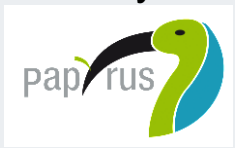
Open Source Tools for Embedded Systems

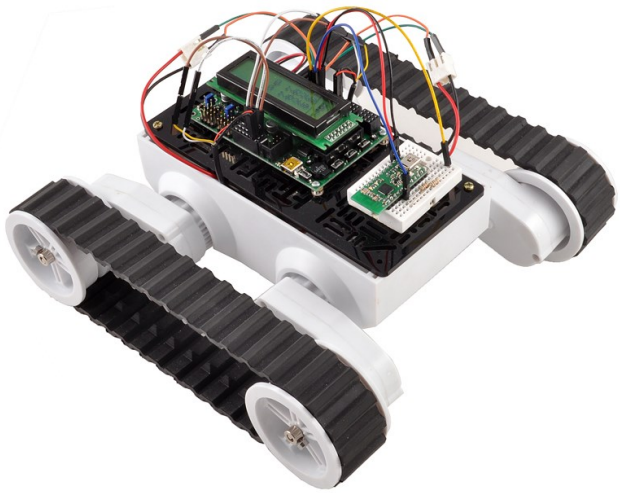




Rover Use Case, Specification, design and implementation using Polarsys Tools: Capella, CDT, Gendoc, Papyrus and ReqCycle

What is the rover use case?

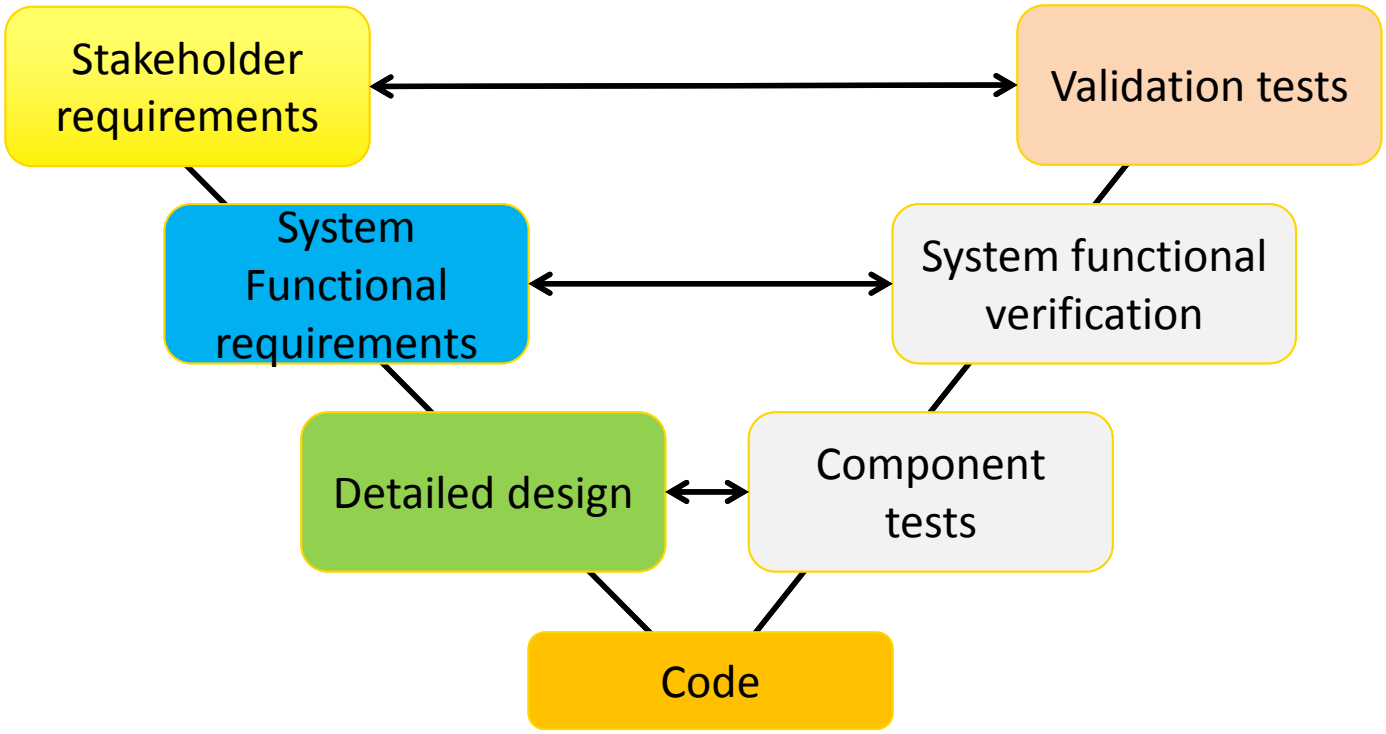
- One Polarsys use case
  - Demonstrate several Polarsys tools
  - Show a system made with these tools



- The rover use case is a small tank
  - travel around a room autonomously or under control
  - return a map of the room.

Objectives?

- Show how, with Polarsys tools, a use case can be implemented.

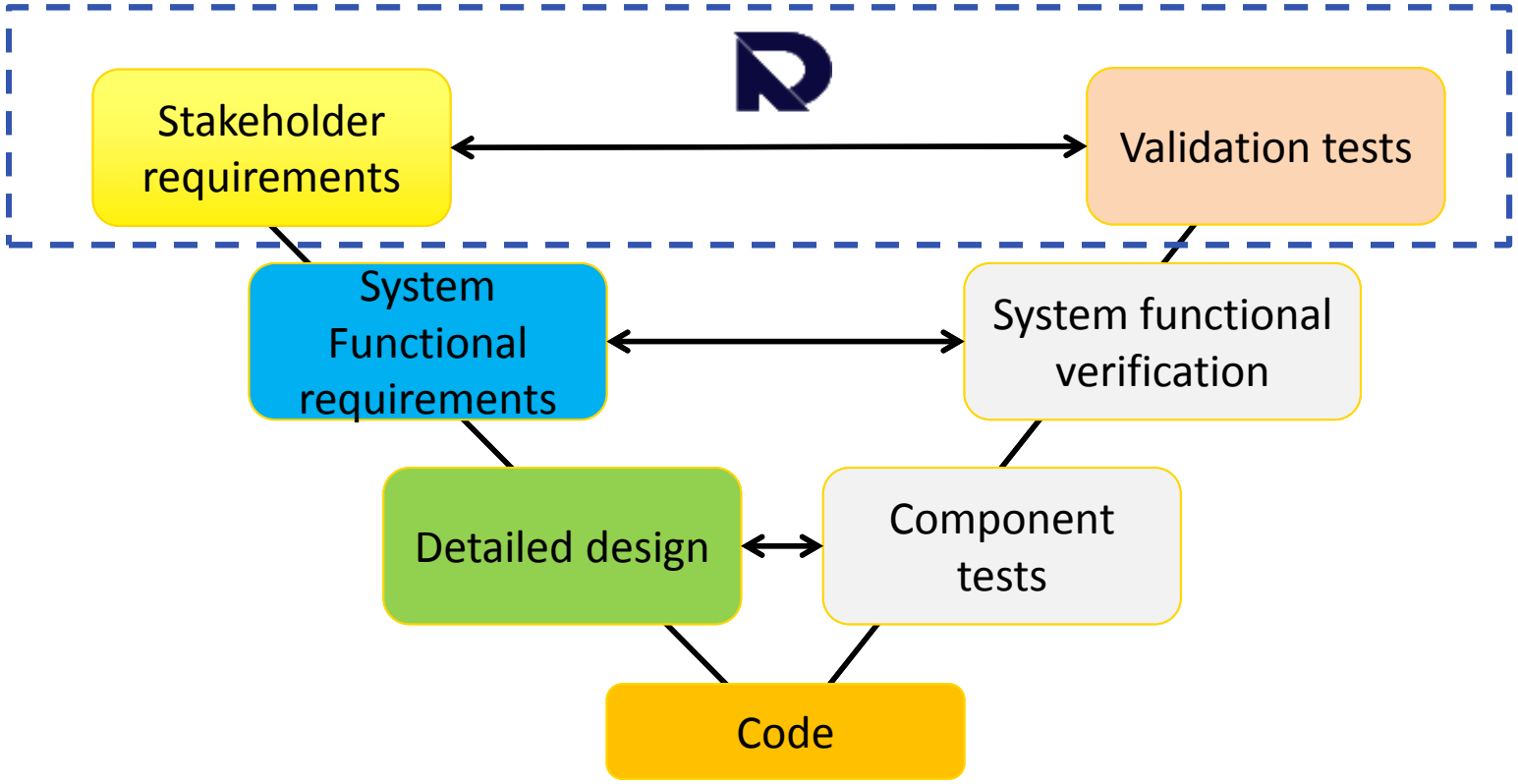


Guideline

ROVER_FUNC_010

The Rover shall support various payloads (sensors/camera/robotic arm) thanks to a pluggable software architecture

Stakeholder requirements



ReqCycle Presentation

- Requirement management
  - Datamodel definition
  - Predicates to support filtering
  - Advanced GUI customization
  - Datasources import and update (with impact analysis)
    - Documents, ReqIF, EMF models, OSLC
  - Requirements creation

ReqCycle Presentation

- Traceability management
  - Traceability link type definition
    - Requirements to Models, Requirements to Requirements, Models to Code, Code to tests, Models to Models …
  - Traceability link creation
  - Requirement traceability links export
  - Traceability capture from existing sources
  - Extended Traceability display (aggregated)

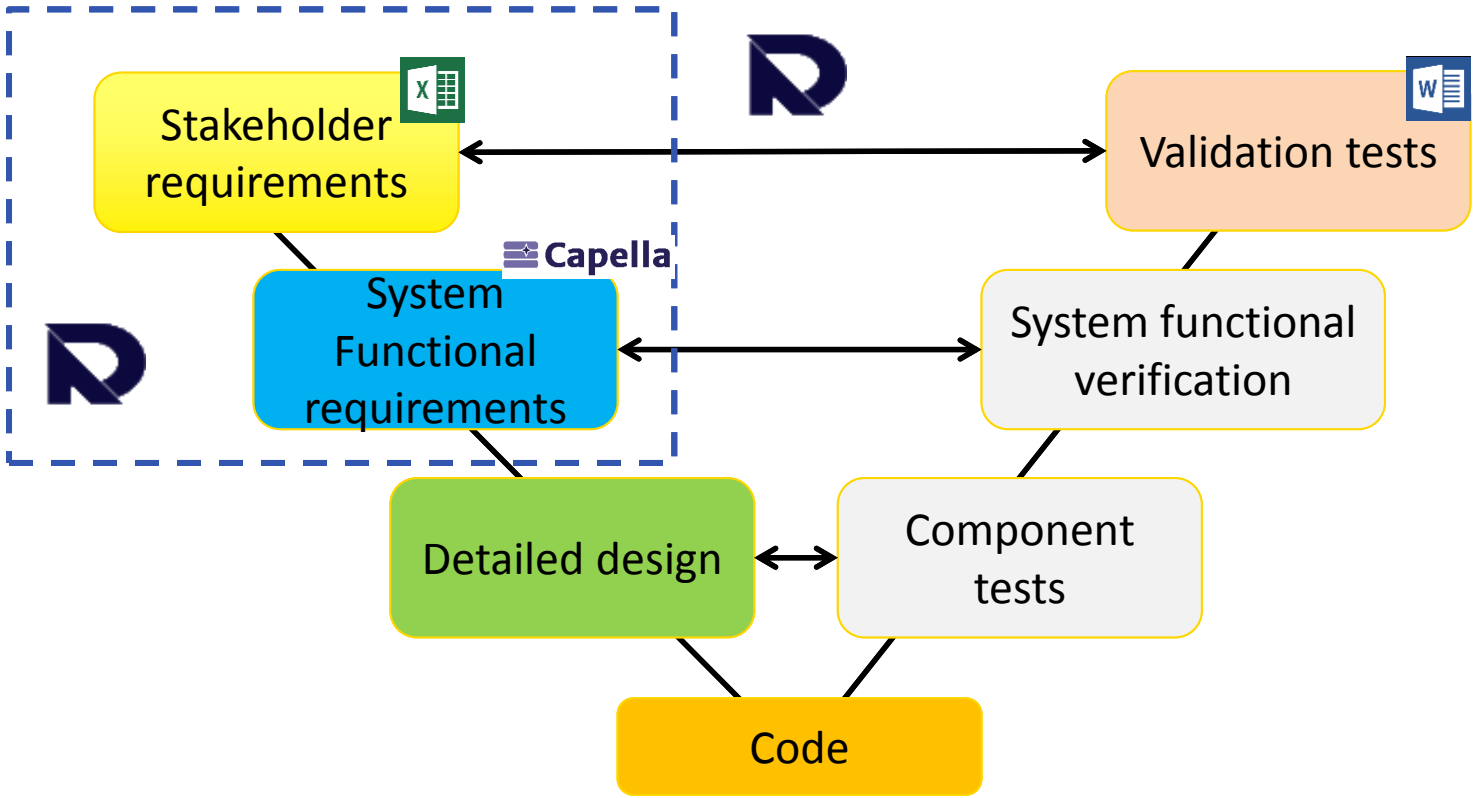
ReqCycle Configuration

- General:
  - Definition of the requirement data model (id, text, further attributes and scopes)
  - Configuration of traceability link types
  - Definition of filter and display styles
  - Creation of rules to map requirement data from external sources (documents, models...) to requirement data model.

- For the use case:
  - Import of requirements from an Excel file
  - Import of test requirements from a Word file

Demo

System Functional requirements



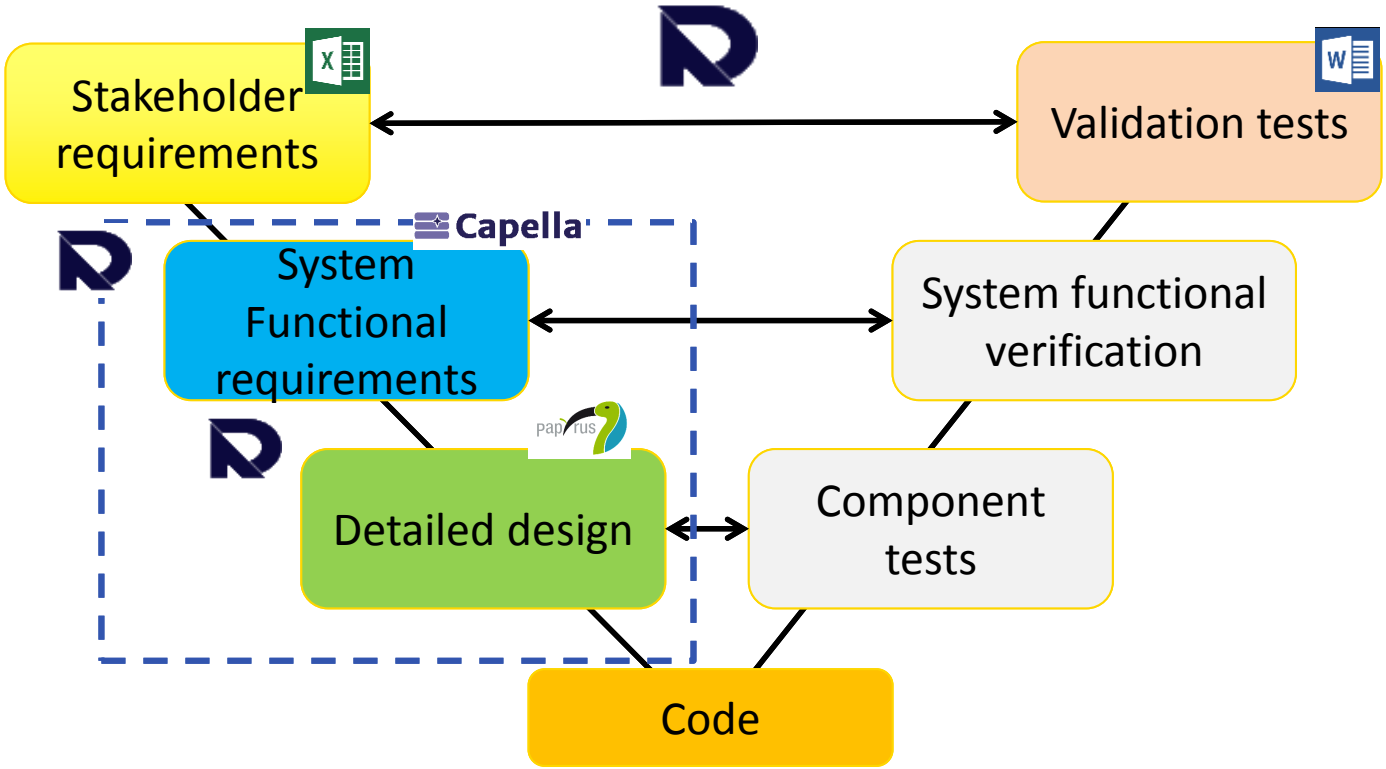
Capella Presentation

Capella

- Model-based engineering solution
  - Graphical modelling workench
  - Methodological guidance
  - Offer extension capabilities

Demo

Detailed design

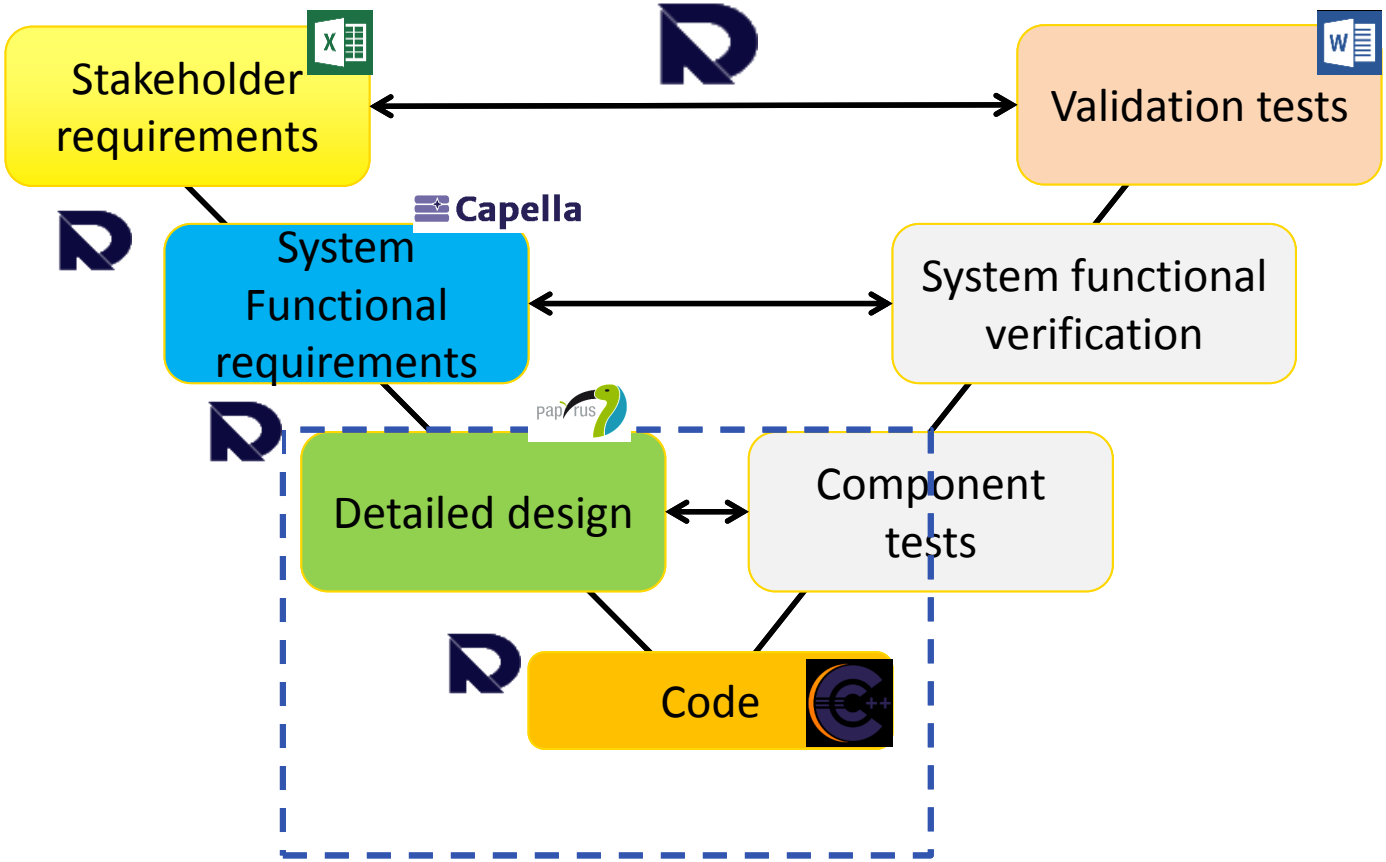


Papyrus Presentation

- UML and SysML modeler
  - all UML and SysML diagrams
  - high level of customization (CSS, property view, palette)
  - high level of extensibility (new diagrams)

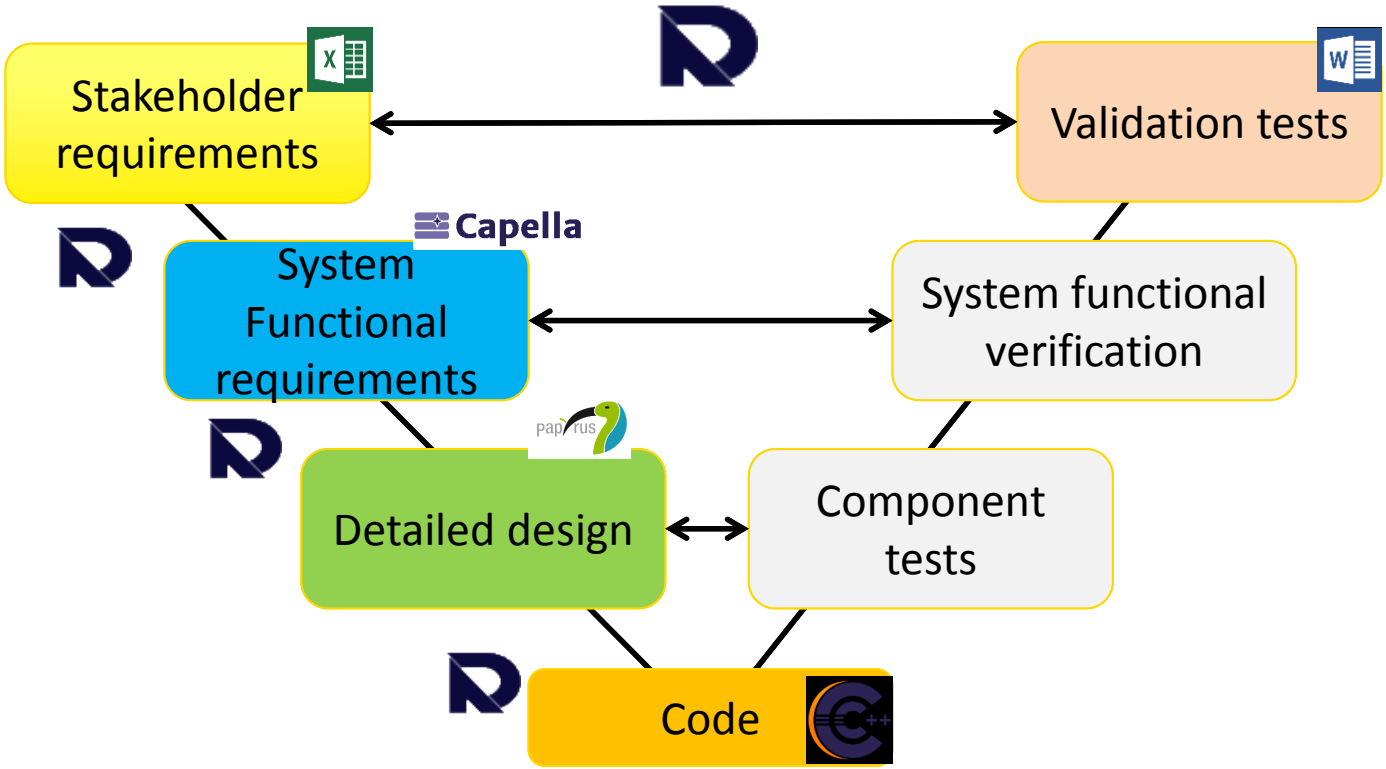
Demo

Coding


Stakeholder requirements
Validation tests
Capella
System Functional requirements
System functional verification
papyrus
Detailed design
Component tests
Code

Demo

Documentation generation



Gendoc Presentation

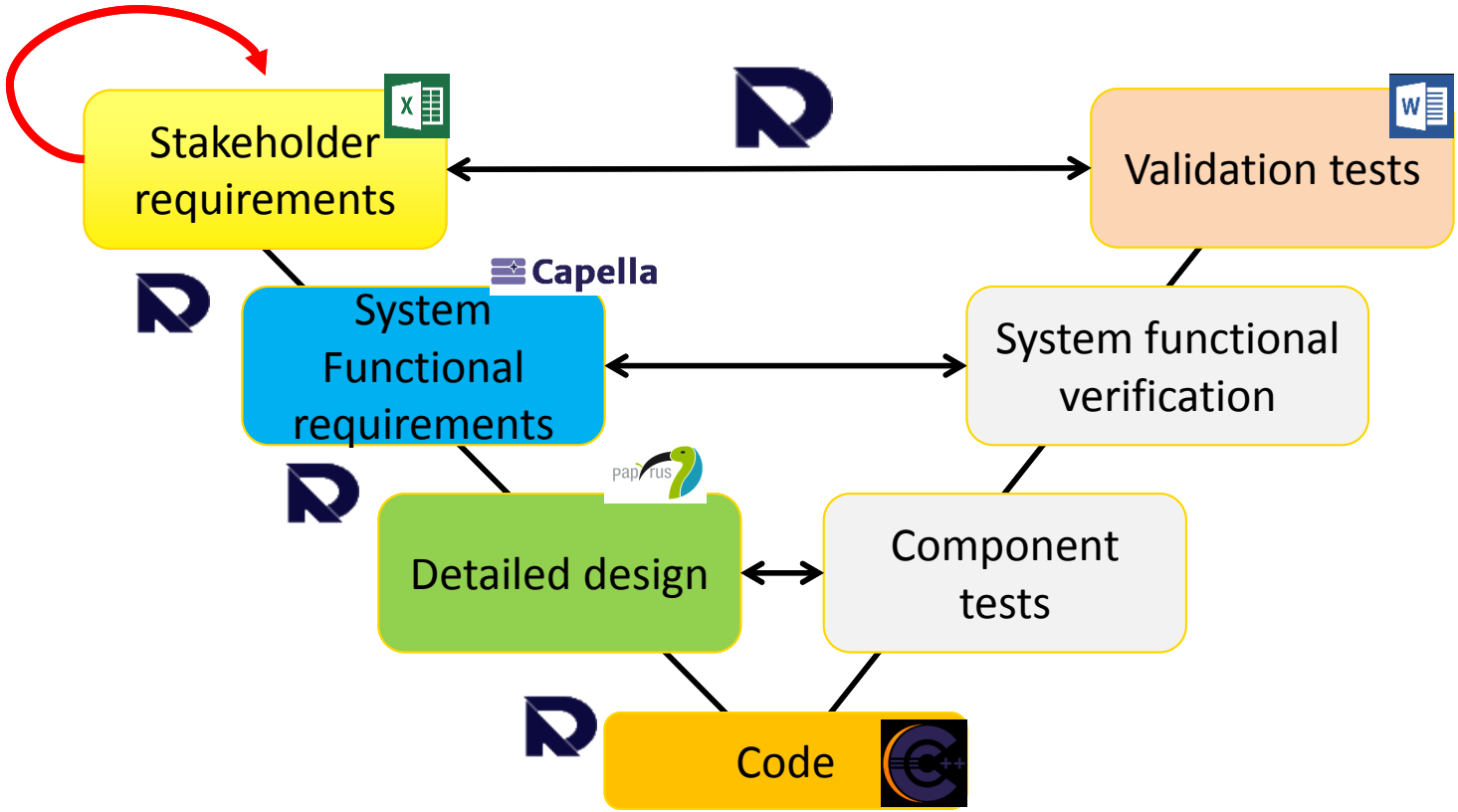
- Document generation from EMF models
  - generate Word and Open Office documents
  - Compatible with Cappalla, Papyrus, Sirius, IBM RSA, XMLs
  - Template based approach
    - Acceleo code

Gendoc : configuration

- Definition of the documentation template

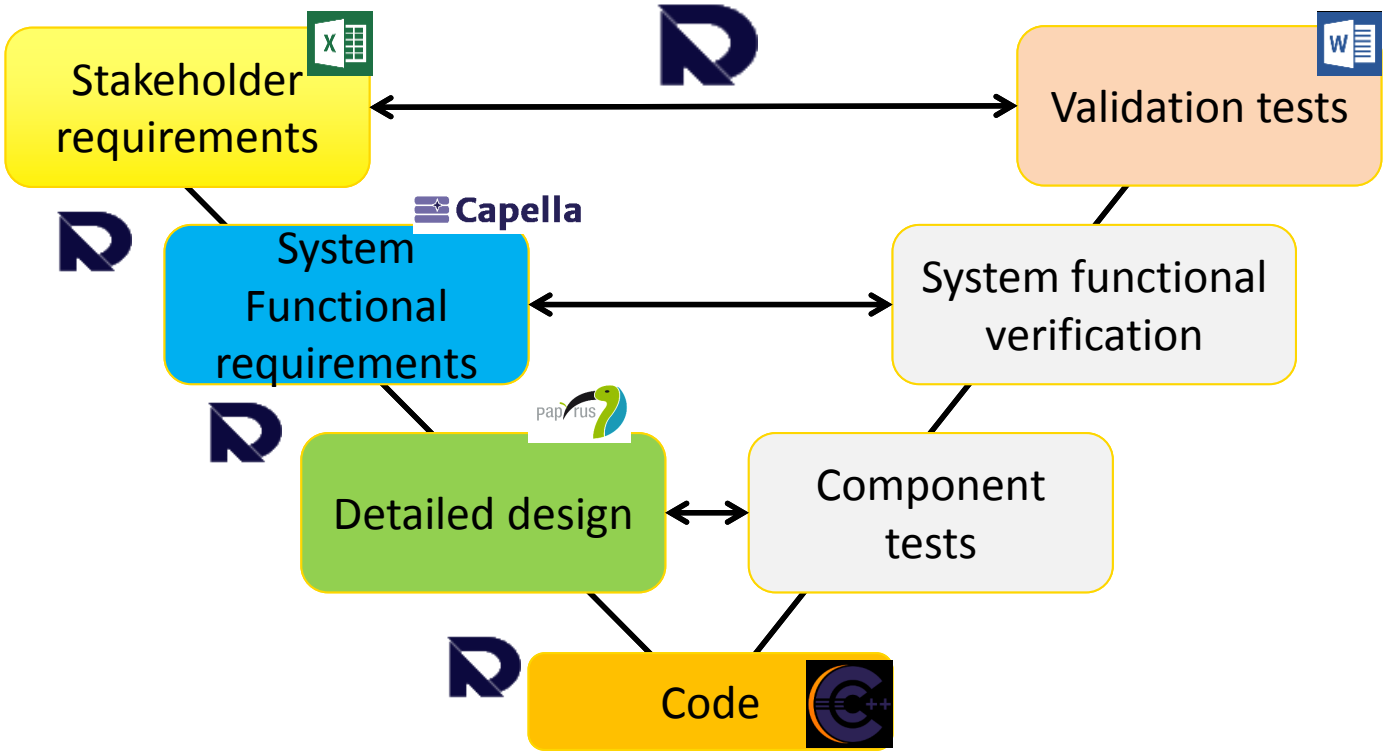
Demo

Specification update



Demo

Project overview



Contacts

- Capella:
  - https://www.polarsys.org/capella/
  - https://polarsys.org/forums/index.php/i/4/
- Papyrus:
  - http://eclipse.org/papyrus/
  - http://www.eclipse.org/forums/index.php/f/121/
- Gendoc:
  - https://www.eclipse.org/gendoc/
  - fr.gendoc-support@atos.net
- ReqCycle:
  - https://www.polarsys.org/projects/polarsys.reqcycle/
  - https://polarsys.org/forums/index.php/f/7/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