Agile and SEMAT Perfect Partners

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with
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The SEMAT initiative

Software Engineering Method And Theory

Founded in September 2009:
Ivar Jacobson – Bertrand Meyer – Richard Soley
40 individual signatories
2,000 supporters – 20 corporate signatories – 20 academic signatories
What is SEMAT?

Let’s wait a little by getting into what it is
Let’s instead start by saying
• It doesn’t compete with any method – agile or pre-agile
• Instead it powers other methods/practices – agile or pre-agile

DSDM  Scrum
Unified Process  Architecture
Prince  Disciplined Agile Delivery
Use Cases 2.0  System of Systems
User Stories  Scaled Agile Framework
There are particularly three things that are new with SEMAT

1. SEMAT relies on a common ground or a kernel

2. The kernel is actionable

3. It relies on an intuitive graphical syntax
1. SEMAT relies on a common ground or a kernel

2. The kernel is actionable

3. It relies on an intuitive graphical syntax
A Specific Problem: We have no Common Ground

Six Sigma  Scrum

Pair Programming  Waterfall

ATDD  Kanban

User Stories  Use Cases

CMMI  SAF e

Spiral

Creating winning teams.
SEMAT provides a Common Ground/a Kernel

Common Ground – The Kernel

User Stories

Use Cases

Pair Programming

ATDD

CMMI

Scrum
• Things that are **universal to all software development endeavors.**
On top of the Kernel ...

- Practices can be added to create your specific Way of Working.
- Practices such as Scrum, User Stories, Test-Driven Development, etc.
- But that is not the subject of today. 😞
There are particularly three things that are new with SEMAT

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The Kernel is more than a static model – it is actionable
The alphas have states and checklists

- **Architecture Selected**
  - addresses the key technical risks and any constraints
  - proves architecture, concept and supports testing

- **Demonstrable**
  - demonstrates quality characteristics required
  - accepted for operational deployment

- **Usable**
  - in use in an operational environment

- **Ready**
  - no longer supported

- **Operational**

- **Retired**

Software Development is a multi-dimensional Endeavor

Every Alpha represents one dimension

http://sematacc.meteor.com/
There are particularly three things that are new with SEMAT

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Play the Games

• You can play many games

<table>
<thead>
<tr>
<th>Progress Poker</th>
<th>Lifecycle Layout</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chase the State</td>
<td>Milestone Mapping</td>
</tr>
<tr>
<td>Objective Go</td>
<td>Health Monitoring</td>
</tr>
<tr>
<td>Checkpoint</td>
<td>And more……</td>
</tr>
<tr>
<td>Construction</td>
<td></td>
</tr>
</tbody>
</table>

• http://www.ivarjacobson.com/alphastatecards/
Plan: Determine Current State

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognized</td>
<td>Identified</td>
</tr>
<tr>
<td>Represented</td>
<td>Solution Needed</td>
</tr>
<tr>
<td>Involved</td>
<td>Value Established</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Software System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conceived</td>
<td>Architecture Selected</td>
</tr>
<tr>
<td>Bounded</td>
<td>Demonstrable</td>
</tr>
<tr>
<td>Coherent</td>
<td>Hirable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Work</th>
<th>Team</th>
<th>Way of Working</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiated</td>
<td>Seeded</td>
<td>Principles Established</td>
</tr>
<tr>
<td>Prepared</td>
<td>Formed</td>
<td>Foundation</td>
</tr>
</tbody>
</table>

App soon to be available
Plan: Determine Current State

All Alpha States Lined Up
Checkpoints for an example state

Viable

It is agreed that a solution can be produced quickly and cheaply enough to successfully address the opportunity.

- A solution has been outlined.
- The indications are that the solution can be developed and deployed within constraints.
- The risks associated with the solution are acceptable and manageable.
- The indicative (ball-park) costs of the solution are less than the anticipated value of the opportunity.
- The reasons for the development of a software-based solution are understood by all members of the team.
- It is clear that the pursuit of the opportunity is viable.
Plan: Determine Next State

Achieved States
- Recognized
- Represented
- Involved
- In Agreement

States
- Identified
- Solution Needed
- Value Established
- Viable

Next States to Achieve
- Satisfied for Deployment
- Addressed

Pending States
- Satisfied in Use
- Benefit Accrued

Requirements
- Conceived
- Bounded
- Coherent
- Acceptable

Software System
- Architecture Selected
- Demonstrable

Work
- Initiated
- Seeded
- Prepared
- Formed
- Started
- Collaborating
- In Use
- In Place

Team
- Under Control
- Performing
- Working well

Way of Working
- Principles Established
- Foundation Established
- In Place

Creating winning teams.
Plan: Determine How to Achieve Next State

Next States to Achieve

Satisfied for Deployment

The minimal expectations of the stakeholder representatives have been achieved.

- The stakeholder representatives provide feedback on the system from their stakeholder group perspective.
- The stakeholder representatives confirm that they agree that the system is ready for deployment.
Plan: Determine How to Achieve Next State

Next States to Achieve

Stakeholders
- Recognized
- Represented
- Involved
- In Agreement

Opportunity
- Identified
- Solution Needed
- Value Established
- Viable

Next States to Achieve

Requirements
- Conceived

Software System
- Architecture Selected

Work
- Initiated
- Seeded
- Formed
- Collaborating

Team
- Foundation Established
- In Use
- In Place

Way of Working
- Principles Established
- Performing
- Working well

Benefit Accrued
- Satisfied in Use
- Satisfied for Deployment
- Addressed

Addressed
A solution has been produced that demonstrably addresses the opportunity.

- A usable system that demonstrably addresses the opportunity is available.
- The stakeholders agree that the available solution is worth deploying.
- The stakeholders are satisfied that the solution produced addresses the opportunity.
Plan: Determine How to Achieve Next State
Plan: Determine How to Achieve Next State

Next States to Achieve

- Stakeholders
  - Recognized
  - Represented
  - Involved
  - In Agreement
  - Satisfied for Deployment
  - Addressed

- Opportunity
  - Identified
  - Solution Needed
  - Value Established
  - Viable
  - Addressed

- Requirements
  - Conceived
  - Bounded
  - Coherent
  - Acceptable
  - Addressed

- Software System
  - Architecture Selected
  - Fulfilled

- Work
  - Initiated
  - Seed

- Team
  - Principles Established
  - Foundation Established
  - In Use
  - In Place

- Way of Working
  - Working well
  - Retired

Addressed

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

- Enough of the requirements are addressed for the resulting system to be acceptable to the stakeholders.
- The stakeholders accept the requirements as accurately reflecting what the system does and does not do.
- The set of requirement items implemented provide clear value to the stakeholders.
- The system implementing the requirements is accepted by the stakeholders as worth making operational.
Applying the Essence

Helping Agile Teams

And Agile Organizations

Creating winning teams.
Applying the Essence

Helping Agile Teams

And Agile Organizations
Taking a holistic approach and exploiting the common ground

All 7 CMU-SV practicum teams used different sets of s/w engineering practices

Progress & Health
- Measure progress & health of your teams regardless of practices selected.

Avoiding Problems
- Detect systemic problems early & take appropriate action
Getting Started

Understanding where you are
• What’s already been achieved?
• What are the risks?

In Action:
• An internal coach in a large telecom product company.

Benefits:
• Detected risks in working with stakeholders.
Getting Started

Understanding where you are

• What’s already been achieved?
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In Action:

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Benefits:

• Detected risks in working with stakeholders.
Scaling Up

- How to help large development team collaborate

**In Action:**
- Large development involving offshore members (50+200) developers

**Benefits:**
- Cards facilitate describing new way of working
- Cards help new (feature) team leaders guide members
The Kernel provides a shared frame of reference

Many Ways of Working on the same kernel.
SEMAT for Agile Teams - Summary

• **Understand where you area and where you are going**
  – Understand what needs to be addressed
  – Holistically track progress and health
  – Keep projects in balance and avoid catastrophic failures
  – Form good sprint goals and other objectives
  – Bring people together

• **Learn and share your way of development**
  – Share and compare practices
  – Build effective ways of working
  – Define practice independent checkpoints, and lifecycles

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**The Value of Essence**
Applying the Essence

Helping Agile Teams

And Agile Organizations
There are several case studies

- KPN, a large telecom operator relying on outsourcing
- Fujitsu UK
- Munich Re, a large insurance company working all around the world
The challenge

- Globally distributed Application Dev’t
- High-levels of outsourcing & off-shoring
- Service organization

The solution

- Agile starter packs
- Practice Exchange
- Governance as a first class citizen
The challenge

• Globally distributed Application Dev’t
• High-levels of outsourcing & off-shoring
• Service organization

The solution

• Agile starter packs
• Practice Exchange
• Governance as a first class citizen
• Define practice independent governance procedures and quality gates.
• More readily and easily form teams and mobilize teams of teams.
• Scale agile approaches across teams of teams and systems of systems.
• Select enterprise level tooling.
Conclusion:
SEMAT and Agile Perfect Partners
Get the cards and play the games

http://www.ivarjacobson.com/alphastatecards/

• Join the community and get involved
• Become a supporter.
  Go to www.semat.org
• Or read the book
Thank You for Your Time!

www.ivarjacobson.com
Questions

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  - www.omg.org
- SEMAT website
  - www.semat.org