

Marcin Ziemek

DESIGNING IT SOLUTION ARCHITECTURE

it architecture

cloud

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TABLE OF CONTENTS

Preface	7
Who Is the Book For?	8
What Does the Book Not Contain?	8
Book Structure	8
Tools Used in the Book	10
The Abbreviations	10
Files to Download	10
 Part 1. Development of an IT Architecture Vision	 11
1. The IT Architecture Design Process	12
2. Business Problem	13
3. Functional and Non-Functional Requirements	13
3.1. Gathering Functional and Non-Functional Requirements	14
3.2. Analysis of Functional and Non-Functional Requirements	17
3.3. Business Processes	18
3.4. Use Cases	29
3.5. Relationship Between Requirements and Use Cases	38
3.6. Reliability, Availability and Archiving	38
3.7. Volumetry	39
4. Architecture Vision	40
4.1. Reference Architecture	40
4.2. Architectural Patterns	40
4.3. Architecture Principles	41
4.4. Preparing an Architecture Vision	41
4.5. Solution Development Roadmap	44
 Part 2. MVP Solution Architecture	 47
5. Business Architecture	48
5.1. List of Business Processes	48
5.2. Business Processes	48
6. Data Architecture	59
6.1. Data Management and Data Quality Management	59
6.2. List of Data Entities	60
6.3. Data Model	60
7. Application Architecture	65
7.1. List of Components	66
7.2. Components	66
8. Integration Architecture	105
8.1. Integration Types	106
8.2. Integration Protocols	106
8.3. Integration Patterns	106
8.4. Integration Use Cases	106
8.5. Canonical Data Model	114
8.6. Designing Integration Interfaces	116

9. Technical Architecture	117
9.1. The List of AWS Public Cloud Services From Technical Architecture	118
9.2. Technical Implementation of Application and Integration Architectures	119
9.3. Services Supporting the Technical Implementation of Application and Integration Architectures	121
10. Infrastructure Architecture	122
10.1. The List of AWS Public Cloud Services From Infrastructure Architecture	123
10.2. AWS Public Cloud Network	123
10.3. Region	123
10.4. Private Network	123
10.5. Availability Zone	123
10.6. Subnet	123
10.7. Security Group	124
10.8. Routing Tables	124
10.9. Internet Gateway	124
11. Security Architecture	125
11.1. Responsibilities	125
11.2. The Mechanism of Business User Authentication	125
11.3. The Mechanism of Administration User Authentication	125
11.4. The Mechanism of Application Component Authorization	125
11.5. Credentials	125
11.6. Data Encryption	125
11.7. Backup	125
11.8. Application Monitoring	126
11.9. Logging	126
11.10. Law and Industry Standards	126
11.11. The Risks	126
11.12. Training	126
12. Deployment Architecture	127
13. Architecture Verification	127
Part 3. Target Solution Architecture	128
14. Business Architecture	129
14.1. List of Business Processes	129
14.2. Business Processes	129
15. Data Architecture	135
15.1. List of Data Entities	135
15.2. Data Model	135
16. Application Architecture	138
16.1. List of Components	139
16.2. Components	140
17. Integration Architecture	161
17.1. Integration Use Cases	162
17.2. Canonical Data Model	164

18. Technical Architecture	165
18.1. The List of AWS Public Cloud Services From Technical Architecture.....	166
18.2. Technical Implementation of Application and Integration Architectures	167
18.3. Services Supporting the Technical Implementation of Application and Integration Architectures	169
19. Infrastructure Architecture	170
20. Security Architecture	171
20.1. Responsibilities	171
20.2. The Mechanism of Business User Authentication.....	171
20.3. The Mechanism of Administration User Authentication	171
20.4. The Mechanism of Application Component Authorization	171
20.5. Credentials	171
20.6. Data Encryption	171
20.7. Backup	171
20.8. Application Monitoring.....	171
20.9. Logging	172
20.10. Law and Industry Standards.....	172
20.11. The Risks.....	172
20.12. Training	172
21. Deployment Architecture	173
22. Architecture Verification	173
Part 4. Summary.....	174
23. Acknowledgments	175
24. Next Steps.....	176
25. Dictionary of Abbreviations	177



PREFACE

The book you are reading describes the IT architecture design process. I will guide you through the design process in a very concise way. Together, we will prepare a project from the beginning to the end. We will use the UML (Unified Modeling Language) notation to design the IT architecture. We will use Amazon Web Services (public cloud services) to select the solution technology. After reading all the material in the book, you will know how to design the E2E (End-2-End) solution architecture yourself. You will not find extensive chapters (subsections) containing theoretical introductions.

Who Is the Book For?

I recommend the book to those who want to acquire practical knowledge of the E2E architecture design process for solutions using UML notation. The presented material does not require any preliminary knowledge. Having IT experience can make the material easier to understand but is not required.

What Does the Book Not Contain?

The book does not contain extensive theoretical introductions to the presented topics. Concise theoretical introductions will allow you to assimilate the discussed issues, and an extensive example of implementation will allow you to understand the process of designing IT architecture.

Book Structure

The material presented in the book has been divided into the following parts and chapters:

Part 1 – Development of an IT architecture vision – presents the process of designing an IT architecture vision, starting from defining a business problem, through obtaining and analyzing functional and non-functional requirements, designing business processes, use cases, and developing an architecture vision. It contains the following chapters:

- # **Chapter 1 – The IT Architecture Design Process** – you will learn the process of designing solution architecture based on the project example that we will implement together,
- # **Chapter 2 – Business Problem** – we will discuss the business problem and the purpose of the project for which we will build a solution,
- # **Chapter 3 – Functional and Non-Functional Requirements** – presents the gathering, analysis, grouping, and prioritizing requirements,
- # **Chapter 4 – Architecture Vision** – we will prepare an architecture vision that meets the requirements in accordance with good practices such as reference architecture and architecture patterns.

Part 2 – MVP Solution Architecture – we will design the solution architecture for Phase 1 from the architecture vision. For this purpose, we will prepare business, data, application, integration, technical, infrastructure, security, and deployment architectures. It contains the following chapters:

- # **Chapter 5 – Business Architecture** – presents the business (dynamic) architecture of the solution; shows functionalities and main participants of processes,
- # **Chapter 6 – Data Architecture** – presents data transferred in business processes and relationships between entities,
- # **Chapter 7 – Application Architecture** – presents the application architecture (components) and connections (integrations) between them,
- # **Chapter 8 – Integration Architecture** – contains application integration details, types of integration, and the format of transferred data,
- # **Chapter 9 – Technical Architecture** – presents the technical architecture of the solution. Our solution will be implemented using AWS public cloud services. It contains the information necessary to build a solution,
- # **Chapter 10 – Infrastructure Architecture** – presents the infrastructure solution architecture, considers non-functional requirements such as high availability, reliability,
- # **Chapter 11 – Security Architecture** – contains information on the security solution architecture,
- # **Chapter 12 – Deployment Architecture** – we will prepare the deployment architecture and the most important artifacts and discuss the public cloud services necessary to implement the solution,
- # **Chapter 13 – Architecture Verification** – presents methods of architecture verification.

Part 3 – Target Architecture of the Solution – we will design the solution architecture for Phase 2 from the architectural vision. For this purpose, we will prepare business, data, application, integration, technical, infrastructure, security, and deployment architectures. It contains the following chapters:

- # **Chapter 14 – Business Architecture** – presents the business (dynamic) architecture of the target solution, shows the functions, main process participants, and changes necessary to be made in comparison to the MVP architecture,
- # **Chapter 15 – Data Architecture** – presents data transferred in business processes, relationships between entities, and changes necessary to be made compared to the MVP architecture,
- # **Chapter 16 – Application Architecture** – presents the application architecture (components), connections (integrations) between them, and the changes necessary to be made compared to the MVP architecture,
- # **Chapter 17 – Integration Architecture** – contains application integration details, integration types, data format, and changes necessary to be made compared to the MVP architecture,
- # **Chapter 18 – Technical Architecture** – presents the technical architecture of the target solution. It shows the changes needed to be made compared to the MVP architecture,
- # **Chapter 19 – Infrastructure Architecture** – presents the infrastructure solution architecture, considers non-functional requirements such as high availability, reliability, and changes necessary to be made compared to the MVP architecture,

- # **Chapter 20 – Security Architecture** – contains information on security solutions and changes necessary to be made compared to the MVP architecture,
- # **Chapter 21 – Deployment Architecture** – presents the target deployment architecture and the changes necessary to be made compared to the MVP architecture,
- # **Chapter 22 – Architecture Verification** – presents verification methods of the target solution architecture,

Part 4 – Summary – summary of the jointly implemented project:

- # **Chapter 23 – Acknowledgements**,
- # **Chapter 24 – Next Steps** – tips for what to do next,
- # **Chapter 25 – Dictionary of Abbreviations** – abbreviations used in the book.

Tools Used in the Book

UML diagrams were modeled using the Visual Paradigm¹ tool in the Modeler version. There is also a free version for non-commercial use. Other popular tools are Enterprise Architect² (it provides a 30-day free version) and diagrams.net³ (a free tool for commercial and non-commercial use).

The Abbreviations

In the book I often use abbreviations of notations, technologies, or products. You can find the expansions of all abbreviations in the [Dictionary of Abbreviations](#) chapter.

Files to Download

Files with diagrams used in the book are available at: <https://architecture.marcinziemek.com/arch-it-files-eng.zip>.

1 <https://www.visual-paradigm.com/>

2 <https://sparxsystems.com/products/ea/>

3 <https://www.diagrams.net/>