



# SCRUM @ Hardware?

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# Some examples



## New concept with innovative USP´s, 30% carry over parts



# The approach

**The management saw no chance to develop the vehicle in 18 months from the idea to the trade fair with the established processes in their own organization.**

- » Core team with its own employees (100 % dedicated) and external engineering resources
- » Agile collaboration with engineering service provider (one team – one goal)
- » Common working environment – co-located (core team and system engineers of the service provider)
- » Experienced SCRUM coach trains and accompanies the team (full-time at the beginning)
- » Sprint length one week
- » Reviews with decision-makers every week (practically no reporting to committees)
- » Very early feedback from real customers (multiple)
- » Product development process adapted (lean and agile)
- » Involvement of the internal organization (transparency, discussions, openness)
- » Early cooperation with regulatory body (TÜV)



# Early customer feedback



source: MAN

## Daily and Review in the assembly area (Engineers and Technicians)



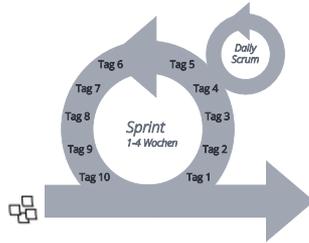
source: MAN

# SCRUM Room, Saab



source: Scrum Inc.

# SCRUM@Hardware goes beyond pure methodology



## Agile organization:

- Roles/responsibilities
- Cadence
- Increment
- Transparency
- Collaboration
- Focus
- Priorities
- .....

## Development Practices:

- User story
- Pairing
- Test driven development
- Test automation
- Simulation
- Additive processes
- ....

## Product architecture:

- Modularity
- Platforms
- Reuse
- Cross platform Synergies
- Stable interfaces
- .....

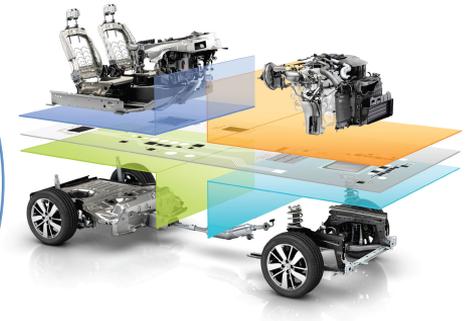


Image sources:  
<https://qanewsblog.com/>  
<https://www.motorauthority.com/>

# Charter for Agile Product Development\* @ Hardware

We embrace agile methods as the engine driving innovative solutions and collaboration to amplify economic, ecologic and social benefits across our planet.

Through this work we have come to value:

**Cross functional team collaboration** *over* specialization, process and tools  
**Modularity** *over* tightly-coupled solutions  
**Continuous customer collaboration** *over* inflexible contracts.  
**Useful continuous delivery** *over* a single comprehensive delivery  
**Extending development through manufacturing** *over* fixing problems in the field  
**Useful continuous documentation** *over* comprehensive documentation

That is, while there is value in the items on the right,  
we value the items on the left *more*.

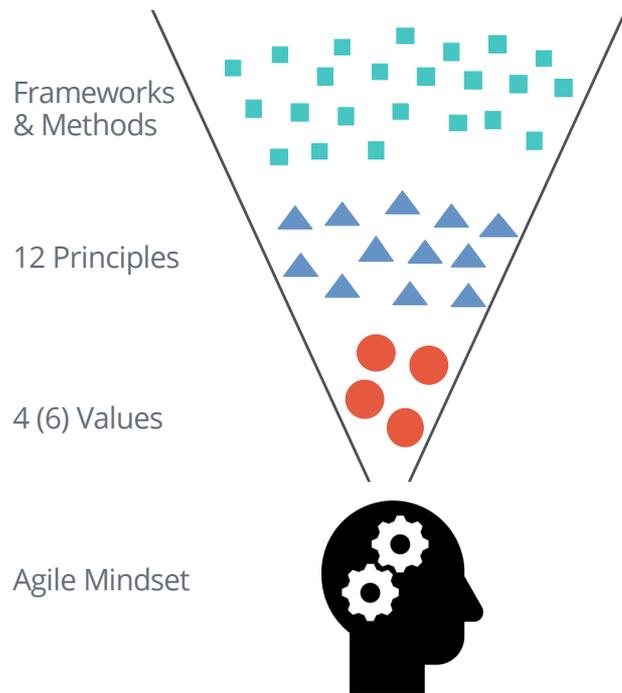
\* <https://agileproductcharter.org/>

# Challenges



source: OMT

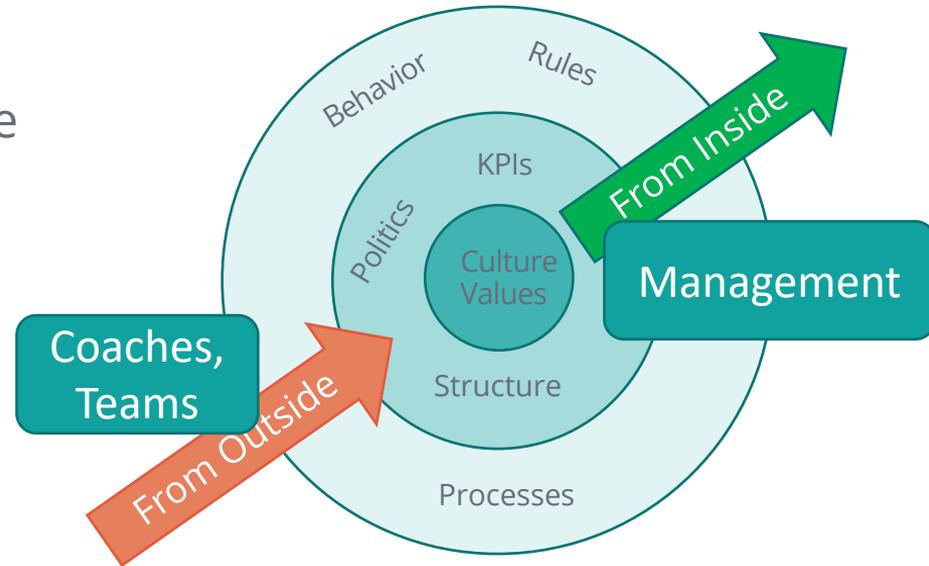
# Agile is not only a new Buzzword – it's a cultural change of how we are going to work in an organization



Doing Agile



Being Agile



Sustainability in an agile transition requires leadership, who lives agile values itself, fosters structures, key figures, and behaviors to allow agile principles.

(Pete Behrens, Trial Ridge)

# The capability profile of Engineers might need to change

Project Plan	
Task 1	Engineer 1
Task 2	Engineer 2
Task 3	Engineer 3
Task 4	Engineer 1
Task 5	Engineer 2
Task 6	Engineer 3



Product Backlog	
Function 1	Engineer 1, Engineer 3
Function 2	Engineer 2, Engineer 1
Function 3	Engineer 3, Engineer 1
Function 4	Engineer 1, Engineer 2
Function 5	Engineer 2, Engineer 3
Function 6	Engineer 3, Engineer 2, Engineer 1

- Engineer 1
- Engineer 2
- Engineer 3

## I shaped Profil:

- Lots of specialists
- Everyone works on their own topics
- No common achievement of goals
- I responsibility
- Little team spirit
- Dependence on individuals
- Bottleneck (utilization, availability)
- Not consistently according to priorities
- Little creativity in the solution
- Solution is often perfected

## Task focus

## T shaped Profil:

- More generalists
- Collaboration at eye level
- Joint achievement of goals
- WE responsibility
- Team culture
- Less dependence on individuals
- More transparency and better communication
- More flexibility and strictly according to priorities
- Room for creative solutions
- Solutions are "good enough"

## Product focus

## Scrum@Hardware – some myth

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We can't deliver  
an increment  
within a sprint

We need so many  
specialists to work  
on complex topics

We have to follow  
our processes

We have long  
waiting time on  
deliverables from  
suppliers

We need a  
complete  
requirement list  
before we start

We can't ask early  
feedback from  
customers



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