Agile in Automotive: Find the right balance

Arina.Bondar@methodpark.de
Otmar.Seckinger@methodpark.de
Method Park Consulting
# Agile Seminars and Workshops

## Agile Development in regulated Environment:

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<tr>
<th>Date</th>
<th>Location</th>
<th>Language</th>
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## Introduction to Agile Methods

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<tr>
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## Expert Workshop: Agile in regulated Environment

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Overview

Hazard analysis and risk assessment

Functional safety concept

Operation, service and decommissioning

Production

Production planning

Operation planning

Product development: system level

SW level

Hardware level

Safety validation

Controllability allocation to other technologies

External measures

In the case of a modification, back to the appropriate lifecycle phase

Concept phase

Product development

After the release for production

Item definition

Initiation of the safety lifecycle

Management of functional safety

Functional safety assessment

Release for production

Development

Remote Development

Research

Product Management

Sales, Marketing...

what else?

System Development

ISO26262
„We can‘t be agile. We are bound to SPICE compliance!“
Evaluation: ASPICE 3.0 – Agile methods

- SWE.1 Software requirements analysis: 81%
- SWE.2 Draft of software design: 63%
- SWE.3 Software detailed design and unit construction: 66%
- SWE.4 Software unit verification: 79%
- SWE.5 Software integration and test: 82%
- SWE.6 Software qualification test: 79%
- SUP.1 Quality assurance: 81%
- SUP.8 Configuration management: 86%
- SUP.9 Problem resolution management: 93%
- SUP.10 Change management: 90%
- MAN.3 Project management: 94%

Contradiction between Agile and SPICE:
- N: Not supported or required by Agile Methods → additional measures need to be taken
- P: Is supported by Agile Methods, however certain flanked measures are required
- L: Not applicable
- F: Is supported by Agile Methods

assessed on PA 1.1
Example 1: Process and product quality assurance in agile projects

Process and Quality Requirements

Definition of Done for the Release

Product Backlog

Sprint Backlog (Team 1)

Sprint Backlog (Team n)

Acceptance criteria

Peer reviews

Work Product Quality

Process Quality

Sprint Review/Demo

Retrospective

Sprint Review/Demo

Retrospective

Example 1: Process and product quality assurance in agile projects
Example 2: Term „Process“ - 3 levels of abstraction (ASPICE 3.0)

The “WHAT” (the goals):
[what is to be done, why, and what are the technical dependencies]

The “HOW” (the way to reach the goals):
[methods, tools, templates, metrics, roles & skill definitions, when to do all this on logical timeline to form specific workflows including process tailoring guidance etc.]

The “DOING”:
[tailoring, set-up and project performance according to the tailored method]

Example 2: ASPICE Level 3 Standard Process

**Agile**
- **WHAT**
  - Standards, Policies, Regulations
  - Quality and Process Department
- **HOW**
  - Try
  - Sprint
  - Sprint Retrospective

**Traditional**
- **WHAT**
  - Enforced Time - Structure
  - Method Database
  - Quality and Process Department
- **HOW**
  - Adopt
  - Fixed Roles
  - Team

**DOING**
- Adopt
- Inspect
- Try
- Sprint
- Sprint Retrospective
- Team
- Enforced Time - Structure
- Method Database
“...SPICE and Agile complement each other so practical solutions should combine and exploit both sources” [intacs, 2014]


Wrong Understanding:
“Agile means quick and dirty”
“Don’t think, just follow the process”
Functional Safety (ISO 26262)
„I won’t use agile methods if I can get in jail for doings so! "

ISO26262!

Agile!
Safety Lifecycle Overview

1. Predefined Phases
   - Concept

2. Upfront (Safety) Architecture
   - Item definition
   - Initiation of the safety lifecycle
   - Hazard analysis and risk assessment
   - Functional safety concept

3. Defined Tools and Methods
   - Upfront Planning
   - V-Model Development
   - Process Assessments

4. Documentation Requirements
   - Separate Validation

5. Late Changes are not welcomed

Source: ISO/FDIS 26262-2 – BL18
Example 1: V-Model Development

The system development process is based on the concept of a V-model [...] Source: ISO 26262-2:2011(E)

- V-Model does not mean Waterfall
- Iterations are foreseen in the ISO26262

⇒ No contradiction to agile development here
Example 2: Safety roles in agile?

As the term “safety manager” is defined as a role (see ISO 26262-1), its assignment can be split between different persons in a matrix organization.

- However, the Team role in Scrum will not be sufficient
- Often used terms in agile:
  - T-Shaped Engineer

Source: ISO 26262-2:2011(E)
Example 3: Upfront Planning

The planning of a safety activity shall include describing:

a) the objective;
b) the dependencies on other activities or information;
c) the resource responsible for performing the activity;
d) the required resources for performing the activity;
e) the starting point in time and duration; and

Source: ISO 26262-2:2011(E)

⇒ Classic project planning
⇒ Maybe mitigated by defined iterations and regular activities within the iterations. But still doesn’t fit well.

BTW: In agile we have persons. Not resources.
Agile vs. ISO 26262

Craftsmanship helps to get the balance
System Development
„Agile works for software development, but we create systems here!"
Typical System Topics

- Prepare Production
- System Validation (e.g. durability tests)
- System Integration
- Purchasing and Supplier Mgmt.
- Supplier Selection
- HW-SW-Mechanic Interfaces
- Release Planning
Example 1: Supplier Selection

**Traditional:**

Technology Evaluation → Technology Selection → Supplier Evaluation → Supplier Selection

- Late interaction with purchasing
- Information gets lost between Development and Purchasing
- Often time pressure

**More agile:**

Supply Evaluation ↔ Technology Evaluation

Technology Selection ↔ Supplier Selection

- Purchasing is involved in the earlier phases
- Establish working interaction with supplier
Example 2: System Validation

- Several types of tests cannot be performed iteratively
  - Durability Tests (lifetime tests)
  - Test drives on specific tracks
  - Production tests
+ Suitable Tools and Processes need to be in place
+ Good Test Documentation is required

**Some mitigations:**
⇒ Early test design „Test first“
⇒ High Interaction / communication between development and test
⇒ Test simulation and automation where possible
Agile and System Development

System?

Agile?
What else?
Large Scale Organizations

- Hierarchies, Command and Control
- Politics (incl. Budget and Resource Fights)
Being a supplier

Flexible Time

Fixed Functions

Flexible Quality?

Fixed Quality?

Traditional

VS.

Fixed Quality

Flexible Time

or

Flexible Functions

Agile

„Quality is a standard, not a variable“

Change requests after the last responsible moment

Unpredictable interaction and escalations

Short term requests directly to developers

VS.

Decide at the last responsible moment

Frequent and early interaction

Discipline (e.g. undisturbed sprints, SPOC,..)
"We succeed by working together"

COLLABORATION
- Teams
- Diversity
- Egalitarian
- Trust
- People
- Interaction
- Affiliation
- Partnership

People oriented

Reality oriented

"We succeed by getting and keeping control"

CONTROL
- Process
- Stability
- Order
- Predictability
- Hierarchical
- Standardization
- Security
- Power

Company oriented

"We succeed by being the best"

COMPETENCE
- Efficiency
- Professionalism
- Meritocracy
- Achievement
- Be the Best
- Expertise
- Craftsmanship
- Dedication
- Purpose/Faith
- Subjectivity
- Creativity
- Let things Evolve

Possibility oriented

"We succeed by growing people who fulfil our vision"

CULTIVATION
- Diversity
- Egalitarian
- Trust
- People
- Interaction
- Affiliation
- Partnership

Source: http://agilitrix.com
Conclusion

ISO 26262 😊  System 😊  Agile 😊  SPICE 😊
Agile
im regulatorischen Umfeld
Lösungen für komplexe Setups

### EXPERTEN-WORKSHOP:
BRANCHENAUSTAUSCH – AGILITÄT IM REGULIERTEN UMFELD

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<tr>
<td>Do, 09.06.16</td>
<td>11:30 - 17:00 Uhr</td>
<td>Hopfenstraße 6, 80335 München</td>
<td>Otmar Seckinger / Arina Bondar</td>
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</tbody>
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Sie wollen Ihre Entwicklung möglichst agil gestalten, stoßen dabei aber auf Herausforderungen, die für Ihr Branchen- und Entwicklungsumfeld spezifisch sind? Bei vielen Firmen in regulierten Bereichen herrscht aktuell große Unsicherheit, inwieweit Agilität Anwendung finden kann und ob deren Vorteile hier auch ausreichend durchschlagen:

- Wie vertragen sich die Anforderungen der funktionalen Sicherheit mit Scrum?
- Kann Kanban helfen die Systementwicklung agiler zu gestalten?
- Wie besteht man ein Automotive SPICE® V3.0 Assessment mit einer agilen Entwicklung?

In diesem Experten-Workshop können Sie Fragen und Anregungen („Call for Problems“) aus Ihrem Arbeitsalltag platzieren und mit den anderen Teilnehmern diskutieren. In Gruppenarbeit klären Sie mithilfe unserer Experten die einzelnen Herausforderungen und erarbeiten mögliche Lösungsansätze dazu. Die praxisorientierten Expertenvorträge und der angeregte Austausch bieten Ihnen für Ihr Unternehmen einen echten Mehrwert. Bei interessanten Gesprächen und Snacks klingt der Tag gemütlich aus.

Einsendetermin für Ihre Problem-Statements:
bis spätestens zum 31.05.16 an agile-experts@methodpark.de

Mehr Informationen finden Sie auf unserer Webseite: https://www.methodpark.de/agile-experts.html
Method Park bietet Ihnen:

- Beratung zur Kombination von agilem Vorgehen mit Standards und Normen (ISO 26262, ISO 15504, CMMI oder IEC 62304)
- Evaluation und GAP-Analysen agiler Prozesse
- Consulting und Coaching beim Roll-out agiler Praktiken
- Unterstützung bei der Tool-Auswahl, -Anpassung und -Evaluierung
- Angepasste Trainings und Seminare zur Einführung agiler Methoden in Ihrem Umfeld
OUR PHILOSOPHY IS SIMPLE AND SHORT

„ENABLER FOR INNOVATIVE SOFTWARE & SYSTEMS-ENGINEERING.“