Assessment of URDAD as a Design Methodology for Model Driven Development

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Introduction

The aim of this study is to:

- Verify and assess the implementability of URDAD
- Verify and assess the business value of URDAD
- Explore tools that are available to facilitate Model Driven Development
- Refine and enhance URDAD.

URDAD

- Use Case, Responsibility Driven Analysis and Design
- Originator = Dr. Fritz Solms
- What is URDAD?
  - Design methodology to enforce sound design principles
  - An implementable algorithmic analysis and design methodology which generates a technology neutral design model
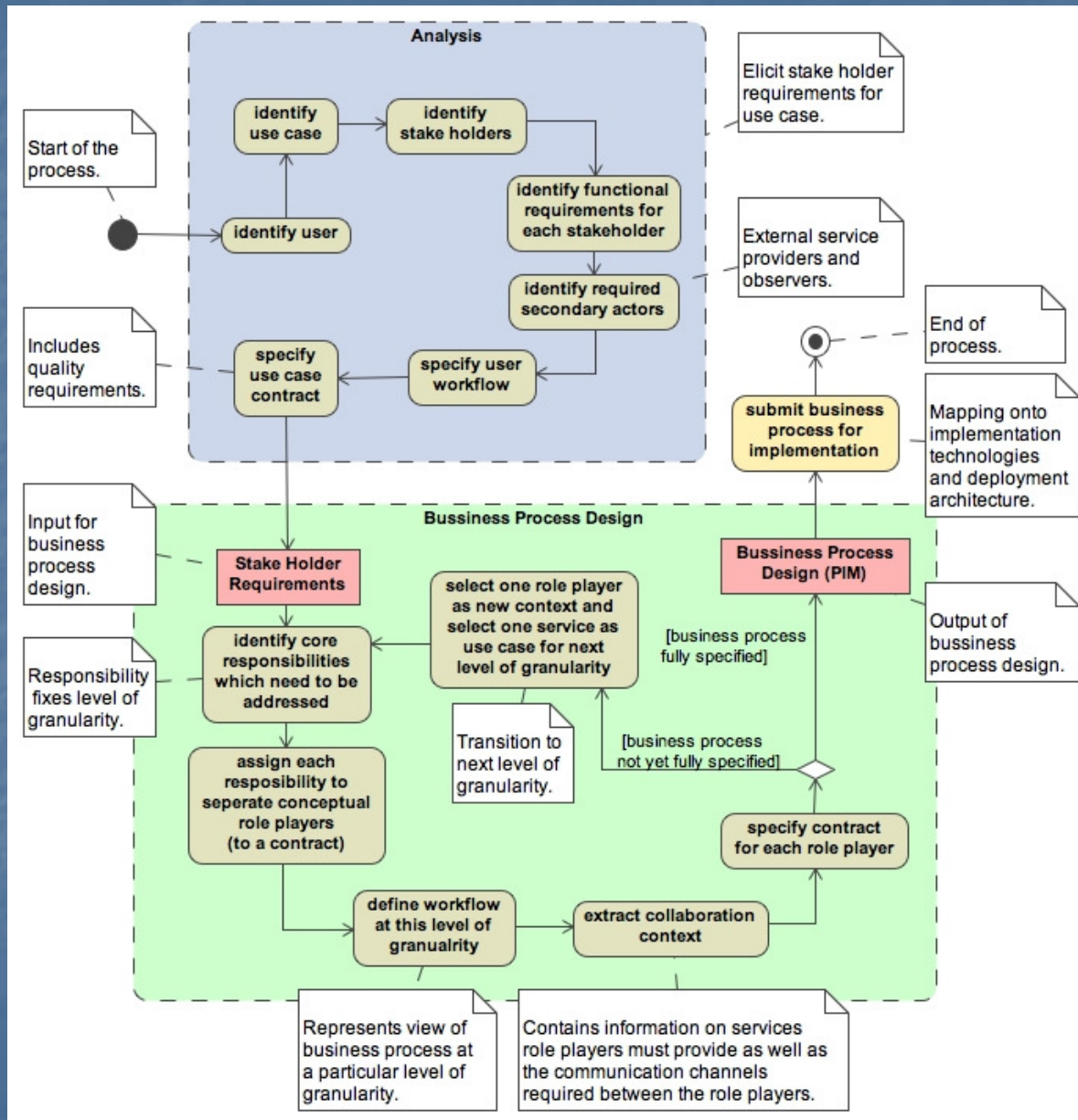- For the purposes of this study, URDAD is implemented using UML.

URDAD Embedded Within MDA
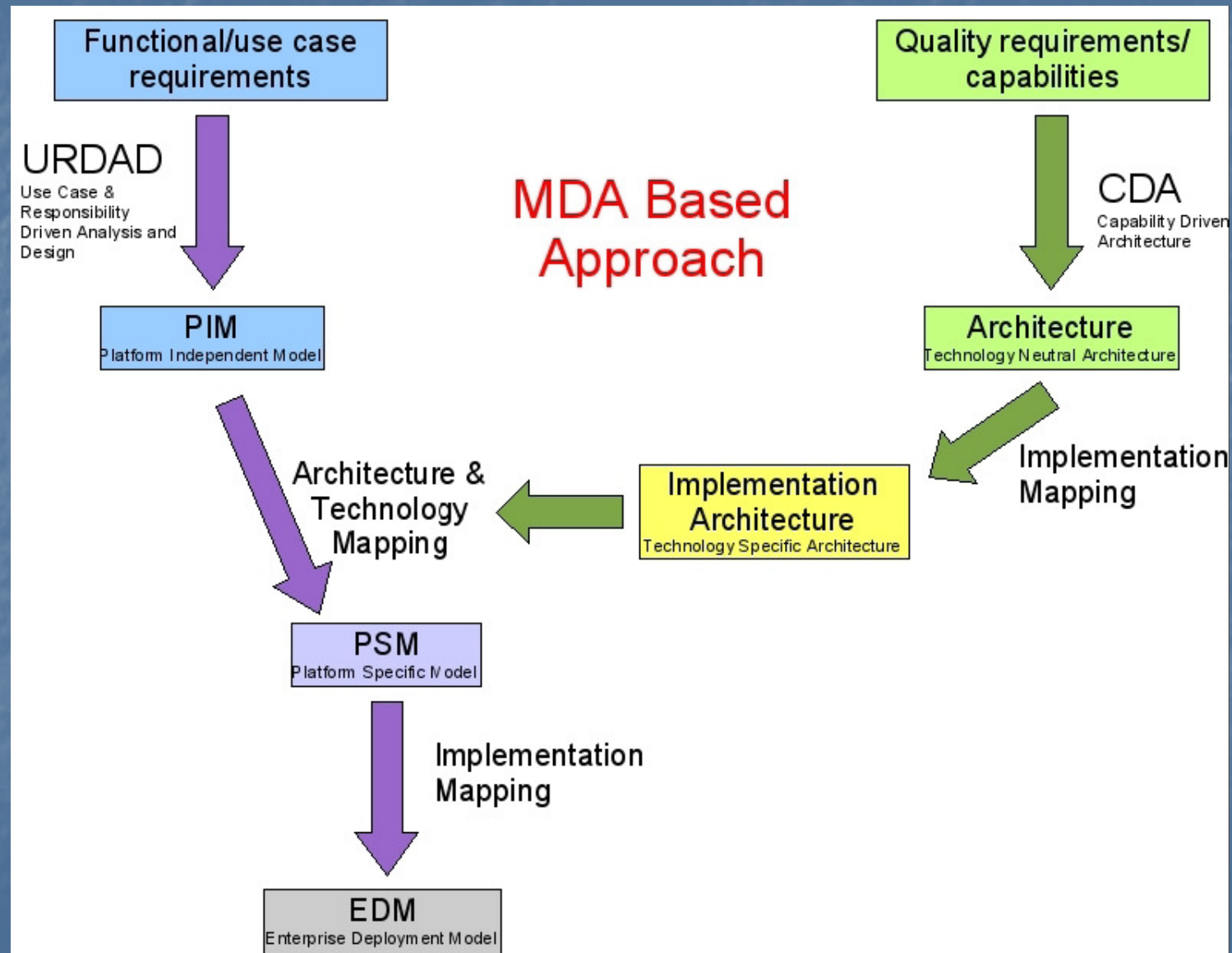
URDAD Overview
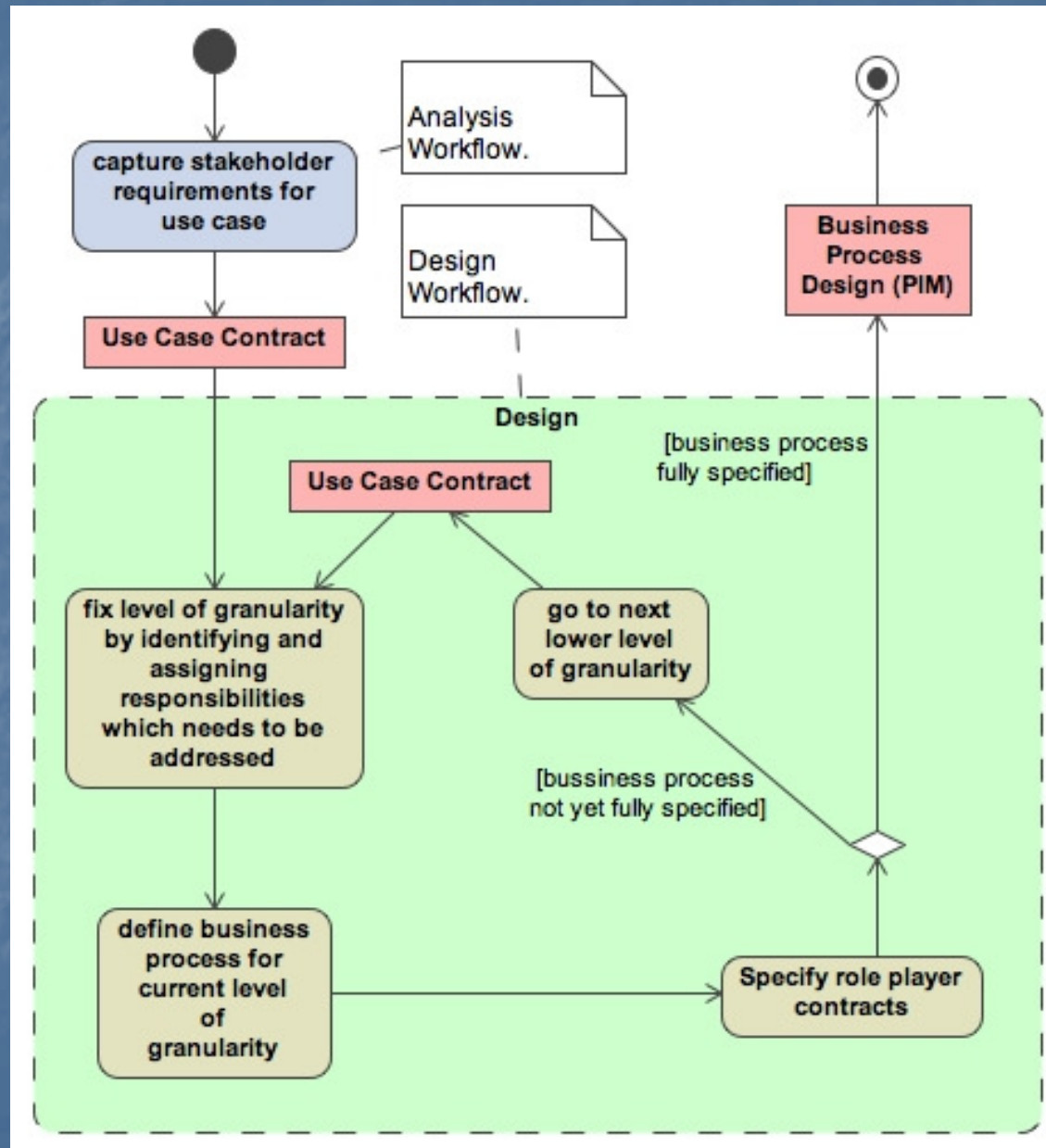
URDAD Analysis and Design Steps

Design Activities Included in URDAD

- Enforce single responsibility principle
- Fix the levels of granularity
- Lock into contracts
- Introduce a controller for each level of granularity
- Document relationships between design layers
- Drive structure from process

Design Attributes Achieved by URDAD

- Loosely coupled components
- Maintainability / extensibility
- High level of reusability
- Testability
- Simplicity / understandability
- Technology neutral
- Traceability

Aims of URDAD

- URDAD aims to:
  - Make the design simpler by defining a step for step algorithm for the design process
  - Enforce accepted requirements for "good design" through the design methodology itself
  - Separate conceptual design from its realization (e.g. the implementation technologies and deployment architecture)
  - Have a design methodology which enables one to manage levels of granularity/refinement effectively
  - Generate an output: for each level of granularity
    - A contract for each role player
    - Technology Neutral Workflow specifying how the role players collaborate to realize use-cases

Questions That Need to be Answered

- Can one successfully follow the URDAD methodology for a realistic problem?
- Can URDAD be embedded within MDD?
    - Does URDAD generate a suitable PIM?
    - Is the PIM a complete technology neutral design?
    - Can one do technology mappings from the PIM to the Platform Specific Model (PSM)?
- Does the URDAD methodology drive the generation of reusable components that are technology neutral?
- Can one do tracing of any design/requirements element back to the core stakeholder requirements?
- Can the outcomes of URDAD be used for automatic functional test case generation?

Possible Challenges

- Meta data challenges of UML
- PIM requirements
- Code generation and MDA toolsets
- Accuracy and relevance of empirical data

Questions

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