

Mehr Wissen dank regelmäßiger Micro-Reviews bei MAHLE

Knowledge Management of Product Development projects by weekly reviews on the board

Case study on a custom hybrid agile method for collaboration in automotive environment

Dr. Pedro Gonzalez Rechea
Mechatronics R&D Processes, Methods and Tools

Agenda

1. Product Development at MAHLE
2. Overview information flow by different professional groups and in different environments
3. Method for Knowledge Management of Product Development projects by weekly reviews on the board
 - a) Procedure, methodology and examples
 - b) Insights to the application
 - c) Reflections on the method. Classification and evolution to a global collaboration method

MAHLE – Facts and figures



Employees: 78,000



Around 170 production locations in 32 countries and on five continents

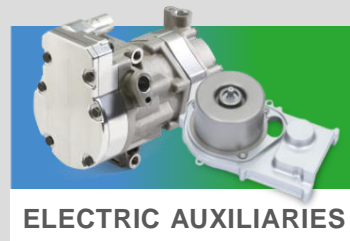


Sales: EUR 12.8 billion (2017)



16 major development locations with around 6,100 development engineers and technicians in Germany, Great Britain, Luxembourg, Slovenia, Spain, the USA, Brazil, Japan, China and India

Dual strategy



Strengthen our existing market position

Build our future in a changing mobility world

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Overview upcoming events preparations by different professional groups: Pilots



Cabin crew meets prior to departure to discuss the step-by-step plan at the airport. During this time, crew-members receive a flight plan document, weather reports and all additional information.

The captain informs the crew of the anticipated flight time and any expected turbulence, while flight attendants go through the passenger manifest to ensure any passengers with special needs are tended to appropriately

Overview upcoming events preparations by different professional groups: Cyclists



Cycling teams on a race meet prior to the stage to prepare it. They review together all the provisioning points, climbs and the finish line. The coach discusses with the team at which point a cyclist shall attack and leave the bunch or how to prepare for the final sprint.

If any team member has already race the stage on previous years he would report if indeed the last meter are completely flat or hilly, if there is a dangerous curve at the end or similar.

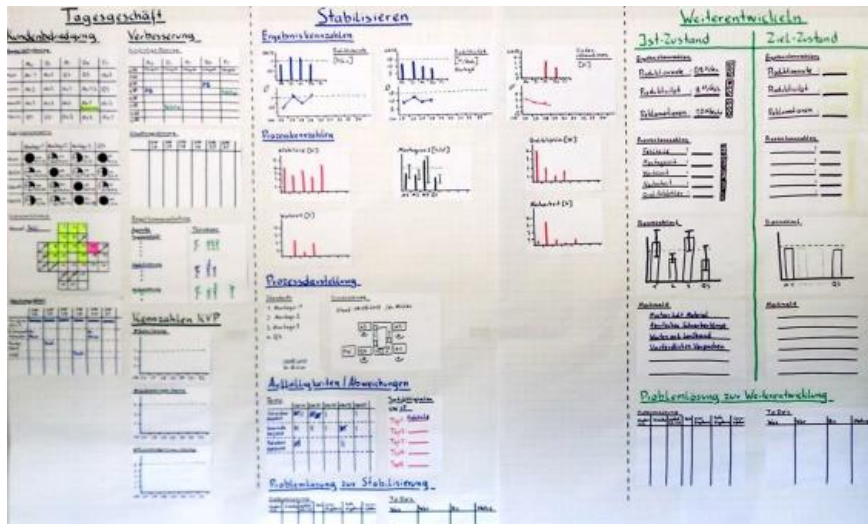
Overview information flows at industrial environments: a factory



In a production factory using Shop Floor Management the day typically starts with a meeting at the Team Board to review the data collected over the last 24 hours. That data is interpreted, trend charts are drawn, countermeasures are defined and the reporting information is agreed.

In further meetings the reports are consolidated, data is aggregated to create the picture for the plant on that day.

At the end of the early morning the Plant Manager has a full report of the plant status. The information and its interpretation, maybe with critical points and escalations, has flown within hours from each workplace to the top levels of the plant.



Overview information flows at industrial environments: a Product Development team



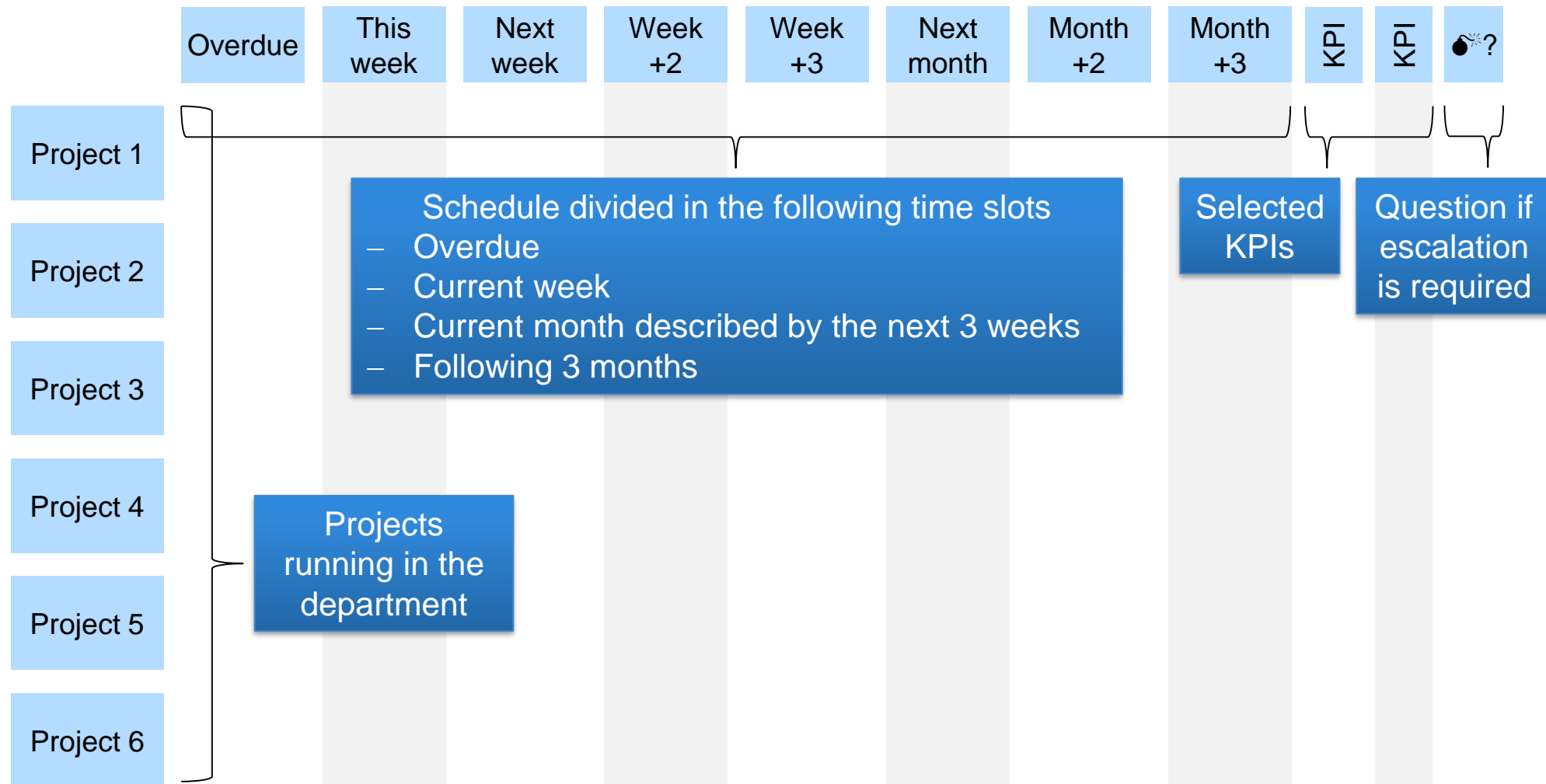
In Product Development office environments the week might start with a smooth transition from the weekend, a cup of coffee and sorting out tasks to be done in the next days. If there are no established review rounds, project teams may only report at milestones and gates. At that point of time, some risk topics might have been undercover and not visible to the organization.

→ **Reflection:** how to improve the knowledge management in Product Development environments?

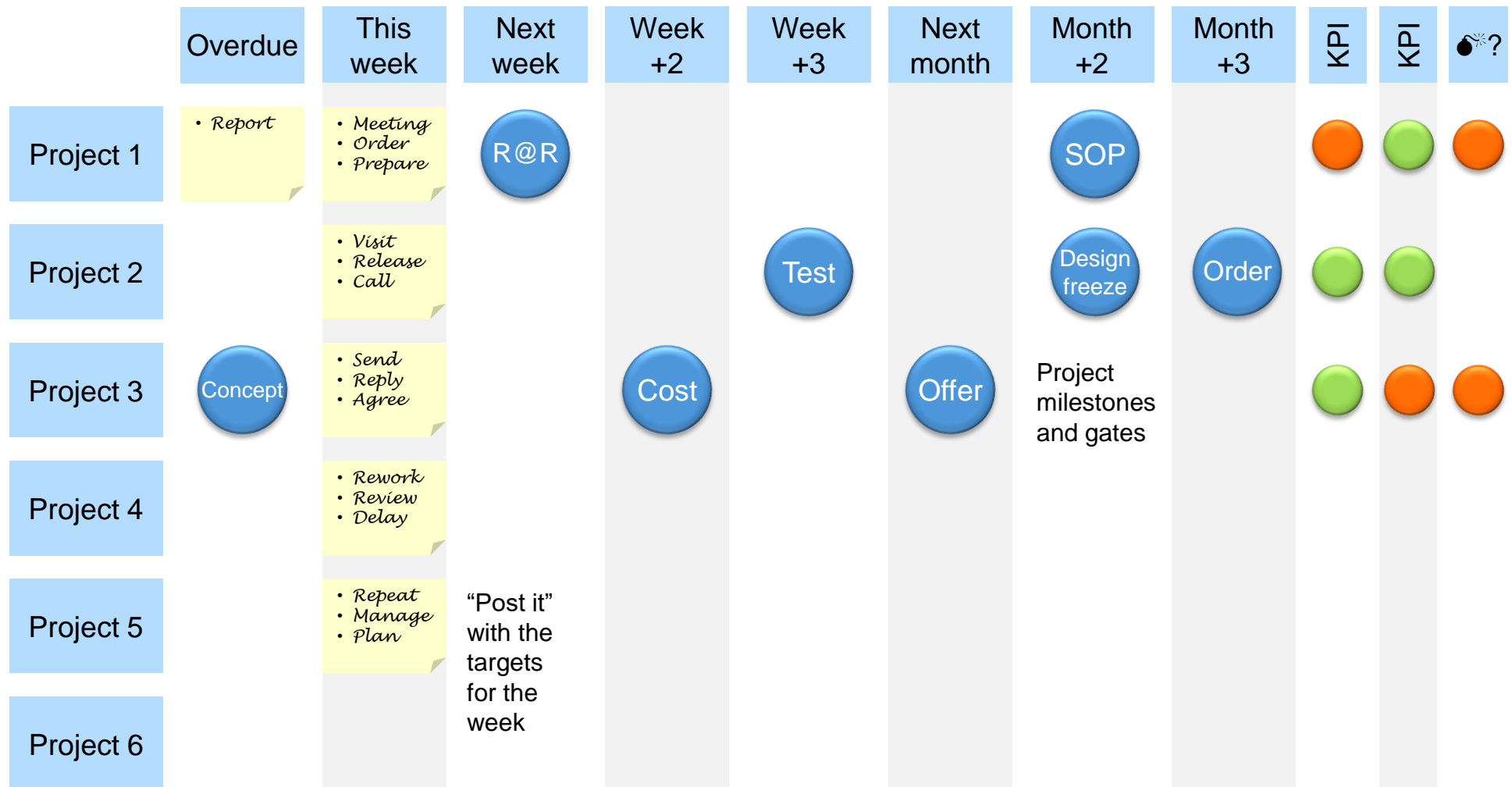
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Tool description (1/3): board structure



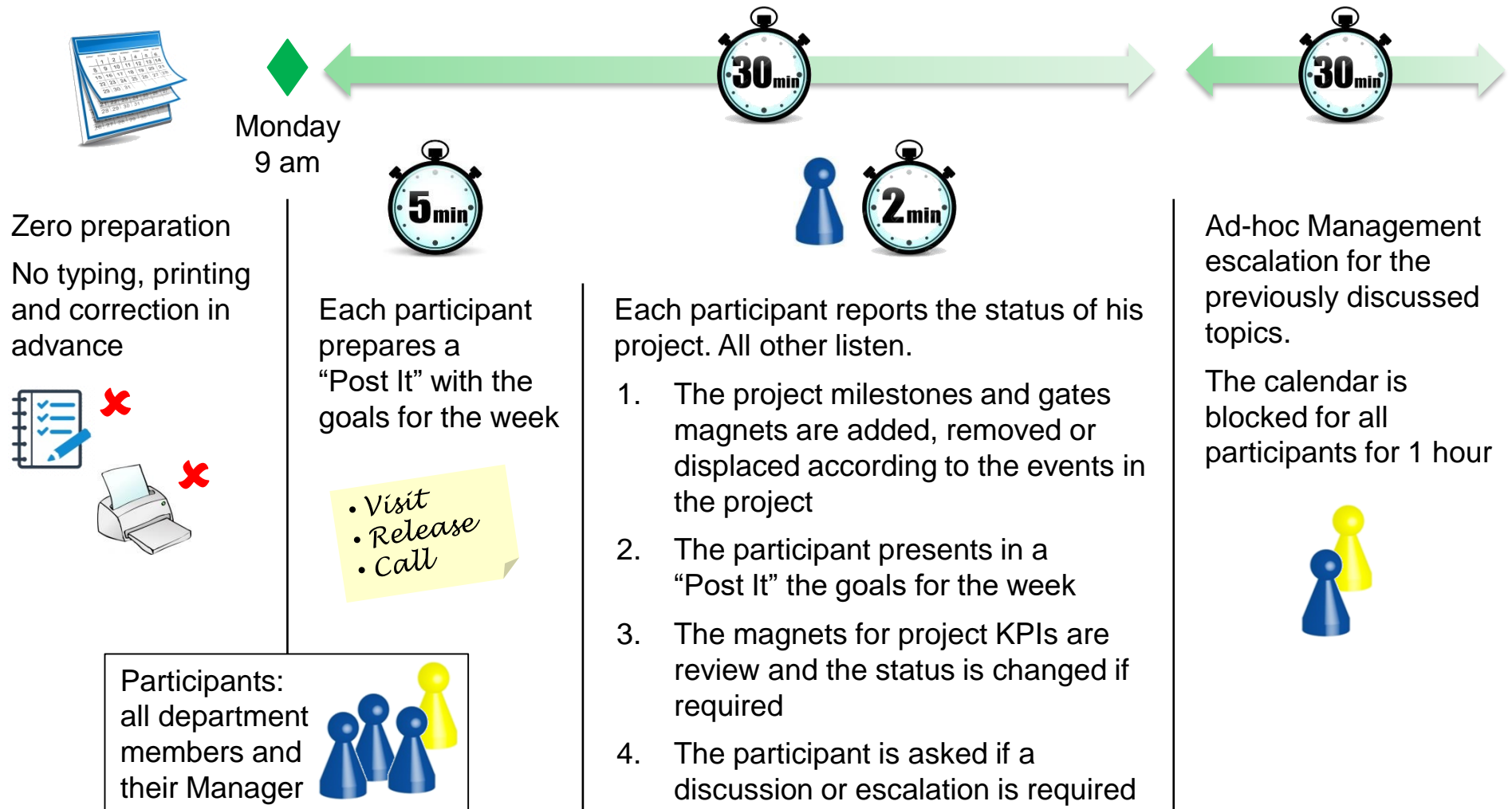
Tool description (2/3): Simulation of first week



Tool description (3/3): Simulation of second week

	Overdue	This week	Next week	Week +2	Week +3	Next month	Month +2	Month +3	KPI	KPI	💣?
Project 1	<ul style="list-style-type: none"> Report Order Prepare 	<ul style="list-style-type: none"> Meeting Test Cancel 	R@R				SOP		Orange	Green	
Project 2		<ul style="list-style-type: none"> Visit Release Call 			Test		Design freeze	Order	Green	Green	Orange
Project 3	Concept	<ul style="list-style-type: none"> Send Reply Agree 		Cost		Offer	Negotiation		Green	Orange	Orange
Project 4		<ul style="list-style-type: none"> Rework Review Delay 									
Project 5		<ul style="list-style-type: none"> Repeat Manage Plan 									
Project 6											

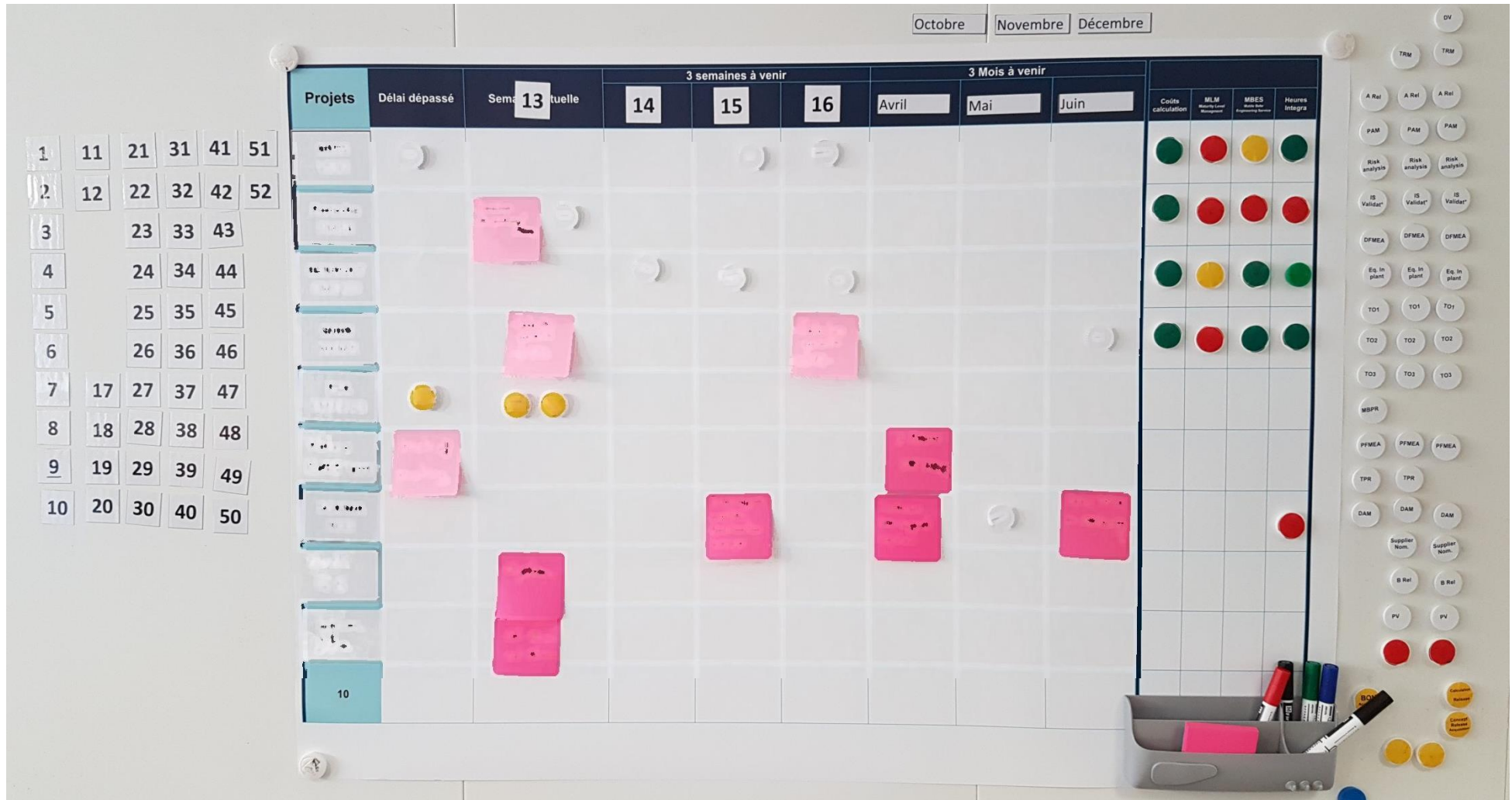
Methodology



First application in Germany in 2016



Replication in France in 2017





Replication in Germany in 2019



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Testing and roll out

- Pilot introduction with 4 projects for 3 months. Intensive parallel discussion on the methodology and improvement of the board content
- Afterwards extension to all running projects at the location
- Presentation via Power Point for discussion with other locations and request for implementation

Analysis of the incubation to deploy this knowledge management activity

An activity as the one described in this case study stands as an spontaneous idea. However there is a landscape around it which fosters the genesis of such a Knowledge Management initiative:

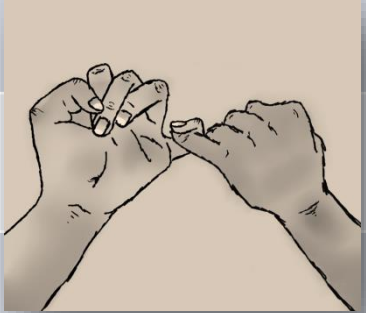

The Management requests to achieve risk mitigated project execution on Product Development for standard products. The vision was personally summarized and proclaimed by the Area Manager in two wisdom quotes: “no surprises” and “keep your promises”



Warm nest for Knowledge Management:

- A CIP initiative was running for approximately 1 year (25 Development Engineers and Managers in 3 European locations). Focus on improvement activities which can be achieved within the Department (for example improve offshoring cooperation or product launches). Idea out of the Work package named “Development Mind-set”
- One third of the team was used to work with the Kanban Board to manage a multidisciplinary project of approximately 15 members

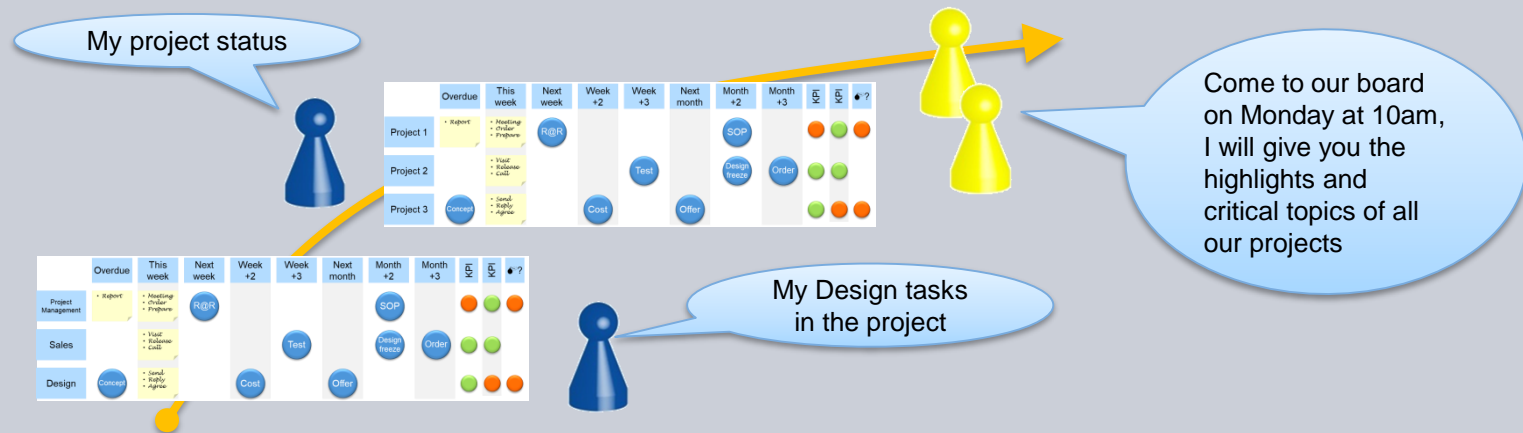
Benefits (1/2)

Presenter	<p>By writing the “Post It” the presenter structures his main tasks for the week (task which he might not do otherwise)</p> <p>Increased accountability and ownership by the delivery of commitments (“keep your promises”)</p>	
Team	<p>Improved communication among the team. Project risks and problems highlighted. Higher chances for linkage of topics, achievement of a common understanding and Lessons Learned</p> <p>“Salutary” peer group pressure by the disclosure of status and commitments</p>	
Project	<p>Visual and dynamic transparency of the project risks and milestones –e.g. the milestones get closer and closer to the column “Today”– (“no surprises”)</p> <p>Improved project performance by increased transparency and short steering reactions times</p> <p>Escalation is not delayed, it takes place directly afterwards. The Manager has a time slot blocked for it</p>	

Benefits (2/2)

Interaction with the organization

Allows for full bottom-up information flow to the management



No conflict with typical Project Management steering elements (p. e. Project Reviews on a regular basis or Steering Committees on milestones and gates). Given its different nature the method can not substitute them. It is an extension.

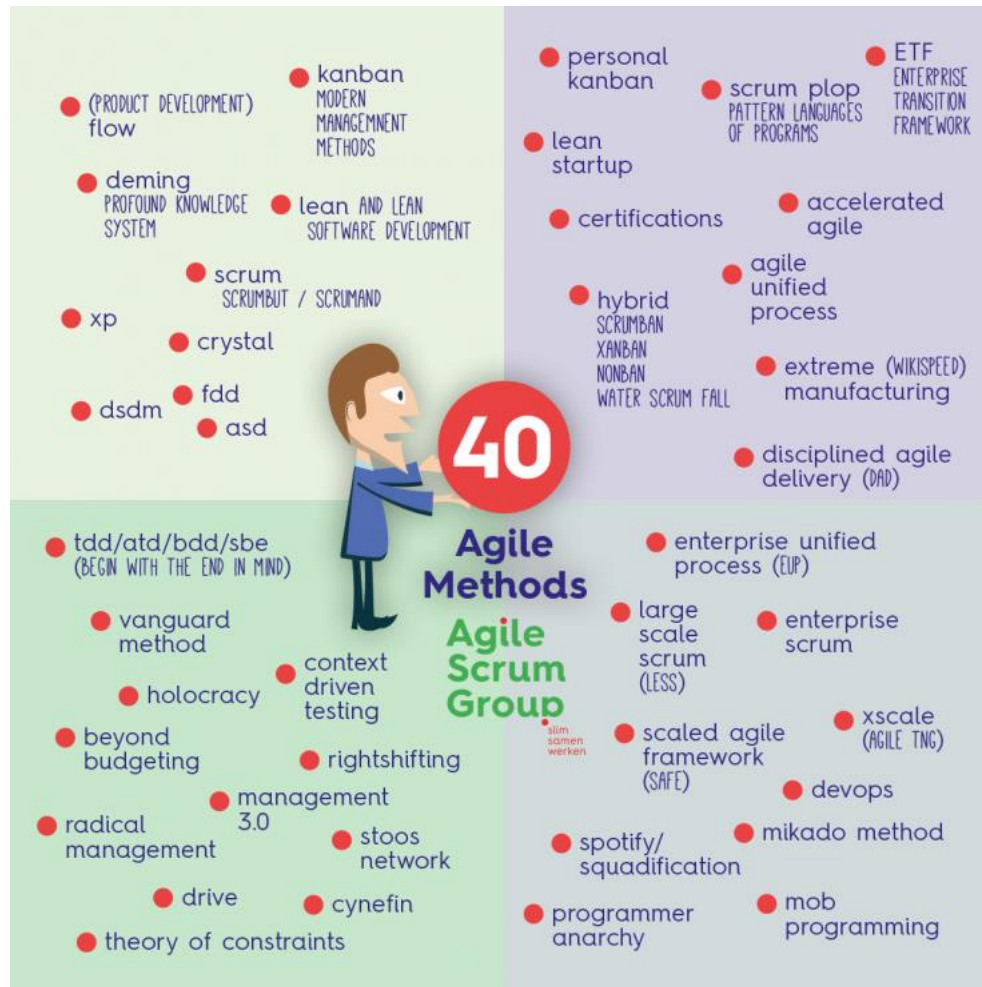
Balance between task and tool

The tool itself is so simple, that information share, dialog, communication and knowledge creation will always be in foreground. The tool is not likely to be disruptive to the method and the task.

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Classification of the tool within the landscape of agile methods



<https://agilescrumgroup.nl/wat-is-agile>

The deployed method is a custom hybrid agile method (combination of different triggers and techniques configured ad-hoc for the specific necessity)

- It is based on Visual Management practises
- It is supported by Kanban Board elements
- In the case described it is used for a Product Development department consisting on a number of Project Managers. The object of review are the respective projects.

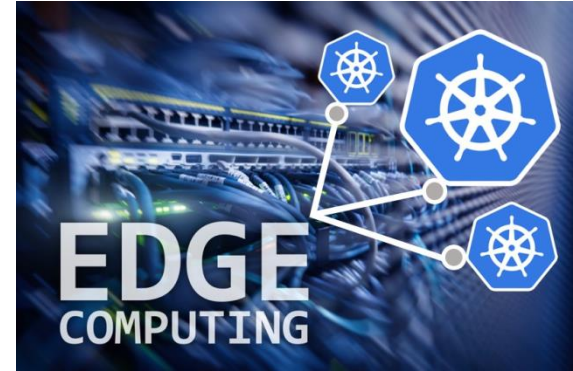
The use can be extended for example to:

- A single project where the different projects disciplines are presented horizontally and reported by the respective responsible
- A department or group of persons who are not directly involved in structured projects but execute however tasks with a defined repeated pattern

What about a comparison with the concept of “Edge computing”?

- Two descriptions of Edge Computing:
 - “Bringing intelligence closer to data source “
 - “Enables data-stream acceleration, including real-time data processing without latency. It allows smart applications and devices to respond to data almost instantaneously, as its being created, eliminating lag time”

- The deployed method has similarities with the data processing strategy of Edge Computing:
 - Acting and steering:
 - close to the information source
 - on short intervals (p.e. before data is introduced into reporting and steering systems)
 - however with a certain “distance” and wide view by dealing with a few further projects
 - The benefit relays in acting on information as it is generated



Evolution to a global collaboration tool. Continuum for collaboration and exchange

- The method has not been tested for global collaboration (at least two locations participating in the meeting) because a suitable process has not been identified yet
- The introduction of collaboration tools facilitates the collaboration purpose but it might not fully substitute the simple dynamic and the advantages of face-to-faces meetings



Evolution to a global collaboration tool. Loop of collaboration and exchange

- In this case study the most valuable asset is the dialog and information exchange. The record of the status, which is delivered by electronic collaboration tools, is a secondary aspect
- If a Virtual Reality application would be in use, that would be the closest status to the original deployment preserving all benefits of the simple dynamic and face-to-face meeting



Thanks for your attention!

