Development of informational technology architecture for software development process improvement using dynamic planning problem statement based on CMMI model

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List of abbreviations

SWDP – Software Development Process

CMMI – Capability Maturity Model Integration

Problem statement

The **object** of the work is the software development process.

The **subject** of the work is architecture of a SWDP improvement software system and SWDP quality management model CMMI.

The **goal** of the work is to design architecture of a future software.

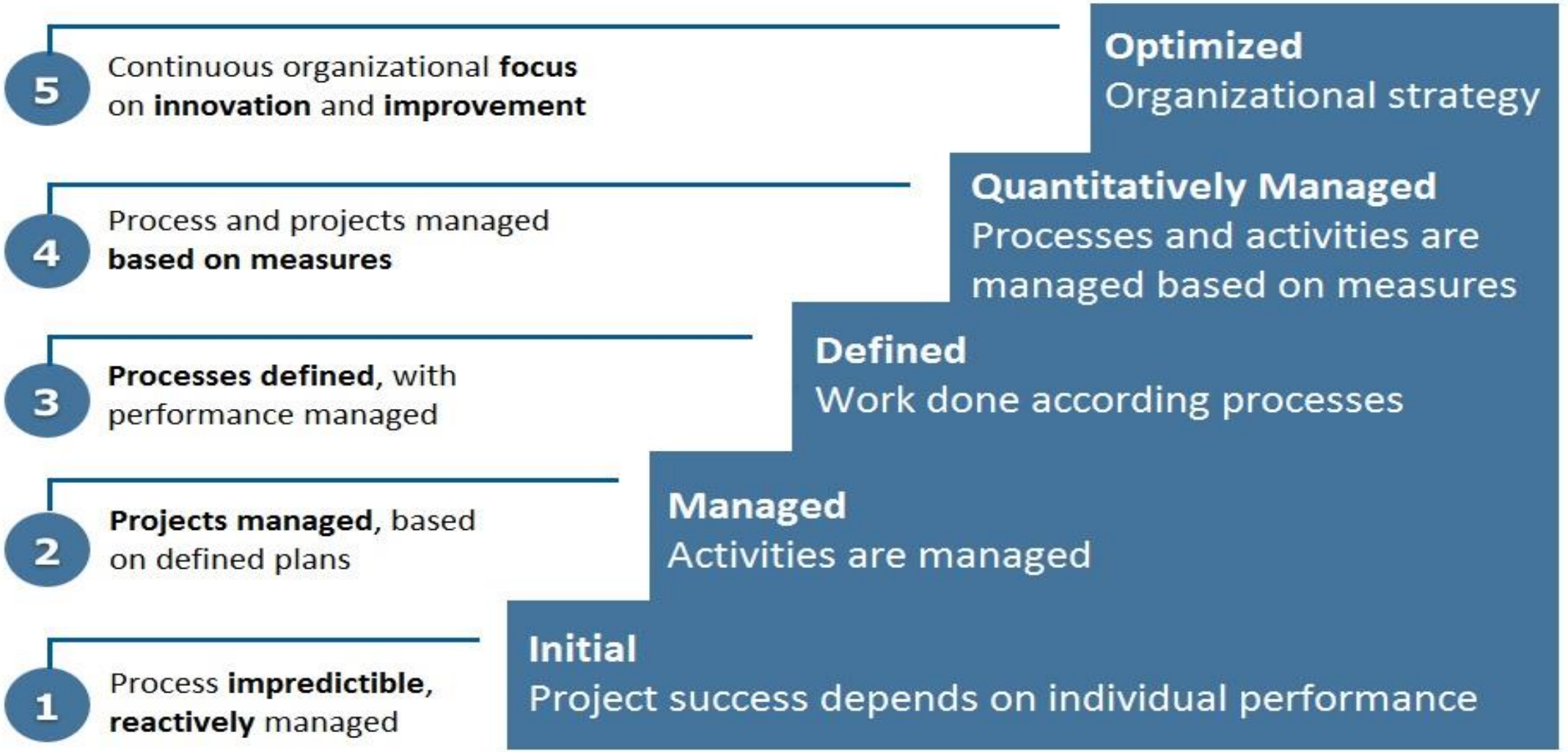
Problem actuality

- SWDP is on the most important activities for a lot of companies.
- CMMI has already shown some results on practice and it is tested by time.
- Optimal trajectory of SWDP improvement allows companies to invest their resources wisely, which is really important in condition of limited resources.

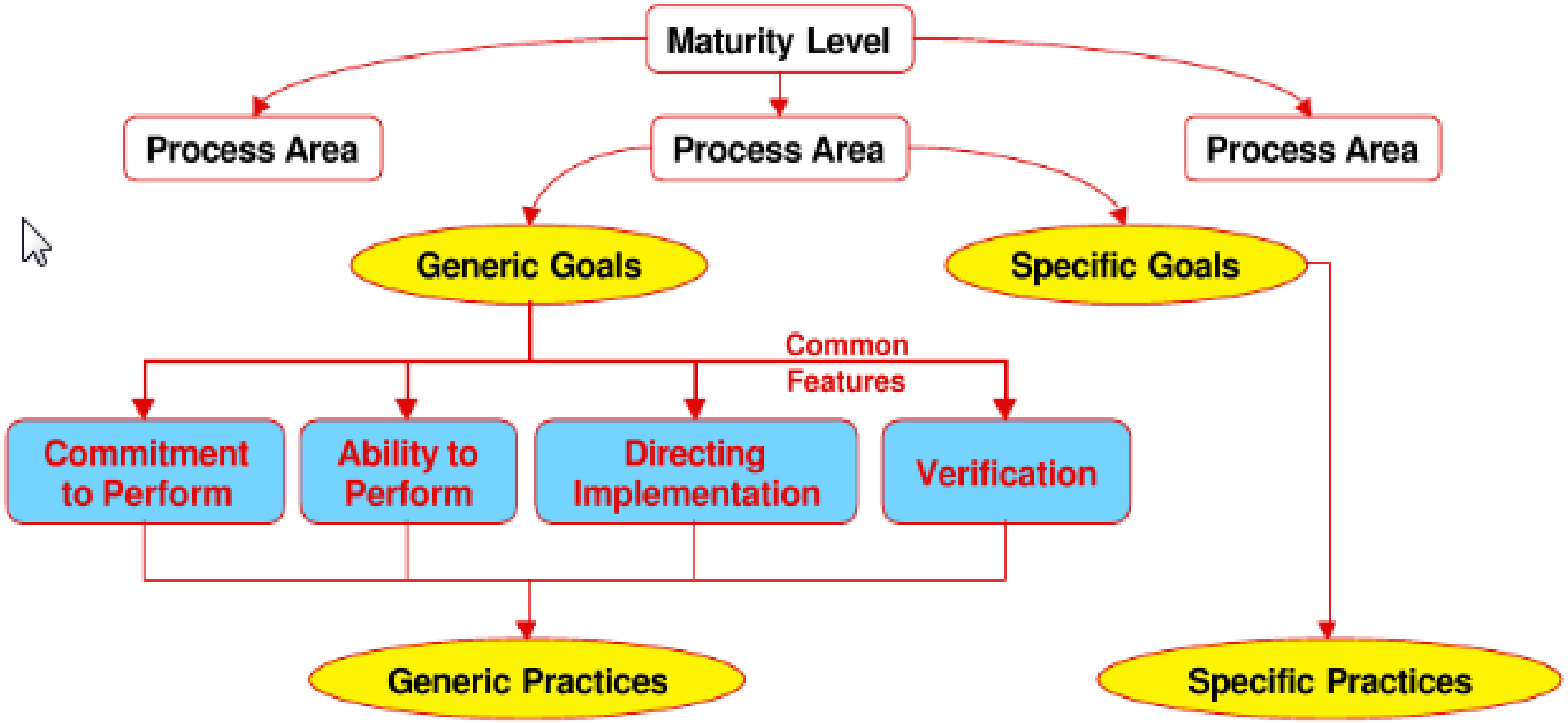
Tasks for goal achievement:

- Analyze the domain area
- Analyze SWDP assessment methods
- Analyze CMMI model
- Research applying of sliding planning task for CMMI model
- Develop and analyze architecture of the future software

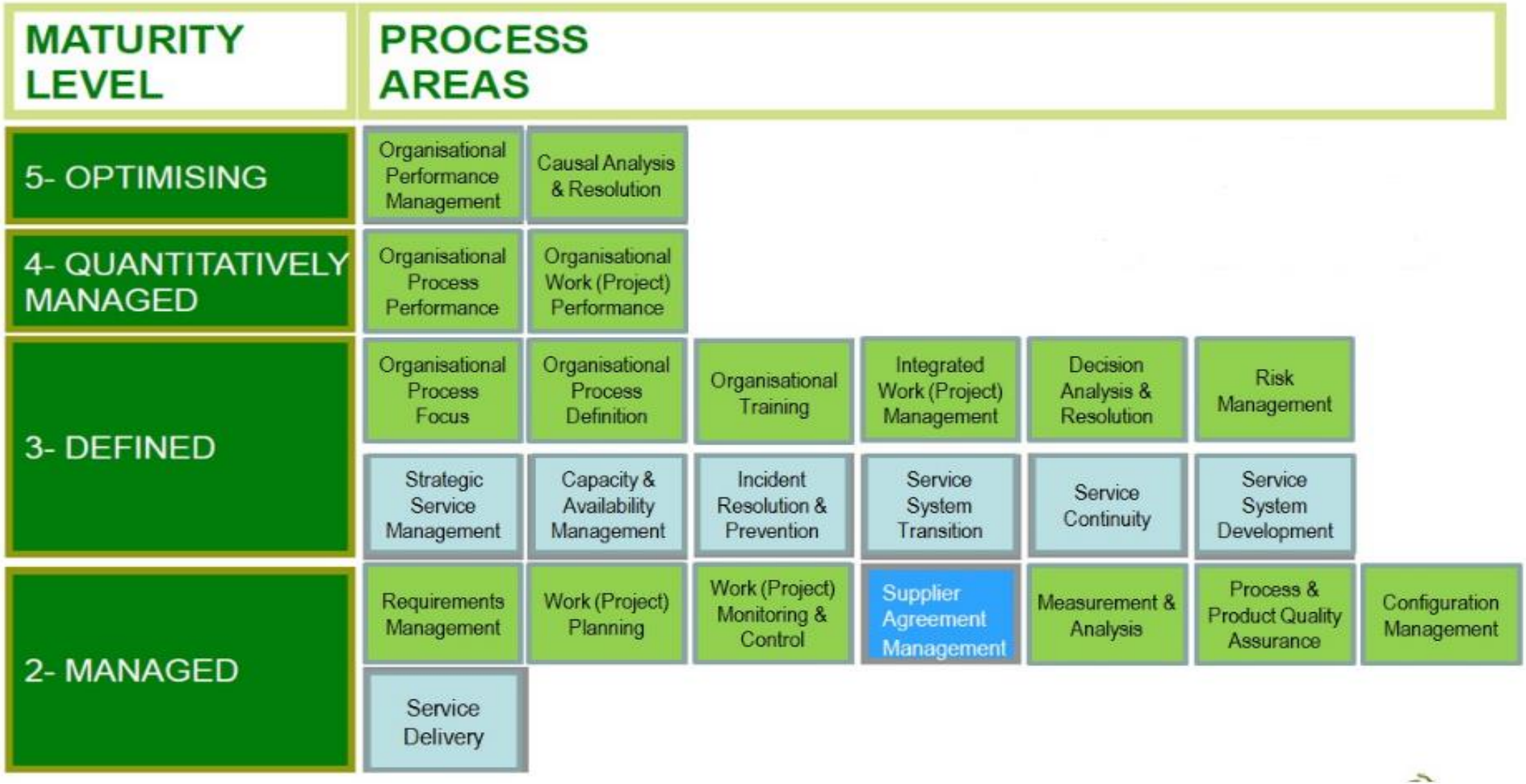
CMMI model


5
Continuous organizational **focus** on **innovation** and **improvement**
Optimized
Organizational strategy
4
Process and projects managed **based on measures**
Quantitatively Managed
Processes and activities are managed based on measures
3
Processes defined, with performance managed
Defined
Work done according processes
2
Projects managed, based on defined plans
Managed
Activities are managed
1
Process **impredictible**, **reactively** managed
Initial
Project success depends on individual performance

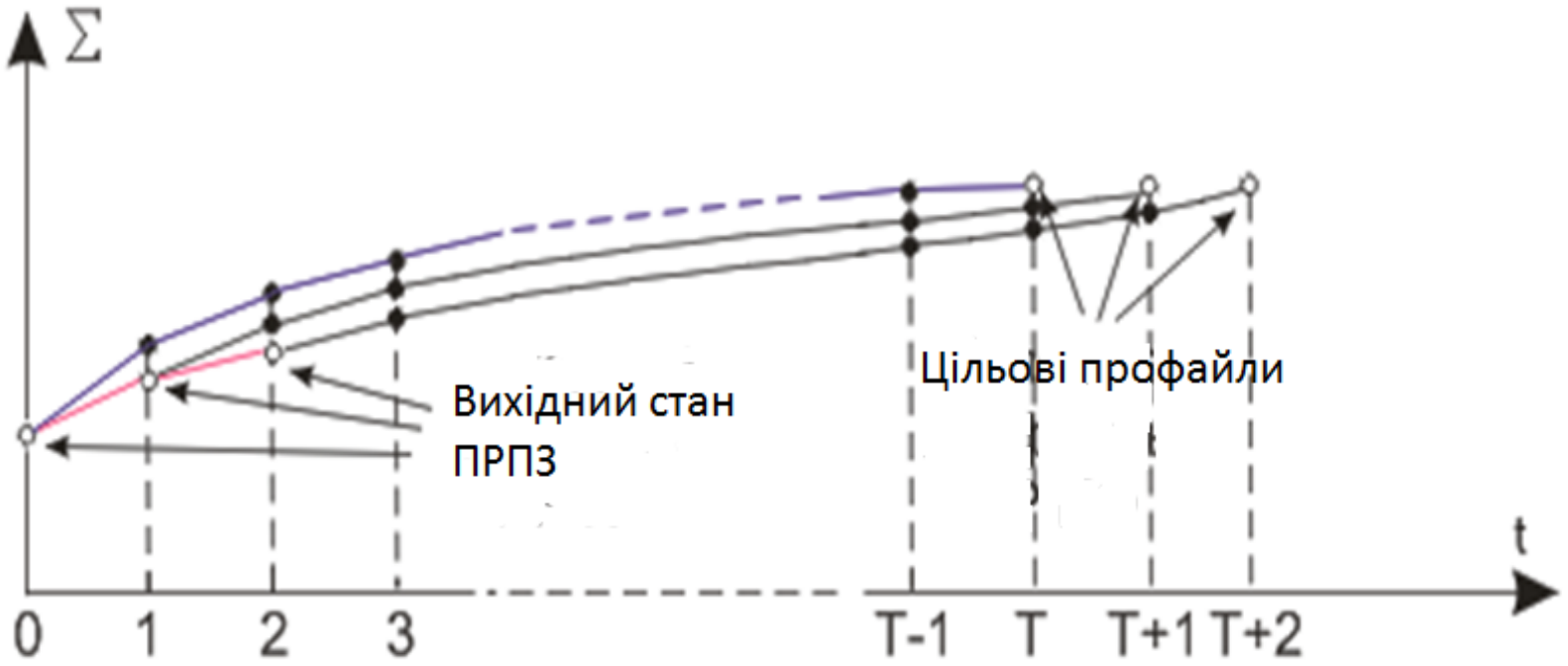
CMMI model


Maturity Level
Process Area
Process Area
Process Area
Generic Goals
Specific Goals
Common Features
Commitment to Perform
Ability to Perform
Directing Implementation
Verification
Generic Practices
Specific Practices

Maturity Level Process Areas

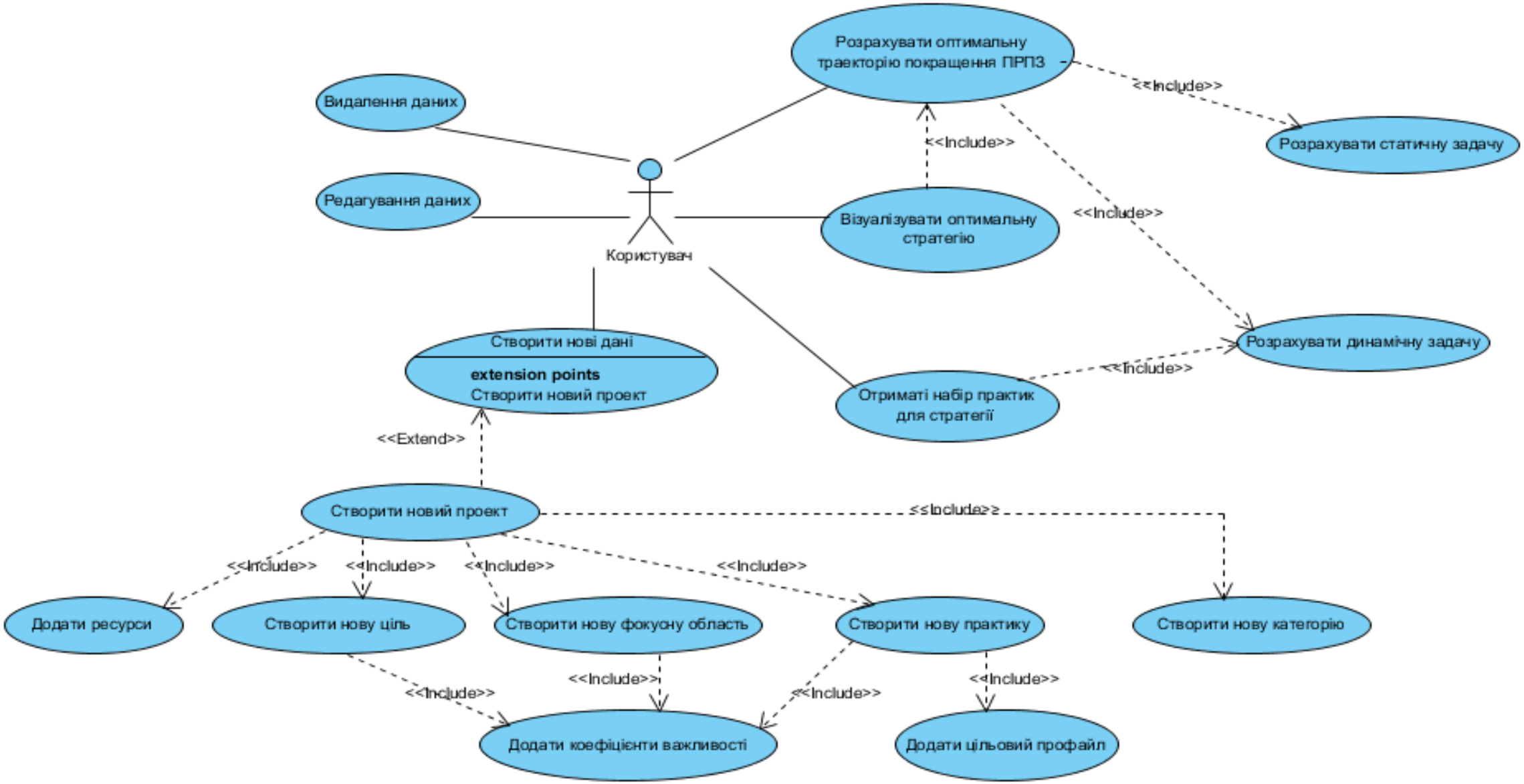


Sliding planning technique

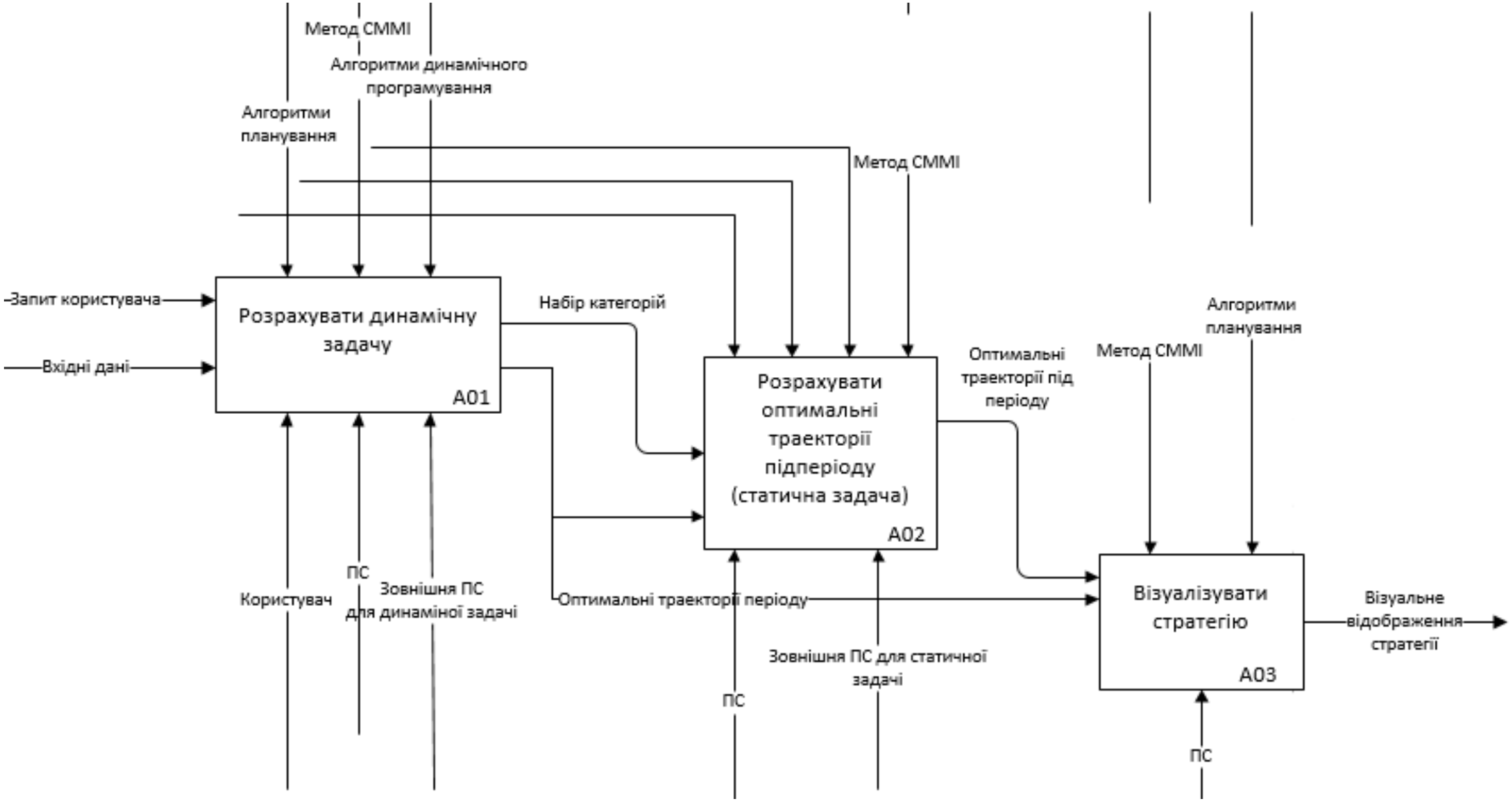


Σ - простір змінних, які описуют поточний стан ПРПЗ

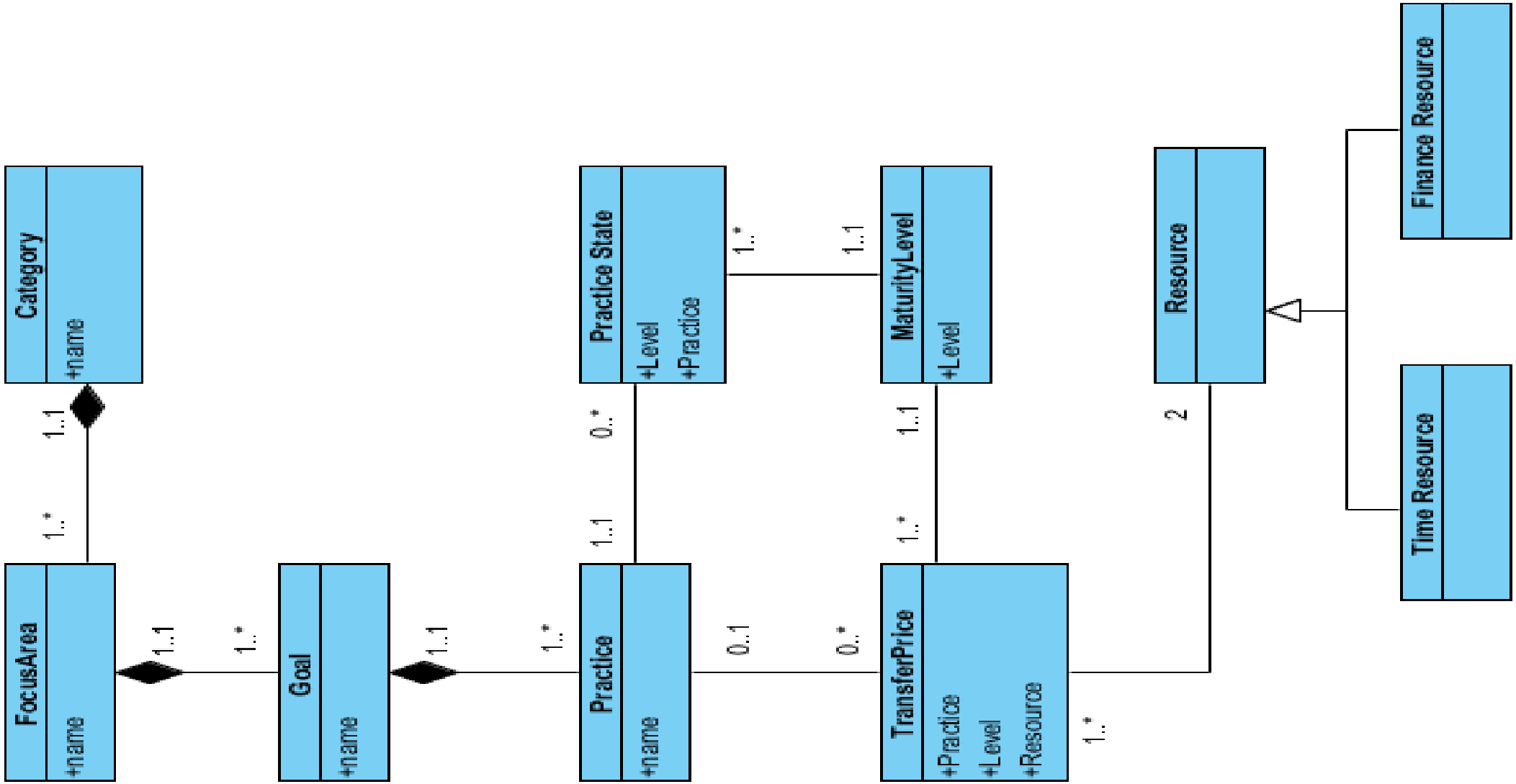
Requirements specification: use case



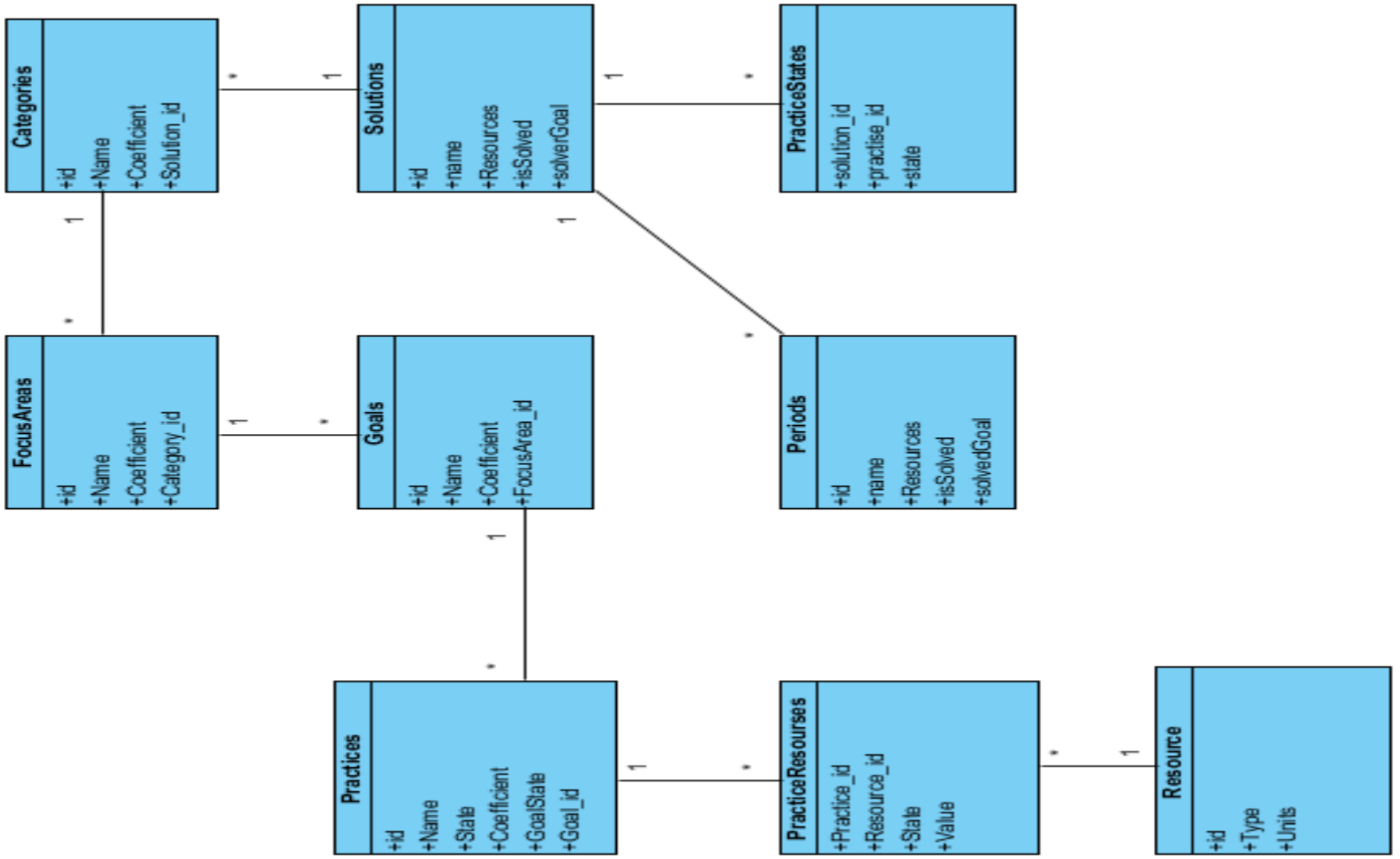
IDEF0 for main process: visualize optimal strategy



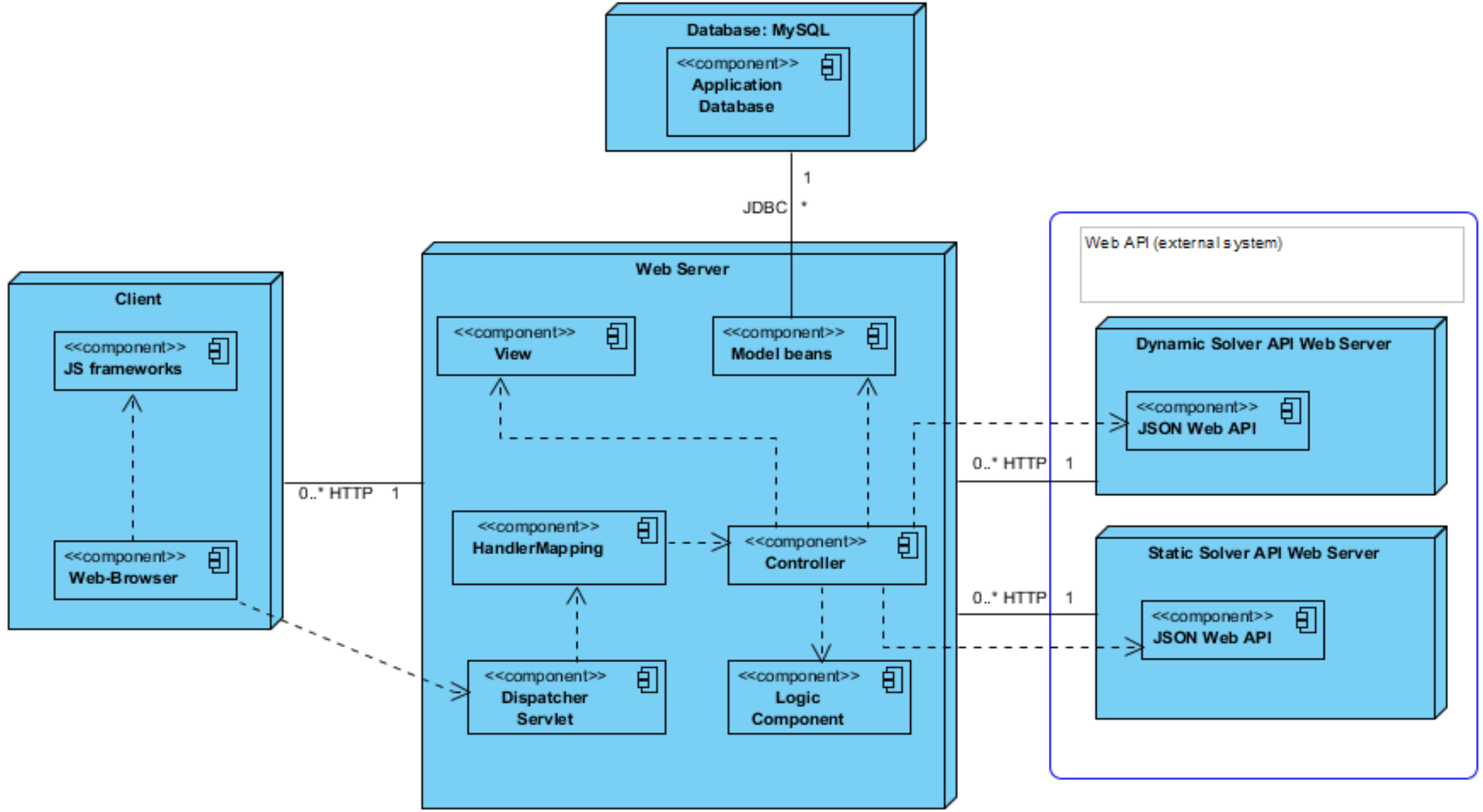
Requirements specification: Ontology of the project



Conceptual Data Model



System architecture: deployment diagram



System architecture advantages

- Independent from the software platform
- High security
- High scalability
- Low performance requirements of the client work machine

System architecture: technologies of the future software

- Java Development Kit (JDK)
- Spring MVC
- Apache Tomcat Java Servlet Container
- Hibernate
- Eclipse IDE

Conclusions

In this work, we have done the analysis of the domain area, as well as SWDP assessment. The CMMI model was researched and analyzed. The sliding planning task was applied for the problem. As the result, architecture of the future software was developed.