

Essence Kernel

A common ground for Software Engineering

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Software Engineering Method and Theory

- A common ground for software engineering
- Moving away from SE methods “fashion” industry.
- Founded in 2009 by:
 - Ivar Jacobson
 - Bertrand Meyer
 - Richard Soley
- OMG Standard on the way under the name Essence
- The SEMAT Kernel – manifestation of the common ground



The Kernel



- comprises the central elements for all SE methods;
- provides a common language for comparing, applying, and improving methods;
- supports progress monitoring;
- works in small- and large-scale projects;
- works for well documented and less documented projects;
- comes with a language and tool for developing practices.
- Early uptake in China, Russia, South Africa, Japan, Silicon Valley, Florida, Mexico

What's in it for us?

- It is probable that this will be used in the future.
- By focusing on the Essentials, the groups have more freedom and responsibility.
- The tool for creating new practices is easier to work with than OpenUP.
- Our students will not become “methodists”.



Areas of concern

Use and exploitation of the system

Customer

Specification and development

Solution

The team and approach of work

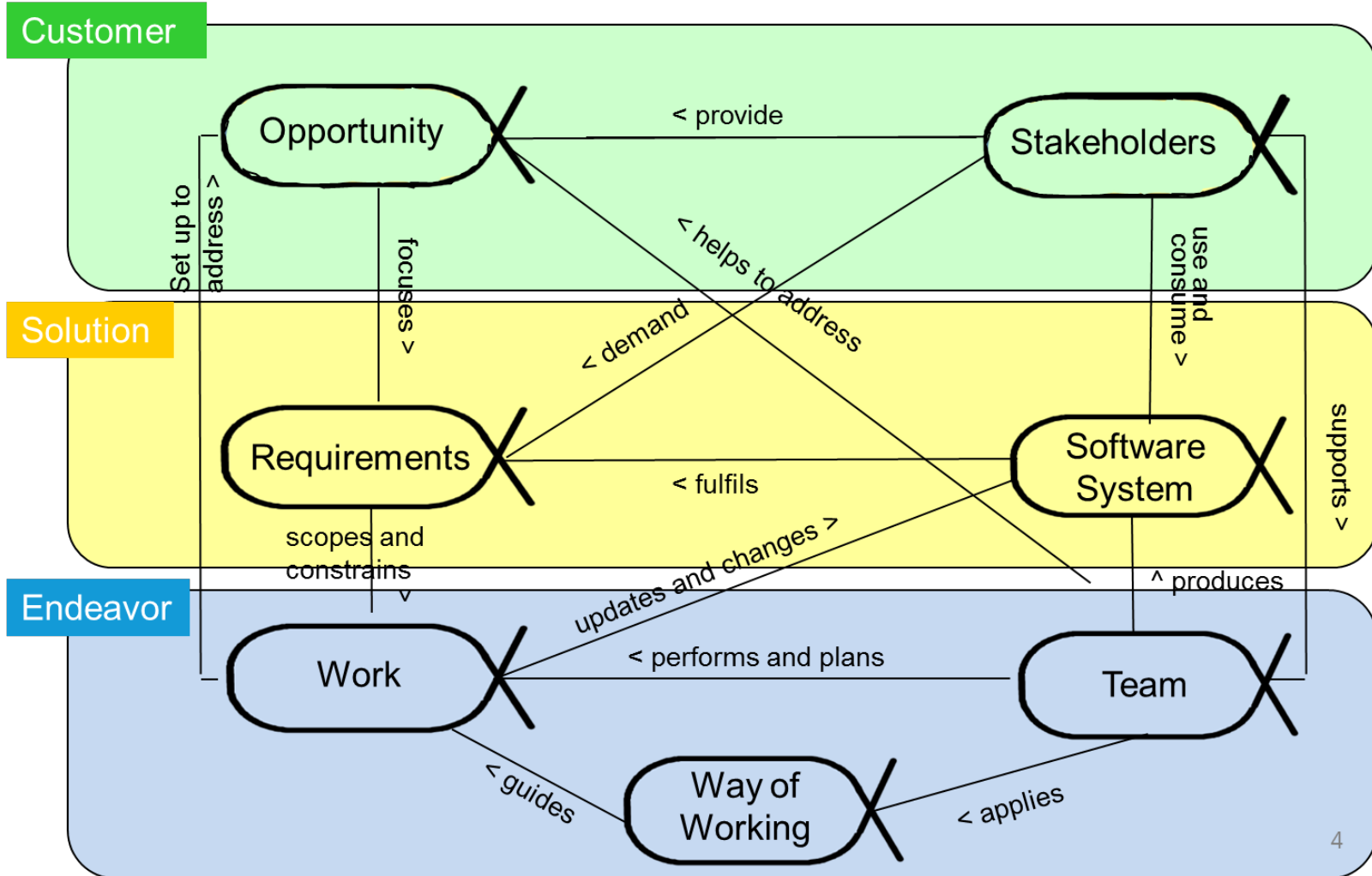
Endeavor

What is an ALPHA?

A large, bold, black Greek letter alpha symbol (α) is positioned on the left side of the slide. The symbol is stylized with a thick stroke and a slight curve at the bottom right.

- Alpha is an acronym for an **Abstract-Level Progress Health Atttribute.**
- A critical indicator of things that are most important to monitor and progress.

The Kernel ALPHAs

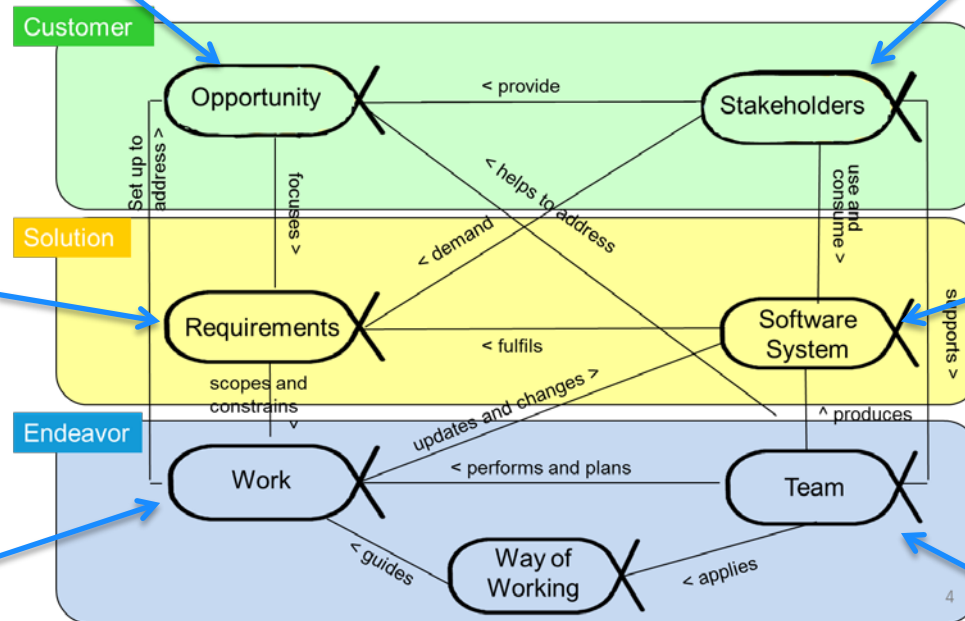


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Brief explanation

A reason for developing the system. Ex: user need

An agent affected by the system
Ex: Customer, project team



What the system must do.
Ex: Store data, be usable

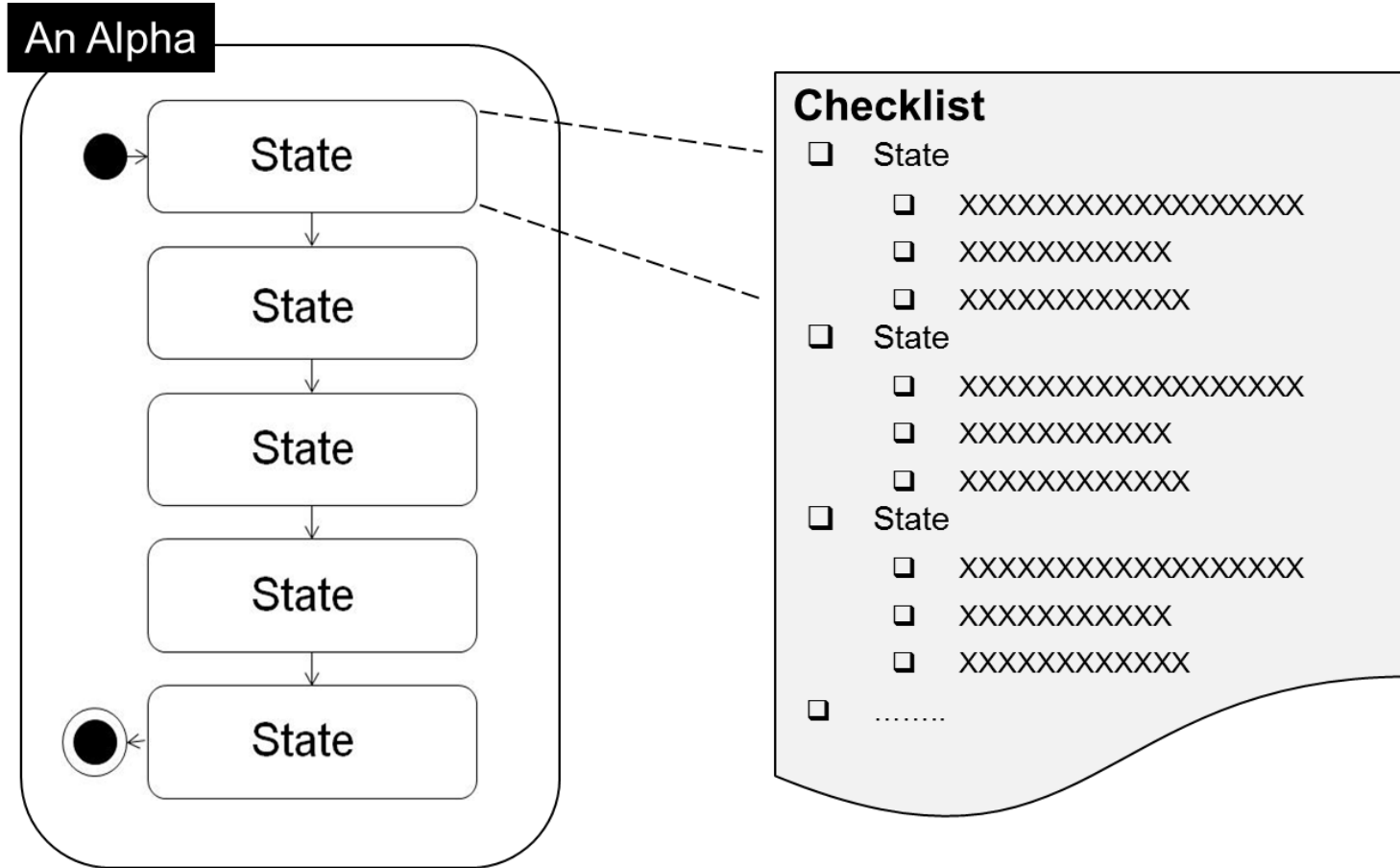
The system of hardware, data, and software items. Ex: a TV

Activity performed.
Ex: Test a GUI.

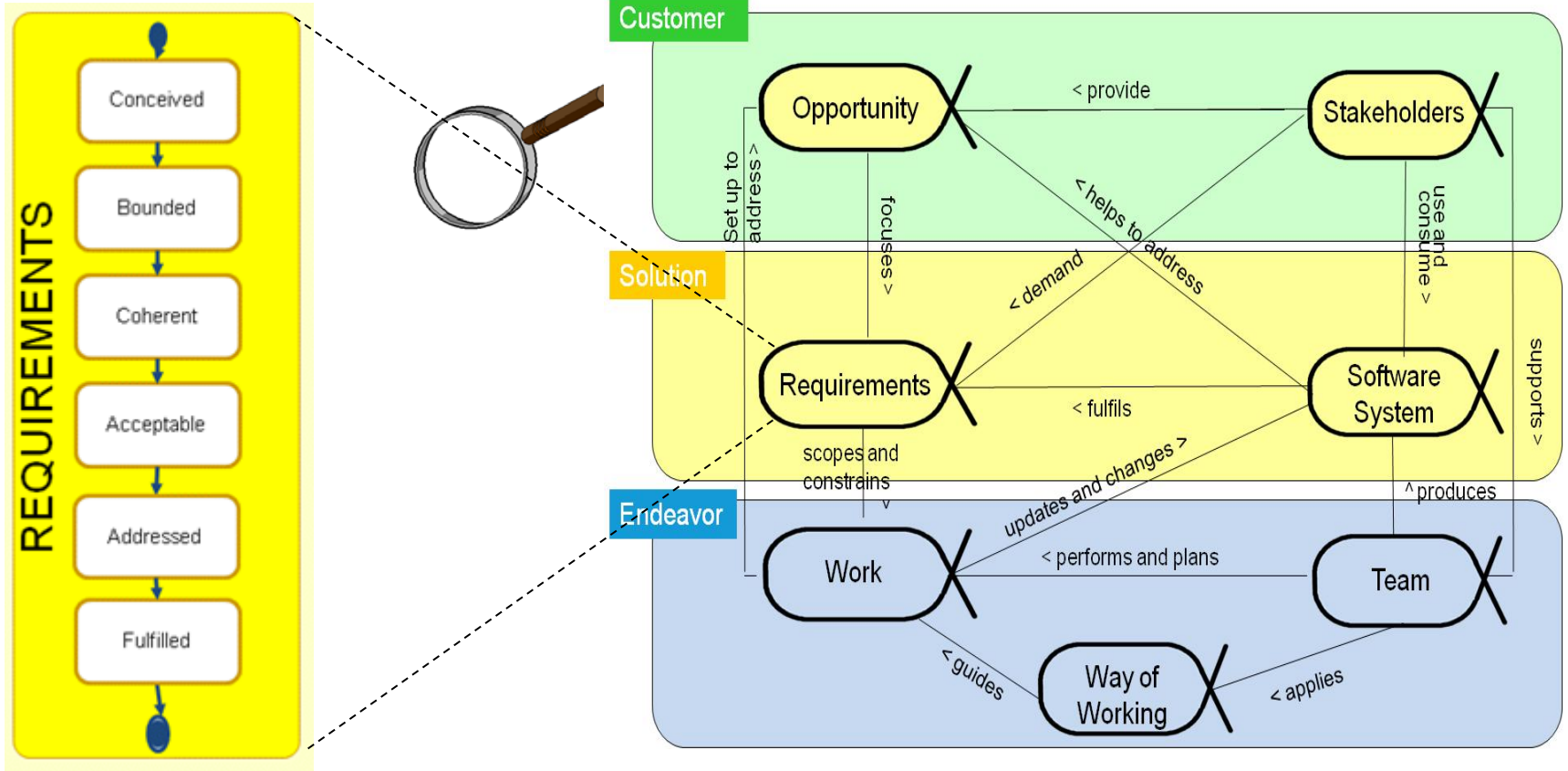
The people engaged in the project. Ex: group 4

Tailored set of practices.
Ex: TDD, Kick-off meeting

The structure of an ALPHA

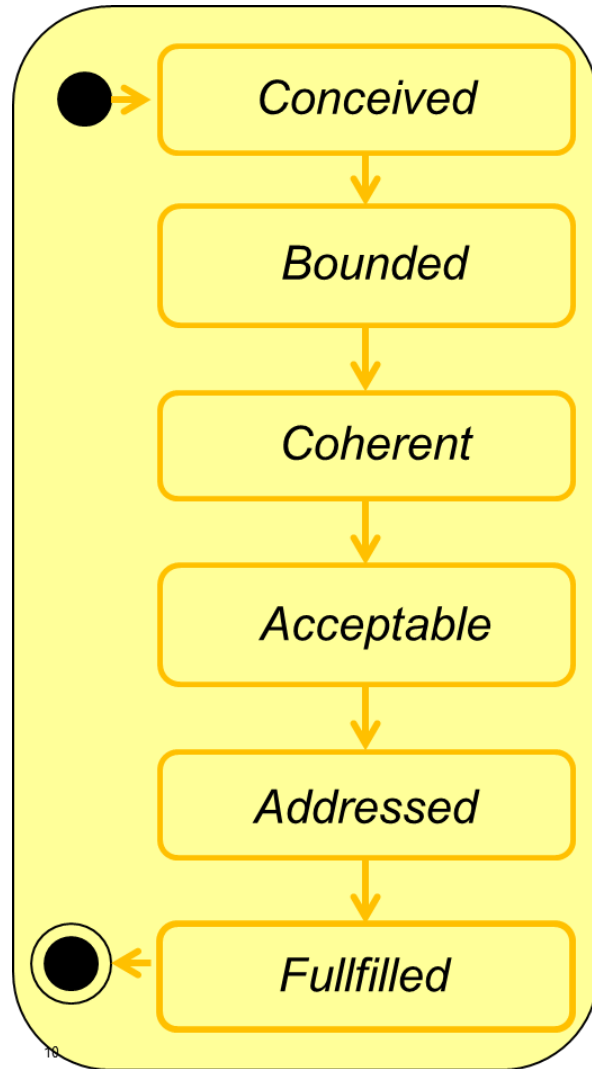


Requirements— one of the alphas



What the software system must do to address the opportunity and satisfy the stakeholders.

Requirements – states



The need for a new system has been agreed.

The purpose and theme of the new system are clear.

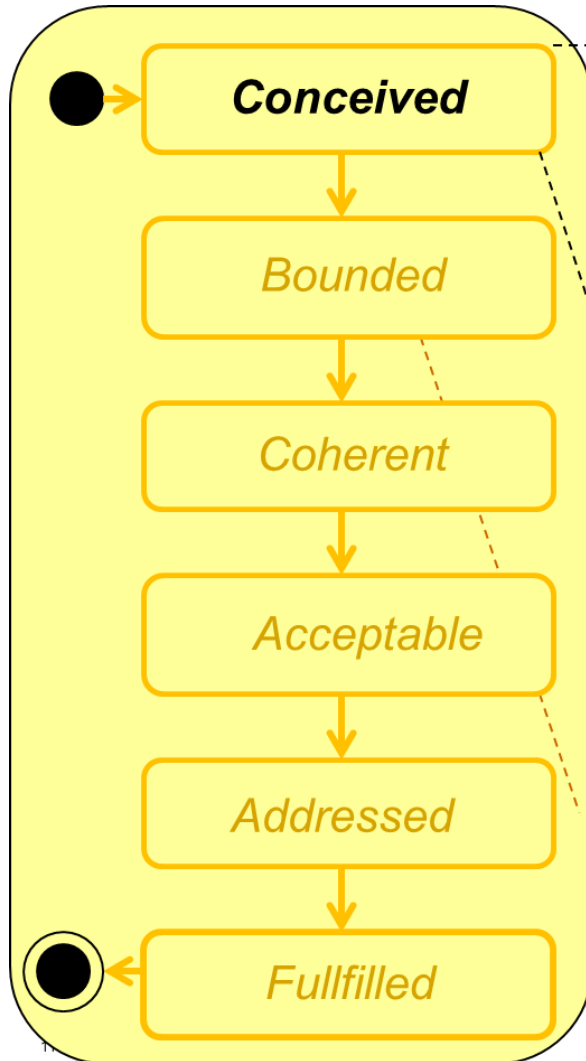
The requirements provide a coherent description of the essential characteristics of the new system.

The requirements describe a system that is acceptable to the stakeholders.

Enough of the requirements have been addressed to satisfy the need for a new system in a way that is acceptable to the stakeholders.

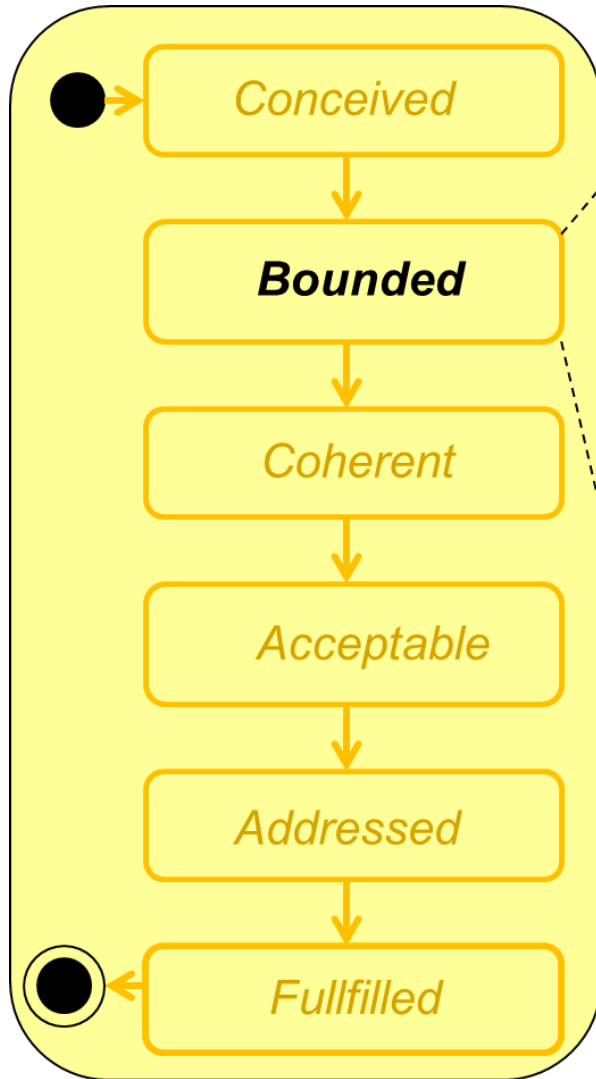
The requirements have been addressed to fully satisfy the need for a new system.

Checklist for requirements states



- ❑ *The initial set of stakeholders agrees that a system is to be produced.*
- ❑ *The stakeholders that will use the new system are identified.*
- ❑ *The stakeholders that will fund the initial work on the new system are identified.*
- ❑ *There is a clear opportunity for the new system to address.*

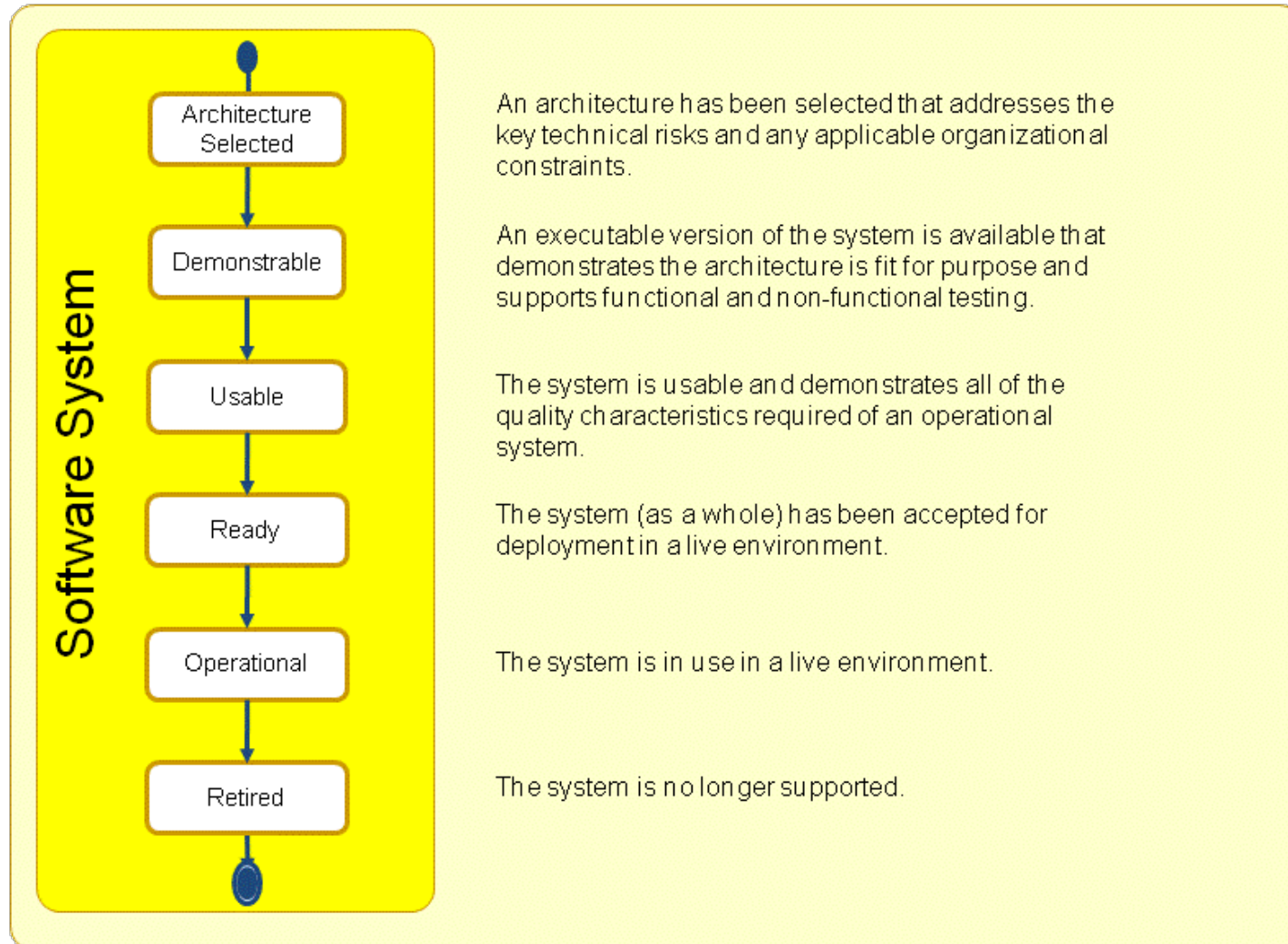
Checklist for requirements states



- ❑ *The stakeholders involved in developing the new system are identified.*
- ❑ *The stakeholders agree on the purpose of the new system.*
- ❑ *It is clear what success is for the new system.*
- ❑ *The stakeholders have a shared understanding of the extent of the proposed solution.*
- ❑ *The way the requirements will be described is agreed upon.*
- ❑ *The mechanisms for managing the requirements are in place.*
- ❑ *The prioritization scheme is clear.*
- ❑ *Constraints are identified and considered.*
- ❑ *Assumptions are clearly stated.*

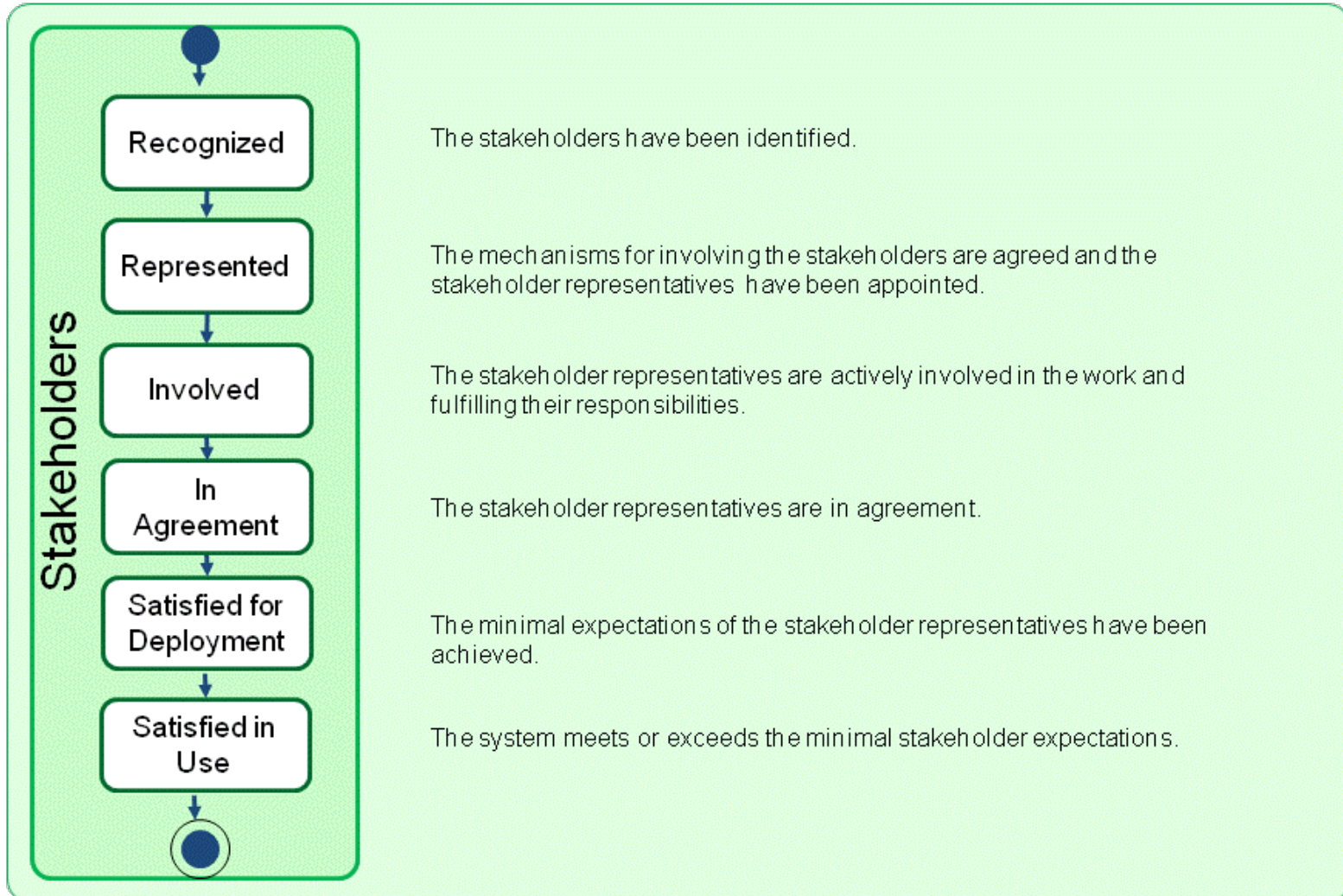
Source of picture: Ivar Jacobsson International

Software system



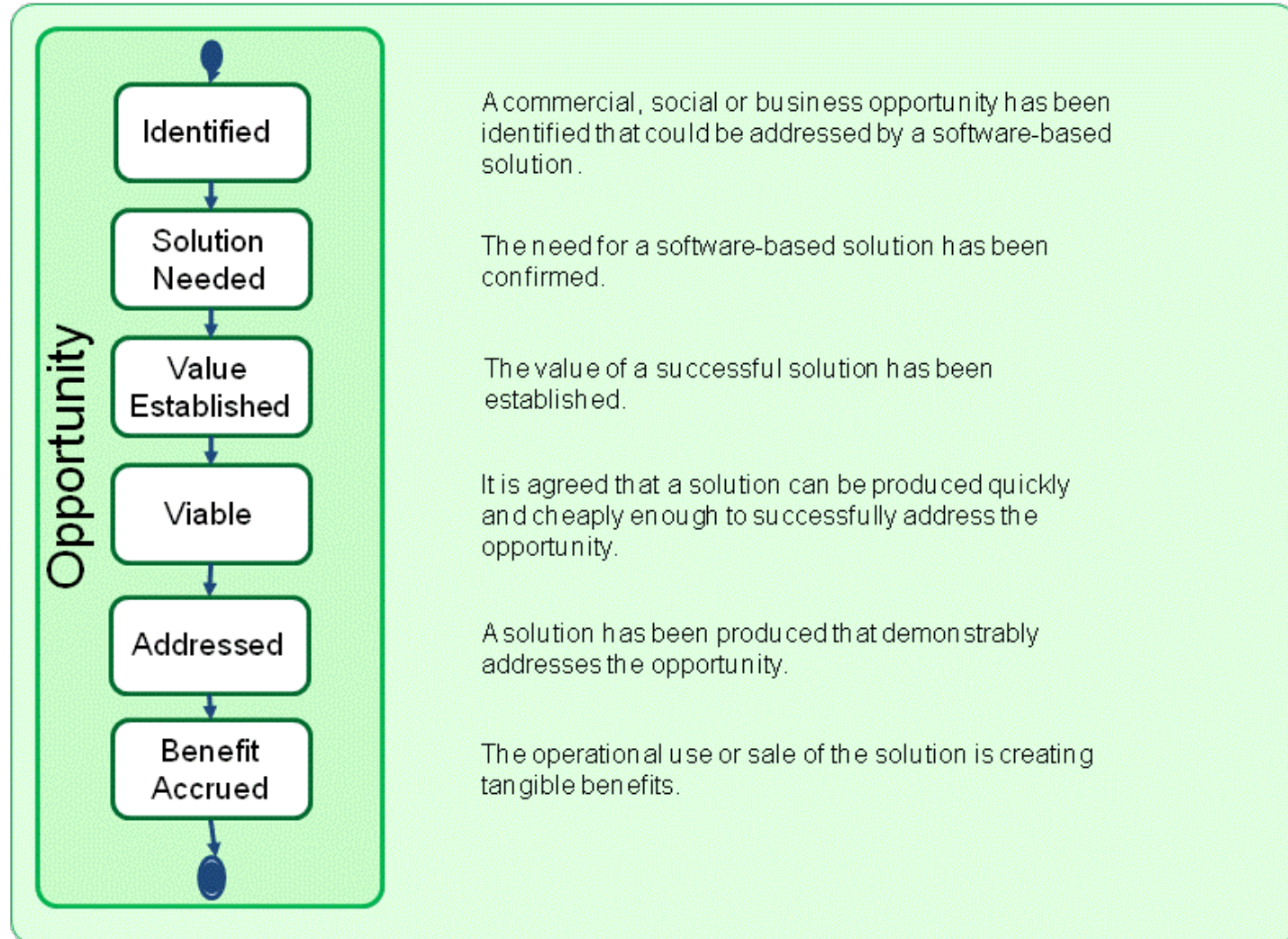
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Stakeholders

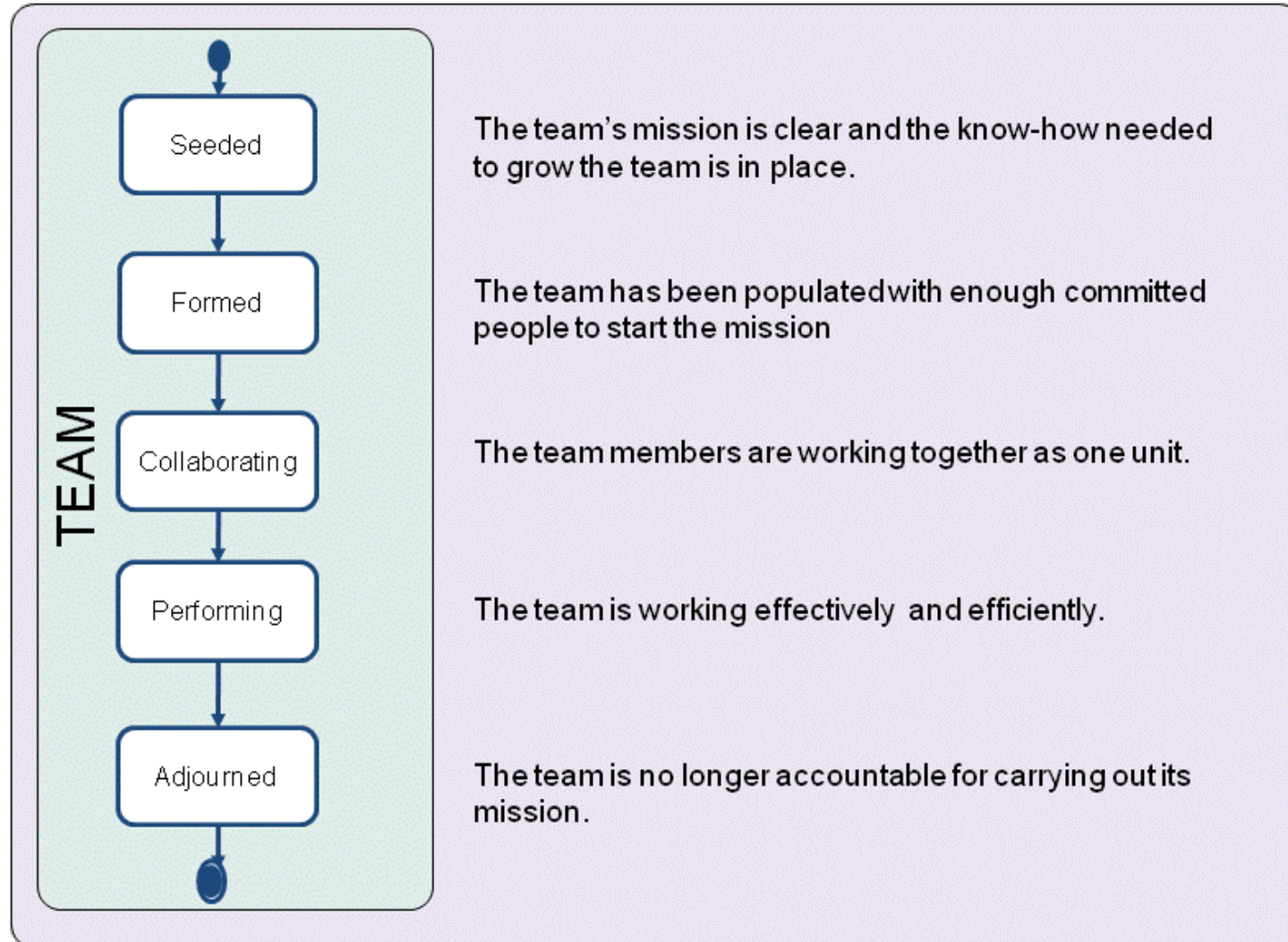


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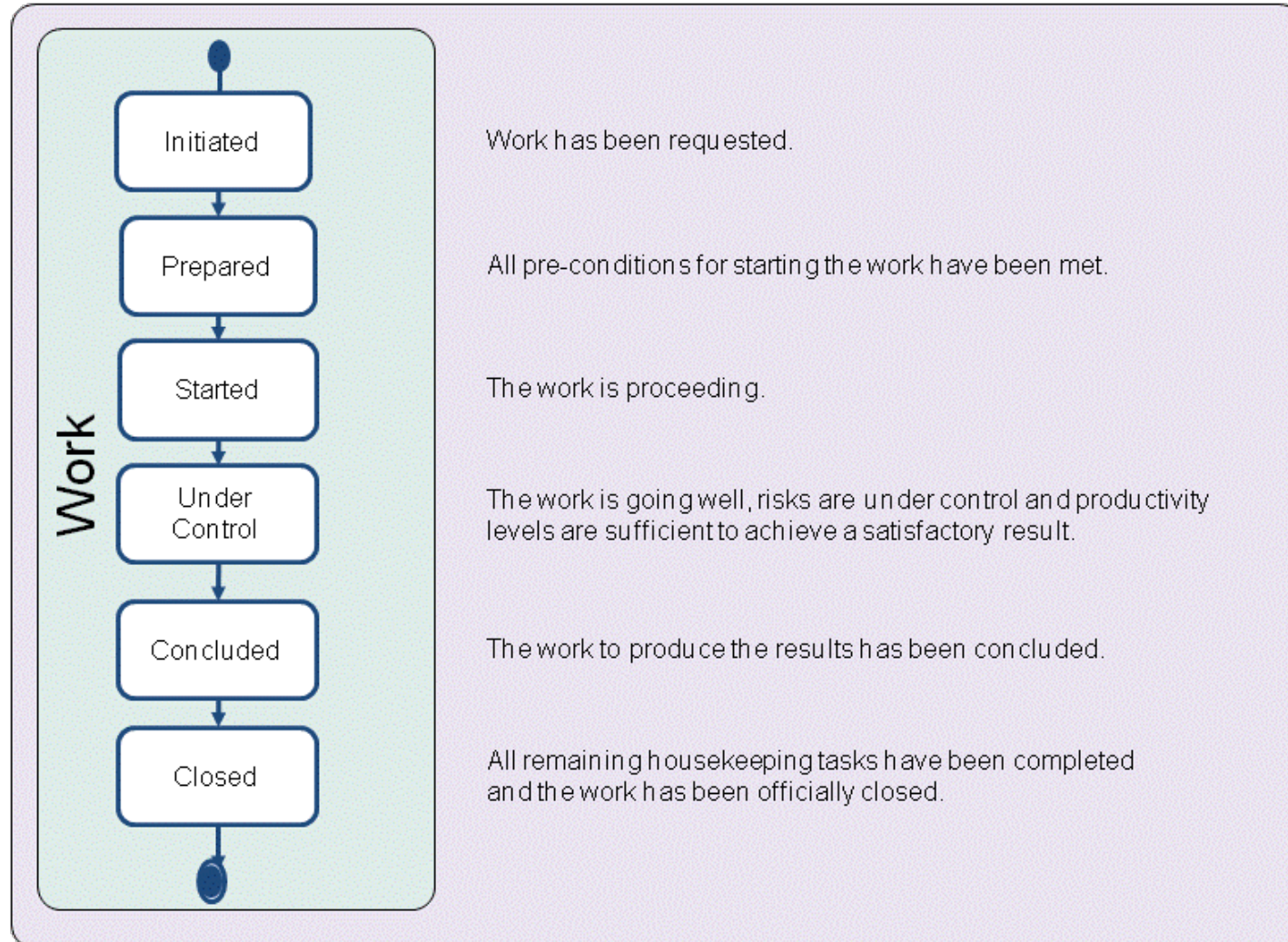
Opportunity



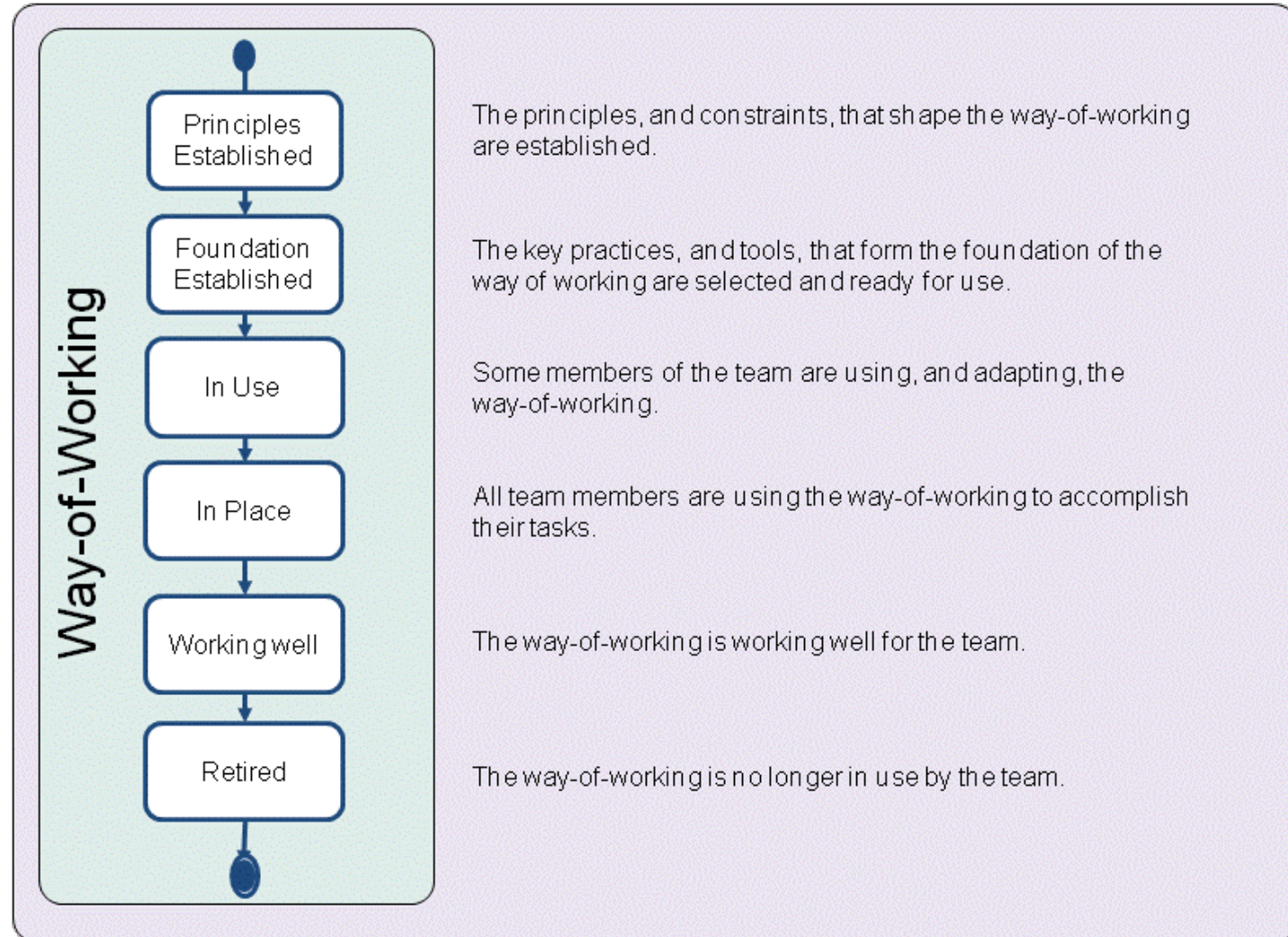
Team



Work



Way of Working



What is the real situation

Requirements

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Software System

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Work

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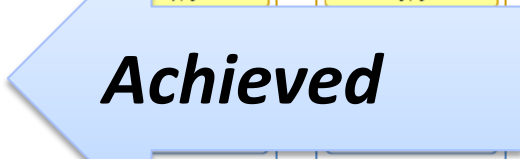
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Plan: Determine Current State

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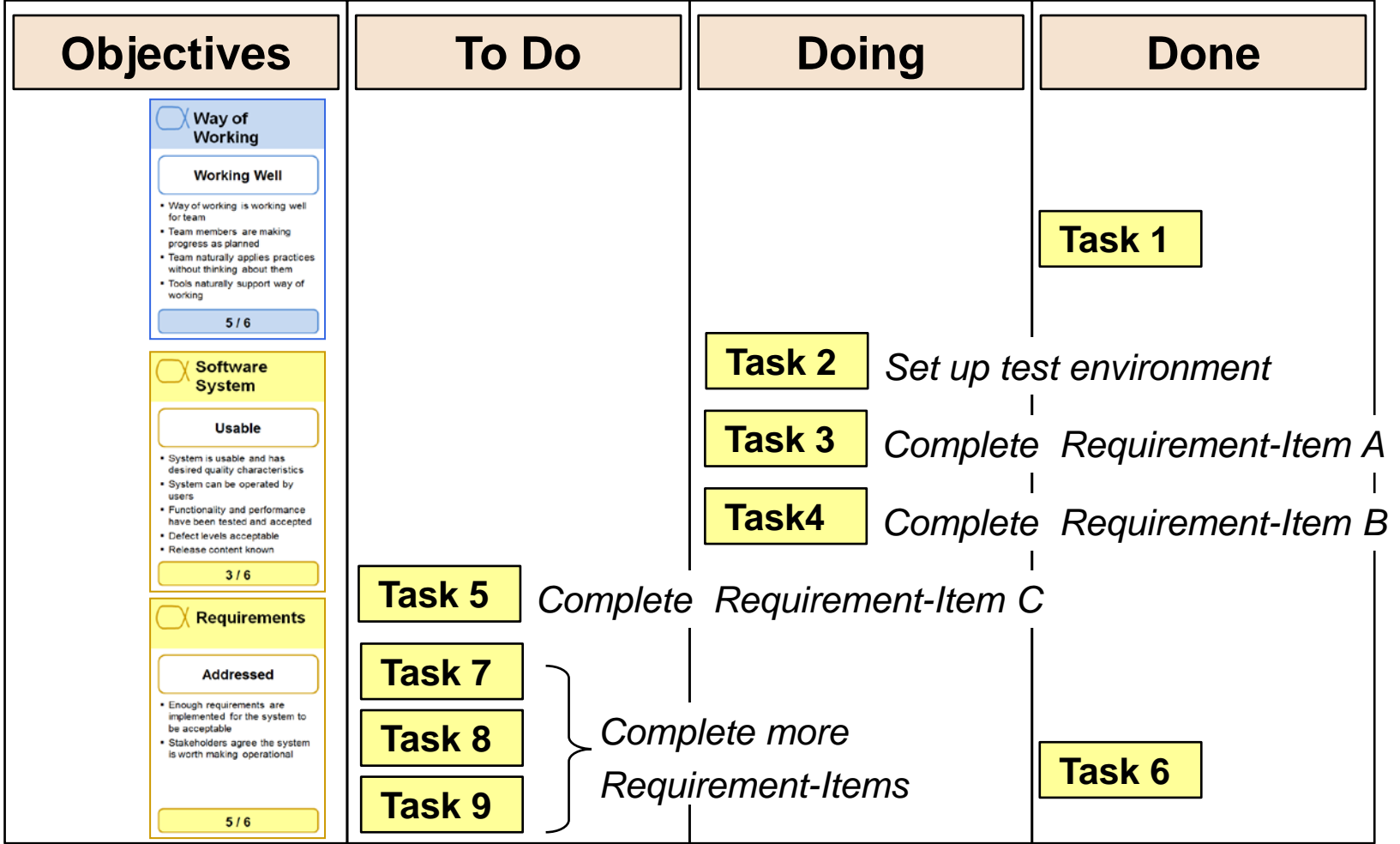
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Identify States by Applying State Cards

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Tasks and Sub-Alphas



Exercise: How would you like your life-cycle?

Prestudy

Requirements

Conceived

- The need for a new system is clear
- Users are identified
- Initial sponsors are identified

1 / 6

Software System

Usable

- System is usable and has desired quality characteristics
- System can be operated by users
- Functionality and performance have been tested and accepted
- Defect levels acceptable
- Release content known

3 / 6

Iteration 1

Requirements

Conceived

- The need for a new system is clear
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- Initial sponsors are identified

1 / 6

Software System

Usable

- System is usable and has desired quality characteristics
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- Release content known

3 / 6

Software System

Usable

- System is usable and has desired quality characteristics
- System can be operated by users
- Functionality and performance have been tested and accepted
- Defect levels acceptable
- Release content known

3 / 6

Work

Prepared

- Cost & effort estimated
- Funding and resources to start work in place
- Acceptance criteria understood
- Governance procedures agreed
- Risk exposure understood
- Dependencies clear

2 / 6

Team

Performing

- Team working efficiently and effectively
- Adapts to changing context
- Produce high quality output
- Minimal backtracking and re-work
- Waste continually eliminated

4 / 5

Iteration 2

Requirements

Conceived

- The need for a new system is clear
- Users are identified
- Initial sponsors are identified

1 / 6

Team

Performing

- Team working efficiently and effectively
- Adapts to changing context
- Produce high quality output
- Minimal backtracking and re-work
- Waste continually eliminated

4 / 5

Iteration 3

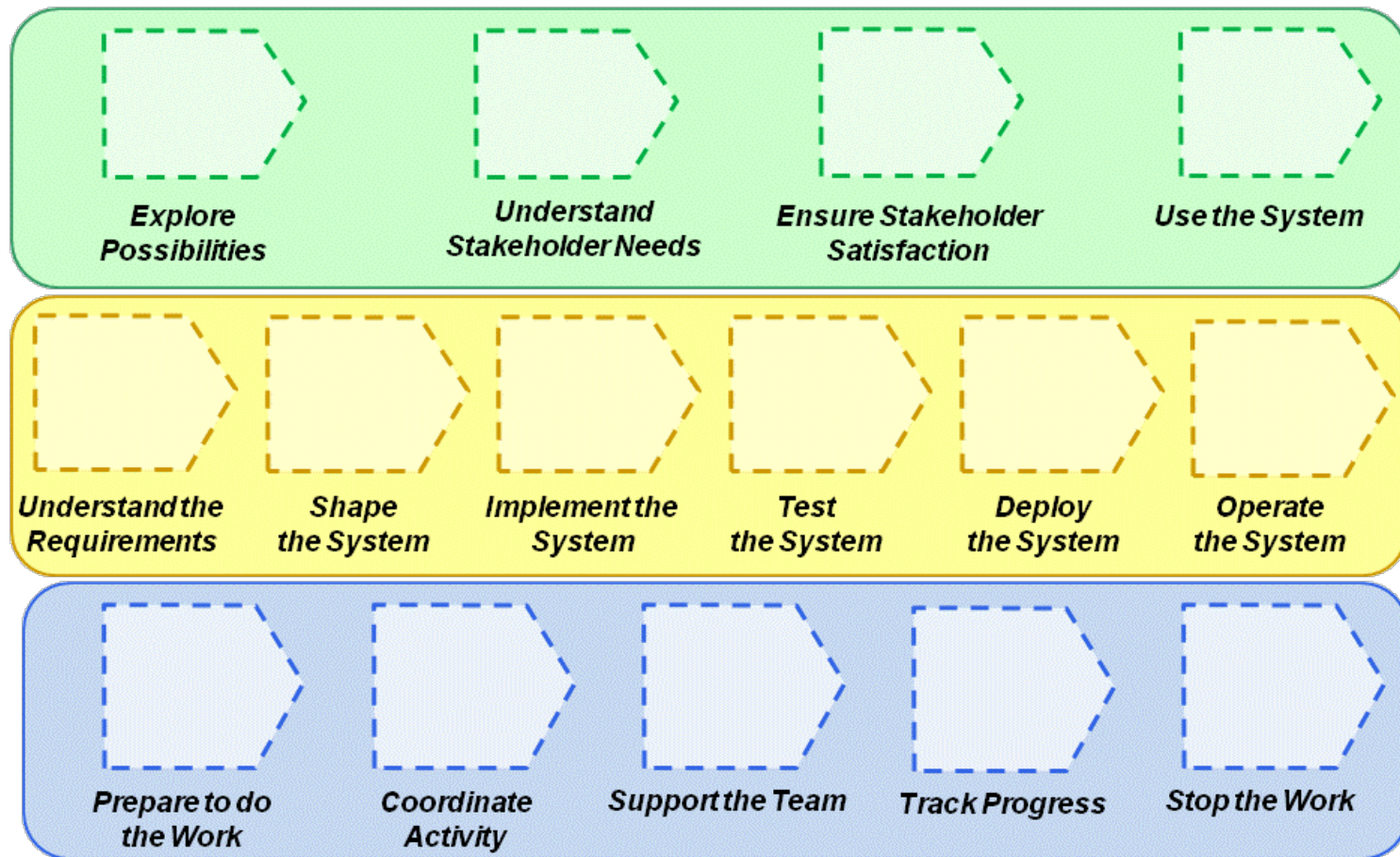
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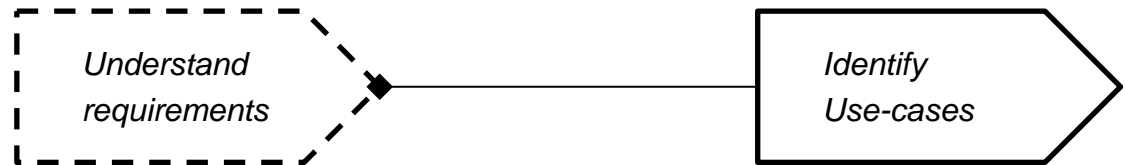
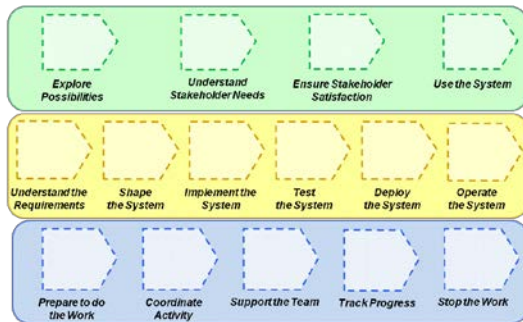
3 / 6

Activity spaces: things to do



Classification of concrete Activities

- From earlier practice and/or theoretical studies



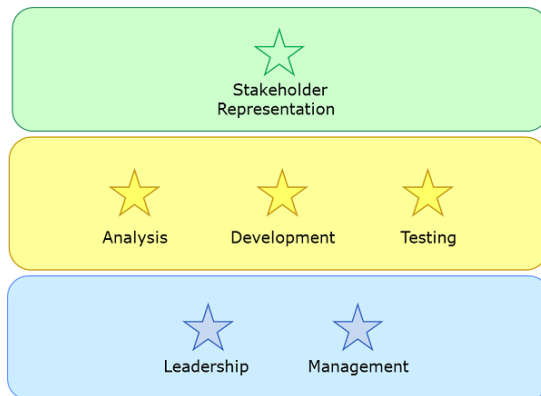
- Some are specified in a document
- Some are specified on a card
- Some are just mentioned
- Some are unspoken, common-ware

Kernel competencies



Formal usage

- Make a rating of competency levels needed for the roles
- Make an (honest) individual rating
- Assign the best-fit roles
- Make a gap analysis
- Develop an education plan





Linköping University

expanding reality

www.liu.se