Experiences with Migrating from SPEM 2.0 to Essence 1.0 for the REMICS Methodology

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Outline

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About the REMICS Project

REMICS at a Glance

- REMICS (FP7-ICT-257793)
  - Reuse and Migration of legacy applications to Interoperable Cloud Services
- Total budget
  - 5,7 M €
- Total effort
  - 468 PMs
- Duration
  - 09/2010 – 08/2013
- Website
  - http://www.remics.eu/

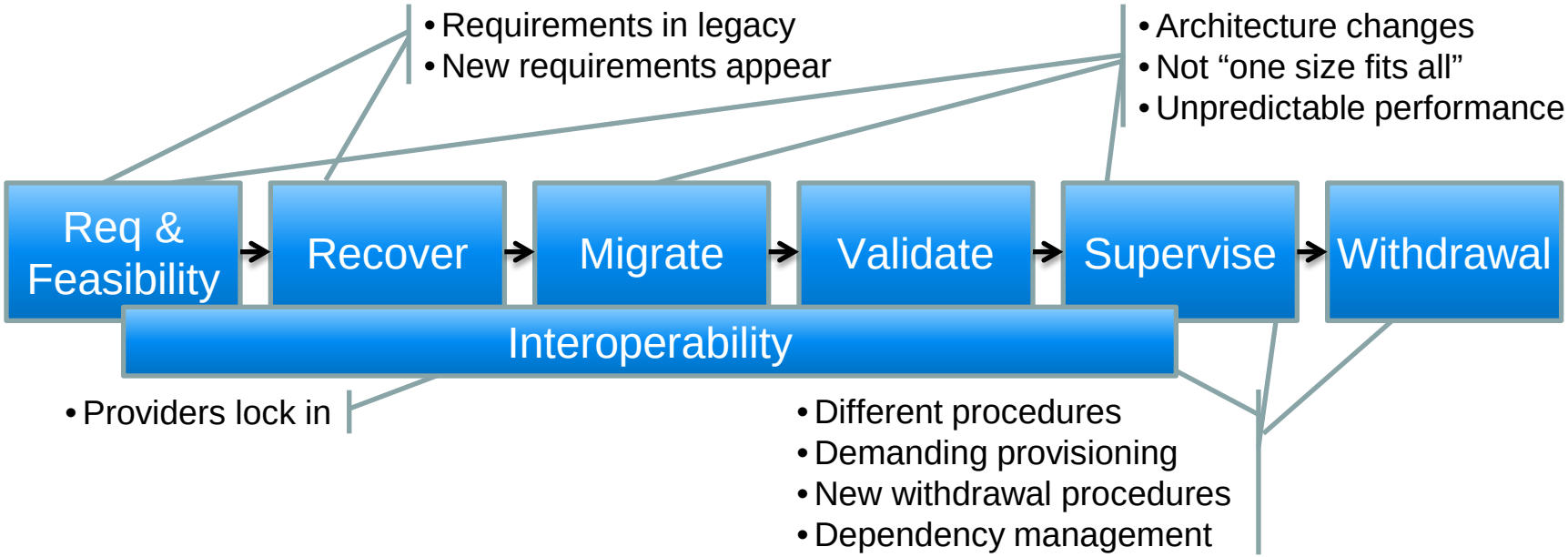
- Goal:
  - To develop advanced model-driven methodology and tools for REuse and Migration of legacy applications to Interoperable Cloud Services.
  - Service Cloud paradigm stands for combination of cloud computing and Service Oriented Architecture (SOA) for development of Software as a Service systems.

The REMICS Consortium

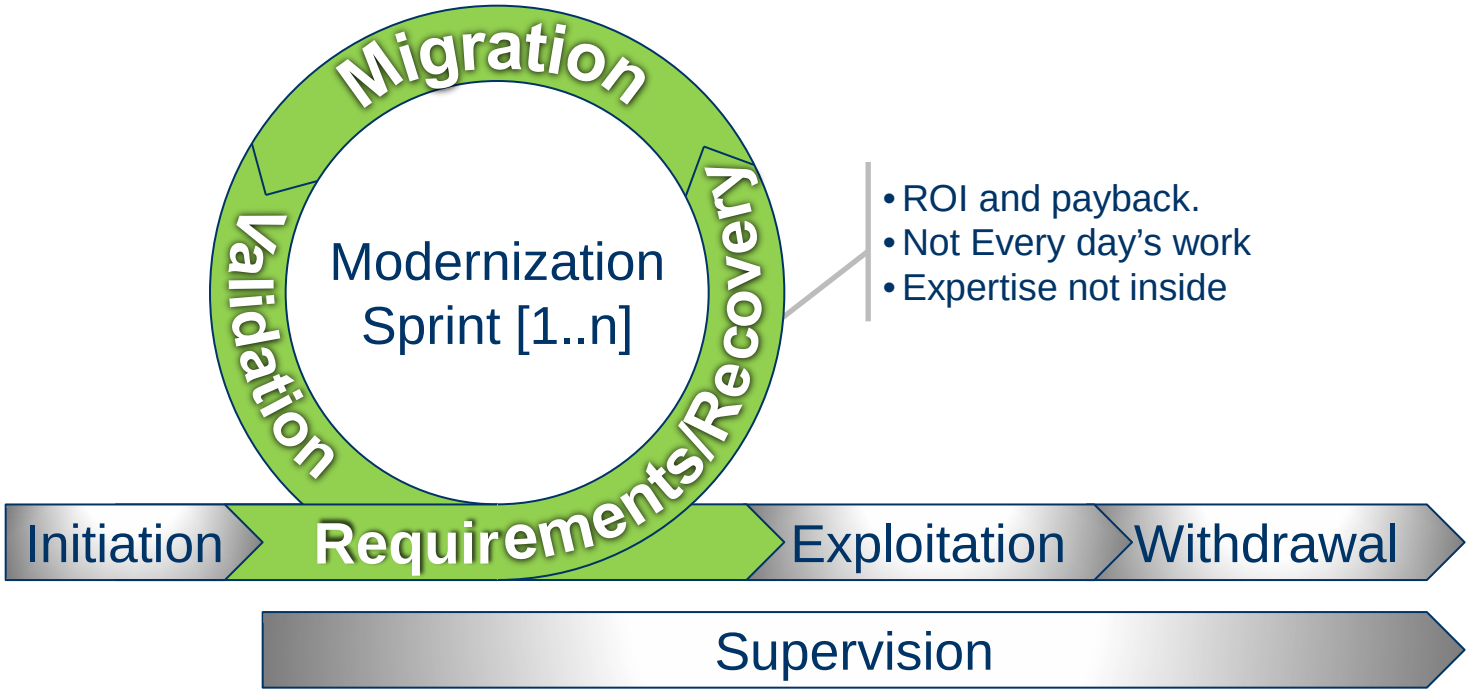
- **SINTEF**
- **SOFTEAM**
- Fraunhofer-FOCUS
- **Tecnalia Research & Innovation**
- Netfective Technology SA
- DI Systemer AS
- DOME Consulting & Solutions, S.L.
- **Institute of Information and Communication Technologies – Bulgarian Academy of Sciences (IICT-BAS)**
- University of Tartu
- Warsaw University of Technology

The REMICS Methodology

Initial release – Activity areas



Second release – Agile approach



Practices

- Modernization Practices
  - **Requirements**
  - **Recover**
  - Migrate
  - Validate
  - Control and Supervise
  - Withdrawal
  - Interoperability
- Agile Practices
  - **Scrum**
    - Product Owner
    - Scrum Master
    - (Development) Team
    - Product Backlog
    - Sprint Backlog
  - Modelling by Two
  - Pair Modelling
  - Continuous Modelling
  - Collective Model Ownership
  - Pair Programming
  - Continuous Integration
  - Collective Code Ownership

Migrating from SPEM 2.0 (using EPF Composer) to Essence 1.0 (using EssWork Practice Workbench)

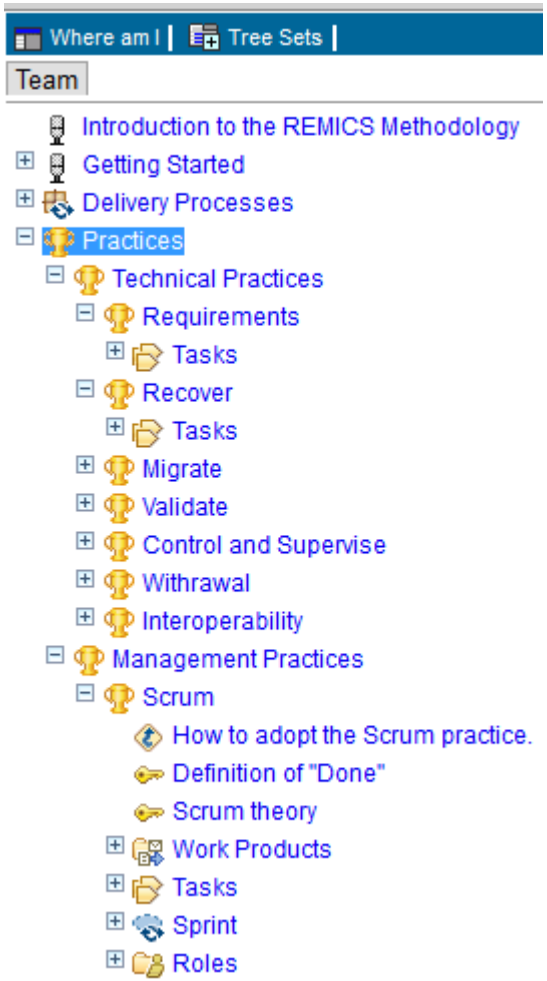
Evaluating the Essence Approach

- The REMICS Methodology has been developed using the Eclipse Process Framework (EPF).
  - http://epf.remics.eu/wikis/remics/index.htm
- Essence promises better support for definition of **agile practices** and **method enactment** compared to SPEM.
- We are currently **evaluating** Essence by updating selected practices of the REMICS Methodology using the EssWork Practice Workbench.
  - Scrum
  - Requirements
  - Recovery
- Provide **feedback** to the FTF based on the evaluation.

Overall Approach to a Manual Migration Procedure

1. **Identify a candidate practice**.
2. **Migrate the relevant SPEM content.**
3. **Bind the transformed content with the Essence kernel (optional).**
4. **Add Alphas complementing the transformed SPEM content (optional).**
5. **Add Activity Spaces complementing the transformed SPEM content (optional).**
6. **Add Competencies complementing the transformed SPEM content (optional).**
7. **Package the transformed SPEM content, primarily as Essence Practices**; and also possibly as Essence kernel extensions, and Practice Assets.
8. **Assure the quality of the transformed result.** Any resulting Essence Practices, Kernel Extensions, and Practice Assets would need to be explicitly quality assured based on both formal and informal qualities.
9. **Return to step 1** and migrate additional candidate practices or practice areas, as appropriate.

Step 1: Identify candidate practices



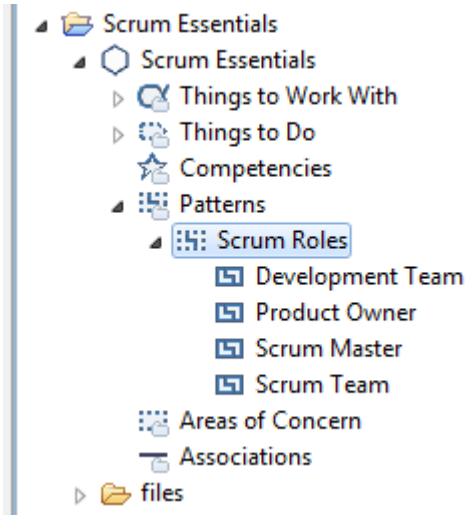
- Technical
  - Requirements
  - Recov(ery)
- Management
  - Scrum

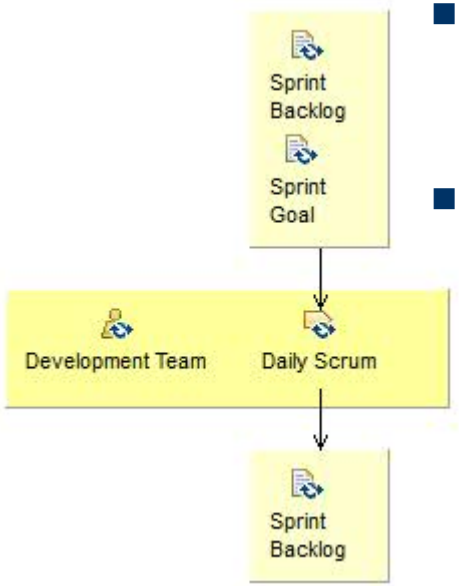
Step 2: Migrate the relevant SPEM content

SPEM construct or property	Essence construct or property
TaskDefinition	Activity
TaskDefinition.ownedTaskDefinitionParameter	Activity.action
TaskDefinition.usedTool	Pattern associated with Activity
TaskDefinition.step	Activity.description, or Pattern
TaskDefinition.requiredQualification	Activity.requiredCompetencyLevel
Default_TaskDefinitionParameter	Action
Default_TaskDefinitionParameter.Optionality	Action.kind
Default_TaskDefinitionParameter.parameterType	Action.workProduct and possibly Activity.completionCriterion
Default_TaskDefinitionParameter.direction	Action.kind
Qualification	CompetencyLevel
WorkProductDefinition	WorkProduct
WorkProductDefinitionRelationShip	Pattern
ToolDefinition	Pattern
ToolDefinition. managedWorkProduct	PatternAssociation
RoleDefinition	Pattern
RoleDefinition.providedQualification	PatternAssociation
Default_ResponsibilityAssignment	TypedPattern
Default_ResponsibilityAssignment.kind	TypedPattern.kind
Default_ResponsibilityAssignment.linkedRoleDefinition	PatternAssociation
Default_ResponsibilityAssignment.linkedWorkProduct Definition	PatternAssociation
Default_TaskDefinitionPerformer	TypedPattern
Default_TaskDefinitionPerformer.kind	TypedPattern.kind
Default_TaskDefinitionPerformer.linkedTaskDefinition	PatternAssociation
Default_TaskDefinitionPerformer.linkedRoleUse	PatternAssociation

Step 2: Migrate the relevant SPEM content (tooling)

- Trivial 1-to-1 mappings
  - Work Products
  - TaskDefinitions to Activities
- Patterns
  - Roles mapped to Patterns





- Issues
  - Where did PatternSpace come from?
  - How to connect Role patterns to other elements
    - Scrum Team participates in Sprint Planning, Sprint Review
    - Development Team participates in Daily Scrum

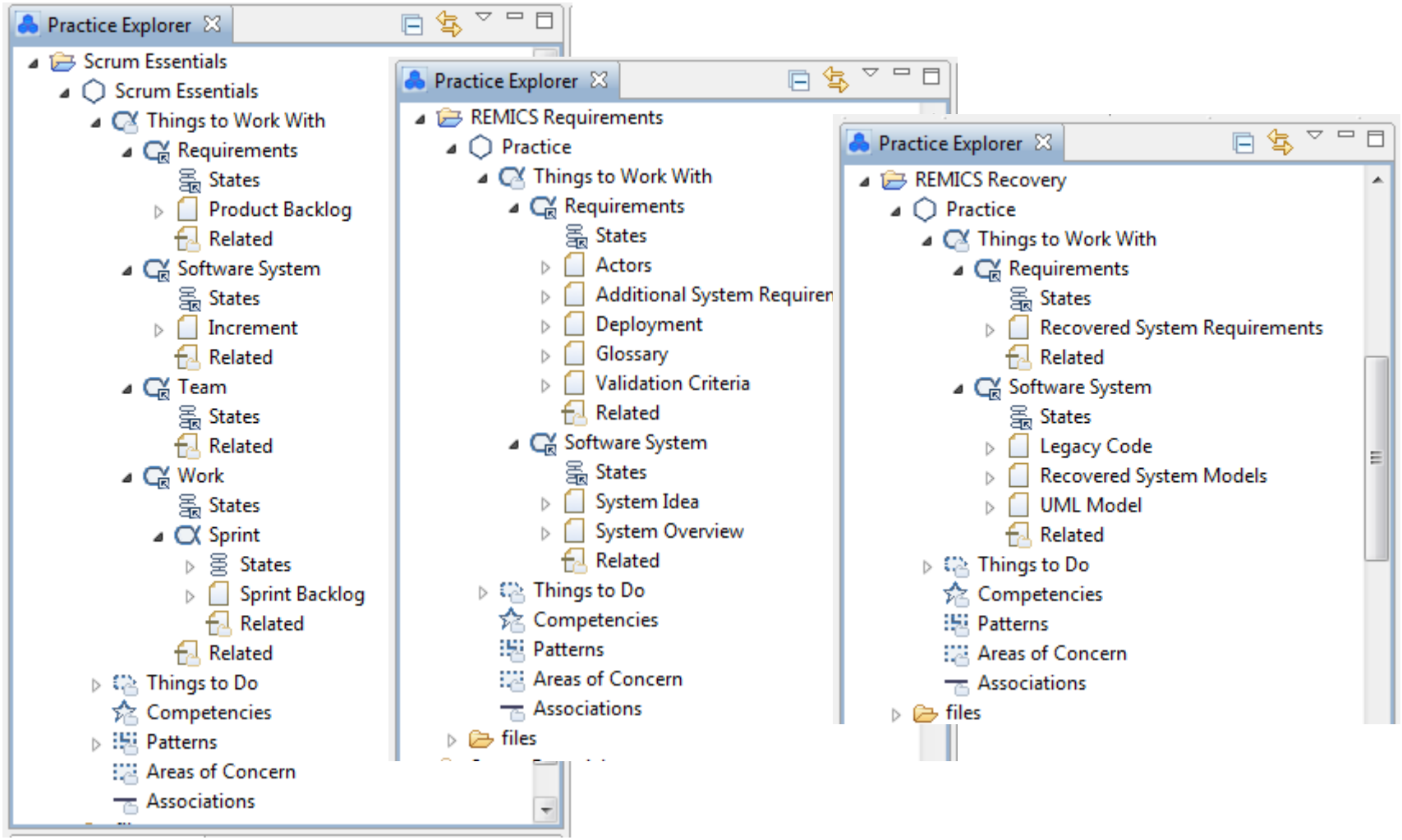
Step 3: Bind the transformed content with the Essence kernel

a) Bind transformed Task Definitions (Essence Activities) to Essence kernel Activity Spaces.
   - This is done by establishing Essence “part-of” Activity Associations between relevant kernel Activity Spaces and newly transformed Activities.

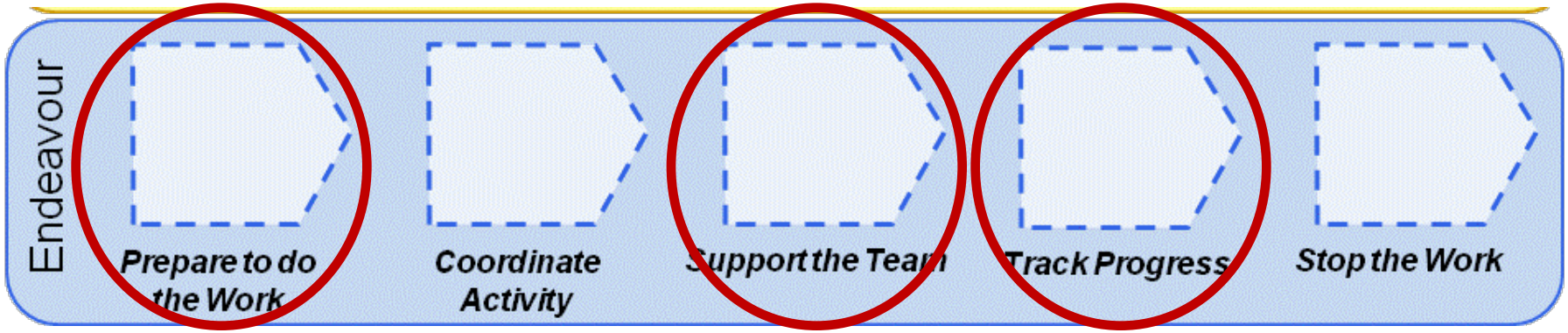
b) Bind transformed Work Product Definitions to Essence kernel Alphas.
   - This is done by establishing Essence Alpha Containments between relevant kernel Alphas and newly transformed Work Products.

c) Bind transformed Role Definitions to Essence kernel Competencies where the RoleDefinition.providedQualification association has been used.
   - This is done by establishing Essence Pattern Associations between relevant kernel Competency Level(s) and newly transformed Roles (Patterns).

Step 3b: Bind Work Products to Essence Kernel Alphas



Step 3a: Bind Activities to Essence Kernel Activity Spaces (Scrum)



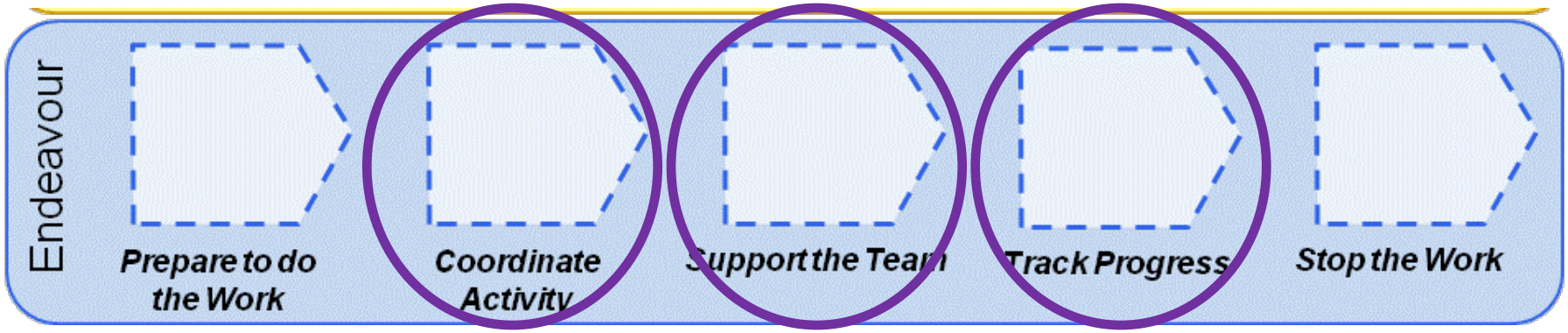
Input: Stakeholders, Opportunity, Requirements
Completion Criteria: Team::Seeded, Way of Working::Principles Established, Way of Working::Foundation Established, Work::Initiated, Work::Prepared

Input: Requirements, Team, Work, Way of Working
Completion Criteria: Team::Formed, Work::Started, Work::Under Control

Input: Team, Work, Way of Working
Completion Criteria: Team::Collaborating, Way of Working::In Use, Way of Working::In Place

Input: Requirements, Team, Work, Way of Working
Completion Criteria: Team::Performing, Way of Working::Working Well, Work::Under Control, Work::Concluded

Input: Requirements, Team, Work, Way of Working
Completion Criteria: Team::Adjourned, Way of Working::Retired, Work::Closed



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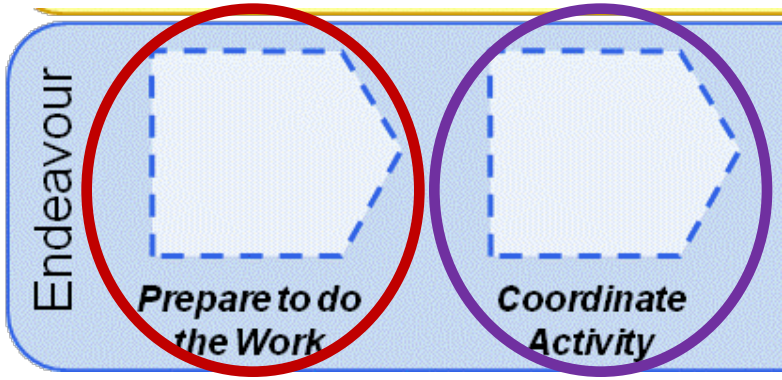
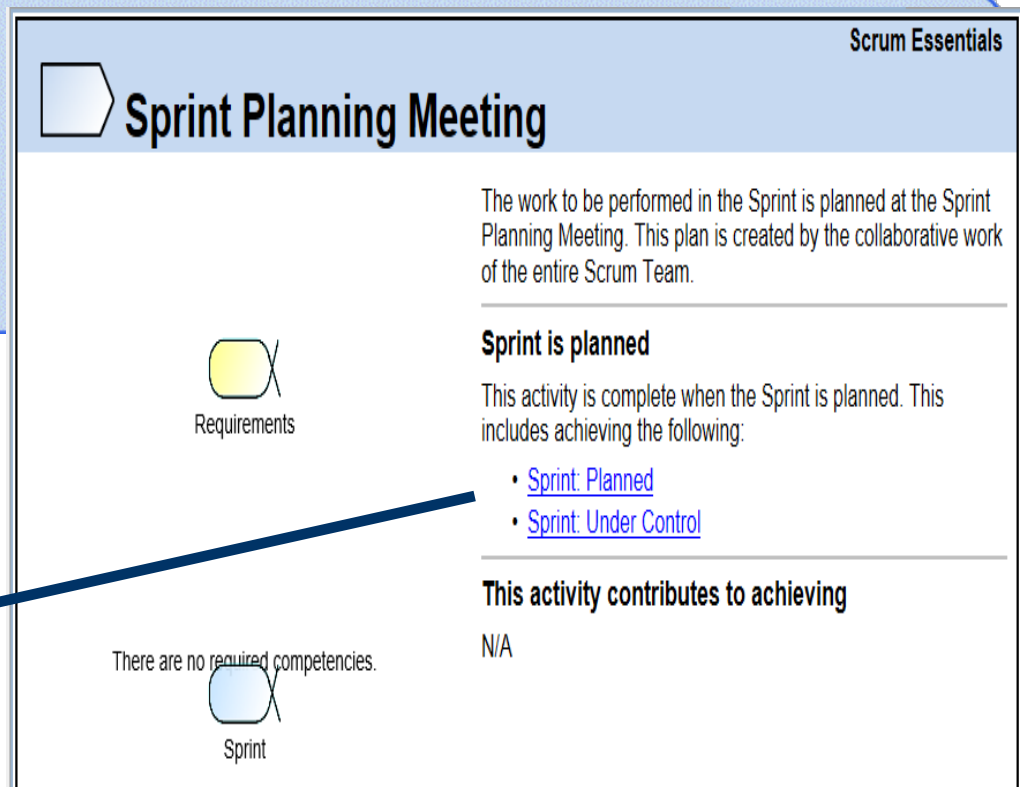


Input: Stakeholders, Opportunity, Requirements
Completion Criteria: Team::Seeded, Way of Working::Principles Established, Way of Working::Foundation Established, Work::Initiated, Work::Prepared

Input: Requirements, Team, Work, Way of Working
Completion Criteria: Team::Formed, **Work::Started, Work::Under Control**

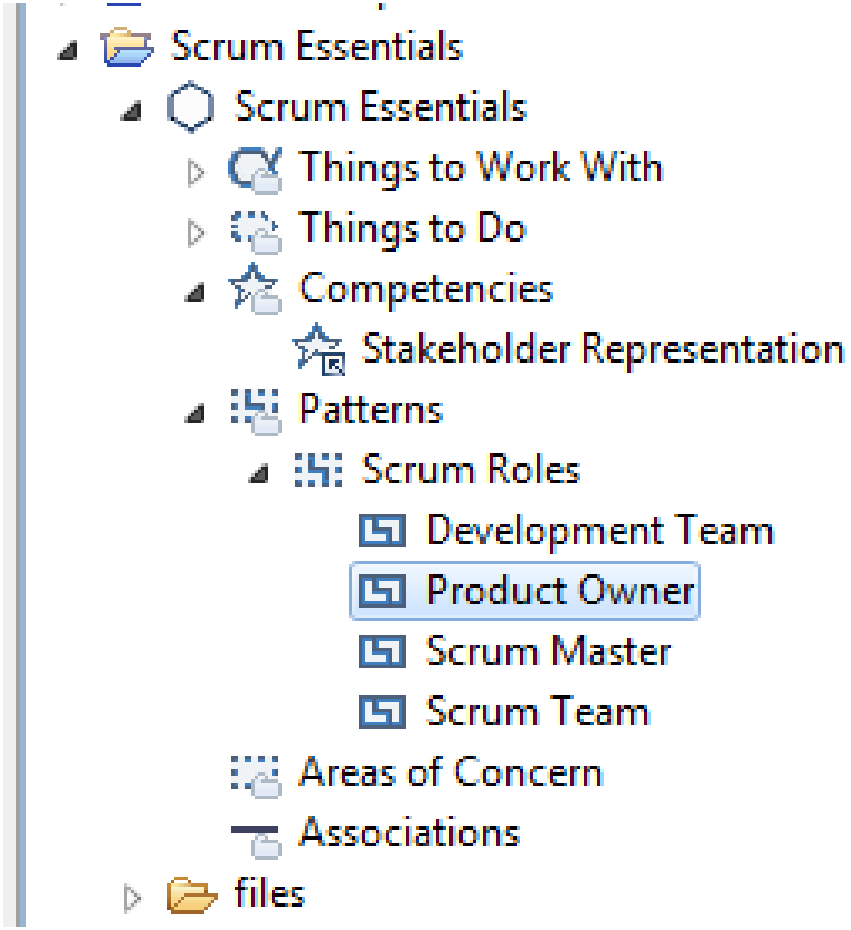


Setting up the Scrum Team

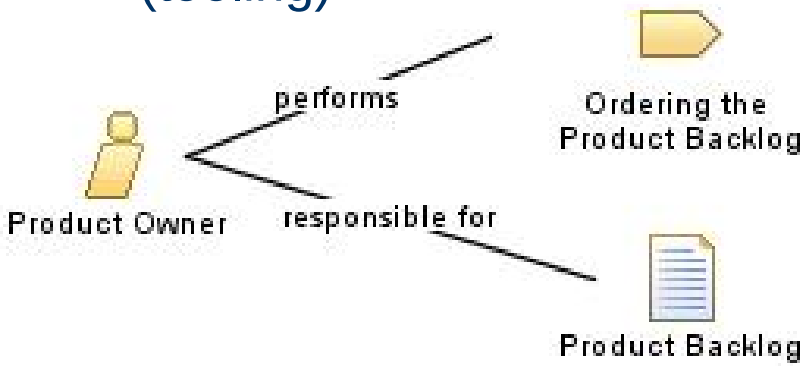
Setting up the Product Backlog

Bootstrapping activities

Step 3c: Bind transformed Role Definitions to Essence kernel Competencies

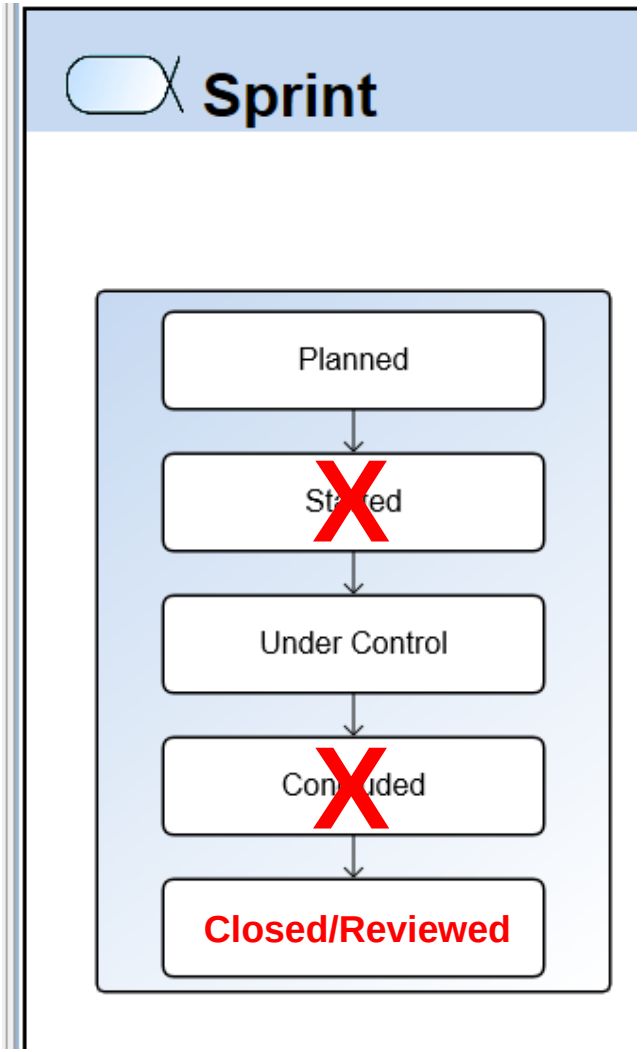


- Difference role semantics
  - Role is assigned to person responsible for something (Work Products, Activities)
  - Role representing competency/skill required to do a particular work
  - Unclear how to do this (tooling)



Step 4: Add Alphas

- The Work Products need to be related to the Alphas that they describe.
- New Alphas will be required when the binding to kernel Alphas (in the previous step) is insufficient in the sense that the kernel Alphas do not serve as useful monitor and control instruments for the new Work Products.

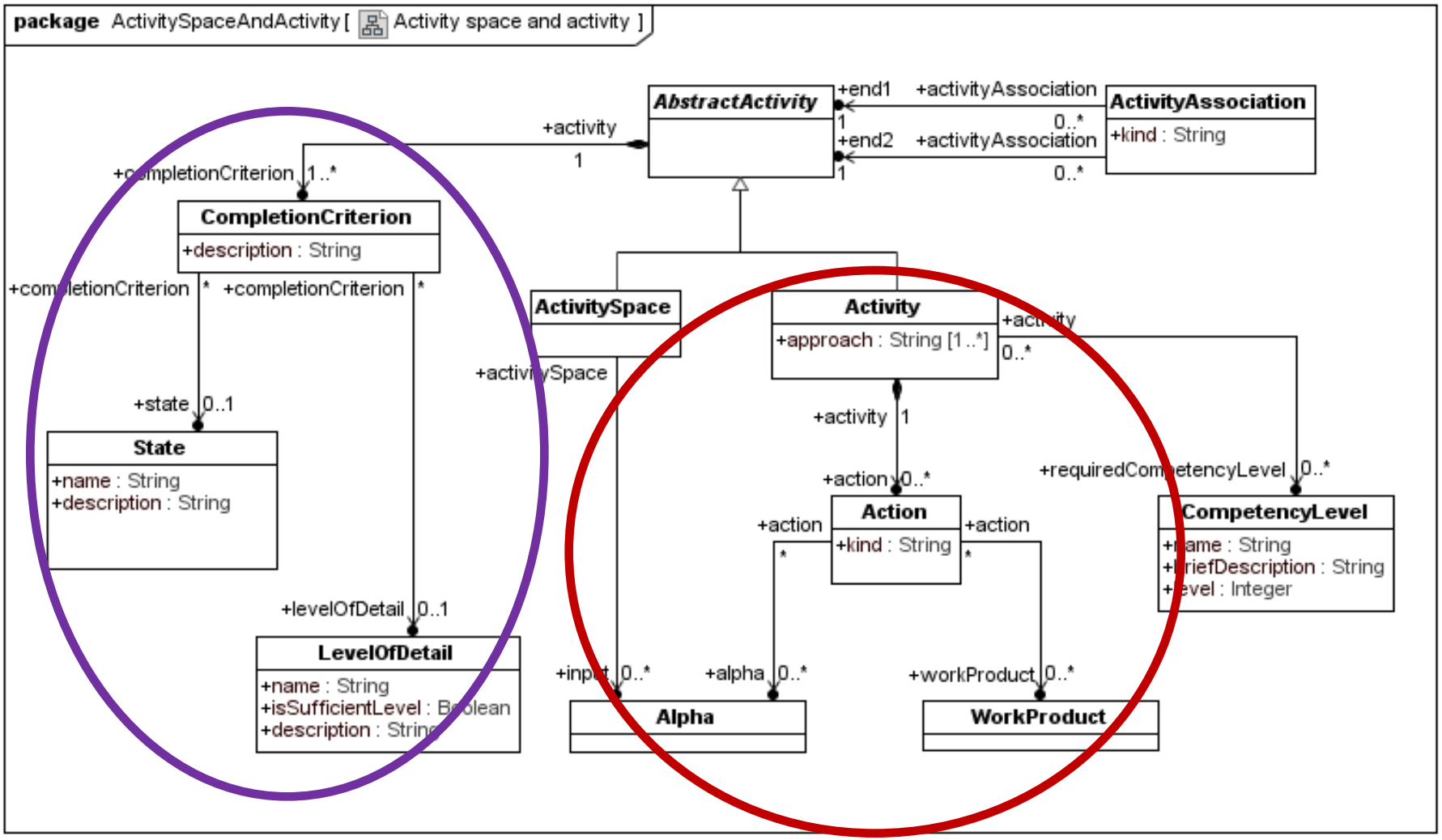


Keep it simple!
Align with completion criteria of Scrum activities

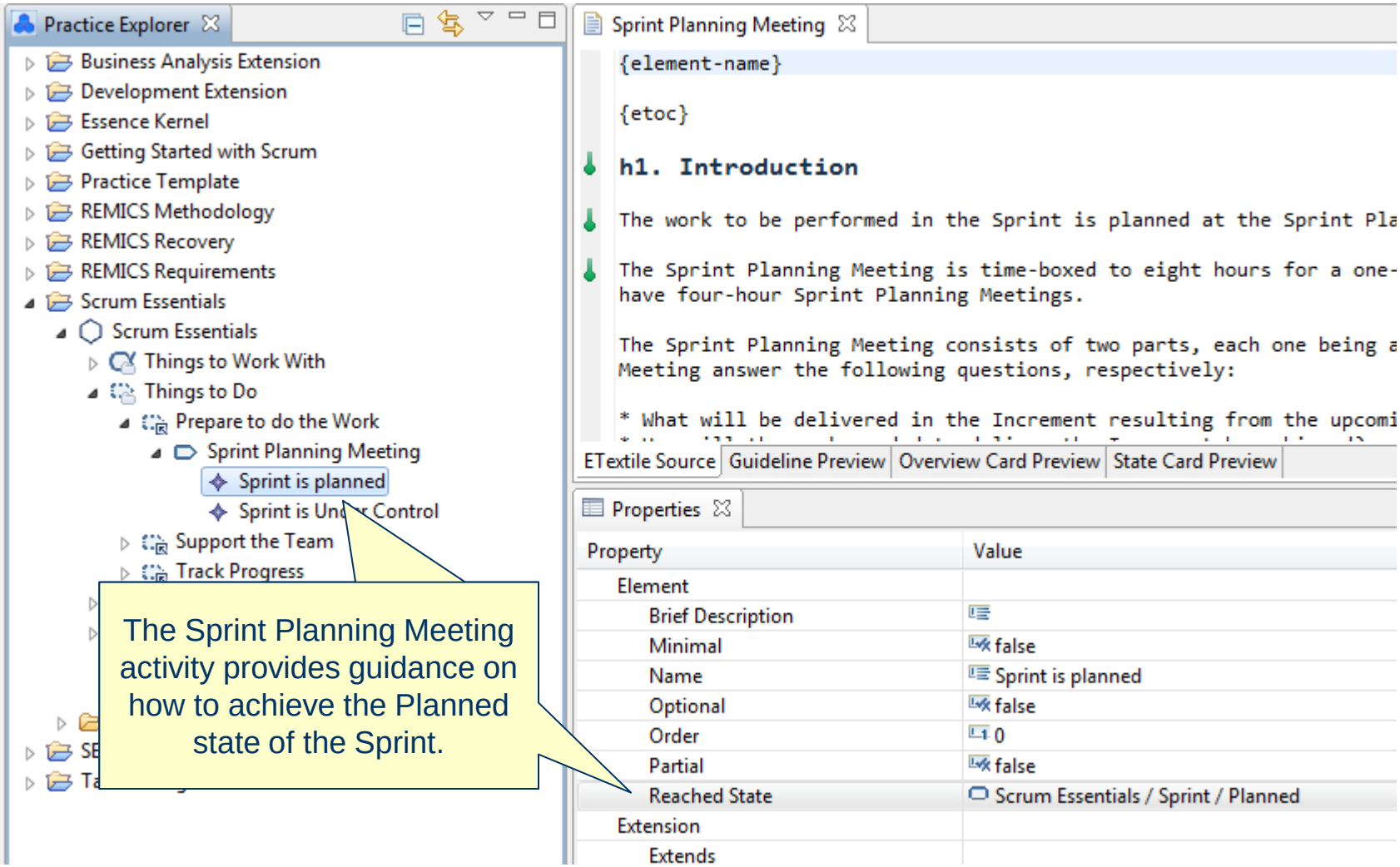
Step 8: Assure the quality of the transformed result

- Any resulting Essence Practices, Kernel Extensions, and Practice Assets would need to be explicitly quality assured based on both formal and informal qualities.
  - This includes making sure that the results are well-formed and complete from an Essence language point of view; and also to ensure more informal qualities such as Practice scope, value and ease-of-use.
- Define Completion Criteria for Activities
  - To understand the objective of the activity
  - To generate advice on what to do next

Activity and Completion Criterion

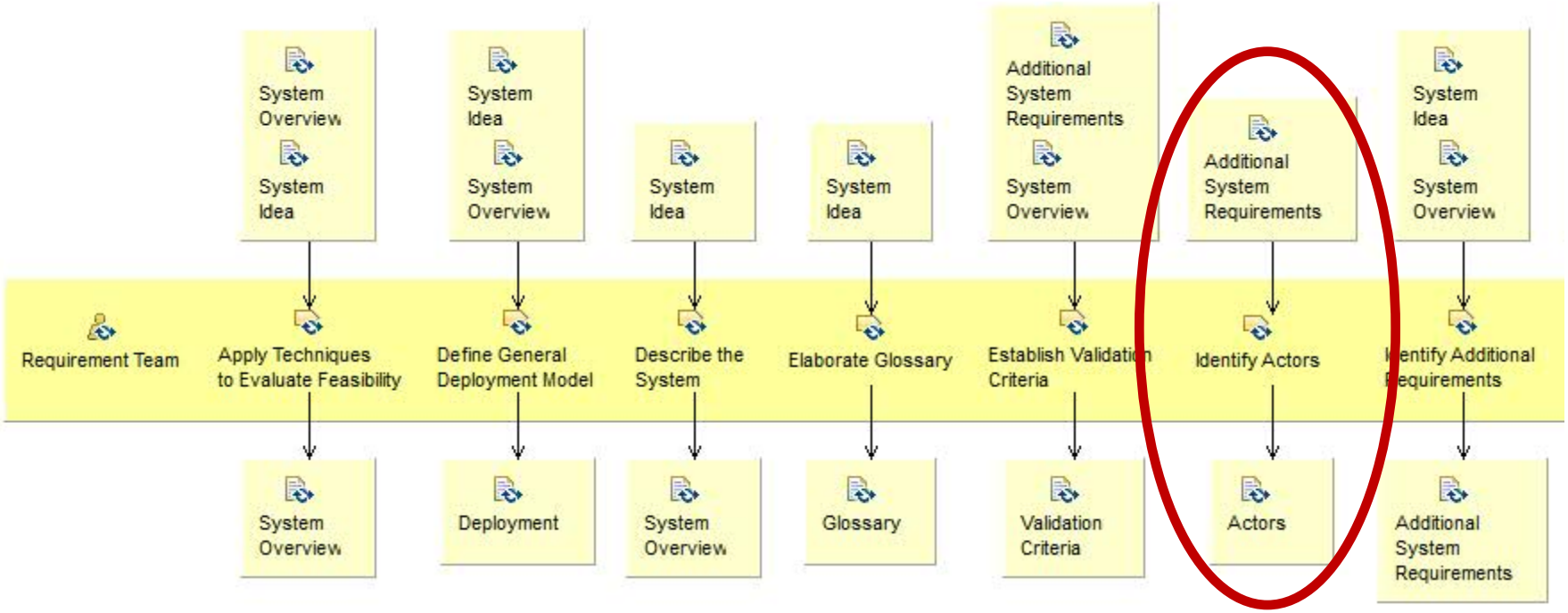


Alpha State as Completion Criteria

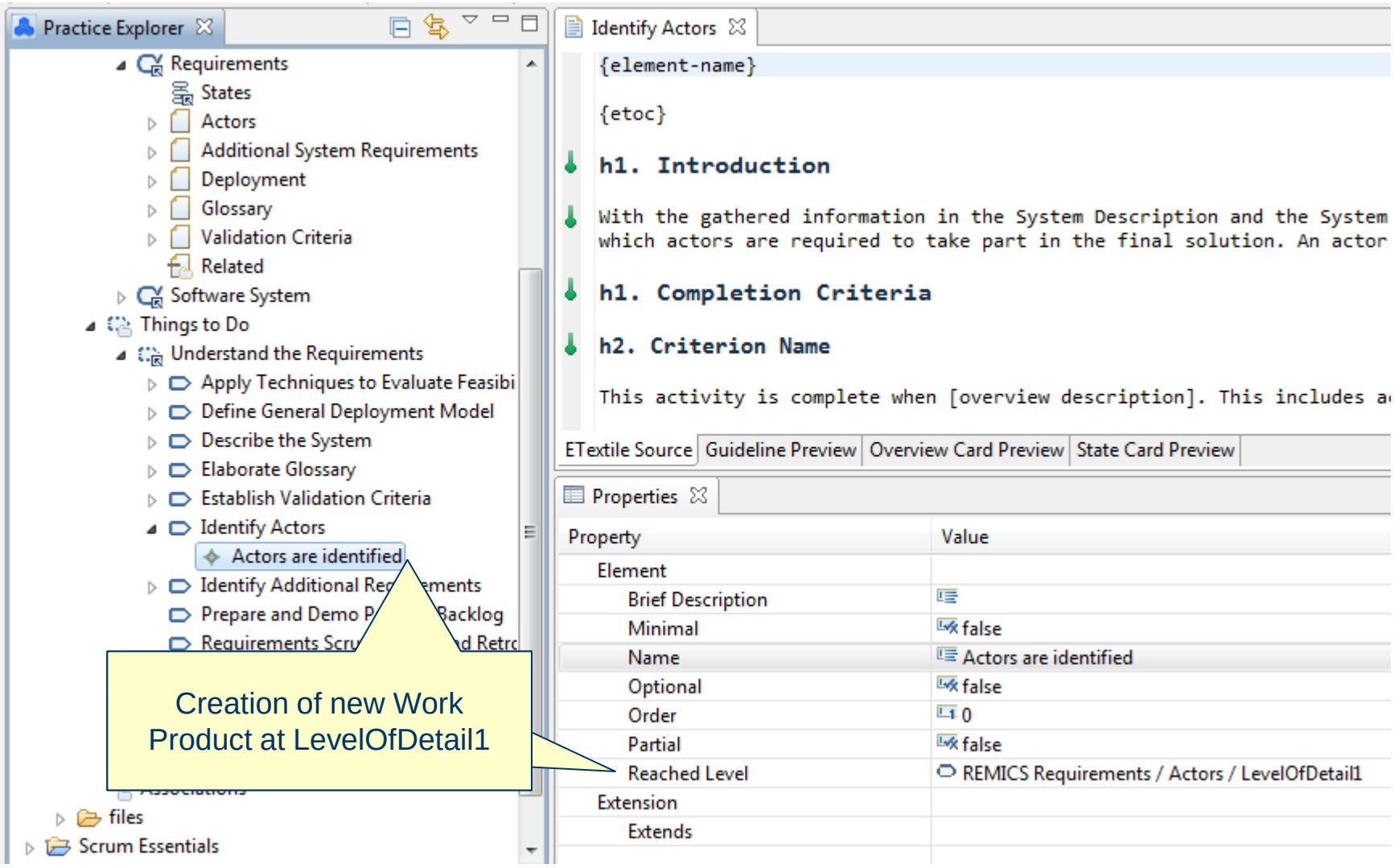


Work Product Level of Detail as Completion Criteria

- Several activities have new work products as outputs



Work Product Level of Detail as Completion Criteria (1)



Work Product Level of Detail as Completion Criteria (2)

- Level of Detail
  - A specification of the amount of detail or range of content in a work product.
  - The level of detail of a work product is determined by evaluating checklist items.
- Alpha States vs. Level of Details
  - Both require to specify checklist items (i.e. Check Point)
- When are Level of Details useful?
  - "Just barely good enough" models and documents
    - Sketch
    - Understanding
    - Documentation
  - Requirements Model
    - Actors described
    - High-level use case described
    - Use case scenarios described
    - Non-functional aspects described

Summary

Summary

- Manual Migration Procedure
  - Good starting point
  - Easy to map
    - Task Definitions to Activities
    - Work Products to Work Products
  - Easy to relate Work Products to Kernel Alphas
- Tooling issues
  - Currently allows to define patterns but not "apply" them
  - *Composition and modification mechanisms*
  - Link with enactment tools
- Better guidelines are needed for
  - Relating sub-Alphas to parent Alphas
  - Defining good sub-Alpha states
    - Keep it simple, as few as possible?
  - Relating Activities to Activity Spaces
    - Defining good completion criteria for Activities
  - How to apply Level of Details
  - Competencies
    - Clarification wrt. SPEM roles
- Future work
  - Finalize migration of selected practices (mid-summer)
  - Enactment support

References

- REMICS Methodology (EPF Wiki)
  - http://epf.remics.eu/wikis/remics/index.htm
- OMG Essence specification
  - OMG, "Essence – Kernel and Language for Software Engineering Methods", OMG Document ad/2013-02-01, 13 February 2013.
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- Scrum Guide
  - Ken Schwaber and Jeff Sutherland, "Scrum Guide", October 2011.
  - http://www.scrum.org/Portals/0/Documents/Scrum%20Guides/Scrum_Guide.pdf
- Practice authoring tool
  - EssWork Practice Workbench
  - http://www.ivarjacobson.com/EssWork_Practice_Workbench/

Questions

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