

BUSINESS SYSTEMS

Systems Analysis

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Outline

- 1 Domain-Driven Design
- 2 Business Systems Analysis
- 3 Software Methodologies ✓
- 4 Requirements Engineering ✓



Outline

1 Domain-Driven Design

2 Business Systems Analysis

3 Software Methodologies

4 Requirements Engineering



Basics of Domain-Driven Design I

- DDD is focusing on the core domain and domain logic, it is a way of thinking aimed at accelerating software projects that have to **deal with complicated domains**.
- The essential terms of DDD are *entity, model, ubiquitous language, bounded context, and business logic in layers.*
- DDD is a set of principles and patterns that help to design a **system** ensuring alignment with the real-world **business needs**.

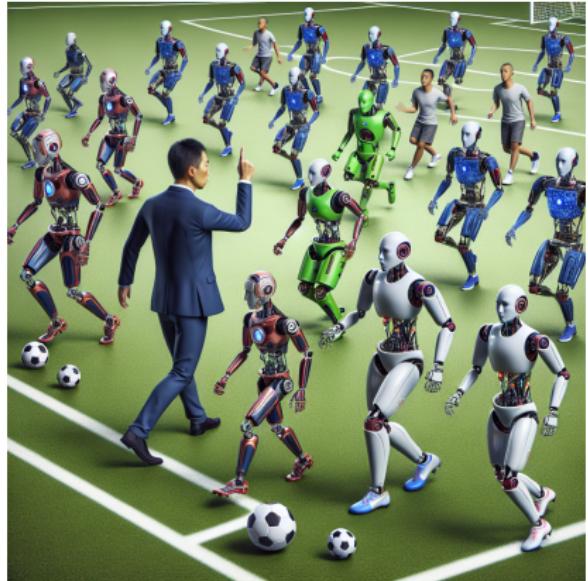


Figure: Prompt: Draw a soccer coach teaching robots soccer players.



Basics of Domain-Driven Design I

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- The essential **terms** of DDD are **context**, **model**, **ubiquitous language**, **bounded context**, and **business logic in layers**.
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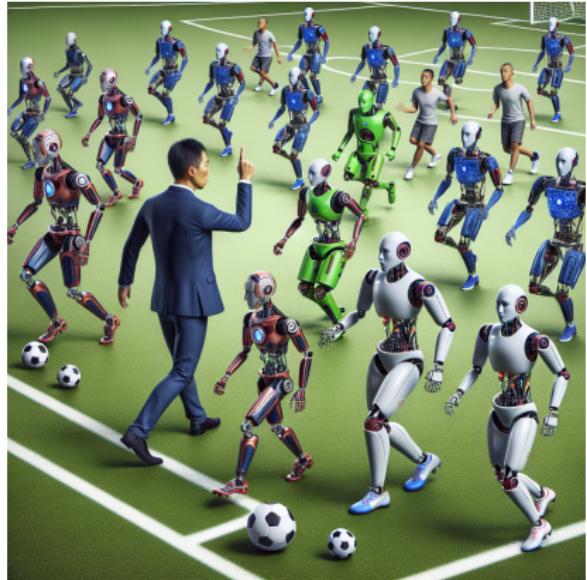


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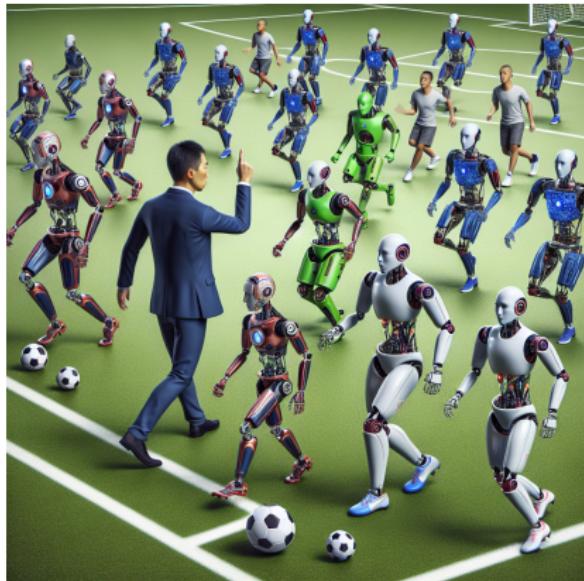


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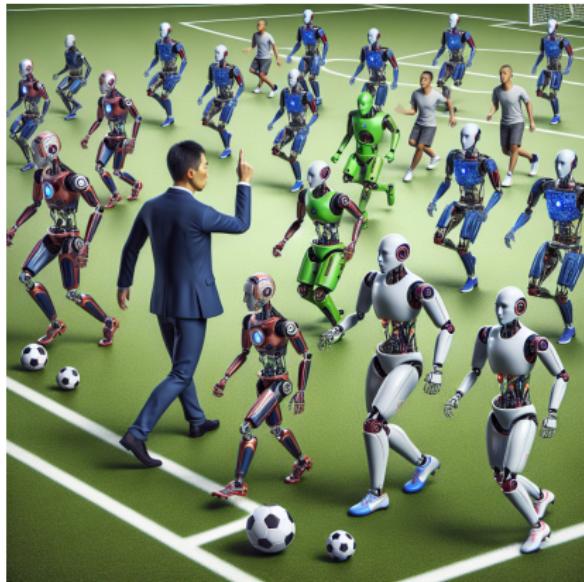


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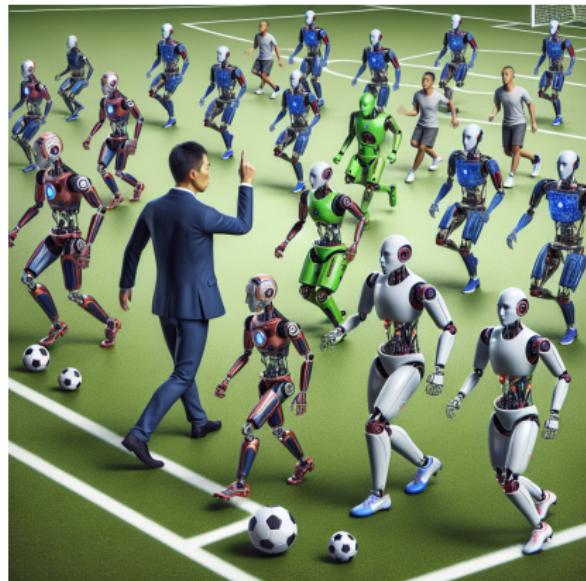


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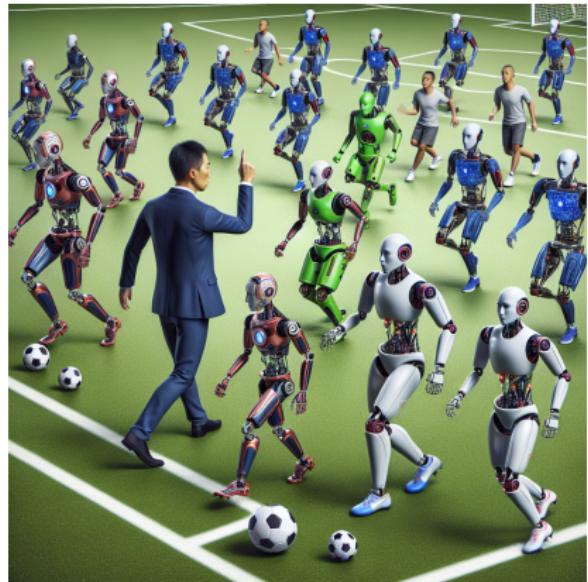


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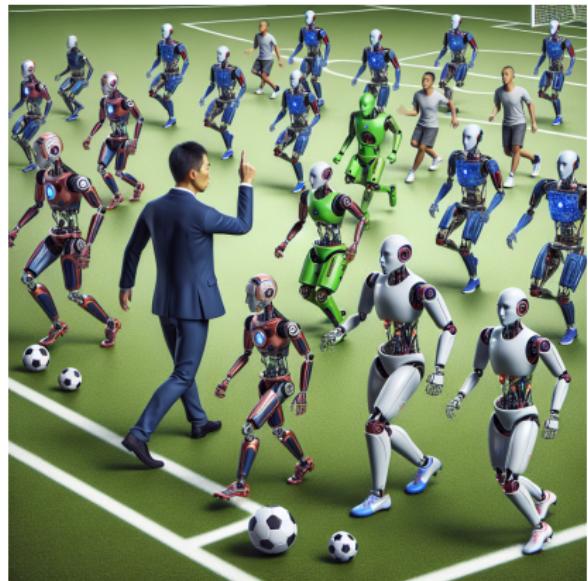


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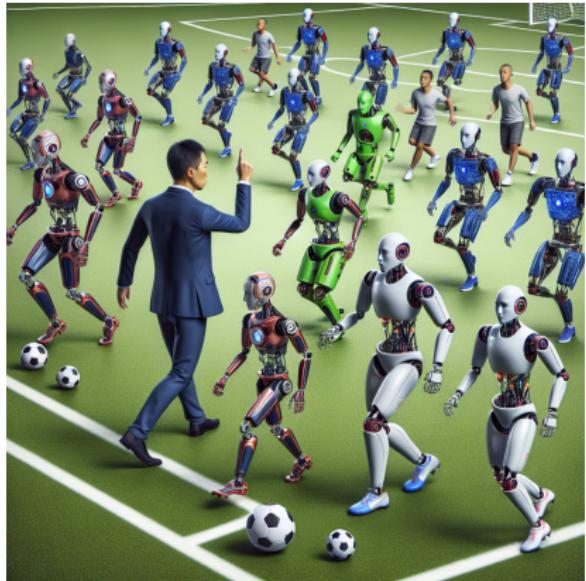


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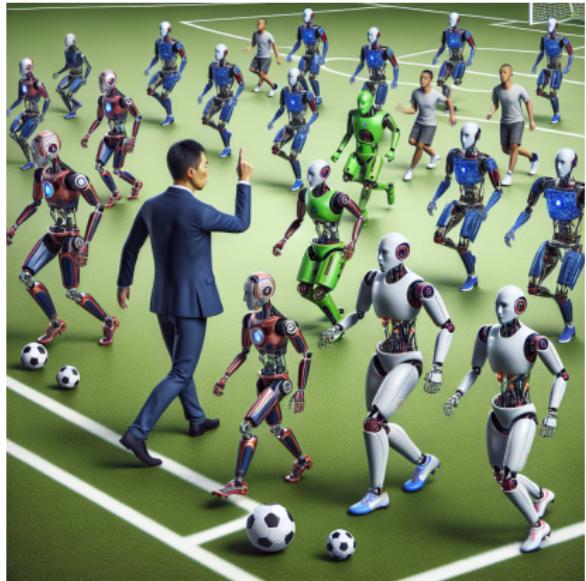


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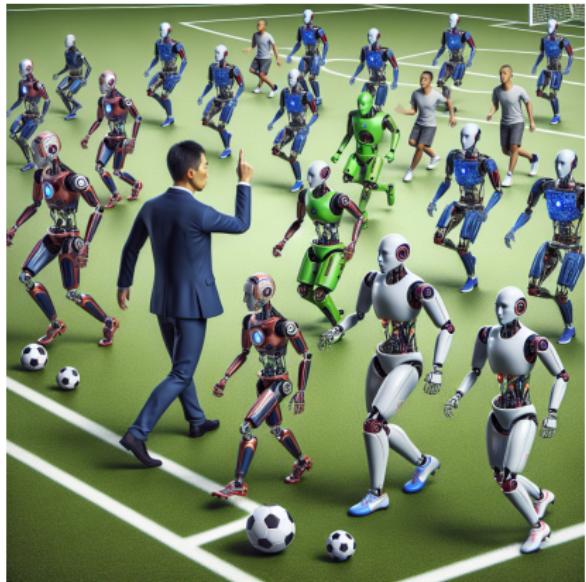


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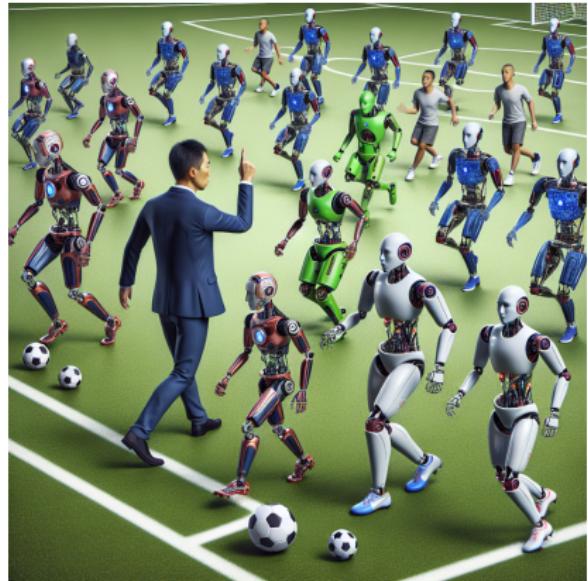
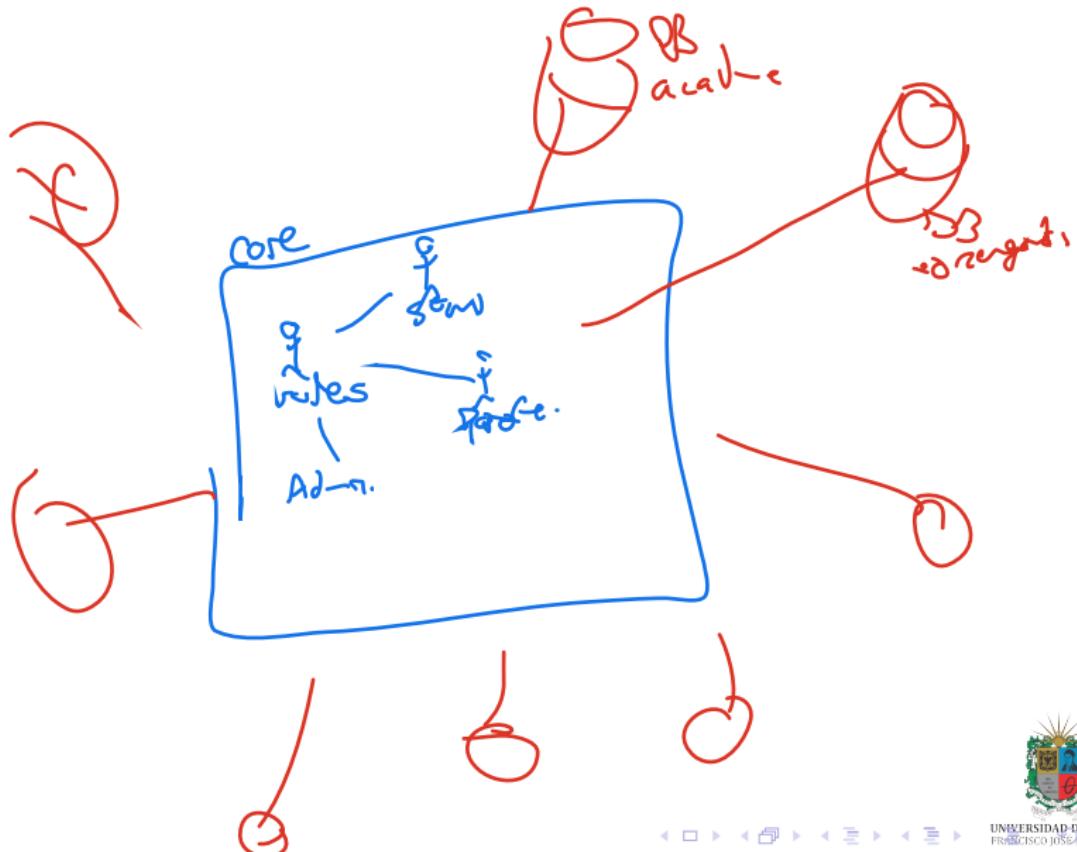


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Case of Study: DDD for Condor



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1 Domain-Driven Design

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3 Software Methodologies

4 Requirements Engineering



Business Systems

- **Business systems** are complex systems that support the operations and processes of a business.
- They are designed to automate and streamline business processes, improve efficiency, and provide accurate and timely information for decision-making.
- Business systems can include a wide range of components, such as:
 - Enterprise resource planning (ERP) systems
 - Customer relationship management (CRM) systems
 - Supply chain management (SCM) systems
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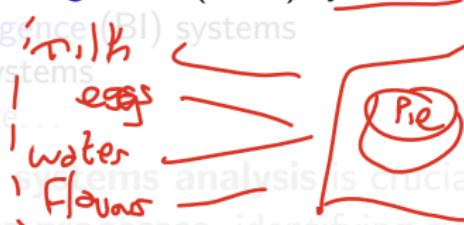
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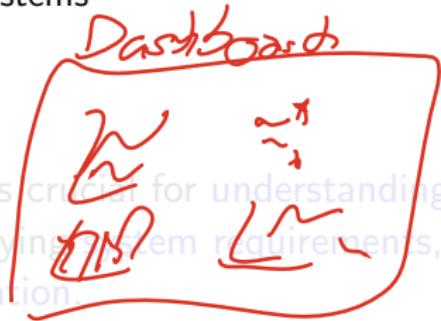
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Business Analysis

- **Business analysis** is the process of identifying business needs and determining **solutions** to *business problems*.
- It involves understanding the current state of the **business**, analyzing requirements, and recommending improvements.
- **Business analysts** use various techniques and tools to gather and document requirements, such as interviews, surveys, and workshops.
- The goal of **business analysis** is to align business objectives with IT solutions and ensure that the resulting **systems** meet the needs of the **business**.
- Key activities in business analysis include:

• Gathering requirements
• Analyzing requirements
• Designing solutions
• Implementing solutions
• Evaluating solutions



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 - **Creating** business process models and diagrams
 - **Collaborating** with **stakeholders** to validate requirements



Business Models Examples

Understanding Business Models Through Flywheels

amazon



NETFLIX



Spotify



LinkedIn



IT Project Management

- **IT Project Management** is the **process** of planning, organizing, and **controlling** the resources and activities required to complete an **IT project**.
- It involves defining project goals, creating a project plan, allocating *Gantt* resources, managing risks, and monitoring project progress.
- Key components of IT Project Management include:
 - Initiation and planning
 - Execution
 - Monitoring and control
- Common IT Project Management methodologies include:
 - Waterfall
 - Agile
 - Scrum
 - PRINCE2



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Case of Study: Example of a KANBAN Board



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Software Methodologies

- **Methodologies** are a set of steps to complete tasks or to perform processes.
- They are next level of algorithms, more complex, more detailed.



Traditional Methodologies

- At the beginning, **methodologies** to solve software problems were **big**, tons of steps, documentation of decisions taken, and looking for a lot of **explanations for everything**.
- **Some problems** required *old school methodologies* to be solved. However, there are **just a few** cases of them.
- Big methodologies **required** a lot of **resources**, as **humans**, knowledge, time and money. Sadly, in real-world, you rarely have all those things to solve problems.



Agile Methodologies

- **Agile methodologies** were created and developed for **small technology companies** unconsciously around thirty years ago.
- Some technology companies are tricky: start with **small teams**, with a few of money, but with big potential growth.
- The term **startups** group this kind of companies. If you want to develop a product with **small teams** and **no so much budget**, you need to **think smart** and **think fast**.
- **Agile methodologies** focus on final product more than in *processes* and *documentation*.
- It means, have a good leadership, a good team culture, a good learning curve, share knowledge, make the client a strong part of the process, and have quickly new versions of the product.



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Case of Study: Example of a SCRUM Workflow



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Requirements Engineering I

- **Requirements engineering** is the process of *gathering, documenting, and managing* the requirements for a software project.
- It involves *understanding the needs of the stakeholders*, defining the scope of the project, and creating a shared understanding of the requirements.
- **Requirements engineering** is critical to the success of a software project, as it helps to *ensure that the resulting system* meets the needs of the users and *stakeholders*.
- Key activities in **requirements engineering** include:
 - Gathering requirements
 - Documenting requirements
 - Managing requirements
 - Refining requirements
 - Validating requirements



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 - Analyzing requirements to determine their feasibility
 - Refining requirements to meet user needs
 - Managing requirements throughout the project lifecycle



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- It involves *understanding* the needs of the **stakeholders**, defining the *scope* of the project, and creating a *shared understanding* of the requirements.
- **Requirements engineering** is *critical* to the success of a software project, as it helps to *ensure* that the **resulting system** meets the needs of the **users** and **stakeholders**.
- Key activities in **requirements engineering** include:
 - Eliciting requirements from *stakeholders*
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- It is normal the **clients** do not know what they want. They are confused, or with **wrong expectations**, even with **bad understanding** of the problem.
- Gather **right information** means make the **right** questions. At the same time, it is important to understand **business domain**, define **business rules**, and create the **right** shared vocabulary.
- Always be **honest**, understand client's **expectations**, and define **processes** aligned with those **expectations**.
- Effective **requirements engineering** requires good communication with stakeholders, a clear understanding of the **business domain**, and the ability to translate business needs into technical requirements.



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Requirements Engineering III

- The **classical theory** talks about **two kind of requirements**: **functional** and **non-functional**. However, they are described in a **very technical** way.
- There are **strategies** to gather **information** from clients: interviews, brainstorming sessions, analysis current client processes documentation. All depends of the **nature of the problem**, and the **impact** of that one into the organization.
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User Stories

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- Nowadays **user stories** are a widely accepted approach, where the idea is to define requirements as a **client story**, it means, write the requirement in the **client vocabulary**.
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Testing and Requirements Validation

- **Testing** is the process of evaluating a **system** or application to ensure that it meets the **requirements** and **expectations** of the **stakeholders**.
- Testing is an **essential** part of the software development process, as it helps to **identify** defects and **improve** the quality of the software.
- There are many different types of **testing**, including:
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 - Integration testing
 - System testing
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 - Regression testing
- Testing should be planned and executed throughout the software development process, from the requirements phase to the deployment phase.



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Outline

1 Domain-Driven Design

2 Business Systems Analysis

3 Software Methodologies

4 Requirements Engineering



Thanks!

Questions?



Repo: <https://github.com/EngAndres/ud-public/tree/main/courses/systems-analysis>

