

BIAN

Data Architecture Practitioner Courseware

**BIAN Data Architecture
Practitioner Courseware**

Colophon

Title: BIAN Data Architecture Practitioner Courseware

Contributors: Laleh Rafati (Envizion)
René De Vleeschauwer (Envizion)
Martine Alaerts (Envizion)
Patrick Derde (Envizion)
Guy Rackham (BIAN)

Reviewers: Gabriel Layerenza (Play Digital Consulting)
Nishan Jebanasam (CC and C Solutions)

Publisher: Van Haren Publishing, 's-Hertogenbosch

ISBN Hard Copy: 9789401814386

Edition: First edition, first print, February, 2026

Design: Van Haren Publishing, 's-Hertogenbosch

Copyright: © Van Haren Publishing 2026

For further information about Van Haren Publishing please e-mail us at: info@vanharen.net or visit our website: www.vanharen.net

All rights reserved. No part of this publication may be reproduced, distributed, stored in a data processing system or Published in any form by print, photocopy or any other means whatsoever without the prior written Consent of the authors and publisher.

Publisher about the Courseware

The Courseware was created by experts from the industry who served as the author(s) for this publication. The input for the material is based on existing publications and the experience and expertise of the author(s). The material has been revised by trainers who also have experience working with the material. Close attention was also paid to the key learning points to ensure what needs to be mastered.

The objective of the courseware is to provide maximum support to the trainer and to the student, during his or her training. The material has a modular structure and according to the author(s) has the highest success rate should the student opt for examination. The Courseware is also accredited for this reason, wherever applicable.

In order to satisfy the requirements for accreditation the material must meet certain quality standards. The structure, the use of certain terms, diagrams and references are all part of this accreditation. Additionally, the material must be made available to each student in order to obtain full accreditation. To optimally support the trainer and the participant of the training assignments, practice exams and results are provided with the material.

Direct reference to advised literature is also regularly covered in the sheets so that students can find additional information concerning a particular topic. The decision to leave out notes pages from the Courseware was to encourage students to take notes throughout the material. Although the courseware is complete, the possibility that the trainer deviates from the structure of the sheets or chooses to not refer to all the sheets or commands does exist. The student always has the possibility to cover these topics and go through them on their own time. It is recommended to follow the structure of the courseware and publications for maximum exam preparation.

The courseware and the recommended literature are the perfect combination to learn and understand the theory.

-- Van Haren Publishing

Other publications BY Van Haren Publishing

Van Haren Publishing (VHP) specializes in titles on Best Practices, methods, frameworks and standards within four domains:

- IT Management
- Architecture (Enterprise and IT)
- Business Management and
- Project Management

Van Haren Publishing is publishing on behalf of leading organizations and companies: Agile Consortium, World Commerce and Contracting, IAOP, IPMA World, KNVI, PMI-NL, NLAIC and The Open Group.

Van Haren Publishing is part of the Van Haren Group and additional to the book publishing also provides the following services: accredited training materials and e-learning through Van Haren Learning Solutions, as well as independent professional certification via examination through Van Haren Certify.

Topics are (per domain):

IT Management	IT Service Management	FitSM, ISM®, ISO/IEC20000, IT4IT®, ITIL®, VerISM®, SAF, TRIM, XLA®
	Data Management	Data literacy, Data visualization, DMBOK
	IT Asset Management	HAM, ITAM, SAM
	IT Security Management	BIO, ISO/IEC27001, NIS2
	Test Management	CTAP
	Application Management	ASL
	Other	eCF, IT-CMF, Scrum
Project Management	Project Management	Half Double, ICB, ISO/IEC21500, P3.express, PM2, PMBOK Guide, Praxis, PRINCE2
	Agile	Agile, Agile PM
	Other	PMO
Business Management	Operations Management	Lean, Lean Six Sigma, OBM, OMC, RASCI
	Contract Management	CATS CM, CATS RVM, IACCM World
	Business Information Management	BiSL, DID
	Artificial Intelligence	AI, Generative AI
	Outsourcing	OPBOK
Enterprise Architecture	Enterprise Architecture	BIAN, TOGAF
	Modeling	ArchiMate, BPMN
	Software Architecture	ISAQB
	Other	Open Agile Architecture

For the latest information on VHP publications, visit our website: www.vanharen.net.

Table of Content

	<i>-- Slide Number</i>	<i>-- Page Number</i>
Reflection		7
Course Scope		9
Syllabus		10
PART I UNDERSTANDING BIAN DATA AND INFORMATION MANAGEMENT APPROACH	(4)	30
Terminology	(7)	32
Modeling Language: ArchiMate & UML	(16)	36
BIAN BOM_ ArchiMate & UML	(19)	38
Control Record Model_ ArchiMate & UML	(31)	44
Explaining the BOM approach	(35)	46
Understanding the BOM Content Pattern	(43)	50
Understanding the BOM Structure Pattern	(81)	69
Defining a business concept	(108)	82
The Classification Pattern	(134)	95
Completing the information requirements	(153)	105
Explaining the CR Model approach	(166)	111
Service Domain Information Profile	(168)	112
Control Record Model Structure Pattern	(170)	113
Using the ArchiMate and UML language BOM	(177)	117
Diagram icons	(178)	117
Relations	(184)	120
Describing Business Object Descriptors	(192)	124
Managing the three-dimensional puzzle: an Enterprise Model	(196)	126
The devil is in the detail	(212)	134
Documenting the BIAN Control Record Model	(221)	139
Using the ArchiMate and UML language Control Record Model	(224)	140
Diagram icons	(225)	141
Relations	(230)	143
CR Model and BOM Linkage	(235)	146
PART II APPLYING THE BIAN DATA AND INFORMATION MANAGEMENT APPROACH	(238)	147
General abilities	(242)	149
A common language	(243)	150
A Common Frame of Reference	(247)	152
Tailoring your Enterprise Data Model	(256)	156
Information Governance	(263)	160
General Abilities interlude	(274)	166
Data Architecture	(278)	168
Exploring, Assessing and Cataloguing the as-is	(280)	169
Steering the Data Solution Landscape	(288)	173
Supporting Data Investments and Changes	(293)	175
Canonical Data Model	(297)	177
Linking to Data Technology	(304)	181

BOM approach and Enterprise Data Model for the System level	(306)	181
Test yourself questions	(319)	188
PART III USE-CASE: CUSTOMER ONBOARDING	(323)	190
Customer Onboarding (ArchiMate)_Architecture Level	(328)	192
Customer Onboarding (UML)_Design Level	(334)	195
Practice Exam info		199

Self-Reflection of understanding Diagram

‘What you do not measure, you cannot control.’ – Tom Peters

Fill in this diagram to self-evaluate your understanding of the material. This is an evaluation of how well you know the material and how well you understand it. In order to pass the exam successfully you should be aiming to reach the higher end of Level 3. If you really want to become a pro, then you should be aiming for Level 4. Your overall level of understanding will naturally follow the learning curve. So, it’s important to keep track of where you are at each point of the training and address any areas of difficulty.

Based on where you are within the Self-Reflection of Understanding diagram you can evaluate the progress of your own training.

Level of Understanding	Before Training (Pre-knowledge)	Training Part 1 (1st Half)	Training Part 2 (2nd Half)	After studying / reading the book	After exercises and the Practice exam
Level 4 <i>I can explain the content and apply it .</i>					
Level 3 I get it! <i>I am right where I am supposed to be.</i>					Ready for the exam!
Level 2 <i>I almost have it but could use more practice.</i>					
Level 1 <i>I am learning but don't quite get it yet.</i>					

(Self-Reflection of Understanding Diagram)

Write down the problem areas that you are still having difficulty with so that you can consolidate them yourself, or with your trainer. After you have had a look at these, then you should evaluate to see if you now have a better understanding of where you actually are on the learning curve.

Troubleshooting

Problem areas:

Topic:

Part 1

Part 2

**You have gone
through the book
and studied.**

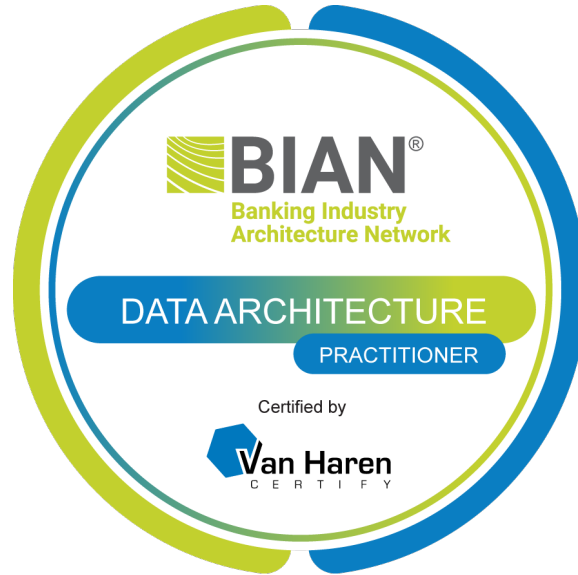
**You have answered
the questions and
done the practice
exam.**

BIAN Data Practitioner Course Scope

PART I_ Understanding the BIAN Data & Information Management approach
BIAN Information Architecture Overview _ General Terminology (<i>Introductory – Information vs Data, Model vs Diagram, Conceptual vs Logical vs Physical Model</i>)
BIAN Data Modeling Languages/Documentation Conventions (<i>Introductory - ArchiMate and UML</i>)
BOM specific terminology (<i>Introductory – Business Object, Business Attributes, Data Types, ...</i>)
CR Model specific terminology (<i>Introductory –Control Record , Behavior Qualifier and Service Operation</i>) NEW
BOM Patterns (<i>Explanatory_ Content, Structure, Classification, ...</i>)
CR Model Patterns (<i>Explanatory_ the structure of the Service Domain Information Profile; the structure of the Control Record and its Behavior Qualifier decomposition</i>) NEW
Documenting BIAN BOM as Enterprise Model (<i>Using the ArchiMate and UML language in documenting the BOM for managing (internal) enterprise information</i>)
Documenting BIAN CR Model as Information Exchange Model (<i>Using the ArchiMate and UML language in documenting the CR Model for exchanging information</i>) NEW
Part II_ Applying the BIAN Data & Information Management approach
General abilities
Information Governance
Data Architecture
Data on System Level
PART III_ Use Case: Customer Onboarding NEW
Use-case focusing on Architecture Level
Use-case focusing on Design Level

Syllabus

BIAN Data Architecture Practitioner Certification



Version 4.4

A versioning table can be found here: <https://www.vanharen.net/standards/bian/bian-versioning-table/>

All rights reserved. No part of this publication may be reproduced, distributed, stored in a data processing system or published in any form by print, photocopy or any other means whatsoever without the prior written consent of the authors and publisher.

This material contains diagrams and text information based upon:

BIAN- the Banking Industry Architecture Network.

ENVIZION- The Business Object Modeling (BOM) approach

All other brand, company, and product names are used for identification purposes only and may be trademarks that are the sole property of their respective owners.

Index

Introduction	11
The BIAN Data Architecture Practitioner Certification	12
The BIAN Certification roadmap	13
The BIAN Data Architecture Practitioner Certification exam.....	13
The BIAN Data Architecture Practitioner Certification in the Bloom Taxonomy	14
BIAN Data Architecture Practitioner Certification scope.....	15
Overview of the BIAN Data Architecture Practitioner Certification exam	15
Introducing BIAN, its framework, and principles	16
Overview of the elements of the BIAN Architecture	16
Using ArchiMate and UML to document BIAN’s data-related deliverables	17
Documenting with a view to the manageability of BIAN’s data deliverables.....	19
Applying BIAN’s deliverables and Business Object Modeling approach on governance, architecture and design levels	19
Preparing for the BIAN Data Architecture Practitioner Certification exam	21
Exam regulations	22
General rules	22
Sharing of exam questions is illegal	22
Key terms and concepts.....	23

Introduction

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

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.

The BIAN Data Architecture Practitioner Certification

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

The BIAN Data Architecture Practitioner Certification exam tests the candidate's knowledge about the BIAN Data Architecture and the approach used by BIAN to create, maintain and manage this Architecture, together with the possibilities to apply this Architecture and approach in practice.

By successfully passing the BIAN Data Architecture exam, candidates will achieve the BIAN Data Architecture Practitioner Certification which ensures that they have been audited and have successfully mastered the required BIAN Data Architecture Practitioner level. This includes their ability to describe and apply certain knowledge about BIAN such as:- Exploiting the BIAN Business Object Model and Control Records.

- Applying the Business Object Modeling Approach in order to create more transparent data systems, to improve the data architecture and to enhance quality and reduce the cost of data integration.
- Enhancing business and ICT system integration by improving the transparency of service interchanges.

Being certified in the BIAN Data Architecture Practitioner level acknowledges that a certified professional has mastered the BIAN Data Architecture and the approach used to build, maintain and manage it. A BIAN Data Architecture Certified person is aware that a financial institution's data can be modeled in the BIAN way, which enables maximum interoperability and re-use, and minimal ICT integration costs. A BIAN Data Architecture Certified person is able to recognize and use this in the optimization of the data architecture of a financial institution as well as in dealings with other financial services providers.

Key benefits of the BIAN Data Architecture Practitioner Certification are:

- It increases the knowledge of BIAN and the BIAN BOM and Control Records.
- It enables professionals to leverage the benefits of the BIAN approach and its data-related deliverables (BIAN BOM and Control Records) in the creation of a more effective data architecture and more open and 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 who are responsible for information and data.

The BIAN Data Architecture Practitioner Certification exam is intended for professionals in the Financial Services Industry such as: information managers, information requirement analysts, data architects and modelers at both the enterprise and solution level. It is also intended for enterprise and solution architects, as well as consultants, who feel the need to extend their capabilities in the areas of information governance and data architecture and design.

The approach BIAN uses to elaborate and manage its Enterprise Data Architecture Model, can be applied in any context. Therefore, the knowledge mastered by achieving certification in the BIAN Data Architecture Practitioner can also be relevant for professionals outside the financial sector who are active in the architecture and data domains.

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 Data Architecture Practitioner Certification exam

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 (or at least 42 of the 60 questions) to pass.

Questions can have one to many correct answers. 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.

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 Data Architecture Practitioner 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 Data Architecture Practitioner Certificate is valid for two years.

The BIAN Data Architecture Practitioner Certification in the Bloom Taxonomy

The BIAN Data Architecture Practitioner Certification audits candidates at the Bloom Levels 1, 2 and 3, according to Bloom's Revised Taxonomy:

- Bloom Level 1: Remember: Retrieve, recall, or recognize relevant knowledge from long-term memory.
- Bloom Level 2: Understand: Demonstrate comprehension through one or more forms of explanation.
- Bloom Level 3: Apply: Use information or a skill in a new situation.

BIAN Data Architecture Practitioner 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 Data Architecture Practitioner Certification exam.

For the Data Architecture Practitioner Certification, the student needs to demonstrate:

- An understanding of what BIAN is and what its purposes and design principles are.
- The ability to recognize the elements of the BIAN Architecture in relation to their role in creating and exploiting BIAN's data-related deliverables.
- The ability to read and understand BIAN's data-related deliverables (Control Record and Business Object Model (BOM)), in the ArchiMate and UML languages. This involves knowing and understanding the meaning of the elements of these languages as used by BIAN.
- An understanding of the Business Object Modeling approach, its steps and its patterns, and the ability to apply this approach.
- An understanding of the documentation techniques BIAN uses in view of the exploitability and manageability of its data-related deliverables.
- An understanding of the ways in which BIAN's data-related deliverables, its Business Object Modeling approach and its documentation approach, can be of use in information governance and on a data architecture and design level.

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

Overview of the BIAN Data Architecture Practitioner Certification exam

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

Table 2 BIAN Data Architecture Practitioner Certification exam topics and their weight

Exam Specification	Weight %
Introducing BIAN, its framework and principles	5%
Overview of the elements of the BIAN Architecture and their relationship to its data deliverables	10%
Using ArchiMate and UML to document BIAN's data-related deliverables	15%
The Business Object Modeling and Control Record Modeling Approaches, their patterns and guidelines	35%
Documenting with a view to the manageability of BIAN's data deliverables	10%
Applying BIAN's deliverables and Business Object Modeling approach on governance, architecture and design levels	25%

Introducing BIAN, its framework, and principles

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

- BIAN is a content standard. It does not prescribe the use of a modeling language to users of this architecture, nor does it prescribe a documentation tool. It is strictly semantic, it 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's Architecture is elaborated by working groups, each focusing on a specific area and aspect of the banking architecture.
- The BIAN Framework is a "toolbox" that contains its Reference Architecture for the Financial Service Industry as well as the means to support its adoption, such as an open digital repository and an API portal, training, publications and seminars, and a certification program.
- BIAN's Architecture is based on Agile principles. It systematically uses "building block thinking", on the level of functionality, information and interactions.

Overview of the elements of the BIAN Architecture

The candidates need to remember 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, in particular in relation to the data-related deliverables.

The **BIAN Metamodel** defines the types of building blocks BIAN uses to capture the reality of a financial institution in an architecture model. It prescribes the way the BIAN deliverables are stored in the digital repository.

The BIAN **Service Landscape** is a representation that organizes the BIAN Service Domains and facilitates finding and accessing Service Domains.

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. 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**.

The complete collection of business information governed by a Service Domain 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; and information at the level of the Service Domain's role execution, called the **Control Record** level.

The Control Record is based on a pattern: it represents the information about the Asset Type of the Service Domain, combined with the information that is central to the execution of the Functional Pattern: the **Generic Artifact**. The Control Record can be further decomposed into **Behavior Qualifiers** according to a **Behavior Qualifier Type**. The latter refines the Generic Artifact, it is representing the type of information resulting from a refinement of the Functional Pattern.

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.

The Business Object Modeling approach uses a **Content Pattern**¹ and a **Structure Pattern** to support unambiguous **definitions for** business concepts and, supported by a **classification pattern**, the detection of the building blocks of the data model. Content and Structure patterns also support the modeling activity itself and the creation of a coherent Enterprise Data Model (the BIAN BOM).

Every Service Domain offers a collection of **Service Operations**. 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 purpose of a service is characterized by an **Action Term**. The **Message**, containing the information exchanged in a Service Operation, refers to the **Information Profile** of the Service Domain, or any of its constituent parts. A machine-readable **Swagger File** can be generated from the Semantic API. The Semantic API Swaggers can be extended to create executable APIs.

BIAN **Business Scenarios** and **Wireframes** provide practical examples of how Service Domains can interact through **Service Connections**, exchanging Service Operations.

A Business Capability represents the bank's abilities and capacities to realize its banking strategies and to create value in its ecosystem. BIAN defines **Business Capabilities**, described as a collaboration between Service Domains, that can be used as such or can inspire a bank's own business capabilities.

Using ArchiMate and UML to document BIAN's data-related deliverables

The candidates need to be able to read and understand BIAN's data-related deliverables (Control Record and Business Object Model (BOM)), in the ArchiMate and UML languages. They need to be able to use these conventions actively. This involves knowing and understanding the meaning of the elements of these languages as used by BIAN.

For its data-related deliverables, BIAN uses the documentation elements depicted in Figure 1. There are conventions for what documentation element to use, for what purpose (i.e. what their role is in a model and what meaning they reflect).

The ArchiMate language is used for documentation on an architecture level, the UML language for documentation on a more detailed (high level) design level. Although different symbols are used for the same concepts in these two languages, the concept itself is managed only once.

¹ The Content Pattern is an abstract data 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.

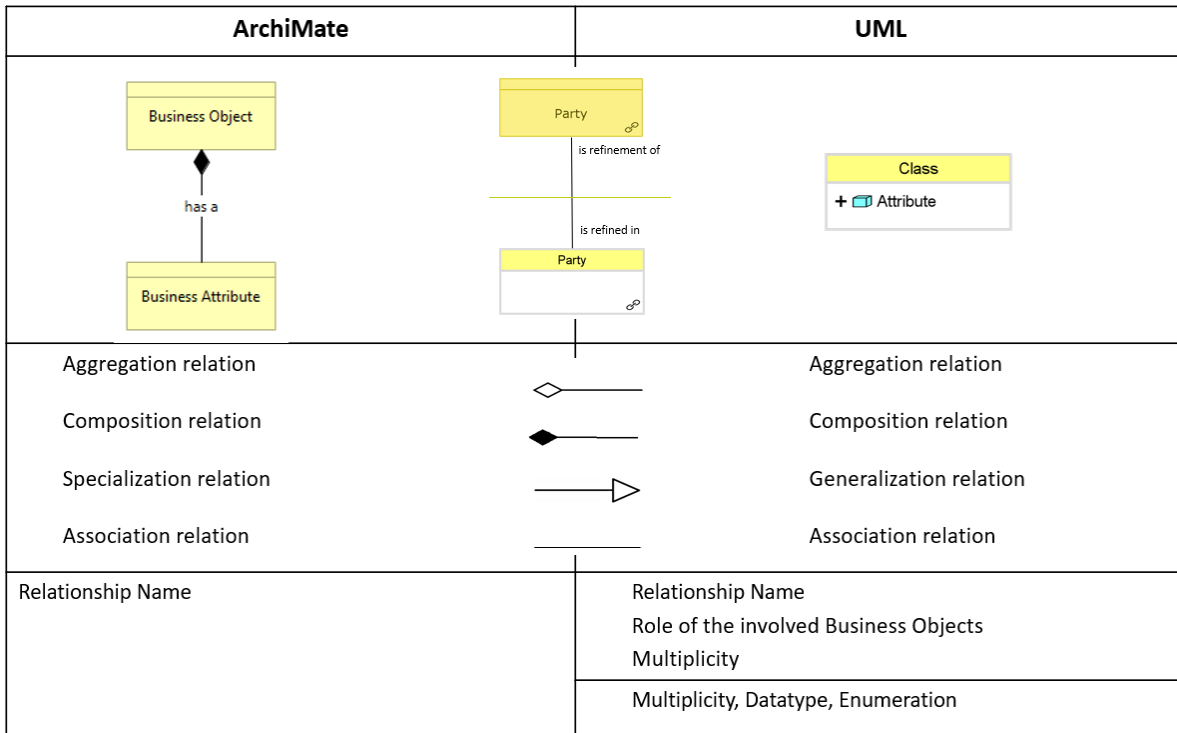


Figure 1 Overview the elements in ArchiMate and UML, used to document data-related deliverables

The Business Object Modeling Approach, its patterns and guidelines

The candidates need to understand the Business Object Modeling approach, its steps and its patterns. This requires a knowledge of the Business Objects of the Content Pattern and their relationships, as well as a knowledge of the concepts represented in the Structure and Classification patterns. They need to be able to recognize the definition guideline. The candidates need to be able to apply the BOMing approach.

The Business Object Modeling approach is based on clearly and unambiguously detecting the **business concepts** required to fulfill the information requirements. Business concepts, however, are (usually) “information products” and not “information building blocks”. These building blocks – or **Business Objects**, need to be “distilled” and their relationships need to be discovered.

The resulting data model, will be used to decide how the data, required to provide the required business concept information, will be registered and managed.

The Business Object Modeling (**BOMing**) approach uses a **Content Pattern** and a **Structure Pattern**, as well as definition guidelines, to support unambiguous definitions for the business concepts. Using a **Classification Pattern**, the building blocks of the information model can be detected.

The Content Pattern is an abstract data 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 is made more specific for the business concept’s particular business context. The Structure Pattern supports this concretization.

By using the Content and Structure Patterns for subsequent business areas (in BIAN’s context, Service Domains), it becomes clear how these areas fit together/where similar or overlapping information is detected. As such, a coherent Enterprise Data Model can be created.

BIAN’s BOM is a Reference Data Architecture Model for the Financial Industry.

Documenting with a view to the manageability of BIAN's data deliverables

The candidates need to remember what techniques BIAN uses to document its BOM with a view to its manageability as an Enterprise Information Architecture Model. They need to understand how these documentation techniques contribute to the exploitability and manageability of its data-related deliverables.

In terms of manageability, an Enterprise Information Model requires abstraction levels. These allow the user of this model to “zoom in” and find the information he/she is looking for. These abstraction levels are also (and not least) an indispensable management instrument for the Enterprise Data Architect. To “divide and conquer”, to enforce a generic structure in each system data model and to support reuse. BIAN uses “Helper Diagrams” for this purpose.

Reuse and “generic structures” are relevant on a more detailed level too. BIAN uses “data types” that describe standard structures and reusable attribute-groups. These are used to create Control Records, and to document Service Domain BOMs on a design level.

Applying BIAN's deliverables and Business Object Modeling approach on governance, architecture and design levels

The candidates need to have an understanding of how the general abilities of the BIAN Architecture and the specific abilities of its data-related views and approach, can be applied in information and data governance, architecture and design. The candidates need to be ready to apply this in their own organization and field of expertise.

The BIAN BOM offers a MECE² collection of elementary, semantic building blocks for a bank's information requirements. Its elements are named and canonically defined to a reasonable level of detail. As such, it is well positioned to be used as a “common language” and “common Frame of Reference” for the information, as required and managed by business and present on the application platform (or with service providers). It can be used as a common language in service exchanges.

The BIAN BOM and/or its tailored version – a bank can always tailor and expand the BOM into its very own “Canonical Data Model”- can be used as follows:

- It can be used as a common language to facilitate understanding between speech communities.
- Data classification (value and risk) on an enterprise level becomes easier. Information and data governance roles can be unambiguously assigned.
- The business and data solution landscape can be overlaid on the BOM, as a Frame of Reference, in order to uniquely identify the data used and managed by business organizations and processes, stored, used and managed in data stores, and “moved around” in data services and flows.
- This facilitates the gathering of quality requirements – and the evaluation and comparison of the quality of data sources.
- It is a powerful tool for managing (exploring, charting, evaluating, optimizing) the data architecture, both “data at rest” and “data in motion”.
- As (documentation of) existing data stores and services/flows are “canonically labeled”, reuse is promoted and possibly enforced.
- The data architecture can be steered by using the Business Object Model, its patterns and principles, as the basis for a conceptual reference data architecture.
- The canonical data model supports the creation of a “business intelligence” environment where all data available in the enterprise needs to be navigable.
- API messages can be expressed in a “common language”, facilitating service-oriented cooperation within the organization and with service providers.

These practices can be introduced step by step. 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.

In process management and application design, the BIAN Service Domains can be used as (high level) reusable process steps and as reliable “Agile” delimitation for application components. If the organization introduces the use of BIAN in all its aspects, the information/data analyst can profit from this: the “sum” of the Control Records of the Service Domains used to describe the process and/or application system requirements, is a nice starting point for gathering and modeling the information requirements.

Preparing for the BIAN Data Architecture Practitioner Certification exam

The BIAN Data Architecture Practitioner Certification is based on knowledge articulated in the publication “A pattern-based approach to enterprise data management”.

The book “BIAN 2nd Edition – a framework for the financial services industry”³ treats the entirety of BIAN, including a more limited view on its data deliverables. This book contains the information required for the BIAN Foundation Certification and offers valuable background for this certification. The chapters mentioned in Table 3 are of direct use in preparation for this certification.

Self-study should take about 30 hours, depending on existing knowledge. It is recommended that candidates have a working knowledge of data architecture and design.

To support the candidates, an accredited BIAN Data Architecture Practitioner training course is available. The recommended number of contact hours for this training course is 16 hours or 2 days.

Table 3 gives an overview of the exam topics and where they are covered in the accredited training course and the related publication, and in the book “BIAN 2nd Edition – a framework for the financial services industry”.

Table 3 Exam topics – training module and literature mapping

Exam specification	Training module	BOM approach Book (1)	BIAN book (2)
Introducing BIAN, its framework, and principles	Part I, Chapter 1	Chapter 1	Part I, Chapter 1
Overview of the BIAN Architecture elements and their relationship to its data deliverables	Part I, Chapter 2	Chapter 1	Part I, Chapter 2
Using ArchiMate and UML to document BIAN’s data-related deliverables	Part II, Chapter 3; Paragraph 5.1	Part I, chapter 2; Paragraph 4.1	
The Business Object Modeling Approach, its patterns and guidelines	Part II, Chapter 4	Part I, chapter 3	
Documenting with a view to the manageability of BIAN’s data deliverables	Part II, Chapter 5	Part I, chapter 4	
Applying BIAN’s deliverables and Business Object Modeling approach on governance, architecture and design level	Part III, Chapters 6 to 9	Part II, chapters 5 to 9	Part II, Chapters 4, 5, 8, 9

(1) Business Object Modeling: an approach to creating, managing and using an enterprise data model”

(2) BIAN 2nd edition, a framework for the financial services industry

Exam regulations

General rules

A BIAN Data Architecture Practitioner Certification is a prestigious qualification, 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, Envizion 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 and understood in order to successfully pass the BIAN Data Architect Practitioner Certification exam.

Table 4 Terms and expressions, key to taking the BIAN Data Architect Practitioner Certification exam.

Term/expression	Definition or meaning, as used in the BIAN context
Account	A measuring state on which movements in value or amounts of assets, rights and obligations are registered.
Account Entry	The record of a movement in value or amounts of assets, rights and obligations.
Aggregation relation	A relation that expresses that one Object combines one or more other Objects. An aggregation does not imply dependency.
Agreement	A formal or informal common understanding between two or more parties, concerning one or more subject matters, expressed in a set of arrangements, terms, and conditions.
Architecture	The aspired structure of the components of a system, their interrelations, and the principles and guidelines governing their design and evolution over time. The structure of components and their interrelationships is described in an architecture model (The Open Group (2019)).
Arrangement	A promise between two or more parties to do or not to do something, to give or not to give something.
Asset Type	Something tangible or intangible the bank has ownership and/or influence over, that can create value for the bank.
Association relation	A relation between two Objects that is not further specified. Specified in the sense of “integrity rules”, like any other relation, an association relation can be attributed with roles for the involved objects, a name for the relation and multiplicities.
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 Object	Something that exists in reality, concrete or abstract, and participates and/or influences the nature of the business.
Business Object Attribute	A descriptor that is not solely used as an identifier nor provides data about the Business Object’s lifecycle stage.
Business Object Descriptor	A data element that describes a Business Object.
Business Object Lifecycle Descriptor	A characteristic referring to a state of transition in the Business Object’s lifecycle.
Business Object Relationship	Information about the relationship between two or more Business Objects.

Business Scenario	A linked sequence of interactions between Service Domains in response to a business event.
Business Object Identifier	A value that is able to uniquely distinguish one instance of a Business Object from another.
Canonical	In a common language, meant to enable communication between “speech communities”.
Canonical Data Model	A conceptual data model that contains all data elements required for the organization, in a canonical format.
Channel	An interface through which parties can communicate or exchange goods or services.
Classification	Any label or category that classifies something. We distinguish Taxonomical Classification and Functional Classification.
Classification Pattern	A classification scheme used to classify business concepts by nature.
Composition relation	A relation that expresses a whole/part relation and an existence dependency.
Conceptual Data Model	A data model reflecting solely the structure of the data, independent of how it is to be used.
Content Pattern	An abstract data model, valid for any business. It contains the Business Objects and their relations, that make up any business, on a high abstraction level.
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.
Data	A discrete value of a data element, that depicts a characteristic of a thing. Facts, describing a Business Object.
Data Architect	Role of a person who is responsible for defining the policies, procedures, models and technologies to be used in collecting, organizing, storing and accessing company data.
Data Type	The notation conventions and internal structure of a business object descriptor.
Diagram	A visual representation of (part of) a model for the purpose of communication.
Enumeration	A series of values that describe and/or limit the possible values of a business object descriptor.
Event	Something that happens, has happened, can happen or is planned to happen.
Frame of Reference	A set of reference or anchor points, that enable a unique identification, understanding and positioning of the elements of a system.
Functional Classification	A classification by functional meaning of the things.
Functional Pattern	A behavior or mechanism that can be applied to some asset in the execution of commercial business.
Generalization relation	A relation between a more specific thing and a more general thing.
Generic Artifact	The general type of artifact produced and/or managed by any Service Domain that conforms to the Functional Pattern.
Good	A tangible or intangible thing.
Helper Diagram	A diagram that depicts one (more abstract) Business Object, its relations with other Business Objects and its specializations.
Implementation Agnostic	Indicating <i>what</i> needs to be done/known and <i>not how and with what</i> this needs to be implemented.
Information	What business needs/wants to know.

Information Classification	<p>A process in which organizations assess the level of quality and protection that should be given to their information.</p> <p>This level is based on the value the information represents for the organization and the risks involved in lacking Confidentiality, Integrity or Availability.</p>
Information Governance	A holistic approach to managing corporate information by implementing processes, roles and structures, controls and metrics that treat information as a valuable business asset ⁴ .
Information Owner	Role of a person who is accountable for the assessment of the value and risk of specified information and for the establishment and enforcement of adequate controls, as well as mitigating actions during its lifecycle.
Information Profile	The information required for a Service Domain to function.
Information Steward	<p>Role of a person who is responsible for the quality of specified information.</p> <p>This includes the establishment and day to day enforcement of adequate controls, as well as mitigating actions during the entire lifecycle of this data.</p>
Information Value and Risk	Assessment of the importance of information for the results of an organization (value), and the gravity of the consequences (e.g. financial, reputational, legal) in case of less than maximal quality and protection of this information (risk).
Instruction	A request to do “something.”
Landscape	The actual structure of the components of a system and their interrelationships
Location	An addressable space/position both in real and virtual environments
Logical Data Model	A data model that takes into account the data’s structure as well as its exploitation.
Logical Data Store	<p>A collection of data that is managed and exploited as a unit.</p> <p>This concept is independent of the technology used to store the data. E.g. a database, a spreadsheet, an address booklet.</p>
Message	The input and output parameters exchanged through a Semantic API Endpoint.
Multiplicity	The possible number of participating instances in a relation.
Party	A person or an organization.
Physical Data Model	A model depicting the structure according to what data will be stored in the storage system of choice.
Product	A type of Good or Service or a coherent package thereof, which is offered to internal or external customers.
Product Feature	A characteristic of a product, expressed in offered services and/or goods and the terms and conditions applicable to the delivery of the services.
Reference Architecture	<p>An architecture that steers the design of solutions and their end-to-end embedding in the enterprise architecture.</p> <p>It does so by providing reference models, patterns, principles and guidelines, and by prescribing standards.</p> <p>A reference architecture is not implemented as such; it steers the architectures that are actually implemented (the landscape) and ensures their consistency and quality.</p>
Reference Architecture for the Financial Services Industry	<p>The architecture model in which BIAN captures the reality of the financial industry.</p> <p>It provides reference models, patterns and principles applicable for the financial industry.</p>

Rule Set	A set of rules to guide, direct or operate a subject matter. e.g., regulation, policy, law, guideline, principle, standard.
Semantic	Expressed in business language, indicating <i>what</i> needs to be done/known and <i>not how and with what</i> 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.
Semantic API Message	The input and output parameters exchanged through a Semantic API Endpoint.
Service Domain	An elemental or atomic functional building block that can be service-enabled as a discrete and unique business responsibility.
Service Domain BOM	Data model of the business information, governed by a Service Domain, modeled according to the BOM approach.
Service Domain Information Profile	The complete collection of business information governed by a Service Domain when implemented as a stand-alone service center.
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.
Specialization relation	A relation which expresses that one Object is a particular kind of another.
Standard	Element of BIAN’s Reference Architecture for the Financial Services Industry for which the ambition is to achieve a consensus among leading banks and providers in the financial services industry, which in due time should lead to standardized services.
Structure Pattern	An abstract model that depicts the structure of the data that can describe a business concept.
Tailoring the BIAN Architecture	Adding/deleting and adapting elements of the BIAN Architecture in view of the specificities of the bank.
Taxonomical Classification	A classification by the nature of things.
Technology agnostic	Unbiased towards what technology is used for implementations.
Time	A dimension expressing when something happens or will happen. It can be a period, date, a calendar, a more detailed time indication.
Transaction	The act of doing “something”.
Wireframe	An interaction representing the available Service Connections for a selection of Service Domains.

A FRAMEWORK FOR THE FINANCIAL SERVICES INDUSTRY

BIAN

Data Practitioner Certification Training

A framework for the financial services industry

COURSEWARE

©2022 - All training materials are sole property of Van Haren Publishing BV, Envizion cvba & B.I.A.N. Services GmbH and are not to be reproduced in any form or shape without written permission.

A FRAMEWORK FOR THE FINANCIAL SERVICES INDUSTRY

Training & Certification Landscape - Individuals

	ESSENTIALS LEVEL 4 HOURS	FOUNDATION LEVEL 1 DAY	PRACITIONER LEVEL 2 DAYS
C-LEVEL / DECISION MAKERS	Business Value and Benefits		
ALL		BIAN Foundation	
ARCHITECTS			Banking Architecture Practitioner
DEVELOPERS			Solution Architecture Practitioner
DATA			Data Architecture Practitioner
Business Architecture			Business Transformation Practitioner

All Training is exclusively delivered by BIAN Accredited Training Organization

- Essentials Level:
No Certification exam
- Foundation Level:
Foundation Certification exam
 - Available as in-class training, self-study, or e-learning
- Practitioner Level:
Practitioner Certification exam
 - In class only
 - BIAN Foundation Certification required

© Van Haren Publishing, Envizion cvba & B.I.A.N. Services GmbH

BIAN Data Practitioner Training and Certification – 2 Days



BIAN Data Practitioner Course Scope	Weight %	Duration	Book chapter
PART I_ Understanding the BIAN Data & Information Management approach	50%	7h	1
BIAN Information Architecture Overview_ General Terminology (Introductory – Information vs Data, Model vs Diagram, Conceptual vs Logical vs Physical Model)			
BIAN Data Modeling Languages/Documentation Conventions (Introductory- ArchiMate and UML)			
BOM specific terminology (Introductory – Business Object, Business Attributes, Data Types, ...)			
CR Model specific terminology (Introductory – Control Record, Behavior Qualifier and Service Operation) NEW			
BOM Patterns (Explanatory, Content, Structure, Classification, ...)			
CR Model Patterns (Explanatory, the structure of the Service Domain Information Profile, the structure of the Control Record and its Behavior Qualifier decomposition) NEW			
Documenting BIAN BOM as Enterprise Model (Using the ArchiMate and UML language in documenting the BOM for managing (internal) enterprise information)			
Documenting BIAN CR Model as Information Exchange Model (Using the ArchiMate and UML language in documenting the CR Model for exchanging information) NEW			
Part II_ Applying the BIAN Data & Information Management approach	30%	5h	2
General abilities			
Information Governance			
Data Architecture			
Data on System Level			
PART III_ Use Case: Customer Onboarding NEW	20%	2h	3
Use-case focusing on Architecture Level			
Use-case focusing on Design Level			

Key Learning Objectives:

- Be able to read the information/data-related deliverables in the BIAN repository.
- Understanding and being able to apply the CR Model and BOM approaches
- Understanding BIAN's approach for managing: 1) the BIAN CR Model as Information Exchange Model; 2) the BIAN BOM as Enterprise Information Model
- Understanding the different usages of the BIAN CR Model and BOM
- Becoming certified

PART I Understanding BIAN Data and Information Management Approach



COURSEWARE



BOM Approach Part I

©2022 - All training materials are sole property of Van Haren Publishing BV, Envision cyba & B.I.A.N. Services GmbH and are not to be reproduced in any form or shape without written permission.

COURSE OVERVIEW

PART I Understanding the BIAN Data and Information Management Approach

- BIAN Information Architecture Overview _ General Terminology
- BIAN Data documentation conventions in ArchiMate and UML
- Explaining the BOM approach
- Explaining the CR Model approach
- Documenting the BIAN BOM as Enterprise Model
- Documenting BIAN CR Model as Information Exchange Model

PART II Applying the BIAN Data and Information Management Approach

- General abilities
- Information Governance
- Data Architecture
- Data on System level

PART III Use case

- Use-case focusing on Architecture Level
- Use-case focusing on Design Level

KEY LEARNING OBJECTIVES

By completing this chapter, you will

- Be able to read the information/data-related deliverables in the BIAN repository.
- Understand the patterns used in the BOM and Control Record Model
- Be able to apply the BOM and Control Record Model
- Understanding BIAN's approach for managing: 1) the BIAN CR Model as Information Exchange Model; 2) the BIAN BOM as Enterprise Information Model

A FRAMEWORK FOR THE FINANCIAL SERVICES INDUSTRY

BIAN

2nd EDITION

Terminology

A framework for the financial services industry

COURSEWARE

Van Haren PUBLISHING

©2022 - All training materials are sole property of Van Haren Publishing BV, Ervizio cvba & B.I.A.N. Services GmbH and are not to be reproduced in any form or shape without written permission.

A FRAMEWORK FOR THE FINANCIAL SERVICES INDUSTRY

INFORMATION AND DATA

Information:

- What business needs/wants to know (*about things in the real world*)
- Information is aimed at a business purpose.

Data

- A Data Element is a property of “a thing”
- Data is the value of a Data Element. It represents facts about the world.
- A Data value is basic or can be derived from other data values
 - Basic means the value is not derived from other values e.g.
 - Date of birth = September 20th 2009
 - Last Name = Johnson
 - Derived means the value is calculated using a formula e.g.
 - Age = Today – Date of birth
 - Gross Invoice Amount = Invoice Net Amount + Tax Amount

What we want to do, is find the raw material for information. We want to make a (conceptual) data model.

© Van Haren Publishing, Ervizio cvba & B.I.A.N. Services GmbH

8

DATA ELEMENTS AND DATA TYPES

A **Data Element** is a property of a thing.

A Data Element can be elemental or structured.

Elemental means that the data element contains one data value e.g.

Date of birth ,
Last Name
Age
Gross Invoice Amount

Structured means that the data element contains a group of data elements. e.g.

Address contains Street, House Number, Postal Code, Place

*So, the data have a notation according to the data type.
In case of: values according to the enumeration.*

A **Data Type** is an expression of the notation conventions and internal structure of a Data Element

A Datatype is elemental or structured.

Elemental means that the data element is generally accepted to be a basic structure e.g.

Date, Integer, Floating Point, Character, String, Boolean, Enumeration

Structured means that the Data Type is expressed as a collection of "Data-Typed" elements and/or a subset of allowed values e.g.

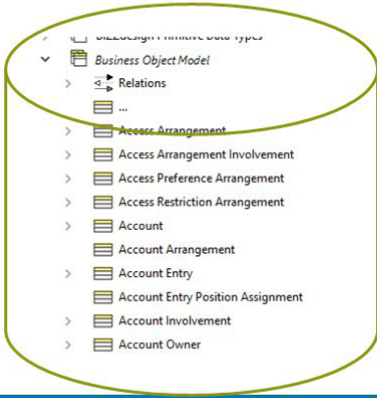
Postal Address : (Street, House Number, Postal Code, Place)
Currency Amount = (Amount (real), Currency Code (ISO 4217 Currency Code)); ISO 4217 Currency Code: Enumeration)

An **enumeration** is a data type that consists of a set of named values that represent possible values of a data element.

MODELING, MODEL, DIAGRAM

- What is Modeling ?
 - The activity of creating and maintaining Models
- What is a Model ?
 - An abstract representation of reality.
 - The concepts that are used to model the reality are:
 - Model elements: "something that plays a role in the modeled reality";
 - relations between the model elements
- Model ≠ Diagram
 - A Diagram is visual representation of (part of) model for the purpose of communication i.e. a specific view into what you are trying to understand in a specific context.
 - Diagrams are a means to create, maintain and communicate (part of) a model.

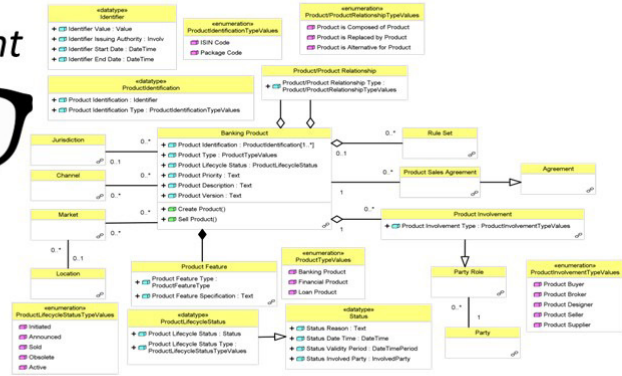
Model



Viewpoint



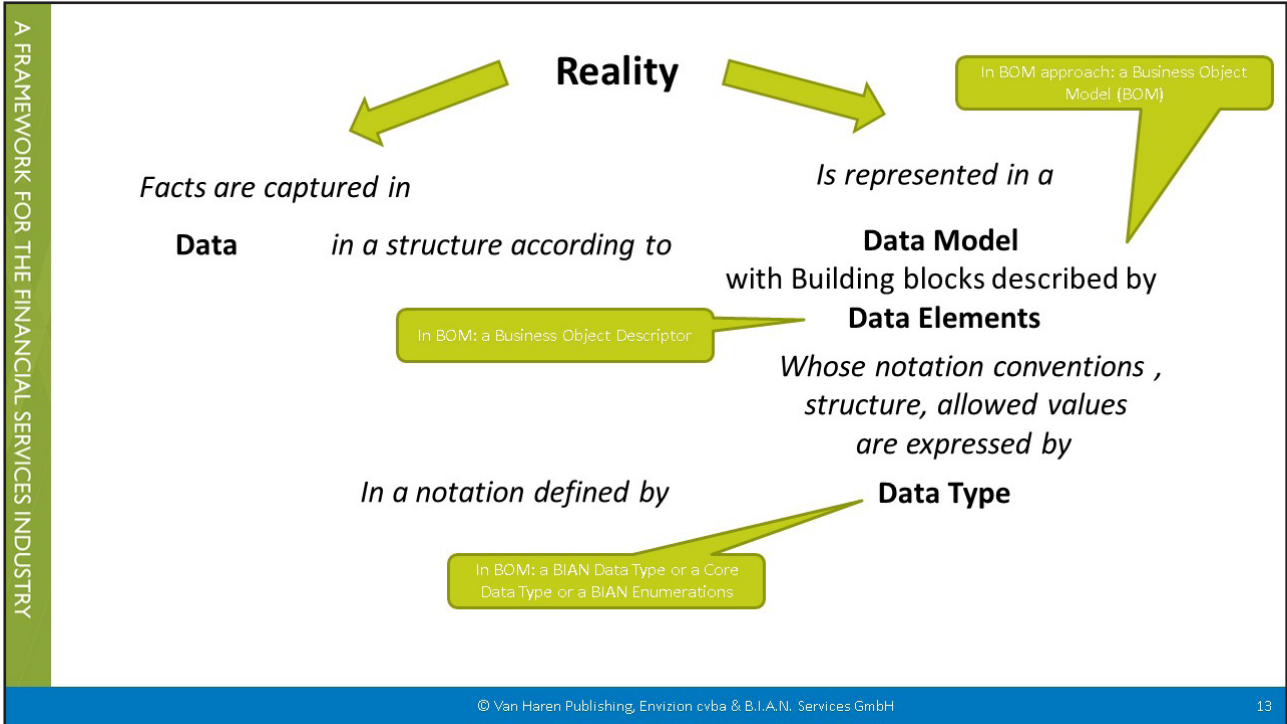
Diagram (view)



DATA MODELING

- Data Modeling is the activity of creating and maintaining Data Models.
 - A model is an abstraction of the real world.
 - It is made with a certain purpose, hence represents a certain point of view on reality.
 - A data model is made to capture the data, needed to provide information.
 - A data model is an abstraction of the real world things and their relationships, and the data elements describing these.
- Data Model Building Block (as we call them in the BOM approach):

Business Object	Something that exists in reality, concrete or abstract, and participates and/or influences the nature of the business.	
-----------------	--	--



A FRAMEWORK FOR THE FINANCIAL SERVICES INDUSTRY



ASPIRATION: ARCHITECTURE, DESIGN
REALITY: SOLUTION LANDSCAPE

Architecture
“the (aspired) structure of the components of a system, their interrelationships, and the principles and guidelines governing their design and evolution over time”.

Architecture is always more abstract than **Design**, which needs to contain all detail required for implementation.

How detailed your architecture needs to be, depends on the importance of the detail for governing the resulting designs – hence implementations.

Solution Landscape
The structure of the solutions: the components of a system, and their interrelationships.

© Van Haren Publishing, Envizion cvba & B.I.A.N. Services GmbH

14

CONCEPTUAL, LOGICAL, PHYSICAL

Conceptual data model:

A data model reflecting solely the structure of the data, independent of how they are to be used.

- The enterprise data model, created through the BOM approach, is a conceptual data model.

Logical data model:

A data model that takes into account the data's structure as well as its exploitation.

Physical data model:

A model depicting the structure according to which data will be stored in the storage system of choice.

BIAN

2nd EDITION

Modeling Language: ArchiMate & UML

A framework for the
financial services industry