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DESIGNING IT SOLUTION ARCHITECTURE

it architecture

cloud

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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 Paradigm[1] tool in the Modeler version. There is also a free version for non-commercial use. Other popular tools are Enterprise Architect[2] (it provides a 30-day free version) and diagrams.net[3] (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 Dictionaty 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/