Syllabus
BIAN Foundation Certification
(Version 3)

Version 3.8

A versioning table can be found here

This material contains diagrams and text information based upon:

BIAN® - the Banking Industry Architecture Network.

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Introduction

This syllabus outlines the knowledge the candidates need to master in order to pass the BIAN Foundation Certification exam. It provides suggestions for preparation and highlights the benefits of taking this exam.

The Financial Services ecosystem in turmoil

Disruptive technology is changing the playing field for consumer services in general and financial services in particular. It is not only technology that is changing the scene, new regulations are also changing the playing field dramatically. They force financial institutions to disclose financial information to Third Party Providers (TPPs), providing access to financial services for new players and facilitating competition frfom FinTechs and RegTechs.

Financial information requirements and financial services are changing at a very high speed. The financial ecosystem is continuously changing, at an ever-increasing pace. This requires an adaptive and agile banking business, supported by an agile organization and ICT platform. Adaptability to new regulations, service requirements, new market players and stakeholders drives the speed and dynamics of the financial world.

Financial institutions were among the first to automate their businesses and are now among the most digitalized service providers. They have pervasive but often complex legacy ICT platforms, with lots of duplication of functionality and data. Monolithic systems, stovepipe systems are connected through point-to-point connections with numerous interface adapters. These legacy systems are a barrier to reacting in a timely and cost-effective manner to market and ecosystem changes. Their complexity results in inflexible/unresponsive systems, inflated enhancement, increasing maintenance and operational costs, and an inability to rapidly leverage advanced solutions, technologies, approaches and business models.

In order to be adaptive in rapidly changing circumstances, financial institutions need agile banking and ICT architectures on an enterprise level. BIAN supports financial institutions in elaborating such a target architecture and in adopting a step-by-step migration towards that target.

The Banking Industry Architecture Network and its mission

The Banking Industry Architecture Network (BIAN) is a global, not-for profit association of banks, solution providers, consultancy companies, integrators and academic partners, with the shared aim of defining a semantic standard for the banking industry covering the business and application architectural layers and the behavior, services and information viewpoints.

The BIAN Association strives to enhance the flexibility and agility of financial services systems by improving the integration of these with an architecture that is based on services.

BIAN's vision and expectation is that a standard definition of business functions, service interactions and business objects which describe the general construct of any bank will be of significant benefit to the industry.

BIAN's mission is to provide the world with the best banking architecture framework and banking standard. BIAN provides a trusted roadmap for constant innovation.

The goal of the BIAN Association is to develop the most important content, concepts and methods in interoperability, supporting the aim of lower integration costs in the financial services industry and facilitating business innovation and agility by:

- Providing an architecture framework with all of the necessary elements, tools and methodologies for a sustainable operational model through the adoption of, and alignment with, available market standards.
- Focusing on the definition of semantic services and/or API-definitions to improve the semantic integration of the financial services landscapes.
- Enabling the financial services industry to develop and run a loosely coupled environment successfully.
- Gaining acceptance from the members of the BIAN Association and the industry of the way in which the requirements will be implemented by both financial institutions and solution suppliers, resulting in the defined services becoming the de-facto-standard in the financial services industry.

The BIAN Certification roadmap

The BIAN Certification roadmap offers role-specific training designed for cross-team alignment. All candidates start with a core Foundation Certification before progressing to one of four Practitioner paths:

- Enterprise Architect
- Solution Architect/Developer
- Data Architect or
- Business Professional.

These certifications are structured to ensure BIAN teams work to the best of their ability, enabling organizations to extract maximum value from the BIAN framework. More details on the BIAN Certification roadmap can be found here.

The BIAN Foundation Certification

The BIAN Foundation exam leads to the official BIAN Foundation Certification by the Banking Industry Architecture Network. It is carried out by Van Haren Learning Solutions.

The BIAN Foundation Certification exam tests the candidate's knowledge of the BIAN Reference Architecture for the Financial Industry. This includes the BIAN Standard, aimed at interoperability in the Open Finance economy. By successfully passing the BIAN Foundation exam, candidates will achieve the BIAN Foundation-level Certification which assures they have been audited and have successfully mastered the required BIAN Foundation-level knowledge and understanding.

The Foundation level ensures successful candidates have the ability to describe the added value BIAN seeks to provide to the Financial Industry and its service providers. It includes knowledge and understanding of the design principles and elements of BIAN's Reference Architecture for the Financial Industry. In addition, it includes an understanding of the ways this Architecture can be used to reduce integration costs, maximize interoperability and improve the manageability of the enterprise. It also provides an understanding of the relationships between BIAN and other standards.

The BIAN Certification exam is intended for professionals in the Financial Services industry such as:
– Enterprise and Solution Architects
– Consultants and Senior Consultants
– Tooling providers, software solution providers, integrators and third party service providers.

Key benefits of the BIAN Foundation Certification are:

- It enables professionals to leverage the benefits of BIAN.
- It increases the knowledge and general skills of professionals regarding financial services and enables the creation of more transparent ICT systems.
- It provides professionals and their organizations with a competitive advantage.
- It is a hallmark for the professionalism of banking professionals and banking architects.

Certification definition

The BIAN Banking Architecture Foundation Certification is a vital component of the BIAN Banking Architecture Certification Program. This Certification validates a candidate's understanding of the BIAN Reference Architecture for the Financial Industry, including its advantages to the financial sector and its service providers. The Certification also verifies the candidate's knowledge about the design principles and elements of the Reference Architecture and its ability to reduce integration costs, increase interoperability, and enhance enterprise manageability.

BIAN Foundation Certification requirements

Candidates can become certified by passing the BIAN Banking Architecture Foundation exam. Vouchers for the Certification exam are available through accredited trainers and Van Haren Group.

The knowledge of the candidates will be tested through a multiple-choice exam. An overview of the exam characteristics is given in Table 1.

All exam candidates will get access to the online exam environment and will need to answer 60 multiple-choice questions within 60 minutes.

70% of the questions need to be answered correctly (at least 42 of the 60 questions) in order to pass.

Questions can have one to many correct answers. The number of correct answers is not always indicated in the question. Negative questions (… NOT…) are included. Candidates are advised to read both questions and possible answers with care.

The candidate will receive the result immediately after the exam. (Digital) Access to their certificate will be given once they have passed.

Registration for the exam can be done by purchasing a participation certificate at www.vhls.global.

The candidate can take a number of trial exams, but only one actual Certification exam. Taking trial exams before attempting the actual Certification exam, is highly recommended.

Table 1 Overview of BIAN Foundation Certification exam characteristics

Number of questions:	60
Time (minutes) for the exam:	60 minutes
Passing grade:	70%
Open/closed book:	Closed
Language:	English
Exam format:	Online
Type of question:	Multiple choice One to many possible correct answers Negative questions included

Validity of the Certification

The BIAN Banking Architecture Foundation Certificate is valid for two years.

The BIAN Foundation Certification in the Bloom Taxonomy

The BIAN Banking Architecture Foundation Certification audits candidates at the Bloom Levels 1 and 2.

This means (according to Bloom's Revised Taxonomy):
• Remembering: Bloom Level 1
• Understanding: Bloom Level 2

BIAN Foundation Certification scope

The learning objectives state what the candidate needs to know and be able to do. Achieving these objectives is expressed by passing the BIAN Foundation Certification exam.

For the Foundation Certification the student needs to demonstrate:

- An understanding of what BIAN is and being able to describe the purpose of BIAN and its design principles.
- Being able to describe BIAN's added value for the Financial Services industry.
- Being able to describe and recognize the elements of the BIAN Architecture and their role in different contexts.

To test these learning objectives, the scope of the BIAN Foundation Certification encompasses the following subjects.

Weight of the BIAN Foundation topics

The candidate's knowledge will be tested on the topics enumerated in Table 2. Each topic has a different weighting. The number of exam questions testing that topic will be chosen according to this weight.

Table 2 BIAN Foundation Certification exam topics and their weight

#	Category	Weight (Questions)
1	BIAN Overview & Purpose	13.3%
2	Industry Challenges & Motivation	13.3%
3	Principles & Design	8.3%
4	BIAN Architecture Fundamentals	6.7%
5	Service Domains & Functional Patterns	10%
6	Service Landscape	11.8%
7	Semantic APIs & Service Operations	11.8%
8	Business Object Model (BOM)	8.3%
9	Business Capabilities	8.3%
10	Applying BIAN in Practice	8.3%

Preparing for the BIAN Foundation Certification exam

The BIAN Foundation Certification is based on knowledge articulated in the publication "BIAN 2nd Edition – a framework for the financial services industry" (ISBN Hard copy: 978 94 018 0768 5, ISBN eBook: 978 94 018 0769 2, ISBN ePub: 978 94 018 0770 8).

This book summarizes the information that is available in the Guides, White Papers and Webinars, available on the BIAN website.

Self-study should take about 16 hours, depending on existing knowledge. It is recommended that candidates have a working knowledge of business and/or application architecture.

To support the candidates, accredited BIAN Foundation training courses are available via Accredited Education Partners. You can ask BIAN Services or Van Haren Learning Solutions (info@vanharen.net) for a reference. The recommended number of contact hours for such a training course is six.

Table 3 Exam topics – Training module and literature mapping, gives an overview of the exam topics and where they are covered in the accredited training and the book "BIAN 2nd Edition – a framework for the financial services industry".

Table 3 Exam topics – Training module and literature mapping

#	Category	Description	Training Section	Book Chapter	Weight (Questions)	Level of Cognition (Bloom Level)
1	BIAN Overview & Purpose	What BIAN is, its mission, vision, and benefits	Introduction to BIAN	1, 2	8	1 & 2
2	Industry Challenges & Motivation	Legacy system issues, integration costs, agility needs	Industry Challenges	2	8	1 & 2
3	Principles & Design Thinking	Agile principles, capability-based design, separation of concerns	Design Principles	4	5	1 & 2
4	BIAN Architecture Fundamentals	Metamodel, layers (business, application, technology), modularity	Architecture Fundamentals	3, 4	4	1 & 2
5	Service Domains & Functional Patterns	Structure of SDs, Functional Patterns, Asset Types, Control Records	Service Domains	3.1	6	1 & 2
6	Service Landscape	Business Areas, Business Domains, Service Domains, hierarchy	Service Landscape	3.2	7	1 & 2
7	Semantic APIs & Service Operations	Action Terms, API endpoints, Swagger, interoperability	Semantic APIs	3.4	7	1 & 2

8	Business Object Model (BOM)	Semantic data model, structure/content/classification patterns	**Business Object Model**	3.3	5	1 & 2
9	Business Capabilities	Strategic capabilities and their alignment with SDs	**Business Capabilities**	5.2	5	1 & 2
10	Applying BIAN in Practice	Tailoring, gradual adoption, implementation strategies	**Practical Application**	5.1, 7	5	1 & 2

Scope of the BIAN Foundation topics

Introducing BIAN and its Framework

The candidates need to remember and understand the characteristics of BIAN and its offering.

The BIAN Association, its vision, mission, goals and benefits

BIAN's vision, mission and goals have already been described in the introduction.

When compared to an increasing number of proprietary designs, a dedicated industry standard like BIAN provides the following main benefits:

- Created by industry experts from around the globe.
- Regular updates following the market developments and industry needs.
- It enables a more efficient and effective development and integration of software solutions within the bank and between banks.
- It significantly lowers the overall integration costs.
- It improves the operational efficiency within and between banks, and provides the opportunity for greater solution and capability re-use within and among banks.
- It supports the current need for more industry integration and collaboration through the usage of (open) APIs.
- It supports the adoption of more flexible business service sourcing models and enhances the evolution and adoption of shared third-party business services.
- It supports FinTechs and RegTechs in gaining an easy insight in the complex Financial Services industry structure.

Positioning BIAN in the standards landscape

BIAN is a content standard.

It uses the ArchiMate and UML languages to document its Reference Architecture for the Financial Industry, but does not prescribe the use of a modeling language to users of this Architecture, nor does it prescribe a documentation tool.

There is a major synergy between BIAN as a content framework and TOGAF as an architecture methodology, but BIAN does not prescribe specific methodologies or techniques.

As a content standard, BIAN is semantic: it offers business definitions and describes WHAT needs to happen/be known, not HOW or WITH WHAT this needs to be implemented. BIAN is implementation and technology agnostic.

BIAN is exhaustive: it offers a definition of business functions, service interactions and business objects. It covers all activities on an architecture and design level.

BIAN has a strong working relationship with other standard bodies and aligns with existing standards where relevant and possible.

It is the ambition of the BIAN Association to achieve a consensus on the service definition among leading banks and providers in the Financial Services industry, which in due time should lead to standardized services.

How BIAN evolves: a member-driven architecture

The development of the BIAN Architecture is iterative, relying on the active contribution of industry participants to build consensus and encourage adoption.

BIAN's Architecture is elaborated by working groups, each focusing on a specific area and aspect of banking architecture. Working groups always have member banks as members, in addition to service providers and academic partners.

Members as well as non-members can communicate proposals for changes and additions to the BIAN Architecture.

The BIAN Framework is a toolbox

The BIAN Framework is a "toolbox" that contains its Reference Architecture for the Financial Industry as well as the means to support its adoption.

BIAN offers an open **digital repository**, which contains its Reference Architecture for the Financial Industry and an **API portal**, that provides access to the Semantic API descriptions and the Swagger Files.

The BIAN website offers **publications** that provide guidance in understanding and using the BIAN Architecture and standard. The information contained in these guides, white papers and webinars is summarized in the first and second edition of the book "BIAN, a framework for the Financial Services Industry".

A typical BIAN **adoption journey** is described.

BIAN offers **training** and **certification** for professionals and is working on certification for vendor products.

The **Reference Architecture** for the Financial Industry is partly meant as **standard**: Service Domains, Service Operations and their Semantic APIs and Business Objects are applicable and "canonical" for all financial institutions. Business Capabilities, Business Scenarios and Wireframes are archetypical examples, not meant to be generally applicable.

BIAN: principles and approach

BIAN's Architecture is based on agile principles

BIAN offers a "capability based" architecture. Contrary to a process-based architecture, this focuses on unique, Mutually Exclusive, Collectively Exhaustive building blocks of "abilities to provide outcomes". These can be combined in orchestrations supporting any banking functionality.

A business and logical application architecture, based on this "building block" approach, is "agile". It can support the business agility required in the rapidly changing financial ecosystem.

BIAN's Reference Architecture for the Financial Services Industry is elaborated according to agile principles:

- Separation of concerns
- Loose coupling
- Reusability
- Encapsulation
- Interoperability
- Service orientation

Applying the Reference Architecture for the Financial Industry results in architectural "simplicity", as opposed to the complexity most financial institutions suffer from. A complexity that causes high maintenance costs, low flexibility and cumbersome migration trajectories.

Changing architecture thinking: building blocks versus process-based architecture

BIAN introduces "capability-based" thinking, instead of the usual "process based" architecture thinking. BIAN's building blocks are the "ingredients" that enable an architect to design an agile architecture for a financial institution, that can support any "stakeholder journey". This can be compared to the way a town planner designs an effective town plan, based on the "ingredients" such as homes, roads, parks… This town plan is designed to support any "journey" through the town in the most effective way.

Explaining the BIAN Architecture

The candidates need to be familiar with the concepts used in the BIAN Architecture. They need to master the terminology and understand the role of each element in the whole of the BIAN Architecture.

The BIAN Metamodel

A model is an abstract representation of reality. A metamodel defines the constructs and rules for creating such models. An architecture model consists of a set of building blocks and their relationships. The metamodel defines the types of building blocks and the possible relationships between them. The architecture model can be managed in an architecture repository, according to the metamodel. According to the metamodel, the architecture model can then be exploited, to produce "architectural artefacts" that can provide information for stakeholders.

The **BIAN Metamodel** defines the types of building blocks BIAN uses to capture the reality of a financial institution in an architecture model. It also describes what artefacts BIAN produces to support financial institutions.

The Service Landscape

The BIAN **Service Landscape** is a representation that organizes the BIAN Service Domains. The Service Domains are grouped into **Business Domains**, which are subsequently grouped into **Business Areas**. This creates an access path that facilitates finding and accessing Service Domains.

The Service Landscape is not intended to represent a design blueprint for any bank.

Service Domains and their patterns

The **Service Domain** is a core concept in the BIAN architecture.

A BIAN Service Domain represents the smallest functional partition that can be service-enabled as a discrete and unique business responsibility. All BIAN Service Domains taken together make up a "peer set" with each performing its own specific business function or purpose. Together, interacting through their Service Operations, they can cover all of the functionality required by a bank.

A Service Domain is constructed according to a pattern that ensures its uniqueness. A Service Domain fulfills its role by executing a **Functional Pattern** on instances of an **Asset Type**. Each Service Domain combines a single primary Functional Pattern (e.g., manage, design, operate) with an Asset Type (e.g., a piece of equipment, a customer relationship).

Control Record and Information Profile and their patterns

The complete collection of business information governed by a Service Domain when implemented as a stand-alone service center, is described by the **Service Domain Information Profile**. The Service Domain Information Profile consists of information on two levels:

- Information at the level of Service Domain used for the control and management of the Service Domain as a service center.

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- Information at the level of the Service Domain's role execution. This is covered by the **Control Record** instances.

The Control Record structure is based on a "pattern".

The Control Record represents a set of business information that reflects all information created during the fulfillment of the role of a Service Domain. A Service Domain fulfills its role and responsibility by the execution of a Functional Pattern on an instance of an Asset Type. Hence, the Control Record represents the information about the Asset Type combined with the information that is central to the execution of the Functional Pattern: the **Generic Artifact**.

The Service Domain is responsible for executing the Functional Pattern and managing the Control Record accordingly, during the entire lifespan of the Asset instance. It can manage one Control Record, or a whole set.

The Control Record can be further decomposed into **Behavior Qualifiers** according to a **Behavior Qualifier Type.** A Behavior Qualifier Type is a type of information that refines the Generic Artifact, according to a refinement of the conceptual behavior of the Service Domain (i.e., the Functional Pattern).

Business Object Model and its approach and patterns

The **BIAN BOM** (Business Object Model) is elaborated by modeling the information needs of every BIAN Service Domain, as expressed in its Control Record, according to the "Business Object Modeling approach". The resulting individual Service Domain Business Object Models (Service Domain BOMs) are consolidated into the BIAN BOM. The "Business Object Modeling approach" ensures the consistency of the BIAN BOM.

Two key notions in the BOM approach's way of thinking are "business concept" and "business object". Being able to make the distinction is key.

The **Business Objects** are discerned and modeled according to two patterns.

The **BOM content pattern** is an abstract information model, valid for any business. It contains the Business Objects and their relationships, that make up any business, on a high abstraction level. This model can be made more specific for a particular business context.

The **BOM structure pattern,** enriches the content pattern by indicating the types of classifications that can be applied to Business Objects, their relationships and attributes.

Service Operations and Semantic API and their patterns

Every **Service Domain** offers a collection of **Service Operations.** The purpose of an offered service is characterized by an **Action Term** which is a fundamental unit of behavior. A Service Operation offered by a Service Domain is made available to the environment through an access point called a **Semantic API Endpoint.** The collection of the Semantic API Endpoints of one Service Domain is represented by its **Semantic API**.

The **Message**, containing the information exchanged in a Service Operation, as described in its Semantic API Endpoint, refers to the **Information Profile** of the Service Domain, or any of its constituent parts. This information content can also be expressed as a view on the Business Objects, as defined in the BIAN BOM.

The Service Operation and its Semantic API can be used to define and design Application Services and APIs. A machine-readable **Swagger File** can be generated from the Semantic API. The Semantic API Swaggers can be extended to create executable APIs.

Business Scenarios and Wireframes

BIAN **Business Scenarios** and **Wireframes** provide practical examples of how Service Domains can interact. They are not part of the BIAN Standard but are included in the BIAN Framework because they provide a powerful mechanism to illustrate, by example, the roles and interactions supported by the Service Domains.

A Business Scenario is a depiction of how BIAN Service Domains might work together through Service Operations in response to an event. These Service Operations realize the **Service Connections** between the Service Domains, required to produce the desired outcome of the Scenario. Business Scenarios are not process descriptions. They do not imply a specific execution order.

A Wireframe is a depiction that shows the Service Connections between a selection of Service Domains.

The service dependency between two Service Domains, one offering the service and one consuming the service, is called "**First Order Connection**".

Business Capability

A business capability represents the bank's abilities and capacities to realize its banking strategies and to create value in its ecosystem. Business capabilities are an instrument for a bank to define its banking strategy. BIAN defines **Business Capabilities** that can be used as such or can inspire a bank's own business capabilities.

A BIAN Business Capability can be described as a collaboration between Service Domains. A BIAN Business Capability is "served" by a series of Service Domains and each Service Domain can be a building block for more than one Business Capability.

How to apply the BIAN Standard, general abilities

The candidates need to have an understanding of the general abilities of the BIAN Architecture and how it can be used by an organization. They need to have a passive knowledge of the terminology used to address these abilities. This insight is related to <u>what</u> BIAN can mean for an organization, <u>not how</u> this is to be achieved.

BIAN as Common Frame of Reference: ambition levels

The BIAN Architecture offers a MECE[1] collection of elemental, semantic building blocks for a bank's activities, information and services, canonically defined. Thus, it is well positioned to be used as "common Frame of Reference" for the functionality offered by the business organization and application platform. This characteristic can be used on different ambition levels:

- As a common language to facilitate understanding between speech communities.
- The business and application landscape can be overlaid on the BIAN-based Frame of Reference, in order to uniquely identify the functionality provided to business organizations and processes and by application(platform)s. This is a powerful tool for evaluating, comparing and optimizing business and application landscapes, and for clarifying the links between these landscapes.
- Features such as requirements and performance measurements and assessments can be documented using the BIAN building blocks as anchor point.
- Documentation of existing or target solutions can be "labeled" and organized according to this Frame of Reference, using the Service Domains as anchor points for documentation. Repositories can be "indexed" with the BIAN building blocks, facilitating their exploitation.
- The principles and building blocks of the BIAN Architecture can be used as the basis for a conceptual reference architecture, steering new developments and the optimization of the business and application landscape.

Tailoring

The BIAN Architecture can be tailored to the bank's specificities and needs.

Its descriptions can be detailed, whilst Service Domains and Business Objects that are not relevant for a specific bank can be omitted ("select"). Service Domains can be merged or split or added, Business Objects can be abstracted, decomposed and specialized ("customize). A bank can use its own Service Landscape structure.

All types of tailoring are possible, as long as the principles and patterns that underpin the BIAN Architecture are respected. Tailoring should stay on the semantic, conceptual level and not be confused with documenting implementations.

Gradual introduction

BIAN can be introduced step-by-step "in time and space".

A bank can start by using it on the lowest ambition level, as a "common language". It can evolve to using it as a common Frame of Reference to systematically explore and map the functionality of the business organization and the application platform. Finally, it can use BIAN as the basis for a

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[1] Mutually Exclusive, Collectively Exhaustive

conceptual Reference Architecture, steering new developments and optimizations of the legacy platform.

The BIAN Architecture provides a MECE collection of stable, well-delimited partitions for a bank's activities and information. This supports an area-by-area introduction.

How to apply the BIAN Standard, applied to layers and transversal views

The candidates need to have an understanding of how the general abilities of the BIAN Architecture can be applied to the different architecture layers and viewpoints of an enterprise. They need to have a passive knowledge of the terminology used to address these abilities. This insight is related to <u>what</u> BIAN can mean for an organization, <u>not how</u> this is to be achieved.

A holistic overview on the enterprise

Enterprises often consist of different "speech communities". The **enterprise blueprint**, depicting the responsibilities of the entire enterprise as well as those of its divisions, lines of business… and other subdivisions, can be expressed in terms of Service Domains. This provides a common, speech community-independent language and Frame of Reference to enterprise management. This Frame of Reference can be of use to link Strategy and Operations and facilitate the "Steer, Operate, Assess and Change" cycle.

The expressions "blueprint" and "Frame of Reference", although slightly different in meaning, need to be considered as synonyms in the context of the exam.

Management, in its "steer and govern" responsibility, is supported by different disciplines, such as strategists (*steer*), architects (*operate*), performance managers (*assess*) and investment and change portfolio managers (*change*). BIAN can be used as a "common language" and "common Frame of Reference" by all these disciplines. This makes it easier to communicate among each other and to provide management with a holistic view on the enterprise.

The BIAN Framework supports Banking **Strategy Management** (*steer*) by offering archetypical Business Capabilities in a Business Capability Landscape. Service Domains are elemental, stable capability building blocks that serve these Business Capabilities. The strategic positioning and requirements of the Business Capabilities can be projected on the Service Domains.

The Banking Strategy is supported by the Business Strategy (business layer) and the Information System Strategy (application and technology layer). Service Domains, as stable capability building blocks, that can be flexibly combined in numerous ways, and are the instruments for these strategies. Service Domains are realized by actual "systems" such as business processes or functions, applications… Systems that represent the actual *operations* of the bank.

Strategic positioning of and (increasing levels of detail of) **requirements** to these systems can be **documented** per Service Domain. **Performance *assess**ments can be documented on the same scale. This information can be "passed down" through the architecture layers, as these are all[2] mapped on the BIAN Frame of Reference.

The availability of (strategic) requirements and assessments on the same scale, facilitates the detection of areas that need **investments or *changes***. The scope of such initiatives can also be expressed in impacted Service Domains.

The common Frame of Reference facilitates the communication between different disciplines (such as architecture, performance management and change management). It can improve the communication within these disciplines. This results in an improved quality of their deliverables.

This Common Frame of Reference is also obtained by enterprise management, by expressing the enterprise blueprint in BIAN language. It is used to **communicate information** from different points of view to them. This facilitates management in acquiring a holistic view on the enterprise.

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[2] Directly in case of the business and application layer, indirectly through configuration information for the technology layer.

Business layer

The support BIAN provides for the different architecture layers and viewpoints corresponds to the same pattern, resulting from BIAN's general abilities and its support for a "holistic view" on the enterprise. We will treat these types of support in more detail under this subject (BIAN for the business layer) and mention them briefly under "application layer", "information and data" and "interoperability".

Specifically for the business layer, the **organogram** can be expressed in Service Domains.

BIAN can be of use on a business architecture level in the following fields:

- The Service Landscape and its Service Domains (or a tailored version the bank made) serves as common Frame of Reference.

  It can be used to **explore** the business landscape: The business landscape (organizational units, processes, business functions…) can be overlaid on this BIAN-based Frame of Reference to uniquely identify the functionality that is performed.

  This enables a one-to-one **comparison** of the functionality present in different organizations. It enables the detection of duplications, reveals gaps… As such, it contributes to the **assessment** and **optimization** of the business **landscape.**

  It can be used to assess the synergy/complementarity in **mergers and acquisitions**.

  Requirements and **performance information** can be documented along with a Service Domain structure. This facilitates the **assessment** and comparison of "business **systems**" and the detection and **scope** delimitation of **investment and change proposals.**

  If business documentation is "labeled" with the Service Domain that is realized (and the documentation repository is indexed accordingly), this supports the search for project-**stakeholders** and the **impact analysis** of change initiatives.

- Service Domains can be used as building blocks for **conceptual reference architecture patterns**. These patterns prescribe what (reusable) business functionality is involved when embedding new functionality in the end-to-end enterprise. The principles the BIAN Architecture is based on can be adopted too.
- The BIAN Architecture provides a stable, friction-free partitioning of a bank's business functionality. This supports **architecture governance** ("**divide and conquer**"), as it enables the delimitation of architecture responsibility areas.

  Each Service Domain partition receives a strategic **value and risk** evaluation, based on the Service Domain's contribution to the bank's strategy. This is "inherited" by the elements of the business landscape that are realizations of this Service Domain.

BIAN can be of use on a business design level in the following fields:

- **Requirements** can be documented per Service Domain. This promotes "service business capability building block" thinking instead of monolithic process-support thinking.

  It facilitates the search for **service providers** within the organization as well as without. If business service providers document their service offering on the same Service Domain scale, comparison with the business requirements is more straightforward.

- Service Domains can be used as high-level process steps, facilitating the cooperation between process managers and the search for the best service provider for each process step.
  Though BIAN's Business Scenarios are not process descriptions, they can be used as inspiration.

Application layer

If business and application architects share the common BIAN Frame of Reference, the communication between them will be improved. The evaluation of the coverage of the application platform will be facilitated as well as root-cause analysis of business problems and impact analysis of ICT issues. The scope definition and impact analysis of projects will be more reliable.

BIAN can be of use on an application <u>architecture level</u> in following fields:

- The Service Landscape and its Service Domains (or a tailored version the bank has made) serves as common Frame of Reference. This Frame of Reference can be used to **explore, compare, assess and improve** the application **landscape.**

  It can be used to assess and compare application platforms in **mergers and acquisitions.**

  As **Requirements** and **performance information** is documented along a Service Domain structure, the **assessment** of application **systems** is made easier and the **scope** and **impact** of **investment and change** proposals originating on the application layer will be more clear to management.

- The technology landscape cannot be directly mapped on Service Domains, but as it is linked to the application landscape through configuration information, the contribution of its elements to "functionality building blocks" can also be explored and evaluated. The business contribution of projects originating on this layer becomes clearer as the project-scope can be "translated" to the "common BIAN language".

- Service Domains can be used as building blocks for **conceptual reference application architecture patterns**. BIAN's Architecture principles are sound application architecture principles.

- The BIAN Architecture supports **architecture governance** ("**divide and conquer**") and the application support can receive a strategic **value and risk** evaluation for Service Domain partition.

- Legacy applications can be optimized and their lifecycles prolonged by overlaying them on the Service Domain Frame of Reference. This shows candidates for "application externalization".
  This can mean that the functionality is eliminated and replaced by a service call, or – if the application is selected as "master"- the functionality is either isolated in a separate service-component, or service-enabled through "wrapping".

- Service Domains provide stable, generic application component boundaries (one Service Domain or a cluster of closely cooperating Service Domains).
  The Business Scenario and/or Wireframe technique can be used to detect and delimit such "clusters".

BIAN can be of use on an application <u>design level</u> in the following fields:

- **Requirements** can be documented per Service Domain. The "Service Domain-index" supports the search for **reusable** application components and the search for suitable **vendor** software or application **service providers**.

Service Domain (clusters) as the "mould" for application component delimitation is relevant, for all "sophistication levels" of application architecture style. Whether it be a "direct to core" exchange of

services on one application platform, a "wrapped host" exchange through EAI facilities[3] or a "distributed architecture" where canonical services are exchanged in a cloud-based environment.

Information and data

The BIAN-based Frame of Reference for information and data is not the Service Landscape and its Service Domains, but the BIAN Business Object Model (BIAN BOM). This BIAN BOM can be detailed and tailored to a bank's specificities, similarly to and preferably together with the tailoring of the Service Landscape.

BIAN can be of use on <u>architecture level</u> in following fields:

- The BIAN BOM and its Business Objects (or the "Bank BOM", the tailored version the bank made) can be used **explore** the information landscape. It can uniquely define which information is created and used in what process and by which organization.
- It can be used to **explore, assess and improve** the "data at rest" (data stores) and "data in motion" (data flows and services) landscape, by indicating duplications and gaps.
- The **value and risk** of business information – hence of the data that represent this information on the application layer- can be expressed per (group of) Business Object(s).

BIAN can be of use on a <u>design level</u> in the following fields:

- A first draft of information **Requirements** can be derived from the Control Records and/or Service Domain BOMs of the Service Domains that are involved in the solution.
- The "Business Object-index" supports the search for **reusable** data stores and data flows.
- The BIAN BOM or "Bank BOM" can be detailed to become a "canonical data model". This canonical data model supports the creation of a "Business Intelligence" environment where all data available in the enterprise need to be navigable.

Interoperability

"API" (Application Programming Interface) and "application service" are used as synonyms for the sake of this exposé.

The "Service Domain Frame of Reference" can be extended with the detail of Service Operation. The "Service Domain / Service Operation Frame of Reference" provides a MECE collection of stable, elemental building blocks for any application service.

BIAN can be of use on an application service <u>architecture level</u> in the following fields:

- The "Service Domain / Service Operation Frame of Reference" can be used as an organizing Frame of Reference for the **application service catalog**. Each application service can be labeled with the Service Operations it realizes.
- The catalog, organized in this way, can be used to **assess** and **improve** the application service **landscape.**
- It can be used to **steer** the use of application services.
- Application services, aligned with the boundaries of Service Domain and based on the BIAN Service Operations, provide **stable service boundaries.** Service users, switching from one

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[3] Where BIAN can provide the "canonical interfaces" as a basis for the ESB-service directory

implementation to another, can expect changes to be limited to the immediate vicinity of the interface, without propagation to business functionality.

- The stable nature of the BIAN-based application services facilitates a gradual optimization of the application portfolio.

BIAN can be of use on an API <u>design level</u> in the following fields:

- Service boundaries of application components can be derived using Business Scenarios and Wireframes. The Semantic API descriptions provide details about the Service Operations that are exchanged.
- The information content of the service exchanges can be enriched with content of the "canonical data model", based on the BIAN BOM.
- BIAN provides Swagger Files, as a programming "stub".
  This should not be confused with actual executable software.

Exam regulations

General rules

A BIAN Foundation Certification is an prestigious title, and fraud is not tolerated. Your exam will be immediately rejected if fraud is found to have been committed during or after completion of the exam. As a result, you will not be reimbursed for your examination fees.

If you fail to pass the exam, you will not receive a certificate. This also means that you must purchase and take a new exam for your certification. Every candidate only gets one attempt per exam to succeed.

Sharing of exam questions is illegal

It is not allowed to share exam questions with others or make them public. This is a violation of the copyright and IP of the BIAN Association and Van Haren Learning Solutions. Doing so can lead to legal action by Van Haren Learning Solutions with potentially harmful consequences.

Key terms and concepts

The terms and concepts described in Table 4 need to be known in order to successfully pass the BIAN Foundation Certification exam.

Table 4 Terms and expressions, key to taking the BIAN Foundation Certification exam.

Term/expression	Definition or meaning, as used in the BIAN context
Action Term	A fundamental unit of behavior that characterizes the purpose of a Service Operation.
API Swagger File	A machine-readable format (according to Swagger[4] TM) of a semantic API description.
Asset Type	Something tangible or intangible the bank has ownership and/or influence over, that can create value for the bank.
Behavior Qualifier	A set of business information that qualifies (i.e., refines) the Control Record of a Service Domain.
Behavior Qualifier Type	A type of information that refines the Generic Artifact and specifies a classification of Behavior Qualifiers.
BIAN BOM	Reference information architecture model for the financial industry.
BIAN Framework	BIAN's Reference Architecture for the Financial Services Industry, and its standard, and the toolbox BIAN offers in support for their adoption.
BIAN Metamodel	The constructs and rules according to which the BIAN Architecture models the reality of the financial industry.
Business Area	A grouping of Business Domains used for a structured presentation of the Service Landscape.
Business Capability	A particular ability that a business may possess or exchange to achieve a specific purpose.
Business Domain	A grouping of Service Domains used for a structured presentation of the Service Landscape.
Business Object	Something that exists in reality, concrete or abstract, and participates and/or influences the nature of the business.
Business Scenario	A linked sequence of interactions between Service Domains in response to a business event.

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[4] Swagger^{TM} allows you to describe the structure of your APIs so that machines can read them. It enforces adherence to the Open API Specification.

Canonical	In a common language, meant to enable communication between "speech communities".
Control Record	A set of business information that reflects all information needed to support the fulfillment of the role of Service Domain on instances of an Asset Type.
Customizing the BIAN architecture	Adding/deleting and adapting elements of the BIAN Architecture in view of the specificities of the bank.
First Order Connection	The service dependency between two Service Domains, one offering the service and one consuming the service.
Frame of Reference	The set of reference or anchor points offered by BIAN, that enable a unique identification, understanding and positioning of the elements of a bank.
Functional Pattern	A behavior or mechanism that can be applied to some asset in the execution of commercial business.
Generic Artifact	The general type of artifact produced and/or managed by any Service Domain that conforms to the Functional Pattern.
Implementation agnostic	Indicating *what* needs to be done/known and *not how and with what* this needs to be implemented.
Information Profile	The information required for a Service Domain to function.
Message	The input and output parameters exchanged through a Semantic API Endpoint.
Reference Architecture for the Financial Services Industry	The architecture model in which BIAN captures the reality of the financial industry.
Semantic	Expressed in business language, indicating *what* needs to be done/known and *not how and with what* this needs to be implemented.
Semantic API	The collection of the Semantic API Endpoints of one Service Domain.
Semantic API Endpoint	An access point where one Service Operation offered by one Service Domain is made available to the environment.
Service Connection	A connection between two BIAN Service Domains, in the context of a Business Scenario or Wireframe, realized by a Service Operation.
Service Domain	An elemental or atomic functional building block that can be service enabled as a discrete and unique business responsibility.
Service Domain BOM	Model of the business information, governed by a Service Domain, modelled according to the BOM approach.

Service Landscape	A representation that organizes the BIAN Service Domains and facilitates access to them.
Service Operation	A business service that is exposed by a Service Domain.
Standard	Element of BIAN's Reference Architecture for the Financial Services Industry for which it is the ambition to achieve a consensus among leading banks and providers in the financial services industry, which in due time should lead to standardized services.
Tailoring the BIAN architecture	Detailing the descriptions of the elements of the BIAN Architecture and customizing it.
Technology agnostic	Unbiased towards what technology is used for implementations.
Wireframe	An interaction representing the available Service Connections for a selection of Service Domains.