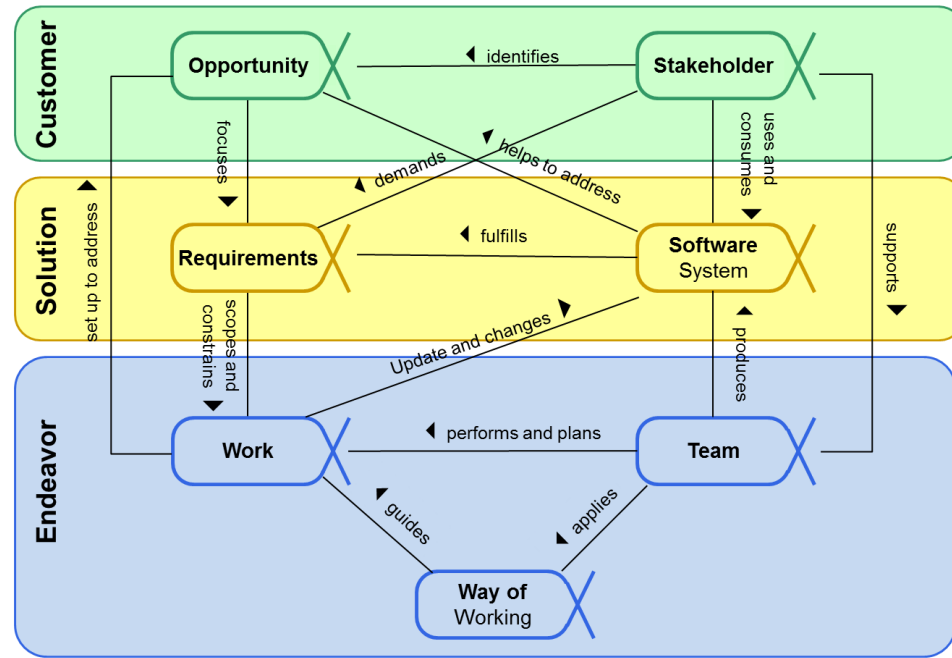


Software Engineering Kernel



SEM AT

Opportunity

Identified

Solution Needed

Value Established

Viable

Addressed

Benefit Accrued

The set of circumstances that makes it appropriate to develop or change a software system.

The opportunity:

- Unites and motivates the stakeholders
- Has tangible benefit for the stakeholders
- Provides the justification for the system's development
- Establishes the value of the proposed system
- Represents the team's shared understanding of the stakeholder's needs

SEM AT

Stakeholders

Recognized

Represented

Involved

In Agreement

Satisfied for Deployment

Satisfied in Use

The people, groups, or organizations who affect or are affected by a software system.

The stakeholders:

- Provide the opportunity and are the source of the requirements
- Use and consume the software system
- Fund the development of the software system
- Actively represent the groups and organizations affected by the software system
- Are actively involved all the way through the endeavor
- Have representatives that collaborate with the team to reach agreement on an acceptable system

SEM AT

Requirements

Conceived

Bounded

Coherent

Acceptable

Addressed

Fulfilled

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

The requirements:

- Establish a shared understanding of what the software system must do
- Communicate the intent of the software system to be produced
- Define the capabilities, services and qualities that the stakeholders desire from the system
- Are organized to allow the scope of the software system to be managed
- Drive the development and testing of the system

SEM AT

Software System



- Architecture Selected
- Demonstrable
- Useable
- Ready
- Operational
- Retired

A system made up of software, hardware, and data that provides its primary value by the execution of the software.

The software system:

- Is the primary product of any software engineering endeavor
- Is structured, designed and implemented to fulfil the requirements
- Is architected to be maintainable, extensible and testable
- Provides value to its users and other stakeholders
- Should be kept bug free and easy to use
- Can be part of a larger software, hardware or business solution

SEMAT

Team



- Seeded
- Formed
- Collaborating
- Performing
- Adjourned

The group of people actively engaged in the development, maintenance, delivery or support of a specific software system.

The team:

- Is formed to complete a mission
- Is made up of one or more team members who collaborate together to complete their shared mission
- Is responsible for completing its work to an acceptable standard
- Supports its stakeholders in exploiting the opportunities and addressing the requirements
- Owns and continually improves its way-of-working

SEMAT

Work



- Initiated
- Prepared
- Started
- Under Control
- Concluded
- Closed

Activity involving mental or physical effort done in order to achieve a result.

The work:

- Is everything that the team does to produce a software system
- Is planned and performed by the team
- Is guided by the practices that make up the team's way-of-working
- Is sizeable, estimable and track-able
- Is broken up to minimize dependencies and reduce risk

SEMAT

Way of Working



- Principles Established
- Foundation Established
- In Use
- In Place
- Working Well
- Retired

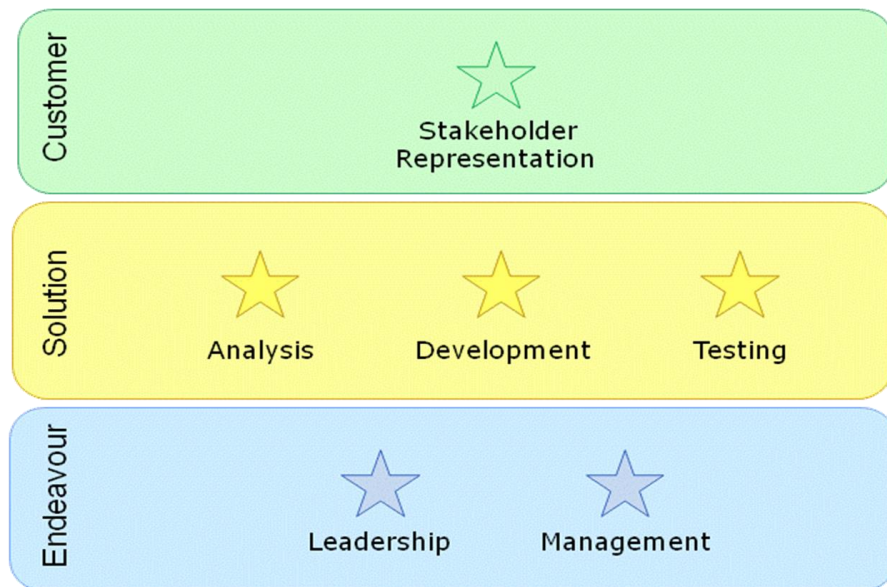
The tailored set of practices and tools used by the team members to guide and support their work.

The way of working:

- Helps the team be effective and work well together
- Evolves as the team understands its mission and environment, and undertakes its work
- Is continually inspected, adapted and improved
- Is owned and agreed by the team
- Reflects organizational policies and standards
- Reduces risk and helps to eliminate waste

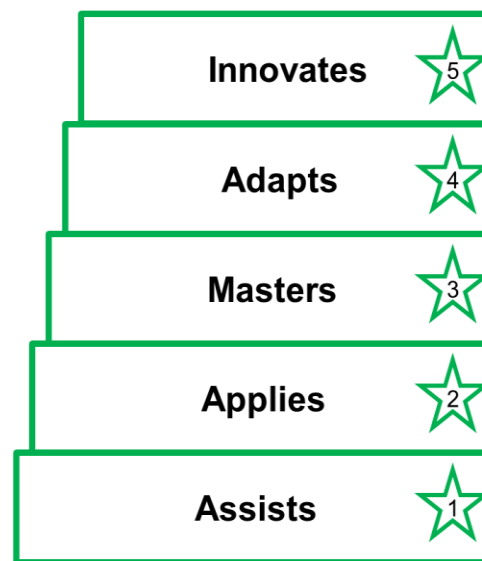
SEMAT

Competency Overview



SEM T

Stakeholder Representation



The ability to gather, communicate and balance the needs of other stakeholders, and accurately represent their views.

People with this competency help:

- The team to understand:
 - the business opportunity
 - the complexity and needs of the customers, users and other stakeholders
 - how well the system produced addresses the stakeholders' needs
- Negotiate and prioritize the requirements
- Interact with the stakeholders and developers about the solution to be developed

SEM T

Analysis



The ability to understand opportunities and their related stakeholder needs, and transform them into an agreed and consistent set of requirements.

People with this competency help:

- Identify and understand needs and opportunities
- Identify the root causes of problems
- Capture, understand and communicate requirements
- Create and agree on specifications and models
- Visualize solutions and understand their impact

SEM T

Development



The ability to design and program effective software systems following the standards and norms agreed by the team.

People with this competency help:

- Design and code software systems
- Formulate and/or evaluate strategies for choosing an appropriate design pattern or for combining design patterns
- Design and leverage technical solutions
- Troubleshoot and resolve coding problems

SEM T

★ Testing



The ability to test a system, verifying that it is usable and that it meets the requirements.

People with this competency help:

- Validate that the requirements and user needs are met
- Test the system
- Create the correct tests to efficiently verify the requirements
- Decide what, when and how to test
- Find defects and understand the quality of the system produced

★ Leadership

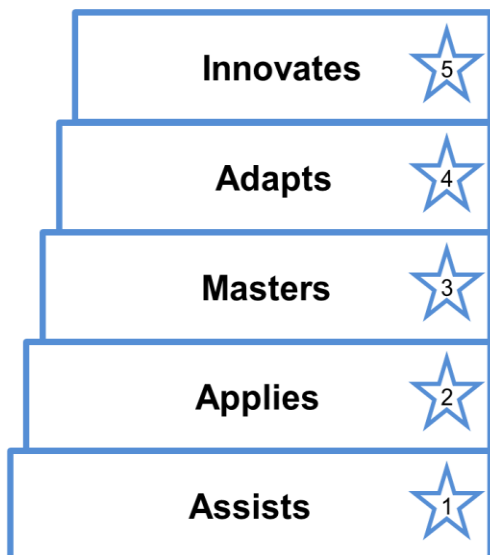


The ability to inspire and motivate a group of people to achieve a successful conclusion to their work and to meet their objectives.

People with this competency help:

- Resolve conflicts
- Inspire people to do their work
- Make sure that all team members are effective in their assignments
- Make and meet commitments
- Resolve any impediments or issues holding up the team's work
- The team to interact with stakeholders to shape priorities, report progress and respond to challenges

★ Management



The ability to coordinate, plan and track the work done by a team.

People with this competency help:

- Plan and coordinate activities over a defined period of time
- Track work completed and compare to plan
- Replan the work if necessary
- Proactively manage risks
- Account for time and money spent
- Interact with stakeholders to report progress