

BEST PRACTICE

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Improving business performance  
through better use of information  
and technology

Brian Johnson  
Léon-Paul de Rouw

# Digital Information Design (DID) Foundation

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# Digital Information Design (DID®) Foundation



**Brian Johnson**

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# Colophon

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# Foreword

Information, in modern times almost entirely digital, is critical for enterprises to operate. The ubiquity of IT means that digitized information not only helps you to manage your enterprise more effectively and efficiently but also, that this information has become totally integrated with the business of the enterprise. In order to manage the quality of information, and how to put it to good use, Digital Information Design (DID) was developed.

What is Digital Information Design (DID)? It is primarily a business information management (BIM) model and as with any model it is used to help you to describe problems and test potential solutions. DID is not like any other method or framework model; it is independent of any other existing model or framework and does not claim to manage the entirety of the design of business information services. DID identifies useful and widely used best practices that are designed specifically for use in any phase of business information service development from idea, conception, specification, design, test, handover, service management and operation, or managing architectural issues or hardware and software installation. The received wisdom that one specialized and well-marketed framework model will meet all your needs is simply wrong.

The DID model has been designed for you to identify what you need and when you need it when designing business information services and as a broad guide, identifies key points in existing frameworks that are particularly useful. The model is wholly independent of all other frameworks (including BiSL and BiSL Next in which the basic design is rooted). You can choose and use whatever you wish, the model will help you to assess the validity of your choice(s) and identify strengths and weaknesses in your approach.

The model is designed to be simple by focusing on the common languages to describe key elements of design (need and value, mission and capability), key business information perspectives (business, information/data, services and technology) and the high-level domains (governance, strategy, improvement and operation) that must be managed in order to effectively run any business.

A long-established enterprise where myriad frameworks, methods and standards are in constant use, can use the DID model to ensure that it is using such guidance effectively and appropriately and to identify gaps in what is needed. The DID model has already been tested in such a way for a major service provider to create a common language for enterprise-wide collaboration. Although focused on the business information needed by the enterprise (internal and external), its use identified duplication of 'common' software support tools, miscommunication between application development teams and operations teams and even software support tools unsuited to the domain in which they are used.

DID helps you to identify only what you need to ensure that business information design reflects what is needed by your enterprise. The model can be used entirely separately from the framework level guidance discussed and it can be used at any level in the organization.

What if you have no knowledge of frameworks and methods? Well, the DID guidance mentions most of the well-established and useful frameworks and instructs you about their most important features, and more than that, instructs you about how to use them in designing business-driven IT services. DID then becomes a framework of methods and you can use it throughout the software development lifecycle, agile or traditional.

The essentials of DID are explained in two books: the first is this book, Foundation. Later this year, the Practitioner book will be published. The DID Foundation book explains the DID model, DID foundation concepts and how to use DID in an enterprise. The DID Practitioner book will be focused on case studies and 'real-life' examples of using DID.

Brian Johnson and Léon-Paul de Rouw  
January 2021

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# 1

# WHY DO I NEED BIM?

## ■ 1.1 INTRODUCTION

The capabilities associated with managing the digital information assets of any enterprise, or government body, are many and diverse. Increasingly, however, enterprises take the view that information is an asset of the enterprise. Information is a critical resource for organizations. Without information or with information of low quality an organization can not function properly. So information should not be treated differently to the financial resources, capital equipment and building/estate assets of the enterprise. Digital assets, properly deployed and employed, create additional value with a measurable and demonstrable return on investment. Forward-thinking enterprises take this view a step further, considering information as a strategic asset that can be exercised as a competitive advantage in the markets they serve. Why use the term "digital"? All useful information no matter the storage medium is important, we use "digital" only because of the ubiquity of IT and to emphasize the need to address the speed of change resulting from the use of IT.

We exist in a digital economy and most of the information we use is digital. Digital information is the currency with which business is transacted within enterprises and exchanged between enterprises. The Information we have available influences our actions and thus the requirements for this information become increasingly stringent: information must be accurate, timely, complete, etc. The result is that standards for the functionality and quality of the information processing systems are similarly stringent. Information systems comprise both manual, non-automated and automated processes and numerous supporting IT components that together result in a business information service being provided<sup>1</sup>.

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<sup>1</sup> R.D. Austin, L.M. Applegate and D. Soule, *Corporate information strategy and management: text and cases 8th edition*, McGraw-Hill Education 2008; John Ladley, *Making EIM (Enterprise Information Management) work for business; a guide to understanding information as an asset*, Morgan Kaufmann 2010.

## Digitization

Digitization is often beyond the traditional borders of IT and data. A number of enterprises include the management of telephones and other voice communications systems, intellectual property and other knowledge assets as part of the information ecosystem. And legislative issues can also drive the digitization of information; for example, in the USA medical prescriptions must be communicated electronically between the prescribing physician and the issuing pharmacist. Why? The US government wants to reduce the risk of issuing the wrong prescription. The widespread practice of prescribing pain killers is considered a major problem and moving to electronic information is seen as a tool that can provide information to change healthcare for the better. The reason is that with electronic communication there is the intrinsic capability of tracking the numbers and use of medical prescriptions more accurately.

There is a significant difference between the terms "data" and "information". Most pundits agree that information results from the processing (by whatever means) of information. Knowledge managers argue that the processed information needs to be placed in context in order to be fully understood. Superficially, information results from the processing of raw data. However, the specific issue is getting the correct information to the right person on a timely basis and in a usable form. Thus, perhaps the most critical issues facing information managers are requirements definition and aligning the focus of the information services with the enterprise goals. And requirements definition means becoming involved in the process of designing a business service, digital, IT-driven or not. Leaving things to a semi-random, non-coordinated approach leads to an *ad hoc* culture of requirements definition.

These are some of the questions that you as a business information manager may have in mind:

- What is our enterprise strategy with regard to IT?
- Where is our operating model?
- Who can advise about security?
- Do I have sufficient information about how IT services are provided?
- How much time do I have to think about the transformative impact of major changes?
- How do users perceive their experience of data-driven services (their user experience, UX)?
- Has risk assessment of the proposals taken place?
- Who is in charge of the programme of change?
- Will the change mean a change in business direction?
- What support processes will be affected?
- What is a cloud and where can I buy a couple?
- Will there be a change to my information needs?

- What new capabilities are required from the IT information processing services?
- Can the current IT infrastructure deliver what is required, or must I instigate technical IT changes with the CIO?
- What the hell is Agile?
- Can I insulate myself from IT failure?
- If not, how can I avoid IT failure?

## ■ 1.2 WHAT IS BIM?

Information management in general is considered to be the collection and management of information from one or more sources and the distribution of that information to one or more sources. You can formally define information management as: Information management is the management of processes that acquire, create, organize, distribute and use information<sup>2</sup>. In this book, the scope also includes technology (increasingly difficult to separate from information and data gathering) and the construction and operation of software applications that process data. As such Information management encompasses information processes, information resources and information technologies.<sup>3</sup>

The short definition of information management is: *the management of the information services comprising functionality, data and technology.*

**Business information management (BIM)** is the management domain responsible for all of the tasks and activities that are aimed at governing, defining, improving and supporting the use of the information services (IS) needed for running the business and reaching the enterprise goals.

Most often, IT is the delivery mechanism of how business information is captured, processed and stored; using IT means that information services based on IT need to be designed with the user of the data in mind. BIM then, is wide ranging and its implementation will vary, possibly covering an enormous spectrum of scope, from enterprise to enterprise.

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2 Chun Wei Choo, *Information management for the intelligent organization – the art of scanning the environment*, American Society for Information science and Technology (ASIST) 2002.

3 P. Ribbers (2014), Information Management, between supply and demand: challenges ahead, Valedictory Lecture, Tilburg School of Economics and management.

### Information systems or information services?

The definition of information systems can be confusing. There is little consensus. For one thing, 'systems' and 'services' are used interchangeably because the outcome of designing a business information system based on IT is a service. . .

The definition often depends on the perspective of your role, for example whether you are a data analyst, systems analyst or business analyst----- or maybe you do not care about the definition because you consider yourself a user of services that rely on IT. Both business and systems analyst most often refer to information systems as the term used to describe *business information services* because most services are based on IT.

The difference is often the scope; a business analyst might include cultural issues, specific workplace issues because of a greater familiarity with working practices whereas a systems analyst often focused on the information being collected and processed and left the 'softer' issues to systems testing.

A formal definition for information systems is: *Information systems are formal, sociotechnical, organizational systems designed to collect, process, store and distribute information. Information Systems have four fundamental components that must work together to deliver information processing functionalities that a business requires to fulfill its information needs: Structure, IT, People and Process*<sup>4</sup>.

In the Netherlands 'information provision' was often used, sometimes from the business analyst perspective, sometimes from the system analyst perspective. The term is not used elsewhere.

IT may be the foundation of modern enterprises, but it is not necessarily the reason for being in business; an enterprise serves customers (no matter if these are public or private sector) and managing information services requires that strategic, tactical and operational staff fully understand all aspects of business information capture, processing, retrieval, security and management. Services designed and built within technology environments for technology environments are therefore not business information services.

<sup>4</sup> See for example: Gabriele Picolli and Federico Pigni, *Information systems for managers, edition 3.0*, Prospect Press, Burlington 2016; Alter, S., (2013), *Work System Theory: overview of core concepts, extensions and challenges for the future*, Business analytics and Information Systems, Paper 35., *Journal of the Association for Information Systems (J ASSOC INF SYST)*, online: <http://repository.usfca.edu/at/35>.

In summary, BIM provides you with the opportunity to:

- Govern business information management;
- Concentrate on transformative data-driven services: be strategic with regard to the information needs of the enterprise and networked enterprises, and to direct data and information services design accordingly;
- Coordinate the development of digital business services by directing information needs throughout service development using programme, project and rapid development good practices;
- Ensure the required operational functionality will be delivered through the use of specific frameworks to address information and data management, functionality, software and infrastructure support.

BIM must coordinate strategic topics, such as:

- Business process management with regard to information;
- Developments in the information partner and supply chains;
- Technological developments;
- Market opportunities and risks;
- Agility, transformation and improvement of business information services.

These strategic topics affect all business activities. The topics can be either a risk or opportunity, depending on the need for information and the value of the information for both the business activities and the enterprise. Governance policies must be carefully interpreted at the strategic level to be effective in the operational environment.

The degree to which an enterprise succeeds in delivering effective and efficient information services depends to a large extent on how information is collected, analyzed, processed and exchanged at different levels, and where the information chain leads, both inside and outside of the enterprise.

BIM manages the portfolio of information services on behalf of the business or product managers. Thus, business information management should be responsible for the overall coordination of design and implementation of business information services. BIM is neither a technological framework nor a sourcing method, but a necessary *function* that runs as a common thread from governance to operation. That is why BIM is an integral part of both information and technological choices. The following tasks within the BIM domain are necessary to fulfill this responsibility:

- Carrying out strategic activities necessary to decide on the future of the business information services required for the provision of business activities and determining how these strategic activities are organized; this includes the formulation of information policy and strategy based on enterprise policy;

- Monitoring developments in the enterprise, business chains and IT, and translating these developments (opportunities and threats) into consequences for the information services;
- Managing, evaluating and improving metadata and master data, and monitoring the quality of the data used by the organization;
- Defining what information is needed to support business processes and business services;
- Ensuring that this information is collected and secured in accordance with company policy;
- Defining/specifying requirements for information systems and services;
- Accepting new or changed information systems and services;
- Preparing the enterprise for the use of new information services;
- Supporting users;
- Recognizing needs and demands within the enterprise regarding information use;
- Using, evaluating and improving data sources;
- Ensuring that information is collected and secured in accordance with current policies;
- Translating demand into solutions by changing existing services, participating in the design of new information services or changing information services. Not every requirement or request necessarily requires a solution with the help of BIM and not every delivery of a new information service or extension of an existing information service leads to an IT project, although the dependence of modern enterprises on IT makes it likely;
- Evaluating and managing projects, developments and activities in collaboration with the internal IT departments or IT supplier (s), and managing, monitoring and evaluating delivery or supply.

## ■ 1.3 BUSINESS INFORMATION SERVICES

Where does business information arise? Depending on your way of working, information appears via surveys, it comes from internal records, social media, articles, books, references and search engines, or through customers purchasing your services or products, or communicating with government departments or agencies; depending on the source and what you do with it, the information is used to guide planning in order to create revenue or perhaps to provide government services. Some common definitions are shown below; make sure everyone understands your description or terminology.

- A business information service is a service that provides the business with the necessary information for delivering business services to its customers;
- An information service is a service that provides any party with the necessary information for its activities. Information services comprise three components: functionality, data and technology;

- A business service is a service provided by the enterprise to its customers and other stakeholders, which comprises one or more products and/or services.

Information arises in all sorts of ways, via the Internet of Things (IoT), from customers, information and supply chain partners, even from social media friends. Published sources may be the web, blogs, newspapers, magazines, databases, government statistics, directories, technical manuals, and many, many more. Information is often defined by context rather than by content, which is why many information specialists claim that information becomes knowledge because you know what to do with it.

In Digital Information Design, DID, a business information service is considered to be an IT-driven service aimed at providing necessary information, such as those services provided by government or banks to gather information from citizens so that they can provide pensions or insurance policies or bank accounts. We specifically use business information services as a term because the most commonly used alternative, information services, is often used to describe services or systems that are used by IT professionals, such as provision of test environments or services relating to support systems. Lack of clarity often leads to confusion. Furthermore, a business information service need not necessarily be IT-driven, it may be entirely paper based, though in modern times that is a rarity.

A business service describes the purpose why necessary information and data are provided.

The main issues to consider for effective business information management are:

- Aligning portfolio and programme management or Agile/DEVOPS methods with the enterprise strategy;
- Designing information services that meet business needs;
- Organizing digital information needs;
- Assisting with the selection of the right technical (technology, . . .) infrastructure;
- If you can't fulfill the above tasks yourself, find people you can trust.

Therefore, by focusing on BIM:

- Business information services are managed and strategically controlled;
- It is possible to focus on a transformation to data-driven services;
- The information needs of the organization and its ecosystem are strategically assessed and data and information services are designed accordingly;
- The development of business services, which are dependent on information, is directed towards the development of digital business services. The BIM team will guide the management of information needs throughout service development, using good practices in the field of programme and project management, or Agile methods;

- It will help to ensure that operational functionality is delivered through the use of frameworks and methods that are focused on information and data management, functionality, software and infrastructure support.

## ■ 1.4 DIGITAL INFORMATION DESIGN

DID has been developed to gain and maintain control of information within enterprises. DID is an abbreviation for “Digital Information Design”; it is a vendor-independent public domain library for the implementation of business information management. The library consists of publications that describe the process framework for business information management and a large number of good practices, white papers, articles and presentations. The ASI BiSL Foundation Digital Information Design family is the next generation of good practices for specifying, organizing, directing and managing the digital information services of enterprises. The core of the series consists of two books: the Foundation (book 1) and the Practitioner (book 2). This book explains the DID model and DID foundation concepts.

The DID framework has been developed to provide a tool for the information management aspects of all business services, with specific attention paid to IT-driven services. DID is the new generation of best practices for supporting the design, management and management of data, information and knowledge, including unstructured data such as that found on social networks or which have been recorded by chain partners<sup>5</sup>. The model is an “aide memoire” on how to structure and operationalize the various aspects of business information management so that it becomes more controllable. In this book the basic definitions of business information management are discussed, explanations are given about the substantive basis of business information management, how the DID framework is set up to provide substantive structure to information management and how to apply this model.

The focus of BIM has shifted from operational functions to focus on the mission and ability of the modern enterprise to deploy the appropriate resources with the appropriate capabilities.

BIM is about governance, the strategy, the improvement and the functioning of business information services from an enterprise perspective. The DID framework describes the activities required to determine many BIM responsibilities. The relationships between these activities are described from a conceptual perspective with examples used to illustrate practical applications.

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5 Digital Information Design (DID) is the new modern and improved best practice that succeeds the BiSL (Next) library.

Why does the world still need a good practice like DID as the modern successor to BiSL<sup>6</sup>? Because relying on a single framework, good practice or standard cannot encompass the complete management of information and data collection, security, retrieval, processing and outcomes. The IT and enterprise perspective must be rationalized and properly interpreted to ensure enterprise objectives. In addition to DID, we refer to good practices that are relevant to BIM, such as governance, security and risk management, knowledge and data management and budgeting. But BIM is not the only perspective on these disciplines. Sometimes other frameworks are available that provide more specific practical guidelines. For example, privacy and security best practice may exist in IT, though ensuring it is relevant and enacted in line with business needs must be led by those with a clear understanding of business needs and BIM is the recommended home for ensuring policies are as needed.

DID has been developed to provide a resource for the information management aspects of IT-driven business information services. Just think of the problem of structured and unstructured data. Massive amounts of data reside "somewhere" in the enterprise, and most of it is unstructured and difficult to identify or search. That is why data is so important to BIM.

## ■ 1.5 BENEFITS OF DID

In today's markets CIOs are increasingly being asked to focus on business needs with regard to information processing and not solely upon technology. Thus the opportunity to ring fence a budget for BIM is clear, the first step is to provide a business case with a clear definition of benefits, costs, risks and the required budget.

It is difficult to be precise about BIM implementation costs, because of the variance of business transformation goals and information needs in different enterprises. It is, however, clear that implementing new processes and procedures costs time and money; though less cost is involved in influencing behavior, either through training or persuasion. And it is certainly possible to identify that even very small percentage improvements in efficiency will result in savings that more than offset these costs by, for example, avoiding catastrophic services outages caused by essential data being unavailable or not having to respond to problems created by a failure to manage information properly.

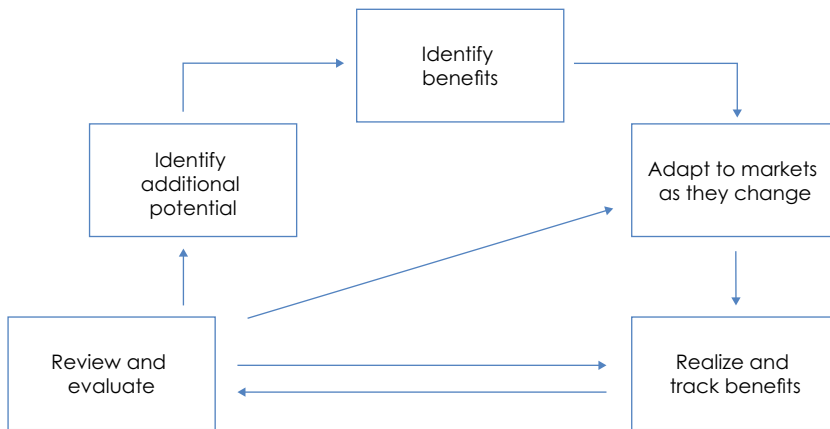
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6 The BiSL library contains among others: R. van der Pols, R. Donatz and F. van Outvorst, *BiSL® - A Framework for Business Information Management - 2nd Edition*, Zaltbommel 2012; R. van der Pols, *ASL®2 - A Framework for Application Management*, Zaltbommel 2012; R. van der Pols and Y. Backer, *BiSL® Pocket Guide – 2nd Edition*, Zaltbommel 2012; R. van der Pols and Y. Backer, *ASL®2 Pocket Guide*, Zaltbommel 2014; Y. Backer, *ASL® and BiSL® Case Studies*, Den Haag 2014; R. Donatz, *BiSL® Self-assessment – 2nd Edition*, Zaltbommel 2012.

Budgeting for BIM and assessing the risks associated with either failing to introduce BIM or indeed introducing BIM without proper planning should be the responsibility of middle management. Discussions should take place with the Security and Financial divisions to establish overarching policies and budgets. BIM can and should advise on privacy and security.

As mentioned earlier, BIM strategists and owners will have specific goals that require budget and resources; these goals and resources must be reconciled with overall enterprise goals and policies. A business case for BIM is the best means of convincing CIOs, who are new to the discipline, of the need for BIM.

DID primarily enables you to reap the benefits of being in control of BIM. Without a tool, BIM is largely abstract and guidance is needed in order to grasp the picture of information flowing through the enterprise. Other frameworks are also tools, whether it is COBIT that elaborates on control objectives that can be identified and audited, or BABOK® or ITIL or indeed any of a hundred others.



**Figure 1.1** Thinking about the benefits of using DID

However, remember the proverb “A bad workman blames his tools. . .” DID is not a hammer with which you club every nail, though many useful frameworks are misused in such a way. DID benefits you by identifying the most common activities and resolutions to BIM. Used wisely, DID good practices will result in benefits such as your enterprise being in control of sensitive and vital information assets, reducing the costs incurred because of poor data quality, establishing a culture focused on the quality, integrity and availability of your information assets and ultimately becoming a digital enterprise. Business transformation using IT is multi-faceted and most often focused on IT professionals; DID focuses on the business professional.

When thinking about the benefits of using DID (and managing digital assets) think about all of the aspects of beneficial impact on your enterprise, not only tangible benefits (proof of data accuracy for example) but intangibles such as a common commitment to the integrity of data.

You should also bear in mind the potential headaches:

- Do we understand the strengths and weaknesses of our existing digital data services and the supporting IT?
- In particular, what are our existing data and IT change capabilities?  
Is there an IT architecture, strategy, or blueprint which sets the direction for transformative change in the enterprise? Do we understand the IT changes that will be needed alongside the business change? What new capabilities are needed? What new business information services? What changes to underlying IT infrastructures are required? What data is needed? What is the effect on information and supply chain partners if we do not have what is required? Where can we find what we need?
- Are any of our information chain partners preparing changes that will affect the information sets that we need?
- Is the digital age something we embrace or fear?
- Are Agile methods viewed as an opportunity?
- Is the level of IT resourcing realistic and achievable: does the enterprise IT supplier have enough of the right skills available?
- Are there enough funds for IT?
- How can we cope with the massive influx of data? How can it be used?
- Is there a fallback position for each IT change? What can be salvaged if any such change should fail? Can we say which requirements can be deferred or dropped and which are essential if the IT projects get into trouble?
- What are the arrangements to ensure that the business can assimilate the various IT changes? Who is responsible for making sure the proposed changes are acceptable to the business? For defining the new way of working? For testing the changes on behalf of the business? For training the business users? For accepting the IT changes on behalf of the business?
- What arrangements are there for phasing out the use of existing data services by the business where these must be replaced?

You should draw together answers for these questions and create a holistic picture of information needs that can be presented to those in charge of designing services for the enterprise.

## ■ 1.6 TARGET AUDIENCE

The primary target audience for this book is those in the front line of business information management. This includes all the roles responsible for governing, defining, improving and supporting the use of business information services, e.g. CIOs, information managers, business information managers and supporting roles at the operational level.

The second target audience is the people responsible for, or involved with, the business processes. These are the roles that are intended to be supported by BIM and they will communicate extensively within the BIM environment. Examples are the business manager, business process owner and business architect. Those involved with Agile or DevOps programmes (not only "traditional" projects) will be interested because DID provides the information/data perspective that must be maintained throughout the design and development of any business services.

The third target audience is the IT service suppliers and the professionals who can redeploy skills such as ITIL, PRINCE2® and Agile/Scrum into BIM, suppliers of hardware and software, service managers etc. The skills required for handling incidents and problems, for example, can be transferred in order to focus on data-driven services rather than on the IT infrastructure that supports their delivery.

This book is also useful for consultants who are involved with the set up or professionalization of business information management and for IS/IT auditors and students of business informatics or BIM.

## ■ 1.7 STRUCTURE OF THIS BOOK

Part 1 discusses the Digital Information Design framework. Part 1 consists of Chapters 2 to 7. Part 2 demonstrates the application of the DID framework in practice. Part 2 consists of Chapters 8 to 11.

Following this introduction, in Chapter 2 we get acquainted with the DID model/framework. The different components of the model and how they relate, are discussed. We also show how you can draw the model yourself. Two simple examples outline how you can use the framework.

Chapter 3 is about applying the framework. Chapters 4 to 8 will then go deeper into the different parts of the DID framework.

This book is designed in such a way that the four domains are explained in individual chapters (Chapters 4 to 7), with each described in the context of four perspectives.

It goes without saying that the importance of a perspective will differ per domain. In "Operation", for example, technology is a transport mechanism that focuses primarily on "does it work?", while in "Strategy" technological decisions have to be made that have an impact on BIM.

Chapter 8 shows how to use the DID model practically to analyze or improve the processes, based on common processes within BIM.

Chapter 9 contains an example of how the DID model can be used in developing a strategy for a digital organization. Chapter 10 explains the relationship between the DID framework and the lifecycle of a business service. The business service lifecycle shows how the DID framework fits into the various development phases of a service and how the framework functions. Finally, Chapter 11 deals with ideas about the development and implementation of business information management practices in cases where little management support exists or few resources are available.



# PART 1: DIGITAL INFORMATION DESIGN MODEL (DID)

Part 1 discusses the Digital Information Design framework and comprises Chapters 2 to 7. In this section, we explain the DID model, how the DID model can be used and even more important, how to draw the DID model yourself. The first two chapters explain the groupings of the 12 elements that make up the DID model. The next four chapters (4-7) explain each the different groupings of four elements in each domain (governance, strategy, improvement and operation) in depth.

You will find that the different elements in each domain in the model is made clear and how the elements can be combined in different ways, with different results, for different enterprises.



# 2

## GET TO KNOW THE DID MODEL

### ■ 2.1 INTRODUCTION

In the 21st century digital environment we need a modern way to design and deliver business information services and to ensure that quality and integrity are not compromised at the expense of accelerated development. For this reason, the DID framework was developed to envelop the key elements that would assist in the design, development and use of business information services.

Business information managers are responsible for governance, strategy, improvement and operation of information services from the enterprise perspective. DID focuses on information-driven, usually IT-powered (hence use of the term IT-driven throughout this book) business services and has been developed as a tool for the business information manager. The DID framework defines the activities and topics/subjects required to name and execute BIM responsibilities. The framework was developed to support the analysis, development, directing and managing of information needs.

This chapter explains how the Business Information Manager can use the DID framework: how it is set up, how to draw it yourself and how to apply it.

### ■ 2.2 DID FRAMEWORK

The DID model comprises three groups of four “elements”: the first group describes a general operating model with four activity domains (Governance, Strategy, Improvement and Operation); the second group consists of what are, in essence, the drivers of the business model comprising four components (Need, Value, Mission and Capability) and the third group makes up the enterprise architecture combining four perspectives (Business, Data, Services and Technology).

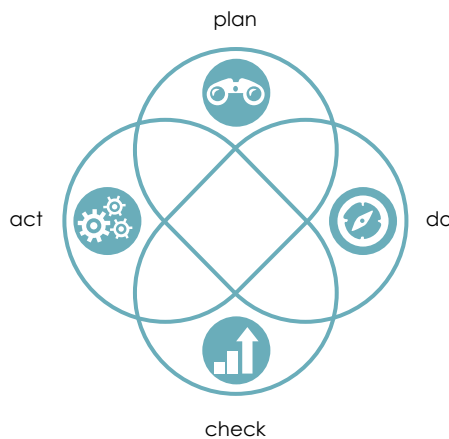
### 2.2.1 Operating model

The outer ring represents the DID operating model. The operating model explains how the enterprise is organized/ structured to achieve its goals. The operating model explains how the enterprise is organized/ structured to achieve its goals and it is easy to represent the Deming cycle (or PDCA as it is commonly known) within the model.

Each sequence in the DID cycle defines a management domain. A domain within the DID model represents information management activities and we can identify the two most appropriate components of the Deming cycle in each domain. The four domains are:

- Governance - act/plan;
- Strategy - plan/do;
- Improvement - do/check;
- Operation - check/act.

Why alternatives? Simply because PDCA can be applied in every domain, perspective or driver in the DID model (or come to that any other business or IT model). Mostly we have found that "plan" is associated with Governance but a very strong argument exists for Governance being the result of what is being done in the enterprise (Act). The difference appears most obvious in government where policies are most often planned long before they are enacted!



**Figure 2.1** Operating model

#### **A dynamic view: on Plan, Do, Check, Act**

In the 1950s William Edwards Deming (1900-1993) worked with the Japanese to implement a method aimed at improving productivity and continuously improving the quality of their production processes. He wrote about his experiences. His theory of management assumes that organizations can simultaneously deliver quality, reduce costs, and increase customer loyalty. Key

is to strive for continuous improvement in the organization through an outcome-oriented process using the Plan, Do, Check and Act cycle<sup>7</sup>.

Within the DID model one can find the PDCA cycle on different levels, just like Matryoshka dolls. Starting in the Governance domain, policy is planned that is translated in strategy and actions (do) which have to match and align with improvement in operations (check) before they can be implemented (act). Based on continuous monitoring the policy and strategy should be adjusted to ensure continuous improvement. On a different level processes in each domain also should be improved using the same approach<sup>8</sup>. For example, looking at governance processes in the Governance domain one can use the same cycle to improve them.

Incidentally, Deming called the PDCA cycle "the Shewhart cycle" because he adopted the idea from his teacher. It is now almost universally described as the Deming circle<sup>9</sup>.

The operation model also reflects the service life cycle or work System life cycle. Work systems is a natural unit of analysis for thinking about systems in organizations.<sup>10</sup>

As a consequence the DID model reflects the dynamic view of how business information service change over time.

We are not prescribing the use of PDCA, we are simply recognizing the importance of the Deming cycle and its almost ubiquitous use. Neither are we positing that plan (for example) only exists in governance. Mini PDCA cycles exist everywhere (thought of a good policy? Plan it, build it check it, put it into action – there is an entire PDCA cycle in the Governance domain....).

It is important to remember that strategic, tactical and operational activities will mirror PDCA-like processes even if the enterprise is agnostic about the Deming cycle. Thus, if you like and endorse the use of the Deming cycle you will not mind the references; if you are a non- believer (heretic!!!) don't get too concerned, just accept that unlike aliens who abduct mid-western farmers in the USA for research on typical earthlings, PDCA does actually exist. As with all other good practices, adopt or adapt it or ignore it depending on the circumstances in your own particular enterprise.

7 See Joseph A. Defeo: *Juran's Quality Handbook: The Complete Guide to Performance Excellence, Seventh Edition*, 2016.

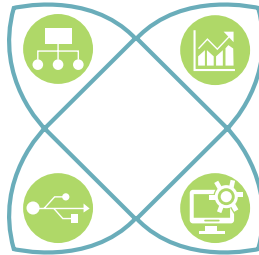
8 For a more detailed discussion see *Aligning business processes and information systems; new approaches to continuous quality engineering* by Robert Heinrich, 2014, Springer Verlag.

9 See more about this principle in: W.E. Deming, *Out of the crisis*, Cambridge, Mass. 1982, 2000.

10 S. Alter (2013), *Work System Theory: overview of core concepts, extensions and challenges for the future*, Business analytics and Information Systems, Paper 35. <http://repository.usfca.edu/at/35>.

### 2.2.2 Enterprise architecture

In the middle of the model you will find the DID enterprise architecture. The enterprise architecture shapes the business information model of the enterprise. The DID enterprise architecture is structured as a combination of four subsets that we term perspectives: Business, Data, Services and Technology.



**Figure 2.2** DID enterprise architecture

Do not confuse the DID description of enterprise architecture with those in other models or frameworks. TOGAF, for example, describes Business, Data, Applications and Technology as the enterprise architecture. Service has been selected in DID because we are focusing on the management of the data and information used to construct the holistic service (which will comprise one or more applications and associated components) and application development is not a DID function.

As with all definitions used in DID, these relate to BIM and can be mapped to other frameworks in the same way that, for example, ITIL can be mapped. The DID definitions are not intended to imply other frameworks are erroneous, nor does it apply that because framework "x" has a different definition, that the DID definition is wrong.

### 2.2.3 Business model

In the center of the model, the core concepts indicate the tension between Need and Value, and Mission and Capability. These four elements, Need, Value, Mission and Capability, are considered the drivers of DID and define the DID business model.



**Figure 2.3** Business model

### 2.2.4 A holistic model

The groupings of the 12 elements is not arbitrary. The core of DID has been distilled so that the DNA (groups of four amino acids for those among us who can recall Biology lessons) of each domain is clear and can be combined in different ways, with different results, for different enterprises. Every one of us comprises combination of only four amino acids, and every one of us is a human being though we all have individual characteristics. With the four DID activity domains, "amino acids", the four perspective "amino acids" and the four drivers, any enterprise can create a combination of the guidance that is specific and will work for them.

The DID model is represented in Figure 2.4.

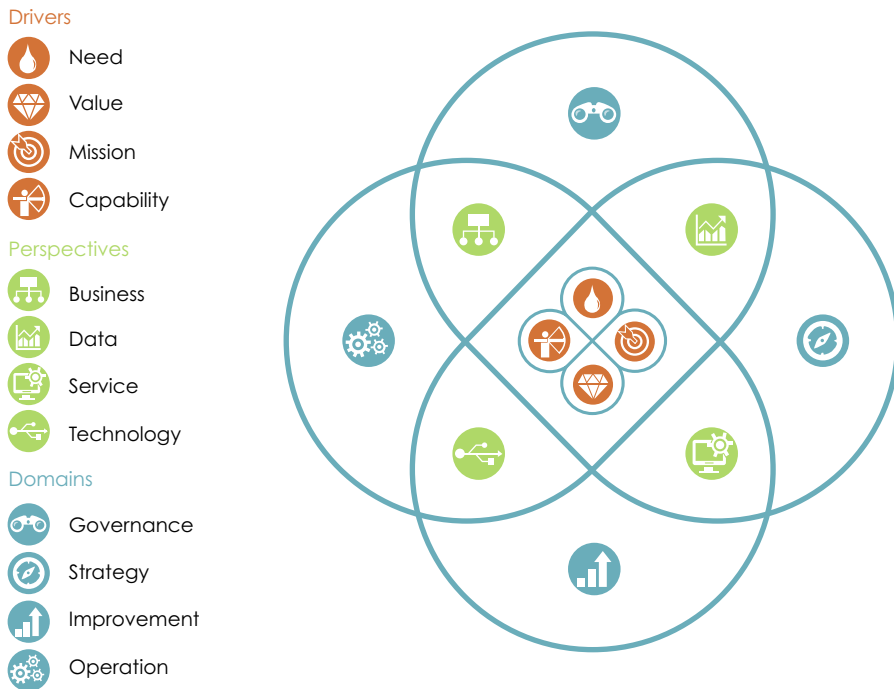


Figure 2.4 The DID model

## 2.3 DRIVERS IN THE BUSINESS MODEL

The drivers are the core underlying principles that apply generically to each of the activity domains.

The drivers comprise two sets of two linked components that complement one another and are also in tension.

The drivers can be applied to any enterprise strategy to determine requirements for an information/ data strategy.

### 2.3.1 Need and Value

Need is a direct reflection of what the business must have and Value relates to the (real or perceived) benefit that would accrue from having the information service<sup>11</sup>. Need and Value relate directly because if something has no value, why would it be needed? And even when something is needed by a specific stakeholder, it is questionable whether it really delivers value. Value should be paramount; if an information service is not valued, or value cannot be demonstrated by, for example, monetarizing the benefits or explaining the usefulness, then it is highly likely it is not needed. An example is where the Need and Value elements help you to link the issues of practical use and necessary improvement. This is to ensure that an information service is working as it should, is completely understood and if it is not providing value then the focus should be on change for the better.

### 2.3.2 Mission and Capability

The driver "Capability" will help you to determine the resources (time, money, business and IT people....you could include BIM in this category!) that you will need to fulfill the Mission. Mission and Capability are directly related because in order to fulfill the enterprise Mission, many capabilities must be in place to drive success; and of course if a Capability is not needed then it has no value in relation to achieving the enterprise Mission.

The Mission should focus on output and outcome (benefits), allowing the key Capabilities to be identified and put in place to meet the information requirements. When evaluating the need for BIM, we focus on the (digital) Mission of the enterprise and on the BIM Capabilities (and related resources) needed to realize the information services required for the enterprise Mission.

The "Mission" element will provide guidance about formulating the enterprise Mission (in terms of Business, Data, Service and Technology perspectives). BIM Capabilities will be needed to ensure that the portfolio of information services is governed, managed, changed and operated in a purposeful way.

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<sup>11</sup> Value and need are always based on the benefits related to the subject at hand. For example project value, business value, enterprise value. See, for example, *Creating Shared Value* by Michael E. Porter and Mark R. Kramer, Harvard Business Review, January–February 2011 or *Value-based Project Management; How to bring focus into complex projects* by Nicoline Mulder, 2016. And as well: M.E. Porter, *Competitive Strategy*, New York 1980, M.E. Porter, *Competitive Advantage*, New York 1985 and M.E. Porter, *The Five Competitive Forces That Shape Strategy*, Harvard Business Review, January 2008.

## ■ 2.4 DOMAINS IN THE OPERATING MODEL

Business information services are at the core of DID. The framework identifies four primary domains for controlling, developing and operating targeted information services: Governance, Strategy, Improvement and Operation.

Governance is the umbrella activity aimed at investigating, controlling, forming a hierarchy and determining policy. The domain of Strategy is mainly focused on the portfolio and lifecycle, while the focus of Improvement is on changing existing or creating new information services. Finally, the Operation domain is by nature focused on the daily use and exploitation of information services.

Keep in mind that all these domains are closely coupled.

### 2.4.1 Governance domain

Governance within DID (keep in mind our point about a definition being used to establish consistent understanding and not necessarily a universally accepted dogma) is defined as the organizational capability exercised by the Board, executive management and IT management to control the formulation, implementation and management of information services and, in this way, ensure the required fusion of business and IT. Governance here means formal management oversight: how the enterprise is managed in terms of hierarchies, authority, roles and responsibilities<sup>12</sup>. Ensuring proper governance of information services is paramount. Managing information flows, structuring information and data dependencies and work methods must be coordinated between strategic suppliers, business partners and users of information and data in the ecosystem (turning to another useful term from Biology) of information and data. The guidance, therefore, also applies to relationships with parties outside the enterprise, such as suppliers and partners in the supply chain.

The Governance domain will discuss how enterprise policies (for example: Identity and Access, Privacy, Quality, Risk, Security), will influence the Strategy, Improvement and Operation domains. Policies are specified and documented regulations (rules or sets of rules) that govern the supply of information services.

### 2.4.2 Strategy domain

In this domain the information strategy is the main focus. Within the domain the information services deemed as necessary for the long-term development of business service are drawn up.

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<sup>12</sup> ISO 37000 *Guidance for the Governance of Organizations* and on an introduction to governance in IT, see P. Weill, J.W. Ross, *IT Governance, how top performers manage IT decisions rights for superior results*, Harvard Business School Press, Boston, Massachusetts 2004.

An enterprise-wide information strategy is a combination of data, business information services and most technical components in the business. Within BIM the consequence is that specifications, limitations of policy, are formulated as information policy principles within the Governance domain. Within the Strategy domain these principles must be made explicit to facilitate measurement.

In the enterprise ecosystem and also in the enterprise itself, the business processes change more or less continuously. There are also market and technology changes (some opportunities, some risks) that affect the information services of the enterprise. Services must be future-proofed, where possible, and where shortcomings in current services are identified, there must be clear direction about what needs to be done to bring about improvements. In particular, issues such as portfolio management and the information lifecycle<sup>13</sup> will be considered.

### 2.4.3 The Improvement domain

How information services change (and how they can be improved) and the mechanism for doing so is the primary focus within this domain. The key to a successful design and delivery is understanding how IT-intensive service design<sup>14</sup> should be managed.

Central to the activities within the Improvement domain is the continuous improvement of business information services by decreasing costs, improving quality or reducing lead times of developments. As a consequence it refers to the reasons why and how information services can be improved, as well as the technology behind this. The Improvement domain is closely coupled with the Operation domain, though it should also be clear that all domains are closely coupled; after all without being linked to Strategy, improvements might be managed on a piecemeal basis instead of holistically.

In this respect, the key elements should be obvious, namely analysis and specification of the information needs of new services or agreed improvements to existing services, assembling the data needed (and influencing technology decisions) and oversight of testing and deployment.

### 2.4.4 Operation domain

This domain focuses on the use of business information services. Ensuring optimal and continuous support of information services is included in this domain. The activities within the domain provide support for those using information services when carrying out their activities within the business processes, for the operational

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<sup>13</sup> B.C. Johnson and J. Higgins, *Information Lifecycle Support*, Norwich 2011.

<sup>14</sup> For a detailed discussion see B. Johnson and L.P. de Rouw, *Collaborative Business Design: Improving and innovating the design of IT-driven business services*, Cambridgeshire, 2017.

management of the information services suppliers and for providing and monitoring the operational services.

The leading questions within the four domains:

- **Domain governance:** Is the governance of business information services well organized, i.e. is the enterprise well managed in terms of hierarchy, authority, roles and responsibilities, and does the enterprise have the ability to supervise this properly? Are clear directions/policies in place for the use and acquisition of information services, based on the mission and policies of the enterprise?
- **Domain strategy:** Has an enterprise-wide or business unit strategy been drawn up (with strategic themes, issues, strategic vision and programmes) in which all information, business information services and most technological elements in the business are coordinated?
- **Domain improvement:** Does the organization actively work on analyzing and specifying the information needs of new services or accepted improvements to existing services, merging the necessary data (and influencing technology decisions) and supervising the testing and deployment of the services?
- **Domain operation:** How are the information services in the business actually used (quality, price, cost and time).

There are two contrasting foci within the DID framework:

- The executive-led domains where the focus lies in the governance and strategic management of the content of information services. Both the Governance and (information) Strategy domains of the DID framework are focused on what the information services must comprise.
- The operationally-focused domains that center on the use and structure of information services. These domains of the DID framework are Improvement and Operation.

### **Operational control**

The operational activities are principally found in the Operation and Improvement domains, though of course they exist in the directly related drivers of Capability and Mission. The operational activities are based on daily use of information services and the design and implementation of new or improved business information services.

### **Management control**

Drivers deal with, *inter alia*, enterprise mission and capabilities, need and value, and are enabled by effective management of the resources needed to fulfill the mission. This does not mean that control of resources only takes place via the one domain, or because of a single driver. BIM should exercise control throughout

the development of new or improved business information services, particularly on information service design and delivery and therefore upon the supplier, and this affects all domains. In the domains of Governance and Strategy, information services are defined for the long term and therefore specify how control over information services will be organized across the enterprise and with partners in the supply chain and information chain.

Control also takes place in the operational activities where changes to master data must be carefully managed. Operation control also deals with the day-to-day management of suppliers and users. And improvement control is focused on what new or changed information services will look like.

Cooperation and clear communication are frequently the deciding factors in the effectiveness of BIM and the quality of the information services within the enterprise. And, as it is with every good practice on the planet and beyond, people will make or break success, not the framework.

## ■ 2.5 FOUR PERSPECTIVES

Each domain can be viewed from four perspectives: Business, Data, Service and Technology. From a "Business" perspective, the interest is mainly on the business activity, while the "Data" perspective is all about information and data and the value it can create. In the "Service" perspective, the aspects of service integration, composition and delivery are emphasized, while from the "Technology" perspective, the emphasis is on the technical standards used. The four perspectives together form the enterprise architecture model.

The DID model can be adapted to the principles of the TOGAF model<sup>15</sup>. Within the DID model the four perspectives could, if required, be described in terms of the TOGAF architectures:

- ✓ Business architecture - defines strategy, policy, organization and the main work processes within the organization;
- ✓ Application architecture - provides a blueprint for the individual systems to be used, the interactions between the application systems and their relationships with the core processes of the organization, using the frameworks for services as functions for the integration. Within DID we use the term "services";
- ✓ Data architecture - describes the structure of the logical and physical data within the organization and the associated data management sources;

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15 <https://www.opengroup.org/togaf> and *The TOGAF® Standard, Version 9.2*.

- ✓ Technical architecture or technology architecture - describes the hardware, software and network infrastructure required to support organization-critical applications.

### 2.5.1 Business perspective

The Business perspective is focused on the activities of the business information users in the enterprise, ensuring that business processes are documented and supported and that business policy is adhered to. Each domain can be viewed from this perspective. Management and direction of the enterprise is not exclusively addressed by the domains "Governance" and "Strategy" because in the domains "Improvement" and "Operation" there is also emphasis on feedback regarding governance or strategic needs.

Policies on, for example, privacy, security and any political regulations) are a key Business perspective. The development of enterprise policies regarding *inter alia*, capture, storage, retrieval, processing, archiving and destruction of information and data (clearly a data policy) is a major BIM function (though within the dictates of the overarching enterprise).

Therefore, in thinking about Governance, extrapolating overarching and BIM policies into a business process is within the domain of the enterprise line of business (LoB) management. LoB management will develop a processing architecture that describes how the enterprise will realize its policies. Because of the relationship between the business process and the information services, business information management (which is responsible for developing the information policy model that should cover standards and levels of services) must be closely involved with line management.

Thinking about Strategy, the Business stakeholder perspective requires that business information management translates the business policy model (describing what the business process should look like) into the information architecture and the architectural data model(s). This describes what information services should look like and shows the relationships between the business processes and the supporting information services. A major component of an architectural data model (a BIM responsibility) will be a database that accurately describes relationships between all data entities and includes data about, for example, interest rates applied to bank accounts (an IT responsibility). In some enterprises, IT might be responsible for maintaining the data model, but BIM is then responsible for ensuring it is accurate, up-to-date and that any changes reflect the needs of the enterprise. Changes to enterprise information are high risk and cannot be left solely to technologists.

Market opportunities should be carefully assessed; the availability of information and data requires the BIM professional to have a taxonomy in mind because of the sheer volume of information and data, and the difficulty in navigating and controlling the use of information.

Improvement of the business information services will be uppermost in the thinking of those with the Business perspective, whereas those focused on Operation will have one eye on improving matters, whilst the other eye is firmly focused on the quality and value of the information assets and the services.

### 2.5.2 Data perspective

Data is a constant factor, in the sense that it is the lifeblood of commerce and government. The Data perspective focuses on requirements for data AND information as defined by all of the primary activities of the enterprise, and on the quality of the data AND information used by the enterprise.

Strategy is arguably the domain where the Data perspective dominates, because inadequate planning jeopardizes both Improvement and Operation. The Information stakeholder perspective will focus on requirements for information services and their supporting technology as defined by the business of the enterprise. Strategic decisions about information integrity and the value of digital assets in the information services must be seen as integral components of strategic decisions about the business of the entire enterprise, its products and services, and its overall functions.

### 2.5.3 Service perspective

The DID Service perspective is about developing or acquiring new or improved IT-driven information services, testing the services and the quality of the services used. To an extent, it also includes the provision of certain services such as a support function.

The stakeholder's perspective on Service will (or should. . .) inevitably focus on issues such as quality of service, high availability through robust risk, security, privacy, resource management and data integrity. The improvement of services will depend on these issues and others such as the suitability and performance of suppliers and sourcing strategies, as well as consideration of team issues that will facilitate management.

Within the Service perspective, Governance and Strategy may not be obvious, though data services will be operated in accordance with policies and strategic intent, and the issues of service quality and fitness for purpose will be under the microscope. Sometimes this is difficult because thinking about Services may not be an obvious task in the domains of Governance and Strategy.

Improvement benefits should be established from a very clear position with regard to new or improved services to ensure that these services are "fit for purpose". If too little attention is paid to this, it will be at the expense of the Operation, resulting in an uncontrolled flow of requests for changes.

As has been expressed frequently, information plays the central role in the administration of the enterprise and their services to customers. Increasingly, to the point almost of ubiquity, the services delivered by enterprises are information-based and often depend on collaboration with other enterprises, especially in the public sector, for their delivery.

Governance in BIM is responsible for effective translation of the business policies and processes into policies for information services, a principal focus for the stakeholder perspective on Services. Application management, database management and IT infrastructure management deal with the further translation into applications, databases and infrastructure; a perspective on Strategy will be required to ensure that action is planned and executed to achieve business information service goals and not just IT goals.

Probably the most important facet in the delivery of information services concerns automated services. The set-up and running of these applications thus defines to a large extent the quality of the support for the business processes. Within Improvement, inevitably the Service perspective will revolve about the axes of development of new or improved information services and the testing of the services. The development and connection of applications are described in the application architecture, which is primarily the responsibility of application management, but clearly under the direction of BIM.

From the Technology and Service perspectives, information services and systems are the combination of IT-based business applications, data, human activities and information-handling procedures that utilize IT hardware and software to deliver electronically-based information services to users within, and increasingly outside, the enterprise.

BIM clearly can (and should) influence developers and infrastructure specialists, because of specific requirements for information services. Even more influence should be exerted over data modelling. A question for the future is whether business information is now so dependent on IT that database design and administration should be in the Business and not in the Technology domain. Some will argue it is inevitable, some will argue technical implementation and administration will always be an IT task and only the design of the database model will ever be a business issue.

### 2.5.4 Technology perspective

Technology is at the center of modern business. In the 21st century IT is critical for most private and public organizations to deliver their products and services to customers and support operational services. The technology perspective includes technological innovation and new ways of delivering services, which of course makes the role of IT increasingly central. In business today almost everything is digital.

Technology has become ever more important to manage relationships with customers, suppliers and partners, and to control the flow of goods and services between customers, suppliers and partners. It is no longer simply a mechanism to manage internal processes and to monitor and control the overall performance of the enterprise and its business units.

Information technology, or IT, is the underlying hardware, software and communications infrastructure upon which the delivery of information services is based. Technology governance should include recommending good practices such as ITIL and COBIT to ensure the proper management of essential processes; since the original days of both BiSL and ASL (Application Services Library) the ITIL practices have been adapted for use in BIM. Thus, it makes sense to promote ITIL within your enterprise information and supplier partners. Technology stakeholders must ensure Strategy is in line with the policies to manage IT efficiently and effectively.

The Technology perspective on Governance and Strategy (even Improvement) might seem diluted because technology is considered to focus on day-to-day operation support, but it is a modern day characteristic of the business world that the role of IT has changed from simply enabling business processes to transforming the business itself. It is crucial that enterprise decisions (Governance) about IT and, in particular, the business information services are aligned to business strategy. This is, of course, even more of a valid point where the enterprise has extensive plans for electronic service delivery or other innovative ways of achieving its aims; in the 21<sup>st</sup> century other than having to consider the needs of the disabled or the economically disadvantaged who might rely on paper based delivery, or audio, most delivery is electronic. When thinking about technology, Strategy means thinking about tomorrow as well as the technology of today.

New ways of delivering services make the role of IT even more central. IT has been critically important for many years in enabling business to gain efficiencies and economies, and technology innovations now make a real difference to effectiveness. IT can transform the manner in which business is done, though remember that Improvement to information services must be implemented in a fashion that fits in with accepted practices. There must be appropriate skills, the correct functionality must be defined and the budget identified. There is, therefore, an important relationship between the Operation domain and the drivers that make resources available for implementing the changes.

Other perspectives on technology will include thinking about the potential of new technologies such as Artificial Intelligence (AI) and Blockchain as well as considering the suitability and value of existing technologies.

The issues of technology often dominate within the domains "Governance" and "Strategy", because once a decision has been made about the technology, the domains "Improvement" and "Operation" can only work with what has been decided and procured. Problems (or opportunities that new technologies offer but have not been considered in the boardroom) must enter a new assessment cycle.

## ■ 2.6 DRAW THE DID FRAMEWORK YOURSELF

The DID framework has no beginning or end and there is no hierarchy between the activities of information services design and management, other than coherence. This is the core of the DID model.

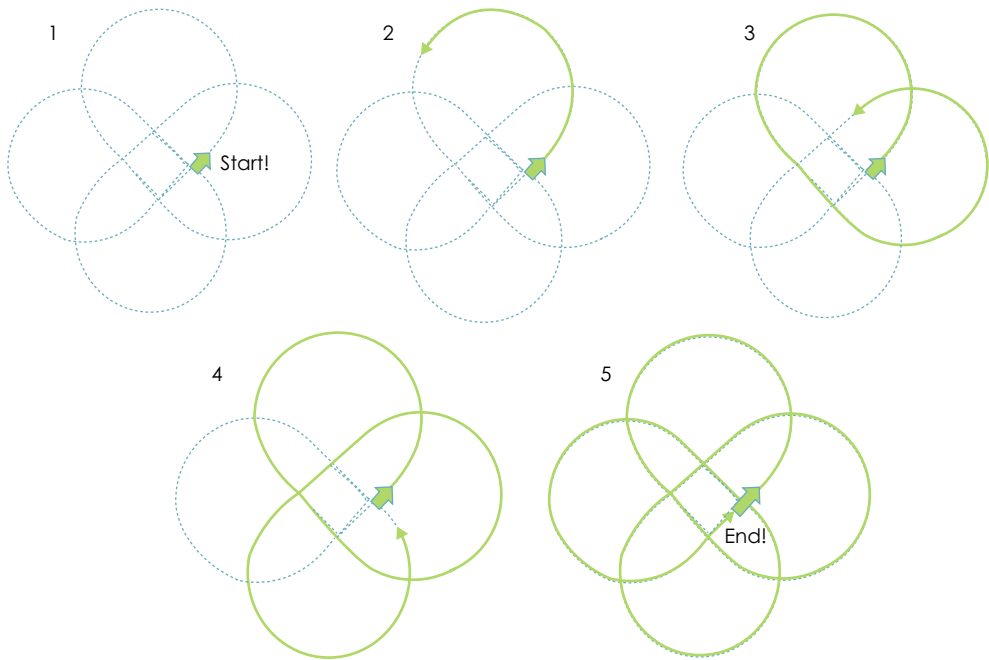
To draw the DID model yourself, you can compare the DID model with a flower (or perhaps a propeller if you prefer). The twelve elements of DID are arranged in three layers, each comprising four generic concepts. DID is based on the principle that business is motivated by specific and generic management concepts: Mission, Capability, Value and Need. In the model, these are located as "stamens" in the middle. Within DID, four domains are recognized: Governance, Strategy Improvement and Operation. These are the outer petals. Each domain can be viewed from the four perspectives: Business, Data, Services and Technology, which are the inner petals.

To draw the framework, we first start with the outer four domains, the petals. We begin (see the first picture in Figure 2.5) with the petal of governance and go through the four improvement steps (plan, do check act) by drawing the four petals, as in steps 2 to 5 in Figure 2.5.

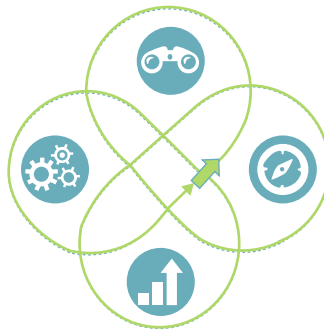
Make sure you overlap each petal. When completed you can place the four symbols in each petal: Governance, Strategy, Improvement and Operation (Figure 2.6).

Drawing the model is nothing more than a demonstration of ease of use. If you consider that childish, keep in mind that one of the most important human abilities is imagination and many of us lose that capability as we mature. And then regret it...

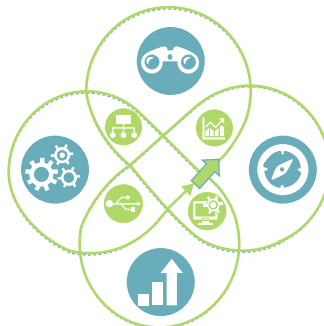
Four subsets have been created where each of the four petals overlaps the other. These four together form the enterprise architecture. Place the four corresponding symbols in the drawing (Figure 2.7).



**Figure 2.5** Draw the DID yourself, five steps to draw the operational model

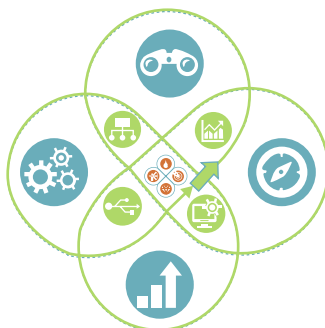


**Figure 2.6** Operation model in the DID model



**Figure 2.7** Enterprise architecture added

Finally, in the middle box (resulting from the overlapping petals of the operational domain) you can place the symbols of the business model, which completes the DID framework design.



**Figure 2.8** The DID model completed

## ■ 2.7 EXPLORE THE DID MODEL

An enterprise is subject to all manner of change: name changes, the enterprise is acquired (or acquires others) or is divided up into smaller parts. However, the business processes usually remain stable (e.g. a bank is still a bank, an insurance company continues to sell insurance, utility companies sell water, gas and electricity. . .). The business processes may be automated or improved but they generally remain the same.

The need for information services for the business processes therefore also remains in continuous existence, requiring ongoing control of the information services. Consequently, BIM is often implemented as line management activities. Businesses sometimes refer to activities in this area as projects or programmes, which suggests that these are only carried out during a certain period. However, this is not correct; BIM procedures are continuous and should, therefore, be considered as day-to-day activities.

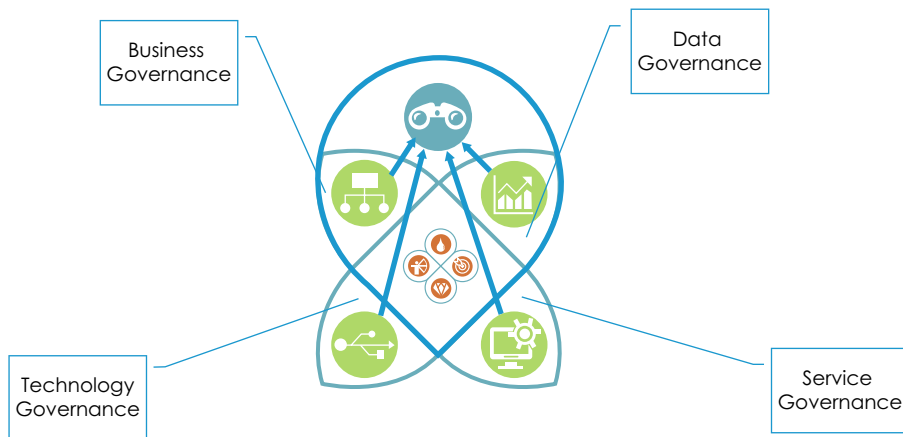
The DID model can be described using the icons or the descriptions supplied and is designed to be communicated quickly and effectively to any audience, ranging from executives to front line operations.

BIM themes and issues are discussed in the context of the four major domains of Governance, Strategy, Improvement and Operation. Drivers act as the principal source, though as mentioned above, they are not the only source, of management control; each of the four domains is then considered from the four perspectives of Business, Data, Service and Technology. In this way a thread can be drawn through any of those four perspectives and linked directly between the four domains. In

the same way it becomes apparent that PDCA cycles *within* each domain can be identified and linked.

Each domain can be viewed from any of the four perspectives. The elaboration of a perspective on a domain provides insight into the themes that play a role in information management. For example, this might be a business perspective on the four domains. This is demonstrated in Figure 2.9.

Successful use of the DID framework is, to a large extent, defined by the close links between the various domains and the different activities, and of course the people involved in managing the activities and links.



**Figure 2.9** Perspectives on the Governance domain

Applying this guidance to the DID framework, leads to the illustration shown in Figure 2.10. Don't be afraid of the arrows and the multiple pathways! This is one illustration to show you that all of the domains, perspectives and drivers are closely linked and that you will take a step-by-step approach to considering the links, the impact of the perspectives and drivers on the domains, and how a simple model can be used to facilitate a complex analysis.

The sixteen topics that arise from the overlapping domains in Figure 2.10 are known as anchor points on the model that assist discussions. To help you to explore the domains and understand the topics and issues we have summarized them in Table 2.1. Chapters 4 to 7 discuss the different topics in detail.

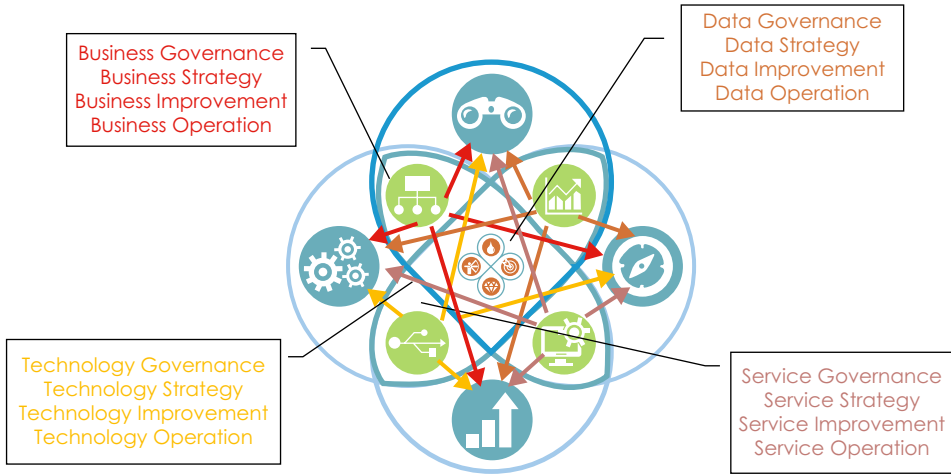


Figure 2.10 The four perspectives on all four domains

## 2.8 HOW TO USE DID

Although the three principal areas (operational model, architectural model and business model) in DID are logically separated, in practice the design of the model illustrates that continuous improvement flows between all domains (as can be seen when you draw the DID model). In the second part of the book we will explain in detail how to use the model. For now, we will show you two examples in order to get an impression of how each BIM subject (as mentioned in Table 2.1) can be analyzed and designed in conjunction using the DID model.

### 2.8.1 Example 1: Service Improvement (3.3)

The management activities based on the contracts and/or service level agreements and the delivery of information services largely relate to service availability, quality and cost. The costs for the information services are mostly determined by the method through which the activities of Improvement are carried out: specifications are created, which are the base for the activities of the IT supplier (thus leading to costs). These specifications define to a large extent the costs and the benefits. Financial management must be closely related to the Improvement domain as this is where the new or improved information service is defined. Of course, this “demand side” perspective can also be a “supply side” issue; service suppliers may be providing COTS (commercial-off-the-shelf) or other packaged services that require attention from BIM.

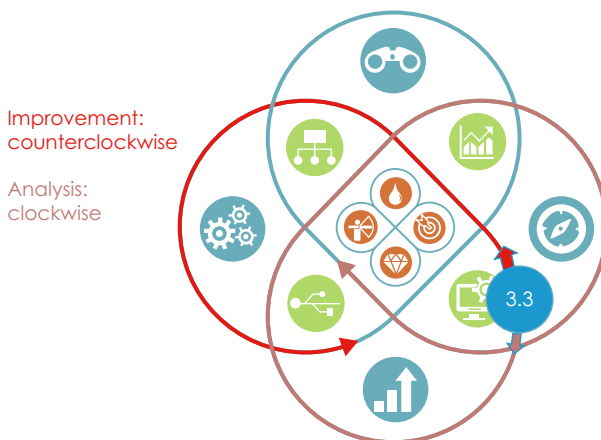
This issue can be found in the Table 2.1 at level 3.3 Service Improvement. Using the DID framework, go to the “anchor”. Follow the line with your finger from this point on the lines of the model counterclockwise (to follow the continuous cycle) or clockwise to enter the previous domain. Trace a line with your finger from any point

Table 2.1 Topics and issues that are discussed in the DID Foundation

Plan	Do	Check	Act
1.1 Business Governance	2.1 Business Strategy	3.1 Business Improvement	4.1 Business Operation
<ul style="list-style-type: none"> <li>Responsibilities and policy making</li> <li>Business change governance and P3O</li> <li>Standardization policies</li> <li>Knowledge management</li> </ul>	<ul style="list-style-type: none"> <li>Enterprise vision for BIM</li> <li>Business architecture</li> <li>Agenda of strategic themes</li> <li>Portfolio of improvements</li> </ul>	<ul style="list-style-type: none"> <li>Business requirements</li> <li>Description of information service offerings</li> <li>Testing: user acceptance</li> <li>Training and documentation</li> </ul>	<ul style="list-style-type: none"> <li>User support</li> <li>Service desk</li> <li>Communication and training</li> <li>Authorization</li> </ul>
1.2 Data Governance	2.2 Data Strategy	3.2 Data Improvement	4.2 Data Operation
<ul style="list-style-type: none"> <li>Data exchange policies and contracts</li> <li>Data governance committee</li> <li>Master data management policies</li> <li>Identity and access policies</li> </ul>	<ul style="list-style-type: none"> <li>Information/data architecture</li> <li>Information service lifecycle</li> <li>Key Performance Indicator (KPI) models</li> <li>Master Data Management (MDM) and models</li> </ul>	<ul style="list-style-type: none"> <li>Data requirements</li> <li>Enterprise data environment</li> <li>The cost of information quality</li> <li>Automated and non-automated information</li> </ul>	<ul style="list-style-type: none"> <li>Master data management</li> <li>Implementation quality plans</li> <li>Data quality</li> <li>Operating the data environment</li> </ul>
1.3 Service Governance	2.3 Service Strategy	3.3 Service Improvement	4.3 Service Operation
<ul style="list-style-type: none"> <li>External executive relationships</li> <li>Sourcing policy</li> <li>Service portfolio policies</li> <li>Service integration</li> </ul>	<ul style="list-style-type: none"> <li>Service portfolio management</li> <li>Sourcing strategy</li> <li>Service architecture</li> <li>Service integration</li> </ul>	<ul style="list-style-type: none"> <li>Build a service organization</li> <li>Service requirements</li> <li>Assembly</li> <li>Service validation</li> </ul>	<ul style="list-style-type: none"> <li>Service support procedures</li> <li>Service measurement</li> <li>Service monitoring</li> <li>Operational supplier management</li> </ul>
1.4 Technology Governance	2.4 Technology Strategy	3.4 Technology Improvement	4.4 Technology Operation
<ul style="list-style-type: none"> <li>Technology policies</li> <li>Guidance on technology-related topics</li> <li>Shared technology</li> <li>Technology driving change</li> </ul>	<ul style="list-style-type: none"> <li>Importance of the technology strategy</li> <li>Technology integration</li> <li>Information technology infrastructure</li> <li>Joint procurement</li> </ul>	<ul style="list-style-type: none"> <li>Deployment</li> <li>Non-functional requirements</li> <li>Testing: automated testing</li> <li>Technology watch</li> </ul>	<ul style="list-style-type: none"> <li>Availability</li> <li>Partner and supply chain liaison</li> <li>Suppliers</li> <li>Incident management</li> </ul>

on any circle or line and see how it flows without a specific end point. . .). Figure 2.11 demonstrates this.

- Improvement (counterclockwise): see how the improvements in the service organization or service requirements work out in the Operation domain, for example fewer reports to the service desk, improvement in the quality of the data or simplified support procedures.
- Analysis (clockwise): see what is going on, and go back to the (strategic) principles as given in the previous domain: there is something missing in the service portfolio management, the sourcing strategy falls short, etc.



**Figure 2.11** Improving and analyzing Service Improvement (3.3)

### 2.8.2 Example 2: Service Operation (4.3)

Addressing information used on a daily basis is effectively the purpose of having an Operation domain: an assessment should be made as to whether information services are efficient and if there is a need for improvements. Operation activities clearly relate to need and to demand; if something is not used, why is it needed? If an activity is inefficient there may be a need to improve something. Demands for change are assessed within Need or can be identified in Improvement; the Improvement function must, therefore, address strategic, tactical and operational change (true also when considering Need and Value). This is where the benefits or changes are also made visible in terms of necessity or (financial) benefits. Need and Value is defined as the central tenet from which management decides on the **total** quality of the support of the business processes. User satisfaction resulting from activities in the Operation domain will indicate the degree to which the IT supplier complies with contracts and or service level agreements (SLAs). Satisfaction should be made visible by monitoring and measuring. Place your finger on the “anchor” 4.3 as shown in Figure 2.12 and follow the line on the model:

- Improvement (counterclockwise): see how the service operation works and think about which policy principles can be improved, or consider which data exchange activity needs to be adjusted or what adjustments need to be made to the identity and access process.

- b. Analysis (clockwise): why does service operation falter? Look back in the previous domain to see whether improvements can be made in the service organization, service requirements and so on.

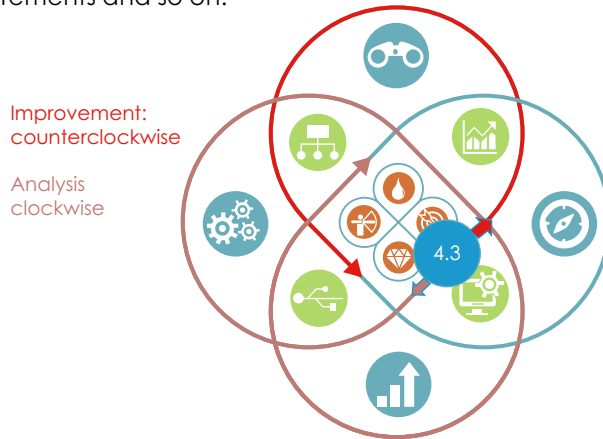


Figure 2.12 Improvement and analysis of Service Operation (4.3)

## ■ 2.9 TO SUMMARIZE

In this chapter we have looked at how the DID framework fits together and how the framework can be drawn and used. The second part of the book explains in detail how the DID framework can be applied to BIM topics. But first, the different elements of the model are explained in Chapters 5 to 8. Chapter 3 begins by discussing in more detail the components of the business model: Value, Need, Mission and Capability.

Bear in mind that no matter what degree of “digital” a transformation might be, there is still the important human factor to be considered. Successful digital transformation requires a certain level of digital readiness of the enterprise itself. How do we work together with regard to the business, information, applications and technology perspectives?

# 3

## THE HEART OF DID FRAMEWORK: DRIVERS

### ■ 3.1 INTRODUCTION

Drivers are applicable to all four of the major domains within DID. The degree of applicability of the drivers within these domains differs from one another, of course, since the focus of the four domains varies.

### ■ 3.2 NEED

Need and value are the primary considerations when translating demand into supply. However, not every demand automatically leads to supply; demands may not be cost effective, or perhaps can be “packaged” with upcoming improvements, or they just may not be worthwhile. The decisions are guided by the Need and Value drivers as a result of careful assessment.

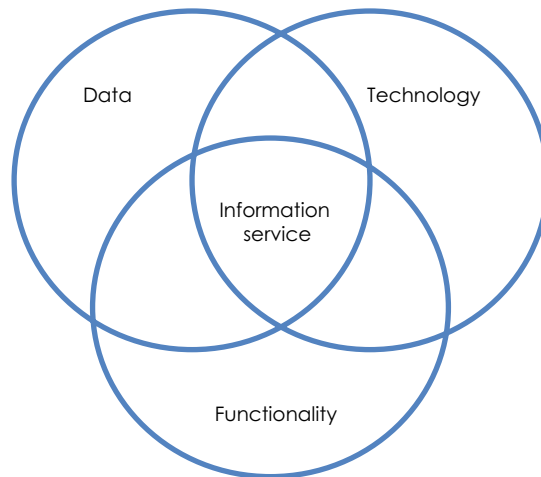
The goal of balancing demand and supply should be to improve the value of a proposed change, whether that is through decreasing risks, improving efficiency, or perhaps the identification of a new business service that offers a new revenue stream.

Need in the context of business information management is the need of the business for an information service. An information service provides the business with the necessary information for delivering business products and services.

Essentially, as shown in Figure 3.1, an information service comprises three components.

When managing the information service, an enterprise commonly examines four components:

- Quality of the support of the business processes; this is translated into the content and the functionality (what);
- Planning (who and when);



**Figure 3.1** The three components of an information service

- Agreements about the supply (how and when);
- The costs (how much).

Too often, the enterprise does not address the Data and the Technology aspects shown in Figure 3.1 until much too late (something you will have appreciated by now after reading Chapter 2).

In the context of these four aspects, what does an information service need? Most importantly the service needs to be of value. Security, privacy and quality should be attributes that are considered from the outset; it is often said that security cannot be retro-fitted, and the same is true of both privacy and quality. Consider access and privacy issues; once service design is underway, the cost of any change (improvement) grows as time passes and if you have neglected to think about regulatory requirements during stakeholder meetings or when undertaking informational analysis and design, then trying to change sophisticated software and keeping operational services up and running at the same time might be a little tricky as well as expensive.

Need should always be tested; users of information services will inevitably make requests for new services because of their perceptions regarding quality or because of serviceability or reliability problems. One need is for high quality software; reliable software coded to high standards is going to take more time and effort (resources) and initially will cost more. Over time the high availability and low maintainability costs will illustrate that it is actually more cost effective.

The need for high quality software to underpin information service processing is one thing; a business case to validate the cost is another. When evaluating the need for BIM it is necessary to have a position on the value of investment in quality based on

that need; services with little risk or where processing is simple might not be cases for such investment. Highly secure and sensitive information services will certainly need to be considered for higher levels of investment.

The need to change information services is similar; change is needed for improvement, even where the change is focused on fixing or mitigating an issue that change is still an improvement. The need for processes and procedures to manage incidents, change and other functions is obvious though how much it costs and the value it delivers must be assessed.

### 3.2.1 Annual planning

How many annual plans have you been told you need? Business, strategic, tactical, operations, financial, information service, quality, risk, security, information technology, resources, capacity, change, service, availability, contingency, disaster recovery. . .

And what about long-term planning? Plans are needed that can be consulted, reviewed, amended where appropriate and made available to all levels of management. But how much planning can realistically be undertaken is a capacity issue too. Baseline plans will generally be required annually; strategic three to five year plans might also be needed in larger enterprises and will certainly exist in many government departments.

Government plans will likely be required mid-year for inclusion in estimate activities; private sector planning will depend on the agreed planning cycles.

Smaller enterprises will most likely have a concatenated process for planning, though in essence the same activities will take place. However, it is less likely that the LoB will be in competition for resources and there will be less need for LoB to share or exchange information. In smaller enterprises there may only be one LoB.

In terms of planning for BIM, it is recommended that an annual plan is issued for the coming business year that provides the Critical Success Factors (CSFs) and Key Performance Indicators (KPIs) which will provide the focus. The objective of the annual plan should focus on improvements that will be made and provide cost and benefit details that can demonstrate both need and value. The plan should be constructed so that it can be "cut and pasted" into documents with different levels of detail. Properly constructed, one plan can also cover quality, risk and security planning.

The level of content and detail will vary from executive, board-level strategic plans, to LoB strategic plans and tactical and operational plans, but generic activities are common to all, as shown in the list below. It should be obvious that at the highest

level the first activity is, or should be, mandatory for executives and those leading BIM programmes:

- Participate in Gateway reviews and Collaborative Business Service Design (CBSD) sessions;
- Draw up a complete list of information service related programmes and projects;
- Determine the required business, information and technological activities and components;
- Confirm priorities;
- Identify benefits, outcomes and measurements;
- Ensure resource bases and any skills register are current and updated;
- Refine and define resource estimates and schedule tasks;
- Examine dependencies;
- Confirm key delivery and action dates;
- Update the project portfolio;
- Prepare testing and review tactics;
- Complete a risk summary;
- Update all documentation;
- Obtain approval from appropriate levels of management.

You will find this a useful checklist for planning activities. Administering the BIM plan will require a lot of attention and regular evaluation of individual programme and project plans to ensure concordance with time, regulatory and financial plans.

### 3.2.2 Administration

The common administrative activities will include:

- Assessment of related technology/infrastructure plans;
- Maintenance of up-to-date information on progress;
- Review and update of plans;
- Liaison with executive, LoB and suppliers;
- Maintenance of skills register.

BIM practitioners should assume an elevated profile where possible within the higher level activities by providing support to designers of business information services and to programme and project managers. In this way they can become influential from a strategic perspective and demonstrate the value of BIM, as well as assisting users of information services by keeping a close eye on how specific requirements are being addressed.

Keep in mind that Need applies to Business, Data, Services and Technology issues. Need is not just an executive issue; feedback from Operation will influence the future of information services.

## ■ 3.3 VALUE

Improvement has value. Change has no value. These statements might seem extreme though in reality they are at the crux of the reasons that many people fear and resist change. Improving information service design and use is clearly something we all want. Change needs a reason to be specified, discussed and agreed. These principles apply to Business, Data, Services and Technology as they will in each of the four drivers.

The portfolio of business services (and/or products) offered by the enterprise will be the primary source of value; if the enterprise is not selling it, providing it (a government service) or promoting it, the service has no value. Information and IT services may be part of a portfolio too, though at an enterprise level only where the services on offer are those that generate revenue (IBM or HP for example, web service suppliers and so on).

Services such as incident management service desks or the provision of development environments for systems analysts and programmers would be part of an IT service portfolio and are mostly considered to be of little value or interest to BIM. A major caveat here, however, is that if you allow an IT infrastructure professional to define your incident management service then it will most certainly NOT reflect business needs or the needs of those using information services. E.g. the support of end users in using the information services (applications, procedures) is an important responsibility for BIM practitioners.

### 3.3.1 Value chain

The unit for constructing a value chain is the business unit; the value chain is not dictated at an enterprise level. Business products pass through a chain of activities in a specified order, and in the course of each activity the product gains some value. According to Porter, the chain of activities gives services or products greater added value than the sum of the added values of all activities. This is not dissimilar to the programme management perspective where individual projects, managed holistically, provide more value.<sup>16</sup>

Information services are no different to any other service; look for value-adding activities all along the service chain. Managing the value chain requires a capability and that capability must extend to partners and suppliers.

A wise man said that people need water but value diamonds; diamond cutting is a means of creating value, because an uncut diamond is significantly less valuable

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<sup>16</sup> Michael E. Porter, *Competitive Advantage : Creating and Sustaining Superior Performance*. New York: Free Press 1985.

than a cut diamond. The value of water is altered simply by some enterprising individual putting it into a plastic bottle, giving it a name such as "Utopian Spring", advertising it as something along the lines of "natural, bottled at source and curing world hunger", and waiting for the gullible public to buy it by the crate.

The value chain of an enterprise forms a part of a larger stream of activities, which Porter calls a value system.

According to Porter, a value system, or an industry value chain, includes the suppliers that provide the inputs necessary to the enterprise along with their value chains. After the firm creates products, these products pass through the value chains of distributors (which also have their own value chains), all the way to the customers. All parts of these chains are included in the value system. To achieve and sustain a competitive advantage, and to support that advantage with information technologies, a firm must understand every component of this value system.

### 3.3.2 Catalogs

Catalogs of business information services and products provides value too. A catalog of IT services is very different to a catalog of business information services so don't rely on IT to be able to provide the latter. For obvious reasons, not everything in a catalog (business or IT) should be available to everyone in the enterprise (or within information or supply chain ecosystems), unless your enterprise risk management framework is predicated on the basis that no one will ever attempt to defraud...).

Keep in mind that a (business or IT) portfolio is not public; it is the internal enterprise view of what is, or will be, on offer and is subject to change depending on market, opportunity, risk and resource. The catalog is a public view of what is available and can be used, purchased, supported and so on.

## ■ 3.4 CAPABILITY

Key to the management of resources is management of the capabilities needed to ensure that there is a requirement for an information service and that the value to be accrued from the benefits of it being in place can actually be realized<sup>17</sup>. Capability is the engine of the enterprise; the capabilities that are available internally (or that may be sourced from the wider world but managed internally) that are essential to bring about both improvements and to run day-to-day operations.

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<sup>17</sup> See for example Linda Applegate, Robert Austin and F. Warren Mcfarlan, *Corporate Information Strategy and Management Text and Cases*, 2008.

There is a tension between Capability and Mission because the latter cannot be achieved without the former. And managing this torsional balance is often an executive headache.

### 3.4.1 BIM processes that provide the capability for managing services

Information is an asset that can be digital or paper-based. We can position the majority of business information services (and therefore IT) in the context of business information management processes that can be categorized as:

- Management;
- Support;
- Primary;
- Innovation.

IT is at the center of data-driven services, but this can be interpreted in two ways. IT is at the center of everything useful, or IT is many steps removed from the coal face of information service design; what is your enterprise view of IT?

The nature of a strategic change will dictate which of the four process “categories” is affected by the change. A merger of two government departments, for example, might well leave the primary processes of the two departments largely unaffected, at least for a while, but may require a new administrative (support) and management process. A reorganization within an enterprise to make it more customer-responsive could, on the other hand, affect the primary purpose processes in a dramatic way, with serious impact on business information services and processing<sup>18</sup>. The roles that you might consider to manage these high level generic processes are shown in Figure 3.5.

There is, then, a relationship between the type of process where IT is deployed and the effect on IT of a strategic change that affects that process:

- IT deployed in business support processes is typically critical in assuring the continuity of the enterprise for its many stakeholders; for instance, it is unlikely that the enterprise workforce will be highly motivated if the payroll application does not work because a change to integrate it with a personnel records service failed. IT however, is not always viewed as a transformative force by business.
- Where IT is part of a primary process, any process changes will typically affect the business information services and IT equipment deployed in this category.
- Where IT is supporting the management of the enterprise, this type of service is impacted by structural changes.
- Where IT is used as a basis for innovation and knowledge transfer, this type of usage usually remains fairly stable in times of change.

<sup>18</sup> See for a related discussion for example B.C. Johnson and D. Arcangel, *Everything you wanted to know about Organizational Change*, Ely 2007 and B.C. Johnson, J. Stewart and R. van 't Veen, *In Times of Radical Change (ITIL enhanced series)*, Norwich 1994

### 3.4.2 Mind the gap

Look at almost any description of the issues about IT aligning (or failing to align...) or integrating (or failing to integrate. . .) with "the business" and you will find a common denominator. Most of the time when information services of an enterprise are discussed, IT defaults to services that a business would be hard pressed to consider as pertinent to their main activity.

Typically, information services such as on-boarding or password-resetting are about as close as you will get to relating to the needs of a consumer; worse examples include server provisioning or labs-on-demand. Outside of IT no one cares....

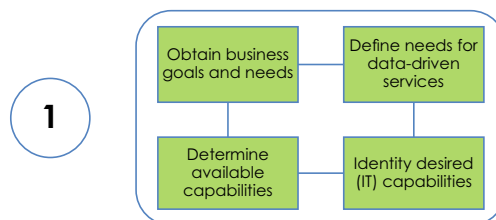
This is largely because many IT staff work in a domain that is a step removed from selling insurance or communicating with citizens about pensions or social security. Consequently, the needs of a business to collate and use information and data is less obvious to the operational IT staff compared with the usual day-to-day headaches such as those pesky users constantly calling up about forgetting passwords, or kindred (but less technical....) spirits next door asking for more storage space<sup>19</sup>.

You can address this gap in understanding by looking at the way in which processes might be categorized, together with the areas of the business and IT communities that have most control over, or input to those processes. Thus, before getting into ANY discussion about which lifecycle you should adopt or if ITIL applies more than say, PRINCE2, why not nail down what services are really needed by the business and what capabilities need to be provided to deliver and deploy the business information services as well as to run and operate the operational infrastructure? Here is a practical approach in four steps.

#### 1. Analyze your current environment for data-driven services

Start with thinking about current goals and capabilities so that you understand the current situations (as shown in Figure 3.2).

It will be necessary to investigate to find out "where are we now?"

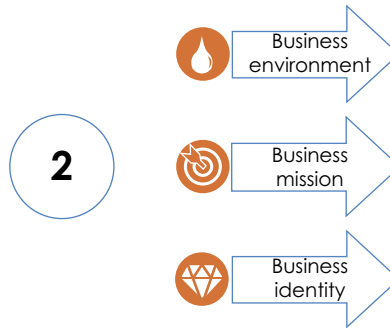


**Figure 3.2** Analyze your current environment for data-driven services

<sup>19</sup> Business IT alignment is critical in understanding benefits for business information services. Services in business always need to add value to the mission and vision of the enterprise. BIM will fail when only focusing on technological aspects of digital information strategy. In this sense 'capability' should be understood on an enterprise level. See for example Linda Applegate, Robert Austin and F. Warren McFarlan, *Corporate Information Strategy and Management Text and Cases*, 2008.

## 2. Use drivers to identify what you need to transform

Next (see Figure 3.3) you need to think about the capabilities you will be needing in your enterprise. The DID drivers will help you to organize your thinking. Think about the enterprise in terms of mission, environment and the business identity in the marketplace. Need, value and mission goals will help you to identify the capabilities you need for the future.



**Figure 3.3** Use drivers to identify what you need to transform

## 3. Consider how strategic processes impact your thinking

Someone may wish to know about all of the major activities necessary to manage a particular capability, for example contract management. Well, contract management impinges on many other capabilities, do you know what they are?

Another person might want to know how (or if....) capabilities are dependent on other capabilities. An example could be DevOps; the issue with DevOps is the reduction of the time to move from thinking about an IT-driven service (business or otherwise), to running it within the enterprise. For one method or framework to claim that all possible connections are covered should make everyone look at the risks your enterprise faces if you take that route.

To complete the picture, you should now consider how strategic processes (see Figure 3.4) impact your thinking, before finalizing your list of the capabilities you believe will be needed.



**Figure 3.4** Strategic processes provide context

DID has been structured to demonstrate a thread that weaves through every possible component that might be required and then the subsequent build, delivery and running of a business information service. That does not mean DID is the key good practice for DevOps, or for IT operations, or programming, or keeping your teeth white, but it is good practice for managing information.

#### 4. From business mission to capability

After considering context, mission and your current "state of being", it should be possible to identify the capabilities you will need for the future growth of your enterprise. An example of a completed capabilities scheme is shown at Figure 3.5.

The peripheral elements of Figure 3.5 illustrate the principal relationships or processes that need to be managed, whilst the right-side box provides an indication of the many different capabilities that you will need to have in place. In your own enterprise, you can create similar figures; for example, if these capabilities relate to business-dependent IT, is there another illustration that provides a way to link an even bigger picture of wider-ranging capabilities such as managing major changes, business transformations, project management, technology opportunities and so on? The driver icons are included to illustrate where they fit.

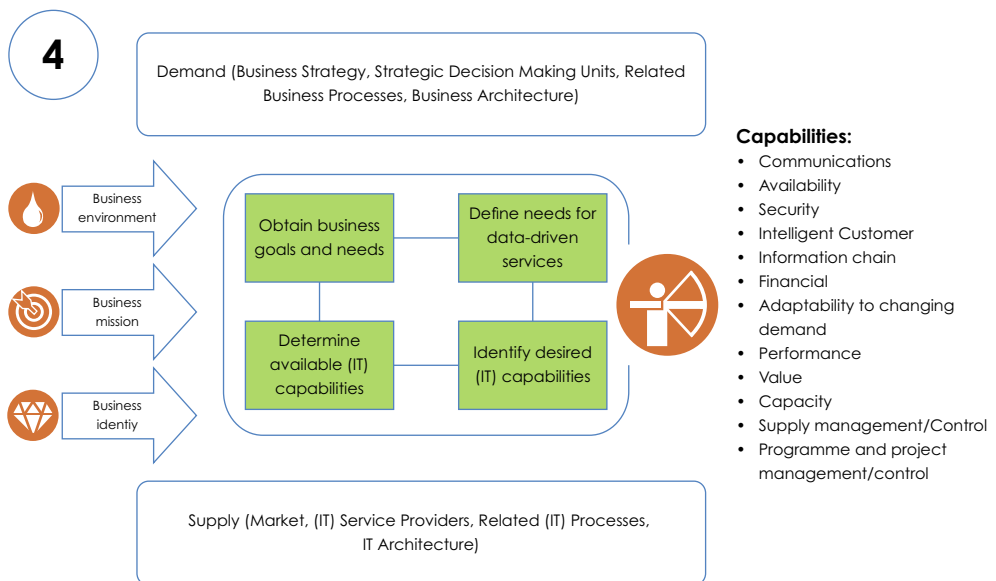


Figure 3.5 From business mission to capability

### 3.4.3 Managing the capabilities

People are the most important resource, after that comes money. If you do not have a budget you cannot provide or manage services and competition is inevitable between those looking for business information management resources, operational technical resources, HR, payroll, everything you can imagine. Thus

BIM needs to be positioned strategically as a function that has value. Remember, needing something is not the same as having value; to earn resource you must earn respect by demonstrating value.

#### 3.4.4 Business capabilities can also be IT capabilities

As mentioned previously, Figure 3.3 indicates many capabilities that should be considered, though some are likely to be more important than others depending on your enterprise and the nature of its business and the scope for business transformation. To begin with you should consider a capability as something needed by the business; many capabilities can apply to both business and IT. For example, the capacity of an airport to allow airliners to take off and land is clearly a business issue, but IT will underpin the data services that pertain to airspace, air traffic control, weather, fly-by-wire systems and a hundred other services.

Enterprise capabilities will of course differ from sector to sector and must be identified and documented. Supporting generic information capabilities can then be placed in context. The information service-specific capabilities that should be given most attention include:

**Capacity management:** mapping out of expectations regarding the necessary capacity (in units of measurement that can be understood and justified) and activities that will ensure the optimal use of IT and other information resources. Capacity with regard to information services requires a knowledge of estimation techniques, with one of the best known (though Agile disciples will claim it to be arcane) being Function Point Analysis (FPA). Those wishing to understand the value of FPA and how to use it are referred to the White paper of the ASL BiSL Foundation "Estimation techniques".

**Financial management:** overarching financial management for IT services is concerned with helping the business to assess whether its' (IT) supplier is doing the best it can with the money it has. The business has to understand the true costs of providing services and manage these costs professionally. Financial management implements IT accounting and budgeting processes, and often charging processes for services, allocating IT expenditure to services and recovering the costs of those services from the business customers to whom they are provided. The management of information services is no different and can be considered as either a sub-set of the entire discipline or (where the information service delivery is costed to include all components of the delivered service) as the service. The difference is in the detail; be clear about the financial aspects you wish to manage, control and report about.

Budgeting enables an organization to predict the cost required to run IT services for a given period. Ensure that actual spend can be compared with predicted spend

at any point. The intention is to reduce the risk of overspending and to ensure that revenues are available to cover predicted spend (where charging is in place).

IT accounting enables an organization to account for the money spent on providing IT services. The goal is to calculate the cost of providing IT services to both internal and external customers. Activities will include performing cost- benefit or return-on-Investment analyses and identifying the cost of any changes.

Charging enables an organization to recover the costs of the IT and other information services from the customer of the service by operating the IT and BIM organizations as business units if required. Cost charging is considered to be a means of influence over user and customer behavior.

The overall scope of financial management of information services covers hardware, software, people, accommodation, external services (e.g. outsourced application development), and transfer costs (e.g. the IT service buying PCs on behalf of a business customer).

**Availability management:** the activities that ensure current and future availability of applications that underpin services for the users. Availability is widely misunderstood in that it actually has three components - confidentiality, integrity AND availability. This means that BIM is responsible for policing the integrity of the information services and is not just a label for trying to assess spurious measures such as 99.9999% of service hours. Note that for some time (since publication of ITIL version2), most infrastructure managers consider availability issues to be a component of security management. For security management, the ISO27000 series is considered best practice and BIM professionals should consult the standard for guidance.

**Business continuity management:** this is about putting measures in place to ensure that information services can continue to function according to expectation, or with an acceptable level of risk to the underlying information. It includes, for example, measures such as protection against fraud or sabotage, being prepared for emergencies such as total IT service collapse, or the requirement to maintain either parallel services and/or system processing.

**Business process development:** over the long term the goal is to support business processes efficiently and effectively. BIM practitioners must be capable, therefore, of translating any change in the business process (as can be inferred from Figure 3.3, whether because of market influences, partner or supplier influences or simply innovation), so that information services are improved (or designed and assembled) to fulfill the need.

**Information chain partner management:** often a single decision maker is missing in the information chain between enterprises (and sometimes within the enterprise). Some information chains are emergent and can't be managed at all. But some can and in that case, BIM practitioners should accept the responsibility for this role to ensure value chains set at LoB levels are coordinated and managed both internally and externally. Agreements will almost certainly need to be in place to manage the various interests. Keep in mind that some information partners are not voluntarily sharing; information exchange may be mandatory because of legislation or simply an imperative, for example in following an individual through the process of being arrested, jailed and paroled!

Establishing an enterprise-wide policy will be an important activity. Managing changes and improvements that impact the chain will be a challenge that can be addressed only by having a holistic picture of the need for information and its value.

In addition, any developments in quality criteria, security, even the use of different technologies within the chain, should be monitored and evaluated for both the short-term and long-term implication on information services.

**Supply chain partner management:** evaluation of the partner supply chain is one side of the coin; evaluating how your enterprise interacts (or could interact, or even should interact) with suppliers is another objective of management. From a business and data perspective it is clear that information services might be improved if any value is identified in the supply chain that can be used in the enterprise.

Once more policy will be key to meet goals and, in the case of suppliers, is more likely to emphasize the capability of managing contracts and service level agreements (SLAs).

**User relationships:** irrespective of the size of an enterprise or whether user relationships are formal and contractual or informal, the effective management of these relationships is vital if the enterprise is to make the right choices and get the best value from their investment in information services. If there is a good relationship, a contract, once agreed, should assume the role of a reference document. However, it is important that a contract clearly defines what is to be supplied, when, how, at what price and the allocation of responsibilities.

**Supplier relationships:** to ensure that relationships with suppliers are effective and worthwhile an enterprise firstly needs to set clear objectives that take account of the future direction and policies concerning information services as set out in their strategy. Existing "formal" relationships with suppliers, and the internal administrative procedures that support these, should be evaluated to determine how effective they are.

Formal relationships need to be planned, maintained and regularly reviewed if resources are to be used efficiently and effectively. Informal relationships are also important but need not be controlled to the same extent.

Relationships in general are likely to be more efficient when there are fewer contact points to maintain, hence one argument for centralizing BIM. Enterprises should review the number and frequency of their contacts with a view to reducing them to a minimum and ensuring that the communication paths within each organization are effective. Measuring the quality of a relationship between an enterprise and its suppliers is largely subjective, but this is no surprise since relationships depend to a large extent on the skills and attitudes of the people involved in order to be successful. Unless the right people are given responsibility, poor relationships may result and the consequences can be significant in terms of loss of business efficiency.

**Supplier management:** enterprises have a number of general expectations of a supplier including delivery of the required information services of the right quality, on time, and at a price that provides value for money, rather than simply the best price (of course it is possible for the best price to also reflect best value for money but one does not always go hand-in-hand with the other).

Other expectations include the smooth and effective delivery of the information services (or goods), a clear contact point within the supplier organization who has the required level of authority to be able to commit to delivery of the goods and services and, of course, no surprises.

Any issues should be raised early and any problem raised should be accompanied by one or more potential solutions wherever possible, together with a clear escalation route for resolving difficulties and, as a last resort, a clear disputes procedure.

**The intelligent customer capability:** what has become known in the UK as “the intelligent customer capability” area provides an expert interface between the LoB and suppliers. The intelligent customer capability should exist wherever outsourcing has taken place so that expertise about the business information (and business information services) is retained within the enterprise<sup>20</sup>. Therefore, the intelligent customer capability is a main BIM responsibility.

These intelligent customer capabilities can be carried out by a combination of roles: service manager, contract/SLA manager and relationship manager (often the relationship role is part and parcel of one of the other roles). However, depending on the size and complexity of the arrangement, it is possible that multiple roles may

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<sup>20</sup> See L.P. de Rouw en C. Verhoef, *Het regiebureau; kernprincipes voor sturen op resultaat*, Zaltbommel 2015.

be filled by the same individual, or covered by the same team. The role is needed because there will also be a contract manager on the supplier side.

Intelligent customer capability enables the enterprise to achieve the following goals:

- Gain a common understanding between the customer and service supplier(s) of the service expectations and how these will possibly be achieved;
- Use service quality monitors as a basis for demonstrating ongoing value for money and service improvements;
- Manage ongoing change and the effect of this on relationships with partners and suppliers;
- Assure consistency in the use of information services and IT, together with compliance with standards and conformance with procedures, making the user community aware of how to exploit the information services to best effect;
- Preserve suitable flexibility in service arrangements, including within contracts, in order to proactively deal with unexpected changes and demands;
- Establish suitable baselines from which to track performance relating to service delivery and service improvement;
- Understand and influence the factors that preserve and enhance relationships to achieve maximum business benefit;
- Ensure that the benefits approach appraises the full investment in business information service change and is not simply a validation of the IT components;
- Ensure that IT contingency and business continuity plans are kept up-to-date.

**Technology oversight:** we have discussed the issues of technology oversight throughout this book. Technology changes faster than could ever have been imagined a few years ago, but this does not mean that your enterprise always has to go for the newest and shiniest, you must address both risk and opportunity. Enterprises such as Uber and AirBnB were built on technology and did not have the legacy (in technology and thinking) that constrained its use. Clearly establishing a capability to evaluate the potential of new technology will inevitably pay dividends.

**Standards oversight:** a management objective to enforce enterprise-wide standards cannot be driven from the bottom-up. The capability to oversee standards is predicated on them being in place and audited, so it is apparent that another objective within management relating to capability is empowering BIM practitioners to set and enforce standards regarding the management of data, risk, security, quality criteria and re-use.

**Information portfolio management:** general policy about the enterprise portfolio will be interpreted by BIM practitioners to ensure compliance and to create a policy for managing digital assets. The objectives of the portfolio will include the ability

to recognize market trends, technology trends and, of course, information service needs.

Some BIM practitioners believe that security and privacy should be specifically managed as a process which we do not disagree with. If your enterprise has security deficiencies that are not being addressed by current arrangements then, by all means, make a takeover bid. Our list of capabilities is not, nor can it ever be, exhaustive for every enterprise!

Once again you can see that all four perspectives of Business, Data, Services and Technology will apply and will need to be considered when considering Capabilities.

## ■ 3.5 MISSION

Mission provides a "mindset" for the enterprise.

### 3.5.1 Sample mission statements

Take a look at some of the mission statements that can be found in the compendium box (maybe that should be the Pandora's box....) of information, on the web. In Figure 3.6 we have collected a few together in order to show the difference between vision and mission statements.

What is clear in these statements is that "mission" has an external focus. The mission establishes identity and purpose and provides a picture of the objectives and overall goals. From the mission we can infer KPIs and CSFs. Your goal should be to create a digital mission statement for your enterprise.

### 3.5.2 Fulfilling the enterprise strategy

Enterprises are not closed systems, because an enterprise influences, and is influenced by, its environment. The enterprise environment comprises anything and anyone related to, but not part of, the enterprise. Strategic change (and therefore often innovation with regard to information services and assets) is typically brought about by the need to fulfill one or more of the generic enterprise goals to:

- **Survive:** if the enterprise's existence and the continuity of its identity are endangered, new ways of surviving will be sought;
- **Prosper:** if the enterprise experiences a declining prosperity or expects this to happen in the future, it examines means to improve so that it becomes prosperous again;
- **Benefit its stakeholders:** when the enterprise stakeholders, or what they value, changes (rather than, necessarily what they need...), then the enterprise needs to be changed to support the legitimacy of its existence.

### Sample Vision and Mission Statements

**PEACE Academy**

**Vision:** "Enter to learn; exit to serve." –Bethune

**Mission:** "PEACE is a leadership and international negotiations smaller learning community that seeks to prepare critical thinking, college-bound, community servants to impact their world through an integrated curriculum and real world experiences."

**WALMART**

**Mission:** "To give ordinary folks the chance to buy the same thing as rich people."

**TARGET**

**Mission:** "Expect more of everything: More great design, more choices, more convenience, more service and more clothes, house wares and designer-created items that you'll never find anywhere else. And pay less."

**AMERICAN RED CROSS:**

**Vision:** "Together, we can save life."

**Mission:** "The American Red Cross, a humanitarian organization led by volunteers and guided by its Congressional Charter and the Fundamental Principles of the International Red Cross Movement, will provide relief to victims of disasters and help people prevent, prepare for, and respond to emergencies."

**Figure 3.6** The difference between vision and mission statements

Survival and prosperity are often defined in terms of the enterprise environment, e.g. "market leader" or "benefiting the general public". If the enterprise's ability to meet these goals is, or is seen to be, at stake, then the enterprise often needs to be changed. You should ensure that the benefits evaluation approach appraises the full investment in information service change and is not simply a validation of the IT components.

Further questions you might be asking yourself about IS and IT when thinking about mission include, is it:

- A key investment?
- An unreliable partner?
- A major risk?
- A source of uncertainty?
- Manageable?

- An area of investment or divestment?
- A business opportunity?
- A source of innovation?
- A continuity problem?
- A pain?
- Providing business benefit?
- A sourcing issue?

Answering these questions will assist you in coming to a decision about the relationship between business and IT. This will then help you to think about the position and role of business information services in your enterprise, so that you can deploy information management good practices more effectively. For many business managers it may be difficult or too time consuming to oversee all of the different aspects that are involved. Sometimes technical issues have to be addressed, but you must also think about sourcing decisions (do you want to build and manage your IS/IT yourself, or outsource it, or acquire it from the cloud?), enterprise issues, investment issues or cooperation issues.

This means that a dedicated role or responsibility is needed which, from a business point of view, ensures:

- Robust choices are made regarding business information services and IS/IT-related topics that support business transformation requirements;
- The optimal state of information quality and business information services;
- Effective management of the delivery of information services.

## ■ 3.6 CHALLENGES

As ever, management will be challenged with quick wins rather than long term goals, which is why Wall Street causes so many potential problems. If the enterprise does not post strong sales of new products or services within two quarters, the pressure rises to ditch the investment (and the people).

Long term gains are the gains that should be measured in terms of outcomes and benefits, not just financial measures. All of the drivers relate to each of the four domains and, of course, related measurements must be defined to track from Governance, through to Operation and provide consistent reporting.

Desirable behavior includes sharing knowledge where needed, compliance with all policies and, ideally, sharing an enterprise-wide vision of the business information needs of the enterprise. Planning will be active at all levels including Operation.

Advancing enterprise goals should be the responsibility of every employee, not just the purview of the executive.

Data growth is inevitable, for example SanDisk forecast 14 x growth by 2020; that is a guess, perhaps informed perhaps not, and anyway 14 x what? The point is that data growth is likely to be huge, exponentially big and BIM will be increasingly important in any enterprise.

Growth will also impact resourcing; BIM will inevitably become more important but it will also have to compete even more vigorously against conflicting IT demands for budget and people as new technologies emerge that change the landscape (consider for example the impact of social media over the past few years). The data available will continue to grow at an alarming rate and opportunities will present themselves for those looking for ways to develop new businesses.

Clearly, the value proposition for BIM in the future is not likely to be volumes of detailed process models and an army of experts; BIM practitioners must be consultative and authoritative and able to impact change strategically.

### 3.6.1 Enterprise

Throughout this book we have discussed all of the activities that were considered to be important, namely standardization, use of other frameworks, creating capabilities, contracts, agreements and responsibilities.

However, the question of how to organize BIM can't be answered easily, given the thousands of enterprises managing information, in hundreds of different countries with differing cultures and values.

An enterprise can only be properly founded once the need for work (any work, including BIM) is established. This follows the well regarded method of looking at organizational change that focuses on need for work, how it is organized (i.e. is it efficient in operation), grading (what is an appropriate level of qualification and experience for carrying out the required work) and then establishing the numbers of people required to carry out the necessary activities<sup>21</sup>.

And at that point, once it is known how much work is to be done and how many people are needed, the issue of hierarchy enters the picture. If you need 30 people to carry out BIM effectively, how many managers are needed to manage these people? Span of control good practice suggests a 1:7 ratio meaning in this case that four managers are needed. However, a further consideration is that four people

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21 See for example: *Werken in een digitale wereld; het KNVI Competentie Model: Alles over functies, taken, rollen en competenties* by Johan Op de Coul, Kees van Oosterhout, 2018 and <https://www.ecompetences.eu/>

cannot be jointly responsible for something like BIM; a single point of responsibility will necessitate appointing someone to control the unit. And don't forget to allow for annual leave and sick leave. . .

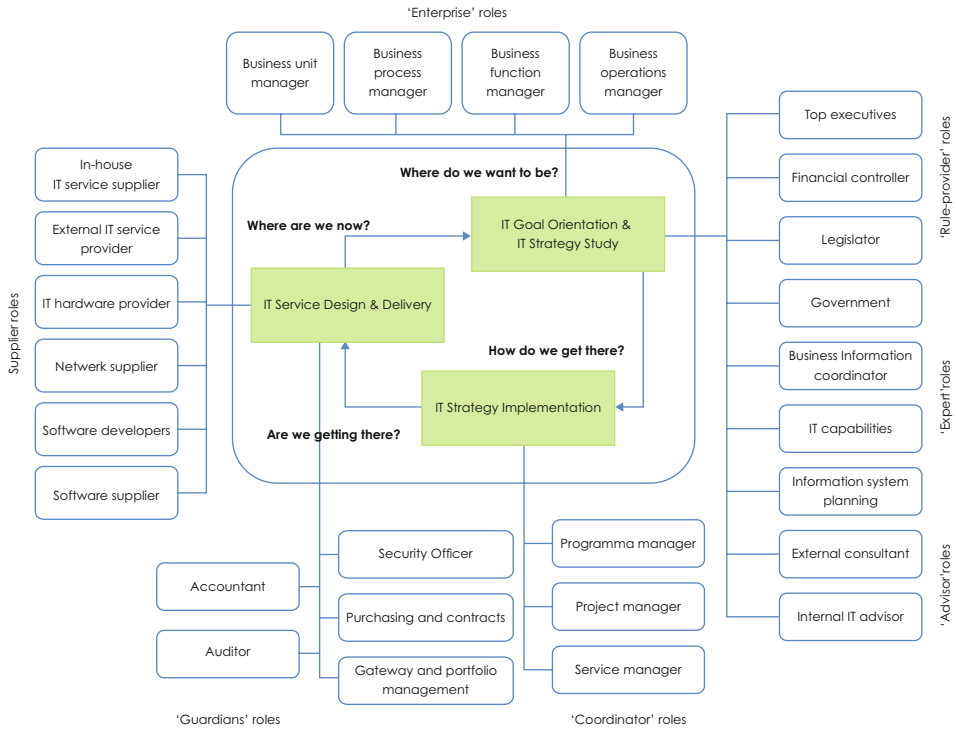


Figure 3.7 Example roles in an enterprise focused on information-driven services

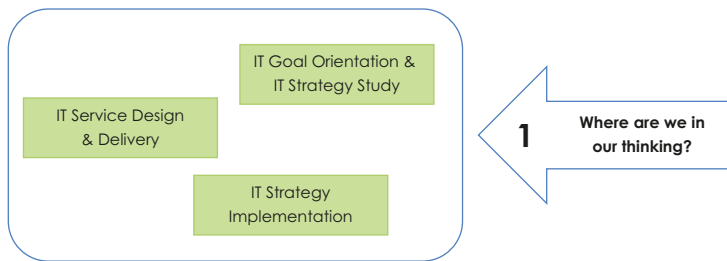
Figure 3.7 is an illustration of the generic, high level roles you might need in a large enterprise; remember the earlier advice, generic information does not mean it can be applied universally without thought. Where do you begin to be able to use such a picture? Here is a simple three step approach.

1. *Where are we now and where do we want to go?*

First, in the immortal words of Peter Wolf (the lead vocalist of the J. Geils Band if you are wondering), "I look at the purse". In other words, what can you afford? And what is essential? And you need to do this in the context of your current and future enterprise IT strategy, and service design and delivery capabilities.

Your initial step (as you will no doubt by now have realized!) is to consider the "Where are we now?" question again, as shown in Figure 3.8.

First, we investigate where we are now and where we wish to be in the future with these issues



**Figure 3.8** The “Where are we now?” issue that won’t go away

Prior to getting too absorbed in “who does what”, “how many people can I rule” and “what processes should be in place”, identify the need for the essential business information management roles and activities (those that will demonstrate quantifiable benefit and that are in line with drivers set out in this chapter) that your enterprise will support and staff.

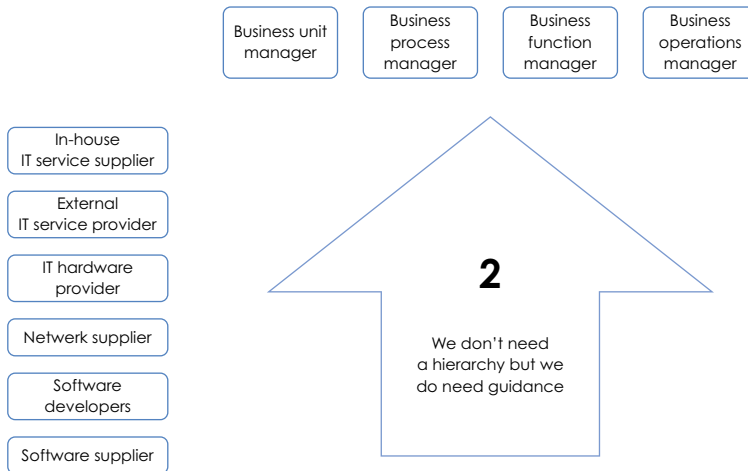
Enterprises can no longer afford to spend huge sums on hierarchies, so (as shown in Figure 3.9), consider the roles you need in the context of what currently exists (see Figure 3.8), what you need and what will improve your enterprise effectiveness. You might find, as illustrated in Figure 3.10, that it is possible to identify something that is missing (in this figure it is IT capabilities); then you use DID guidance to help you brainstorm the capabilities you need as described in Sub-section 3.4.3.

Once you have considered the options available, you can promote a vision for BIM, policies, standards and plans. Lines of communication and processes to coordinate the activities of the users of information services can then be instantiated. It will also be clear that parameters can be defined for what must be centrally managed and what can be delegated and what is sensible to put into practice.

## 2. Identify essential roles

Next, we think about the most important roles for our enterprise, for example the possible customer roles and possible supplier roles that either exist or may need to be established in order to effectively manage digital data services.

Keep in mind that these models can be used to either transform thinking about the enterprise or specifically to transform thinking about BIM. Roles are generic and can be combined; thankfully the wrong-headed notion that every role must have a hierarchy of people supporting a mountain of procedures has been put aside. Now let’s make the great leap forward and make the decision that the BIM organization can focus on managing all or some (as appropriate) of the capabilities we have discussed.



**Figure 3.9** Identify essential roles

### 3.6.2 Organizational issues

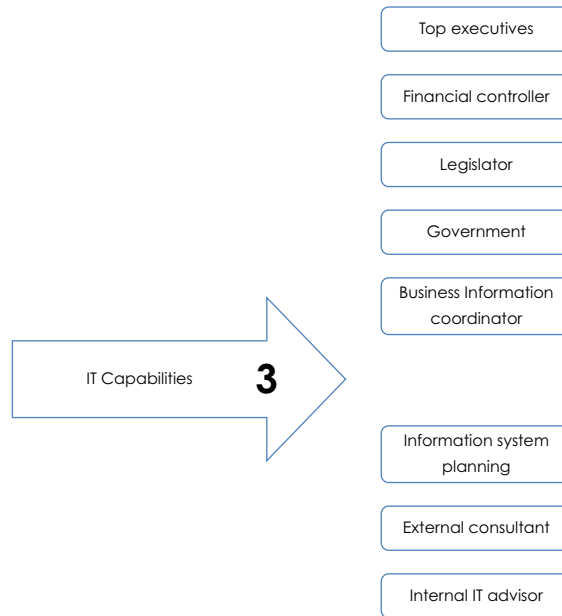
To be successful, information and data drivers and practices have to be planned for implementation across the enterprise. The greatest benefit will be achieved if planning is at an enterprise level, i.e. at a level within the enterprise at which the whole of its activities can be managed. Existing organizational structures, developed to cope with older technologies and working methods or practices, may well need to be changed before such a plan can be developed and instantiated.

#### 3. What do we need to arrive at the future?

Changes like this, though doubtless focused on improvement, will not be easy to implement. A plan for information and data management will have to address some complex problems associated with existing roles and responsibilities as described above; simply focusing on processes will be a waste of time (you do not create a process model of a restaurant before identifying the type of food you want to sell. . .). It is, therefore, essential to expand your thinking in order to include what we need to arrive at a future state, for example are the enterprise IT capabilities in place? Do we need external advice?

The key activities required to achieve this include:

- Identifying people with appropriate business information knowledge and building a reporting structure that matches the significance of the new roles. Management initiatives often fail to realize their full potential because the practitioners have insufficient authority in the enterprise. Focus on roles, not hierarchies.
- Balancing the priorities and demands of individual information projects with the need for an information data management policy, ensuring that there is a match between responsibilities, technical skills and positions within any reporting structure



**Figure 3.10** What is missing?

- Integrating information and data management within the other management structures already in place.

Overcoming these practical and difficult issues will require an understanding of the impact involved and support from executive management.

New roles and responsibilities are inevitable when adopting (or adapting) innovative information and data management practices. It is not possible to be precise about details because of different cultures within an enterprise, different markets and different objectives, though the above basic components are likely to require attention in any enterprise. Care should be taken to ensure that a new structure does not prevent communication across functional boundaries; the intention is to enhance communications not stifle them!

## ■ 3.7 CONCLUSION

Information and data management are needed to address the overall requirements for managing enterprise information. It is helpful to consider the wider roles and responsibilities of information management which will provide a context and justification for business information management. Do not think of BIM in a vacuum, it must be part of your enterprise, operate effectively within your enterprise and, above all, provide value to your enterprise.

In the final chapters we offer some ideas for you to consider if you are looking to transform your business and introduce BIM (or to raise the profile of BIM) in your enterprise. So, if you are an experienced data manager or BIM professional, you might want to jump directly to Chapter 8. If, however, you now wish to explore the domains and issues in more detail the following four chapters have been designed to help you think about some of the more important issues and concepts<sup>22</sup>.

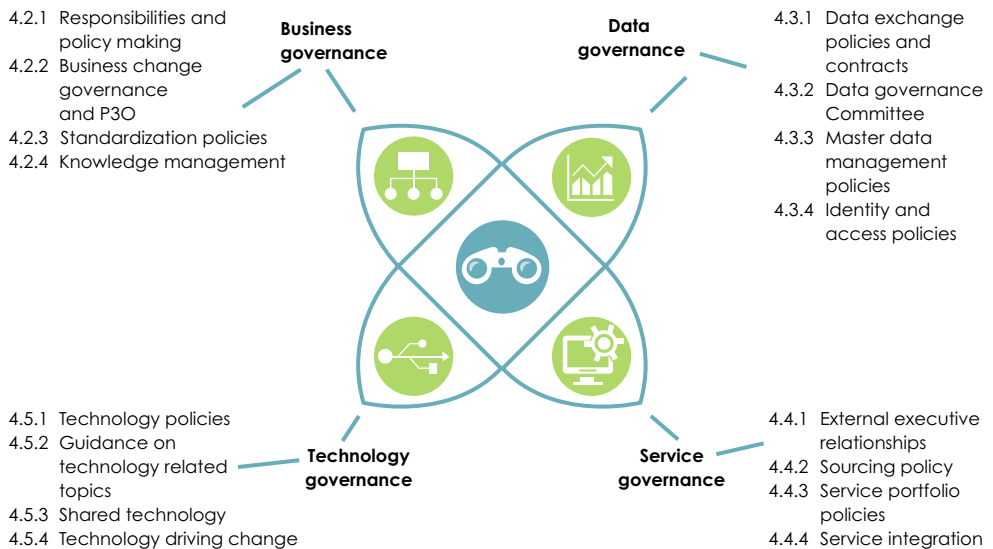
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<sup>22</sup> Discussions of each theme in the DID model can fill many books and articles. Those who want to have a more in-depth study of the themes in the next four chapters should look into more specialized literature. For example on the governance of an information strategy we refer to *Corporate Governance Matters A Closer Look at Organizational Choices and Their Consequences* by David Larcker and Brian Tayan, 2011 and Paul A. Strassmann, *The politics of information management; policy guidelines*, 1995.

# 4. THE GOVERNANCE DOMAIN

## 4.1 INTRODUCTION

The topics in Figure 4.1 are discussed in the following sections within this chapter.

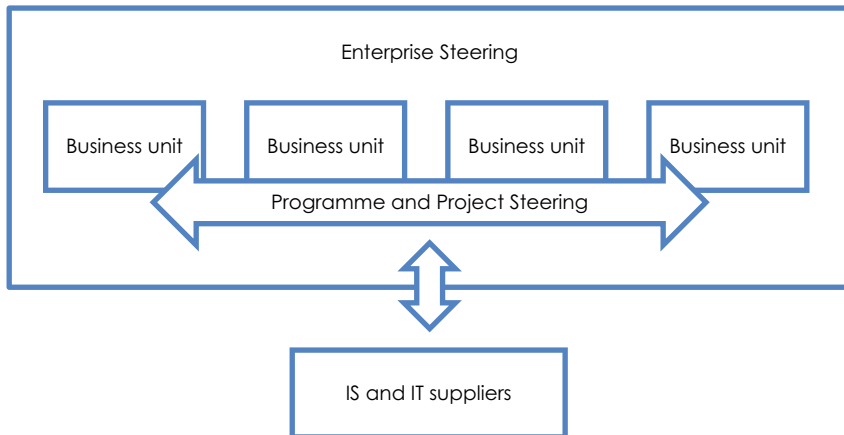


**Figure 4.1** The Governance domain topics

Governance within DID is defined in Sub-section 2.3.1 as the organizational capability exercised by the Board, executive management and IT management to control the formulation, implementation and management of information services and, in this way, ensure the required fusion of business and IT. The business requires good governance over IT to ensure that desirable behavior is achieved.

Governance and policy are therefore integral to the management oversight of any overarching enterprise-wide initiatives. In terms of BIM, executive decisions will lead to strategic investment, whereas failure to interest executives and to elicit support

for BIM will lead to BIM (and DID) being constrained to limited use and value at the operational level.



**Figure 4.2** Relationships at executive and business levels for managing strategic change

Figure 4.2 provides an illustration of a widely accepted organizational structure used in larger enterprises to manage strategic programmes and projects. The Executive committee looks at information service coordination issues across the organization, and will take control over enterprise technical issues where individual Lines of Business cannot agree, or where the technology changes will be transformational across the entire enterprise.

The LoB will need to be aware of their limitations regarding autonomy, but within these limits they should be free to make their own arrangements with suppliers of technology, services and products.

The programme steering committees are in place to ensure that autonomous decisions do not wreak havoc on other LoB or the enterprise as a whole. The programme boards (and the project boards) should ensure that information services are being built according to the policies handed down and they are directly responsible for ensuring outcomes and benefits are being measured and documented for feedback to the executive.

If the enterprise has to take a strategic decision unexpectedly, the decision will be taken and the strategy updated in parallel. Governance is there to guide, It is not in place to unduly constrain; if change has to take place to support the enterprise LoB or even an aspect of information services, then proper authority is obtained and changes are approved and are part of the Improvement domain.

In the following sections we will discuss key governance issues including specifics about governance itself, policy, benefits and risk management.

### 4.1.1 Governance

Governance in this context means formal management oversight: how the enterprise is currently managed in terms of hierarchies, authority, roles and responsibilities and so on, ask the following questions:

- What is the future direction of the enterprise and how well is the enterprise positioned for change?
- What are the priorities, why are they priorities; and who sets them?
- How are business and business information activities broken down, how are they currently undertaken and how are they organized?
- Where and why is there potential for increased efficiency, effectiveness and economy, and how might IT or information management contribute?
- What is the geographic distribution of the enterprise units and business processes?
- How do information/data architectures that are service-oriented, and implement common architectural and design patterns, lend themselves to greater levels of consistency, reuse, and adaptability?

Governance will require setting policies about who does what and who is authorized to do what. A custodian is a person, body or group of individuals (or more probably a number of groups), who are in day-to-day control of the information service. The information service owner therefore delegates certain responsibilities to the custodian. Examples of custodians are the key user and the business information administrator. Although this delegation is both necessary and practical, the owner cannot abrogate ultimate responsibility (or accountability) for the security, integrity and confidentiality of the information and the proper functioning of the information service. There are certain other responsibilities that should not be delegated to the custodian, which should include:

- Agreeing the definition of data;
- Defining access;
- Authorizing custodianship;
- Defining code structures;
- Approving master data values;
- Approving levels of backup;
- Approving functional and non-functional requirements.

The precise responsibilities of a custodian will vary from circumstance to circumstance and often on how the information chain has been created. Governance should ensure that the enterprise BIM organization is the custodian of enterprise-specific metadata and the IT suppliers are the custodians of the business data held on IT-infrastructure.

### 4.1.2 Policy

Policies are specified and documented regulations (rules or sets of rules) that govern the supply of systems and services from first principles of identification, planning,

development, implementation, operation, improvement and decommissioning. Policies may relate to information services and information technology, and to wider enterprise and management issues. Standards and good practices are not policies. Rather, policies define and govern which standards and good practice can be used, whilst standards and good practice are used to implement policies.

General issues, for example standards, are the fundamental points of management policies and these are usually implemented through using good practice, though the specifics of most standards and the implementation and operation thereof, is through technical policies. The issues for which governance policies may be required can be categorized as either management or technical.

Policies can, of course, also be considered as either enabling or constraining.

Enabling policies are those that aim to support, promote and encourage the deployment of effective services and information systems.

Constraining policies are those that aim to control or restrain activities in the various parts of the enterprise, either for their own good or for the improvement of the enterprise as a whole.

Some possible areas where governance policies might be required are:

- People;
- Risk;
- Document and records management (electronic and paper);
- Financial requirements and obligations;
- Organizational structure;
- Master data management;
- Information;
- Information services and systems;
- Knowledge management;
- Infrastructure management;
- Security;
- Legal and compliance;
- Technology.

Each governance policy should be regularly:

- Monitored, to assess its effectiveness and benefits achievements;
- Reviewed and tuned, to update it as needed, considering improvements and developments;
- Assessed to ensure that its objectives are still valid.

### 4.1.3 Benefits realization

Each programme of business change, and each project within a programme, will have its own requirements for benefits realization. For projects, the benefits may not contribute directly to the business, but instead provide support for the achievement of wider benefits from the programme as a whole. Although benefits realization metrics will be derived from Strategy, Governance will require executive consideration of the outcomes they wish to achieve in terms of setting Governance policies and will also require action to be taken should the transformation benefits not materialize during Operation.

A benefits realization plan for a business change programme should include:

- Definition of business investments and the objectives of the programme;
- Details of the benefits tracking, and an unequivocal description of the benefits management activities in the programme and their sequence;
- Documented expectations of the benefits, and who is responsible for delivering them;
- Timescales;
- Any significant benefit dependencies, e.g. specific technologies that must be in place because all medical prescriptions will be electronic and not paper-based (mandatory in the USA);
- Resources required for the work to be undertaken and when these are required.

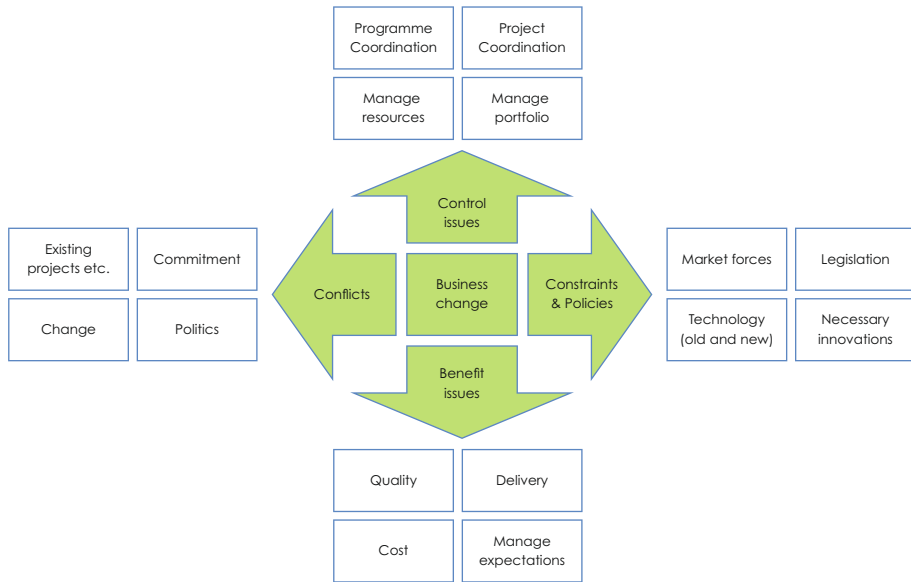
To manage benefits effectively, business managers need to be able to answer at least the following questions:

- How do we identify the potential benefits from this investment?
- What are the risks in achieving them? And what about the risks of not achieving them?
- How can we achieve more?
- How do we assess the relevance of the benefits to the enterprise?
- How do we know if we are achieving them?
- What measurements do we need?

Consider Figure 4.3 and arrive at your own conclusions about the issues facing your enterprise.

### 4.1.4 Risk

A risk management plan (annually updated) should be a policy requirement. All information projects should be required to submit risk identification and management proposals. A central management activity should then take place to examine all of the projects systematically to establish all related dependencies and to allow classification and identify potential root causes.



**Figure 4.3** Focusing benefits realization on business change

The management of risk at the enterprise level is concerned with setting direction and balancing potential opportunities against the associated costs and risks. A certain amount of risk taking is inevitable if the enterprise is to achieve its strategic objectives. The task of risk management is to limit the enterprise's exposure to an acceptable level of risk by taking action on the probability of the risk occurring, its impact, or both. Integrated risk management must be carried out to manage interdependencies at the strategic, programme, project and operational levels. Risks at lower levels should be escalated to the strategic level of the enterprise when they exceed agreed tolerances - for example if there is an unacceptable exposure to risk, if risks fall outside agreed limits, or if they could adversely affect strategic objectives. The other side of risk management is opportunity; many entrepreneurs see risk as opportunity and the potential benefits of risk-taking may be perceived as worthwhile. Thus risk management is a balancing act.

The management of risk involves the identification, estimation, evaluation, control and monitoring of risks (or opportunities...). The process must be consistently applied across the enterprise and be a recognized managerial activity. Thus, risk management policy must be set at Board level, enacted at management level and monitored operationally.

Risk estimation will involve individual evaluation with regard to the potential likelihood and impact. Not all risks will be subject to the same scrutiny; high likelihood, high impact risks will be subject to analysis whereas properly classified low impact risks will not. An example of a risk framework is provided by the white paper of the ASL BiSL Foundation "Risk management".

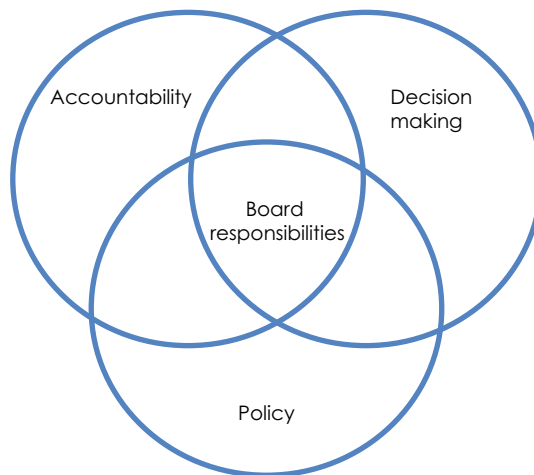
Do not forget that risks will relate to Business, Data, Services and Technology.

## ■ 4.2 BUSINESS GOVERNANCE

BiSL was primarily used at the operational level when it was first introduced; over time it has become more apparent that a strategic implementation, embracing business use of both information and technology is necessary in order to gain both executive support (vital for any introduction of change) and better control of business information.

### 4.2.1 Responsibilities and policy making

IT governance should focus on the business exploitation of IT. However, most IT governance currently focuses on investment in IT and fails to focus on the benefits of that investment. The Board should be responsible for governance, whether it is an executive board, architectural board or programme board. Policy should not be set at operational or management levels; the behavior and integrity of the enterprise and, therefore, the integrity of the information processed is an enterprise issue and requires communication and compliance from top to bottom. Board responsibilities are summarized in Figure 4.4.



**Figure 4.4** Summary of Board responsibilities

The Board is accountable for decisions made in the enterprise and must therefore set policy to ensure compliance. If there is no policy, how will your people know what they must be accountable for?

The information service stakeholders in an enterprise are lines of business, not technologists. Leaving important decisions to technologists does then seem rather a perverse strategy of ensuring that enterprise policies concerning, for example,

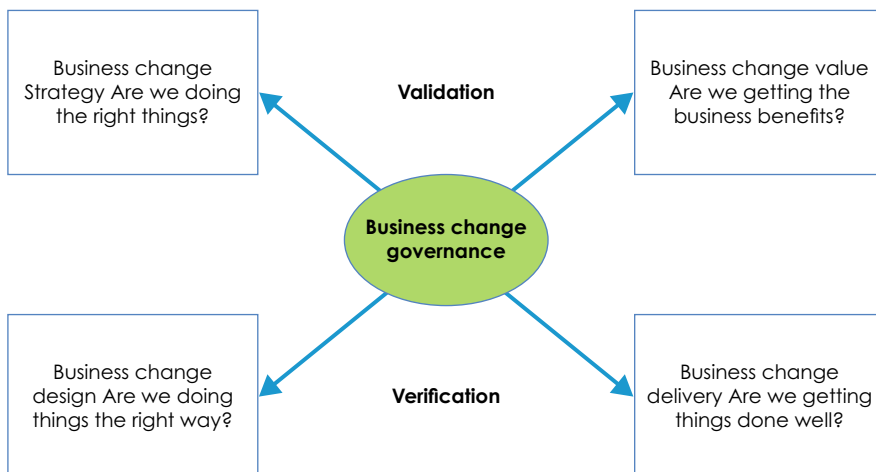
electronic document management are exercised as they should. Furthermore, the responsibilities of the IT service supplier may not have been clearly defined between enterprise stakeholders or may be biased toward fulfilling the needs of one stakeholder (perhaps the one who had the foresight to realize that responsibility for data and information cannot be abrogated to an IT supplier). In outsourced situations, a retained organization unit might exist that makes sourcing decisions; most often however this is still an IT unit that requires business oversight.

Every enterprise will differ in both definition and execution of policy, therefore the domain of activities focuses on why policy is needed and what to do. The “how” is largely the result of enterprise culture and custom. Thus organizational structures will differ; when it comes to governance, however, one piece of advice that should be heeded is to match cultural style - if a centralized approach to governance is imposed on a decentralized enterprise culture it most likely will fail.

Partners may need to be included in the governance organization, though here again this will depend on the nature and culture of the enterprise.

#### 4.2.2 Business change governance and P3O®

Business governance is effectively a result of compliance with policy, achieved through validation and verification. Validation of the improvement strategy focuses on are we doing the right things versus are we getting the business benefits, whilst verification is about: are we doing things the right way versus are we getting things done well. This is illustrated in Figure 4.5.



**Figure 4.5** Support and enablement of business change governance (according to portfolio management good practice)

All portfolio, programme and project models (like P3O) should be capable of meeting these requirements and the figure is pertinent to both programmes of

change improvement and projects. An international standard for the corporate governance of IT, ISO/IEC 38500, exists and can be consulted with regards to terms of compliance. The DID model conforms to this standard because it follows the model of evaluate, direct and monitor.

### 4.2.3 Standardization policies

At the governance stratum, reducing risk of failure in complex projects by having well defined and understood standards and methods will be a prerequisite. Knowledgeable executives (or worse, executives who are not knowledgeable but read press releases....) may even define the methods and frameworks that they wish to see used. Ideally the focus will be on protecting the investment in current software and hardware.

It is perfectly reasonable, therefore, to set policy to standardize where possible, in order to enforce business information management, portfolio and programme management, the quality of software development, the quality of service management and IT infrastructure management in the enterprise (and in supply chains). It is not really an executive issue, however, to specify that the enterprise (or supplier) must use ITIL or IT4IT or whatever; it would be more useful to state a position regarding compliance with international standards and leave the choice of methods and frameworks up to LoB.

Enterprise quality goals should be set by executive management when developing the enterprise quality philosophy, whilst general information services quality goals (which will contribute towards the enterprise goals) should be set by BIM.

To achieve better quality information services, it is essential to define information services in the right way and agree the expected service quality levels that are necessary to meet business needs. Fundamental to this process is gaining a common understanding between the customer and service supplier(s) of the customer service expectations and the supplier capability.

### 4.2.4 Knowledge management

Knowledge management (KM) is a governance issue because enterprise policy might be that knowledge sharing is a required outcome for BIM. Policy will determine whether compliance within a "sharing of information" culture is a success or a failure. Knowledge management, therefore, is a business issue that is too important to be left to technologists. For those wishing to address the issue more extensively, refer to the White paper of the ASL BiSL Foundation "Knowledge management".

Promoting a knowledge management policy only at the Operation level will have little or no effect.

**Wisdom, knowledge, information and data management**

Knowledge is essentially information and/or data in context, allowing it to be put to effective use. Wisdom is the ability to use knowledge wisely; in ITIL wisdom is promoted as a specific process, which is fine if you have the resources, though in practice wisdom is ultimately aligned with the experience needed to use knowledge effectively.

Useful definitions are included in Appendix A, just be sure that everyone in your enterprise understands the differences between wisdom, knowledge, information and data and that whatever definition you agree upon reflects the needs of your enterprise.

Knowledge management is a discipline that promotes an integrated approach to identifying, capturing, evaluating, retrieving and sharing all of an enterprise's information assets. These assets may include databases, documents, policies, procedures and previously uncaptured expertise and experience in individual workers. A good KM policy will ensure that Strategy sets goals that can be measured to assess achievement. Unstructured data, which unfortunately is by far the largest component of information processed by IT, is far more difficult to navigate and impossible to maintain. Some expensive technologies do exist that will spider through masses of data and both the military and law enforcement use them to do lots of things that if you knew about, you would have to be either killed or incarcerated. . .!

## ■ 4.3 DATA AND INFORMATION GOVERNANCE

The information chain at all levels of business in large enterprises (and often in medium and small enterprises that depend on others for their business) has become so important that contracts and/or agreements must exist to support information and data exchange.

The information chain requires careful management to ensure that everyone involved has access to the information they need and perhaps, more importantly, the information to which they are entitled. Identity and access issues as well as privacy policies are some of the mines waiting to destroy information chain management.

Keep in mind that knowledge repositories might need to be accessed by IT suppliers or partners, but that does not provide them with carte blanche to mount a raid on all of the enterprise knowledge and data; you must be aware of the information that cannot be shared irrespective of a sharing culture.

### 4.3.1 Data exchange policies and contracts

Many of the organizational models described in the past assumed a central level of responsibility for information and data management that enabled (or sought to enable) some authority over the areas using the data. However, the accelerated drive towards smaller, more independent, business units and advances in technology has created a different type of enterprise structure. In such a structure a group of organizational units are linked to each other with the freedom to share and exchange data, though the relationship is that of a partner.

Typically, this situation exists where a large enterprise has been divided into a number of smaller business units. These units may have a high level of data interchange and may also exchange data with external partners and suppliers. Some of them may procure services from the market. The problem is where to vest the authority to ensure that a sufficiently common approach to information and data management is adopted by all the interested parties.

The partnership may include both public and private sector organizations that could be information gatherers, or users, data suppliers or information service suppliers. The proximity of the partnership will depend on the level and significance of the information that flows between the participants.

As in any partnership, the rights and obligations of each partner will need to be specified in a manner that is verifiable and enforceable. Declarations of common interest will not be sufficient. In extreme cases, the terms of the agreement must make it possible to pursue deliberate non-compliance as a contractual issue.

Good advice often comes from governments, for example the following.

Should one of the proposed participants in a data sharing arrangement decide (possibly for financial reasons) to terminate cooperation, the result could be seriously detrimental to the data management plans of all the participants. The data that the opt-out partner supplies to the rest of the partnership could no longer be relied upon to conform to the commonly used definition and quality standards, incurring additional validation costs to the users of the data. You should, therefore, ensure that the risk of such an event is clearly articulated and understood, and a mitigation strategy is put in place.

When setting up a common policy, the implications of one participant abandoning the policy must be considered. It may be decided that the departing member should incur a significant penalty to compensate the other parties to the agreement. Alternatively, the partners might consider contingency arrangements for exchanging data with any partner who opts out of the policy.

Where agreement has been reached, the cooperation must be regularly monitored by all the interested parties.

Where the partners decide that a formal partnership may be too difficult for them, but there is still a need for data interchange, other more limited agreements will be needed to cover the data items to be shared. Common data definitions and data standards will be needed if the expense of data conversion is to be avoided. Without a common data model to provide a framework for data sharing, it is likely to be more difficult to reach agreement on individual data items that are to be interchanged. In addition, change control becomes more difficult, as do questions of ownership and access rights.

### 4.3.2 Data Governance Committee

A Data Governance Committee should be a subcommittee to an existing governance structure, with the influence necessary to institute improvements to workflows, resolve data quality conflicts and develop data acquisition strategies to support the enterprise. The Data Governance Committee should also recruit employees as data stewards (selecting those who are knowledgeable about the collection of data in the information services such as, cost accounting, scheduling, registration and business information services).

Such a committee can have a wide -ranging brief to include not just issues specific to your enterprise, it can examine for example legal, ethical and privacy issues.

### 4.3.3 Master data management policies

Master data management (MDM), one aspect of data and information governance, is an emerging trend that many people believe should be governed. There is no argument about the activity, only the governance.

Master data management ("MDM") is a technology-enabled discipline in which business and Information Technology ("IT") work together to ensure the uniformity, accuracy, stewardship, semantic consistency and accountability of the enterprise's official shared master data assets

The benefits of MDM should be identified by the enterprise and governed by enterprise policy.

A holistic approach to MDM means that you must begin with people, politics and culture, and concurrently address the business processes involved in data governance and data stewardship. A Data Stewardship Team is required to sponsor a MDM initiative that, among other things, should include the following as Critical Success Factors (CSF):

- Creating or redesigning your processes for adding new master data records;
- Modifying existing records;
- Cleansing/standardizing/matching;
- Resolving anomalies;
- Reporting data quality metrics;
- Reporting exactly where and how the MDM initiative has helped the enterprise to achieve its strategic objectives.

Information governance is a long term proposition, your enterprise will be creating, modifying, and using master data on an ongoing basis. Many forms of master data are volatile, for example customers, suppliers and products. Thus if every LoB is reliant upon them but no one is specifically accountable for maintaining and certifying the level of quality, the digital information becomes ever more chaotic and unusable.

Master data belongs in a dedicated repository of some type, and that repository needs to be managed by data stewards. Accuracy, completeness, timeliness and consistency of the critical information that the business runs on is key. Master data repositories do not manage themselves, therefore it is essential to understand the impact on resources. The core data model of your MDM needs to be integrated carefully with both internal enterprise systems and services and, where necessary, those of your supplier or information chain partner.

### **Data ownership**

Governance then, is about setting sensible policies and consequently expectations regarding ownership, behavior and compliance. Every enterprise must adhere to external policies set by national and international governing bodies and it will also need to set internal overarching policies that require compliance across all LoB. BIM governance extends to the LoB of the enterprise with regard to business information and data capture, storage, retrieval, security, processing, archiving and destruction in accordance with external policy compliance, such as that required for financial or privacy compliance.

Oversight of information and data quality is perhaps the single most important function of data and information governance. Low quality information has a negative impact on the accuracy or timeliness of the enterprise and may impact decision-making. A Data Governance Committee must be capable of quickly reacting to these issues and enforcing the changes required in source information services and workflows that are necessary to raise data quality.

According to UK government guidance published about data ownership, a data owner is the person, body or organization which has been given, or has assumed, the following responsibilities and authorities over specified groups of data:

- Agree a business description and purpose for the data;
- Define who can create, amend, read and/or delete occurrences of the data;
- Define the authorities of custodianship/guardianship and assign custodians;
- Authorize changes to methods of capture, derivation and format of data;
- Define a structure for encoded data;
- Approve value ranges and formats for data;
- Eliminate duplication of data capture and storage;
- Approve levels of security against both physical and logical damage (including destruction, modification or disclosure);
- Assist in the resolution of definitions;
- Coordinate distribution of information to, and collation of requirements from, other users;
- Assess risk to the organization for loss, corruption and lack of the data;
- Adhere to any legal requirements;
- Adhere to internal policies related to the data;
- Respond to information freedom access requests (Data Protection Act and Open Government);
- Ensure data is maintained to agreed quality standards;
- Ensure permissible data usage is documented.

#### 4.3.4 Identity and access policies

It is essential that the identity and access criteria (who is authorized to access and use data and information) should be set at an enterprise level and BIM practitioners should be either leading this policy or at least be influential. Security, risk and quality policies are examples of information policies that should be set by BIM, with regard to customers and users, once again taking into account overarching enterprise policies.

Thus from a BIM perspective, it is essential to foster relationships that enable both the value of data and information and the quality of data and information that is needed to be determined strategically and subsequently funded and managed throughout the information lifecycle from collection to disposal. The LoB will have a degree of autonomy from executive governance, and that degree of independence must be defined so that where exemptions apply they can be properly managed. The internal ecosystem at the governance level is based on good relationships and mutual understanding. At executive level, the stakeholders might have both mutually supportive and mutually competitive goals, thus it is very important that BIM goals are widely communicated and understood.

## ■ 4.4 SERVICE GOVERNANCE

The services ecosystem at executive governance levels will focus on internal and external relationships.

We have established that business information services are the lifeblood of the enterprise and the lines of business will require robust management and oversight from the executive levels of the business so that major partners and suppliers understand all requirements. When compliance with policies can be measured and demonstrated then effective service governance is achieved.

### 4.4.1 External executive relationships

Executive relationships will be made with suppliers of external services. These will not supplant LoB relationships though they are very likely to create the cultural relationship that will be established. These relationships might be cordial or frosty, either way the executive relationships will define the nature of negotiations with regard to contracts and agreements and, no doubt, the way in which any disputes are handled.

At this level, executives will establish broad parameters for contracts and agreements and delegate detailed discussion to the procurement function. BIM practitioners should be visible in such discussions because procurement, no matter what their experience and expertise, will not be looking at issues regarding information services supply or indeed at detailed issues regarding software quality (necessary to ensure that information is processed accurately). See also the White paper of the ASL BiSL Foundation "Contractual clauses".

### 4.4.2 Sourcing policy

Sourcing will inevitably be an issue. Policy must be set that allows LoB to establish their freedom parameters to buy external services and what they can afford in the overall context of resources. Once again procurement professionals will most likely be in the front line regarding sourcing, and will pursue the usual line of negotiating what they consider to be the best financial deal. BIM practitioners must be involved to ensure that the quality of services is as required, software quality can be assured and information processing will be undertaken according to their specifications.

The framework provided by the enterprise information service policy will then specify guidance about both internal and external supplier relationships, within both the information chain partnership and supply chain partnerships.

Cloud computing, though something of a cliché, has become the touchstone for many who are seeking options regarding the sourcing of services and of course "apps". The boardroom might well approve some latitude for LoB to examine sources

in the cloud for some common applications. Finance and HR are among a number of once "core" services that are now frequently sourced from the cloud.

Social media services can also be an executive issue. The use of social media in the enterprise is virtually uncontrollable because of the proliferation of personal devices. Policy regarding use of enterprise equipment and what the enterprise permits in terms of personal use should be mandatory. Some social media effectively provide information services that can be the source of information which is consumed by LoB. Managing the download and use of information sourced in this way will be a BIM issue.

#### 4.4.3 Service portfolio policies

What is the enterprise environment and what is expected of the current and future contribution that the information services (and IT) make to its strategic value? Once more the issue comes down to need and value. As the wise man said, "we need water but we value diamonds."

Measurements that focus on benefit and outcomes, not just pounds, dollars, yen or euros, need to be established at an executive level. A wise songwriter once pointed out that you need a yen to make a mark. . .

What levels of service are being delivered and at what price? Here again, contracts and agreements will be needed (though they may not have value unless they are defined carefully with penalty clauses that actually improve the services rather than being simply compensation that suppliers are happy to pay). Internal relationships tend to be defined by SLAs and external relationships by contracts. In both cases where levels of service are inadequate, the documents are useless; and where relationships are defined by digging out the documents and waving them about, then the executive relationship is already fractured.

What will be the impact of improvements to business services on the partners and suppliers of an enterprise? BIM practitioners should focus on changes that lead to visible or at least demonstrable improvement in the way that business is transacted. How do we obtain value for money? That is a question that cannot be answered generically, though BIM practitioners will need to establish both a value for money (VFM) case for existing services and, often, some VFM criteria for introducing new services or changing existing services.

The need for a service will be established either through a study of the executive strategies and policies, or because operational feedback makes it obvious. BIM practitioners will be responsible for establishing what precisely is required to fulfill information services needs and for gathering support for service design.

Users are not customers and vice versa. The perception of user and customer is completely different depending on where you stand in relation to the information service. Someone buying a passport is a customer, so the person assisting with the transaction will (or should) treat them as such; from the perspective of buying the passport, however, we are using a service.

Similarly, in many enterprises the LoB are the customers of IT and their employees are the users; but employees might well consider themselves as customers. . .

#### 4.4.4 Service integration

Governance should cover the information chain (external as well as internal) and thus the issues of integration of services becomes a prominent issue for the attention of executives. Enterprise mergers and acquisitions often focus on the overall business, then on the underlying technologies. Business information services should have a strong focus. Although not an obvious issue for the Board, service integration is becoming a major strategic consideration and policy setting is required on how to interact with partners and suppliers, whether directly or indirectly; for example, identity and access requirements (access to data in a private cloud, either that of the enterprise or those of its partners/suppliers) and the implications for data shared between enterprises which will be (or may become) subject to regulation.

Policy regarding shared infrastructure (including geographic location) may also demand attention.

## ■ 4.5 TECHNOLOGY GOVERNANCE

Technology is a boardroom issue; how much to spend, where the future lies, what will be future-proof and what will be a waste of money. The growth of "apps" is a BIM issue and is one example of why technology should be of interest in the BIM ecosystem. The Internet of Things (IoT) is another; if information can be sourced from almost anywhere, what are the issues regarding governance?

At the governance level, specific constraints regarding technology should be identified in technical policy (for example the use of open-source or the banning of certain web applications). Dropbox for example is not commonly used in government because of policies requiring information to be held within national boundaries.

### 4.5.1 Technology policies

In the UK for example, the Government Digital Service publishes IS/IT (information systems, services and technology) related Framework Policies which apply to the

whole of central government and the rest of the public sector. Policies published to date include:<sup>23</sup>

- The e-Government Interoperability Framework;
- e-Services development;
- Electronic records management;
- Metadata;
- Call centers;
- Authentication;
- Digital TV;
- Security;
- Smart cards;
- Channels.

These examples might not all apply, though many of them certainly will.

Be aware of technology innovations; maybe that should read beware of technology innovations, because sometimes the driver for change is ostensibly for altruistic purpose but can mask the impact of potentially expensive ramifications. For example, Bring-Your-Own-Device (BYOD) has become an executive issue, because people like to use their own tablet, phone or laptop in the work environment. Think carefully about policies regarding BYOD, (rapidly changed by many to Choose- YOD because of the massive problems created for infrastructure security and interoperability by users demanding that their favorite device be added to enterprise systems).

Some technology companies have eliminated CD drives from their hardware to save weight and to improve aesthetics but at the cost of those needing a CD drive having to purchase the item separately. Is the issue one of eliminating extra weight or attempting to manipulate customers into downloading software rather than relying on hardware?

#### 4.5.2 Guidance on technology related topics

The Government Digital Service has also published guidance and guidelines on IS/IT-related topics. These include:<sup>24</sup>

- Guidelines for UK government websites;
- The e-Government metadata standard;
- The principles of e-policy making;

23 Another example can be found following up on the Lisbon Strategy, the Digital Agenda for Europe (DAE). This was conceived as one of the seven flagship initiatives of the Europe 2020 strategy adopted by the Commission. Published in May 2010, it sets out to define the key enabling role that the use of ICT will have to play if Europe wants to succeed in its ambitious 2020 goals. In order to ensure a fair, open and secure digital environment, the Commission consequently built the Digital Single Market Strategy on three pillars: providing better access for consumers and businesses to digital goods and services across Europe, creating the right conditions for digital networks and services to flourish, and maximizing the growth potential of the digital economy.

24 See again: <https://www.europarl.europa.eu/factsheets/en/sheet/64/digitale-agenda-voor-europa>

- Trust charter for electronic service delivery;
- Electronic communications at work;
- Skills for e-government.

Your enterprise might have (or will need) similar policies to ensure effective governance. Governments worldwide might not govern information services in precisely the same way, though most will have some policies that will apply and most will have policies that apply to the governance of aspects of information services data capture, storage and use. BIM governance will relate closely to such policies.

### 4.5.3 Shared technology

Among other things, Radio Frequency Identification (RFID) has transformed communications and we now have an Internet of "Things" (IoT) that enables physical devices with embedded sensors and software to "talk" to one another. Four specific "things" need to be in place to fully enable a walking, talking IoT environment:

1. A shared understanding of interconnected parties and their equipment/appliances;
2. State-of-the-art software architectures;
3. The ability to convey contextual information across communications networks to where it is needed;
4. Analytics tools that will allow autonomous and so-called "smart" behavior.

Information chain partners might embrace IoT rapidly (or may take the possibly unwise approach of ignoring it). The executive issue is one of how the IoT might impact privacy and use (or misuse) of personal data. The Board needs to consider how information services will evolve in the context of potential IoT innovations and create a policy that covers all aspects of sharing and storing the data.

### 4.5.4 Technology driving change

Technology is changing society because it is removing the necessity for skills such as personal communication, performing even basic arithmetic without the help of a calculator, and the ability to write in grammatically correct language. Executive governance might seem an extreme measure to apply to arithmetic and grammar, though in some enterprises a mandate for clear and simple use of correct language is directed from the Board (in a text message, with a smiley face....).

The point here is that many information services depend on clear and precise use of language to avoid potentially disastrous consequences and the Board should consider a policy for the use of language wherever mobile devices are employed.

Technology watch is the key message here; monitor developments in key areas such as digital transformation, AI, IoT, blockchain, cybersecurity and business automation;

do not be led by hype, but do think deeply about how technology is disrupting what was once normal business.

## ■ 4.6 CHALLENGES

What are the key information service requirements of the enterprise? Far too often these issues are left to IT professionals (even scarier, sometimes to IT professionals working for external suppliers). Governing the business, the data, the services and the technical aspects of business information services must be undertaken at an executive level. Consider once more that information governance must be a component of enterprise-wide governance.

Just for example, what needs to be done to govern the information flows between customers, users, partners and suppliers in the environment? Sensitivity and privacy are increasingly boardroom issues; loss of sensitive information can be crippling, not just in terms of recovery but also in terms of reputation. Consequently, good governance is a prerequisite. . .

### 4.6.1 Governance of service design

At the executive level it is important to understand the broad strokes of ensuring that stakeholders have agreed the "design of the design" so that BIM and other professionals can take forward an agreed blueprint for information services. Without such a blueprint, design will almost certainly proceed on the basis that the supplier (internal or external) can develop services freely, the result being that the service will most likely not fulfill all requirements. Figure 4.6 illustrates that Governance policies must exist in order to create a solid Business Service Design (BSD)<sup>25</sup>.

The basic premise is that executives are responsible for the Business Service Design Architecture or they must identify a business service coordinator as their proxy. The service design begins with stakeholder involvement, with executives understanding that they are responsible for the "design of the design".

In many mature enterprises, a number of boards or committee bodies will exist to manage information services because information services are too important to simply leave to IT or a supplier of services. Technology improvements (real and imagined...) require that the Board (executive) takes an interest in all information service design issues and that the LoB act upon Board requirements and constraints.

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<sup>25</sup> B. Johnson and L.P. de Rouw, *Collaborative Business Design; Improving and innovating the design of IT-driven business services*, Cambridgeshire, 2017 and B. Johnson and L.P. de Rouw, *Collaborative Business Design: The fundamentals: Improving and innovating the design of IT-driven business services*, Cambridgeshire, 2018.

The administration should be agile (otherwise someone, somewhere will play the “not very agile” card, usually because they have heard the word and wish to look as if they have some form of expertise). That does not preclude being properly organized.



**Figure 4.6** Governance of the business service design scenario

#### 4.6.2 Communicating the good things

Good governance is leading by example. Ensure that policies are well thought out and maintained, and that the enterprise is aware of what is needed and why. Benefits management has been mentioned throughout and this is always a challenge. The ability to identify useful measures that clarify benefits in terms of being demonstrable is an art in itself.

Good communications are important at every level of management. In particular, there is a requirement to make communications valuable otherwise after a very short while they are ignored and useful information is not recognized in amongst the mess of other information being transmitted around.

#### 4.6.3 Geography

Geographies and localization are factors that impact BIM more than most. For example, do you need to have communications in different languages? Some countries are more sensitive about the use of language than others; English is easy to use, and there is often a view that everyone speaks or understands English, so why worry? Sadly this is far from the truth and business information is much too important to allow degradation of the value simply because it appears to be too difficult to obtain proper, accurate translations.

#### 4.6.4 Competition for resources

One of the challenges is combining roles and functions in smaller enterprises (and it applies equally to BIM roles, or indeed any other good practice roles) is that not

everyone is in the position of being able to afford a process manager for every process identified in DID, BABOK, TOGAF, ITIL or whatever. Every enterprise will differ and combining roles in one enterprise cannot be guaranteed to provide the same value in another. Each enterprise must make its own decisions.

#### 4.6.5 Compliance and conformance

You can comply with standards and contracts but you can only conform to frameworks. Compliance can be strictly enforced whereas conformance is often little more than a best effort. It is better to build compliance into everyday processes instead of having a separate compliance process which often results in unnecessary overhead. Automation is the key to being cost effective and strategic perspectives should identify where Business, Data, Service and Technology compliance or conformance needs to be addressed (usually through the interpretation of Governance policies).

## ■ 4.7 CONCLUSION

The Board should be responsible for governance, whether this be an executive board, architectural board or programme board. Policy should not be set at operational or management levels; the behavior and integrity of the enterprise and therefore the integrity of the information processed is an enterprise issue and requires communication and compliance from top to bottom.

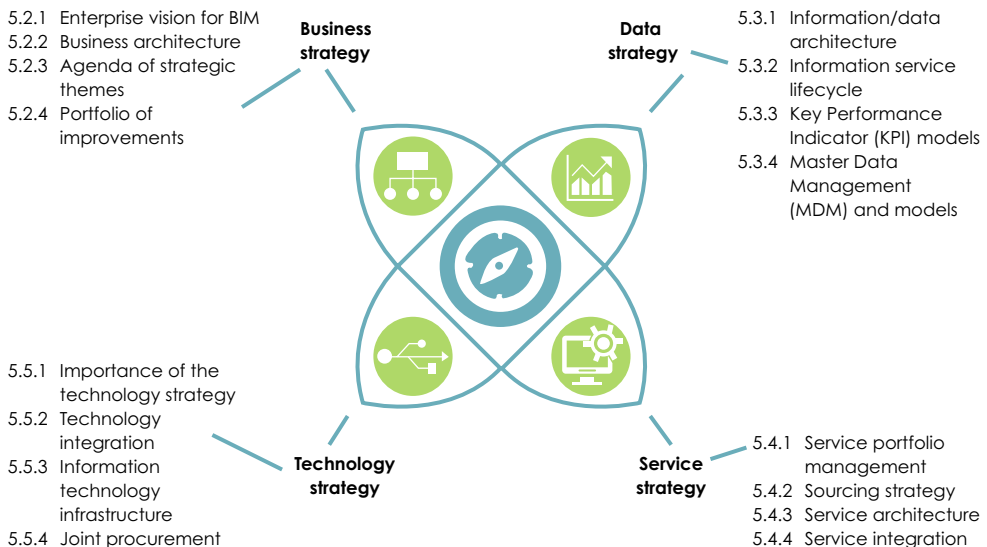
We have established that information services are the lifeblood of the enterprise and the Lines of Business will require robust management and oversight from the executive levels of business so that major partners and suppliers understand all requirements. The services ecosystem at executive governance levels will focus on both of these internal and external relationships.

# 5.

## THE STRATEGY DOMAIN

### 5.1 INTRODUCTION

The Strategy domain topics shown in Figure 5.1 will be covered in detail in the following sections.



**Figure 5.1** The Strategy domain topics

The objective of this domain is to elaborate upon developments in the longer term within the enterprise and the associated business services, so that the business services are enabled appropriately by information services. This takes place by translating the developments that play a role within the business processes, the enterprise, its goals and its policies regarding the consequences for information service design and delivery. Let's begin by establishing the role of Strategy and how it differs from Governance.

### 5.1.1 Enterprise information services strategy

An enterprise-wide information services (IS) strategy can be defined as comprising the information, business information services and most of the technology elements of the enterprise business. In terms of BIM, the imperatives, constraints and policies will be set by Governance and will require compliance, whilst Strategy will translate policy into themes and activities and will set the metrics that will be used to demonstrate achievement. COBIT can be useful in this domain, acting as an audit framework. Business objectives that are set can be part of a change (Improvement) and can be measured for compliance in Operation.

Each LoB will need to develop an information services strategy that supports its particular information needs within the information services framework that is defined enterprise-wide. The strategy will most likely contain, among other things, Finance, HR and information elements. Information services such as libraries, a records center, or statistical services will depend on the enterprise; some will be provided by external parties, some by internal suppliers.

### 5.1.2 Strategies and the stages of strategy development

Creating a strategy means clarifying, creating and refining the strategic vision, strategic issues, strategic themes and the candidate programmes and/or projects that will go forward with approval. The strategic vision expresses the assumed future for the enterprise, its desired position in relation to its partner and supply chain ecosystem and the outcomes it wishes to bring about, both within the enterprise and in its dealings with customers and information chain partners.

The strategic vision can be seen as a blueprint for change. It might well focus on a number of related (and sometimes unrelated) changes that are managed in the Improvement domain and should be fundamentally focused on outcomes, which are set in policies defined in Governance. Outcomes are the changes that the enterprise or LoB aims to make to improve the benefits for the good of the enterprise and/or its customers or partners. Government examples might include a healthier population, or improved access to education, perhaps a reduction in crime, or a reduction in the cost of public administration. Information services will be essential in each of these themes, for example the collection and distribution of healthcare information (which will be subject to privacy regulations...), the creation of accessible websites and distribution of information, or the collection of financial data for action.

BIM is important in ensuring that strategic themes are enacted as expected. Consider also interface changes, focusing on how the enterprise positions itself in relation to its business environment, both internally and with partners, in terms of how it will do business or how its business needs will be achieved (perhaps through new ways of working with suppliers and/or customers).

Although BIM is not directly concerned with internal changes that focus on how the enterprise wishes to be constituted (such as any internal restructuring, or a change of culture) it must be influential in ensuring that such changes reflect the need to manage information with integrity and in line with BIM governance.

Results that are strategic but represent only a stage along the path to achieving more significant outcomes are known as intermediate outcomes. In your enterprise, a programme directing the work of an employee training scheme might increase the number of employees trained to certain levels, or in certain disciplines (one of which might be sales). For this scheme, an intermediate outcome might be a raised level of sales expertise in the workforce, whilst a final or policy outcome could be the beneficial effect on market share.

### 5.1.3 Strategic issues

An issue is a challenge facing the enterprise that requires action. It may be regarded either as a problem or an opportunity. Issues that are critical to the enterprise's high-level plans for realizing transformation outcomes, or that could jeopardize its business, are termed strategic issues.

All enterprises will differ in terms of the issues to which they must respond, there is no "one size fits all". The range of relevant issues will depend on individual circumstances, although many enterprises will identify common elements. Generally speaking, we can identify four categories:

- **Business:** how the enterprise interacts with its customers, information chain partners and its suppliers, how it provides its services and improves efficiency or revenue by meeting rising customer/citizen expectations or through the need to streamline supply chains;
- **Political:** decision-making, hierarchies, policy issues, e.g. the need to address public perceptions of a policy, for example one relating to a sensitive issue such as crime or health, or where successful delivery requires collaboration and commitment from enterprises or organizational units within the enterprise that report to different management boards;
- **Cultural:** values, attitudes, competences and relationships, such as the need to change the existing behavior of staff and customers to work in new ways;
- **Technical:** IT, business information management and communications concerns, e.g. requirements for robust security on information provided and shared electronically, digital delivery, "cloud first", capacity of technical resources needed to deliver high levels of service performance, or common standards for information exchange and interoperation.

A critical success factor for a strategy is being able to demonstrate that a key issue has been addressed in a way that is clear and can be measured.

### 5.1.4 Wicked issues

Something wicked this way comes. It might be an odd phrase, though it has been used for some years in government to describe issues that are not readily solved by existing methods. Complex strategic issues often present themselves in this way. Most problems are bounded, relatively straightforward, and there are known procedures and techniques for resolving them. Wicked issues, on the other hand, have no relationship with straightforward problems. Wicked issues often have specific characteristics:

- Each issue is essentially unique;
- Each issue is part of an interconnected set of problems;
- There is no definitive statement of the issue;
- From the outset it is not clear what approaches or techniques will be most appropriate for addressing the issue;
- The nature of the issue can change while the enterprise is being challenged;
- It is not obvious when the issue has been solved. The solution process ends when a deadline or resource constraints impose an end to the process. Very often, there is no perfect solution.

And what has that to do with BIM? In many ways BIM is a wicked issue; there is no template that can be provided to every enterprise that will allow executives to see immediate benefits, there is no specific organizational structure that can be applied, "solving" BIM has no end point and there is no perfect solution. Instantiating BIM may also be a problem because there is no definitive statement of the issue. What is required in terms of quality and cost/benefit from one enterprise to another (and even within the LoB of an enterprise) will differ.

BIM therefore must be addressed strategically with specific measurable goals based around themes for improvement.

### 5.1.5 Strategic themes

Strategic themes are the areas of business activity in which the enterprise needs to engage to meet the challenges posed by strategic issues. BIM practitioners should be aware of, and monitor, strategic themes and issues to gauge the influence of them on information services and to identify any necessary improvements to information services.

The strategic vision describes the desired future, in broad terms, which will be the intended outcome of the changes undertaken by the enterprise. Strategic themes are the specific areas that must be addressed along the way. A road map to the desired future of BIM in the enterprise is mapped out using strategic themes. To illustrate the relationship between strategic issues, strategic themes and candidates for action, an example for an enterprise providing online services to its customers might be:

- Strategic issue – the pressure to improve quality of service in online transactions;
- Strategic theme – improvements in information provided to frontline staff, requiring better linkage between front and back office.

And candidates for action might include enterprise-wide electronic document/ records management, internet access and a programme of staff training; each of these being wholly dependent on effective BIM.

Some possible strategic themes for each of the four types of strategic issues (business, political, cultural and technical) detailed in Sub-section 5.1.3 could be:

- Themes relating to business issues:
  - Responding to customer information needs;
  - Dealing with competition;
  - New requirements for products and information services;
  - Requirements for partnering and other new external relationships;
  - New ways of doing business, brought about by new technologies, social media or automation of existing manual processes;
  - Reorganization to improve efficiency;
  - Regulatory changes.
- Themes relating to technical issues:
  - Using innovative IT to improve support for the business;
  - Using IT to transform the business (for example, through e-business or apps);
  - Improving the management and processing of information;
  - Restructuring of tasks and processes;
  - Facilities for communication, within and beyond enterprise boundaries;
  - New systems for management, monitoring and regulation.
- Themes relating to political issues:
  - Decision processes;
  - Sources of power and influence in the enterprise;
  - Definition of policy;
  - Relationships with the external environment;
  - National and international regulatory issues.
- Themes relating to cultural issues:
  - Enterprise values;
  - Communications in the enterprise;
  - Stakeholder perspectives;
  - Skills of staff and new skills becoming necessary;
  - Internal and external structures and relationships.

Most governments define certain strategies and policies at the center of government, within which individual departments define their own strategies. Consider BIM in the context of such a strategic proposal, e.g. the possible national strategy for local e-government. Its strategic vision might be that services should

be more: accessible to everyone (including those not able to access information electronically. . .), convenient (not necessarily only available on personal devices), responsive, cost- effective and easy to use. In addition, enterprises or departments should be more transparent, open, and accountable, and be perceived as able to lead their communities.

There are some obvious critical tests of success for this strategy. For example, the services must be:

- Joined-up around customer needs, offering them valuable information-based business services;
- Accessible, secure and reliable;
- Delivered and supported electronically, seamlessly and jointly by enterprises and departments that should be part of an information chain;
- Open and accountable;
- Able to be used by everyone who is entitled to do so, as mentioned above. However, not everyone can afford a smartphone and not everyone has access to the internet, leading to a conclusion that paper will still be needed somewhere. . .

Managing business, information and IT strategies is about creating, harmonizing, implementing and monitoring strategies for the business and the information services and information technology that support it. In other words, it is about managing strategically so that the enterprise business is supported, enabled or transformed in the most effective way possible by its information services and its information technology. This is in fact the information strategy of an enterprise, which of course should be directly derived from the business strategy.

Creating and managing strategies follows three stages of planning, followed by the ongoing process of strategic management – implementing the programmes that have been decided upon, and reviewing and updating the strategy. This is the sequence of activities that must be undertaken regarding the components of strategic management, cascading from strategic issues through major themes to individual programmes and projects of change. The three stages of strategy development (applying to any strategy, including BIM) are:

- Business analysis (looking in detail at the issues facing the enterprise, how things are currently done);
- Deciding upon the future state that the enterprise should move towards and identifying the strategic themes;
- Strategic planning, which involves translating strategic themes into candidates for action, prioritizing these and assisting executive management in deciding on how best to proceed.

The main characteristic of strategy formulation in the early stages of any strategy study is synthesis: identifying patterns and creating candidates for improvement from

a wide spectrum of inputs. BIM should be focused on improving the ways in which information is made available and information services are being used. Quality, integrity and confidentiality are as important as the availability of information services. The third stage of information strategy development involves shifting the emphasis from strategy formulation to high-level planning, which is the necessary basis for detailed planning and implementation. Detailed planning will, in turn, generate a detailed breakdown of the activities and resources required.

## ■ 5.2 BUSINESS STRATEGY

Strategic management has a governance coordination and integration role where business and supporting strategies (Master Data Management, HR, IS and IT to name just some) must be in alignment so that enterprise themes are assured and seen to be effective and relevant. DID plays a key role in this alliance.

The role of strategic enterprise management, in collaboration with information and supply chain partners, is to manage the continuous processes of:

- Maintaining an appropriate relationship between the enterprise and its environment, with future-proofing being the goal;
- Developing, managing and executing approaches for the implementation of the agenda for strategic change regarding BIM;
- Developing, reviewing and monitoring the policies which scope and constrain BIM decisions and implementation plans;
- Directing the policy that dictates the enterprise data model or models;
- Tracking technical innovation to identify opportunities for improvement.

As with business governance, Strategy was discussed in initial BiSL guidance but what was not covered in any detail was how it related to the enterprise or how a BIM strategy should be drawn up and managed. The key issue is largely that of ensuring the benefits relating to effective business information management are fully realized, that there is evidence for this realization and that the benefits are commensurate with cost (as illustrated in Figure 5.2). Realization will depend on cooperation between many expert groups while net cost- benefit should by and large be a BIM responsibility within the bounds of programme and project management.

### 5.2.1 Enterprise vision for BIM

The strategy for the enterprise, whether this be for the enterprise as a whole, individual LoB, or for its information services, should include as part of its overall mission a strategic “vision” that promotes BIM. The vision is a long-term view of how the enterprise wishes to position itself in relation to its business environment; for example, its role and functions, the products or services it will deliver, or its relationship with customers or competitors. BIM should not be “just another trend”; it should have an agenda for improvement.

### 5.2.2 Business architecture

According to many sources of good practice architectural guidance, a knowledge of the business architecture is a prerequisite for architecture work in any other domain (Data, Application or Technology). The business architecture is therefore the first architecture activity that needs to be undertaken, if it is not already catered for in other organizational processes (enterprise planning, strategic business planning, business process re-engineering, etc.).

Pragmatically, the business architecture is often required as a means of demonstrating the business value of subsequent architecture work to key stakeholders, and the return on investment to those stakeholders from supporting and participating in the subsequent work. Note that if your enterprise uses the TOGAF business architecture it does differ from an information (and service) architecture and care should be taken to employ guidance correctly. Also, it is important that responsibility of the BIM expert in any architecture activity is made clear and accountable.

### 5.2.3 Agenda of strategic themes

The agenda should focus upon the significant areas of improvement that the enterprise will address, to respond to the risks and opportunities it faces. These themes will form the focus of interest for the Strategy domain. The enterprise might need to change in terms of organizational units, and in turn business functions and activities, product and service delivery, management and staffing issues, technology, or external relationships and all of these factors will have an impact on business information.

The policies that will guide the decision-making processes, and provide a framework for management decisions will influence the patterns of behavior which drive the enterprise towards the desired future; governance policies will be key to changing behavior. The policies can be regarded as the "strategy success factors" – those factors which the enterprise must focus upon if it is to move in the desired future direction and if BIM is not one of those success factors then it will inevitably fail to become established.

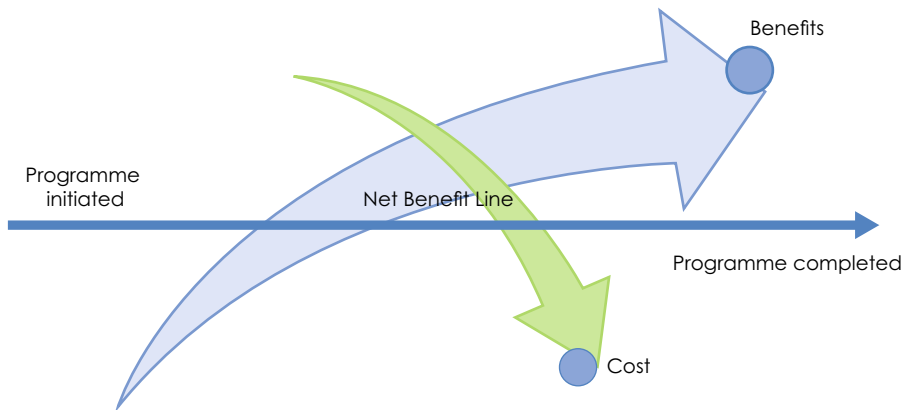
You should have established whether the current information services, the IT infrastructure or data structures are a part of the business problem, or are largely irrelevant to it. And bear in mind that any improvement will depend on the careful planning of the required changes.

As an outcome of your deliberations, you should be aware that some of your IT applications will become redundant because they either do not support current or future demands for BIM, or they are a cause of poor quality information that is being used. You may need new or substantially modified applications. You may also need new network and computer capacity. You may need your infrastructure

to have greater flexibility. So, before using your understanding of your current IT to improve it, you first of all need to assess its continuing relevance to the new business environment. In any respect, the changes to the business portfolio and its impact on information services, whether carefully planned or disrupted by events, will require you to understand portfolio, programme and project planning.

#### 5.2.4 Portfolio of improvements

The correct Portfolio, Programme and Project Offices model (portfolio management good practice (P3O)), will allow the enterprise to define a balanced portfolio of improvements (changes) and will ensure a consistent delivery process. Larger enterprises will have a tangible office and team, smaller ones perhaps a virtual team. The creation of the portfolio is governed by the executive decision-making as described in the Governance domain.



**Figure 5.2** Balancing cost and benefit within the improvement portfolio

A portfolio is defined as “The totality of an enterprise's investment (or segment thereof) in the changes required to achieve its strategic objectives”. The OGC went on to describe portfolio management as a coordinated collection of strategic processes and decisions that together enable the most effective balance of organizational (enterprise) change and business as usual. You should be aware that a service portfolio is a subsidiary of the overall enterprise portfolio. Figure 5.2 illustrates the type of visual that will appeal to those tracking costs and benefits. Applying axes of actual cost versus time might also cause people to take notice that something is going to be very expensive, which may lead in turn to questions about value.

## ■ 5.3 DATA STRATEGY

The strategic focus will most likely (or it should) consider how all LoB can be served better by creating useful common modules of information and data that are used by many LoB. For example, the name and address of a customer might be shared across many LoB in the information chain. It is plausible for instance that an insurance intermediary passes on customer data to the insurance company that the customer has chosen.

At the LoB level a strategy is an amplification of perspectives contained in the enterprise strategy. The focus is more on the interpretation of enterprise policies and their enactment to ensure the right information is being captured, processed and used, and to establish that appropriate outcomes are being met.

The information policies and principles set out in the Governance domain will impact data architecture, modeling, data portraits, database design, and data administration and data stewardship.

Data portraits of customers will be subject to a privacy policy and external regulations, though some enterprises will see the opportunity to mine data and opt to take risks.

### 5.3.1 Information/data architecture

Information/data architecture is the domain of The Open Group and their TOGAF model.<sup>26</sup> The DID model reflects the perspective of BIM and, for the purposes of DID, we recognize that the term "data" is more reflective of the drive to digital transformation. Depending on the policies of your enterprise, responsibilities should be clear about ownership and composition of the Information architecture and Data architecture. For the purposes of DID, we use the term Data architecture to describe all of the data and information sources under the umbrella of BIM.

Sources of information are many and varied. Internal sources, information chain partners or supply chain partners, information from voice communications or content that sits out there on the internet, all can be put to use. Part of the strategic approach to information must be the identification and control of information sources to ensure overall integrity of the information services in use.

The sheer volume of information and data makes the task complicated. The term Big Data was created for very good reasons, referring to the potential benefits, costs and risks.

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26 TOGAF: <https://www.opengroup.org/togaf> and as hard copy: *The TOGAF® Standard, Version 9.2.*

### 5.3.2 Information service lifecycle

An information service lifecycle is not a software development lifecycle. A generic information lifecycle is shown in Figure 5.3. It summarizes the issues we have been discussing; information capture from whatever source, organization of the information including creation of common models, use through processing, storage, retrieval, security and eventually perhaps disposal. However, best of luck with that given the nature of today's IT. . .!

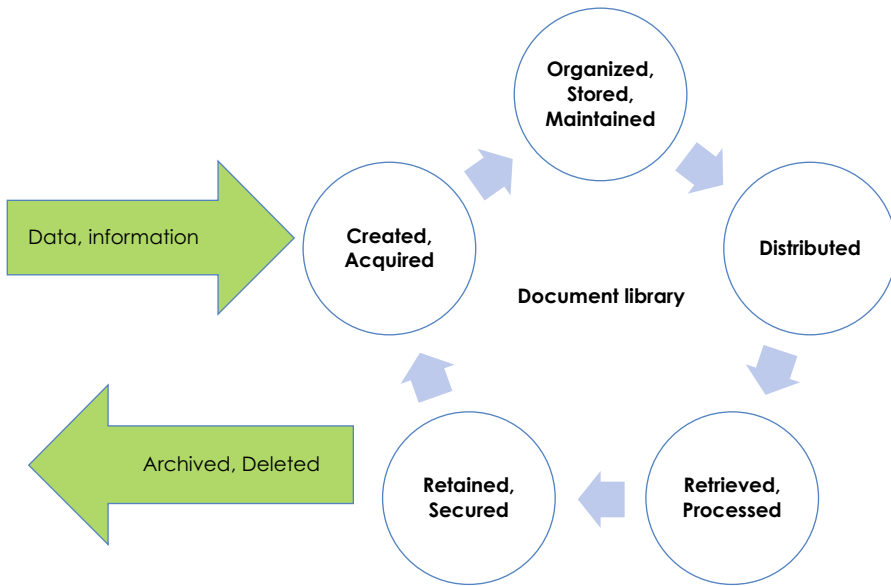


Figure 5.3 A generic information lifecycle

The “documents” at the center of the model can be electronic or paper. The point is that BIM is responsible for the integrity of the information used to provide information services and these services all follow the same basic lifecycle.

### 5.3.3 Key Performance Indicator (KPI) models

It is not an easy task to monitor benefits that are not financial. BIM should be responsible for setting KPIs and other output performance measures that can be monitored operationally and provide the basis for reporting.

You should examine enterprise drivers, objectives and goals to identify questions or Key Performance Indicators (KPIs) that will demonstrate compliance (and/or conformance) and create suitable metrics that will prove the case for investment. Basilli and Rombach created a simple method that is particularly useful (and surprisingly tricky to put into practice given its simplicity...), known as G (Goal), Q (Question), M (Metric)<sup>27</sup>. GQM is one method of establishing KPIs, though irrespective

<sup>27</sup> Victor Basili et al., *Aligning Organizations Through Measurement*, Springer International Publishing 2014.

of what method you select the focus remains the same. KPIs should focus on Value (reports or surveys to establish if what we are doing is worthwhile), Quality (activity-based indicators to measure the quality rather than the effectiveness of how well we are doing the right things), Performance (time sensitive measurements to capture how quickly, or perhaps how slowly, we are doing the right things) and Compliance (across the enterprise, how many of us are doing the right things the right way).

### 5.3.4 Master Data Management (MDM) and models

Guidance such as database design conventions, modeling standards, data naming conventions, report design guidelines, metadata definitions and reusable assets such as frameworks and components, will be adopted if they are perceived to add value for developers. BIM practitioners should ensure that any guidelines to be used are as easy as possible for developers to comply with and take advantage of. When standards are sensible, easy to understand and easy to access then there is a significantly greater chance that people will follow them. Models should also reflect identity and access policy restrictions.

Data models must be built from multiple organizational/LoB perspectives and, therefore, must be centrally coordinated and managed. Many enterprises exist to use web data to create complex portraits of people's habits and preferences that are then used to target advertising and sales. Business information, therefore, can be elicited from many sources, not all of them being aware that such information is available!

One of the major advantages of the MDM approach is that expectation of change is built into the design, thus reducing the maintenance overhead of locating what has to be changed, changing it and testing the change.

Tables are provided in Sub-sections 6.3.2 and 7.3.4 that provide guidance about overall objectives and target measures that you should consider pertinent to the administration and maintenance of a master enterprise data model.

#### **Data architecture and standardization**

As described in Section 4.2, business areas should be represented on the committees where policy is adopted, and they should be free to be able to negotiate levels of flexibility or degrees of compliance. Where a LoB negotiates exemption, it is not enough to simply say "OK, we are now free to implement Apple technology instead of Microsoft Windows because we prefer to develop our ideas on a Mac..."; an appropriate exemption should be documented and recorded, after all we are promoting proper records management in BIM! The agreed standardization policies and data architecture should be pursued by making Strategy responsible for the instantiation of projects that meet the specifications set out. Clearly wanting to use a Mac is not just a technology issue...

## ■ 5.4 SERVICE STRATEGY

The services perspective requires stakeholders to analyze both business information service needs and value together with the issue of sourcing; a key question is build or buy?

### 5.4.1 Service portfolio management

All services that are built in support of information services will be part of an IT service portfolio, and the dependencies between the IT service portfolio and the information services portfolio must be unequivocal.

A service supplier is expected to have the correct mix of services that enables business objectives to be met consistently and effectively. The service portfolio is the internal view of that mix of services (whereas a service catalog is the external view since the catalog is open to view).

A primary consideration is the impact of any improvements to information services on the enterprise's customers, partners and suppliers. BIM should focus on projects that will lead to visible and demonstrable improvements in the way that business is transacted and these projects will be candidates for development from the portfolio. Following the directive from Governance, value for money (VFM) must be a consideration and this will also impact sourcing as illustrated in the following sub-section).

### 5.4.2 Sourcing strategy

The suppliers of the information services may be internal, external or a combination of the two. Whatever the structure, the relationship must be carefully managed. Information services that are consumed operationally will, of course, require that day-to-day management activities take place but that will not be the case at the strategic level.

When it comes to sourcing at the strategic services level, contracts, agreements and detailed discussions will be primarily undertaken by the procurement function. BIM practitioners must ensure that the strategy will meet information needs. That is a question that cannot be answered generically, though BIM practitioners will need to establish both a VFM case for existing services and often, VFM criteria for introducing new information services or changing existing services. As mentioned in Chapter 4, BIM practitioners should be visible in such discussions because procurement, irrespective of their experience and expertise, will not be looking at issues regarding information services supply, or indeed at detailed issues regarding software quality.

### 5.4.3 Service architecture

Requirements and demands for information services and their supporting technology are defined by the business of the enterprise. Strategic decisions about information services must be seen as integral components of strategic decisions about the business of the entire enterprise, its products and services, and its overall functions and organization. These strategic decisions will include:

- How will information services, and the supporting information systems and technology, be developed or acquired by the enterprise? What role does BIM have in this function?
- How will information services be managed and delivered, internally and externally, to ensure that the business benefits are harvested and measured?
- How will information services contribute to the support and development of the enterprise business functions, and to the development and delivery of its products and services?
- How will improvements, changes and developments be identified in the information services?

LoBs will also need to know whether in times of pressure they can be more agile by being able to procure services from outside of the internal organization, or even outside the preferred suppliers.

Contracts between suppliers and the enterprise should also be considered at the earliest possible stage. A focus on financial benefits is both common and obvious, but the realization of non-financial benefits is often more important and is not typically addressed. The result is that contracts may have teeth but they focus on obtaining financial recompense that typically has no effect on the actual problem, which may be the inability to use information services.

### 5.4.4 Service integration and management

Following deliberations by the executive regarding the effective governance of shared business information services, data and/or technology in the various supply and information chains, strategic decisions will be needed about service integration. Service integration is the set of principles and practices which facilitates the collaborative working required to maximize the benefit of delivering services using multiple service suppliers. Service integration links services, the technology of which they are comprized and the delivery organizations and processes used to operate them, into a single ecosystem which is capable of meeting the needs of the business it supports. A good practice (Service Integration and Management, SIAM) exists to cover the technical side of integration but BIM practitioners must take responsibility for addressing integration issues regarding information and data sources and their use.

As mentioned in Chapter 1, the scope of the information management organization will vary between enterprises. As a minimum, it will usually include management of the origination or acquisition of data, whether it originates in digital form or other form, storage, processing to create more valuable data and reports via applications, and the transmission of the data or resulting reports.

Failure to enforce a holistic approach to managing information services and sources of the data will almost always lead to a fragmented set of information services and data stores (often known as islands of automation), which may be incompatible, contain duplicate or inconsistent information, and omit critical components of information.

These problems are compounded when information partners or supply chain partners are excluded from the picture of the ecosystem to be managed.

## ■ 5.5 TECHNOLOGY STRATEGY

At the strategic level, technology choices are made in line with governance policies. This is where LoB may (or may not) have the latitude to make decisions that impact only their own specific business information services. Strategic decisions made to renew, improve or develop new services will entail those responsible being involved in the high-level design processes and overseeing any business decisions regarding investment or use of resources that apply.

### 5.5.1 Importance of the technology strategy

The technology strategy will touch every area of the enterprise and its business. A proactive and forward-looking IT strategy will enable the enterprise to move forward in terms of its own structure and the way it does business. Without an IT strategy, or with an IT strategy that is not allied to the business need, IT can become a hostage to fortune, stifling change, with issues in areas such as interoperability, compatibility, future-proofing and the cost of renewing the infrastructure preventing other strategic aims from being realized. The absence of an IT strategy will result in poor returns on investment in technology along with high maintenance and support costs for technology components.

The procurement of technology will be left to professionals, though BIM influence should be apparent to ensure that information services are built on the most appropriate platform(s). Technology monitoring is important, in particular identifying emerging technologies that may be of use in the improvement of information services and, conversely, identifying those technologies that are likely to deliver little value.

### 5.5.2 Technology integration

The objective should be a strategic portfolio of technology and technology services that support the information services and these should be linked architecturally to the portfolio of information services.

The fact is that business and technology are now so closely fused with information services that the BIM practitioner needs to have a good understanding of what is (and what is not) technically feasible and appropriate. The strategy for information services supply should recognize the technology components and be fully approved by information and technology specialists in terms of being robust, in line with executive governance and within any resource constraints, financial or otherwise.

Technology developments might represent either a risk or an opportunity; the role of BIM is to be aware of developments and have a sufficiently sophisticated grasp of technology so that the potential for useful adoption is not overlooked.

### 5.5.3 Information technology infrastructure

Where once IT was not much more than a means of streamlining or speeding up processes (or slowing them down, after all ineffective automation of an inefficient business process is nothing more than an automated inefficient business process), IT can now form the basis for profound changes in the ways in which enterprises interact with their customers. As a consequence, business and IS/IT strategies are critically important and also inseparable. It is vital to consider them together; in fact, rather than being distinct entities, they are aspects of a coherent strategy for fulfilling enterprise objectives and delivering services by whatever methods are most appropriate.

The design, development and operation of the technical infrastructure might well be the primary concern of service suppliers, but technology choices will impact information services and thus BIM practitioners need to be active in looking at potential new technologies as identified by the board or by IT.

### 5.5.4 Joint procurement

It is important to negotiate with technology suppliers to obtain savings. That may seem obvious but consider that government bodies have been examining joint procurement as a strategy for some time now, helping to ensure that individual departments who have arrangements with a particular supplier join together to obtain better financial (or other) deals by bulk-buying hardware or software. Executive decisions regarding, for example, IoT might have an extensive impact on joint programmes of work with information partners.

## ■ 5.6 CHALLENGES

Strategy is not easy to define, rarely easy to enact and always a challenge to assess in terms of whether or not the planned-for goals were achieved.

### 5.6.1 Dependencies

Strategic perspectives on business, information and technology will coalesce around dependencies. It is essential that BIM is aware of how the business uses information services, which services are dependent on other services (and perhaps also dependent on partners or suppliers) and how these dependencies relate. The detail of planning for this integrated perspective will be in the design of new or improved services that takes place in Improvement. However, Strategy must be cognizant of the impact of proposals to establish, for example, common use of information assets or services between partners in the information or supply chain.

### 5.6.2 Review

You must keep the strategy under constant review as part of the continuous task of monitoring enterprise performance. You should consider:

- Does the information services mission for the enterprise remain valid? Does your view of the desired digital future for the enterprise match the competitive pressures on the enterprise, the way your business is developing, and the changes that have taken place – and are likely to take place – in your business information ecosystems?
- Are the themes of your information services strategy still appropriate? Do you need to consider additional themes which should be added to any agenda for change, because of changed business circumstances, new technologies and pressures from the environment? Are any of your strategic themes no longer relevant to the agenda for improvement and change?  
What progress is being made in your strategic themes, and do we need to alter priorities or adapt planning to ensure that the rate of change meets your business requirements?

You must keep all these levels of strategy and planning under constant review; the strategic vision for the enterprise, the route chosen towards the vision (the thematic components of the information services strategy), and the detailed plans for implementation.

Make sure you can answer the multi-part question related to the above: "Does our view of the desired digital future for the enterprise match the competitive pressures on the enterprise, the way our business is developing, and the changes that have taken place – and are likely to take place – in our business information ecosystems?"

## ■ 5.7 CONCLUSION

If BIM is not already instantiated in the enterprise, it should be a strategic project because of the importance of information (both digital and paper-based). That said, the key message is that the strategy for the enterprise should be a long term view of how the enterprise wishes to position itself in relation to its business environment; for example, its role and functions, the products or services it will deliver, its relationship with customers or competitors. A primary consideration is the impact of improvements to information services on the enterprise's customers, partners and suppliers. BIM practitioners should focus on projects that will lead to visible and demonstrable improvement in the way that business is transacted.

Failure to enforce a holistic approach to managing information services and sources of data will lead to a fragmented set of information services and data stores, which may be incompatible, contain duplicate or inconsistent information, and omit critical components of information.

# 6

## THE IMPROVEMENT DOMAIN

### 6.1 INTRODUCTION

The Improvement domain topics shown in Figure 6.1 will be covered in detail in the specified sections.

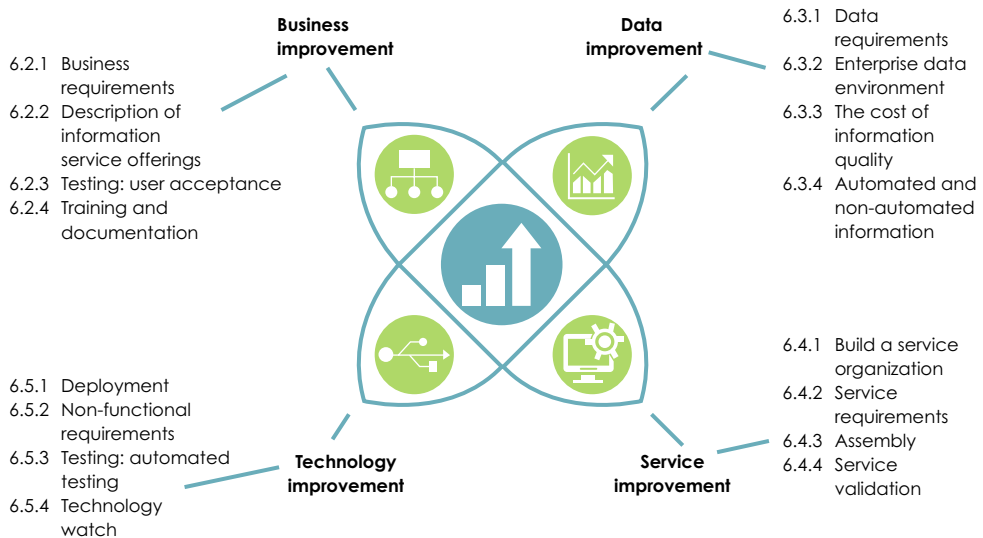


Figure 6.1 The Improvement domain topics

What is the purpose of Improvement? In essence it is to improve the business services or the cost of business services by providing better information services. Improvement is not possible without a proper requirements analysis and specification.

Most design techniques (modern and traditional) distinguish between logical and physical design, even where Agile methods are the most widely employed. Though the terminology may be different, TOGAF models are essentially no different in concept. Logical design is what you want an application or service to do and physical design is how the application will comply with logical design. Logical

design is, in turn, based on a Master Data Model/enterprise data model and cannot “create” new entities.

Physical design has practical considerations such as operational efficiency (for example, a decision about what data should be used as a key for accessing physical records). MDM is not a substitute for physical design; physical design is centered on obtaining a workable solution that performs in compliance with an acceptable set of criteria. Agreed requirements must serve the needs of the users of the information services; keep in mind that users will sometimes be customers and sometimes they will be on the receiving end of something they have not requested or even considered they might need.

As a result of being involved closely with those who are developing services, you should have:

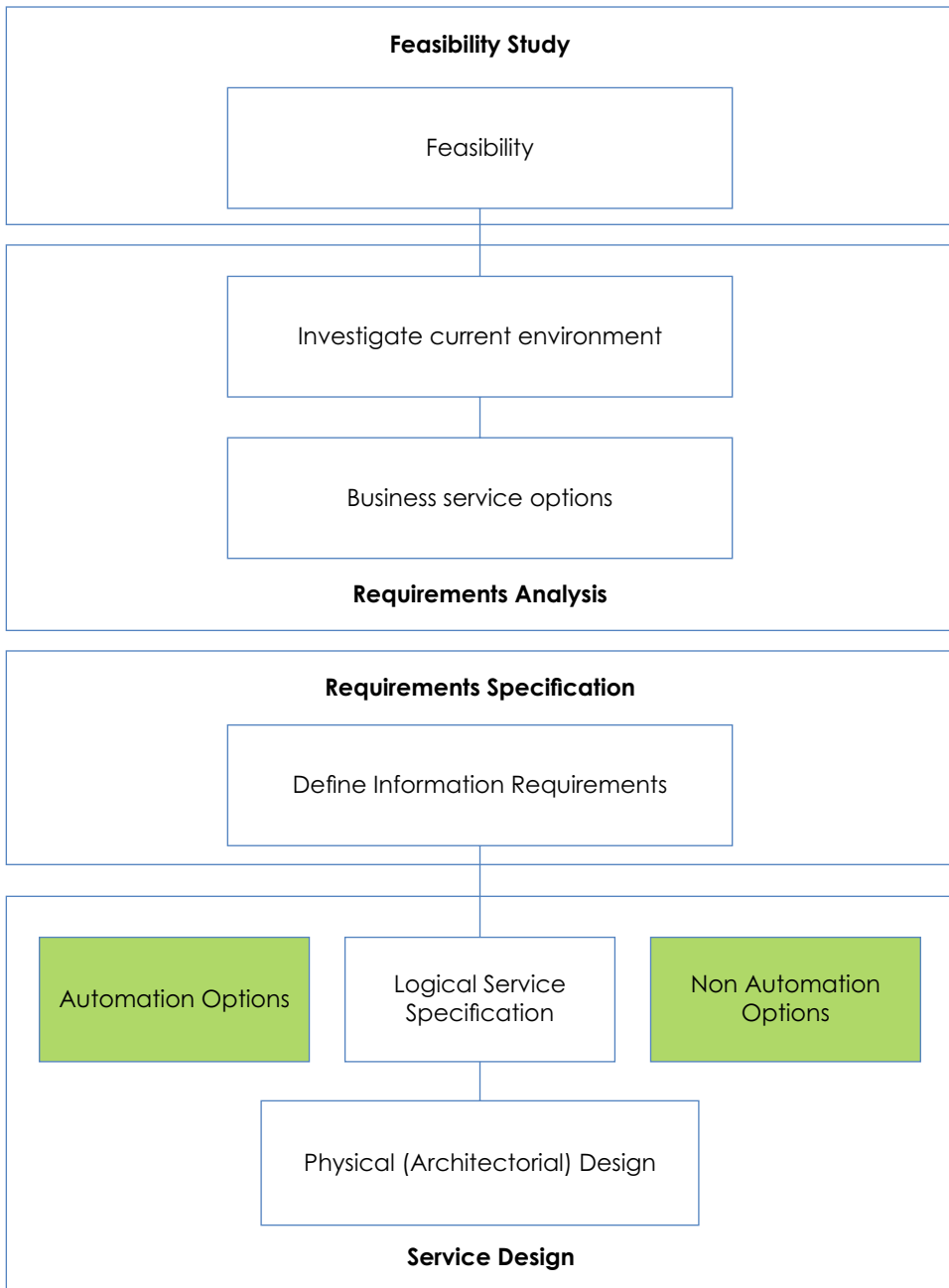
- A service or services that meet business objectives;
- Ongoing evaluation of benefits accruing to the business;
- Service delivery effectively assured through business continuity management, not just IT contingency plans.

Essentially, (IT) information service design is the domain of analysts working in IT, based on requirements defined by analysts working in the BIM organization of the enterprise. However, working in IT does not necessarily mean that these analysts have a complete understanding of the enterprise, its LoB, or how information flows. Indeed, the four perspectives in Figure 6.1 can apply all across the spectrum of information service design and improvement. Thus we have established one of the principal reasons why BIM practitioners need to have oversight over design.

When strictly defining the Improvement domain, there are two elements that are both complementary and occasionally contradictory:

- Design: focuses upon the design of the desired change to the information service;
- Transition: focuses on the transfer to new ways of working and this domain deals with initiating and preparing the desired transition and implementing the desired change.

Contradictions often occur when a short-term change intended to correct an operational problem that is serious is not compatible with changes made as a result of a larger change project seeking to correct wider issues. Changes are improvements, or at least they should be. So the correction of an operational issue that is essential to ongoing business should not be delayed without very good reason.



**Figure 6.2** BIM - overview of major processes for improving services

### 6.1.1 Waterfall or Agile?

A common software technology dilemma centers around the issue of whether to develop services using Agile methods rather than “old fashioned” Waterfall methods. When considering the question, you should bear in mind that Agile and Scrum can be described as lots of waterfalls joined together. The most likely answer

is that both methods have a place, depending on business need. BIM practitioners should examine all options and although software developers will have the expertise to make recommendations, BIM practitioners should assess the risks (and opportunities) inherent in the methods and ensure the business is not railroaded into making decisions. Remember, business is too important to leave the choices to technologists!

Service design, whether focused on improving existing services or developing new services, should firstly ensure that the required service is fully explored and defined before even considering the possible development methods.

## ■ 6.2 BUSINESS IMPROVEMENT

The Governance domain will have established the parameters of policy, exemption and so on. These parameters set the scene for strategic change, and the proposed improvements to existing services will form part of the strategic portfolio that must now be addressed by building, buying or changing information services.

### 6.2.1 Business requirements

When considering the need to improve information services, the first step is the analysis of the changes proposed, or the nature of the new services. Major change to the information services will require at least LoB approval.<sup>28</sup> Among other things, BIM practitioners should take particular interest in ensuring that the identity and access rights and privileges are in line with enterprise policy and that they meet business need. Increasingly the focus will be on digital delivery of even the most basic information services and it is important to be aware of the potential of new technologies.

The enterprise strategy will inevitably have imposed some constraints on business (and information) such as identity and access rights and a privacy policy, so it is important that the strategic plans from the LoB should be cognizant of such issues. The constraints are not there, however, to be a burden, they reduce choice rather than constrain ideas and good policies should be a positive step to assist in information services design.

Providing input into information service specifications and being involved throughout the building and testing activities will be an essential role to play for BIM practitioners.

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<sup>28</sup> For a detailed discussion see: B. Johnson and L.P. de Rouw, *Collaborative Business Design; Improving and innovating the design of IT-driven business services*, Cambridgeshire, 2017.

### 6.2.2 Description of information service offerings

Irrespective of the origin of an improvement project or programme, the business perspective will be on the use and quality of the new or changed information services. A summary of the main points is included below, however those with wider responsibilities for IT or information service design should consult books where service design thinking and the concept of a service constellation (i.e. all of the possible points of coordination that need to be mapped) are discussed in greater detail. For additional information about these concepts refer to the White paper of the ASL BiSL Foundation "Basic principles of business service design". You will have to evaluate many details to complete the design stage and make the service offering feasible. However, the approach will identify enough information in the design stage to influence the design choices made and understand the capabilities needed. Therefore, at this phase we prefer to consider the output as a description of a desired service offering, rather than the design of the service offering.

A description of an information service offering should at least have:

- Description and justification of the information service offering;
- Insight into the motivations, needs and expectations of customers and users;  
Details of how the delivery of the information service will be managed and coordinated and any dependencies on support processes that must be managed;
- A comprehensive check of whether suppliers are able to deliver the required information service offering;  
A comprehensive check of the extent to which the information service offering complies with market standards and commercial-off-the-shelf solutions (COTS), or if it is essentially to be "custom made";
- Insight into the constraints and critical resources needed;
- Insight and appreciation of the risks involved, together with an understanding of the countermeasures involved in risk management.

### 6.2.3 Testing: user acceptance

Keep in mind that testing goes through many phases (e.g. feasibility, logical and physical design, architectural build, system/service build and coding) and from the user perspective, the acceptance testing to be performed by BIM practitioners on behalf of the enterprise is most important. A plan for testing should be available before moving into any of the testing phases and sign-off at each stage should be mandatory before proceeding to the next.

Very often there will be a request to prepare test cases and it is essential that these are available early in the process. Any modifications in expected performance, or perhaps changes made to specifications or features, must be clearly identified and approved.

## Transition and implementation

Depending on your enterprise policies, transition from testing into implementation might be considered an entirely separate activity from testing. Irrespective of that, business information service transition will require BIM practitioners to ensure that the services have been fully tested, that users have available to them all of the necessary documentation which will be needed when the service is in use and that training has been properly carried out. Furthermore, BIM practitioners should ensure that support will be available from trained personnel in the event of problems arising, and that any service desk is fully up to speed with appropriate guidance. Depending on your enterprise policies, you may have separate implementation and transition plans. It is important that however these activities are managed, someone is responsible for signing off that the implementation and transition into use has been successful and accords with plans. Planning might require the acquisition of additional resources (carbon or silicon. . .).

### 6.2.4 Training and documentation

Training and documentation should be available for users of new services. IT suppliers will be responsible for technical training, though the responsibility for creation and distribution of educational materials and communications should be the role of BIM. BIM practitioners should have been involved in every stage of information service design from the initial stakeholder involvement, through creation of the "design of the design", the exploration of methods such as Agile or other traditional development methods, and of course throughout the various testing processes.

It is, therefore, logical that BIM practitioners should be responsible for ensuring that the training is timely and available to those needing to be trained and that documentation and user manuals are available (perhaps on paper as well as online), whilst also making certain that support is available for users when the new services are delivered.

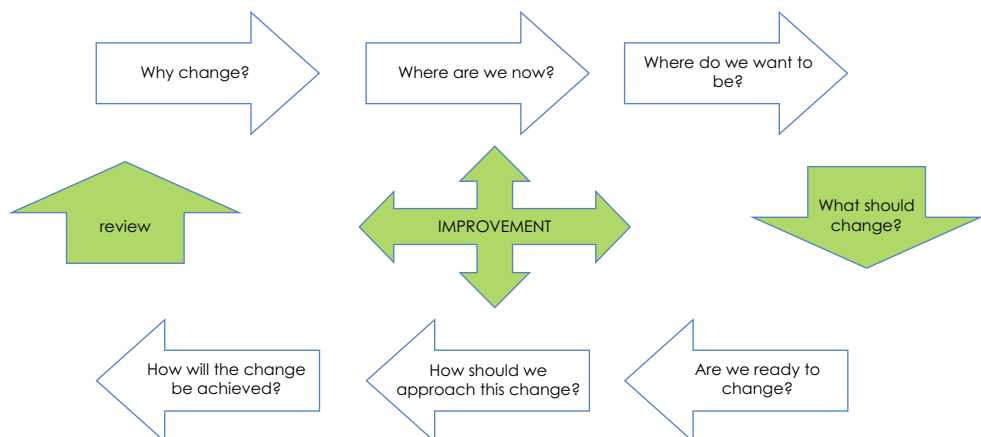


Figure 6.3 The justification for change and improvement

## ■ 6.3 DATA IMPROVEMENT

Don't forget that changes and improvements must be justified. Figure 6.3 illustrates that a number of important questions need to be addressed before getting into making changes (for better or worse). For example, when considering any improvement, BIM practitioners should at least influence the design of information databases and data models to ensure information services are processed as they should be and any dependencies (internal and external) are addressed.

### 6.3.1 Data requirements

Improvement of existing information services, or the creation of new information services as established in the business information portfolio, will require “build or buy” decisions and need the assistance and cooperation of many experts. BIM however is responsible for improving information services including the information and data perspective. BIM practitioners will, consequently, need to play a role in identifying programmes (or projects) to resolve problems related to data inconsistencies or data ownership for example.

### 6.3.2 Enterprise data environment

Enterprise data environment refers to the data contained in a combination of all of the databases of an enterprise . When considering information/data improvement, the objectives should be identified that will assist in guiding authorized improvement projects; Table 6.1 will help in the planning of this. These objectives will inevitably impact the master data model.

Table 6.1 Identifying and measuring enterprise data environment objectives in the Improvement domain

Objective area	Target measure
Manage the administration of the enterprise information/data environment.	Resources available. Resources used. Work throughput. Management satisfaction.
Analyze the enterprise data environment requirements.	Proportion of requirements analyzed. IT and business satisfaction.
Design the enterprise data environment requirements.	Proportion of requirements designed. IT and business satisfaction.
Build and implement the enterprise data environment.	Proportion of requirements built and implemented. IT and business satisfaction.

Enterprise data access will be subject to proper authorization as determined by business requirements in line with policy.

### 6.3.3 The cost of information quality

The cost of information quality is a vital measure of the effectiveness of the BIM quality management plans. A quality costing system should be developed as part of the overall enterprise Quality Management System (QMS) and integrated with the business information services cost management process.

A quality costing system should cover:

- The quality-related costs to be collected and analyzed;
- Cost and cost trend analysis and reporting;
  - How quality-related costs are to be allocated to business units (those units within the enterprise that use information services);
- Comparison with other business information services costs (e.g. total quality cost against the total cost of information service supply);
- Identifying the key processes or resources which affect the service quality;
- Analyzing these processes and resources to select the characteristics whose measurement and control will ensure service quality (these will include the customer service characteristics);
  - Determining how to measure, evaluate and influence or control the specified characteristics;
- Defining the quality practices and resources to be applied;
- Identifying any requirements for measurement and evaluation tools.

### 6.3.4 Automated and non-automated information

The issue of automated and non-automated services was prominent in the original BiSL publications. Certainly documentation might exist that is not pulled up on a computer desktop, laptop or smartphone, but most manuals, self-help and training materials are now created as electronic documents. Be aware that any transition to new or changed services will require users to be familiar with what is to come and education should be available on a timely basis, as should knowledge sites and trained support.

Automation, as the term would suggest, is the automatic execution of tasks without periodic interference. Non-automated is then, the opposite; execution requires interference. Digitalization is the conversion of analogue information into texts, photographs and voices, among others. With regard to BIM, whether automated or not, any data or information that is digitized needs to be managed.

Information/data in digital form means that it **can** be automated; on paper means automation is not possible. In the past, information “outside” the automated information systems was considered “non-automated”, however now everything, including your photographs, voice mails, meetings, conversations- pretty much everything is (or can be) digital and therefore automation (for many purposes, including those of a nefarious nature) is possible. Descriptions about how information

services should function would once exist in handbooks or manuals but these days are more commonly online...

The enterprise aim while implementing automation and digitalization differs in the sense that while executing automation their focus is to simplify the tasks by reducing human intervention, as opposed to creating self-reliant business models to ensure cost-efficient standardized quality

The key point is that BIM practitioners should ensure any changes made to improve information services that have a component of information which is not a part of the "automated" service, such as training materials, procedure manuals or necessary communications, must also be included in Improvement planning. Even if non-automated, digital or paper, the materials need to be managed and controlled appropriately.

The "non-automated" information design begins at the same time as the inception of automated service design discussions. BIM practitioners should be aware of how automated information services are (or should be. . .) used and be able to guide the development of user manuals with the LoB (or take responsibility for delivering them). BIM practitioners should also be clear on how the information services support business goals, which these days might well be within a supply chain. Someone, somewhere must know and understand how all of the information services in the enterprise and in information partners and supply chain partners interact and ensure the dependencies are managed.

## ■ 6.4 SERVICE IMPROVEMENT

Managing services is, in effect, meeting business needs through the effective management of demand and supply. In order to be successful, you must firstly have valuable and required services that are reliable. Improvement of service design will be achieved by your close involvement in any feasibility studies and requirements analysis to ensure information needs are being properly addressed. This point was covered in Section 6.3. It is only possible to be precise about information needs after proper analysis (which is not dissimilar to business analysis at the strategy level).

### 6.4.1 Build a service organization

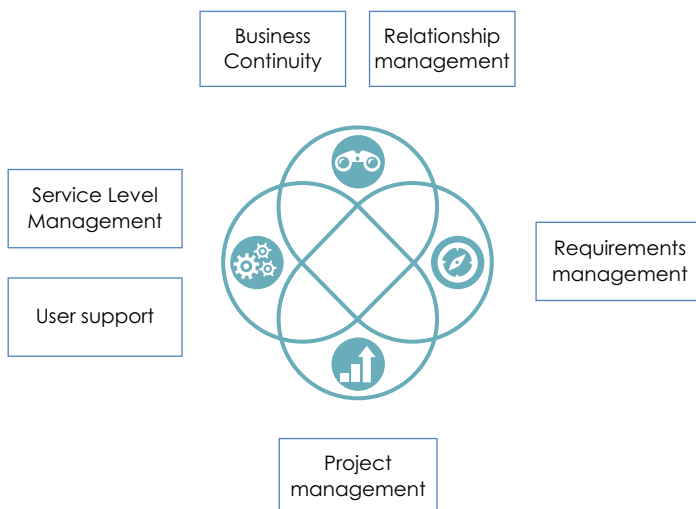
You might be in the front line of managing the delivery of business services (such as services provided direct to the citizen, or aimed at improving staff productivity), and need to liaise with those in charge of the delivery of technical services (such as support of IT infrastructure). In such a situation it is important to achieve a common understanding between the customer and supplier through managing the overall

service including service level expectations and service level delivery, and delivering and supporting desired results.

Service management also looks at the dependencies that businesses and enterprises have on information services in order to acquire and process the elements which make up many of their business services. Service quality monitoring demonstrates ongoing value for money and service improvement. You will also need to make arrangements for the management of infrastructure, which may be carried out on your behalf by service suppliers. You must have processes in place for business continuity, to ensure that the business can continue to deliver its objectives in the event of technology or systems failure. In addition, there must be support for the users in the form of training, help desk facilities and everything they need to make effective use of the services.

The interaction between the business, its partners and end-users, such as the citizen on the one hand and the supplier on the other hand, in managing services is controlled by the “intelligent customer/informed partner” role, an important BIM responsibility that was discussed in Sub-section 3.4.4.

There are many possible fundamental, basic roles, (as illustrated in Figures 3.7 to 3.10). Figure 6.4 illustrates some roles that specifically apply to information service delivery (as well as to services in general!) and support activities.



**Figure 6.4** Example team model for managing information services

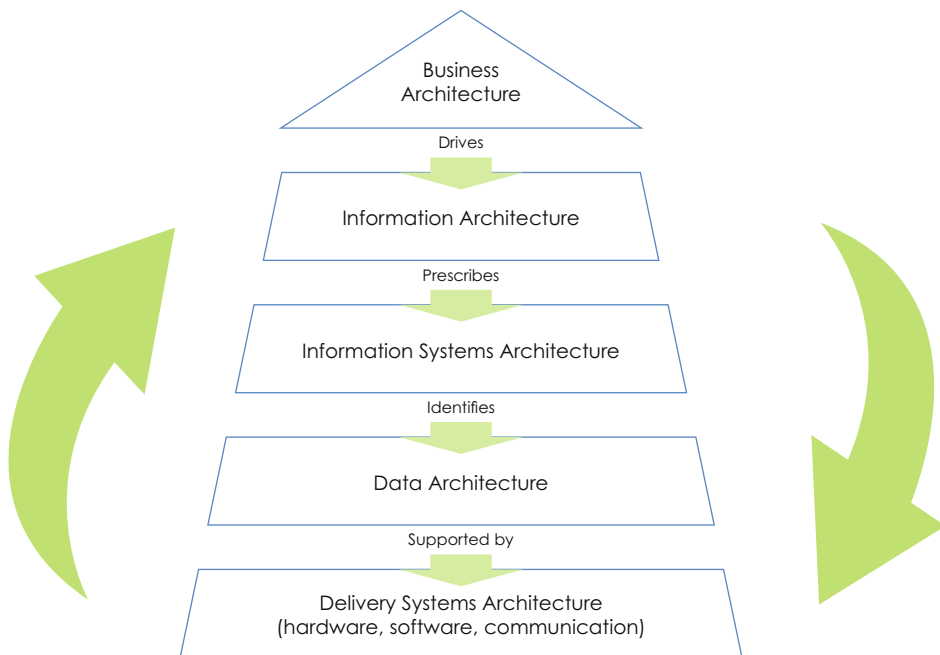
For example, at the operational level, making users aware of the facilities available is one of the responsibilities of the “user support” role. At a more tactical level, the service management role ensures that service quality monitors, based on SLAs, are used as a basis for process/service improvements. The role of “requirements/

change management" is responsible for monitoring the changing requirements of the business and ensuring that they are incorporated in the ongoing development and delivery of services and systems. The model can be adapted for your enterprise by substituting or adding specific roles that you have identified as being necessary.

The "relationship management" team role is primarily responsible for removing barriers and opening gateways or communication channels between the customer and service suppliers. The role is one of listening to the various parties and understanding both service expectations, positions and achievements. The role plays a key part in managing the ongoing change and its effect on relationships between partners and suppliers. A key outcome is to understand and influence the factors which preserve and enhance relationships in order to achieve optimum business benefit.

Project management would be an excellent example of a role that is needed to take data/information changes forward.

Figure 6.5 is another widely copied example of where BIM roles will apply. As ever, beauty is in the eye of the beholder and if you recognize your enterprise in this figure then it will be of more value.



**Figure 6.5** Example of where BIM roles apply

### 6.4.2 Service requirements

Once requirements have been defined and approved, it is possible to focus on the issues of what is or is not to be automated. As indicated throughout this book, in the modern enterprise this is increasingly a decision that states electronic first and foremost, but which must be nuanced by being certain of what the customer or user will both need and value. Digitization is effectively the conversion of analogue services.

A couple of good examples are a charitable enterprise for the profoundly deaf that might be able to “go electronic”, whereas one for the blind would be wise to consider audio as the delivery mechanism, as well as catering for the partially sighted by enabling large scale magnification. Who takes responsibility for these issues? Without a BIM focus, services may well be inadequate.

The electronic delivery of vital information for immigrant groups who have little or no access to electronic devices might also be doomed to failure. . . Consider also the issue of language; without BIM as a central and effective discipline, the service design of information services becomes dependent on technologists who may not know all they need to about customers, users and partners.

#### Design of the service

The IT service design that has been taken forward from executive-level sessions (the stakeholder requirements) is most likely to successfully address any resource constraints (people, time, money). Time spent on agreeing the “design of the design” will result in a design description that you will take forward into the development of a service. Improving and innovating IT-intensive service design will require a high-level exploration with stakeholders to arrive at a business service design architecture. Success depends on whether all the information is available to cover all of the information requirements in the design and development stages. From a business point of view, you should have gathered all of the business information needs to justify further investment and sign off.

### 6.4.3 Assembly

Build or buy (hinted at in Sections 5.4 and 6.3) is really the crux of design in the context of improving services. Is the LoB free to buy from any source? What resources are available? Is the design one of complexity requiring assistance from either or both disciplines of programme and project management? Depending on the scale of the improvement or just the cost, a business case might be required and, as mentioned in Chapter 3, this should describe benefits and KPIs.

Assembling resources requires knowledge of information design requirements. Any change to an existing service should improve the service, if it doesn't then there is no need for it because it has no value. The design approach will be similar irrespective

of whether the information service (as a whole or in part) is being provided in-house or contracted out to a supplier, for example; in the latter case a formal contract will be required.

Successful design and development planning depends on using suitably qualified personnel equipped with adequate resources. Similarly, the organizational and technical interfaces need to be defined (including those with customers and suppliers). These are likely to include: service level management, capacity management, availability management, computer operations management, network services management, service desks/help desks, change management, incident and problem management and the various personnel charged with managing and maintaining databases and related repositories, together with, of course, the hardware and software suppliers. Service design and development planning must allow for service level reporting. This is addressed by service level management.

#### 6.4.4 Service validation

The information service design should be validated against the following criteria:

- Consistency with the business requirements;
- Completeness of the service delivery process;
- Availability of resources to meet the service obligations;
- Compliance/conformance to any applicable standards or codes of practice;
- Availability of information to users of the service.

Agility in the development of information services is often thrown into the mix and the usual argument is that a process focus is too slow, outdated and not very agile. Generally speaking, that sort of thinking is nonsense, as is the opposite view that the process focus is the only way to be effective. Prototyping information services might well allow service delivery and deployment to proceed more quickly but it might not actually help to achieve enterprise programme goals and it might also cause a lot of rework because dependencies have not been recognized. What is sensible is thinking about the need for a process and designing it in accordance with cost and benefit.

We say "might" because all enterprises differ and accelerated development in an enterprise with only a single LoB might well be more efficient than using a project management method that is designed to manage a more expansive canvas.

At this stage of information services development once again you should consider the integrity of the information service processing so that you can be certain that the service will be compliant with stakeholder needs, executive policies and LoB use. If the service is not focused on these criteria it has no value and it is very probably not needed.

## ■ 6.5 TECHNOLOGY IMPROVEMENT

In Improvement, technology decisions have largely been made and the issue becomes one of ensuring that the technology choices are fit for purpose.

### 6.5.1 Deployment

There is a very large distinction between programme and project delivery and sign-off and actual deployment. How often do you see a communication announcing a new service has been made available, only for it to be followed by a further communication that announces one or two problems exist and it is necessary to make a few changes (or improvements. . .)?

The deployment of new services is a technology issue ("release management" to some). However, deployment should be subject to the results of testing and review; BIM should be responsible for ensuring that only fully tested services are deployed and that they fulfill all of the LoB needs.

### 6.5.2 Non-functional requirements

Typical non-functional requirements include accessibility, security, privacy, performance, different variants of platform and software or middleware. Many of these points do not relate directly to data and the issue of non-functional requirements is, therefore, included as a technology issue.

Service delivery and deployment frequently focuses on testing the IT aspects; capacity for example is often tested as a performance issue, as is accessibility, or sometimes the number of concurrent users. Quite often, however, the issue of dependence between information services is overlooked and service improvement should ensure that the build of services is always related to business requirements that IT assists in fulfilling.

There are numerous examples of IT focusing on deploying shiny new desktops rather than deploying IT services; for instance, rolling out brand new service desks or catalogs that fail to address the actual requirement, which was to provide a service that processes information and updates the databases that are needed for the business to actually function.

Also consider the fact that suppliers might be able to propose a number of different solutions to specifications provided by the business for new or improved information services. Packaged solutions (that often require additional "non-automated" services to tailor them for use) might be very cost effective. A BIM responsibility should be to ensure that any and all proposed solutions are going to produce digital services that are fit for use and within scope.

### 6.5.3 Testing: automated testing

Testing is not restricted to the application software; who is responsible for ensuring that the installed hardware (or the hardware that is needed to allow mobile access to services) is available and functioning as it should? The responsibility might lie with others in terms of procurement and installation but BIM practitioners are responsible for ensuring that information can be processed effectively as well as accurately.

Testing is often automated in modern technology. In particular, Agile methods look to automation to save time and money (though the actual saving in time may be miniscule in relation to the overall time taken for a programme or project to be completed). . . BIM needs to be certain that testing is effective and in particular, where business acceptance is automated (or partially automated), there is a need to be vigilant.

### 6.5.4 Technology watch

Nothing exists that cannot be improved where technology is concerned. What we mean is that Technology Improvement should institute a "technology watch" where time and budget are allotted to allow for investigating the potential of new technologies and ideas (for example TED events).

A technology watch can (and should) exist throughout the domains, looking for opportunities should not be simply abrogated to "technologists"; those responsible for Governance, for example, have the opportunity to be thinking about AI or Blockchain even if the implications are not clear to them because of their experiential distance from using technology.

## ■ 6.6 CHALLENGES

Involving stakeholders at the stage of even thinking about a new service is vital; an estimation of cost and code sizing (see White paper of the ASL BiSL Foundation "Estimation techniques") is a useful way to focus the executive mindset on the budget needed. The stakeholder with most to lose is the business stakeholder. IT decisions (discussed in the technology perspectives at Governance and Strategy levels) can have disastrous consequences if they are not fully focused on business demand and need.

Involving users at this stage (also mentioned in Chapter 5) should be mandatory too, although it is likely that their input will be delivered via management.

### 6.6.1 Dependencies

Having an awareness of the lifecycles of development will assist the non-expert in understanding dependencies between different organizational units and people

and their methods. Complexity in the enterprise is ever-present no matter how small it is; even a single LoB will have many components. And as mentioned, knowing the business of the enterprise requires knowledge of mutually dependent services both inside and outside the enterprise environment.

It is essential that BIM practitioners are aware of how the business uses information services, which services are dependent on other services (and partners or suppliers) and how the dependencies relate; a follows b but only after c.

### 6.6.2 Audit

Audit and control are most likely to be practiced in this domain, but will also be practiced in the Operation and Governance domain. It is important, therefore, to ensure that managers are aware of all of the process and procedural elements and have a plan to carry out the necessary exercises. ISO standards (e.g. ISO 20000) might be in place and endorsed by the executive; trained ISO 20000 auditors from third parties might be employed, or BIM professionals might undertake training to ensure they can properly evaluate information services for compliance. The point of audit should not be to find fault or to apportion blame. Audit should provide the opportunity for improvement.

It is better to build compliance into everyday processes instead of having a separate compliance process which often results in unnecessary overhead. Automation is the key to being cost effective. For example, instead of holding reviews to ensure that development teams are following enterprise data conventions, invest in a system that will check data naming conventions are actually being followed.

### 6.6.3 Focus on successful improvements

The key factors for successful improvement are many, with the following generic list giving some useful pointers on what to focus upon:

- Proactive management of information services to anticipate and respond to future business need;
- Responsibility for information services being taken by sponsors for change;
- A clear understanding of the rights and obligations of all parties involved in service delivery;
- Firm foundations of service management - that is, defined services, appropriate sourcing decisions, an appropriate regime for service and contract management, suitable monitors and the flexibility to make service modifications, when necessary;
- An understanding of how good communications can help in managing a relationship and an awareness of the factors that can assist in achieving the appropriate benefits from the relationship;
- Service performance metrics and detailed operational criteria derived from high-level business objectives;

- Flexibility on both sides (or all sides in a multiple partnership) in managing the contract, together with a willingness to adapt in response to change;
- Good understanding of your information services and IT infrastructure and the implications of managing capacity, availability, cost, service levels, configuration, business continuity and relationships.

## ■ 6.7 CONCLUSION

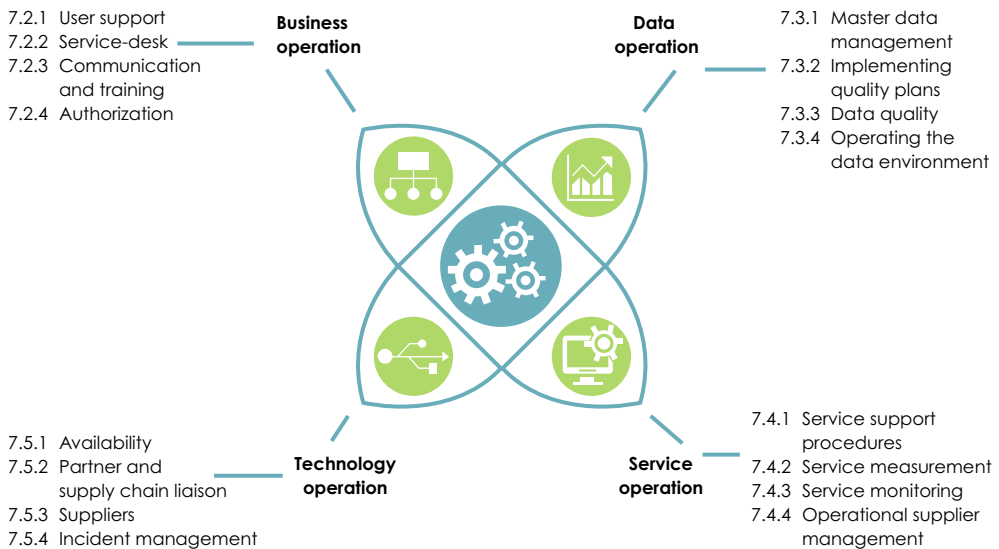
The Improvement domain is predicated on designing services that correspond with business policies of governance as defined by the executive, instantiated in strategic plans and actioned by being authorized through inclusion in the portfolio. Assembly of the service (whether from scratch, by utilizing components that already exist, or from an external supplier) will lead to the requirement to test all aspects of the build. Service review and testing should focus on the information and how that information is to be processed and used, rather than just on the technology. BIM practitioners should assume responsibility for the production and use of test packs that will fulfill these criteria and should undertake a detailed review of all testing. Such testing will include systems testing, service testing and user acceptance trials, all of which should be under the umbrella of BIM.



# 7. THE OPERATION DOMAIN

## 7.1 INTRODUCTION

This chapter discusses the topics shown in Figure 7.1.



**Figure 7.1** The Operation domain topics

Being at the sharp end of information processing means using the information services available, processing new information, realizing that what you have is not what you need and, in enterprises where the public at large is the customer, dealing with the pressure of providing an efficient service. Here again the focus is inevitably on four perspectives, since all four are linked to the customer experience. It might be that the information services have been poorly designed (or implemented), or it could be that improvements must be made in terms of understanding the information sources (whether from public sources such as the ever-present internet, or from information chain partners or customers).

The Operation domain is often termed “the daily processing domain” because it relates directly to functioning (or often non-functioning. . .) information services. Information services exist to support the business processes and to ensure that they work as efficiently and effectively as possible. It almost goes without saying (though everyone says it anyway), that it is of considerable importance that services continue to work well and their effective use is guaranteed. This not only concerns the availability and technical working of the application (subjects of IT infrastructure management and application management) but also the functional working and application possibilities for the users.

## ■ 7.2 BUSINESS OPERATION

It is here in Operation that the evil that men do lives after them (or with luck, where the good that men did is forgotten because everything is running smoothly!). As mentioned above, good information service design will result in everything running smoothly and no one will care about contracts or service levels. Flawed information service design will cause operational issues, incidents that must be addressed and in such cases it is essential that monitoring activities have been designed and work well so that feedback can be provided. Governance policies, strategic decisions and design and/or build decisions all impact the information processing in this domain.

### 7.2.1 User support

Business information managers should aim to provide optimum quality information and data services, cognizant of the resources available. Quality is determined by fitness for purpose, and quality information services are those which consistently meet business needs and customer requirements. Effective liaison between service suppliers and their customers, is an essential aspect of the supply of quality information services. Information service suppliers must understand the purposes to which the services are put, and provide services that are capable of fulfilling these requirements.

Users of information services are the customers of the (IT) services supplier. Whether or not they are being charged for services, they should be treated as customers, and their views taken into account. The information and data service suppliers must continuously seek to improve their standard of service to customers. Suppliers should research and respond to customer views, whilst effectively and efficiently supporting their use of information services.

Once the new or changed services are available and all of the supporting BIM elements (training, manuals and so on) have been completed, Operation takes over the responsibilities for monitoring effectiveness and identifying any issues.

Support for the information services should be provided centrally, and locally where possible. The most likely causes of issues arising will be security measures, the perceived quality and operational issues regarding the availability of the services and problems associated with information being processed and retrieved. Identifying improvement to the business information services should be a key consideration. Even services that work effectively can be improved and a forum to raise improvement issues should be available, at least online.

Think carefully before simply copying a set of procedures. If you are going to cheat in an exam, make sure you copy the work of the class brainbox and not the class clown who might well have copied from someone else, who might well have copied from someone else, who. . . you get the picture.

Feedback might be strategic as well as operational. It is possible that some incidents, after they have been investigated, may result in a major change, possibly a new service, whereas simpler issues may be resolved through ITIL, for example processes and procedures.

When it comes to business information services, in effect you are providing a customer liaison function that has four major goals, to:

- Ensure standard procedures and good practices are used in all contacts between IT services and its customers (let's call them "business information services customers", in short: BIS customers);
- Ensure effective customer support is provided at all times (support staff should always be courteous and helpful, meetings should be formal);
- Undertake and manage specific liaison initiatives, for example a customer care programme.

Ensure that the quality of service is formally documented in Service Level Agreements. Failure to conform with SLAs should be investigated thoroughly and seriously. Customers of information and data services should be educated about the full range of services offered, and helped to make the best use of them.

An important liaison role is your understanding of information services and providing assistance to BIS customers in order to specify their requirements for new services. In this way the demand for services is tailored to meet BIS customer requirements, not the convenience of service suppliers. Your role will be important in assisting BIS customers to identify, define, prioritize and evaluate changes in requirements that will improve the service they receive.

Your assistance with incident and problem resolution is not bound only to the IT component of data and information service supply. Customer problems with information services must be resolved even where the cause lies in the customer

area, for example in inadequate training, or an unsuitable environment, or where there is disagreement between the BIS customer and supplier about whether there really is a problem.

Further, new BIS customers might need to be assisted to familiarize themselves with the new or changed services and to start using them. In short, if new information services are to be fully supported, customer satisfaction is paramount and should be regularly monitored. Customer complaints must be acted upon in accordance with agreed conditions and customer views taken into account. And of course, BIS customers should receive regular feedback on progress in resolving complaints, problems and other enquiries.

### 7.2.2 Service desk

A service desk- or help desk provides a day-to-day contact point between the customers and suppliers of information services. It is responsible for dealing with BIS customer queries and problems with services, for overseeing the restoration of normal service on the behalf of the customer following incidents, and for disseminating day-to-day information about changes and service developments to customers.

Effective customer liaison means building relationships with customers, and assisting customers to make the best possible use of the information services available to them. The service desk can make an important contribution to effective liaison.

The service desk and any customer (or supplier) liaison staff must work closely together, and both may be part of an overall customer-facing services function within an IT supplier division or company.

Information requests, improvements to processing or data definitions, complaints, or indeed any digital communication requiring action is best dealt with centrally through a service desk. ITIL procedures may be more than adequate to address incidents, problems and changes, and require little more than ensuring communications are channeled to the correct person. If you want to know how to fix an engine, don't send the request to the guy responsible for the transmission.

### 7.2.3 Communication and training

IT staff are most often drawn from a technical background that gives them little opportunity to understand the environment in which information services are used. Customers are considered to be responsible for defining their requirements for the services they expect to receive, but cannot be expected to have an extensive knowledge of the practicalities and costs of providing information services. There is a need to bridge this knowledge gap and provide an effective interface between IT service suppliers and their customers; where it exists, an intelligent customer/

retained organization unit is often put in place but it needs to be focused firmly on business, not on IT.

Providing training (electronic or otherwise) in the use of the information services, or merely providing communications about when training is available for new or improved services, is another angle to be addressed. Communications should be planned carefully so that users know what to expect, when, what they can do to change things and, of course, who to contact. They will also require knowledge of levels of service and quality so that these can be monitored and reported upon.

This means that proactive communication with the users of the information service must be under control. The focus should be on providing timely training courses and instructions, publishing a newsletter or general announcements on, for example, the company intranet, planning for handling and chairing user consultations and providing information on new software releases, etc.

#### **7.2.4 Authorization**

The identity and access policy with regard to information should have been determined at the executive level (see Sub-section 4.3.4)) and formed part of the strategic information service design. New or improved services will be available and in Operation it will be necessary to manage access appropriately. Operational managers will be responsible for granting (or removing) authorization where appropriate and ensuring information services are used only by the right people.

Access to data can be controlled by permitting three different levels of rights:

- Read only, in other words the ability to look at the data and/or the ability to print the data;
- Read and write, that is the above plus the authority (with the appropriate education/training) to amend data;
- Creation and deletion, that is both of the above plus the authority and appropriate training to create new records and delete occurrences.

It is not sufficient in some cases (sensitive, secret or private data or perhaps data that is simply high risk if it were to be changed without oversight) to restrict access merely to the data since knowledge that such data exists at all is restricted.

### **■ 7.3 DATA OPERATION**

The information provided must be correct of course, and the processing of information must achieve what was intended.

As discussed throughout, you will see that the objective of good quality data, information processing and use also applies to any information that is not automated. Such information will include letters, forms, and perhaps personal spreadsheets. Defining information as non-automated is very difficult given the ubiquity of IT; even supporting documents or forms are most likely to be in digital form. We consider that "non-automated" should encapsulate any ancillary materials including procedure manuals that are not part of the (IT-driven) service design.

Data integrity too is a quality issue; if integrity is compromised (think of a corrupted information database) then information processing cannot be relied upon.

### 7.3.1 Master data management

In Operation, it might be necessary to change data types such as control data, or to request a change to data such as tariffs, VAT or insurance actuarial tables that are needed to enable digital information to be processed correctly. Users will not have direct access to such control data.

Levels of impact must be identified carefully. Changes to data models that impact the enterprise (for example interest rates provided by banks, pricing and discount information, government taxation or social security information) should not be abrogated to IT professionals, either internally or externally.

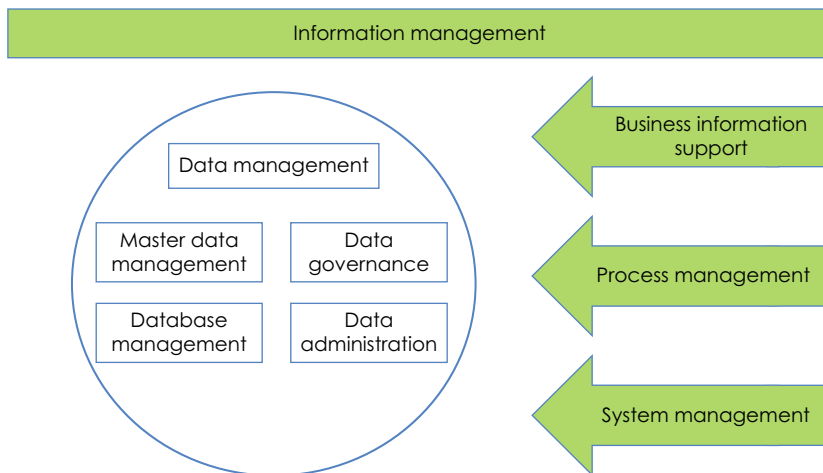
That does not mean that the BIM professional must action the release of the information but they must be responsible for proper authorization of important changes to enterprise-wide, sensitive information and should oversee the process of release.

Use of the information services in Operation will lead to suggestions for improvements. There will need to be a point of contact where requests can be made, assessed and qualified.

Information management can be described using the roles shown in Figure 7.2. In order to place data management in the context of overall information management, the roles of process management, systems management and business information support need to be described.

Process management is concerned with the administration and control of the business processes that use data. Process management can be viewed as being similar to data management but with its prime focus being on how the business uses its processes. In principle, process management involves similar activities to those of data management. These include:

- Laying down the approach for implementing and exploiting enterprise data;
- Setting targets for all enterprise data management activities;



**Figure 7.2** Information management roles and responsibilities regarding data

- Resolving all conflicts about data management issues, such as those which can arise when one of the lower level activities conflicts with another;
- Controlling the tasks involved in the above three activities;
- Ensuring that data management objectives are met.

Systems management is concerned with the administration and control of the applications that use and maintain data, or in other words with the management of the IT infrastructure systems that provide support to business processes.

Business information support is a service provided to the users to help them fully exploit the information that is available in the enterprise. The support offered will include advice and consultancy on the information that exists in the enterprise and how to access it. The activity will help users develop agreements with information service suppliers to provide the data the business units require.

The role of business information support as described here is logically distinct from the role of data management. The dependency of information on data demands a symbiotic relationship between the roles to ensure that the information needs of the business can be met by the enterprise data services. In some enterprises the policy elements of the data management role and the role of business information support may be combined within an information management function.

These activities help to ensure that master data management, data (and database) administration and, of course, data governance are all instrumental in the delivery of quality information services. Note that in larger enterprises the database administration and data administration roles are separated; separation might also be a governance policy because separation of the duties is recommended so that

one person is not vested in all processes. The following should be useful as a guide to separating the processes.

**Data administration – focus on logical design:**

- Perform business requirements gathering;
- Analyze requirements and model business based on logical and conceptual requirements;
- Define and enforce standards and conventions (definitions, naming standards);
- Conduct data definition sessions with users;
- Manage and administer metadata repository and data administration tools;
- Assist database administration in creating physical tables from logical models.

**Database administration – focus on physical design and operational needs:**

- Define required parameters for database definition;
- Analyze data volume and space requirements;
- Perform database tuning and parameter enhancements;
- Execute database backups and recoveries;
- Monitor database space requirements;
- Verify integrity of data in databases;
- Coordinate the transformation of logical structures to appropriately performing physical structures.

Data administration requires a concrete grasp of the business of the enterprise, not just the technical aspects of using IT. Having an impact on data design and information management requires an understanding of the goals, objectives and tactics of the enterprise and its business (insurance, pharmaceuticals, banking, etc.). Logical modelling is part of the data administration function, and is a full-time responsibility for those involved in a major development or enhancement project. One role of data administration is to advocate the planning and coordination of the information resource across related applications and business areas. By doing so, the amount of data sharing can be maximized, and the amount of design and data redundancy can be minimized.

### 7.3.2 Implementing quality plans

To implement quality plans for existing business information services it may be necessary to:

- Modify the general operations and service-specific procedures to ensure that the required actions are carried out;
- Modify applications software, systems software and hardware configurations, as appropriate, so that the required quality can be measured and achieved.

Care needs to be taken not to raise customer expectations beyond what can be achieved during a review of SLAs and development of service quality plans. It should

be made clear that this is the start of a quality improvement process, and that both time and customer cooperation will be required to achieve quality objectives.

The drivers, in particular Capability, provide overall direction and control of the operational running of the enterprise and the general quality of user support. Feedback is also created from within user support in relation to the operational running of the activities that underscore the drivers and this feedback, in turn, provides guidance about the perception of quality, the need for improvement and the requirement for new services.

A regular report should be submitted about the value of existing contracts and/or agreements, based on statistics gathered about the quality of user support, for example restrictions about when calls can be made, or how much time is needed to deal with calls (is it acceptable), is the support of value (in other words are the incidents solved or is another level of escalation always needed), etc.

Reporting should be at least weekly with monthly summaries, though your enterprise may have specific reporting guidelines.

### 7.3.3 Data quality

Clearly, the goals of information governance are to ensure the quality, availability, integrity, security and usability of the information within an enterprise. Bear in mind once more that a centralized governance model is sometimes considered unwieldy and many propose a Lean or Agile approach where a CSF is to enable development teams to maintain and develop high-quality information assets within the overall IT ecosystem. A Lean information governance approach promotes a healthy, collaborative relationship between all of those in the information supply chain that they are supporting.

Where a number of users independently take responsibility for their own instances of quality, availability, integrity, security and usability of the information, and for the same information and data items, poor quality data values are invariably maintained and their usage gives rise to poor quality information. For consistency, there must be formal guidelines available to define what is meant by data integrity. Without guidelines, there will be no knowledge of what good quality data actually means.

### 7.3.4 Operating the data environment

Table 7.1 below is included to help you to manage objective areas (on the left) and target measures (on the right) in the operational environment. This is largely an issue of quality (expectations and the actual experience) and pertains directly to what is, or should be, in a SLA or the supporting documents that underpin the content of the SLA.

Table 7.1 Identifying and measuring enterprise data environment objectives in the Operation domain

Objective	Target measure
Maintain the enterprise data environment.	Proportion of the requirements maintained. IT and business satisfaction.
Support the enterprise data environment.	Use made of environment. Number of users. Enquiries, complaints and problems addressed. Training delivered. IT and business satisfaction.
Operate the enterprise data environment.	Use made of environment- number of users. Downtime. Availability, integrity and security problems addressed. Response time to provide data and metadata to users. IT and business satisfaction.
Maintain the integrity of the enterprise data environment.	Potential integrity issues. Integrity and security problems addressed. IT and business satisfaction.

Where the enterprise has not addressed the issue of quality (or has done so inadequately), Operation should revisit quality plans or, if necessary, take action to introduce suitable processes.

## ■ 7.4 SERVICE OPERATION

The principal skills required for managing services include the ability to manage many dependent services and relationships together with an understanding of technology and awareness of its possibilities. Service operation will require a focus on customer and user support, liaison with applications development, liaison with implementation and operations, and the ability to communicate with management about key issues.

DID is, where possible, re-using other good practices. User support is so closely related to the incident, problem and change management processes within IT infrastructure management as described in ITIL (and the Application Services Library, ASL) that it is pointless to do anything more than adhere to these processes with small adaptations where necessary. A significant difference is in the knowledge database that provides the support; only a fool (and there are many. . .) thinks an ITIL service desk is the same as an information management service desk; expertise will be different.<sup>29</sup>

<sup>29</sup> See Sections 8.3.1 Single Point of Contact information management and 8.6. Example: Single Point of Contact (SPOC-IM) for more information.

### 7.4.1 Service support procedures

Documented agreements should be in place to ensure that procedures are established regarding the way in which data registrations take place and information/data are exchanged. There should also be clear agreements about the first points of contact for the users, and for which subjects these contacts are appropriate. Essentially, this is cooperation with experts rather than duplication of process, procedure and effort.

### 7.4.2 Service measurement

Daily, weekly and monthly measurement should be in place within the IT service departments so that the BIM team is kept informed of the state of play. Where information/data incidents occur, they should be categorized and prioritized based on their impact on information services. BIM measurements will focus on service issues as mentioned but also on the quality of service and the maintenance of information.

Reporting should be done on an exception basis; whether the reporting is daily, weekly or monthly, it should focus on information that needs to be communicated. A daily report of boring and useless facts and figures will soon be ignored; good practice should focus on reporting meaningful information and necessitate some form of action. Informative communications are different; a daily bulletin of "What is happening today that impacts availability. . ." is quite different to a report.

Identifying and managing problems might require liaison between many groups of experts. Where information services are at risk, a BIM representative should always have a seat at the table.

### 7.4.3 Service monitoring

The information services tested and transitioned into live use must be monitored for compliance with policy and strategy. Monitoring services is key. Is the service working as it should? Is the service available when it is supposed to be? Are there capacity issues (in other words can everyone access the service when they need to, or is there a maximum number of people who can use it at any one time)? How is the user support process working? Is it timely and useful? Do incidents get sorted out effectively or do they recur time and time again?

Monitoring might include reporting on call satisfaction (or lack of it. . .), the time taken to resolve calls and escalation of incidents. And do not forget that communications are multi-channel. Some communications will be two-way; some will almost certainly involve suppliers or information chain partners, or both!

#### 7.4.4 Operational supplier management

Users must be aware of the contracts and agreements derived by management with either internal or external suppliers. These contracts and agreements are often created by procurement and passed on from whoever is responsible for contract or SLA management as a starting point. User support staff will report to contract management when there is a deviation from the agreements and contracts in daily operation.

Operational supplier management is where the performance of your supplier is measured and compared to SLA and contractual obligation, and will be a daily activity. Beware, however, of the points we have made previously that SLAs and contracts should form the basis of a good relationship not the instruments with which to beat suppliers.

Many services will be supported by a SLA, which is most often useless unless designed and agreed at the earliest stage of information service development rather than at the IT implementation stage, where the deepest thoughts do not tend to go beyond ensuring 99.9999999% availability! The result is that whilst incidents might well be fixed on time, they will definitely recur and measures about availability will focus on the uptime of technology and not about the availability of the information services applications.

Agreements and contracts should be clear and unambiguous including, for example, identifying the first point of contact. Escalation paths should also be identified and documented.

## ■ 7.5 TECHNOLOGY OPERATION

The technology of the services underpins delivery, though in terms of information services it is little more than a transport mechanism. That does not mean it is not needed or valued and it is always an expensive resource (insourced or outsourced). Business continuity plans must be current to reflect the criticality of operational information services to the business and to address changes and new services.

### 7.5.1 Availability

When problems with IT have disrupted the availability of the information service, or perhaps caused data corruption because of hacked or virus-infected infrastructures, the service desk support is most likely to be provided by IT experts, but these experts cannot make up the lost processing time. In particular, where the business impact is profound, liaison between BIM practitioners and the suppliers of the service may be necessary in order to obtain extended service hours to allow the business to catch up on lost hours of operation. Financial impact is less of an issue in these

circumstances; penalizing the supplier because the contract permits might well recover money but the impact on the customer base is not ameliorated so easily.

Liaison within the enterprise will be the responsibility of BIM practitioners in such circumstances. Effective communications are required about the impact on services, recovery information and, of course, the reports to executive management when disruption is so significant that escalation has been raised to the highest levels.

### 7.5.2 Partner and supply chain liaison

Partner and supply chain liaison may be an issue in many enterprises. An incident that disrupts service availability or integrity in your enterprise will, potentially, cause problems in the entire information supply chain. Indeed, problems in your enterprise may have originated within the information supply chain. The root cause of the problem might be tracked back to a partner and BIM practitioners will need to provide assurance (and be assured) that the manner in which the partner deals with the situation does not lead to risk to your enterprise, and that their processes and procedures are at least conformant with the procedures that you would have applied in-house.

The use of technical IT resources such as IT infrastructure and automated information services/applications is not specifically a BIM issue until decisions need to be made about the processing of business information. BIM is increasingly reliant upon technology and needs to be kept informed about technical policy and decisions; it must also have the mandate to over-rule decisions it feels will detrimentally impact information services.

### 7.5.3 Suppliers

Suppliers of the information services should be monitored to ensure they are conforming to SLAs or are in compliance with contracts. In particular, suppliers might be under pressure in relation to their levels of service regarding performance or availability. In such situations proactive management is better than beating them with a rolled-up SLA; keeping the supplier informed of incidents or potential problems might lead to either a speedier resolution or avoiding the incident altogether, much better than arguing over the length of time taken for service restitution. Service (or change) requests to suppliers should be made using a single source, as this is invariably more efficient; everyone might be able to ask for something, but if everyone does it's likely that the process will be somewhat anarchical.

Keep in mind that suppliers have capacity issues too; if a change request can be quantified (see Function Point Analysis) it will help to establish feasibility. If you do not have the expertise to carry out the planning calculations, then seek assistance from an expert, and that expert might well be your supplier.

### 7.5.4 Incident management

It is possible that your entire incident management process is carried out by the IT supplier. Complete coordination will then take place in the supplier environment. BIM practitioners must ensure that their processes and procedures support informational needs as well as technical needs.

Incident management procedures are well described in ITIL and need not be repeated here. What should be highlighted is that when handling calls that fall between the two stools of application management and IT infrastructure management, many other procedures (and processes) may be initiated (for example, if the call is connected with a software error in the application or there is a technical issue with the IT infrastructure). The issue here is that an incident related to availability (or unavailability. . .) of an information service might have many causes, whereas an incident about, say, the information processing leading to an unexpected result is much more likely to point to a specific problem with a data store (or with the processing algorithms). The role of BIM should be to ensure appropriate resources are available to identify the root cause and appropriate resolution within agreed parameters. Do not attempt to reinvent ITIL to manage incidents, just ensure processes and procedures reflect BIM requirements as well as technical requirements. And don't forget to implement a procedure within BIM for handling incidents that don't have a technical cause (e.g. "I don't know how to add a new customer to the application").

## ■ 7.6 CHALLENGES

It is necessary to identify users, and to manage and support them so they use the services correctly and effectively. Ensuring that information services are defined with the end user in mind, putting yourself in the position of being a user, is the best means of achieving success. As mentioned throughout, early involvement in the design stages of service development is the place to exert influence. Operation personnel can become excluded from strategic involvement and BIM practitioners should ensure the communications lines between operations personnel and management are open and effective so that operational input is included.

### 7.6.1 Executive-led BIM

A significant challenge is that the process and procedure-led approach promoted in the original version of BiSL, while useful at the time, has caused most BIM projects to be rooted in operations rather than being instantiated at the executive and strategic strata.

As we have stated, Operation is where the rubber hits the road and it is essential to ensure BIM remains a success at that level, though the competition for resources at

executive levels means that feedback about the value of BIM should be raised in profile.

### 7.6.2 “It’s all being done by someone else. . .”

Another challenge, also the result of the operational focus, is to get a clear picture of how other good practices such as ITIL, COBIT, or whatever is in use in your enterprise, complement the BIM practices. On the website [www.aslbisfoundation.org](http://www.aslbisfoundation.org) a number of white papers can be found explaining how DID complements these practices.

The challenge is in understanding; experts in other methods must know their limitations. Similarly, BIM professionals need to know where they can add value with additional procedures that can be subsumed into existing processes and procedures so that specific information services issues are certain to be cleared according to need.

### 7.6.3 User support

Need and value can sometimes be merged in the sense of being difficult to separate at the operational level. Bottlenecks in the use of information services, and requests to fix them might lead to ideas for improvements that emerge during the calls. Capturing this information and ensuring that it is acted upon should be covered by procedures that are in place. Any preconditions and guidelines for implementation and the required quality level of user support for improvements will also be derived from operational use.

User support personnel should have a management reporting line to the (planning and) management function where it is a management objective to oversee how much work there is on hand, track the progress of reported incidents and changes, and to establish what resources are being used. People get busy; capacity and availability apply to their time just as much as they do to silicon resources. . .

### 7.6.4 Resources

Resource management will define how much time and effort can, or must, be spent on user support, because operational issues might require prioritization that should be communicated by management. When your incident is downgraded in importance, or you are informed that you have to live with it, your argument should be with the boss not with the unfortunate user support person.

Users commonly need to request access to the systems and services of internal and/or external suppliers, particularly in times of crisis. Such requests might become overwhelming, thus procedures should be in place to manage demand and to prioritize any requests. It may perhaps be that security or risk measures preclude such access and, where major outages occur, contingency processes and

procedures will apply. Business continuity should be an imperative and plans should exist (and be tested regularly) that ensure the most important information services and processing are available first and any support services that are required are also in place. A centrally coordinated emergency communications service will be useful.

BIM should be responsible for ensuring that the focus is on information service availability and not on IT.

There will be a requirement to confirm the availability and accessibility of additional services or processing in problem situations, because no one ever plans for how to recover what has been lost in terms of information processing time. And even fewer plan for the additional time needed from people to catch-up.

## ■ 7.7 CONCLUSION

Good or bad information policy, design and execution has the most impact on operational activities. Good design (or policy) is rarely praised of course, but poor design leads to problems that result in the need to change things so that they improve. If improvements are not made to policies that cause problems, no change to the design of a service will improve the life of the unfortunate operations personnel. Remember "garbage in garbage out"? The same principle applies to policy and design.

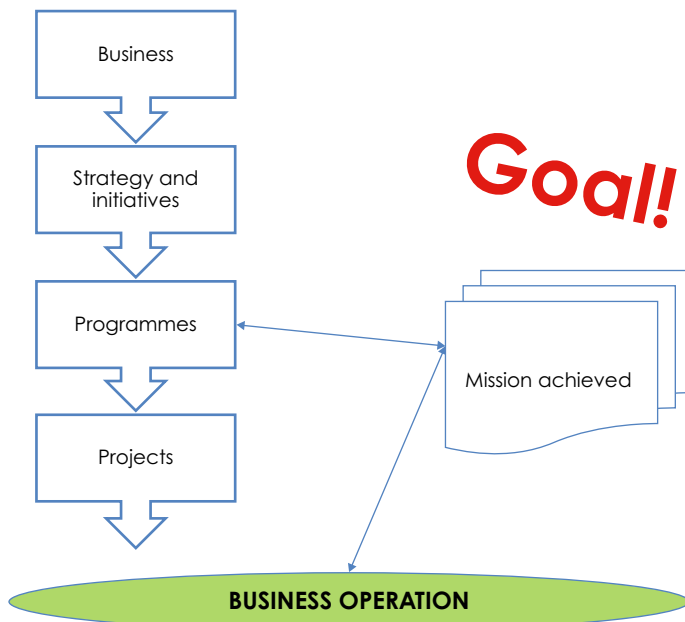


Figure 7.3 The essential goal for Operation

The primary goal of Operation is to ensure that everything comes together (as John Lennon wrote in his famous song about BIM. . .). Figure 7.3 summarizes this in a simple and effective picture. No Governance, Strategy or Improvement thought will be worthwhile unless the mission is achieved in Operation.

Operation is a management activity where the enterprise mission (or rather how well the mission is being achieved) becomes clear. If the resources are not in place to support all necessary capabilities, then the information services will suffer, which leads us to Part 2.



# PART 2: DID IN PRACTICE

The DID model can be applied in several ways. In this section, we outline some options for using the DID model in an enterprise and how DID strengthens business information management. Five examples are provided:

- User support, a Single Point of Contact for the business information management department;
- Use of DID in information-driven business processes;
- Transformation to a digital organization using DID;
- Solving information issues in the context of BIM using DID;
- Quick start business information management with DID.

Keep in mind this is an introduction and that all enterprises differ in the need for, and use of, BIM practices. Those new to BIM should find it useful, whereas experienced BIM practitioners may require the greater level of detail that will be included in the upcoming Practitioner book. The guidance here is included to provide readers with more than just the “what to do” information that is found in Foundation books.



# 8

## USING THE DID MODEL

### ■ 8.1 INTRODUCTION

In the previous chapters, the components and features of the DID model were explained. The second part of this book examines the different ways in which the DID model can be a tool for BIM practitioners seeking to solve information management issues within an organization, at the operational, tactical and strategic levels. This chapter discusses the use of the DID model in an enterprise, the relationship with technical handling processes (including ITIL) and an example for user support, a Single Point of Contact for the business information management department.

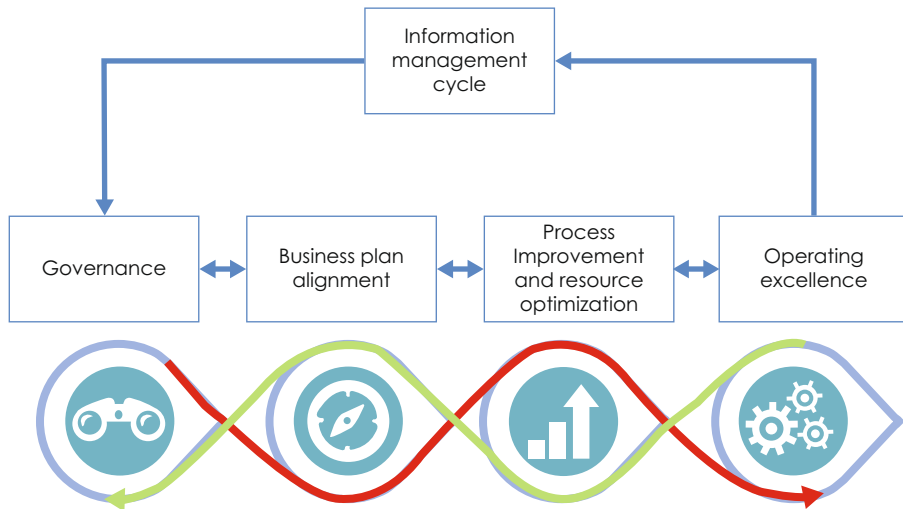
### ■ 8.2 ADDED VALUE OF DID AS A RESOURCE FOR INFORMATION MANAGERS

It goes without saying that information has always been necessary to run a business; but we've said it anyway. The better the information within the enterprise (in terms of access and use), the likely it is that appropriate processing can be achieved with efficiency and minimal error. In the past, much more was needed to collect information but this has now completely changed. Information technology has made great strides in recent years. The costs of information collection and exchange have fallen sharply. Information about, for example, new developments or the progress of projects can be collected quickly and almost free of charge and can be shared quickly and easily with everyone involved. The question is no longer where can I get what information, but rather how do I unlock the right information at the right time? This means that information managers need to think mainly about how they can acquire and maintain a grip on the information processes in their domain, and how they can quickly take the right steps to make the requested information available from the gigantic amount of data available.

Depending on where the business information manager is positioned in the enterprise, requirements/specifications will be set for the desired information.

Those requirements arise from the needs of demand/customer/questioner and the purpose for which the information is needed. Consider the manager who needs control information, or the project leaders who want discharge on their projects and thus need to complete the validation and verification of the functional tests.

If it concerns the cycle of information management in an organization, this usually involves the steps shown in Figure 8.1.



**Figure 8.1** Information management cycle<sup>30</sup>

The principles with which information management within the enterprise must comply, i.e. governance, must be considered. Within these principles, strategies are drawn up that are translated into the appropriate actions. These actions are in line with what needs to be requested or improved, with optimal use of resources, and then implemented so that possible new or adapted working methods can be used in the operational environment based on adapted information needs. It must be regularly demonstrated whether the information is adequate and remains current.

DID helps to interpret, categorize, demonstrate coherence in the context, show the needs and involvement of stakeholders and ask the right questions in relation to the way the enterprise is structured.

In Chapter 2, using two examples, we described how to use the DID model for both “analyzing” and “developing” information management issues. Generically, it boils down to the following approach: determine where on the model the information issue is to be considered. In Chapter 2 this was identified on the basis of an “anchor”

<sup>30</sup> Based on: Paul A. Strassmann, *The politics of information management; policy guidelines*, 1995.

that can be found by locating the subject in the accompanying table and the corresponding coordinate on the DID model.

There are now two options: follow the line from this coordinate/anchor counterclockwise to visualize the improvement process, or clockwise to analyze in the previous domain whether the corresponding information issues have been correctly identified or are the cause of the issue you are dealing with.

There are two variants of the first option that we mention: from "inside to outside" and "from outside to inside". In the first case you start with the basic questions: *what is the mission of our enterprise, where do we want to go and do we have sufficient resources (in terms of nature and size?)*. In short, you are looking for answers to the questions from the four drivers in the middle of the DID model. From there you will work towards the organization of the necessary information services. An example of this can be found in Chapter 10.

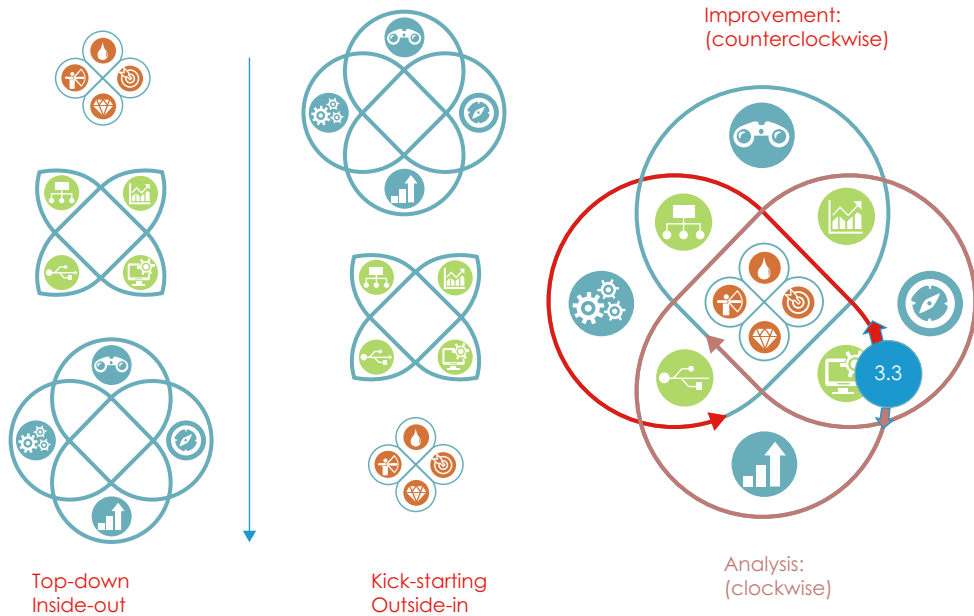
A number of experienced BIM consultants also adopt a very simple approach of filling in the domain perspectives to identify responsibility. This approach may be simple but if you do not have time for the navigation/anchor analysis, a quick and simple approach can prove very useful.

Where BIM is not actively supported (in other words at a very low level of maturity) or is still in its infancy (perhaps activities take place that are recognizably BIM but not labelled as such), you will have to work pragmatically and you will focus on the domain in which you (and others) are active, or from which an information issue arises "outside in". From this management domain, you need to consider the four perspectives and use them to assist you in asking the right questions (and finding the appropriate answers...). An example of this is described in Chapter 11 (kick-starting BIM).

So, the DID model can be applied in the following four ways:

1. As an aid to analyze in which management domain certain issues play, or to understand why certain issues are not fully resolved, so that insight is gained into possible solutions (moving counterclockwise around the model).
2. To shape and further develop and improve information management issues within the organization (moving clockwise).
3. From mission and vision to design and layout: from "inside to outside".
4. Practical and direct application (kick-starting): "from the outside in".

Before the DID model can be effectively applied, the model must first be analyzed and adapted for your own enterprise. This means that the basic principles, together with the principles of the DID model as described in the generic framework, must be studied by information managers so that they can be used appropriately.



**Figure 8.2** Four ways to apply the DID model

### Navigating the DID model

Navigating the model often begins counterclockwise. It can seem a little awkward in the beginning as it seems counterintuitive, but it will become apparent that navigating counterclockwise following the lines on the model, can make sense.

The “direction” you select is entirely a personal choice; what works for one enterprise may not work for another.

We recommend that whatever approach you choose, always keep in mind the drivers. . .

There is a simple way to approach this in a structured way by answering the following two questions for your own enterprise:

- Who uses the DID model and for whom are the products/services intended? In the latter case, it is important to have a good understanding of your own stakeholders (team, customers, service providers, sponsors, etc.).
- What should be delivered and when and where do they need to be available? In other words, what are the products and services you must provide (on an operational, tactical and strategic level) and when and where are they available?

### 8.3 WHO USES THE DID MODEL?

Authorized training consultants teach that the DID model can be used to:

- Introduce BIM within the enterprise (with the model you can check whether all domain perspectives are covered):
- Ensure a better connection between strategy and operation, long and short term, and information management and operational business information management;
- Introduce uniform terminology.

The DID model has been specifically developed for business information management and its practitioners. Information management is usually organized on the business side, and is the responsibility of the business side. The information needed is often provided by suppliers, internal or external, meaning that internal providers can also be considered as being on the supply side.

The way in which this is arranged in an enterprise differs greatly. In abstract form, the position and the roles that go with it can be interpreted as in Figure 8.3.

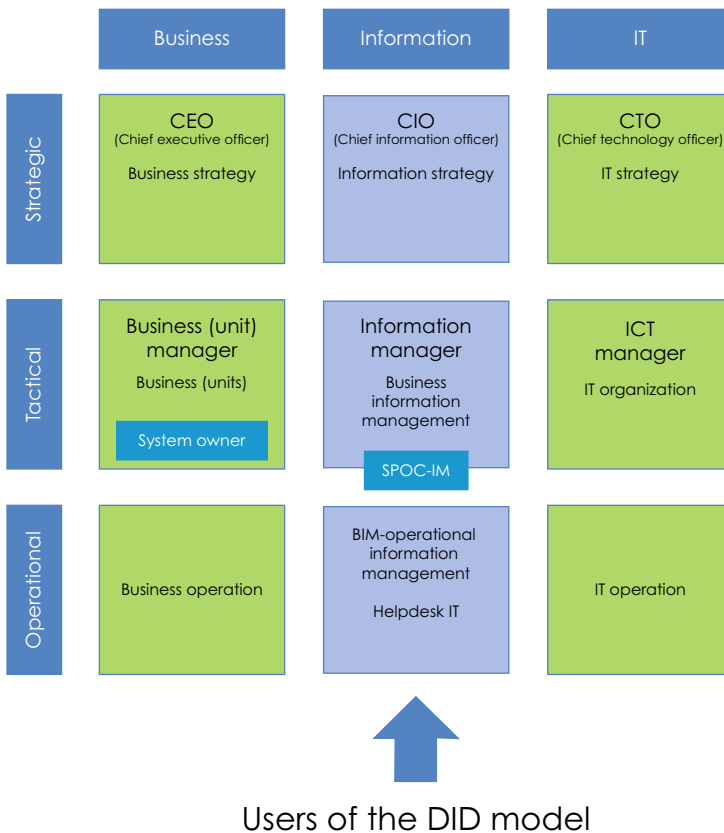


Figure 8.3 Information management in the organization on three levels

There are many possible roles within business information management (and many English language terms to describe them), such as that of information manager, system owner and functional application manager. No matter the role, the term operational information management exists. This role has been given different names within different enterprises with varying interpretations. In practice, we come across different names for roughly the same type of work, such as: application manager, functional application manager, functional system manager, application support person, process assistant and business process consultant. The operational information manager is sometimes a key user within the user organization who performs a number of information management tasks at a decentralized level<sup>31</sup>.

The information manager or business analyst works within the user organization or LoB. The LoB responsible for the business processes has ultimate responsibility for the provision of these processes and (usually) must organize this in consultation with IT. IT is the technical service provider. The roles, responsibilities and powers of the information manager must be clear in order for BIM to function effectively.

The information manager plays a dominant role in the consultation between the user organization (the business) and the IT service provider (the supplier). The IT service provider can work within his own organization or be based in another (external) company. Especially in the latter case, it is important that BIM is well organized and that there is sufficient knowledge to properly manage this IT service provider.

The job description of the information manager or BIM practitioner comprises, in general, the following tasks<sup>32</sup>:

- Supporting users in articulating and prioritizing their questions and requirements. Connecting the user organization with the IT department.
- Regular management (“better use” and “better every day”) and innovation management (business case production for new ideas).
- Formulating the requirements in terms of functionality, performance and quality (using international standards such as J-STD-016 or ISO 15288/9<sup>33</sup>). Administering, investigating and specifying the detailed requirements for user needs. Part of this is testing the requirements drawn up in line with the wishes/requirements of the client and the drafted architecture guidelines. Intake of global business requirements and requests/review of impact analysis.
- Monitoring throughout the realization and management processes that requirements will be met by validating, testing and analyzing; they are the point of

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31 An extensive introduction in operational information management can be found in the publication by Daniël E. Brouwer and Martijn Buurman, *Hét handboek voor de functioneel beheerder*, Hilversum 2019.

32 See also <https://www.ecompetences.eu/>

33 J-STD-016-1995 and ISO 15288 and 15289 are international standards/good practices for information technology, software development, lifecycle management, and principal-supplier agreements.

contact for the user department when designing and realizing change requests and approving designs.

- Developing, implementing and supervising functional and user acceptance testing.
- Supporting the user organization in implementation (process change, procedures, acceptance and training). Actively sharing knowledge with colleagues about the assigned information systems, the methods and techniques used and the financial work area.
- Supporting business consultants and operational information managers in the field of information systems and related business processes.
- Organizing user input and user management. Coordinating user wishes and agreeing change requests with the release manager who draws up the business release plans and coordinates with the release manager department.
- Drawing up and monitoring SLAs, advising about information chains, advising on the applicability of innovations.
- Providing education and training within the user organization.

### 8.3.1 “Single point of contact” information management

Single point of contact information management (SPOC-IM), see Figure 8.3, is the central point of contact for the BIM organization or department. In many respects it should be a component of a universal service desk<sup>34</sup>, USD, where all operational issues (information, logistical and technical) are handled. It should handle all customer enquiries, calls and tickets; qualify them as specific tasks and services and, where appropriate, hand them over to other parts of the enterprise (or to other providers) for resolution. In some cases it must work closely with the IT help desk in order to process requests or complaints. In most cases, it takes ownership of the customer question (the demand) and pursues the progress of any resolution through to the satisfaction of the customer. In consequence, additional tasks for the USD include monitoring the progress of any actions, informing and advising the customer about the status of their enquiry and, ultimately, closing the enquiry. Where closure is not possible, the USD may maintain a log of known issues.

### 8.3.2 System owner

Figure 8.3 shows that the system owner of information systems is positioned within the business, emphasizing their central role. The system owner determines what is necessary for optimal support of the information provision of the business processes, both with regard to the functionality of the applications and the desired service level. This involves weighing up costs and benefits for the user organization. The system owner (who will often be a business unit manager, or LoB manager) determines the priorities and provides a budget for both the operation and the implementation of

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<sup>34</sup> Brian Johnson and Léon-Paul de Rouw, *The Universal Service Desk; implementing, controlling and improving service delivery*, 2020.

changes. The budget does not only concern IT costs (on the LoB level), but also, for example, what is available for the support of BIM.

### 8.3.3 Areas of tension

In larger enterprises, we see that BIM is sometimes centralized. Certainly in that case, good communication must be in place and monitored between the decentralized - that is, working key users and the centrally operating information managers. This is the responsibility of the system owner, since they are responsible for the provision of information about their business processes. The information manager must actively communicate with all users. Regular consultation should prevent the information manager from losing contact with the practice in the workplace. User consultations will need to be set up for this. It is the task of the system owner to initiate and encourage such consultation.

The information manager works in an environment in which various issues can conflict. Namely:

- Wishes with regard to the quality of the information provision of the business processes within the user organization;
- The ability of IT service providers to provide this quality and support it both now and in the future on acceptable and agreed terms;
- The policies of the enterprise, in which the long-term objectives and the variations (including with regard to costs and benefits) are laid down.

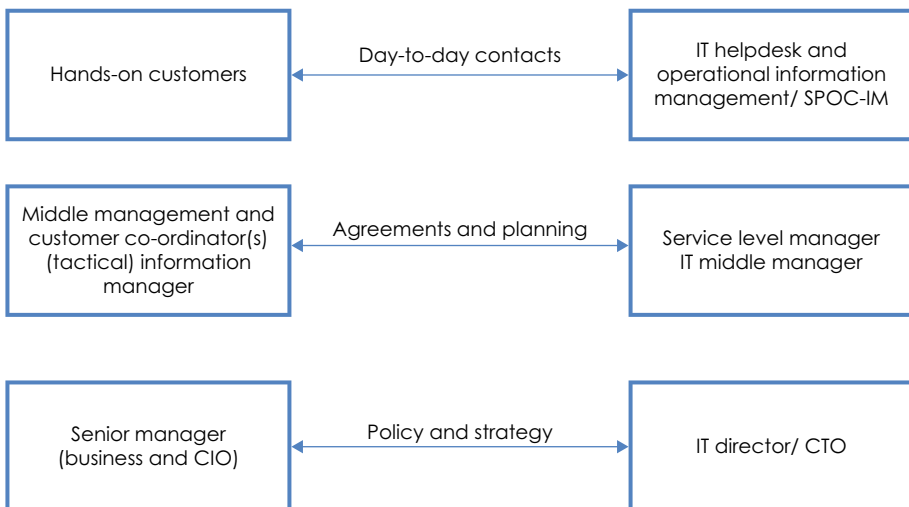


Figure 8.4 Different levels of contact

Different levels of information management will therefore have different contacts, but the majority of the contacts will be handled as follows:

- Via help desk or service desk together with operational information management, to handle the daily contacts with regard to incidents, requests for help and requests for information.
- With the information manager/middle management from the business together with the service level manager/middle management from the IT department to discuss information issues regarding improvement and operation. Most management contact between IT service providers and customers takes place at middle management level, where detailed negotiations on service levels, changes and capacity plans take place. Good relations at this level are crucial to the long-term success of an IT service.
- Between senior management (business and CIO) with the IT director or CTO to discuss policy, strategy and (financial) performance. Contacts between senior customer and IT management are largely concerned with IT strategy and long-term planning. Overall control, and the final approval of Service Level Agreements, capacity plans etc., lie with senior management. Terms of reference for service level management, universal service desk (USD), change management and customer liaison, are agreed at this senior management level. Some of the issues raised by customer liaison staff may require resolution at this level.

### 8.3.4 Skills and capacity

The enterprise may not have enough people of the right caliber to cope with the required changes and keep the enterprise support running smoothly. It pays to be realistic about this, since information services are far too important to the enterprise to be restricted by the available manpower.

You may be able, given time, to grow your enterprise skills so that you can increase the number of people you can call on to cope with business and technology issues during the change. However, it's more likely that you simply won't have time or you won't feel it is cost justifiable to meet what is, after all, a short-term requirement. It is probable that you may well have to call on outside assistance. Such outsiders may be closer than you think; ITIL professionals, for example, are more than familiar with using processes such as incident, problem and change management, so why not consult them and adopt their practices? You may also need to use outside help to fill in the gaps in your own expertise in areas that are important during a time of transformative business information change, for example:

- Information systems architectures;
- IT infrastructure planning;
- Specification of requirements (for software to support the business);
- Management of risk;
- Security and identity/access policies;
- Financial management;
- Project management;
- Understanding structured and unstructured data (big data);

- Knowledge management;
- Software development;
- Service and system integration;
- Testing of software, services and systems;
- Cloud strategies;
- Commercial-off-the-shelf software (COTS);
- Business/IT transition planning and management;
- Strategies for legacy services and systems.

Experience of major improvement initiatives indicates that a realistic understanding of your enterprise capabilities is a major factor for success; conversely, where skills and experience have not been considered, the risks of failure are high. You are strongly advised to carry out a skills audit of your team before any improvement initiative gets under way and monitor the skills profile throughout the initiative (because operational situations dictate that team members often have to be deployed elsewhere). This will help you to identify any areas of weakness and make contingency plans to address them.

## ■ 8.4 WHAT ARE THE PRODUCTS AND SERVICES AND WHEN ARE THEY USED?

Products and services delivered from information management depend on the subject and the demand from the organization. Table 8.1 categorizes the different services as formulated in the DID model.

Table 8.1 BIM product and services

		<b>Operational Calls: requests and questions about:</b>	<b>Tactical Calls: requests and questions about:</b>	<b>Strategic Calls: requests and questions about:</b>
Business		<ul style="list-style-type: none"> <li>• User support</li> <li>• Communication and training</li> <li>• Authorization</li> <li>• Functioning of the delivery chain (chain dependencies)</li> </ul>	<ul style="list-style-type: none"> <li>• Business requirements</li> <li>• Description of information service offerings</li> <li>• Testing</li> <li>• Training and documentation</li> </ul>	<ul style="list-style-type: none"> <li>• Responsibilities and policy making</li> <li>• Business change governance and P3O</li> <li>• Standardization policies</li> <li>• Knowledge management</li> <li>• Enterprise vision for BIM</li> <li>• Business architecture</li> <li>• Agenda of strategic themes</li> <li>• Portfolio of improvements</li> </ul>

		<b>Operational Calls: requests and questions about:</b>	<b>Tactical Calls: requests and questions about:</b>	<b>Strategic Calls: requests and questions about:</b>
Data		<ul style="list-style-type: none"> <li>• Master data management</li> <li>• Implementation quality plans</li> <li>• Data quality</li> <li>• Operating the data environment</li> </ul>	<ul style="list-style-type: none"> <li>• Data requirements</li> <li>• Enterprise data environment</li> <li>• Cost of information quality</li> <li>• Automated and non-automated information</li> </ul>	<ul style="list-style-type: none"> <li>• Data exchange policies and contracts</li> <li>• Data governance committee</li> <li>• Master data management policies</li> <li>• Identity and access policies</li> <li>• Information/data architecture</li> <li>• Information service lifecycle</li> <li>• Key Performance Indicator (KPI) models</li> <li>• Master Data Management (MDM) and models</li> </ul>
Services		<ul style="list-style-type: none"> <li>• Service support procedures</li> <li>• Service monitoring</li> <li>• Operational supplier management</li> </ul>	<ul style="list-style-type: none"> <li>• Build a service organization</li> <li>• Service requirements</li> <li>• Assembly</li> <li>• Service validation</li> </ul>	<ul style="list-style-type: none"> <li>• External executive relationships</li> <li>• Sourcing policy</li> <li>• Service portfolio policies</li> <li>• Service integration</li> <li>• Service portfolio management</li> <li>• Sourcing strategy</li> <li>• Service architecture</li> <li>• Service integration</li> </ul>
Technology	Help-desk IT	<ul style="list-style-type: none"> <li>• Availability</li> <li>• Partner and supply chain liaison</li> <li>• Suppliers</li> <li>• Incident management</li> </ul>	<ul style="list-style-type: none"> <li>• Deployment</li> <li>• Non-functional requirements</li> <li>• Testing</li> <li>• Technology watch</li> </ul>	<ul style="list-style-type: none"> <li>• Technology policies</li> <li>• Guidance on technology-related topics</li> <li>• Shared technology</li> <li>• Technology driving change</li> <li>• Importance of the technology strategy</li> <li>• Technology integration</li> <li>• Information technology infrastructure</li> <li>• Joint procurement</li> </ul>

In the DID model you will find different topics reflected in the four perspectives. Once the components have been completed, you can easily determine the questions on which you need answers from the organization. If this is not available, you can check which principles or matters you need. Use the model as a tool or compass.

Each organization has its own terminology and it may be for your own organization to provide the different products in the model with their own names, positions in the enterprise and responsibilities. In Table 8.2 you will find a template that helps you think about what you need to find out and what you might need to kick start sensible action.

## Example template

Table 8.2 Template to translate DID model to your own enterprise<sup>35</sup>

Business Governance	How is this described in your enterprise?	Location in your enterprise	Responsibility	Recommendation
1.1 Business Governance <ul style="list-style-type: none"> <li>Responsibilities and policy making</li> <li>Business change governance and P3O</li> <li>Standardization policies</li> <li>Knowledge management</li> </ul>	<ul style="list-style-type: none"> <li>Management and Finance charter</li> <li>Data and information management policy archives</li> <li>Absent</li> <li>Sporadic information sharing</li> </ul>	<ul style="list-style-type: none"> <li>Organization charter</li> <li>CIO Office</li> <li>Programme management</li> <li>Head of Information management</li> <li>Somewhere in IT or somewhere in the business, OK we don't know....</li> </ul>	<ul style="list-style-type: none"> <li>Board of Directors</li> <li>CIO</li> <li>No centralized responsibility</li> </ul>	Policies are robust, well understood and communicated. Processes are in place but adherence needs to be mandated. Policies either do not exist or cannot be located; action urgently required

Plan	Your solution	Do	Your solution	Check	Your solution	Act	Your solution
1.1 Business Governance		2.1 Business Strategy		3.1 Business Improvement		4.1 Business Operation	
<ul style="list-style-type: none"> <li>Responsibilities and policy making</li> <li>Business change governance and P3O</li> <li>Standardization policies</li> <li>Knowledge management</li> </ul>		<ul style="list-style-type: none"> <li>Enterprise vision for BIM</li> <li>Business architecture</li> <li>Agenda of strategic themes</li> <li>Portfolio of improvements</li> </ul>		<ul style="list-style-type: none"> <li>Business requirements</li> <li>Description of information service offerings</li> <li>Testing: user acceptance</li> <li>Training and documentation</li> </ul>		<ul style="list-style-type: none"> <li>User support</li> <li>Service desk</li> <li>Communication and training</li> <li>Authorization</li> </ul>	
1.2 Data Governance		2.2 Data Strategy		3.2 Data Improvement		4.2 Data Operation	
<ul style="list-style-type: none"> <li>Data exchange policies and contracts</li> <li>Data governance committee</li> <li>Master data management policies</li> <li>Identity and access policies</li> </ul>		<ul style="list-style-type: none"> <li>Information/data architecture</li> <li>Information service lifecycle</li> <li>Key Performance Indicator (KPI) models</li> <li>Master Data Management (MDM) and models</li> </ul>		<ul style="list-style-type: none"> <li>Data requirements</li> <li>Enterprise data environment</li> <li>The cost of information quality</li> <li>Automated and non-automated information</li> </ul>		<ul style="list-style-type: none"> <li>Master data management</li> <li>Implementation quality plans</li> <li>Data quality</li> <li>Operating the data environment</li> </ul>	

<sup>35</sup> The table can be downloaded via the Van Haren Publishing website.

Plan	Your solution	Do	Your solution	Check	Your solution	Act	Your solution
1.3 Service Governance		2.3 Service Strategy		3.3 Service Improvement		4.3 Service Operation	
<ul style="list-style-type: none"> <li>External executive relationships</li> <li>Sourcing policy</li> <li>Service portfolio policies</li> <li>Service integration</li> </ul>		<ul style="list-style-type: none"> <li>Service portfolio management</li> <li>Sourcing strategy</li> <li>Service architecture</li> <li>Service integration</li> </ul>		<ul style="list-style-type: none"> <li>Build a service organization</li> <li>Service requirements</li> <li>Assembly</li> <li>Service validation</li> </ul>		<ul style="list-style-type: none"> <li>Service support procedures</li> <li>Service measurement</li> <li>Service monitoring</li> <li>Operational supplier management</li> </ul>	
1.4 Technology governance		2.4 Technology Strategy		3.4 Technology Improvement		4.4 Technology Operation	
<ul style="list-style-type: none"> <li>Technology policies</li> <li>Guidance on technology-related topics</li> <li>Shared technology</li> <li>Technology driving change</li> </ul>		<ul style="list-style-type: none"> <li>Importance of the technology strategy</li> <li>Technology integration</li> <li>Information technology infrastructure</li> <li>Joint procurement</li> </ul>		<ul style="list-style-type: none"> <li>Deployment</li> <li>Non-functional requirements</li> <li>Testing: automated testing</li> <li>Technology watch</li> </ul>		<ul style="list-style-type: none"> <li>Availability</li> <li>Partner and supply chain liaison</li> <li>Suppliers</li> <li>Incident management</li> </ul>	

Use the empty cells to refer to the manner in which your enterprise refers to the activity and who is responsible for it. Blank templates in English and Dutch can be found on the DID community site. If a theme is not identified, the question is whether the subject needs attention. This question can then be put to the CIO or appropriate person.

How do you carry out the activities? There are plenty of best practices that have been made available over the years. These best practices are often developed by professionals. Many publishers such as Van Haren Publishing maintain a large library of best practices that provide information on specific topics. On the DID community website you will find an overview of the best practices published by Van Haren Publishing.

## ■ 8.5 CONSISTENCY WITH PROCESSES, PROCEDURES, TECHNICAL HANDLING

There are close relationships at an operational level between the best practices used for quality management in information technology and those well used frameworks such as ITIL, ISO and MOF that focus upon the management of the IT infrastructure. These frameworks are intended for service quality and to maintain the IT infrastructure and ensure continuity. There are various processes in service management in which information management from the demand side makes an important contribution. It is, therefore, obvious (as indicated earlier in this book) that

rather than devise new processes you should seek to establish BIM as a clear role in the existing service management processes. In the relationship between demand side (business) and IT services, the processes are organized on the basis of the type of contacts. For ITIL these are, for example, the well-known process agreements with regard to, *inter alia*, service level management, capacity management, financial management, asset and configuration management, incident management or problem management.

Agreements are made using these processes about interaction with customers, such as:

- Set standards for all contacts between customers and IT services, which apply to service level reviews and other meetings;
- Provide expert assistance to customers to help them to specify their service level requirements, for both existing and proposed services;
- Assist customers to resolve problems with service levels where the cause appears to be in the user domain, for example due to inadequate training;
- Assist in the resolution of incidents which impact service level targets, but which could not have been legislated for within the SLA;
- Provide detailed, concise and objective reports regularly to customers and customer liaison to show the achievements for each particular service;
- Regularly review service level achievements (say monthly) and SLAs (say every six months) with the senior customer managers who represent all the customers covered;
- Assist customers to evaluate and consider the impact of changes proposed by IT services, or other customers;
- Assist customers to progress major changes that are beyond the authority of the CAB, for example the setting up of an Information Center, or a new system procurement.

The information manager often plays (or should play. . .) an important role in all these operational questions as a link in the overall process. This can be as a representative of the customer, supporting the customer, meeting the demand on behalf of the customer, or working closely with the IT department (for example with the application managers). It is then sensible and practical not to set up something completely new when designing these processes, but instead to give the responsibility of information management a clear role in the existing process.

We outline the situation for two examples: the change procedure and new functional needs<sup>36</sup>;

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<sup>36</sup> See ISO/IEC/IEEE 15288:2015, Systems and software engineering — System life cycle processes; and ISO/IEC/IEEE 15289:2019, Systems and software engineering — Content of life-cycle information items (documentation)

**Example 1: modification procedure**

It is important that an enterprise establishes a change procedure and subsequently makes consistent agreements about:

- Who is involved in the process and what roles, tasks, responsibilities and powers they have;
- Who has access to reports with regard to the implementation of the change process;
- The integration with the DID improvement concept;
- The requirement to regularly evaluate the change procedure and the enterprise in its own organization (for example twice a year) and improve it where necessary.

BIM plays a key role in preparing, implementing and verifying change proposals. After all, BIM determines the requirements together with the users' needs, requirements and priorities, and provides the budget for the changes. The system owner, together with the information manager, assesses the business case based on the cost of the change, the maintenance costs, the benefits, impacts and risks. This allows the system owner to make a responsible decision about the feasibility of the change proposal.

**Example 2: functional changes**

The change initiative can also come from BIM. For example, when they identify issues related to data integrity. For example, if users "abuse" screen fields by using them for purposes for which they were not designed. Such issues will lead to changes in the software.

If the change proposal is feasible, it will be submitted to the release consultation for implementation. From this moment on, we will no longer look at changes per change, but at all changes of a future release. Many organizations have a Change Advisory Board (CAB). The interests of the user organization always come first in the decisions.

In the case of larger projects, it is useful to set up a separate Change Advisory Board within information management, specifically for project-related technical and functional changes. Just as on the IT side where changes are discussed in a CAB, the same applies to information management.

## ■ 8.6 EXAMPLE: SINGLE POINT OF CONTACT (SPOC-IM)

### 8.6.1 Interaction with customers: user support for business information management (BIM)

Perhaps the most important part of BIM is the interaction with customers.

BIM should consider the operational user support issues by creating a customer liaison function. As with all services, this means managing, collecting and handling internal customer issues and questions.

At the operational level, questions regarding the availability of new or changed services and all supporting BIM components (training, manuals, etc.) are the most common.

Experience has shown that user enquiries are largely related to security measures, the perceived quality and availability of services, and problems related to processing and retrieving information. After all, when IT-driven information services are used, questions inevitably arise from users. These questions range from how to obtain the required authorizations, through to the need for instruction and improvements that are seen as necessary to new services.

In most enterprises, this is a task that is often entrusted to the so-called key users of applications and to the information managers. These key users and BIM will have direct contact with the users and they will be required to have specialist knowledge of the information services and applications. They must also have a good knowledge of business processes. In order to better streamline contacts and requests, especially in larger enterprises, it is preferable to set up a single point of contact at operational level for BIM. This is often called SPOC-IM (single point of contact -information management), but that can vary and the important issue is to be certain that everyone knows the name used and the purpose of the role. As with all role descriptions, it is more important that EVERYONE in the enterprise understands the role rather than to argue about the actual job title.

Why would a user need a SPOC-IM?

- ✓ One stop shop for all issues and only one contact needed to take down all of the necessary information;
- ✓ Clarity about processes and handling;
- ✓ A contact person takes responsibility and ensures coordination and distribution if several specialists or decision-makers are needed;
- ✓ A fast track facility for emergencies;
- ✓ An understanding of users' interest and need for support.

The mechanism that can be used to create and manage interaction is the long-standing front-back office principle, whereby the front office is the single point of contact (SPOC) that aims to regulate the relationship between internal customer and internal expert services (eg BIM) effectively, efficiently and practically.

A report (or call) to SPOC-IM can be in the form of an information request, a wish, a complaint, an assignment, or an incident report (disruption); in short, everything that has to do with the provision of information.

SPOC-IM takes over the customer's request and modifies it for internal information services and solutions that are specified in the processes within the back office.

### 8.6.2 Analysis of “user support in business operation” using DID model

User support as an activity can be found in the DID model in Business operation: the “operation” is the responsibility for monitoring effectiveness and identifying any problems.

The first step in this case is the analysis. The question is *have we adequately organized user support at the operational level?* The analysis focuses on being able to deal with questions quickly and effectively and to resolve them in a standardized and efficient manner, or if there is a need to forward them to other departments within the enterprise.

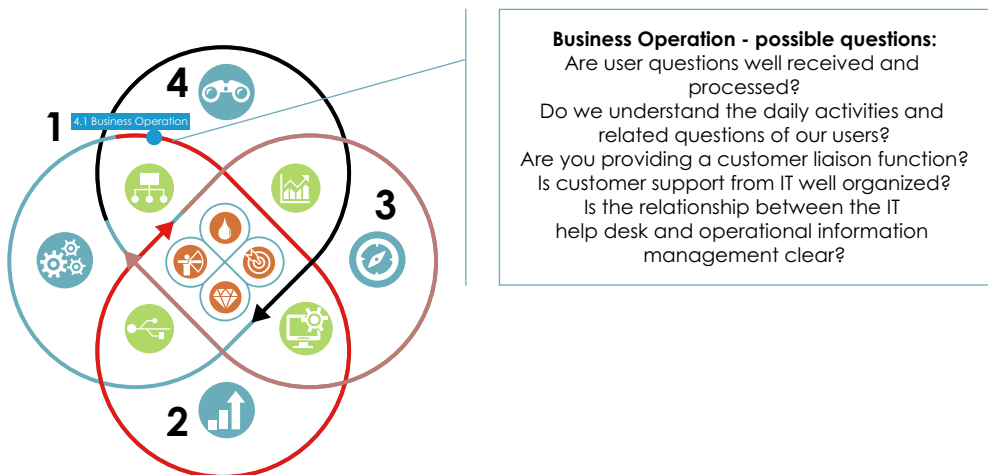


Figure 8.5 Analysis of user support and SPOC-IM.

User support and SPOC-IM are focused on business operation. With regard to BIM, it is possible to build a step change for improvement in efficiency by implementing a SPOC-IM. It is necessary to check whether issues have been sufficiently answered at the operational level and then consider what this means in the other domains of the DID model.

Analysis goes clockwise around the DID model. Initially the focus is on whether the specific topic on the DID model has been identified. If not, we must take a step back to assess which principles should be used to ensure that all issues have been identified. Then we enter the information in the column of business improvement. Questions we should ask ourselves (starting at 1 in Figure 8.5) are:

1. Do we know which services we offer (service offerings)? Is the service department correctly instantiated? How does the SPOC-IM interact with the IT help desk (DID Operation domain)?
2. Is there a quality system in place for continuous improvement? Are improvement plans in development or ready to be deployed (DID Improvement domain)?
3. Is the strategy and its related actions on how to deal with business operation concerning information management, specifically explicit in terms of user support? Are levels of ambitions or a roadmap available and supported by management (DID Strategy domain)?
4. Do we understand the policy guidelines concerning business support? Is there policy and governance on good information service management, information processing service level management and contracting? What are guidelines when flawed information design will cause information issues and incidents (DID Governance domain)?

### 8.6.3 Formulating ambitions and operations for a SPOC-IM

After analysis, we must formulate the principles for a SPOC-IM. What is SPOC-IM for, what services does it offer and how will a SPOC-IM be organized? And can we find a better name for the role? If it turns out that we cannot fully answer such questions, we still have to take steps to clarify the principles in each DID "domain" for departmental user support, starting in the Governance domain. We now follow the borderline of each domain counterclockwise to go from "Governance", to "Strategy", to "Improvement" to "Operations".

In each "domain" the principles and guidelines for business operations/user support should be formulated.

The design of SPOC-IM begins with the governance and strategic principles. As we have said, front office to back office principles are the Bible; however, that should not restrict choices regarding the ambitions of SPOC-IM. The mission and goals of SPOC-IM must be carefully formulated and should be realistic.

A mission statement needs to be simple, short and easy to understand (and not stolen from the internet).

Here are some questions to help you formulate the mission:

- What are we good at?
- What is our reason for existence?
- Who are our commissioners, users and customers?
- Which competences and capacities are unique to us?

The mission should be described in goal statements. The goals should concern the quality of service and be about creating an efficient and effective operating organization. These goals set a framework (or blueprint) for the final design of SPOC-IM. The goals will be used to populate a strategic plan that will focus on necessary resources (people and capabilities). Of course, the mission of SPOC-IM should fit with the overall mission and goals of the enterprise. It is of little value to have a SPOC-IM which focuses on customer intimacy when the enterprise is only interested in operational excellence. The best way to get a grip on the SPOC is to consider it as a concept consisting of a service site, call center functionality (telephone, email, chat) and/or physical contact point. This concept is known as a universal service desk (USD). If the enterprise already has an IT help desk and/or a generic service desk, it is obvious that the SPOC-IM is the second line for these central points, which is a choice that is generally made by a number of enterprises. This means that customers of the SPOC-IM are users in the enterprise or they are "other" service desks that cannot handle the issues/reports and need to forward them to SPOC-IM.

Tasks that are generally undertaken by SPOC-IM are:

- Acting as a discussion partner and source of knowledge for the business in relation to the information systems assigned. This also includes insight into the functionalities of standard packages that are used.
- Performing regular management tasks and thus ensuring that the consistency, continuity and timeliness of management documentation of the assigned systems is guaranteed.
- Guaranteeing the quality and continuity of the information provision.
- Providing incident management support, with specific attention to third-line support, and contributing to problem management.
- Taking care of version management, accepting and managing custom/new information issues and supporting the business in putting these into use.
- Ensuring information system security issues are properly handled so that reliability is guaranteed and systems are kept up-to-date.

A SPOC-IM should take an active part in operations not merely handling notifications and requests. A proactive form of communication is desirable. The SPOC-IM will have to inform users about, among other things, future releases, release dates, expected changes to information service provision or to its organization. New versions of applications should be announced in advance, so that surprises are avoided as much as possible. With major interventions, such as

switching to entirely new information provision (for example a new application), it is useful to inform users about the progress of the project via newsletters or a special temporary information number. Everyone in the user organization must know when elements of the application will be put into use, or when they may be involved in testing, etc.

A generic SPOC comprises three levels of service: service via intranet, service by telephone email and chat, or physical service. The manner in which this is organized within an enterprise depends on the business undertaken. A small enterprise only needs a central number in the department with a few key users, but larger enterprises will need to think carefully in advance about the design based on factors such as the range of products and services that are supported, the desired level of service to be offered, the level of cost reduction that may be required, the staffing levels needed in the back office, or the provision of certain types of management information.

Figure 8.6 is a schematic of a generic SPOC-IM.

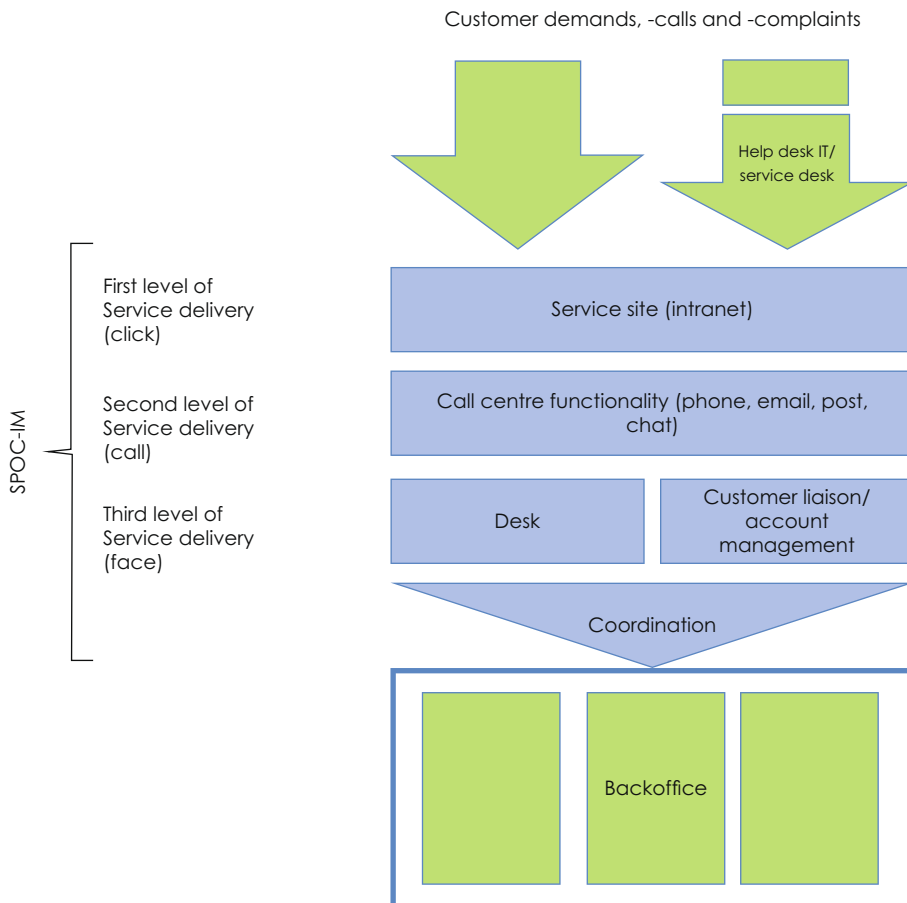


Figure 8.6 Single point of contact for information management

In the first situation, a large number of the questions can be dealt with via the ICT help desk or a central service desk. In that case, the applications must be standardized services with associated handling procedures. BIM must ensure that the procedures and instructions on the help desk or central service desk are adequate and up-to-date. In cases where the question cannot be recognized as standard, requires much more processing time or has already been immediately identified as a notification of a second category (and must therefore always be continued), the notification must be forwarded to the responsible BIM department<sup>37</sup>.

## ■ 8.7 CONCLUSION

In this chapter we have put theory in practice and explored how you can use the DID model in your enterprise. To adapt the model to your own organization you should translate the different DID themes in the activities, policies and departments that have been implemented. Of course, not each subject is applicable or necessary. Some generic principles concerning competences and positions of the roles will help you to put lateral and hierarchical coordination and control in place. Finally we have considered the four main approaches to using DID for analyzing and developing information management topics.

In addition, examples on user support in business operations has been provided to show how you can “read” the DID model.

In the following chapters three more examples will describe the ways in which you can use DID to put together a strategy for a digital enterprise, develop business services and kick-start business information management.

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<sup>37</sup> The reader wishing to follow the detailed instructions for creating a SPOC-IM should refer to the book *Universal Service Desk* by Brian Johnson and Léon-Paul de Rouw.



# 9

## USING DID TO DEVELOP A DIGITAL STRATEGY

### ■ 9.1 INTRODUCTION

A digital enterprise has, in essence, merged the primary business processes with IT. Who would ever have thought that a taxi ride (Uber) would become a digital service? Or an overnight stay (Airbnb)? However, there is rarely a digital transformation that begins with a greenfield situation.

To understand what opportunities can be found in order to become a digital enterprise, a snapshot of “*where are you now*” in relation to the digital aspirations of your enterprise will help. DID can be used to focus new ideas and technologies to help the business achieve goals more rapidly and efficiently.

The improvements in information and communication technology in the last decade led to what is now often called digital transformation. Digital transformation encompasses the profound changes taking place in organizations and industries through the use of these digital technologies.

Digital transformation is used to label how organizations work and function and are structured because of improved business processes, new customer service approaches and new business models. This is achieved through the use of new digital technologies that are summarized under the acronym SMACIT. SMACIT refers to digital technology developments that make digital transformation possible: “SOCIAL, MOBILE, ANALYTICS, CLOUD, INTERNET OF THINGS”.<sup>38</sup>

Digital transformation strategies are coming from a business centric perspective. These strategies focus on the transformation of products, processes and organization aspects owing to new technologies. Digital transformation strategies include next to changes in processes also changes to and implications for products, services and business models as a whole.<sup>39</sup>

Navigating the DID model will help translate your business goals into digital ambitions and assist in identifying a roadmap in a practical (non-technical) manner. You gain insight into the steps you can take to transform your enterprise.

The philosophy behind using DID is that the full potential of digital innovation can only be achieved if it is successfully embedded within your business model, the enterprise architecture and the operating model of your enterprise. Navigating the framework will provide insight into the opportunities for digital innovation and create a digital profile of your enterprise.

The focus of every digital innovation should be “business first”. Business-first approaches require insight in the enterprise and the characteristics of its processes.

There is also the requirement to create a balance between the enterprise mission and the capabilities needed to achieve these goals. The business model within DID helps to gain insight in the challenges an enterprise faces and is the first step in designing a strategy for digital innovation.

The approach (or way of thinking) is to discover which elements or resources are in good shape and which are not. Then to make reasoned arguments about what needs to be done, what should be done and what are the necessary actions to take.

DID assists in the assessment of what you need to focus upon in order to help your enterprise prosper, or provide better services, or at the basic level simply decide how IT can really help create a better digital future. Further, these elements form the underpinning structure for the support of the business needs and values that are fundamental to fulfilling the business mission, and the capabilities needed to do so.

## ■ 9.2 STARTING THE ANALYSIS

### 9.2.1 Spotting trends and developments (step 1)

By now you should be aware that clockwise navigation of the model, while a challenge because of the ethereal nature of planning and strategy, is essential for the proper business analysis of information management and transformative programmes.

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38 Digital transformation has many definitions. Vial presents a structured overview of some of the different definitions, see G. Vial, (2019). “Understanding digital transformation: A review and a research agenda.” *Journal of Strategic Information Systems* 28(2): 118-144.

39 C. Matt, T. Hess and A. Benlian, Digital Transformation Strategies, in: *Business Information Systems* 57 (5): p. 330-343, Springer 2015.

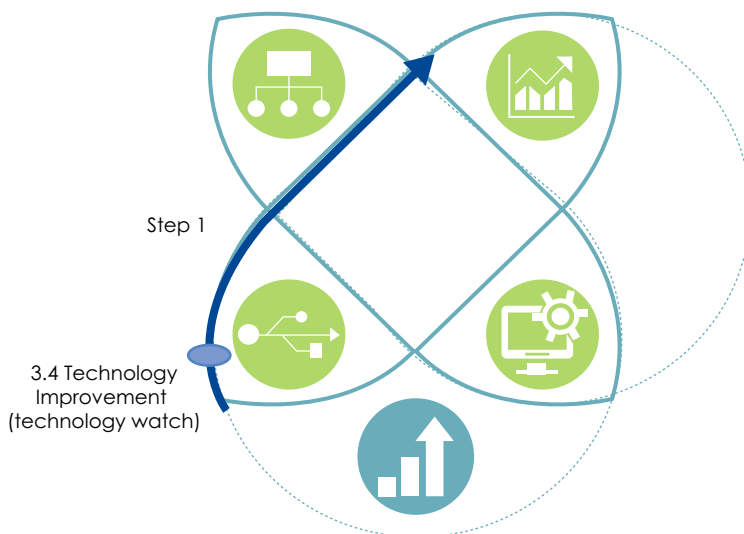
Counterclockwise navigation of the model (beginning in the Governance domain to the Strategy domain etc. as we have shown in Chapter 2) is easier to understand as it follows the generic internal improvement cycle of Plan. Do, Check, Act.

Spotting trends initially requires both movements. To carry out the analysis, you navigate clockwise through the model from Governance to Strategy. At the strategic level, planning should be in the light of trends and developments, if it is not then we suggest you find planners that are awake. Once enlightened by the visionaries in your planning team, you can then reverse the motion in the model and begin following Plan-Do-Check-Act once more (the counterclockwise navigation in the model).

The DID model can be used in many different ways and here we want to use the model to identify the opportunities to become a digital enterprise. Thus, a logical place to begin would be “technology watch” (see Chapter 6 Technology improvement).

The analysis begins with the simple dot on a paper picture of the DID model (or these days a pen allowing you to mark your computer screen) and the creation of your continuous model for improvement. And how does the DID model illustrate continuous improvement?

Place a finger or a pencil or anything that points anywhere on the model and you will see how it works (Figure 9.1).



**Figure 9.1** Step 1 - the analysis begins with technology watch in the “Improvement domain”

Your goal is first to identify the outcome (see Sub-section 9.2.4) of transformation (that is what the business needs and values and is directly related to benefit). Bear in mind that an output is often a delivery mechanism or digital service, or even a product that enables operational activities to perform the necessary work that contributes to successful outcomes. However, it is important to note that an application or service is not an output; mistakes are frequently made in thinking about digital transformation when it is assumed that the shiny new application which counts beans is the same thing as the business requirement to manage inventory "just-in-time". . .

Blockchain, big data and gadgets, might be outputs - who gets to decide what the added value for the business could be? Could the application of a new development help the enterprise to be even more effective and efficient? Perhaps a development might result in a new value proposition or a new benefit model? In part at least, you should explore the market for novel ideas, gadgets and new technologies that might be useful to the enterprise. It is up to those responsible (not necessarily you....) to analyze what the potential benefit would be in terms of new value propositions or impact (positive or negative) on the current benefit model, or maybe even an opportunity for a brand-new benefit model.

Market analysis, benchmarking and research play a significant role in the portfolio management process. Enterprise portfolio components are driven by such considerations as market opportunity, platform development, support functions, regulatory obligations or operational requirements. Input from the marketing function is required for some of the strategic decisions that dictate the criteria to be used in selecting and managing components. For a nonprofit enterprise, a similar analysis of value-for-money or value to organizational vision will be needed for component selection and management. This is characterized by a transition from divergent to convergent thinking; from considering the issues that face the enterprise to defining the themes for the activity that will deal with those issues<sup>40</sup>.

Consumers of business services whether IT-driven or steam-driven are often the source of ideas for improvement because they see opportunities, which may be developments and trends; consumers are not the sole source of trend spotting of course, as this function is required in all parts of the organization - including the Board.

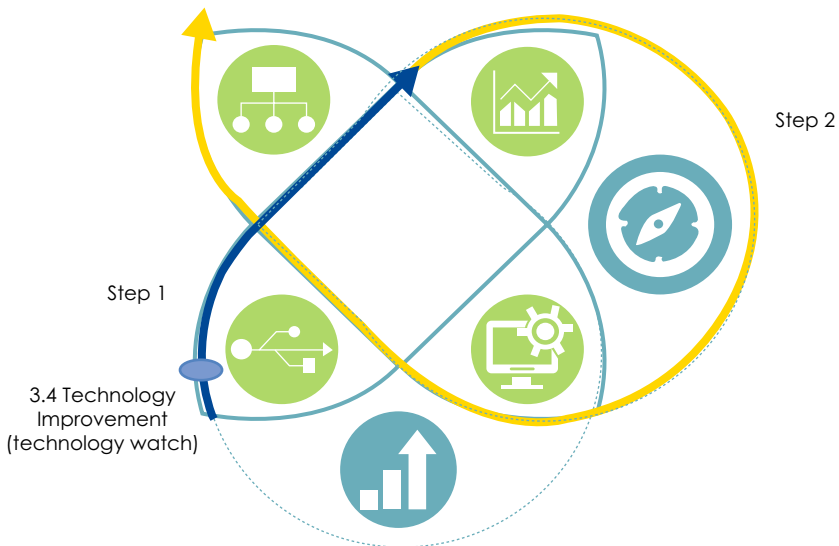
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<sup>40</sup> Use cases inspire. Apart from visiting colleagues or conducting interviews you should read some interesting examples like for example: A. Smith, H. and R. T. Watson (2019). "Digital Transformation at Carestream Health." MIS Quarterly Executive 18(1) and S. Chaniyas et al. (2019). "Digital transformation strategy making in pre-digital organizations: The case of a financial services provider." Journal of Strategic Information Systems 28(1): 17-33. Next to that you will find interesting research from Gartner, for example the case *Monsanto Company Digital transformation* (2018).

Many enterprises will survive, perhaps even prosper without investment, though it should seem clear that, like houses, a bit of redecorating now and again rarely goes amiss.

### 9.2.2 Identifying strategic themes (step 2)

The enterprise needs to identify the strategic themes that arise from examination of developments and trends. Board-level activities in the Governance phase are focused on identifying strategic themes and determining what will shape the future direction of the enterprise (see Figure 9.2).



**Figure 9.2** Step 2 - analyze strategic themes that arise from examination of developments and trends

Themes can be regarded as the “strategy success factors” – the things which the enterprise must get right if it is to achieve its objectives.

They are the areas of activity that will make the most important contributions to supporting or promoting the business, management or organizational changes and improvements sought by the enterprise in the near future.

A theme is a grouping of developments and other changes that will help to take the enterprise forward in pursuit of its business strategy and objectives.

A theme may focus on particular strategic strands such as e-business, but if it does it will also recognize other strands, such as changes in the enterprise, business processes, responsibilities, working methods and procedures, management and technical policies, administrative support, external relationships and so on. Even a theme that is primarily focused on IT will touch on other strands in the enterprise; IT can never be considered in isolation from the business.

Digital transformation relates to business strategy<sup>41</sup>:

- ✓ The scope of digital strategies (so the consequences blur the organizational boundaries and make organizations part of ecosystems):
  - Which analytical approaches go beyond the extended firm view and help me to look outside the enterprise (outside-in)?
  - What are new opportunities for value creation based on the DID drivers: Mission, Vision, Value and Capacity?
- ✓ The scale of digital strategies (the emergence of platforms that make organizations ever-increasingly part of a network):
  - What is the added value of platforms, what typology, how should they be managed and which governance structures foster the scope?
  - How do they contribute to innovation and broadening the scope?
- ✓ The speed of digital strategies:
  - Which new services are developed and offered, and what is the speed of decision-making?
  - How do we implement and present new innovative products and services?
- ✓ The sources of value creation based on digital strategies (what are the sources of value creation, for example data, networks and digital architectures):
  - What and how many resources do we have available or can we deploy (capabilities)?
  - What capabilities do we need?

A theme in the strategy will be a significant topic, related to strategic change that is of concern to the business management. It is a topic that business management will wish to keep under review for the foreseeable future, as part of the task of monitoring the performance of the business and the achievement of its business objectives. The reviewing of a theme will be the task of those responsible for managing opportunities and risks. And those responsible for policy and compliance must take responsibility for validation.

When it comes to the strategy, the themes may be expressed in terms of significant changes or developments required in various areas:

- High-level results, such as for government;
- Policy outcomes;
- External communications and interworking;
- Information sharing;
- "Virtual" services;
- New ways of working;
- Managing the information resource of the enterprise;

41 See also Ahmed Bounfour, *Digital Futures, Digital Transformation; from lean production to acceluction*, CIGREF and Springer, 2016.

- Sourcing and procurement issues;
- Major operational information systems;
- IT support for redesigned business processes;
- Improved services.

It should be possible to express the essence of the strategy in no more than half a dozen thoughtful themes. The description of each theme will include:

- The reason why the theme is strategically important;
- The strategic issues that the theme begins to address;
- The main changes or developments which the enterprise will expect to achieve through the theme.

Good governance will be key to managing the progress of developments and themes.

### 9.2.3 Governance (step 3)

When it comes to discussing digital transformation the central question for Board members is often “How to be highly effective and compliant at the same time, versus how to take full advantage of new developments while mitigating risks?” And the answer is to think about the enterprise holistically, rather than as piecemeal, silo-driven exercises. The role of Governance here should be an enabling role, balancing opportunity and risk in a way that benefits the enterprise.

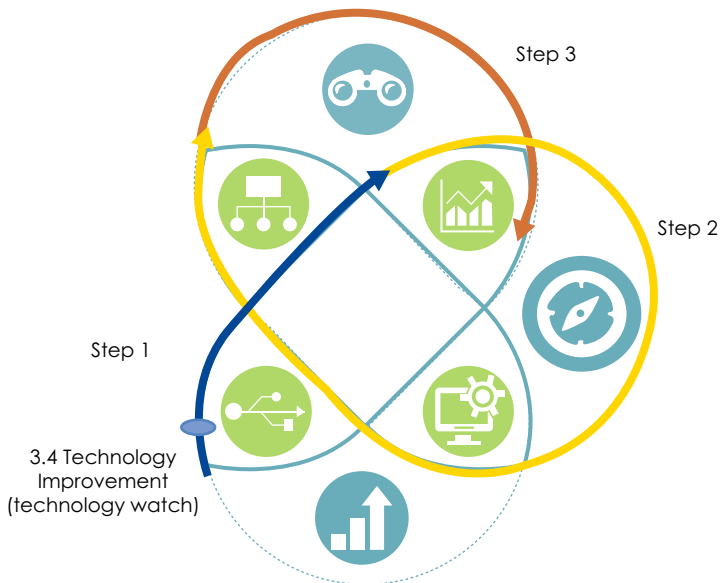


Figure 9.3 Step 3 - find principles on governance and policy

Governance and policy, therefore, are integral to management oversight of any overarching enterprise-wide initiatives. Executive decisions will lead to

strategic investment, whereas failure to interest executives and to elicit support for improvements will lead to changes being constrained, of limited use and valued only at the operational level.

### 9.2.4 Outcome and output

The Governance sector is primarily (nearly exclusively) focused on business outcome; outputs might be hurled into the discussion by the CIO or those thinking the iPhone is the outcome, but the Mission and Capability of the enterprise to deliver business outcomes is the discussion point when considering business Need and Value. Of course, if discussions also conclude that something is not valued, then it is certainly unlikely to be needed. . .

The most important element with regard to outcome is, therefore, the enterprise policy and a clear understanding of how that policy will be enforced to ensure compliance. The essential outcome of Governance is effectiveness and efficiency in the process of validating outcomes (and to an extent, outputs, i.e. improvements or Request for Comments (RFCs)<sup>42</sup>, that in themselves should arise from Need and Value, and most likely follow on from some form of analysis of developments and trends). Necessary developments will inevitably impact the mission of the business and will almost certainly require a reassessment of the enterprise capabilities. Most likely this will involve evaluating the Operation domain in general. The pivotal role of policy and compliance in the center of the Governance domain cannot be underestimated. As mentioned above, it will be necessary to establish a means of ensuring (and proving) compliance; compliance may well be mandatory (many external government or financial bodies will certainly have mandatory activities) and it may also be required from an internal perspective. In some cases external auditors will need to be employed.

Output is largely not an issue in Governance (no one is likely to care if the output is a service, a product or an app, or if it is built in-house or externally); digital transformation will be the Governance issue but the executive focus is never going to be on the specifics of IT. This also means that the focus on technology will be somewhat less than perfunctory; someone will throw in a few buzz words but the lead will be taken by the senior responsible owner of any programme (or by their proxy). The Board or governing council has little time for even thinking about data as an asset, never mind a lump of metal, plastic and flashing lights (that emit a “ping”. . .). Governance with regard to digital transformation means defining the mission for the future. If that is considered “the output”, then so be it. The mission summarizes the desired future for the enterprise; it expresses “where we want to

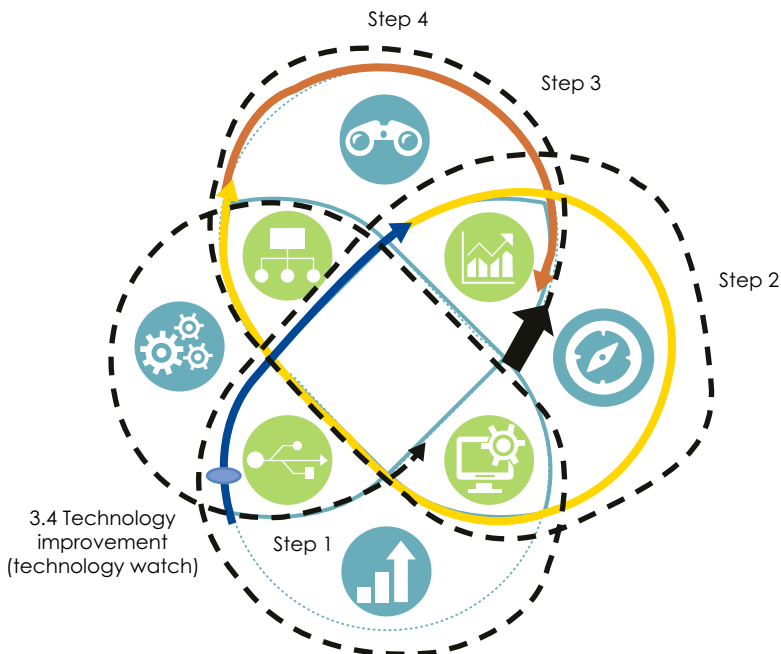
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<sup>42</sup> Request for Comment: Request for Comment, description and use of the protocols and other agreements that define the internet. The New York Times How the Internet Got Its Rules by Stephen D. Crocker, April 6, 2009.

be" in relation to the business success of the enterprise. It indicates the areas of significant change and the desired outcome of improvements and developments.

### 9.2.5 Strategy for digital "ambitions" (step 4)

Strategy is the means by which an equilibrium is reached between the opposing dynamics: "How to be both resilient *and* agile and how to maintain the *status quo* while attempting to adapt to new challenges (business, information/data, applications/services and technology)" - usually through investing in innovative business or IT practices, or technologies. The strategic themes described at Governance/Board level must now be translated into an action plan (Figure 9.4).



**Figure 9.4** Step 4 - navigating counterclockwise following the PDCA cycle; strategic themes described at Governance/Board level are translated

Following on from deliberations in Governance, creating a strategy means clarifying, creating and refining the strategic vision, strategic issues, strategic themes and the candidate programmes and/or projects that will go forward with approval. The business outcomes are the focus, though attention must be paid to the likely outputs because leaving these issues to Improvement would be leaving things late and inviting scope creep and cost. The strategic vision expresses the putative future for the enterprise, its desired position in relation to its partner and supply chain ecosystem and the outcomes it wishes to bring about, both within the enterprise and in its dealings with customers and information chain partners.

The strategic vision can be seen as a blueprint for improvement. It might well focus on a number of related (and sometimes unrelated) changes that are managed in the Improvement domain and should be fundamentally focused on outcomes, which are set in policies defined in Governance. Outcomes are the changes that the enterprise or LoB aims to make in order to improve the benefits for the good of the enterprise and/or its customers or partners. Government examples might include a healthier population, or improved access to education, perhaps a reduction in crime or in the cost of public administration. Information services will be essential in each of these themes, for example in the collection and distribution of healthcare information (which will be subject to privacy regulations...), the creation of accessible websites and distribution of information, or collection of financial data for action.

In essence describing the strategy and its objectives and requirements provides a roadmap for improvement. An enterprise-wide digital information services (IS) strategy can be defined as comprising the information, business information services and most of the technology elements of the enterprise business. In terms of Governance, imperatives, constraints and policies will be set by Governance and will require compliance, whilst Strategy will set metrics that can be used to demonstrate achievement.

Necessary strategic developments will be in line with the business mission and will almost certainly require a reassessment of the enterprise capabilities. The pivotal role of architecture and portfolio in the center of the Strategy domain cannot be underestimated. It will be necessary to establish a means of demonstrating compliance with policy directives

The services resulting from developing new or improved digital services might well be subject to contractual agreements; contracts with external parties will be established at Board level and the issue of compliance will be central.

In most enterprises, each LoB will need to develop a digital information services strategy that supports its particular digital information needs within the information services framework that is defined enterprise-wide. The strategy will most likely contain, *inter alia*, finance, HR and business information elements. Generic information services such as libraries, a records center, or statistical services will depend on the enterprise; some will be provided by external parties, some by internal suppliers.

### **Strategic issues**

All enterprises will differ in terms of the strategic issues to which they must respond, there is no "one size fits all". An issue is a challenge facing the enterprise that requires action. It may be regarded as a problem or an opportunity. Issues that are critical to

the enterprise high-level plans for realizing transformation outcomes, or that could jeopardize its business, are strategic issues.

The range of relevant issues will depend on individual circumstances, although many enterprises will identify common elements. There are the issues of roles and responsibilities that need to be identified (and in place) to enable improvements and, of course, to deliver outcomes and outputs as needed. Generally speaking, there are four categories of issue that will require someone, somewhere to play their role:

- **Business:** how the enterprise interacts with its customers, information chain partners and its suppliers and supply chains, how it provides its digital services and improves efficiency or revenue by meeting rising customer/citizen expectations;
- **Political:** decision-making, hierarchies, policy issues, rationalization of services;
- **Cultural:** values, attitudes, competences and relationships, such as the need to change the existing behavior of staff and customers in order to work in new ways;
- **Technical:** IT, business information management and communication concerns, e.g. requirements for improved security on information provided and shared electronically, digital delivery, cloud common standards for information exchange and interoperation.

A critical success factor for a strategy is being able to demonstrate that a key issue has been addressed in a way that is clear and can be measured.

Since the strategic themes, if correctly identified, will address the strategic issues facing the enterprise, the realization of these themes will lead the enterprise in the right direction. The vision for the future can then be expressed in terms of the outcome of pursuing the themes of the strategy. The vision statement can be constructed by considering what the situation will be as a result of progressing each of the themes in the strategy. In this case, the vision statement will be produced after the themes have been defined and agreed with Governance.

### 9.2.6 Business case for the strategy

The business case for the strategy will be a justification for the strategy in business terms, taking into account, in broad terms, the financial implications as well as relevant qualitative issues. For example, it will seek to demonstrate that:

- The themes for the strategy have been correctly identified (that is, they are indeed "strategic" for the enterprise, and there are no others which are more important);
- The strategy adequately addresses the issues confronting the enterprise (insofar as these issues are amenable to business change as the way forward);
- The business assumptions on which the strategy is based are reasonable;
- The strategy adopts an acceptable position in relation to the risk and uncertainty with which it must deal;

- The benefits that will be derived from the realization of the strategy are in line with wider business objectives;
- The strategy is achievable and politically acceptable (for example, to the stakeholders in the enterprise);
- The mechanisms and procedures for monitoring and progressing the strategy within the enterprise will be effective;
- The development of individual business cases for programmes and projects to realize the strategy will focus on the need to demonstrate business and strategic "fit" with the overall direction of the business strategy.

It is unlikely that the business case for the strategy will be supported by detailed financial analysis. It may not be meaningful to assess the "value-for-money of the strategy" since there will not always be detailed information about money in the strategy. The business case for the strategy provides a defined context for the individual business change initiatives through which the strategy will be progressed.

Once you have the strategy in place, you can return to the improvement cycle and navigate counterclockwise to begin executing the strategy (or executing those that thought of it depending on how good the strategy seems to be!).

The DID framework can help you to provide guidelines for digital transformation by presenting a well-balanced benefit/business model, fitted in a supporting enterprise architecture and supported by a digitization-ready operating model.

# 10.

# DEVELOPING BUSINESS SERVICES, SUPPORTED BY DID

## ■ 10.1 INTRODUCTION

When it comes to development of business services, there are many methods that will help you with managing projects, or systems analysis or coding, but not so many that will help you design your information needs effectively in relation to business needs. In the information management domain DID exists uniquely to help you with governing and controlling the information services from a business perspective.

Let's start with another question (and answer). What is the purpose of Improvement? Essentially the purpose is to improve the use of the digital services or to improve "the customer experience" of using digital services.

Someone has a responsibility to maintain the position of the business use of the information services (or would you prefer that useless services remain useless?) and should be responsible for overall quality of the delivery. Available resources and the activities they can undertake, should be their pivotal role (which is, in turn, dependent on available competences and capabilities that would be identified in HR records of skills and competences).

The question for those working in the Improvement domain is how to keep improving while retaining a well-balanced enterprise architecture?

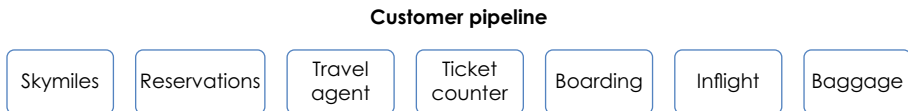
The essential element of Improvement is "design and realization" in the context of strategic outcomes and therefore to a very large extent, the required outputs, i.e. specific improvements, products or services. Strategic outcomes should be initiated from Need and Value, and most likely followed on from some form of analysis of developments and trends.

In the DID model, the central tenet of improvement is understanding the requirements and the consequences of new or improved products/digital services. In turn, the underlying activities contribute to the overall design and realization of digital services for the enterprise that fulfill the business mission. Necessary developments

will inevitably impact the business mission and will almost certainly require a reassessment of the enterprise capabilities.

## ■ 10.2 WHAT IS A BUSINESS SERVICE?

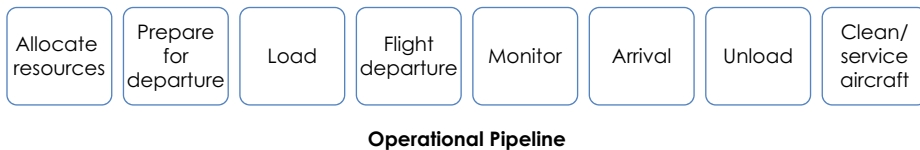
Think about any air carrier, British Airways, United, American, EasyJet. Now define the services. Depending on your perspective, it could be taking people from point A to point B. Another person might add the word "safely". Someone else might point out that buying a ticket is part of the services. What about on-board catering? We have not even started to discuss the services that begin at the airport such as checking-in baggage. Figure 10.1 illustrates a simplified example of what are (most of) the overall services of Mythical Airlines Limited (or pretty much any airline you can think of). The enterprise (that is, the owner of the airline) is in it however, to make money, not necessarily to provide the best services to passengers. Ask Ryanair....



**Figure 10.1** Airline customer services

If you are starting up an airline, what services will support the customer? To keep costs down and become efficient, most aviation companies use IT to the absolute maximum automating everything they can. The customer experience is largely going to be as digital as is possible. And what are the basic digital services you will need to operate?

The operational pipeline is also going to be digital (as shown in Figure 10.2).



**Figure 10.2** Operational pipeline for an airline

The currency of the enterprise (other than money....) is information, data. Who is flying? Where to? With or without luggage? Are they on a "no fly" list? Do they have connecting flights? Has a ticket been issued? Do we have an aircraft available or do we need to lease one? And as shown in Figure 10.3, data might be held in many different databases and locations (and in the case of airline partnerships that complexity is worsened) as well as by organizations such as Air Traffic Control and SITA that provides various services to the industry. An airline has many services and all of them are digital or rely on digital services for support; you will need to provide access for your customers.

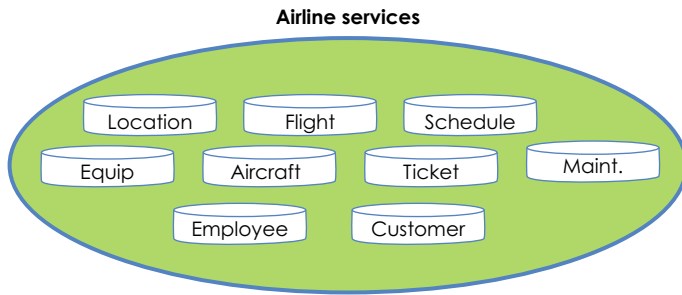


Figure 10.3 Airline digital services

Think about how many IT applications are running that are inter-dependent, allowing the airline to provide digital services (as also indicated in Figure 10.3) and consider the enormous quantities of information being collected, processed, stored, retrieved, manipulated, secured and shared. Then join all of these components together and you arrive at a very big, very complex picture shown in Figure 10.4; the message being that the volume of data flowing through a large enterprise is staggering.

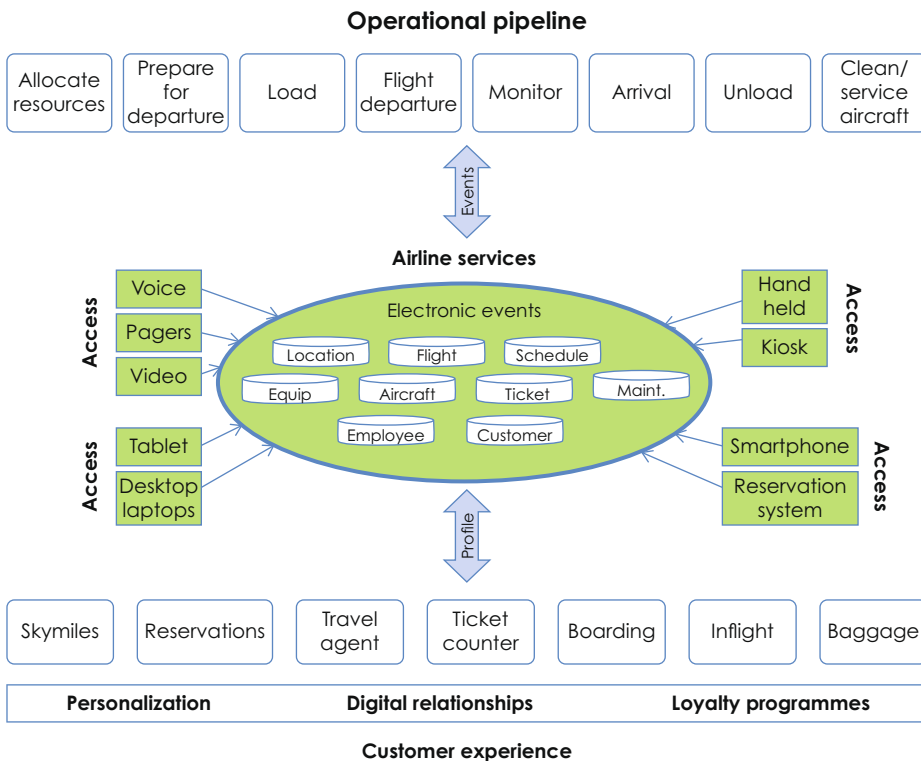


Figure 10.4 Mythical Airlines Ltd<sup>43</sup>

43 Airline applications and flows figure based on drawing by P. Weill and J.W. Ross, *IT Governance, how top performers manage IT decisions rights for superior results*, Harvard Business School Press, Boston, Massachusetts 2004.

Now, the 64,000 dollar question, which of the services we have mentioned are business services and which are IT? The answer is that **all** are business services that depend on IT, and the "IT services" and organizational units support the lines of business of the air carrier.

## ■ 10.3 SERVICE DEFINITION

A service from a delivery viewpoint, can be defined from two perspectives: the demand side and the supply side. Although the perspectives differ, the outcomes should match. Suppliers will often focus on the development and the maintenance of the output that is asked for. Business (or demand as it is called) is focusing in attaining the outcome and all parties anticipate that output should be predicated on those outcomes. This is not an easy thing to do but primarily through a lack of attention, suppliers sometimes forget (or perhaps do not know how) to define services from the perspective of customer needs and responsibility. In the end this can lead to mistrust, misunderstanding, and the rise of "Shadow IT" where customers "find" IT services on the web and simply download them (raising security issues for incumbent suppliers of IT...). Ultimately this can result in outsourcing if it becomes apparent to the business that the money spent on IT does not seem to deliver the expected value.

It is worthwhile amplifying the issues regarding definitions of "services" to bring in an IT perspective.

Some of the key points about a service (or IT-driven service) are:

- It can range from access to a single application (such as a general ledger system) to a complex set of facilities including many applications (providing State Pensions or Social Services).
- It can be provided from a central system or, as is the case with office automation, could be spread across a number of hardware and software platforms.
- Enterprise IT services are supported by the IT infrastructure which is comprised of hardware, software, and computer-related communications.

A final "definitive" definition will always be hard to find. Thus we prefer an approach where we define services as having key characteristics, rather than definitive statements that someone, somewhere will nit-pick (in the way we just cannot resist...).

- Services may not be entirely tangible, for example "Office Cleaning Services". Services often occur in a combination of assets that have a tangible nature, such as cleaning. The cleaner uses resources, planning systems and machines. But the result of the services is a clean environment, visible but hard to define.
- Services comprise a series of activities. For example, the request and delivery of procurement items. The process, therefore, consists of a series of operations in

which the final product is the delivery of the purchased product. The quality is evaluated on the basis of both the quality of the delivered product, as well as on the manner in which the process is completed (the purchase of services).

- Services are often produced and consumed directly, such as the handling of a request for information or reservations.
- The customer may, to a greater or lesser extent, participate in the provision of services, such as creating access cards that require a photo and the application and specification of an office move to a new geographic location.
- And finally, services are most often not “pure IT” but often heavily IT-driven. Market traders use IT products such as Quicken to account for what they buy and sell; their business might be selling fruit, but they use IT to place orders, IT to produce accounts and they may also have a website!

And how are such business services developed? We will discuss this further in the following section.

## ■ 10.4 FROM BUSINESS VISION TO OPERATION

Figure 10.5 illustrates a simplified lifecycle of the development of a business service. In three places in the generic lifecycle you will see an illustration of when to use the DID model to help you to improve thinking and decision-making.<sup>44</sup> First, in defining business services using the business and architectural model guidance (Drivers and Perspectives) from DID. Second navigating through the different phases from problem analysis using the Domains guidance, to design, build and operations and maintenance through use of the DID operating model. The navigational guidance helps you to recognize the myriad appropriate good practices (Figure 10.6) that can be applied during the different stages in the development lifecycle. Some of the details of this illustration are expanded in 10.3.1.

The DID model is both Agile and “traditional”, after all even rapid development goes through rapid iterations of these basic steps. BIM is at the heart of keeping software development focused on business services. And the DID icons have been placed to help you to identify where (and when. . .) to “think BIM”.

### 10.4.1 Determine strategic business justification

Very large scale development should almost always undergo a “Gateway” review, shown in Figure 10.7, as initially defined by the Office of Government Commerce (UK) and widely adopted in Dutch government. And guess what, Gateway started life in the private sector. The goal is to ensure that stakeholders are fully on board,

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44 B. Johnson and J. Higgins, *ITIL and the Software Development Lifecycle (Practical Strategy and Design principles)*, Zaltbommel 2007.

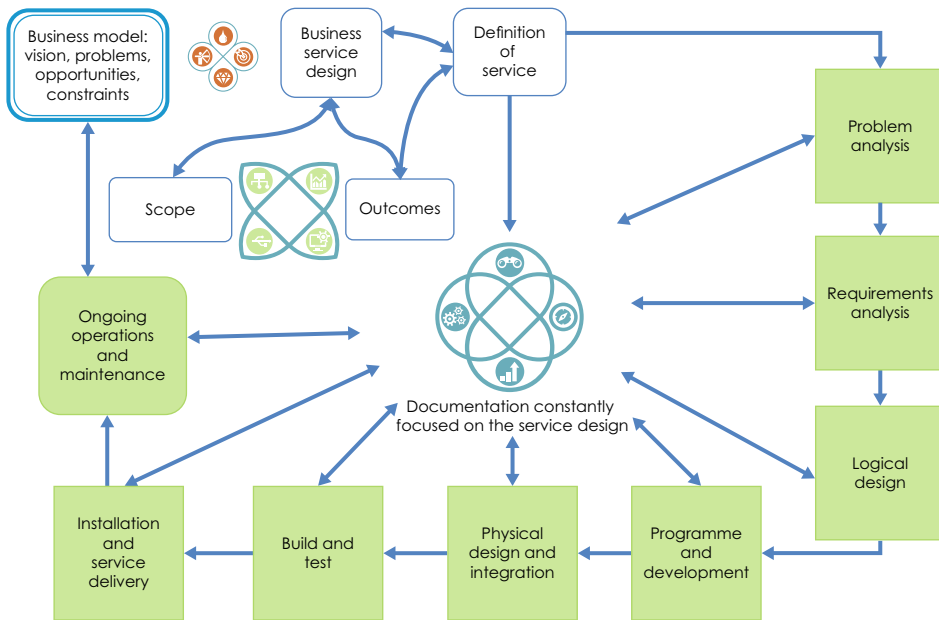


Figure 10.5 A simplified generic development lifecycle with DID components plotted in

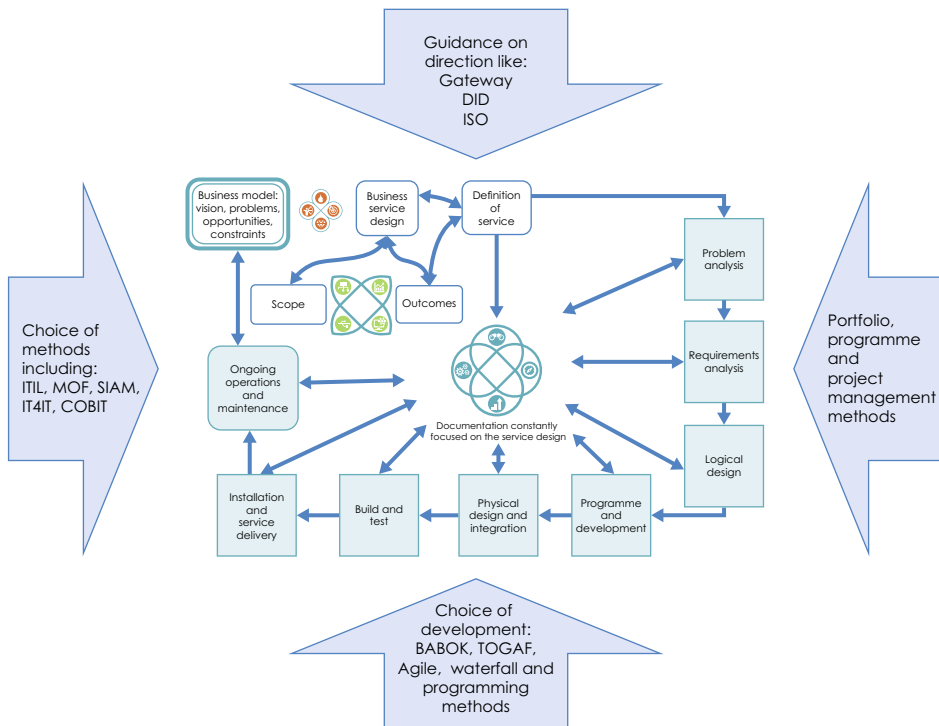
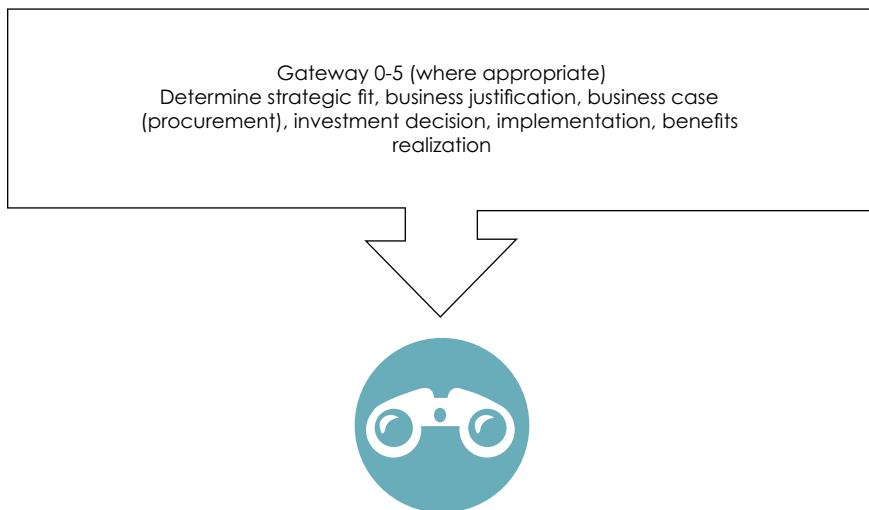


Figure 10.6 Methods that assist in the development lifecycle

and the programme or project has the best chance to succeed. Using DID at the executive level helps you to govern planning and development before mistakes are made.



**Figure 10.7** Start as you mean to go on

### 10.4.2 Service design architecture

Improving and innovating IT-intensive service design will require a high-level exploration with stakeholders to arrive at a service design architecture (not a TOGAF architecture). Success depends on whether all the information is available to cover all of the information requirements in the design and development stages. From a business point of view you should have all the business information needs to justify further investment and sign off.

The drivers within the DID framework will fuel your discussions and will help you to understand the needs in relation to capabilities and value.

All IT-intensive services that are being developed in an enterprise must contribute in one way or another, either as a primary activity, as part of the core, or as part of a necessary secondary process to the enterprise business goals. In the last few years the distinction between primary and secondary processes has become more diffuse as execution of work and supporting processes becomes more difficult to separate.

Service development or services changes attract the attention of stakeholders within an enterprise. Questions they have include what information must be collected, how is it processed, what is automated, what can be automated, what can never be automated, what is the result we are looking for, how will the new service be paid for and what (if any. . .) income is required from it. . .

It is also important to ensure that the service design is viable, so definitions and outputs should not only be tested in relation to the business model but also to the architectural basis of the enterprise.

Enterprise stakeholders want to be involved in the development and implementation, or adaptation, of highly IT-driven business services and ensure that different perspectives, interests and principles are included. Governance and business requirements, and functional and non-functional requirements are equally important to enterprise stakeholders, as is the choice of technology. Technology selections cannot be left to the judgement of the IT provider, be it in-house or external. By understanding IT-driven business services and anchoring them in a service design statement or terms of design reference you will be able to accelerate the translation of the needs of the business into the delivery of IT intensive business services.

Essentially, we would argue that the primary cause of dissatisfaction is that the supplier is often unaware of the different needs of the individual businesses that make up the enterprise. Whether IT-based or not, the party responsible for developing the services is either not informed how lines of business are joined in such a way that demand matches supply (so that the interests of the enterprise are thus served as a whole) or did not discover all of the requirements before proceeding to build the services. And very often developers somehow fail to recognize many of the interfaces within the enterprise between the different stakeholders.

Although it is not always the case, in general business information services that create substantial business value are most often demand-driven, being custom-made for specific purposes regarding enterprise business. On the other hand, business services with low business value are most often supply-driven commodity services such as HR or payroll. Not that these commodity-driven services are unimportant, for example try running your enterprise without a payroll service. . .

Success depends on whether all the information is available to cover all the requirements in the design and development stages. From a business point of view, you should have all the business information needs to justify further investment and sign off.

### 10.4.3 Description and justification of the service offering

Justification (and therefore the value) of the service offering will be clear because BIM focuses upon:

- Insight about the motivations, needs and expectations of customers and users and, of course, suppliers;
- Completeness of the service delivery process, in particular how the delivery of the service will be managed and coordinated, and any dependencies on support

processes that must be managed, together with the availability of resources to meet the service obligations;

- Consistency with the requirements, achieved by answering the requirement questions that stakeholders have in the four areas of operational insight and requirements, functional requirements, specifications and external interfaces;
- Attention to issues of quality (BIM will be responsible for the quality of information service provision and the associated software quality issues for which they will have oversight);
- Governance issues, thereby ensuring that the requirements of executive, LoB strategy, business information requirements and business rules have been addressed, along with compliance/conformance to any applicable standards or codes of practice.

BIM and service design professionals will also provide a comprehensive check on whether suppliers are able to deliver the required service offering, together with a comprehensive check about whether, and to what extent, the service offering complies with market standards and commercial-off-the-shelf solutions (COTS) or if it is essentially to be "custom made".

"Build or buy" is really the crux of the design considerations in the context of improving services. Is the LoB free to buy from any source? What resources are available? Is the design one of complexity requiring either, or both, disciplines of programme and project management? Depending on the scale of the improvement or just the cost, a business case might be required and it should describe the benefits and KPIs.

Assembling resources requires knowledge of information design requirements. Any change to an existing service should improve the service, if not there is no justification because it has no value. The design approach will be similar irrespective of whether the information service (as a whole or in part) is being provided in-house or contracted out to a supplier; in the latter case a formal contract will be required.

The successful design and realization of development planning depends on using suitably qualified personnel equipped with adequate resources. Similarly, the organizational and technical interfaces need to be defined (including those between customers and suppliers). These are likely to include ITIL/ASL processes such as: Service Level Management, Capacity Management, Availability Management, Computer Operations Management, Network Services Management, Service/Help Desks, Change Management, Incident and Problem Management. They will also include the various personnel who will be charged with managing and maintaining databases and related repositories and, of course, with managing hardware and software suppliers. Service design and development planning must allow for service level reporting, which is addressed by ITIL Service Level Management.

Experience of major improvement initiatives indicates that a realistic understanding of your enterprise capabilities is a major factor for success; conversely, where skills and experience have not been considered, the risks of failure are high. You are strongly advised to carry out a skills audit of your team before any improvement initiative gets underway and monitor the skills profile throughout the initiative (because operational situations dictate that team members often have to be deployed elsewhere). This will help you to identify any areas of weakness and make contingency plans to address them.

## ■ 10.5 PROBLEM AND REQUIREMENT ANALYSIS AND LOGICAL DESIGN

At the programme/project development stage it is essential to ensure that the service design is agreed so that the programme initiation documents can be circulated (see Figure 10.8). Here again, it is possible to be “agile”, though large, expensive and risky undertakings tend to be heavily scrutinized and require more management effort. IT should not be in control of the development until all aspects of risk, management and control have been assessed and high-level requirements agreed<sup>45</sup>.

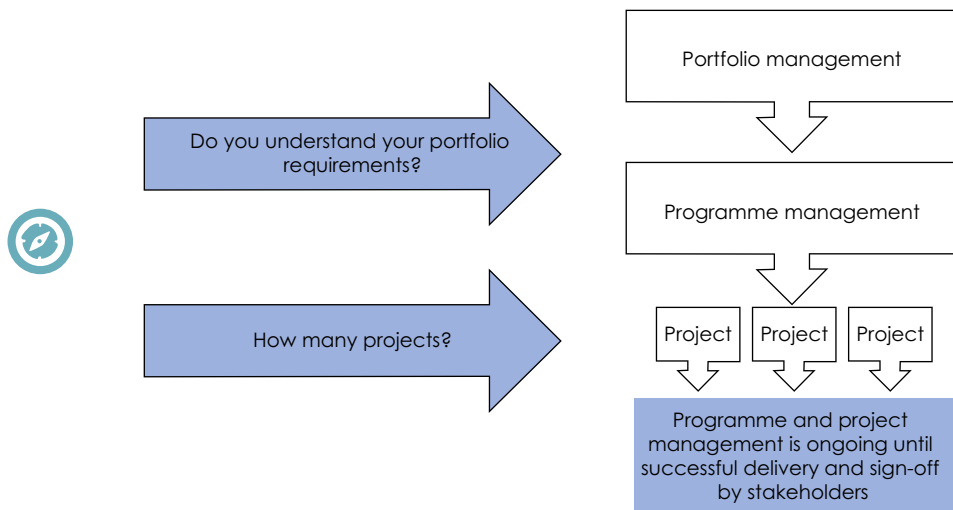


Figure 10.8 Applying good practices to overall management

### Maintain your stakeholder perspectives

At this stage of digital information services development you should consider the integrity of the information service processing so you can be certain that

<sup>45</sup> A more extensive introduction on requirement analysis can be found in: Donald Gause and Gerald Weinberg, *Exploring requirements: quality before design* (1989).

the service will be compliant with stakeholder needs, executive policies and LoB use. If the service is not focused on these criteria, it has no value and it is likely it was not actually needed.

## ■ 10.6 BUILD

### 10.6.1 Design phase

In the design phase we also have to consider existing common infrastructure services, such as network services, naming services, directory services, communication services, database services, middleware, application program interfaces (APIs), etc. The intention is to ensure that further development is compatible with the *de facto* standards, typically based upon key suppliers' products. This requires information about the design of the IT infrastructure, which means that an adequate configuration management database system (CMDB) is needed to hold such details.

Developing the functional design needs input from users and business plans. The acceptance criteria derived from this input are expressed in general terms and will have to be translated into clear IT requirements. The resulting functional specification is approved by the project steering group.

The next step is to consider the organizational aspects of the IT solution. Both the operational management and the incorporation of operational management processes have to be defined. For example, you will need to consider how incident management will support the new digital services, and how availability management will measure and monitor their availability. Additionally, responsibilities will have to be allocated and operating procedures will have to be written.

The technical design of the IT solution addresses issues which are specific to various platforms, such as configurations and component sizes. The technical design shows how the IT solution will eventually be incorporated into the existing infrastructure.

The design phase should determine the working environments needed for each of the phases of the deployment project.

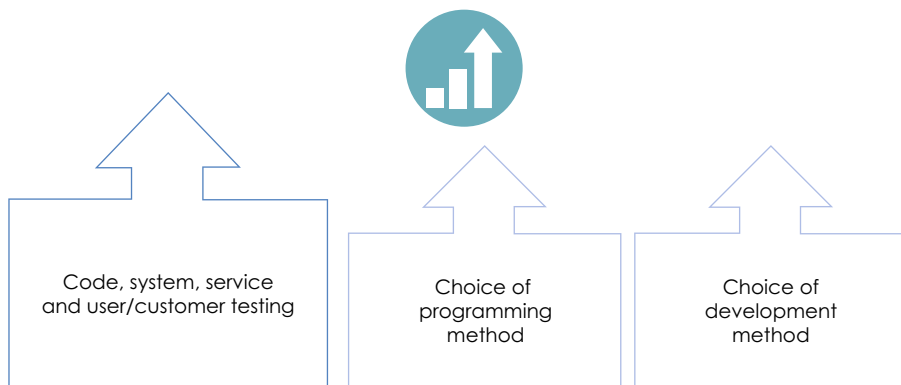
### 10.6.2 Build phase

During the build phase it is advisable to have a development environment, which is isolated from the testing, acceptance and production environments, to prevent any premature impact on operational systems. If several disciplines are working on the IT solution during the build phase then it is advisable to structure their activities such that their development and testing activities are isolated. However, in some cases the new IT solution will have to use the existing production environment even as it is being developed. In such a case, you should select the best solution with the

smallest possible impact to facilitate this. Improvement will play a critical part in this, as will an up-to-date CMDB and/or asset management capability.

During the build phase the documentation for the systems is written to prepare for their hand-over. Apart from the *technical* impact on the existing systems, the impact of the new systems on the IT infrastructure *capacity* will also have to be considered. However, this is often overlooked. . .

In Figure 10.9, we can now add another component, which is selection of the development method, and this component is truly where decisions about Agile or traditional methods are most useful. Very often, defining the information needs of the enterprise was left to IT specialists who had never been free to roam in the wilds (of the business...). In the DID improvement guidance the focus is clearly on ensuring that the customer gets what they need and value; so unless it is clear that the development methods are risky, you should leave the choice to the experts. At this point, if you have carefully controlled and managed risks and established needs and requirements, you can safely start the development in which BIM and IT professionals should work closely together.



**Figure 10.9** Decide on development and programming methods

## ■ 10.7 TEST MANAGEMENT

### 10.7.1 Purpose

It is the role of test management to ensure that new or modified digital services or products, or even new hardware, meet the business requirements for which they have been developed or enhanced. The purpose of test management is to ensure that a testing strategy<sup>46</sup> is both devised and applied that is efficient, effective and

<sup>46</sup> For an introduction see Rex Black, James L. Rommens and Leo van der Aalst, *The expert test manager*, Rocky Nook 2017.

economic. The testing strategy should define the objectives of all test stages and the techniques that apply.

Test management will often be part of project or programme. As a consequence, most test strategies will focus on “fit for use” as defined in requirements and contracts. Business users will likely have a different view of “fit for use” because using a service in practice may be a very different experience to the one envisioned by the service designers. It will be the responsibility of BIM to be involved during user acceptance (see Sub-section 6.5.3) to ensure that fit for use is the same as fit for purpose. BIM practitioners should understand the validation and verification process, which is part of the agreement between customer and supplier, and monitor progress<sup>47</sup>.

The testing strategy also forms the basis for the creation of a standardized documentation set, and facilitates communication of the test process and its implications outside of the test discipline. Any test support tools introduced should be aligned with, and in support of, the test strategy.

Test management is also concerned with both test resource and test environment management. BIM should take a particular interest where automated test strategies (especially automated business acceptance testing) are part of the handover processes.

### 10.7.2 Key elements of test management

The key activities in test management include:

- Test enterprise –the set-up and management of a suitable test organizational structure and explicit role definition. The project framework under which the testing activities will be carried out is reviewed, high-level test phase plans prepared and resource schedules considered. Test enterprise also involves the determination of configuration standards and the definition of the test environment.
- Test planning – the requirements definition and design specifications facilitate the identification of major test items and these may necessitate the updating of the test strategy. A detailed test plan and schedule is prepared with key test responsibilities being indicated.
- Test specifications – required for all levels of testing and covering all categories of test. The required outcome of each test must be known before the test is attempted.
- Unit, integration and system testing – configuration items are verified against the appropriate specifications and in accordance with the test plan. The test environment should also be under configuration control and test data and results stored for future evaluation.

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<sup>47</sup> On validation and verification, see ISO/IEC/IEEE 15288:2015 Systems and software engineering — System life cycle processes

- Test monitoring and assessment – ongoing monitoring and assessment of the integrity of the development and construction. The status of the configuration items should be reviewed against the phase plans and test progress reports prepared that provide some assurance of the verification and validation activities.
- Product assurance – the decision to negotiate the acceptance testing programme and the release and commissioning of the service product is subject to the “product assurance” role being satisfied with the outcome of the verification activities. Product assurance may oversee some of the test activity and may participate in process reviews.

**Fitness for purpose checklist:**

Is there a documented test strategy that defines the objectives of all test stages and the techniques that may apply, e.g. non-functional testing and the associated techniques such as performance, stress, security etc.?

- ✓ Does the test plan prescribe the approach to be taken for intended test activities, identifying:
  - ✓ The items to be tested;
  - ✓ The testing to be performed;
  - ✓ Test schedules;
  - ✓ Resource and facility requirements;
  - ✓ Reporting requirements;
  - ✓ Evaluation criteria;
  - ✓ Risks requiring contingency measures.

Are test processes and practices reviewed regularly to assure that the testing processes continue to meet specific business needs? For example, innovative e-commerce testing may involve new user interfaces and a business focus on usability may mean that the enterprise must review its testing strategies

Testing and commissioning is often inadequately considered by project teams and pressure is exerted by available time and resources, particularly towards project completion.

It is essential that sufficient time and suitable resources are dedicated to testing and commissioning in order to assure the fundamental success of the project. There are advantages in using dedicated, specialist resources i.e. independent of the development/construction team, and the project sponsor should ensure that testing requirements are considered throughout the project lifecycle and a suitable test strategy and appropriate test plans are formulated and instantiated.

## ■ 10.8 REVIEW AND VALIDATION

Programmes of change aimed at meeting performance targets will need to pay particular attention to the review phase and to the evaluation of outcomes of the programme. The enterprise will be concerned to establish that the target performance levels have been achieved; but some thought should also be given to establishing the role of the change programme in meeting the objectives.

In complex programmes of enterprise improvement it can be difficult, or even impossible, to establish after the event that specific activities or policies in the change programme gave rise to identifiable and quantifiable improvements. Chains of cause and effect must be carefully considered in planning the change, and monitored during implementation. The approach to measurement of performance improvements and other objectives must be considered as part of the planning of the change programme, and not tacked on later as an afterthought. Things to think about include:

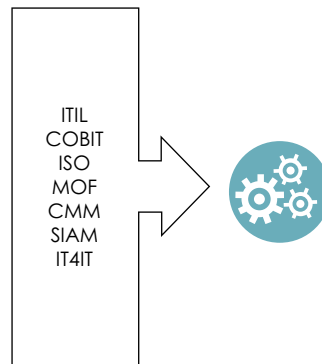
- Be open minded about how requirements could be met (i.e. encouraging innovation where appropriate);
- Consider collaboration with others e.g. partners;
- Opt for evidence-based strategies where possible, i.e. learning lessons from what has worked for others – or failed;
- Ensure close engagement with stakeholders to ensure that their needs are accurately reflected in the requirements specification and end result;
- Be realistic about what can be delivered (enterprise capability and capacity to implement/absorb the change);
- Be clear about what the enterprise wants – understanding what would/could meet the business needs;
- And be clear when engaging with the market – ensuring they understand what we want.

Other than that life is fairly straightforward and we can all get back on Twitter to distract ourselves. . .!

Figure 10.10 illustrates just a few of the many good practice frameworks (and the ISO standards suite. . .) that are hurled into play once testing and operation of services are involved. Beware that they are often hurled much too early (occasionally much too late...) and most should be hurled back immediately. All of these are excellent good practices, though you should ensure they are used for the purpose for which they were developed. For example, don't use ITIL for application development, or Agile for infrastructure management. . .

Once "live", service problems always occur. Many problems will be detected by the end users, and changes will be demanded and made; you all will have certainly

come across examples of what could go wrong. IT is sometimes much too easy to change (and change is never controlled effectively).



**Figure 10.10** Framework Armageddon

Generally speaking, once a service was released, operations and infrastructure management would claim dominion over service management through the use of ITIL; this was largely because ITIL had been used for many years and not much else existed to help. ITIL essentially became used as a bible.

In essence this is still valid, though only for changes to the infrastructure and supporting IT services. ITIL is one of a number of good practices that you need to ensure that a service operates as it should. We apologize in advance to those of you who do not see the appearance of their favorite framework or standard in Figure 10.10, but we had to get the point across in one picture. Hundreds of standards, frameworks and methods exist, all of them good and all with a place. In the context of BIM, we have included the well-known methods, not necessarily the one (or more) with which you are familiar. And where many choices exist, we have not gone crazy with listing too many (a good example is project management where methods such as PRINCE 2 or PMI are both excellent, but we chose PRINCE 2 because it was created by the same enterprise that created ITIL, Gateway and P30. . .).

## ■ 10.9 OPERATION

The essential “outcome” of Operation is deployment and maintenance of the new or improved digital services that were commissioned by the Board. The process of ensuring this “outcome” is, to a greater extent than in any other domain, about the deployment of services or products that are outputs (improvements, implemented RFCs and new technologies) which arose from *Need and Value*.

When it comes to the development of business services, there are many methods that will help you in terms of managing projects, or systems analysis or coding, but

not so many to help in the effective design of your information needs in relation to business needs. You need ITIL to assist with managing operations and infrastructure for example, and for creating the support processes required to manage IT incidents and failures. However, DID is of greater importance in the information management domain since it can help you in governing and controlling information services from a business perspective.

A completed version of our simple lifecycle (now much more complicated. . .) is shown at Figure 10.11.

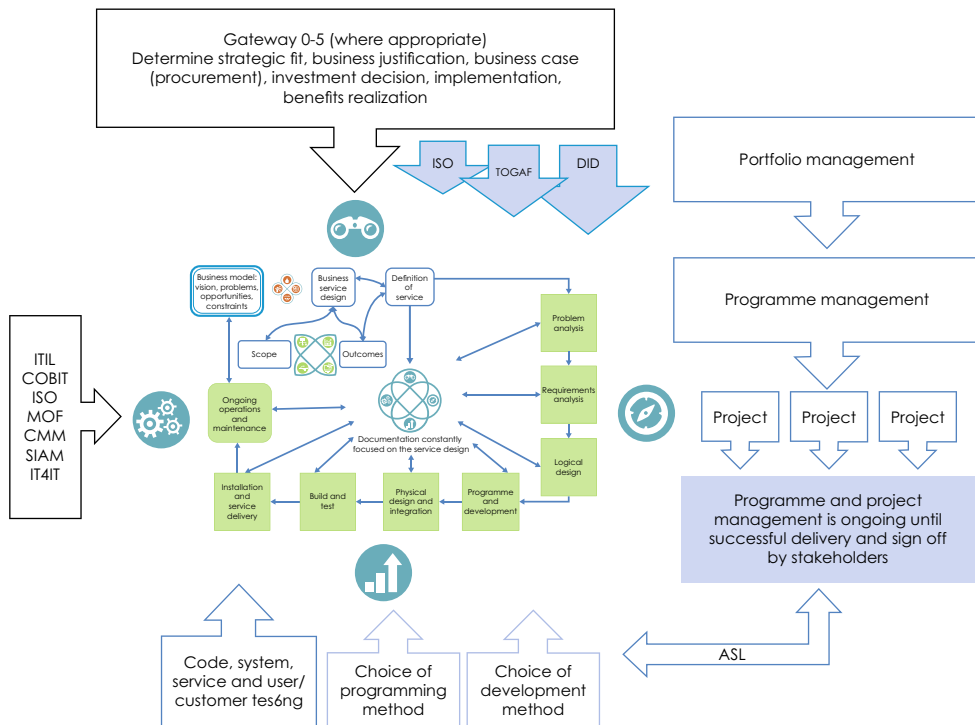


Figure 10.11 Supporting the simplified generic development lifecycle with good practices<sup>48</sup>

Once the new or changed services are available, and all of the supporting DID elements (assessments or perhaps training, manuals and so on) have been completed, Operation takes over the responsibilities for monitoring effectiveness and identifying any issues. Support for the services should be provided both centrally and locally where possible. The most likely causes of any issues that might arise are security measures, the perceived quality and operational issues regarding the availability of the services and the problems associated with data being processed and retrieved.

48 Based on the map drawn by Brian Johnson and Léon-Paul de Rouw in *Collaborative Business Design: Improving and innovating the design of IT-driven business services*, 2017.

Business managers should aim to provide optimum quality digital information and data services, cognizant of the resources available. Quality is determined by fitness for purpose, and quality digital information and data services are those which consistently meet both business needs and customer requirements.

Necessary improvements will be (or at least should be) in line with the business mission and will almost certainly require a reassessment of the operational capabilities. The pivotal role of those managing contracts and agreements cannot be underestimated. Such instruments will be vital to establish a means of demonstrating compliance with policy directives.

The services resulting from developing new or improved digital services might well be subject to different forms of contractual agreements; measuring operational performance will be a key activity in demonstrating that the business benefits have been achieved (or not).

It might be that the digital services have been poorly designed (or implemented) or alternatively it could mean that improvements must be made to understanding data sources (whether from public sources such as the ubiquitous internet, or from information chain partners or customers).

Managing contracts and agreements is the key. Effective liaison between service suppliers and their customers is an essential aspect in the supply of quality information and data services. Information service suppliers must understand how and why their services are to be used and provide services that fulfill these requirements.

Users of digital information and data services are the customers of the (IT) services supplier. Whether or not they are being charged for services, these users should be treated as customers and their views taken into account. The service suppliers must continuously seek to improve their standard of service to customers. Suppliers must research and respond to customer views, and effectively and efficiently support their use of services.

# 11

## KICK-STARTING BIM WITH DID, A PROJECT PRIMER

### ■ 11.1 INTRODUCTION

Given the ever-present nature of digital information sources and assets where do you start? Frankly, if BIM is not practiced in your enterprise then anywhere will do, though the most substantial effects will be achieved if executive sponsorship and support are obtained. For this reason, we are supplying checklists of the essential questions you need to ask and the information you should gather that will help you to build a solid business case for business transformation and BIM, and how to use DID effectively to assist you.

If you have a new line of business with undocumented business processes to start with, then you can use this LoB as a pilot; if you have undocumented business processes throughout your enterprise, use this problem as an opportunity. No matter how small the project, make sure you can demonstrate benefits. Take another look at Section 8.4 as the template provided there will be useful.

Before embarking on establishing BIM or implementing DID, it is good practice to think about how your enterprise and its business are organized. The questions listed below will help you develop a balanced view of the enterprise business and how it is currently organized:

- What is the business of the enterprise? It might be obvious to you, but are all goals and aspirations clear to everyone, including suppliers and partners?
- Who are our customers and stakeholders?
- Where are the internal customer and supplier boundaries?
- What about external customers, partners and supplier boundaries?
- What about information chain partnerships?
- How, why and when does the business interrelate with other LoB in the enterprise?
- What are our digital assets?
- How well does the enterprise meet its current objectives?
- Can information integrity be relied upon?
- Is BIM a recognized discipline and how is it functionally organized?

- What is the enterprise trying to do better, cheaper or differently, and what are the factors that constrain this?
- What are the relationships with other enterprises, including competitors?
- What information services are provided and for whom?
- What information services are procured and from whom?
- Who else should be consulted?
- What characterizes the culture of the enterprise?
- How are responsibilities organized?
- What are the command structures and reporting chains?
- What styles of management are in use?
- Who has authority and to what degree?
- What freedoms, constraints or political imperatives are there?

It is fairly common now to see whiteboards, blackboards, Post-it notes, mind-maps, Sudoku puzzles, you name it, used as ways to brainstorm ideas (or maybe blame-storm them. . .). When using checklists these cliché tools can be surprisingly useful, but ensure that you appoint a facilitator with the most useful skill known to facilitation; the ability to tell people to shut-up and give others a chance to talk.

When experts in many disciplines are brought together there can often be Method Wars, Model Battles and Process Armageddon that lead to very precise and detailed trails to absolutely nowhere. Your facilitator needs to understand the basic human need to show-off and to be able to kindly and carefully close down such mind numbing debates.

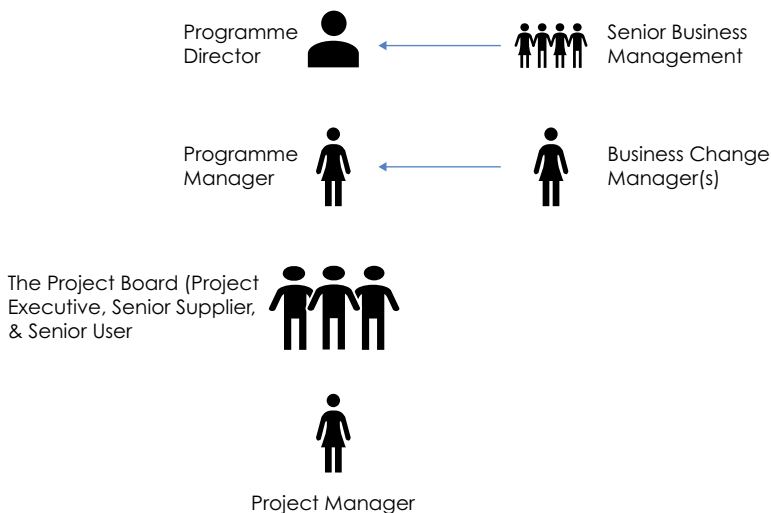
Ensure the focus is on the business processes. As described in Chapter 3, transforming the business begins with the business model and articulation of the desired enterprise services. The elaboration should always begin with thinking about the business model, the architectures, the services and then the operating model.

## ■ 11.2 GOVERNANCE STRATEGY AND BUSINESS TRANSFORMATION

The most effective introduction of business transformation requires the business case to focus on the scale of the digital environment and the need and value of governance and strategy; unfortunately, you are unlikely to gain executive interest by focusing on how many times a user had to request a change to an information source because it was inaccurate. That said, an analysis of the total amount of time wasted across the enterprise showing how poor quality information costs money would be an excellent addition to any business case. It is suggested that when addressing the business model, you should initially focus on the following questions:

- How does the enterprise currently determine whether the technology support and delivery capabilities accurately match requirements with regard to managing data and information services?
- What are the internal delivery capabilities (processes, competences) required to fully support the enterprise's strategic objectives?
- What are the customer and user experiences you intend to provide for using digital information and will these match expectations?
- What are the delivery capabilities that are currently provided by suppliers and do they work with both internal and external suppliers?
- Does the enterprise have a plan that accurately describes how your business will function in the near future? In six months? In twelve months? In eighteen months?

Annual planning was mentioned in Sub-section 3.2.1; the stakeholders in the enterprise might have many titles (Supreme Leader is in use in some of the less enlightened regimes. . .), though most enterprises will have a structure more or less similar to that shown in Figure 11.1.



**Figure 11.1** Stakeholders in the planning stages

As we have mentioned throughout, there is no one, single, absolute way to success, use what suits you and your audience.

The guidance contained in Chapters 4 and 5, the DID Governance and Strategy domains, will further assist you in gathering essential information. Once you have answers to the questions posed above, or have gained an understanding of the current state of play in your enterprise, you will be in a position to identify the supporting information required for a solid business case.

## ■ 11.3 GATHER ESSENTIAL SUPPORTING INFORMATION

You can expand your thinking by acquiring information about how success should be measured. Some of the questions you will find are repeated. For example, a quality policy will usually require documented evidence. Thus an answer of “YES!!!!!!” to “Have you documented a data architecture?” when gathering basic facts will need to be revisited if the enterprise is pursuing a Quality Management System (QMS), with the follow-up question of “Where is it then?”

Consider the following points when gathering supporting information:

- How do you arrive at the measurement of business need and value with business information services and information technology solutions in terms that are both quantifiable and meaningful to your executive management? And are they meaningful to users? And partners or suppliers?
- Describe the process and technology used by the IT units to manage the assignment and configuration of information and data assets for specific information services. Is it effective?
- Describe the processes and technologies used to monitor and manage essential commitments made by IT and measure user satisfaction. Are they effective? Are they focused on information services and not on technology?
- Have you documented an enterprise data architecture for your enterprise (see Section 11.6)? Where is the data about the architecture recorded and how is it made available as appropriate?
- Based on the execution and impact of ongoing projects, how are enterprise data risks identified, classified, recorded, analyzed, documented, managed and communicated?
- What financial approaches are used to fund and track both initial and ongoing investments in information/data programmes and projects? Are they effective?

## ■ 11.4 IT PLANNING

In the digital age, information is intrinsically and irrevocably linked to IT; clearly then, you must now take a close look at IT within your enterprise and ask some searching questions. The white board approach will help you to answer the following questions:

- Does the enterprise have a process in place to continually examine and determine how to bridge the gap between the anticipated future requirements for information and data, and existing resource capabilities? Can you interpret your business model in a way that focuses on strategy and not on what is operational?

- How does the enterprise try to overcome resistance to change and to meet any urgent need for the planning and execution of opportunities? Does the enterprise examine risky opportunities and take chances on these in order to profit?
- What are the strategies, processes and technologies used by the enterprise to identify improvements and to initiate, assess, approve, assign, deliver and support changes to the user environment? Is change management an enabler of change or a bottleneck?
- How does the enterprise initiate, assess, approve, assign responsibilities, strategize and deliver beneficial results from IT-driven and data-driven projects to the users?
- How effective is IT in these areas?

When it comes to planning, you should carry out the following tasks:

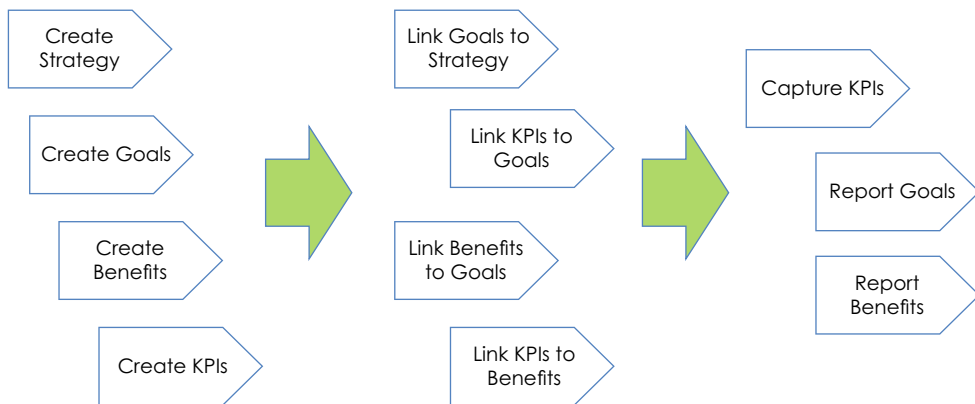
- Orchestrate the pace and timing of the transformation and the use of DID;
- Communicate a consistent view of the transformative changes you wish to make, whether you are focusing on documenting and automating business processes, finding an opportunity to introduce BIM, or simply using good DID practices;
- Create a central point for information exchange;
- Use sensible, non-generic metrics to monitor progress;
- Make sure that executive action focuses on the links between strategy, tactics and operations;
- Provide regular updates for middle managers, using handouts to ensure further dissemination;
- Appoint someone to stay close to the programme manager or leading teams, to stay on top of issues and to ensure that no mixed messages are communicated – this could be your services design coordinator role if you have one or, of course, the senior responsible owner (SRO);
- Understand that there is a difference between communicating what is to happen and expecting it to happen;
- Make sure the overall vision is simple and inspiring, but not constricting;
- Consider which specific groups of employees will be implementing improvements or changes and therefore expected to understand the change;
- Establish what new skills these employees will need.

## ■ 11.5 PERFORMANCE

The front line may not be the executive focus, though it is very important that you gather information about how the information services are performing so that you can provide evidence about the need for BIM. Consider the following questions:

- Does the IT supplier or unit have the infrastructure and performance instruments in place to accurately determine how the enterprise is currently functioning with regard to digital information service use, quality and need for improvement?

- What methods are practiced by the information service developers to ensure that the processes of design and delivery are continually improved? Is Agile a buzz word or a way of thinking? Are communications effective?
- What means do the management of the enterprise use to discuss and develop objectives, provide required resources and organize work?
- What is the enterprise process of dealing with user incidents, requests and problems in terms of the initial identification of issues, escalations, assignments, scheduling, time tracking, entitlements, ongoing information and knowledge collation, and resolution. Is the process "ITIL-like" or "ITIL-compliant"? The former generally implies a thoughtful approach, the latter a reliance on an expensive consultant model that may or may not add value and which is likely to focus on infrastructure issues.



**Figure 11.2** A summary of the BIM strategic approach

Figure 11.2 summarizes how to approach BIM in a strategic fashion; the key to formulating strategy is not having a model of procedures, rather it is being aware that the combined brain power of a group of individuals needs to be focused on sensible, measurable goals and benefits that improve the business. The approach shown is valid for any strategic brainstorm. After all, is BIM so special that it should have a unique strategic thought process? Think before acting and eliminate risk where possible before spending money; mistakes are more expensive to correct as time passes.

## ■ 11.6 ARCHITECTURAL ISSUES

It may not be all about IT, though as we have continuously emphasized, IT is both a driver of innovation and a legacy that you must deal with because information is delivered electronically. Particular attention should be paid to information service architectural issues. Some of the following points will amplify your thinking about the LoB in the context of IT. And remember, BIM focuses on the data architecture - but a

service architecture and a technical architecture will also exist and so will a business architecture!

A few typical "IT" issues:

- In considering a merger with another enterprise, is it possible to get scale advantages from combining two central IT departments and is this far more than a technology decision?
- At which level of the enterprise should the IT strategy be formulated? What about the data strategy?
- Who owns the transformation programme? The BIM unit? Is there such a unit????
- Should the enterprise's information strategy and transformation evolve "bottom-up", or "top-down"? Why is one of these approaches considered preferable to another?
- Should the enterprise's information strategy be dictated by the available technology?
- Is your enterprise state-of-the-art or "state-of-the-ark" (but proven) in terms of the technology it uses?
- Should you always commit to a supplier that proposes a particular technical solution?
- How do you determine the degree of IT support that the enterprise needs to function effectively?
- Do you know how much knowledge of your processes, products, services and customers resides in unstructured and inaccessible files? Can old microfiche records, paper records, CDs, video tapes or eight track cassettes be found, let alone accessed for content?
- If a new way of working will require support from a new or improved information service or system, can you be sure of obtaining one that works? What will you do if it doesn't work?
- How many frameworks and standards are there and who knows what they are and how they fit together?

### 11.6.1 Strategy and performance

Can you identify the parts of the enterprise data architecture that are critical to your information services? Do you know which parts of the architecture represent risks (potential bottlenecks, capacity chokepoints, single points of failure, etc.) to the efficient operation of your information services?

- What communications and formal agreements are put in place to set the direction for technology infrastructure and project architecture programmes? Are the agreements contractually or legally binding? If so, how have they been working?
- Do the sourcing and procurement organizations in your enterprise get involved in making technology choices? How do they help?

- Is any group responsible for enforcement of the (various) architectures? Communicating the architectures? Guiding other groups in understanding and using the architectures?
- How do you manage technology decision-making?
- How do you determine the priority and impact of IT-driven project requests? Do you operate a planning unit, programme or project office? How effective are they?
- What cost components are important to you in defining the value of your significant information services and your supporting technology infrastructure?

### 11.6.2 Quality and efficiency

A QMS dictates that documentary evidence is available and that such evidence (data if you like...) can be audited. Whatever the answers you may have unearthed in gathering evidence, this now needs to be documented to cement a quality-driven approach.

- Have you documented an enterprise data architecture? Does it correctly (and succinctly) describe the information services, systems, data and applications aspects of your information services?
- How is the information services data architecture implemented in your enterprise?
- Is the architecture dictated by legacy services? Are there guidelines and procedures that guide the implementation?
- Are your data designers and architects sufficiently experienced and trained?
- Who has ownership of the current data architecture management process and who is responsible for implementing the architecture?
- What do you do to ensure that technology choices are consistent?
- Does every IT unit in the enterprise follow the standards and guidelines of the enterprise data architecture?
- How is information regarding problems and/or work requests analyzed and fed back to improve the technology or applications infrastructure?

### 11.6.3 Capabilities

The capabilities discussed in Chapter 3 provide you with the important information you need to think about in terms of how the enterprise mission can be addressed. Look again at Figure 3.5, draw up a version for yourself with some specific capabilities that you have identified as necessary and think about where the roles are in place (and where they are needed). To help you focus on some key features, think about the answers to the following questions:

- What major enterprise and departmental policies guide your technology choices?
- How is BYOD (Bring Your Own Device) or CYOD (Choose Your Own Device) implemented and, more importantly, controlled?
- How are new digital information system technologies introduced into the enterprise? How is their impact assessed and managed in the data center and in the field?

- Have you identified a catalog of standard information/data services? Or a blueprint of how the standard technologies interact with each other and support the digital environment?
- Are you dependent on any one particular partner or supplier for the whole, or any part, of the information services of your enterprise? What about IT infrastructure?
- Have you clearly identified possible transition strategies?
- Can you ensure there is difference between a capability and a capability??

Of course the list of questions cannot be definitive, though armed with these as a guide and amplified with the answers to many of the other questions we have identified throughout this book, you will be in good shape to prepare a business case that provides evidence of the need for BIM in your enterprise.

But what happens if you cannot engage executive interest? Well, do not give up. Identify an information service that is valuable, needed but unfit for purpose and dissect the service components. First, think about the information service in terms of the four domains, identifying how good Governance should be applied, or better Strategic design, or perhaps simply focus on Improvement. Identify the key (and expensive. . .) Operation issues. Be agile in your thinking (remember, agile is not a method).

Consider the service from all four stakeholder perspectives to assess where improvements will be justified, cost effective and demonstrable. Then consider the drivers we have identified and sketch out how you can use these to identify KPIs and CSFs for an improved service. Calculate the costs of having to maintain the inadequate service and the impact of the service on the business. Then calculate the costs of improvement, and the money that will be saved through having a service that is not causing problems. Maintenance costs over the life of an information service far outstrip the cost of development.

You can demonstrate the improvement value for one business information service in this way; extrapolating these results into the likely outcomes of improving other information services should be an effective way to gain interest!

#### 11.6.4 How does business service design differ from BIM?

BIM covers both automated and non-automated elements of business and is thus a close companion of service design; it differs from business service design in that BIM focuses squarely on information services and related activities, including the quality of information, whereas service design necessarily drives the holistic picture of a business service. An IT-intensive business service necessitates someone owning the holistic picture, understanding where all of the different expertise lies (e.g. ITIL, ASL, IT4IT, COBIT, YFA (Your Favorite Acronym...)) and then applying business knowledge to ensure that data models are accurately imagined and constructed,

that all business services relating to the model are structured appropriately and that enterprise policies regarding information and data are exercised - as well as identifying any specific policies for the information lifecycle from capture through to destruction. Oh yes, and don't forget that you will have multiple information chains (some external) and multiple (IT) service suppliers<sup>49</sup>.

This section will help you to position the IT service lifecycle elements appropriately in any scenario relating to design of services that arises from different domains, from business to internal IT.

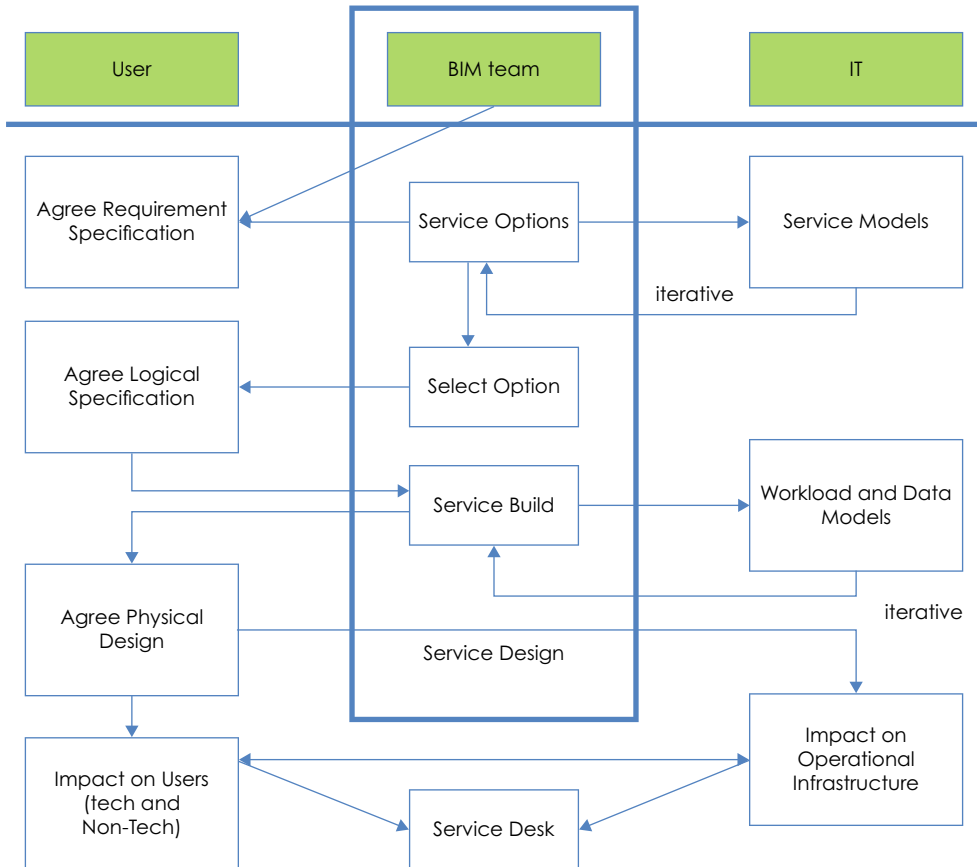


Figure 11.3 DID and the service design lifecycle

Figure 11.3 provides us with an overview of where good DID practices are aligned (or should be aligned) with information software development. This figure is an amplification of Figure 6.2.

49 B.C. Johnson, D. Arcangel, N. Osman and R. Zuurdeeg, *ITIL and the Information Lifecycle, integrating Agile, DEVOP and ITSM (official ITIL complementary guidance)*, Norwich 2016.

Figure 11.3 shows that BIM is central to good service design and that DID should be the good practice that is adopted. The creation of useful and reliable information services relies on cooperation between users, the BIM/DID team, developers and IT (application software builders and infrastructure managers, possibly internal and external).

Keep in mind the comments in Section 6.1, that most design techniques (both modern and traditional) distinguish between logical and physical design, even where Agile/rapid application development is in use.

It is likely that there will be a number of service options, and service models from which to select a preferred option. Rapid application development techniques such as Agile might be used to allow users to get a picture of how the agreed logical service specification is translated into a useable information service. The service models and the underlying data models will likely be beyond their expertise, and BIM skills will be needed to ensure that the models will support all requirements. Depending on the scale of the new service, BIM practitioners might need to assist with the estimation of all of the resources that will be needed (White paper of the ASL BiSL Foundation "Estimation techniques") and obtain executive approval from the appropriate steering committees (White paper of the ASL BiSL Foundation "ToR for structural bodies for managing information services development"). BIM professionals may also need to spend time with programme and project management to assist them with the management tasks that will include reporting such information to management.

Workload models must be applied early in the design process to ensure that information/data models are designed to cater for the necessary processing; data dependencies that are not tested can cause operational performance problems. Once the most practical service option has been selected, tested and the performance is assured, the DID team will oversee the service build to ensure that quality, security and performance continue to be addressed.

The impact on users should be apparent even before the physical build. Planning must be managed for the knowledge base that will support calls made to the service- desk about new or improved services and ensure training is not only available but has actually been actioned. The issue of automated versus non-automated information has been mentioned previously. At this time, it should be clear if any non-automated materials are needed, for whom and when they will be available. If the services are required to provide information that can be understood by disabled users or customers, then BIM practitioners are responsible for ensuring that they are not disenfranchised. The same is true if such users or customers need to access web or telephone support.

BIM practitioners must liaise on the behalf of users with those in IT operations and infrastructure management, internal or external, so that the services will run as required (and as possibly specified in SLAs or contracts).

You should bear in mind that this model can also help you with the design of services which are not necessarily information services, but need to be in place to support information services, such as incident management services or business continuity management services.

## ■ 11.7 SUMMARY AND FINAL CHECKLIST

Often BIM is seen as being “something done by IT. . .” (a capability) rather than being a management function that the enterprise depends upon to ensure the integrity of the information used to transact business effectively and appropriately. And business transformation (as we mentioned in Chapter 3) often focuses on the operating model and not on the enterprise architecture, meaning that there is a gap between business and IT understanding. DID will help you to focus on innovation for the business by structuring the process of thinking about new services. Service design will then help you to understand all aspects of information services, and DID will assist you in maintaining the integrity of the business data/information perspective.

If you have been sufficiently inspired by this book to introduce BIM or to improve BIM, then your enterprise will improve its use of information assets and its management of information assets, both digital and paper-based. If you wish to go further and really embrace business transformation, then here is a final summary checklist that you might want to think about.

Getting back to where we started, did you really cover all important questions in the white board session? Here's a final checklist (thank Heaven, we hear you say. . .):

Governance:

- Do you understand the enterprise policy? And how compliancy is demonstrated?
- Who is accountable for decision-making and who participates in auditing programmes?
- Is governance transparent and clear to everyone in the enterprise? How effective is it?
- How does the enterprise identify and take advantage of new trends in technology and other innovations?

**Strategy:**

- Opportunities and risks need to be balanced and assessed. Who is responsible and what is the process?
- Are objectives and requirements made clear in statements of service design? Are the needs of all stakeholders taken into account?
- Is there a separate unit to manage sourcing and partnerships and does it operate effectively?
- Is the decision-making process effective?

**Improvement:**

- Is resource management effective or do programmes and projects fail in some way?  
Does service design reflect the stakeholder needs expressed in the high level strategic design statements?
- How are the review and testing activities organized? Are they efficient and, where appropriate, agile?
- Does training and communication work effectively?

**Operation:**

- Is maintenance an uncontrolled overhead or is operation a seamless transition between being trained and then using new services?
- How is knowledge kept up-to-date and how relevant are the skills of your employees?
- Is supplier management effective?
- Is service level management effective?

## ■ 11.8 FINAL COMMENTS

Whether it is a large programme of work or a small feasibility study, a business transformation project will benefit your enterprise. The ASL BiSL Foundation will be pleased to hear from you and will provide guidance to help you. Please refer to the web links that are provided for more information and guidance, and good luck with managing the digital services in your enterprise.

Not everything in this book will apply to you, though we believe much of the generic advice is useful and can be interpreted to suit your objectives for the effective management of business information services. The DID Library will be regularly updated and we hope that you will keep up-to-date with new material as it is published.



# Appendix A: Terms and definitions

TERM	DEFINITION
Application	The automated part of an information system consisting of application software, application-related data, the storage structures (physical and otherwise) in which this data is embedded, and the relevant documentation.
Application development	The initial development of applications until operation and transfer of responsibility to application management.
Application management	The domain responsible for all of the tasks and activities that are aimed at managing, supporting, maintaining and renewing existing applications and related data structures. Note: Application management includes all of the tasks, responsibilities and activities that serve to bring applications into a state where they meet the requirements and needs of their owners throughout the entire lifecycle of the business processes that are supported by the applications.
Business (Perspective)	The perspective focused on the business processes and the lines of business within an enterprise.
Business activity	An action taken within an enterprise and related to achieving its goals.
Business function	An organizational subdivision of work performed by (part of) an enterprise, such as marketing, sales, operations, support, financial management and HR management.
Business information	All information used within an enterprise to achieve its business goals. Business information can be used internally, be shared with other enterprises or be provided to customers and other stakeholders.
Business information management	The management domain responsible for all of the tasks and activities that are aimed at governing, defining, improving and supporting the use of information services needed for running the business and achieving the enterprise goals.

TERM	DEFINITION
Business information management coordination (BIMC)	<p>BIMC is positioned between the customer enterprise and the supplier(s), internal and external. It is the intermediary who, as a delegated client, ensures that the client's needs (or the needs of the business) are well served by clear formulation of the needs and the translation thereof into purchased and delivered information services.</p> <p>The core function of BIMC is being the intelligent customer capability of the enterprise so that the correct specification for a business information service can be drawn up.</p> <p>Sometimes the combined activities of BIMC are known as "functional management" as opposed to "technical management".</p> <p>BIMC might be one person or a team; it is the role that takes all responsibility for business information in the enterprise and where BIM and intelligent customer expertise is to be found.</p>
Business information service	A service providing the business with the necessary information for delivering business services.
Business organization	The non-IT part of an enterprise.
Business process	A cluster of business activities.
Business service	A service provided by the enterprise to its customers and other stakeholders, which comprises one or more products and/or services.
Capability (Driver)	The organizational ability to perform business activities. Note: Capabilities require investment of time and effort to develop, unlike resources which can be easily acquired. Resources are the means that may be necessary to supply the capability.
Chain partner	An external party or organization with which the business organization cooperates in a chain in which information exchange takes place. Only other user organizations in this chain are considered as chain partners.
Customer	A party that purchases a commodity or service (from the enterprise).
Data	A set of values of qualitative or quantitative variables. Note: in this book often used as overall term for "data & information" (so all of the data, including data with meaning and purpose, usually called "information").
Data (Perspective)	The perspective focused on the data and information necessary for running the business and attaining the enterprise goals.
Data carrier	A medium on which data is recorded.
Data management	The development and execution of architectures, policies, practices and procedures that properly manage the full data lifecycle needs of an enterprise.
Data, information, knowledge and wisdom	A "pyramid" that defines data, information, knowledge and wisdom, and their relationships.
Database	An organized collection of data on a digital data carrier.
Database management	The set of database-related activities within application management and IT infrastructure management.

TERM	DEFINITION
DID model components	The twelve components that, in combination with each other, describe the structure of DID.
Domains	Areas of activities.
Drivers	The factors that exert significant influence on business information management. These are related to all of the activity domains. The drivers comprise two sets of two linked components that complement one another and are also in tension: need and value, and mission and capability.
Enterprise	An organizational entity involved in the provision of products (goods and services) to consumers. An enterprise can be a private or public organization, profit or non-profit.
Enterprise ecosystem	The organizational environment in which an enterprise operates, comprising customers and other stakeholders.
Governance (Domain)	The organizational capacity exercised by the Board, executive management and IT management to control the formulation, implementation and management of information services. Formal management oversight of how the enterprise is managed in terms of hierarchies, authority, roles and responsibilities.
Improvement (Domain)	Analysis, specification, realization, testing and deployment of new and/or changed business information services.
Information	Data with meaning and purpose.
Information chain	The flow of information between the business (user) organization and its chain partners in the supply chain.
Information management	Management of the information services comprising functionality, data and technology.
Information service	A service providing any party with the necessary information for its activities. Information services comprise three components: functionality, data and technology.
Information system (IS)	The people, procedures, data, data carriers, software and hardware that produce information to accomplish goals of (part of) an organization. Note 1: An information system may be automated or non-automated, or a combination of both. Note 2: An information system often supports one business process or a part of it.
Information system components	The "stack" of non-organizational parts that comprise an (automated) information system.
IT function	The part of an enterprise that is concerned with providing IT services to a business organization. The IT function can be an organizational unit that is separate from the business organization, and/or can be an integral part of the business organization.
IT infrastructure	All of the hardware, software, networks, facilities etc. that are required to develop, test, deliver, monitor, control or support applications and IT services. The term includes all of the information technology but not the associated people, processes and documentation.

TERM	DEFINITION
IT infrastructure management	<p>The domain responsible for all of the tasks and activities aimed at managing, maintaining and renewing the IT infrastructure of the information system, including the operation of the information system.</p> <p>Note 1: IT infrastructure management includes all of the tasks, responsibilities and activities that aim for a correct technical operation of the information system, consisting of hardware, (system) software and data sets.</p> <p>Note 2: The IT infrastructure management organization is responsible for running the application software in the production environment.</p>
IT management	<p>Specific areas of consideration that are important within the overall area of the management of information systems. Three IT management domains are distinguished within the overall management of information systems: • IT infrastructure management • Application management • Business information management.</p> <p>Strictly speaking, unlike the other two domains, business information management is not a domain that provides IT services. Business information management acts as the customer for the IT providers of application management and IT infrastructure management.</p>
IT service	<p>A service provided by an (internal or external) IT service provider. IT services comprise both core services that provide customers with access to information systems, and supporting services such as a service desk and database management.</p>
Knowledge	<p>Information connected in relationships.</p>
Master data management	<p>The set of processes, governance, policies, standards and tools that consistently define and manage the critical data of an organization to provide a single point of reference. The data that is mastered may include: * Reference data – the business objects for transactions, and the dimensions for analysis * Analytical data – supports decision-making.</p> <p>Master data (as opposed to "data") represents the business objects which are agreed on and shared across the enterprise. It can cover relatively static reference data, transactional, unstructured, analytical, hierarchical and metadata. Master data management is part of data management.</p>
Mission (Driver)	<p>A statement of the enterprise's (digital) identity and purpose, and a picture of the objectives and overall goals, from which KPIs and CSFs can be inferred.</p>
Need (Driver)	<p>The resources needed by the business to fulfil its mission. In the context of business information management, the needs for business information services.</p>
Operation (Domain)	<p>Support for those using information services when carrying out their activities within the business processes, for the operational management of the information services supplier, and for providing and monitoring the operational services.</p>
Perspectives	<p>Important aspects that are considered during Governance, Strategy, Improvement and Operation.</p>

TERM	DEFINITION
Products and services	Products and services exist on a continuum, in which a 100% pure product is material, as opposed to a 100% pure service that is immaterial. An enterprise usually provides a combination of services and products. "Service" is also often used to designate a combination of products and services.
Project Support Office (PSO)	A PSO is a temporary or permanent organizational unit that provides a portfolio of services to support project teams that are responsible for a defined group of projects. Depending on your favorite framework or practice you may call it something different.
Service	A means of delivering value to customers by facilitating the outcomes that they want to achieve. A service comprises an (1) offer from one party to another, between whom a (2) relationship exists; an (3) engagement between both parties, (4) interaction (or service act) between parties, and results in (5) output and (6) outcome for both parties. When "service" is used to designate a combination of products and services, service is defined as anything that can be offered and provided to a market that might satisfy a want or need.
Service (Perspective)	The perspective that is focused on the services required to acquire the necessary information for running the business and reaching the enterprise goals.
Service design	The activity of planning and organizing people, infrastructure, communication and material components of a service in order to improve its quality and the interaction between the service provider and its customers.
Stakeholder	A party that significantly affects, or is significantly affected by, an enterprise.
Strategy (Domain)	Definition of the information strategy, and coordination of business information services.
Supplier	One that provides goods or services (to the enterprise).
Supply chain	A system of organizations, people, activities, information, and resources involved in moving a product or service from supplier to customer.
Technology (Perspective)	The perspective that is focused on the technology needed to acquire the necessary information for running the business and achieving the enterprise goals.
User	A person who uses an information service.
Value (Driver)	The benefits that the business derives from the business information services.
Wisdom	Integrated knowledge – information made super-useful.



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