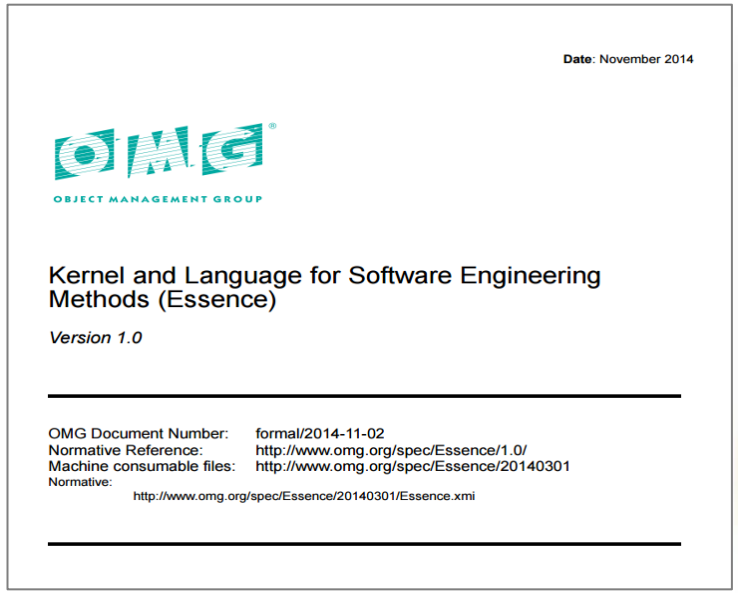
ESSENCE-POWERED SCRUM

- A GENERIC APPROACH TO DESCRIBING PRACTICES USING ESSENCE KERNEL AND LANGUAGE

PROFESSOR JUNE SUNG PARK, KAIST / SEMAT

ESSENCE KERNEL

- Alpha
- Activity Space
- Competency



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OMG
OBJECT MANAGEMENT GROUP

Kernel and Language for Software Engineering Methods (Essence)

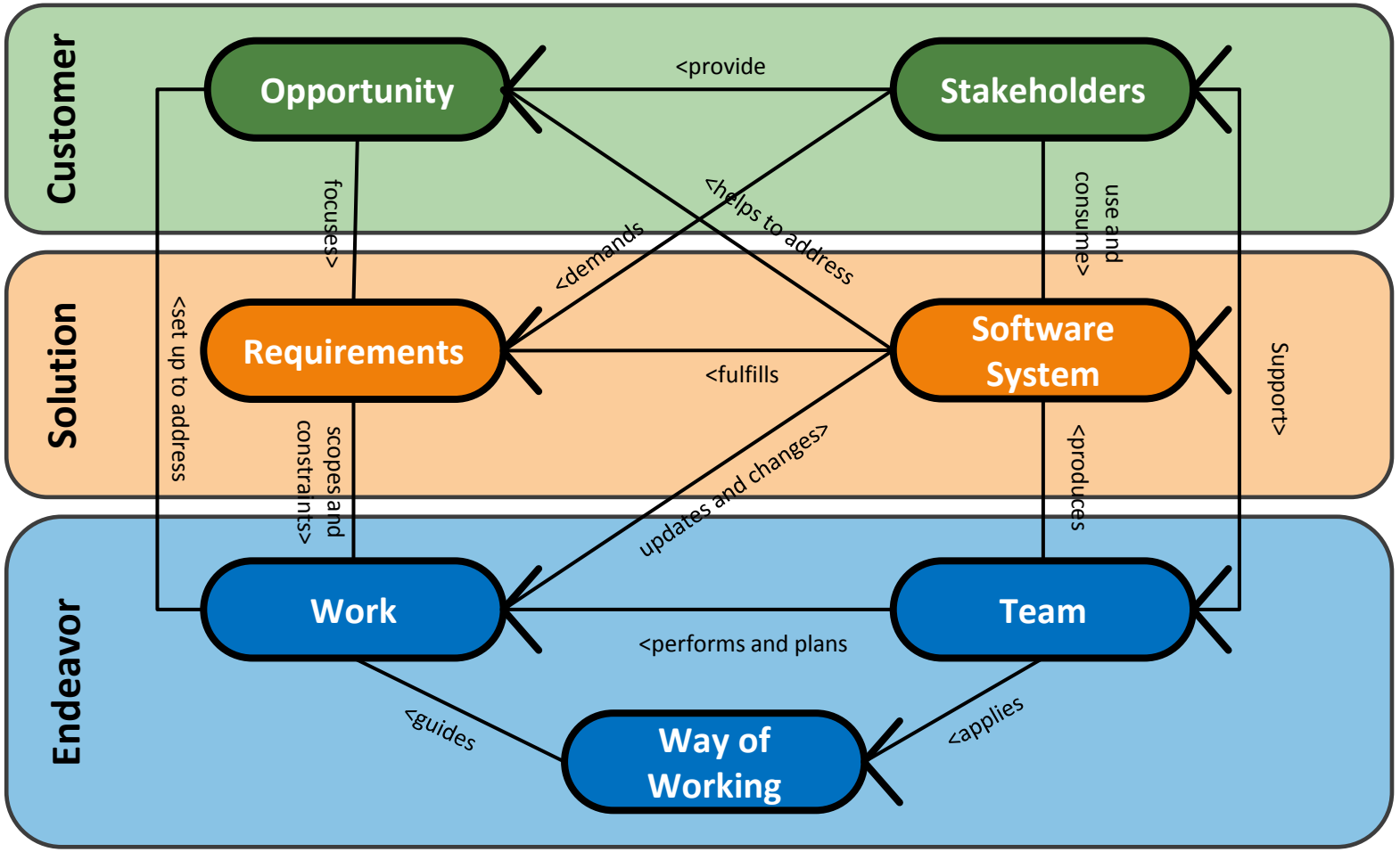
Version 1.0

OMG Document Number: formal/2014-11-02
Normative Reference: http://www.omg.org/spec/Essence/1.0/
Machine consumable files: http://www.omg.org/spec/Essence/20140301
Normative:
http://www.omg.org/spec/Essence/20140301/Essence.xmi

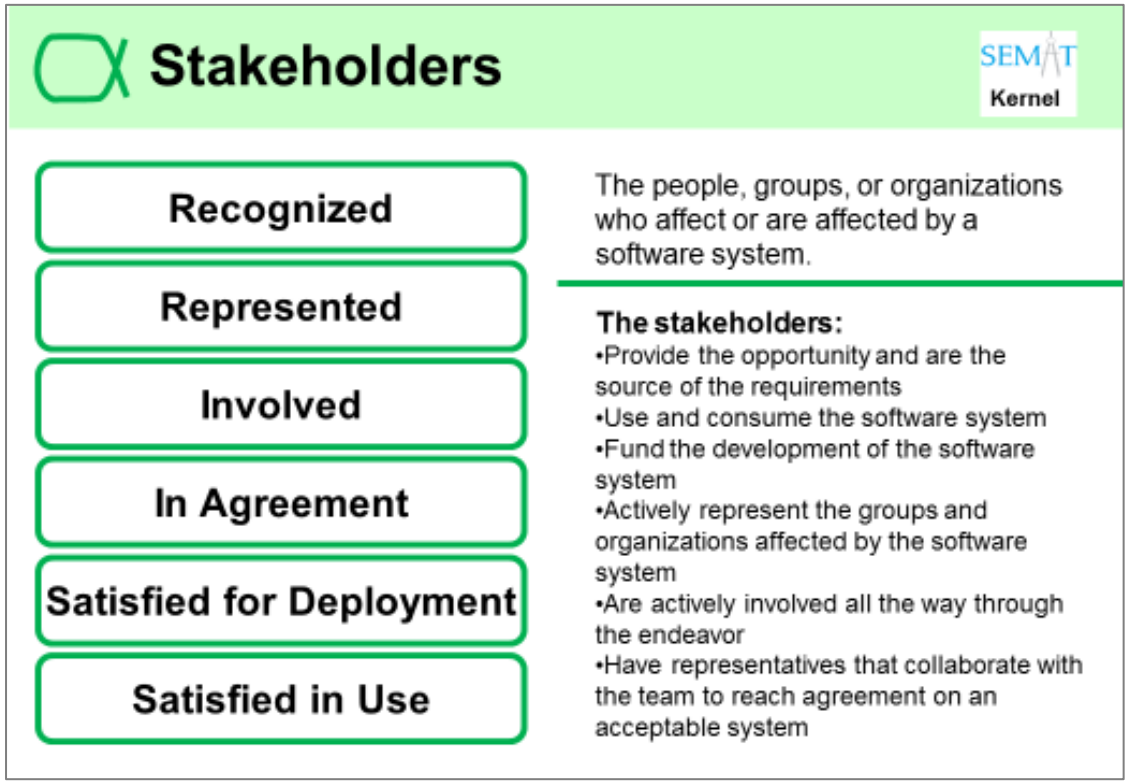
ALPHA

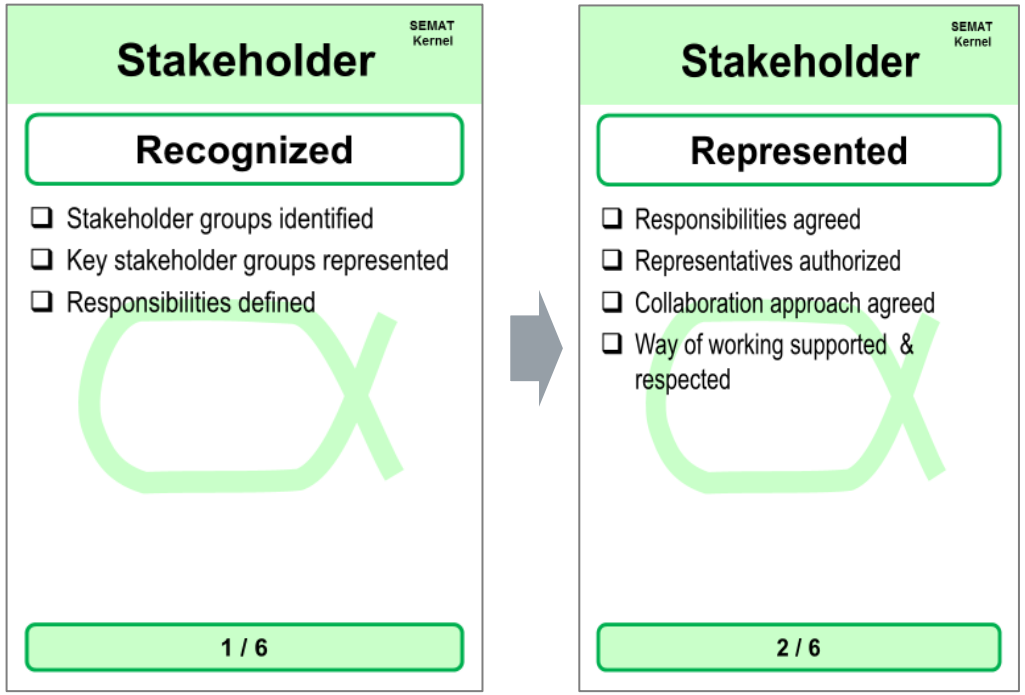
- Alpha represents things to deal with in any software engineering project.

* Alpha means "Abstract-Level Progress Health Attribute."

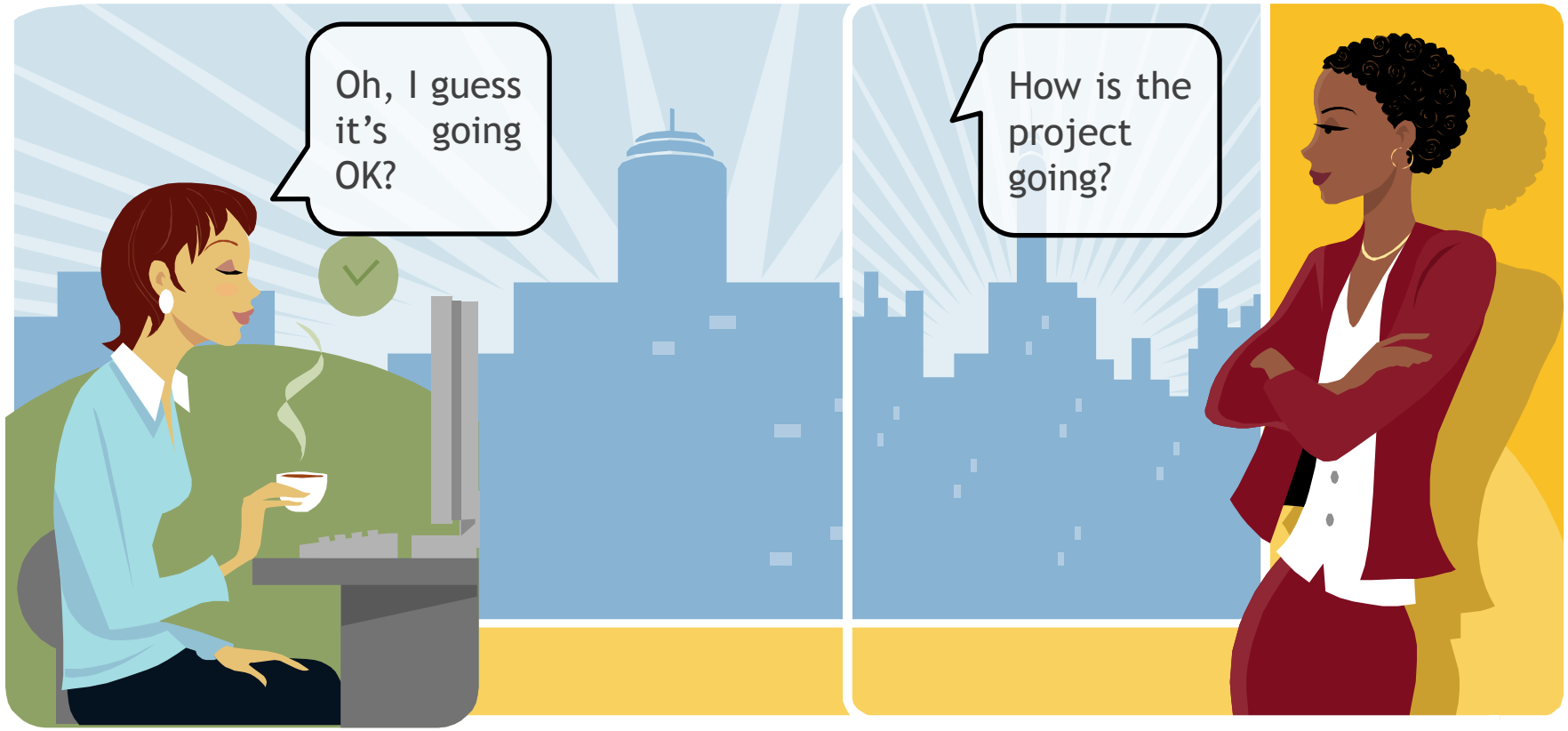


ALPHA STATE AND CHECKLIST





STATE OF SOFTWARE ENGINEERING PROJECT



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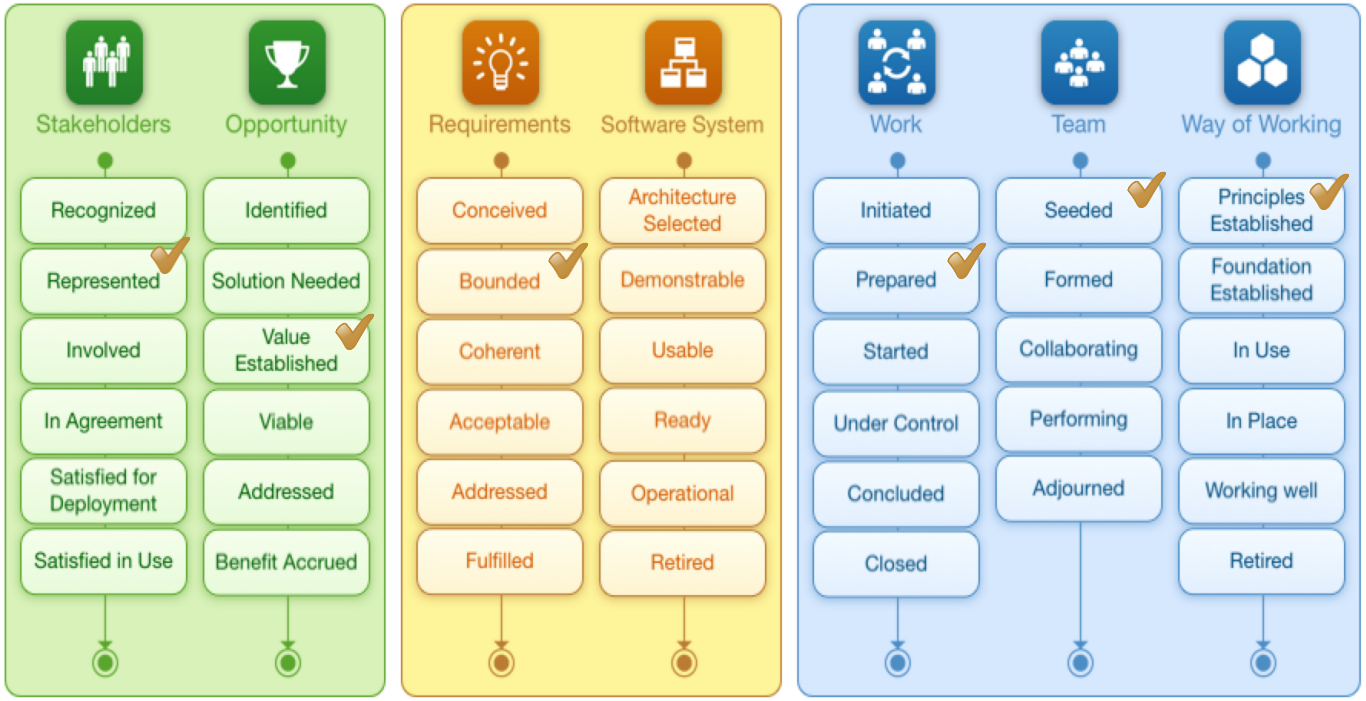
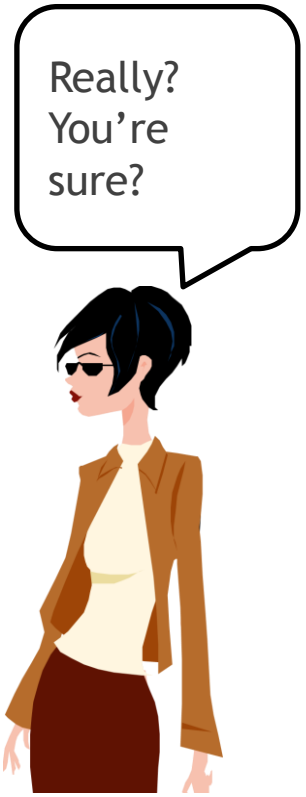
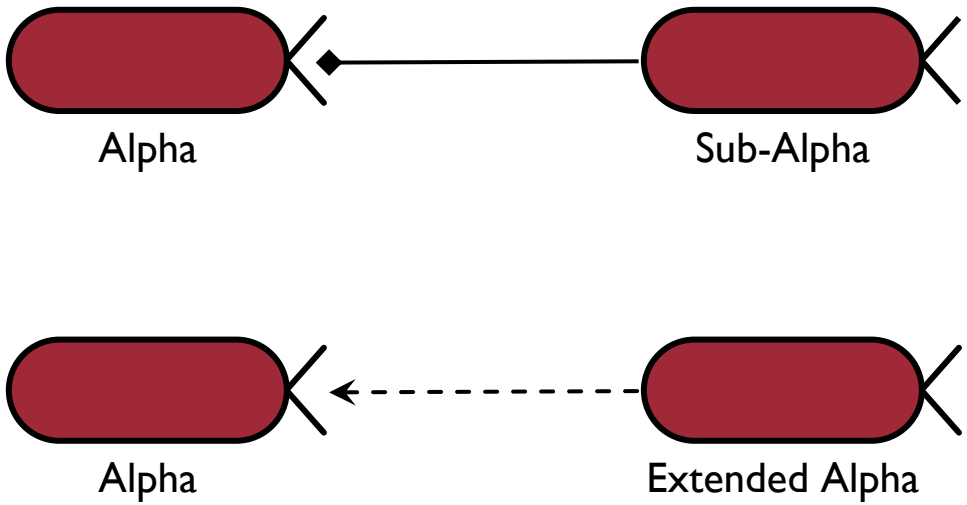




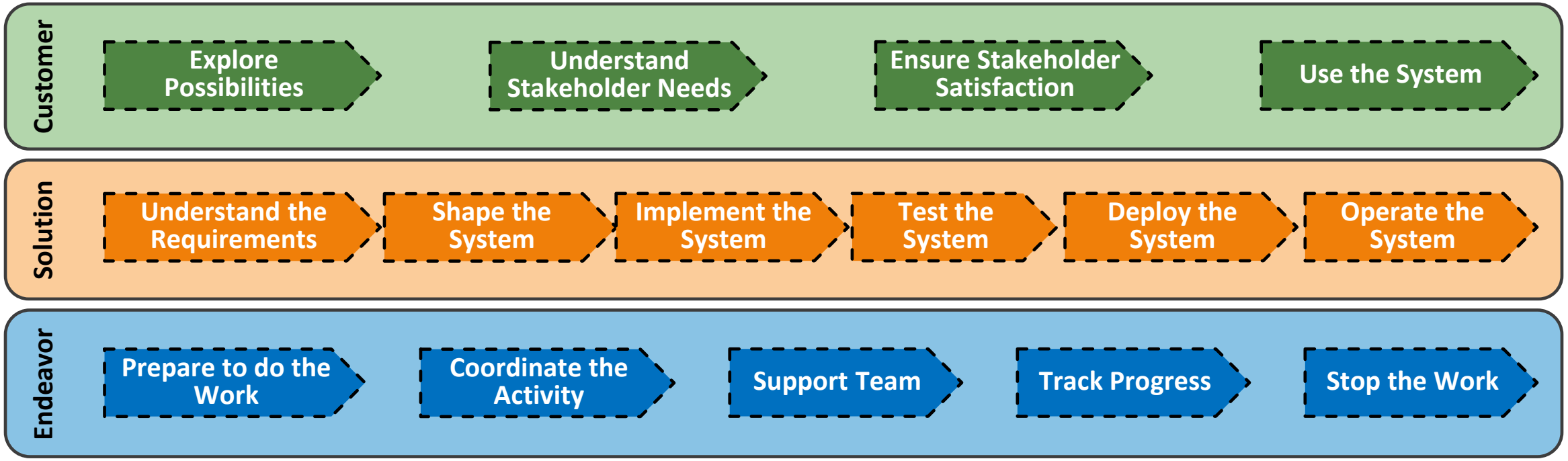
ALPHA DECOMPOSITION AND EXTENSION

- An alpha may have lower-level, more granule sub-alphas whose states contribute to and drive the state of the super-alpha.
  - Association between super-alphas and sub-alphas can be many-to-many.
- An alpha may be Extended (i.e., have the values of its attributes be changed) in the context of a Practice (such as Scrum).



ACTIVITY SPACE

- Activity spaces are containers of activities performed in a project.
  - An activity may be a part of another activity forming a work breakdown structure.
- The association between activity spaces and activities can be many-to-many.



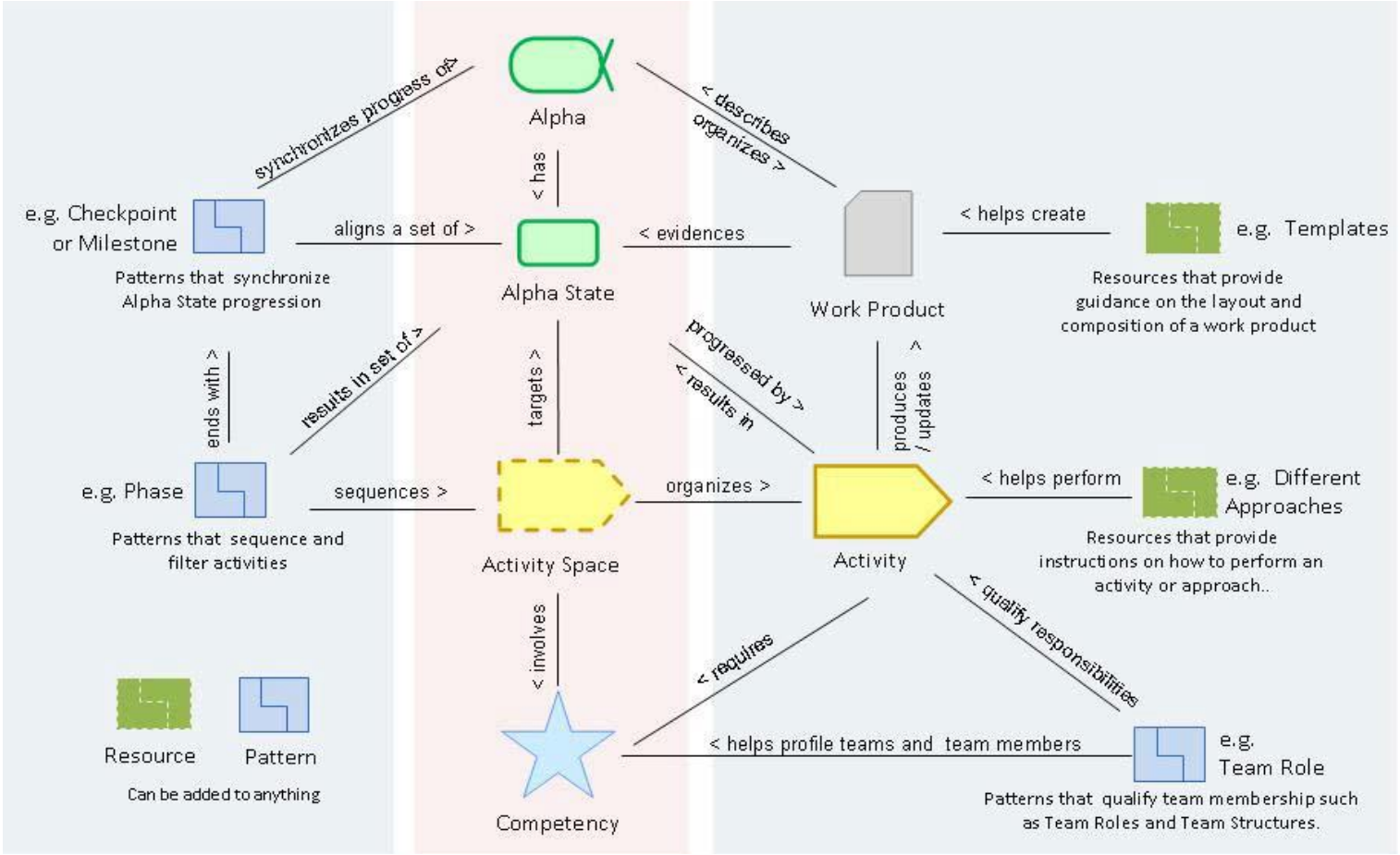
ACTIVITY SPACE AND ALPHA STATE

- Pre and post conditions of each activity space are suggested (as a reference) in terms of alpha states in the kernel.

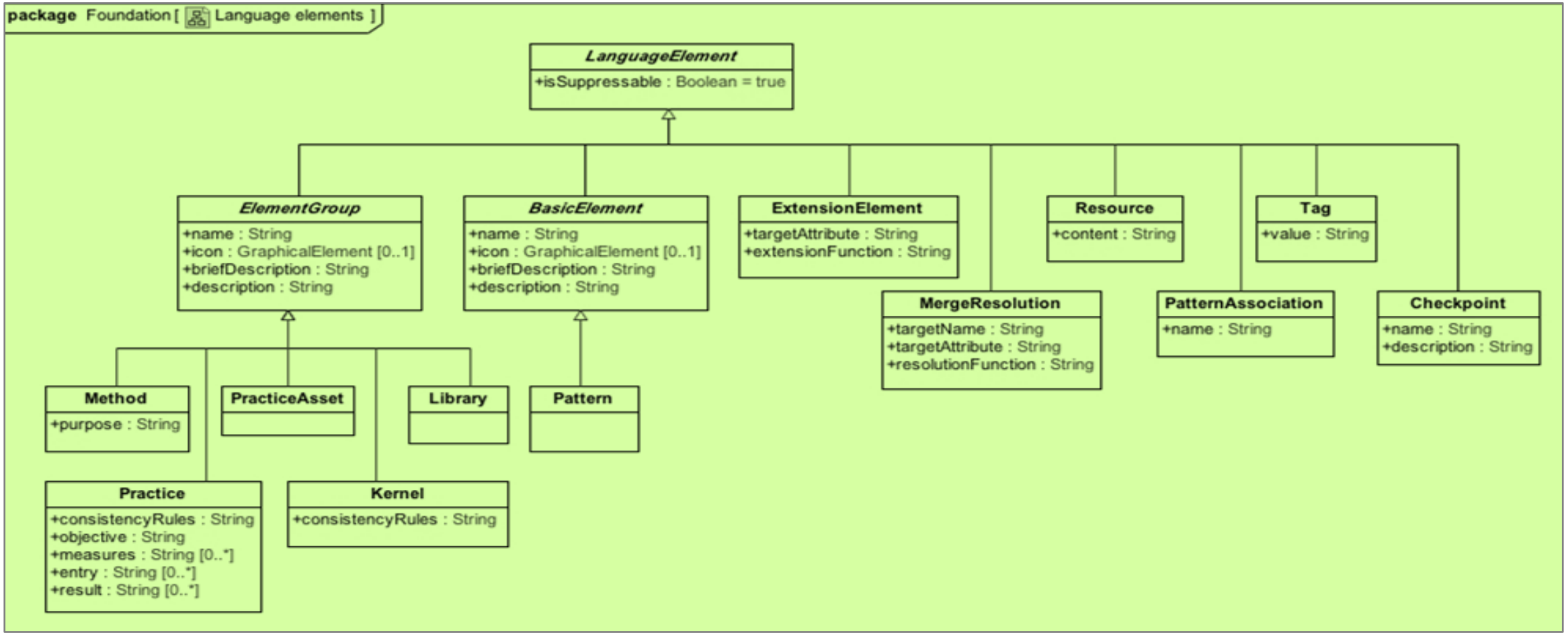
Alpha States / Activity Spaces	Opportunity						Stakeholder					
	Identified	Solution Needed	Value Established	Viable	Addressed	Benefit Accrued	Recognized	Represented	Involved	In Agreement	Satisfied for Deployment	Satisfied in Use
Explore Possibilities	■	■	■				■					
Understand Stakeholder Needs				■				■	■	■		
Ensure Stakeholder Satisfaction					■						■	
Use the System						■						■

ESSENCE KERNEL EXTENSION

- Patterns can arrange language elements into arbitrary meaningful structures.
- Resources can be attached to any language element.
- Tags add user defined information to any language element.
- User-Defined Types detail, explain, and constrain the proper usage of particular patterns, resources, or tags.

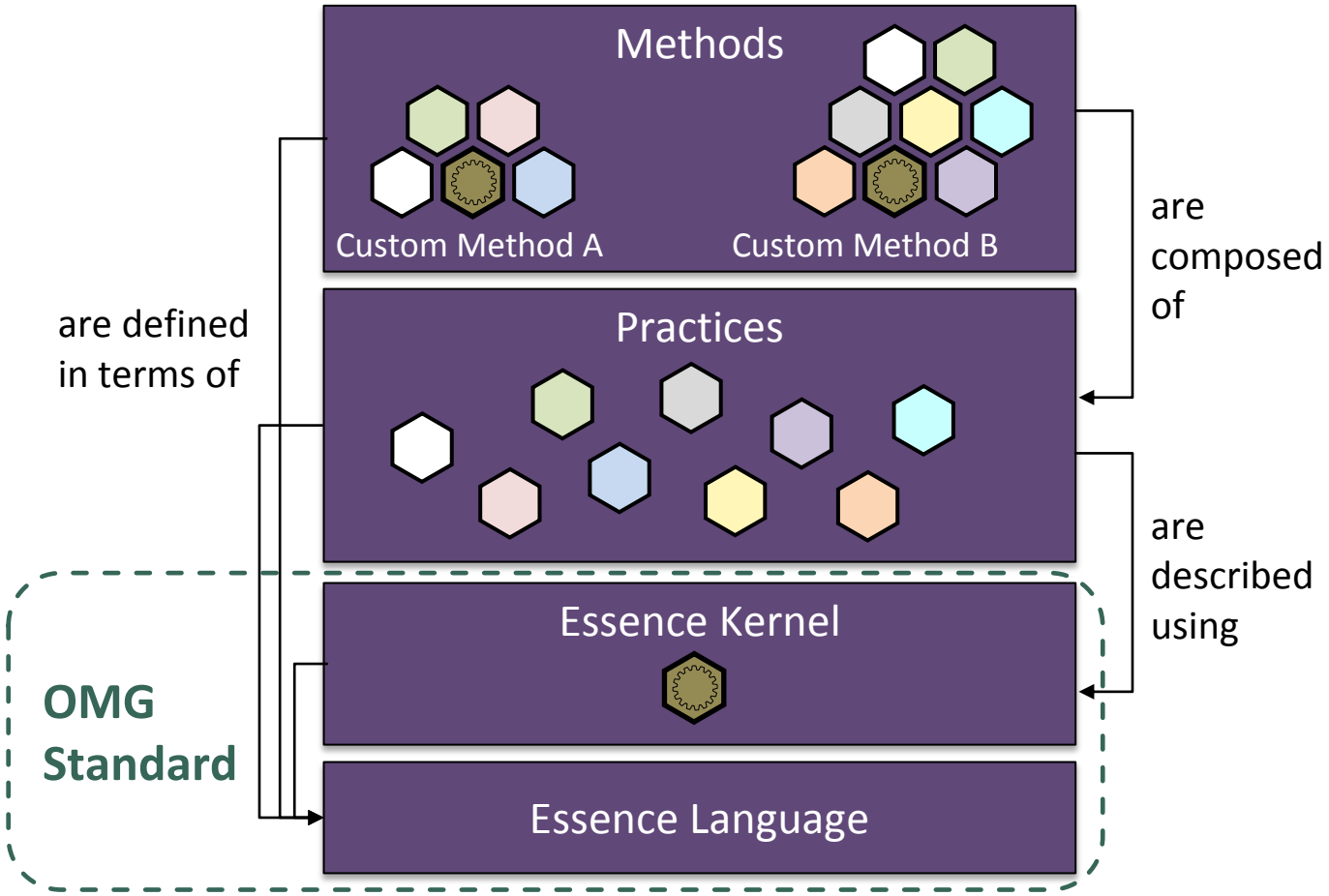


ESSENCE LANGUAGE

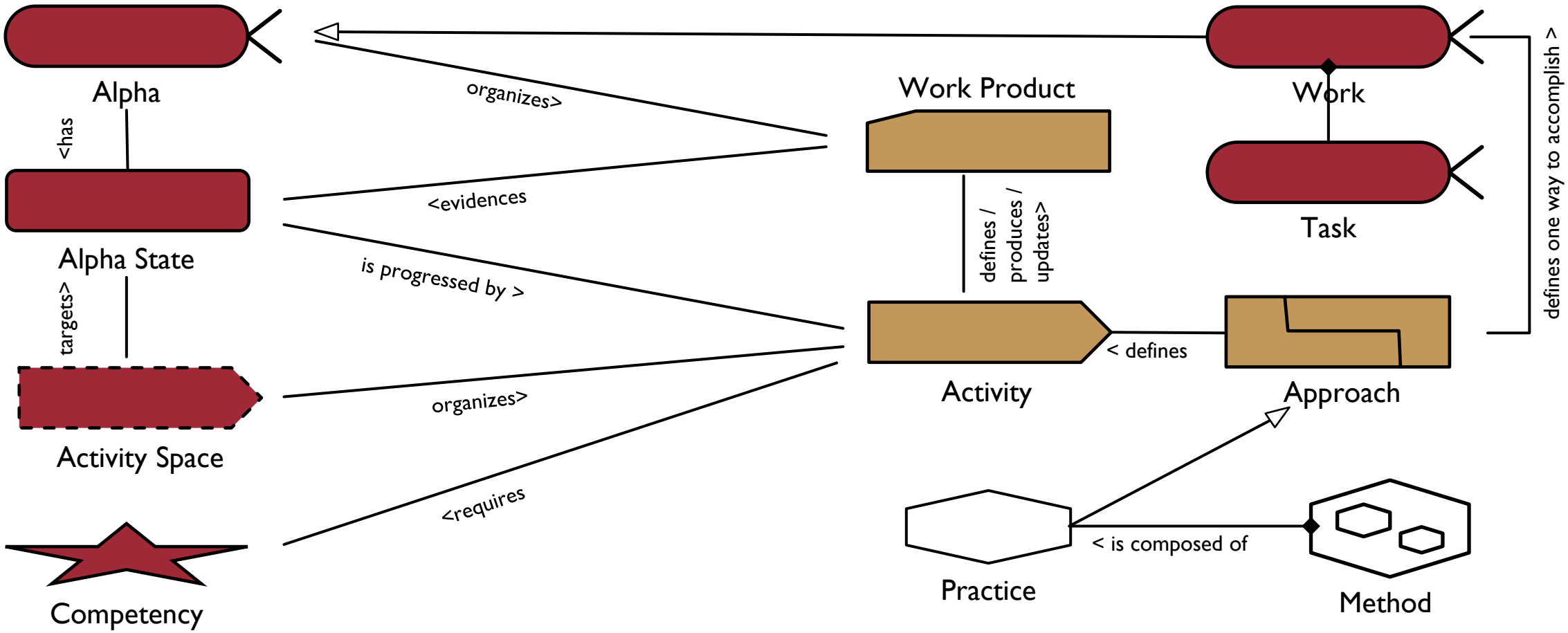


METHOD DESCRIPTION IN ESSENCE LANGUAGE

- There are probably hundred thousands of methods applied in SE projects worldwide.
- There are about 300 well known practices reusable across projects.
- Those practices can be described using Essence kernel and language.
- A project method can be composed of practices.

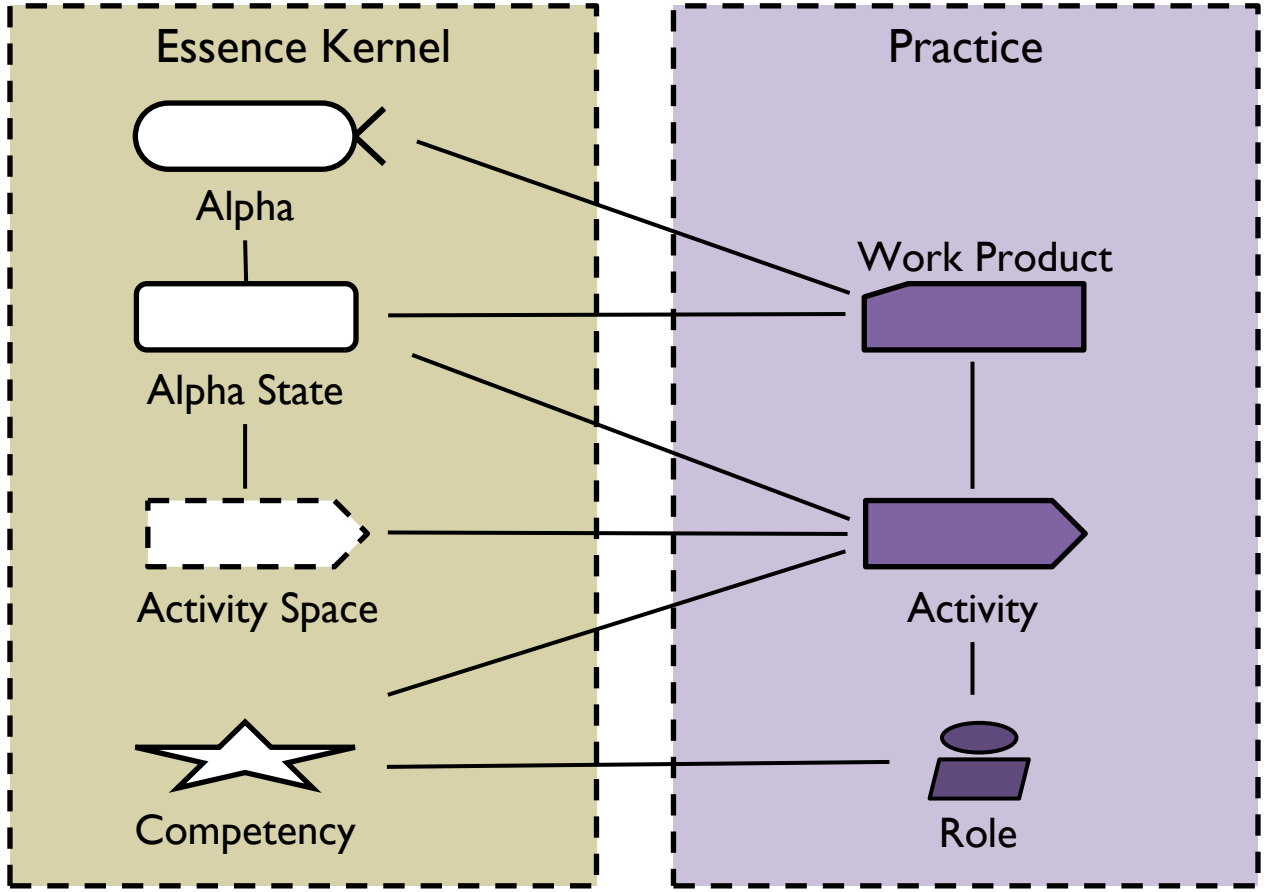


ESSENCE KERNEL AND METHOD



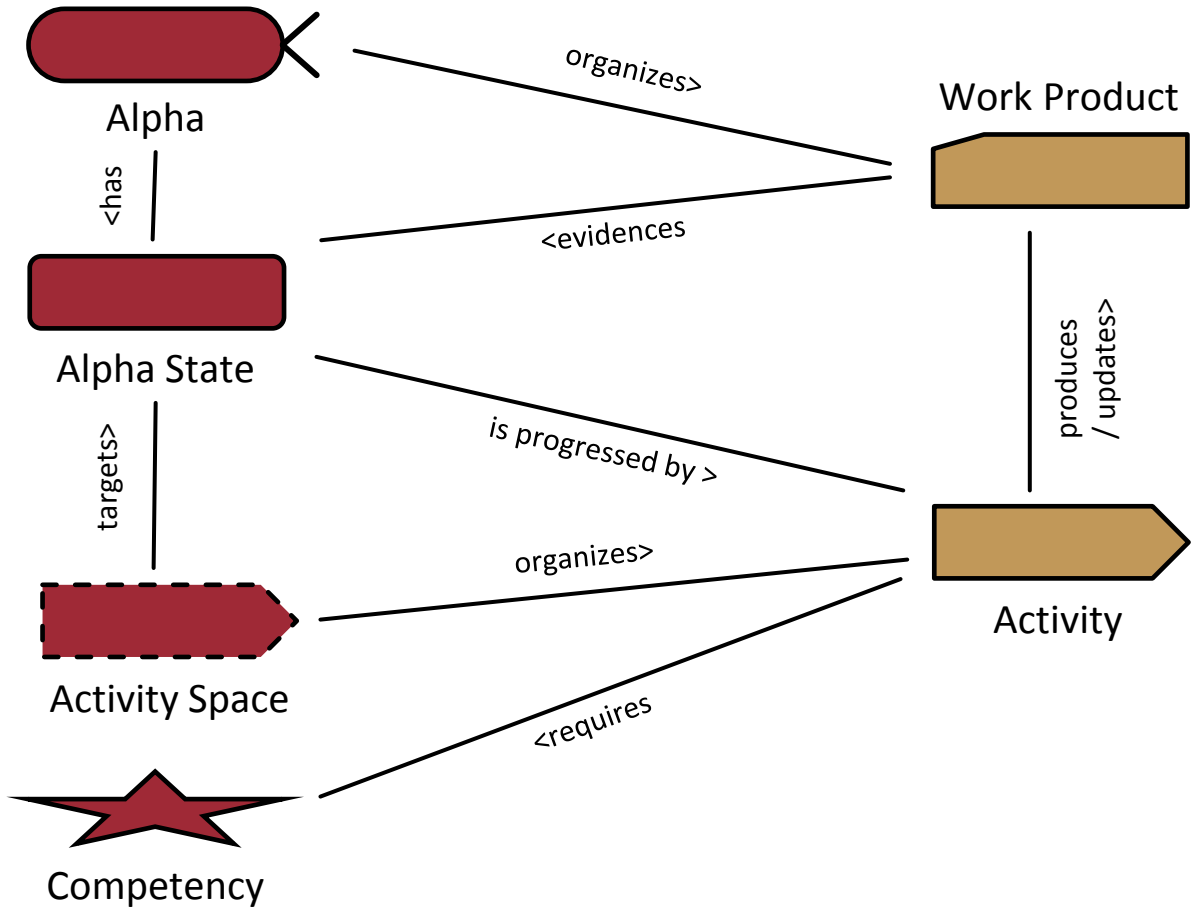
PRACTICE DESCRIPTION IN ESSENCE LANGUAGE

- A software engineering practice can be described in Essence language by mapping:
  - work products to Alphas,
  - activities to Activity Spaces
  - roles to Competencies
- Mapping a practice to Essence produces a mapping from activities to "default" state transitions.

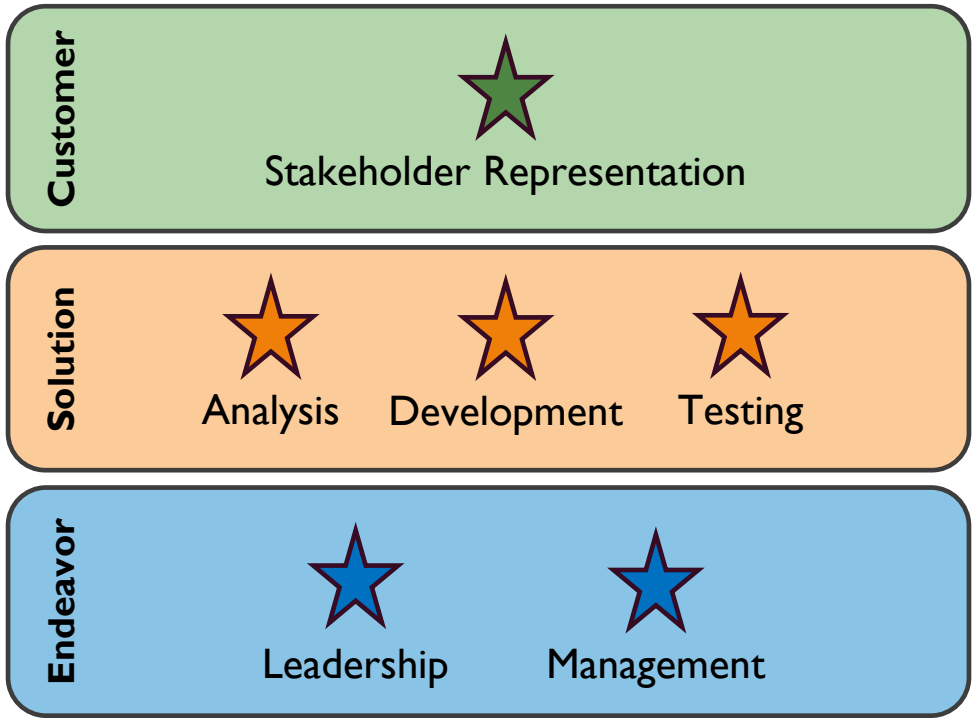


ACTIVITY AND STATE TRANSITION

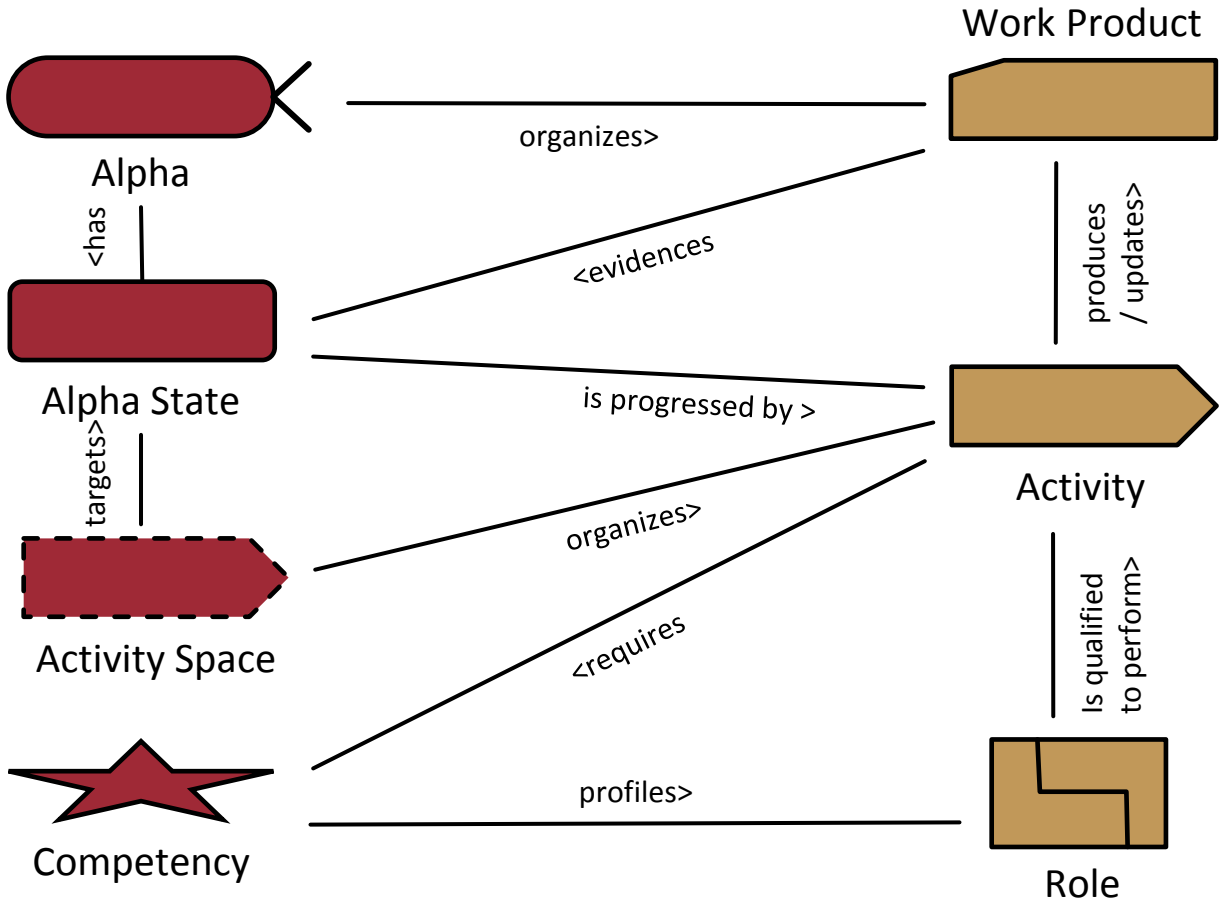
- Activities may change the alpha states of the software engineering project.
- Activities can be assigned target alpha states or checkpoints (i.e. criteria of done).
- By mapping activities to activity spaces you can get "default" target states of each activity.



COMPETENCY AND ROLE

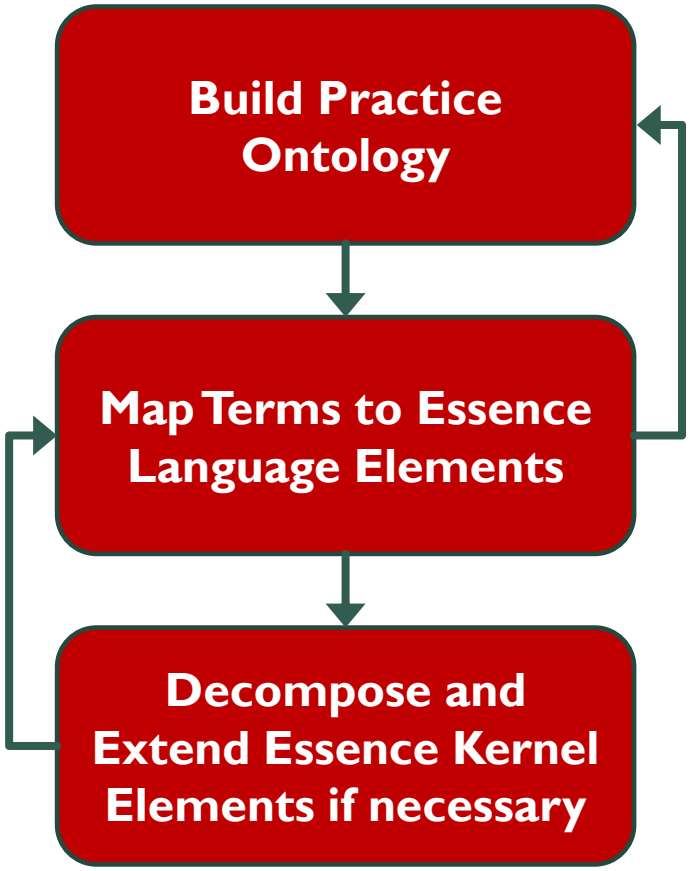


- The role can be modeled as a Pattern.
- Patterns can arrange language elements into arbitrary meaningful structures.

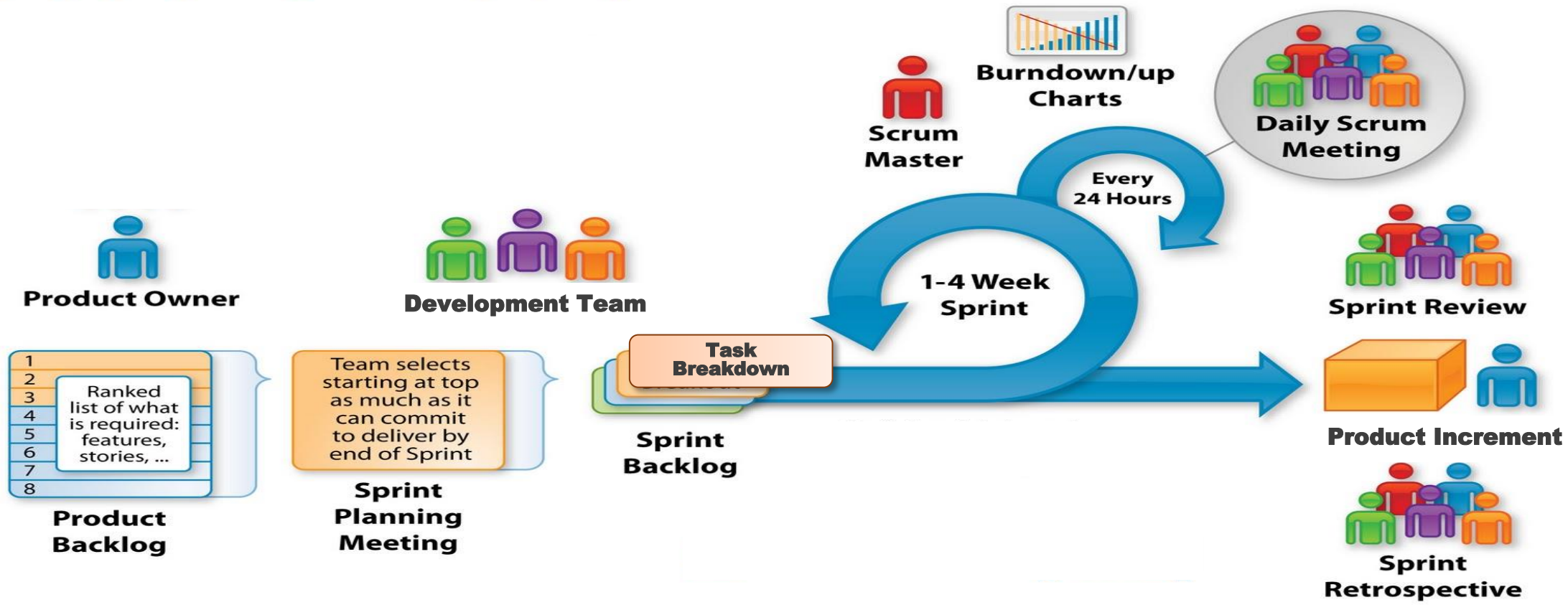


PRACTICE DESCRIPTION APPROACH

1. **Build an Ontology of the Terms used in the Practice**
   - Parse the text description of the Practice to build a Glossary.
   - Classify the Terms in the Glossary into Work Products, Activities, Roles, etc.
   - Add missing Terms such as activities for producing or updating work products and vice versa.
2. **Map the Terms to Essence Language Elements.**
   - Determine alphas, alpha states and checkpoints corresponding to each work product.
   - Determine activity spaces, beginning and target alpha states, target checkpoints corresponding to each activity.
   - Determine competencies required of different roles.
3. **Decompose and Extend Essence Kernel Elements to represent detailed concepts, composite constructs and complex relationships.**
   - Define sub-alphas, sub-activity spaces, patterns, resources and tags to represent concepts in the practice.



SCRUM PRACTICE

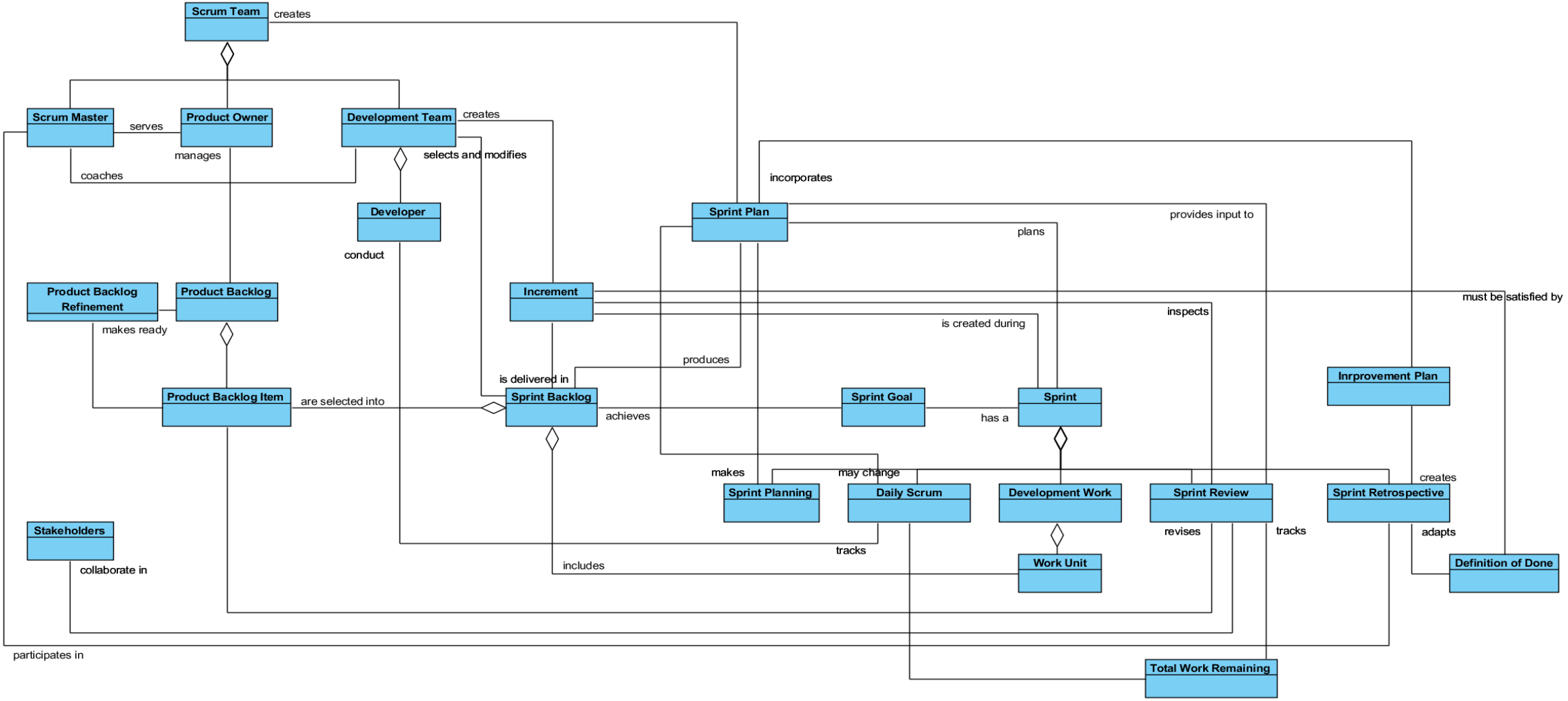


Jeff Sutherland and Ken Schwaber, The Scrum Guide, 2013. (http://www.scrumguides.org/)

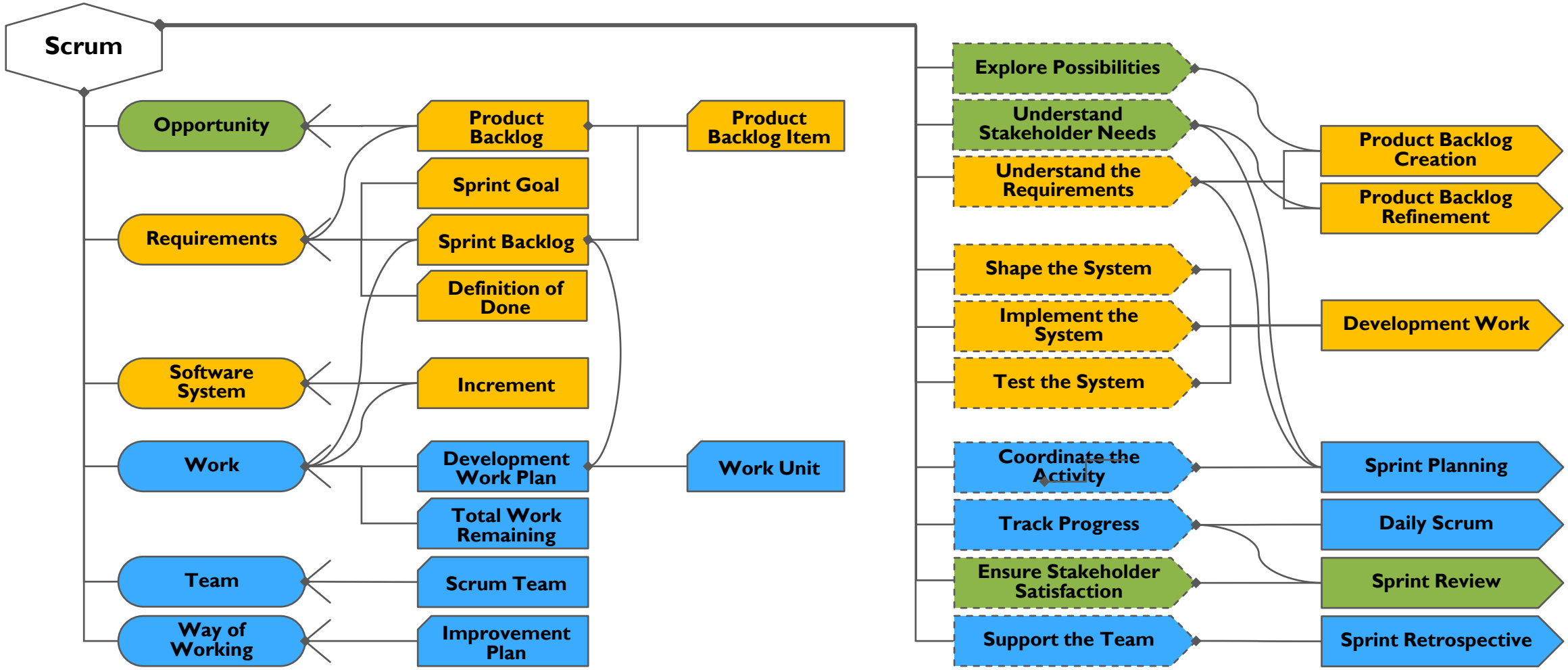
SCRUM GLOSSARY

Key Terms	Classification	Relationship			Added Terms
		Role	Activity	Work Product	
Daily Scrum	Activity	Development Team		Sprint Plan, Total Work Remaining	
Definition of Done	Work Product		Sprint Retrospective	Increment, Product Backlog Refinement	
Developer	Role				
Development Team	Role		Daily Scrum	Sprint Backlog, Development Work, Increment	
Development Work	Activity			Sprint Backlog, Development Work Plan, Work Unit, Increment	Development Work Plan
Improvement Plan	Work Product		Sprint Retrospective		
Increment	Work Product		Sprint Review	Sprint Plan, Sprint Goal, Sprint Backlog, Definition of Done	
Product Backlog	Work Product	Product Owner	Product Backlog Refinement, Sprint Review	Product Backlog Item	Product Backlog Creation
Product Backlog Item	Work Product			Product Backlog	
Product Backlog Refinement	Activity			Product Backlog	
Product Owner	Role		Product Backlog Creation, Product Backlog Refinement, Sprint Review	Product Backlog	Product Backlog Creation
Scrum Event	Composite Activity				
Scrum Master	Role		Sprint Retrospective		
Scrum Team	Work Product	PO, DT, SM			
Sprint	Milestone				
Sprint Backlog	Work Product	Development Team		Product Backlog, Sprint Goal, Development Work	
Sprint Goal	Work Product		Sprint Planning		Sprint Planning
Sprint Plan	Composite Work Product				
Sprint Planning	Activity			Sprint Plan	
Sprint Retrospective	Activity	Scrum Master		Sprint Plan, Definition of Done,	
Sprint Review	Activity	Stakeholders,		Increment, Product Backlog, Total Work Remaining, Sprint Plan	
Stakeholders	Role		Sprint Review		
Total Work Remaining	Work Product		Sprint Review, Daily Scrum		
Work Unit	Work Product			Sprint Backlog, Development Work	

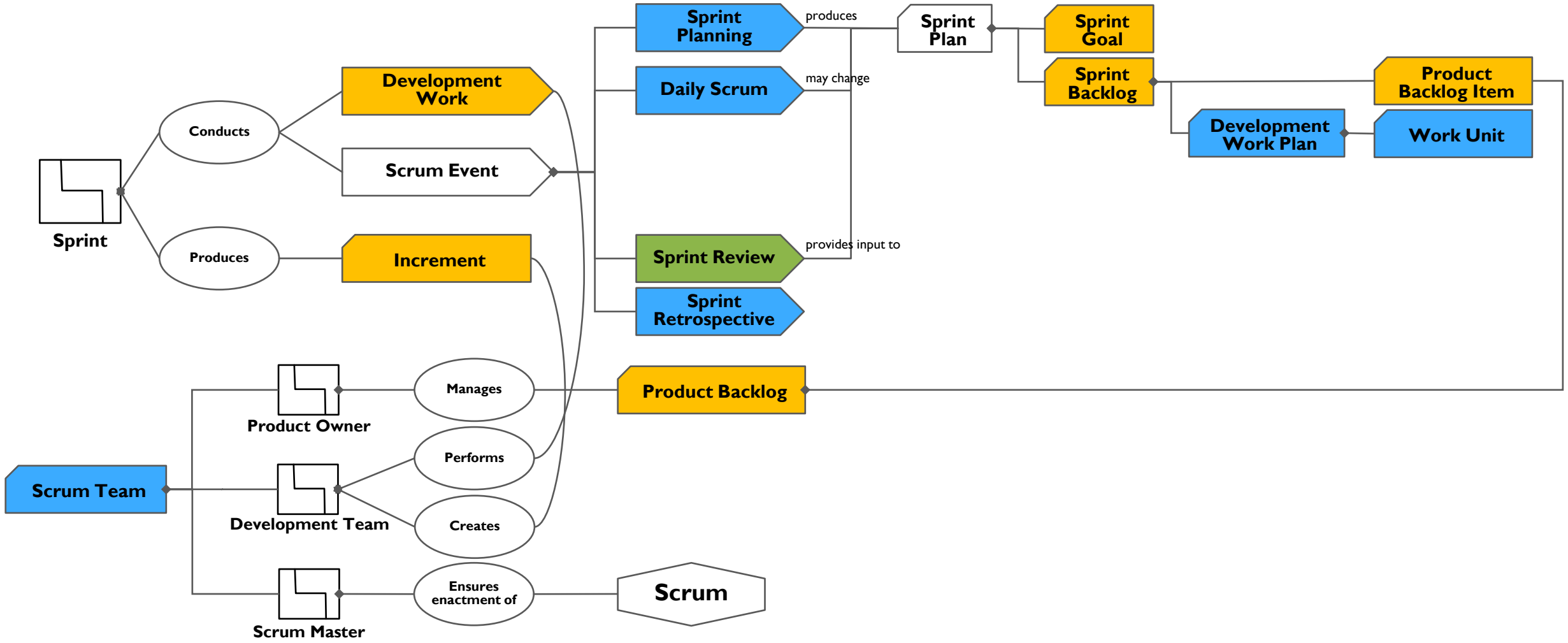
SCRUM ONTOLOGY



SCRUM TO ESSENCE KERNEL MAPPING



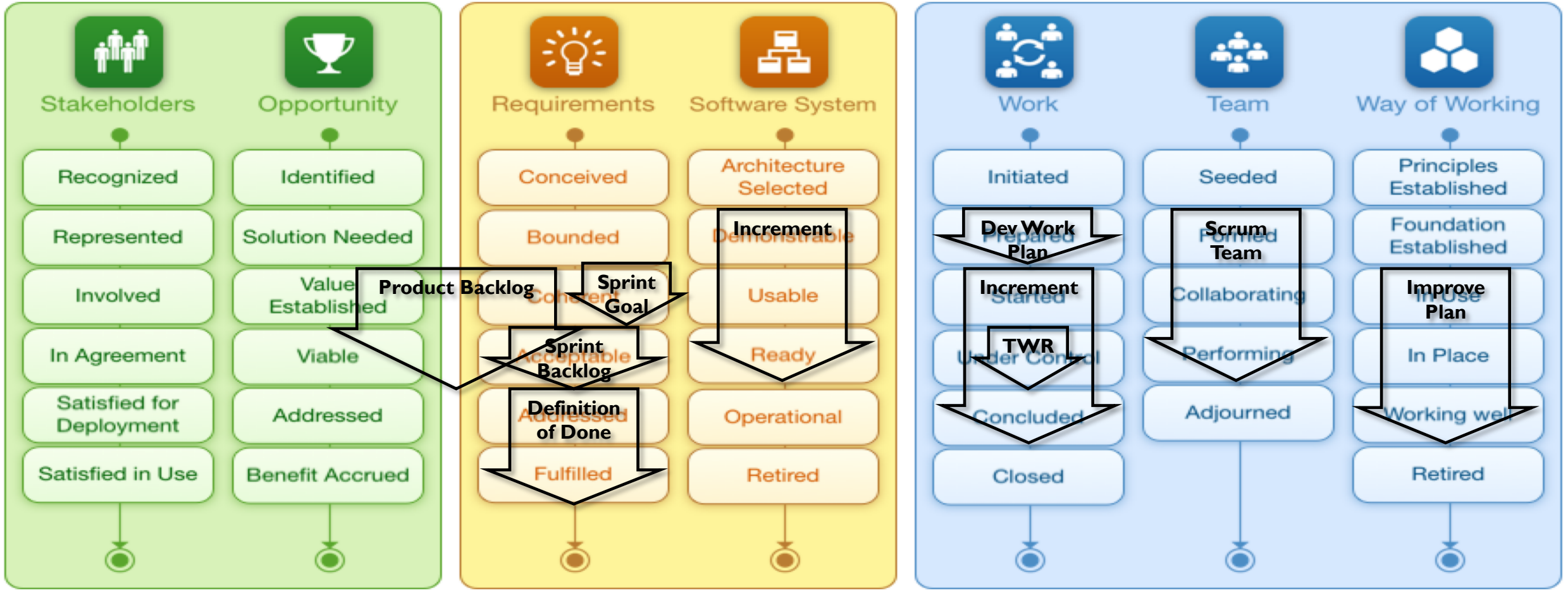
COMPOSITE CONSTRUCTS IN SCRUM



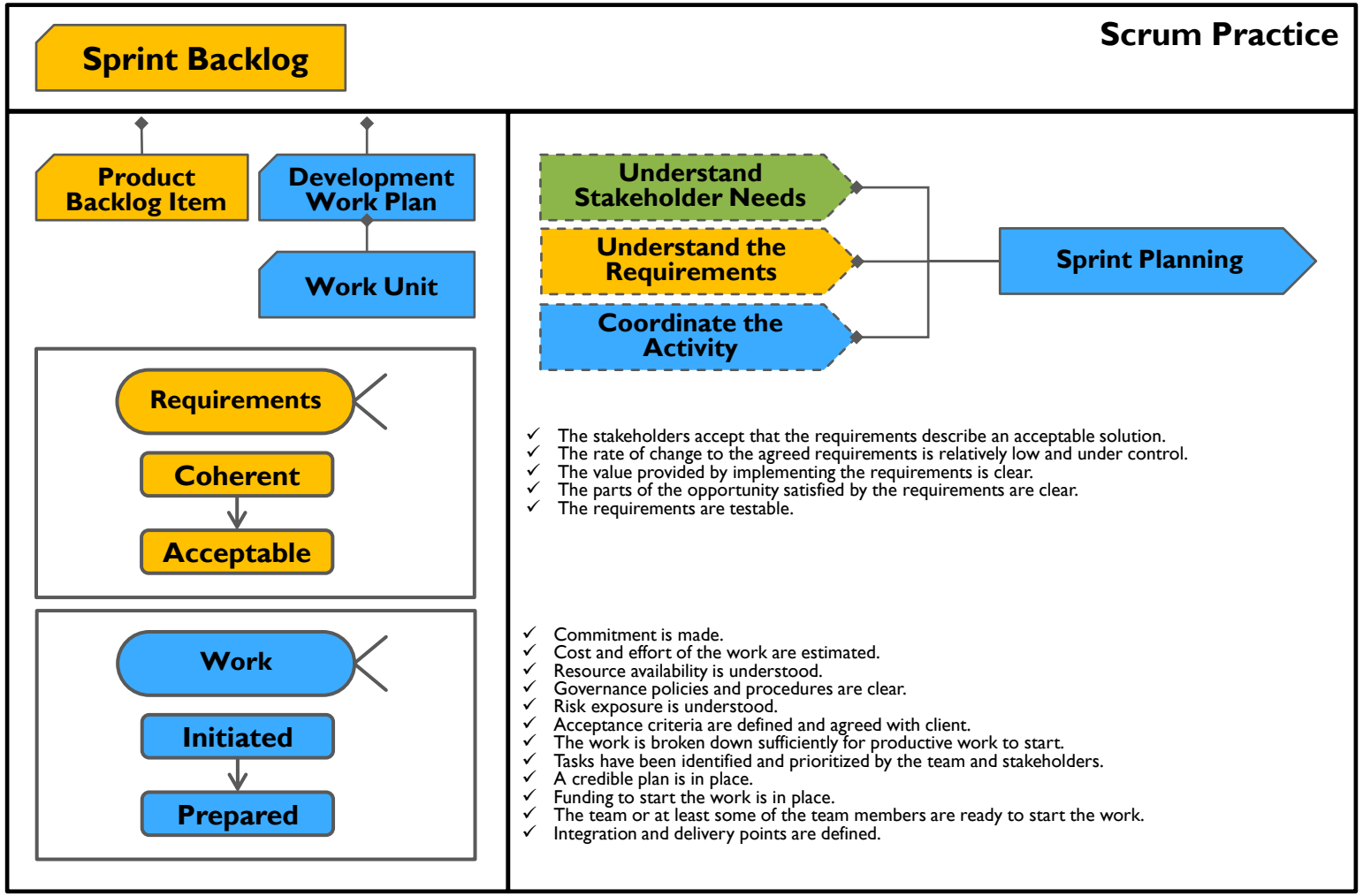
WORK PRODUCT TO ALPHA STATE MAPPING

Work Product	Alpha	Alpha State	
		Begin In	Target
Product Backlog	Requirements	Bounded	Acceptable
	Opportunity	Solution Needed	Viable
Sprint Goal	Requirements	Bounded	Coherent
Sprint Backlog	Requirements	Coherent	Acceptable
Definition of Done	Requirements	Acceptable	Fulfilled
Development Work Plan	Work	Initiated	Prepared
Increment	Software System	Architecture Selected	Ready
	Work	Prepared	Concluded
Total Work Remaining	Work	Started	Under Control
Scrum Team	Team	Seeded	Performing
Improvement Plan	Way of Working	Foundation Established	Working Well

WORK PRODUCT TO ALPHA STATE MAPPING



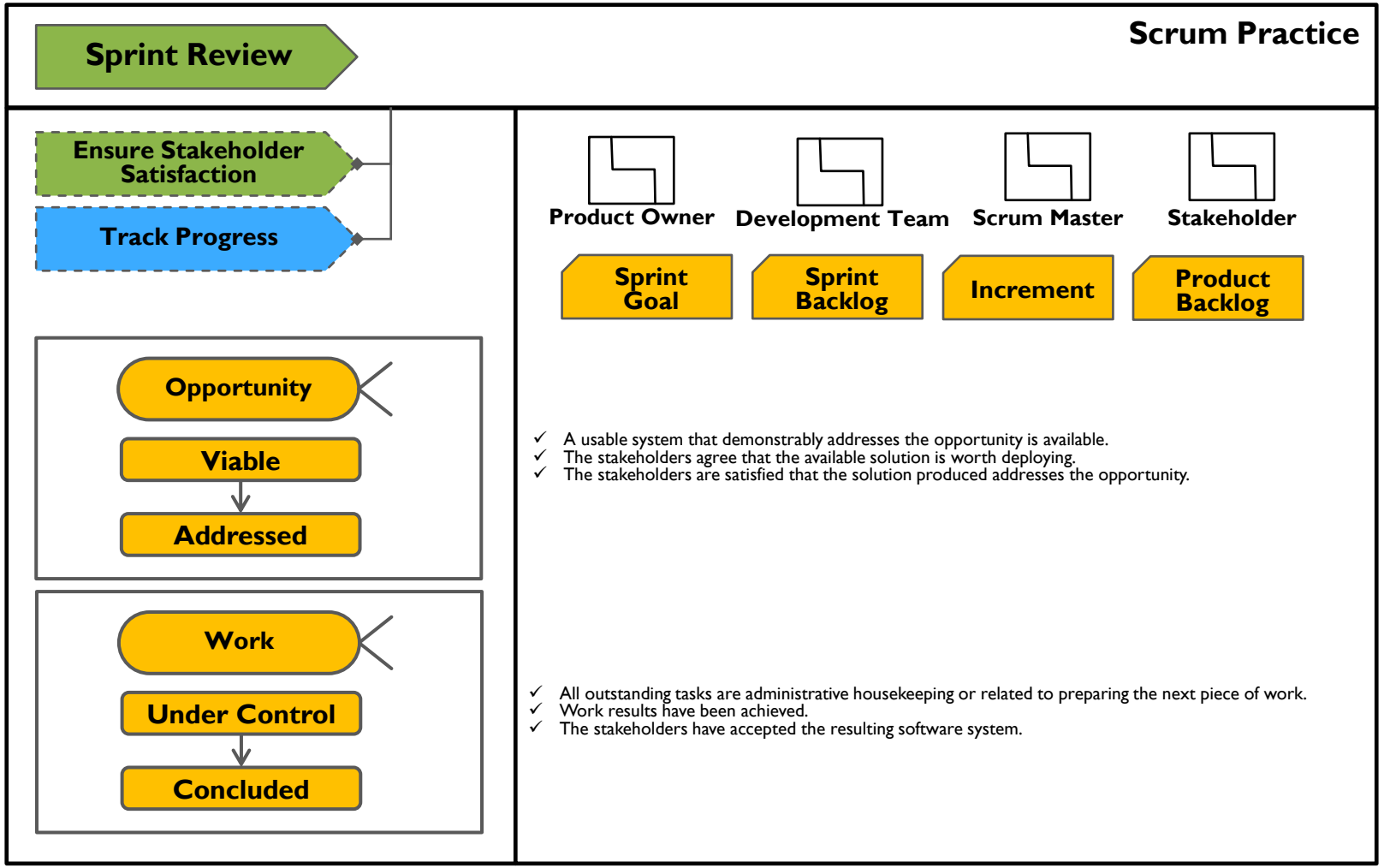
WORK PRODUCT DEFINITION CARD



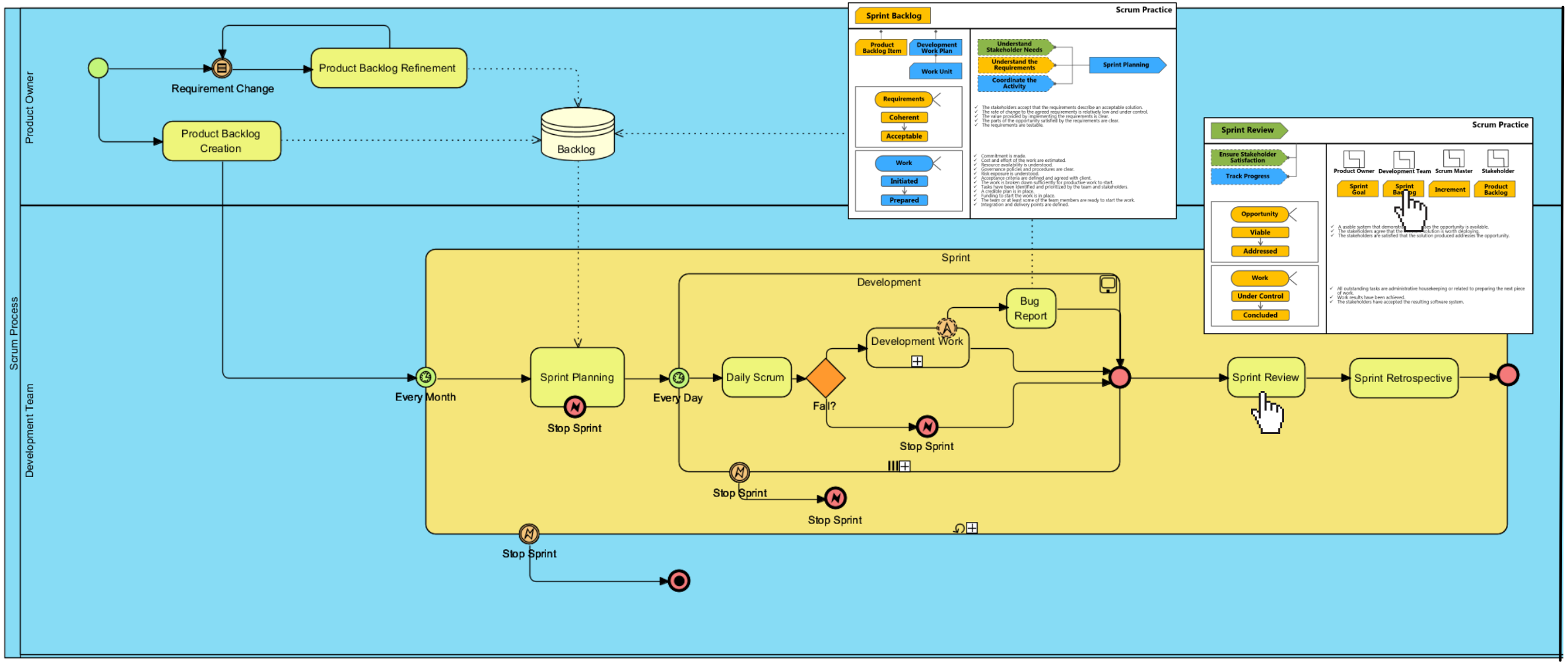
ACTIVITY TO ALPHA STATE MAPPING

Activity	Activity Spaces \ Alpha States	Opportunity						Requirement						Software System						Team					Work						Way of Working					
		Identified	Solution Needed	Value Established	Viable	Addressed	Benefit Accrued	Conceived	Bounded	Coherent	Acceptable	Addressed	Fulfilled	Architecture Selected	Demonst-rable	Usable	Ready	Operational	Retired	Seeded	Formed	Collabo-rating	Performing	Adjourned	Initiated	Prepared	Started	Under Control	Concluded	Closed	Principles Established	Foundation Established	In Use	In Place	Working Well	Retired
Product Backlog Creation	Explore Possibilities																																		
	Understand Reqts																																		
Product Backlog Refinement	Understand St. Needs																																		
	Understand Reqts																																		
Sprint Planning	Understand St. Needs																																		
	Understand Reqts																																		
	Coordinate Activity																																		
Development Work	Shape the System																																		
	Implement / Test																																		
Daily Scrum	Track Progress																																		
Sprint Review	Ensure St. Satisfaction																																		
	Track Progress																																		
Sprint Retro.	Support the Team																																		

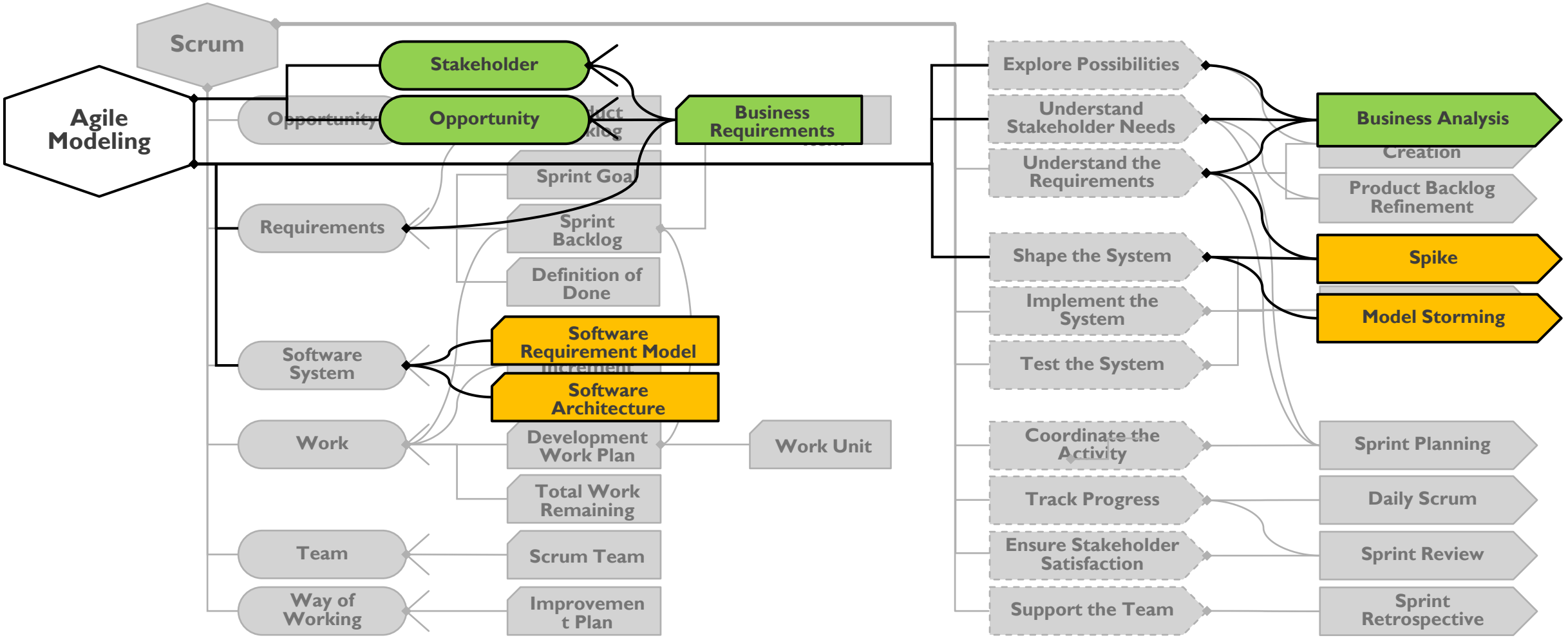
ACTIVITY DEFINITION CARD



SCRUM WORKFLOW

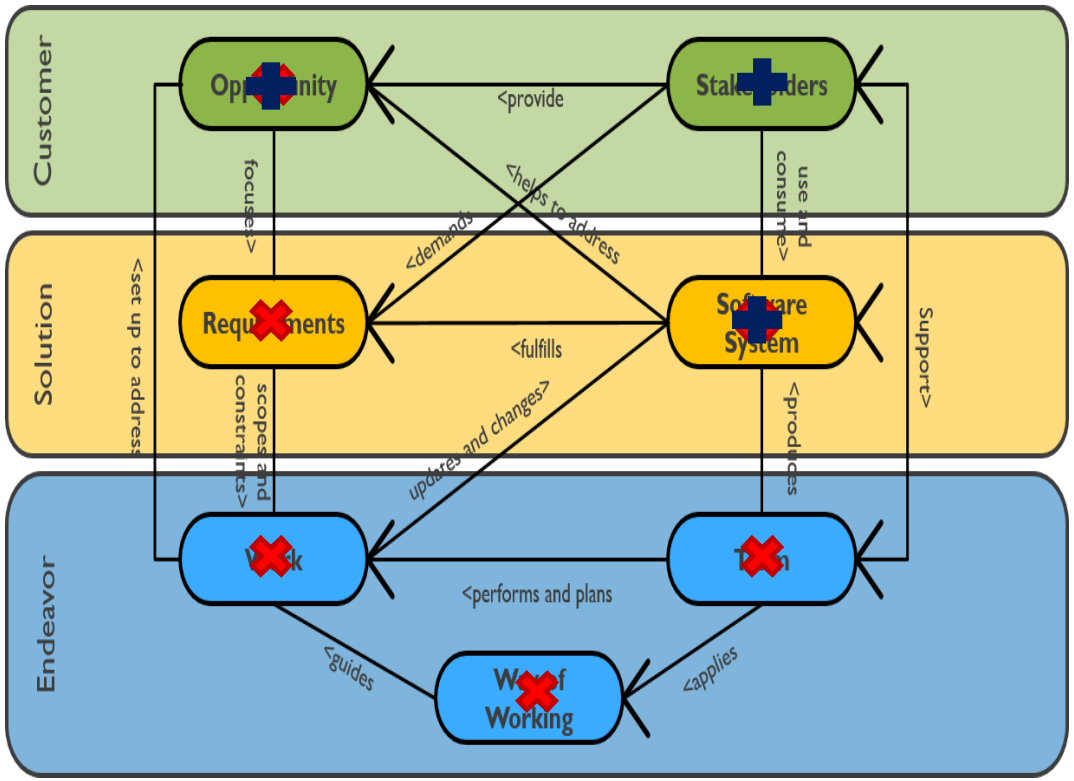


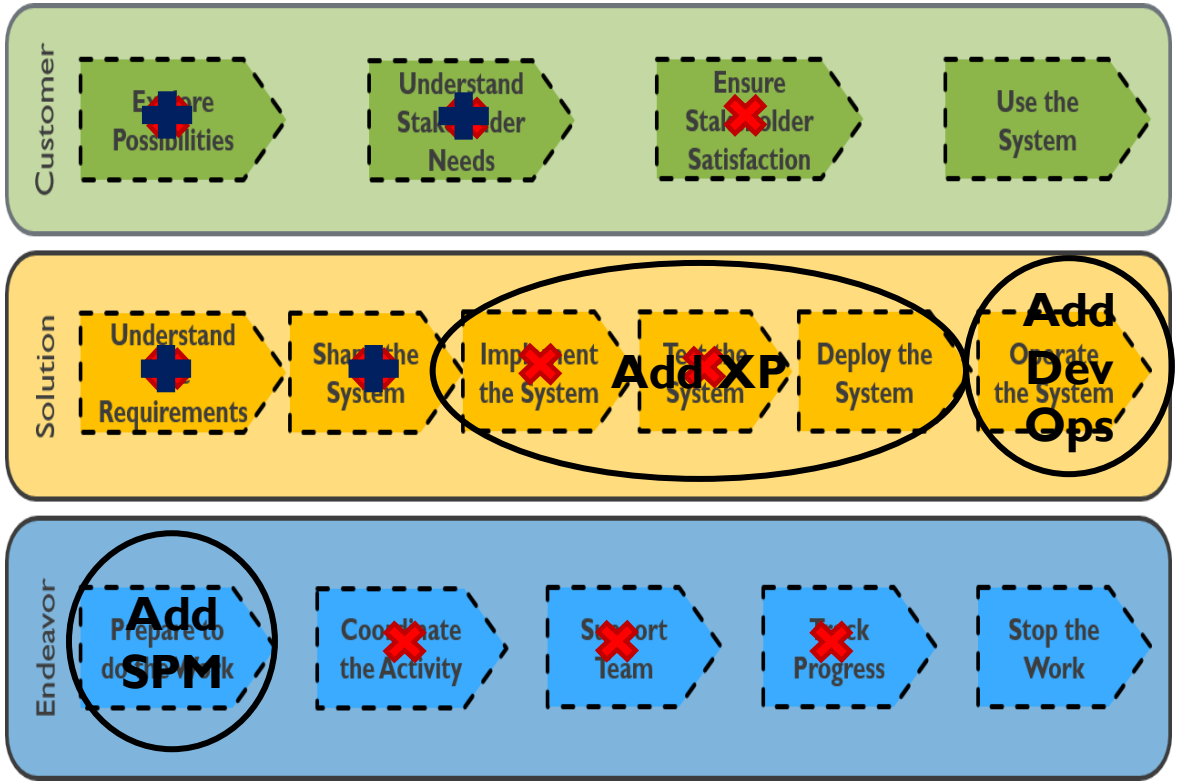
METHOD COMPOSITION



METHOD COMPOSITION

- ✖ Kernel elements covered by Scrum
- ✚ Kernel elements additionally covered by Agile Modeling





CONCLUSION

You can use Essence kernel to:

- Describe practices
- Merge them into a project method
- Monitor health and progress of the project
- Adaptively determine project goals and activities based on the current state assessment.