intacs.info

International Assessor Certification Scheme™

AGILE SPICE™

An Add-on for and Bridge to AUTOMOTIVE SPICE™

Agile Work Management - ready for piloting

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How to use this booklet

AGL.1 Agile Work Management

The purpose of Agile Work Management is to collaboratively manage the work of a team (of teams) to develop iteratively within work boundaries, vision and strategic themes to generate business and customer value.

Agile Process Outcomes

[1] the scope of the work is defined and kept up to date.
[2] the right set of competencies and adequate resources are planned and adapted as needed.
[3] a work approach is defined and continuously improved.
[4] dependencies, interfaces, stakeholders and their commitment are planned for and monitored.
[5] ..,

Base practices

BP1

Identify Demand and Work Boundaries.

Identify the customer demand and work boundaries collaborating closely with stakeholders. Derive the vision and strategic themes linked to business and customer value. Keep demand, boundaries, vision, and strategic themes up to date. [OUTCOME 1]

Notes & Definitions:

1. *Collaboration can be internal and external; e.g., within a program, product line or organization, and together with (multiple) customers and suppliers.*
2. *A customer demand is a recorded customer statement on the problem to be solved.*
3. *A vision defines the product capabilities potentially leading to a successful solution.*
4. *Strategic themes are unique selling proposition. They typically run across iterations and address a mid and long-term perspective.*
5. ....

Agile Work Products: Product backlog, demand statement (e.g. includes agreed stakeholder goals), boundaries, vision and strategic themes

Supporting *Agile Principles 1, 2, 4, 10, 11 and ASPICE 3.1 Practices BP1, (BP3), BP7 and Outcomes 1, (2), (4), (5)*

Purpose: What benefit does this process offer?

Process outcomes: What are the typical process results?

[Outcome 1] refers to the agile process outcome No. 1

Base Practices: What are the expected practices to achieve the process purpose?

Notes & Definitions: How to interpret and apply the related Base Practice

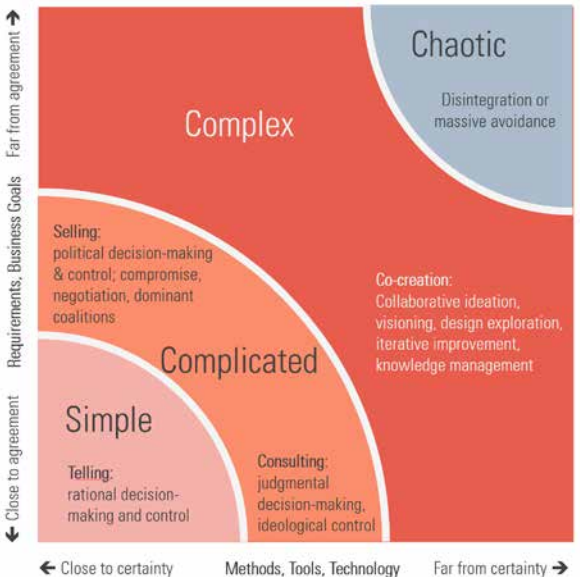
Agile Work Products: What are the typical agile artefacts?

Supporting: How does the Base Practice (including artefacts) maps to …

1. The agile principles (page ….)
2. The ASPICE 3.1 Base Practices (page xx) – direct (or indirect i.e. in brackets)
3. The ASPICE Process Outcomes (page xx) – fully, largely (or partly i.e. in brackets)

Agile SPICE™ is a bridge to Automotive SPICE™

- Growing complexity and faster changes during development drive increased use of agile approaches.
- OEMs ensure the overall quality and safety/security of those products, leading to increased pressure to show ASPICE capabilities.
- ASPICE as is can be applied and interpreted for any kind of development.
- However, both agile organizations and those in an agile transition struggle in implementing and interpreting ASPICE.
- There is a need to reduce misunderstandings and help to interpret the terminology for both sides.
- This bridge shall …
  - reduce the variation in interpretation of ASPICE assessors,
  - increase the acceptance of ASPICE in the agile community.



Stacey Matrix, developed by Ralph Stacey, Stacey RD. Strategic management and organisational dynamics: the challenge of complexity. 3rd ed. Harlow: Prentice Hall, 2002. Picture by Kugler Maag Cie GmbH 2019

Agile SPICE™ is an add-on for Automotive SPICE™ which helps OEMs to accept ratings based on agile practices.

Approach

1. Provide agile practices for the what and not the how
   - Condensing existing best agile concepts without favoring a specific one
2. Map agile practices to existing ASPICE practices
   - Ensuring comparability of ratings of agile and classical approaches to development work
   - OEMs accepting ratings based on agile practices
3. Rate agile practices and report ASPICE achievements

Initial scope (as first potentially shippable work increment)

- Agile Work Management (as bridge to MAN.3)

Agility is the timely adaption of an organization (or team) to an ever-changing environment while continuously delivering value to their customers at sustainable pace.

[Definition by Kugler Maag Cie and Knüvener Mackert.
Picture by Kugler Maag Cie GmbH 2019]

Benefits for agile teams or organisations

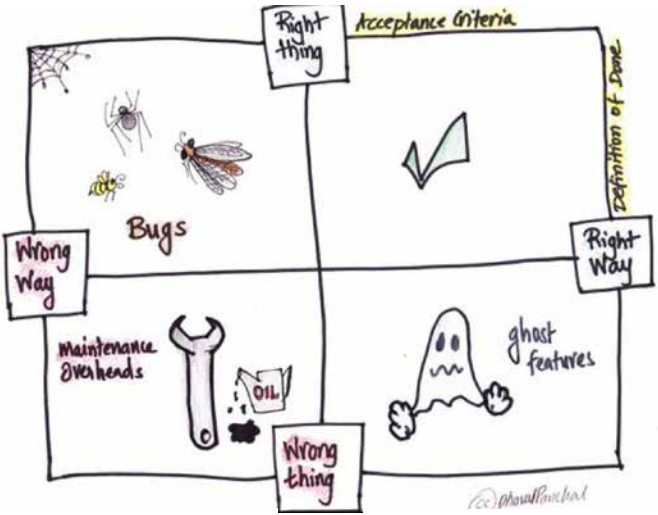
Approach

Practices describing „what“ is expected not the „how“

- Avoiding discussions about specific agile approaches
- Ensuring expected process capability by automotive industry

Helping implementing agile good practices and achieving ASPICE expectations at the same time

Resolving misunderstandings of how to implement and assess ASPICE processes in agile environments



Agile Principles for Automotive*

1. Our highest priority is to satisfy our customers through early and continuous delivery of valuable and usable system functions.

2. Requirement changes are mastered, prioritized and systematically integrated into our continuous development work. Agile processes make use of changes to the competitive advantage of the customer.

3. We deliver regularly usable and enhanced system features, preferring shorter time periods within a few weeks or months.

4. Experts from all domains should collaborate intensively during product development.

5. We organize the product development around motivated individuals. We design an environment and support to achieve maximum value. In doing so, we trust that the individuals do their jobs independently and in the best possible way.

6. The most efficient and effective way to communicate information to and within a development team is face-to-face.

7. Usable and extended system functions are the most important measure of progress. Agile processes promote sustainable development.

8. Clients, developers and users should be able to maintain a steady pace for an unlimited period of time.

9. Continuous attention to technical excellence and good design promotes agility.

10. Simplicity - the art of maximizing the amount of work not done - is essential.

11. The best architectures, requirements and designs are created by self-organized teams.

12. At regular intervals, the team reflects on how it can become more effective and adjusts its behavior accordingly

* Adapted by Kugler Maag Cie

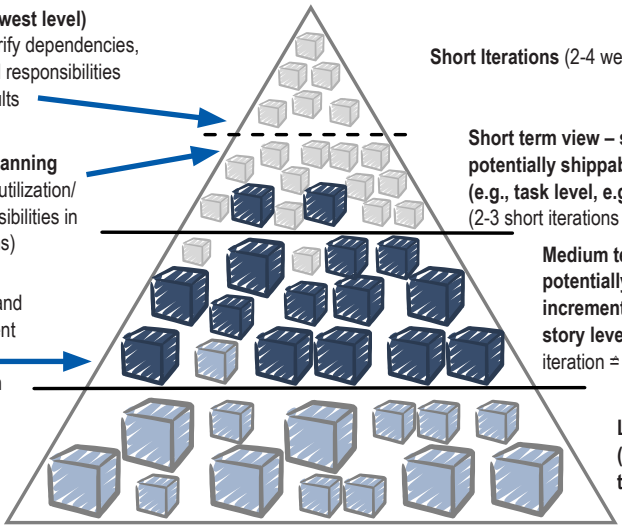
Agile Work Management – Assumptions

Granularity of planning

Iteration planning (lowest level)
Assign work/tasks; clarify dependencies, utilization/capacity and responsibilities with team, ensure results

Iteration advanced planning
Clarify dependencies, utilization/ availability and responsibilities in different team (of teams)

Clarify dependencies and competences in different areas like SW, HW, Mechanics, Production



Short Iterations (2-4 weeks)

Short term view – small potentially shippable work increment (e.g., task level, e.g. sprints) (2-3 short iterations ≙ 4-10 weeks)

Medium term view – larger potentially shippable work increment(e.g., epic/feature/ story level, e.g. releases) (1 large iteration ≙ 4-6 smaller iterations)

Long term view (e.g., vision/strategic themes level)

Priority/ Level of detail

Picture by Kugler Maag Cie GmbH 2019

AGL.1 Agile Work Management

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Agile Process Outcomes

[1] the scope of the work is defined and kept up to date.
[2] the right set of competencies and adequate resources are planned and adapted as needed.
[3] a work approach is defined and continuously improved.
[4] dependencies, interfaces, stakeholders and their commitment are planned for and monitored.
[5] the needed infrastructure and work environment is planned and operationalized.
[6] the feasibility is evaluated for critical elements.
[7] the backlog is estimated and prioritized as basis for both for short term and long-term planning
[8] the content of iterations and (potentially) shippable work increment is planned and realized.
[9] progress and status of work completion is made transparent and impacts on strategic themes and vision are managed.
[10] impediments are identified and resolved when planned work or vision and strategic themes are significantly affected; recurrence of selected issues is prevented.

Base practices

BP1

Identify Demand and Work Boundaries.

Identify the customer demand and work boundaries collaborating closely with stakeholders. Derive the vision and strategic themes linked to business and customer value. Keep demand, boundaries, vision, and strategic themes up to date. [OUTCOME 1]

Notes & Definitions:

1. *Collaboration can be internal and external; e.g., within a program, product line or organization, and together with (multiple) customers and suppliers.*
2. *A customer demand is a recorded customer statement on the problem to be solved.*
3. *A vision defines the product capabilities potentially leading to a successful solution.*
4. *Strategic themes are unique selling proposition. They typically run across iterations and address a mid and long-term perspective.*
5. *Vision and strategic themes are typically the result of requirements engineering activities.*
6. *A customer can be a stakeholder within (e.g. product management) or external to the organization (an individual customer)*
7. *Boundaries can include out of scope, system context, solution space, link to feasibility, organizational constraints and business objectives, platform and product line constraints.*
8. *Ensure agreement with stakeholders on change mechanism for changes to the demand and boundaries.*

Agile Work Products: Product backlog, demand statement (e.g. includes agreed stakeholder goals), boundaries, vision and strategic themes

Supporting *Agile Principles 1, 2, 4, 10, 11 and ASPICE 3.1 Practices BP1, (BP3), BP7 and Outcomes 1, (2), (4), (5)*

Base practices

BP2

Build Team.

Form, empower and enable a team (of teams) fitting to the vision and work boundaries. Ensure the right skill and experience set within each team (of teams). [OUTCOME 2]

Notes & Definitions:

1. *Self-organization is a guiding principle for founding an agile team (of teams) and their efficient performance.*
2. *Teams of teams are used for larger scopes using a fitting agile scaling approach for teams. Business agility is the overarching objective.*
3. *Typically, ground rules for all teams need to be agreed on in scaling approaches.*
4. *Best performing teams are stable in composition and are working at a sustainable pace.*
5. *Teaming includes defined ground rules for collaboration within a team (of teams).*
6. *Empowerment is a conscious delegation of decision authority to a team (of teams).*
7. *Enablement ensures the right skills and experience set within a team (of teams) including needed training.*

Agile Work Products: Team setup, Work approach, Training needs and records, Skill profiles
Supporting Agile Principles 4, 5, 6, 8, 9, 11, 12 and ASPICE 3.1 Practices BP6, (BP7) and Outcomes 3, (7)

Base practices

BP3

Define work approach.

Establish, record and keep the work approach of the team (of teams) up to date. Ensure that the work approach reflects the given level of complexity, fulfils the work boundaries and defines team policies, iteration cycles, agile events, artefacts, and roles. [OUTCOME 3]

Notes & Definitions:

1. *Typically, agility is based on the pull principle as well as on limiting work in progress and are focused on reducing multi-tasking.*
2. *The Definition of Done (DoD) is a build-in quality measure containing minimum, agreed to and recorded set of criteria upon which a task or increment is considered to be done.*
3. *The Definition of Ready (DoR) is a build-in quality measure containing minimum, agreed to and recorded set of criteria upon which a content is considered as ready to be pulled into an iteration.*
4. *Typical team (of teams) policies include Definitions of Ready and Done based on quality criteria.*
5. *An agile approach often encompasses a whole product lifecycle and a clear alignment with the customer work approach.*
6. *An iteration cycle has to fit the chosen agile approach - e.g., cadence, sprint and release duration, synchronization between domains/teams, team capability, infrastructure - and is influenced by technical feasibility as well as safety and security aspects.*

Agile Work Products: *Work Approach, Definition of Done (DoD), Definition of Ready (DoR)*

Supporting *Agile Principles 2, 4, 5, 7, 8, 9, 10, 11 and ASPICE 3.1 Practices BP2, (BP9) and Outcomes 2, (4)*

Base practices

BP4

Manage Stakeholders and interfaces

Stakeholders, interfaces and dependencies within and outside the team (of teams) are identified, planned for, recorded and involved. [OUTCOME 4]

Notes & Definitions:

1 Dependencies and interfaces include both technical and organizational ones:
- technical: e.g., among major architectural elements or safety/security related activities/roles;
- organizational: e.g., to other teams/stakeholders and between different iteration cycles;
- Supplied products or services: e.g. from suppliers or from customers.

2 *Critical interfaces and dependencies should be identified from the start early, their sequence identified and their status tracked across multiple iteration cycles. The product backlog typically contains a path to address them and an allocation to iteration cycles.*

3 *Stakeholder involvement includes tracking the commitment of involved and affected parties as well as ensuring the active involvement of stakeholders.*

4 *In case of non-agile approaches, e.g., on system and other discipline level, clearly define how they integrate and synchronize.*

5 *Agile practitioners are typically organized in communities of practice (CoP, self-organizing networks)*

Agile Work Products: *Agile Work Approach (containing e.g. communication and meeting mechanisms, technical and organizational interfaces and dependencies), Product Backlog*

Supporting *Agile Principles 2, 4, 5, 12 and ASPICE 3.1 Practices (BP2), BP4, BP7 and Outcomes 1, (2), (4), (5)*

Base practices

BP5

Plan Infrastructure

Identify, plan for and keep the needed work and development infrastructure up to date. [OUTCOME 5]

Notes & Definitions:

1. Infrastructure typically includes but is not limited to an engineering tool chain, ticketing and backlog database, verification and integration environment, communication and collaboration tools, physical and online workspaces, work environment, licensing, etc.
2. Agile approaches typically focus on as much automation of processes as possible, e.g., for ticketing, continuous integration and development (CI/CD), and transparency of status.

Agile Work Products: *Work Environment, Product Backlog*
Supporting *Agile Principles 3, 6, 10 and ASPICE 3.1 Practices BP5, BP8 and Outcomes (3)*

Base practices

BP6 **Evaluate feasibility.**

Evaluate and act on the feasibility of critical elements. [OUTCOME 6]

Notes & Definitions:

1. Criticality is related to fundamental and conscious decisions during the complete product lifecycle.
2. Critical elements address contents related to e.g. product risks, architectural challenges, key features, key technology decisions, key supplied features, relevant safety and security contents.
3. The identification, prioritization and monitoring of critical elements is a continuous activity.
4. Critical elements should be addressed by potentially shippable work increments.
5. Many agile approaches are built for adapting to uncertainty in early stages of development (see MAN.5 for risk management)

Agile Work Products: *Prototypes, Potentially Shippable Work Increment (SWI), Product Backlog (e.g., contents characterized as critical elements)*

Supporting *Agile Principles 1, 2, 4, 7, 9, 10, 11 and ASPICE 3.1 Practices BP3, (BP5) and Outcomes 2, (3)*

Base practices

BP7

Estimate Work.

Perform a high-level estimate on all backlog items. Estimate and prioritize work for the upcoming iteration cycles to ensure a common understanding of the work content within the team (of teams). Refine and adapt estimates to continuously improve team collaboration and the quality of the product backlog. [OUTCOME 7]

Notes & Definitions:

1. A high-level estimate helps to gauge the overall feasibility of vision and strategic themes.
2. Work estimation requires sufficiently small backlog items fitting within the upcoming iteration cycle, i.e. satisfying a DoR and considering (potential) impediments.
3. The selection of work items for estimation should be driven by priority and business value.
4. Typically, agile estimation is based on experts discussing estimates to achieve a shared understanding and consensus.
5. Appropriate estimations methods and recorded estimation data from previous estimates should be used, i.e. based on estimating complexity, relative size or analogy.

Agile Work Products: *Product Backlog, Team Backlog*
Supporting *Agile Principles 3, 7, 8, 10, 12 and ASPICE 3.1 Practices BP3, (BP5), (BP10) and Outcomes 3, (6), (7)*

Base practices

BP8

Work Planning.

Plan and realize the content of the upcoming iteration cycles based on estimates and definitions of ready and done. [OUTCOME 8]

Notes & Definitions:

1. Typically, there are different levels of planning related to iteration cycles depending on the complexity of the product and team of teams (e.g., sprints and releases).
2. In general, work planning should consider actual team member capacity, availability and velocity as well as the recorded work approach, dependencies and feasibility.
3. Planning is usually based on selecting (pulling) content from the prioritized product backlog meeting DoR criteria, estimates, overall vision and strategic themes.
4. Typically, planned work for each level is the result of a planning workshop for the upcoming iteration cycles by focusing on the near and known future.
5. Typically, work is rather pulled by instead of pushed to team members.
6. Typically, work is planned to avoid multitasking and by limiting the amount of work in progress.
7. Typically, one or multiple iterations form a potentially shippable work increment (SWI). Being potentially shippable does not mean the results have to be delivered to customers. Shipping is a recorded business decision and should provide customer value and feedback.
8. The term “sample” is often used in automotive for a larger shippable work increment containing results of multiple iteration cycles and disciplines.

Agile Work Products: *Product Backlog, Content and work breakdown of upcoming iteration, Shippable Work Increment (SWI), Team Backlog, Tasks.*

Supporting *Agile Principles 1, 3, 4, 5, 7, 8, 9, 10, 11, 12 and ASPICE 3.1 Practices (BP2), (BP3), BP4, BP5, BP8, (BP9) and Outcomes (2), (3), 5*

Base practices

BP9

Inspect and Adapt.

Inspect, measure and visualize the status and progress of work completion in short regular intervals. Adapt as needed to manage impacts on strategic themes and vision. [OUTCOME 9]

Notes & Definitions:

1. Typically, there are different levels of reviewing iterations depending on the complexity of the product and team of teams (e.g., small iterations on team level and larger increments on team of teams or program level).
2. Typically, progress and status of work of a team is transparent and reviewed daily.
3. Measurements are typically related to team (of teams) capacity, velocity, and rate of completion based on agreed to Definition of Ready and Definition of Done.
4. The status is usually visible on demand at any time by physical or online team boards or charts.
5. Transparency supports achieving consistency among current and overall planning, product backlog, and team capacity to ensure a sustainable pace.

Agile Work Products: *Reporting, Tasks, (updated) Backlog, (updated) Vision and strategic themes*
Supporting *Agile Principles 1, 5, 6, 7, 8 and ASPICE 3.1 Practices (BP4), (BP5), (BP9), BP10 and Outcomes 5, 6, (7)*

Base practices

BP10

Manage Impediments.

Identify, monitor and resolve impediments within and across iteration cycles. [OUTCOME 10]

Notes & Definitions:

1. An impediment is any issue or risk towards either achieving current iteration/increment goals or likely affecting planned work or visions and strategic themes (potential impediment = risk)
2. Managing impediments supports consistency among current planning and vision, product backlog, and team capacity to ensure a sustainable pace.
3. Impediments are typically identified by the team (of teams) while reviewing the progress of work. Addressing them helps in adapting work planning as well as vision and strategic themes.
4. Work resulting from impediments is typically managed as part of the backlog.

Agile Work Products: *Implementation Log, Tasks, (updated) Backlog, (updated) Vision and strategic themes*
Supporting *Agile Principles 1, 5, 6, 7, 8 and ASPICE 3.1 Practices BP4, BP5, (BP10) and Outcomes (5), (6), 7*

Base practices

BP11

Improve Work Approach.

Inspect and adapt the work approach based on short learning cycles within the team (of teams). [OUTCOME 3]

Notes & Definitions:

1. The way of working in the team (of teams) is regularly discussed to identify improvements to the recorded work approach.
2. Typically, current processes are inspected and adapted at least per iteration cycle and event driven.
3. Improvement work from identified improvements is typically managed as part of the backlog.

Agile Work Products: *(updated) Work Approach, (updated) Definition of Done (DoD), (updated) Definition of Ready (DoR), Tasks*

Supporting *Agile Principles 5, 6, 12 and ASPICE 3.1 Practices (BP2), BP10 and Outcomes 7*

MAN.3 Project Management

The purpose of the Project Management Process is to identify, establish, and control the activities and resources necessary for a project to produce a product, in the context of the project's requirements and constraints.

Process outcomes – as a result of successful implementation of this process

[1] the scope of the work for the project is defined;
[2] the feasibility of achieving the goals of the project with available resources and constraints is evaluated;
[3] the activities and resources necessary to complete the work are sized and estimated;
[4] interfaces within the project, and with other projects and organizational units, are identified and monitored;
[5] plans for the execution of the project are developed, implemented and maintained;
[6] progress of the project is monitored and reported; and
[7] corrective action is taken when project goals are not achieved, and recurrence of problems identified in the project is prevented.

Output work products

08-12 Project plan	[OUTCOME 1, 3, 4, 5]	14-06 Schedule	[OUTCOME 3, 5]
13-04 Communication record	[OUTCOME 4, 6]	14-09 Work breakdown structure	[OUTCOME 3, 4, 5]
13-16 Change request	[OUTCOME 7]	14-50 Stakeholder groups list	[OUTCOME 4]
13-19 Review record	[OUTCOME 2, 7]	15-06 Project status report	[OUTCOME 4, 6]
14-02 Corrective action register	[OUTCOME 7]		

MAN.3 with 10 Base practices

BP 1 **Define the scope of work.** Identify the project's goals, motivation and boundaries. [OUTCOME 1]

BP 2 **Define project life cycle.** Define the life cycle for the project, which is appropriate to the scope, context, magnitude and complexity of the project. [OUTCOME 2]

1 *This typically means that the project life cycle and the customer's development process are consistent with each other.*

BP 3 **Evaluate feasibility of the project.** Evaluate the feasibility of achieving the goals of the project in terms of technical feasibility within constraints with respect to time, project estimates, and available resources. [OUTCOME 2]

BP 4 **Define, monitor and adjust project activities.** Define, monitor and adjust project activities and their dependencies according to defined project life cycle and estimations. Adjust activities and their dependencies as required. [OUTCOME 3, 5, 7]

2 *A structure and a manageable size of the activities and related work packages support an adequate progress monitoring.*

3 *Project activities typically cover engineering, management and supporting processes.*

BP 5 **Define, monitor and adjust project estimates and resources.** Define, monitor and adjust project estimates of effort and resources based on project's goals, project risks, motivation and boundaries. [OUTCOME 2, 3, 7]

4 *Appropriate estimation methods should be used.*

5 *Examples of necessary resources are people, infrastructure (such as tools, test equipment, communication mechanisms...) and hardware/materials.*

6 *Project risks (using MAN.5) and quality criteria (using SUP.1) may be considered.*

7 *Estimations and resources typically include engineering, management and supporting processes.*

BP 6 **Ensure required skills, knowledge, and experience.** Identify the required skills, knowledge, and experience for the project in line with the estimates and make sure the selected individuals and teams either have or acquire these in time. [OUTCOME 3, 7]

8 *In the case of deviations from required skills and knowledge trainings are typically provided.*

BP 7 **Identify, monitor and adjust project interfaces and agreed commitments.** Identify and agree interfaces of the project with other (sub-) projects, organizational units and other affected stakeholders and monitor agreed commitments. [OUTCOME 4, 7]

9 *Project interfaces relate to engineering, management and supporting processes.*

BP 8 **Define, monitor and adjust project schedule.** Allocate resources to activities, and schedule each activity of the whole project. The schedule has to be kept continuously updated during lifetime of the project. [OUTCOME 3, 5, 7]

10 *This relates to all engineering, management and supporting processes.*

BP 9 **Ensure consistency.** Ensure that estimates, skills, activities, schedules, plans, interfaces, and commitments for the project are consistent across affected parties. [OUTCOME 3, 4, 5, 7]

BP 10 **Review and report progress of the project.** Regularly review and report the status of the project and the fulfillment of activities against estimated effort and duration to all affected parties. Prevent recurrence of problems identified. [OUTCOME 6, 7]

11 *Project reviews may be executed at regular intervals by the management. At the end of a project, a project review contributes to identifying e.g. best practices and lessons learned.*

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References

[1] Clarifying Myths with Process Maturity Models vs. Agile (Besemer, Karasch, Metz, Pfeffer), 2014:
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[2] Automotive SPICE Process Assessment / Reference Model 3.1
http://www.automotivespice.com/fileadmin/software-download/AutomotiveSPICE_PAM_31.pdf

[3] Agile Manifesto: http://agilemanifesto.org/principles.html

About intacs™

intacs™ is an independent and legally registered non-profit organization. intacs works almost exclusively with volunteers and is open, transparent, global and multilingual. The goal is to ensure high quality assessor qualification for process assessments according to ISO/IEC 15504 and 33002.

intacs™ was founded to improve assessments, to reduce variations in the quality of assessment results and to improve their comparability.

In order to reach these goals, intacs™:

- sets training and certification standards for ISO/IEC 15504 and 33002 assessors
- sets standards for maintaining assessor competence
- promotes assessment models and community interactions

intacs™ is accepted by the automotive industry and the VDA AK 13 (working group responsible for defining process requirements for car manufacturers and suppliers).

Benefits

For individuals interested in becoming an assessor

- You can be sure that you are trained by an accredited training provider with approved up-to-date training material reflecting the latest technical community knowledge.
- You have access to the list of these training providers and their instructors.
- You can rely on instructors to be the most experienced assessors in the community who have extensive training experience

intacs.info

International Assessor Certification Scheme™

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