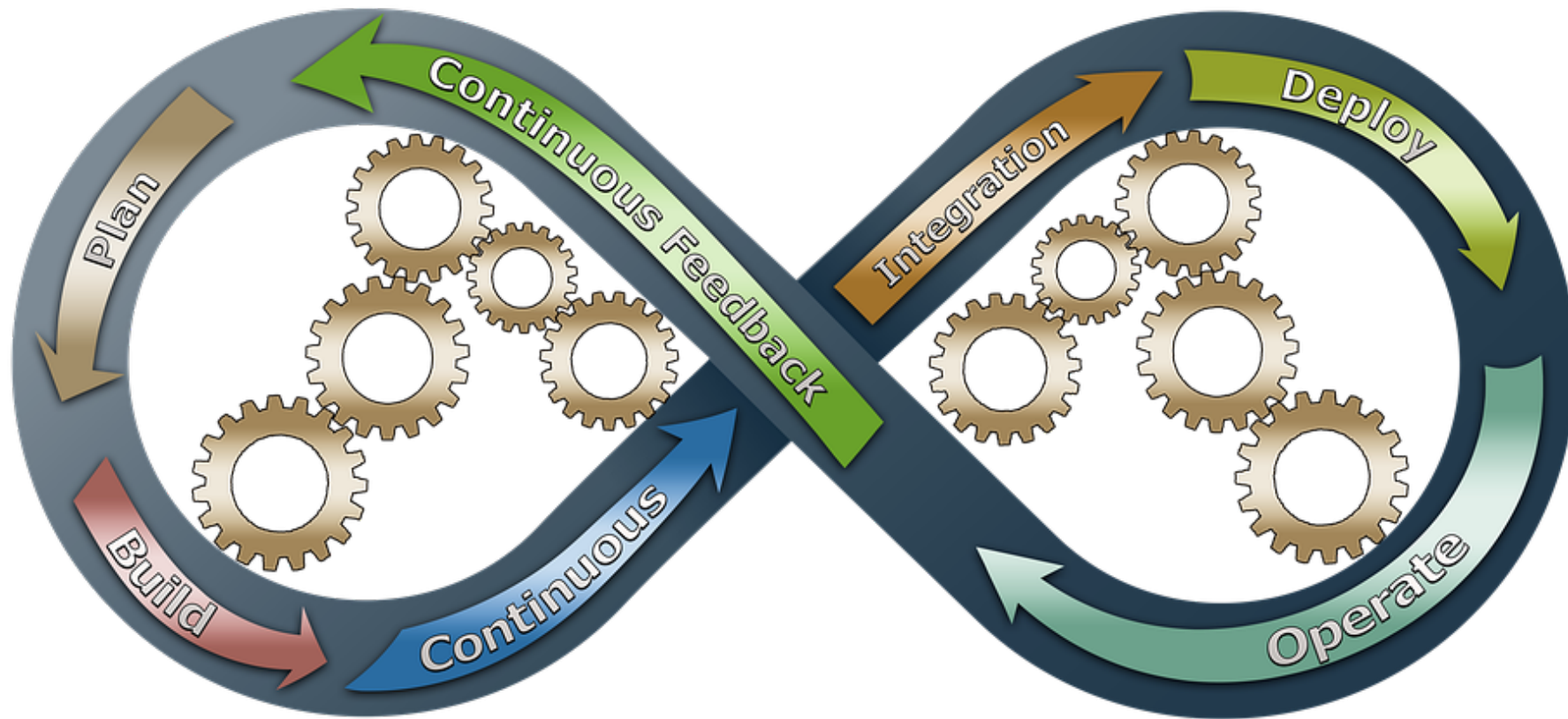




# Welcome!

# Agile Functional Safety

# Agile Functional Safety

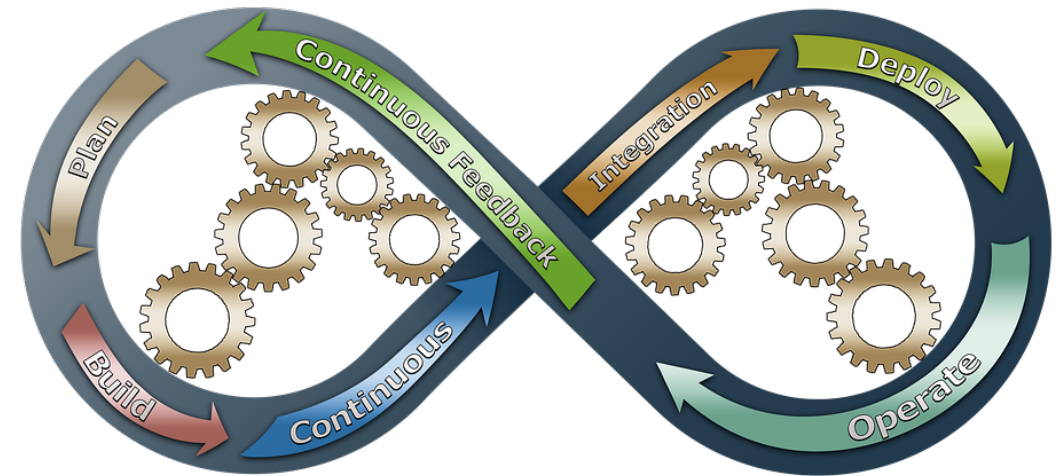


# Agile Functional Safety

## What Does it Mean?

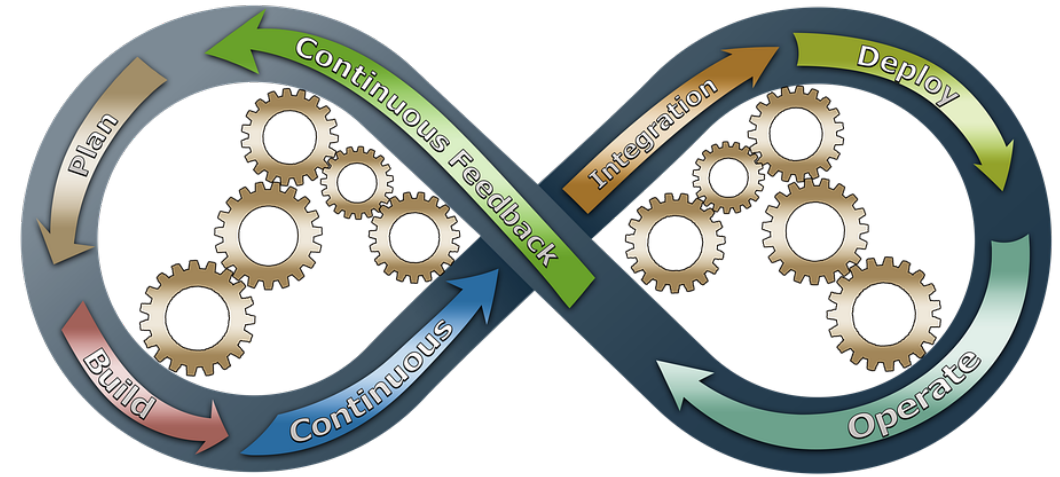
### Cambridge's definition:

1. Able to move about quickly and easily
2. Able to deal with new situations or changes quickly and successfully



# Agile Functional Safety

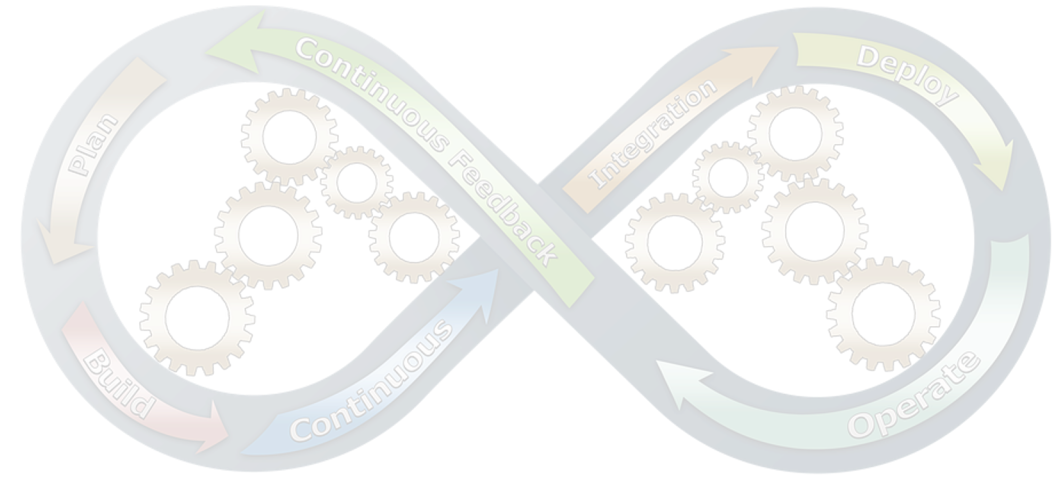
Core Values of the Agile approach

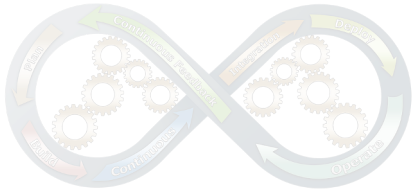


# Agile Functional Safety

## Core Values of the Agile approach

- CV1:** Individuals and interactions over processes and tools
- CV2:** Working software over comprehensive documentation
- CV3:** Customer collaboration over contract negotiation
- CV4:** Responding to change over following a plan





# Agile Functional Safety

Step 1. Item definition

Step 2. Hazard analysis

Step 3. Functional Safety Concept

Step 4. Technical Safety Concept

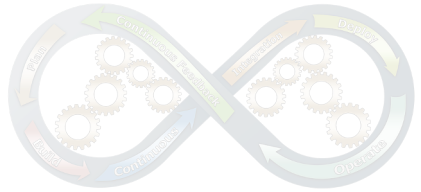
Step 5 & 6. Hardware Safety Software Safety

Step 9. Assessment

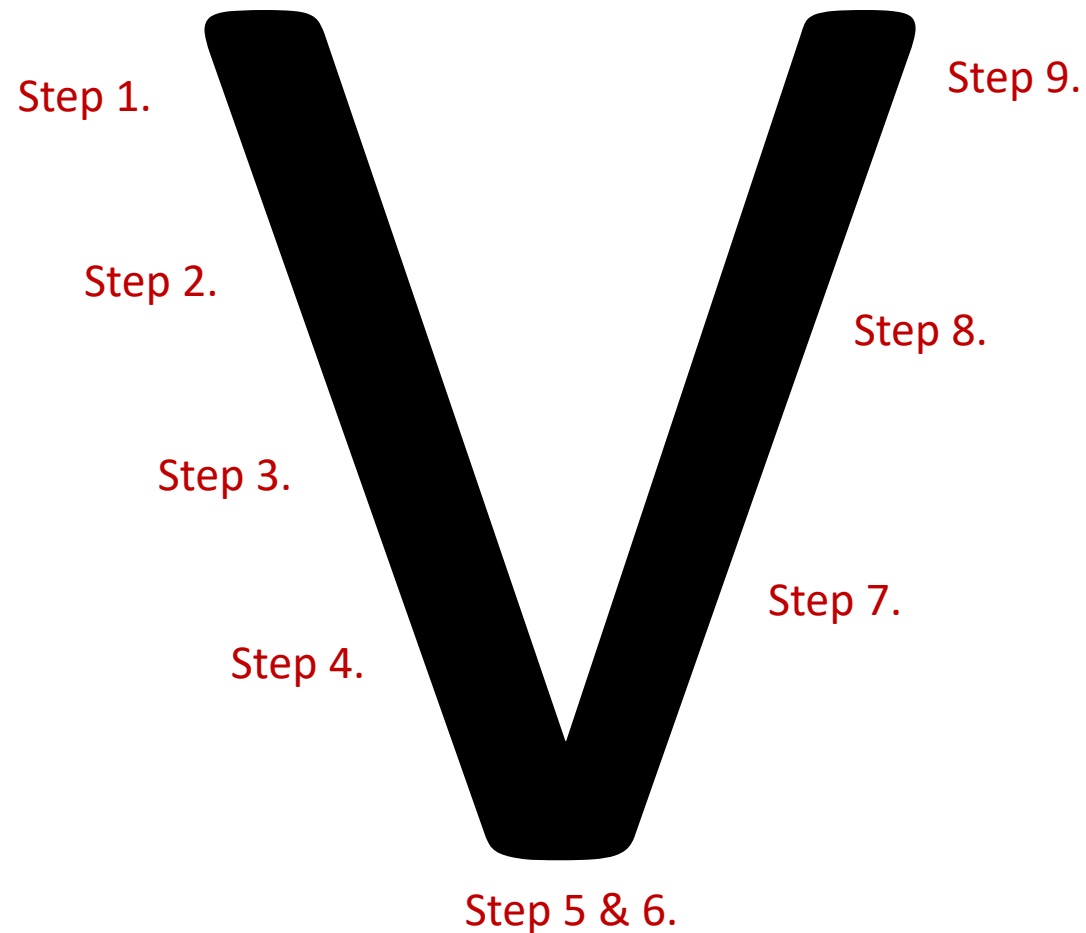
Step 8. Safety Validation

Step 7. Testing & integration

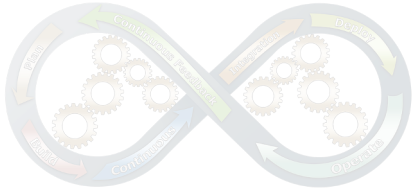




# Agile Functional Safety







# Agile Functional Safety

## Simplified meaning of the V-model

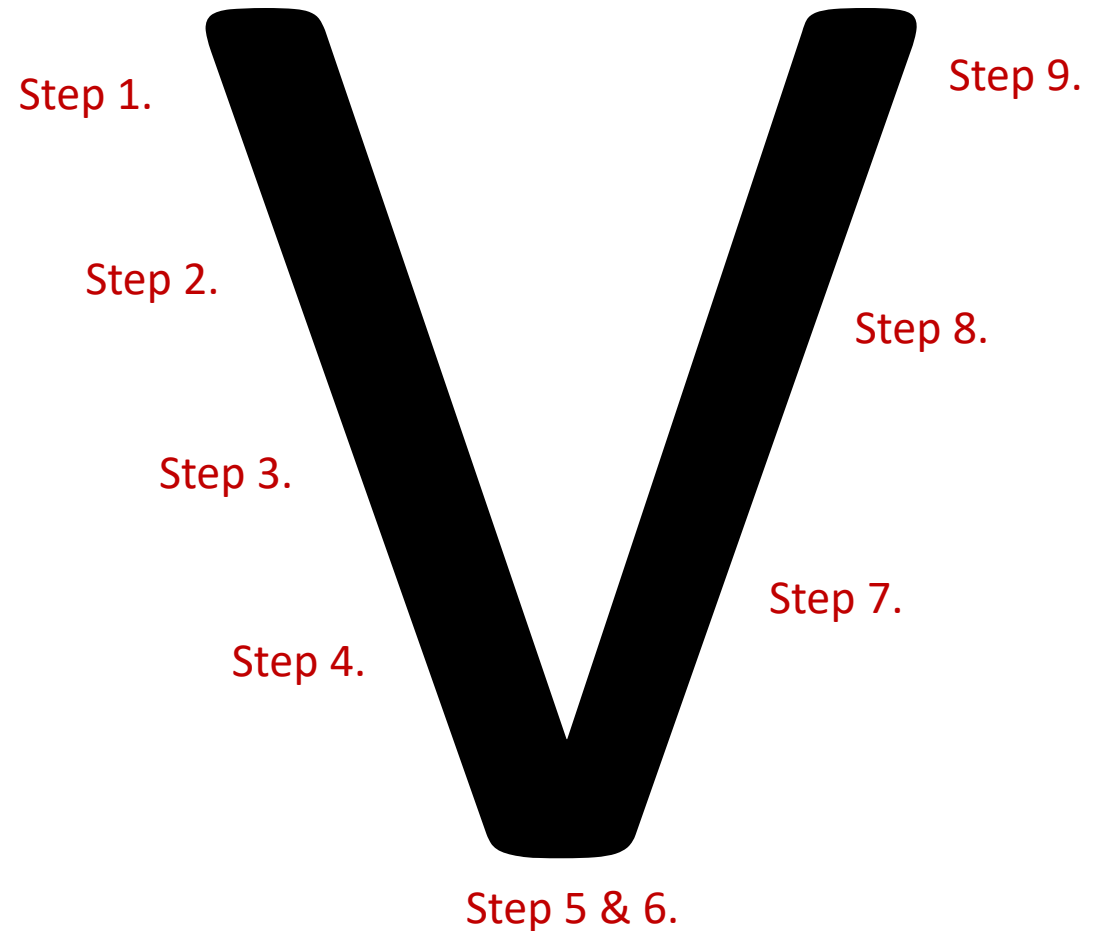
**1:** Perform one step before you move on to the next

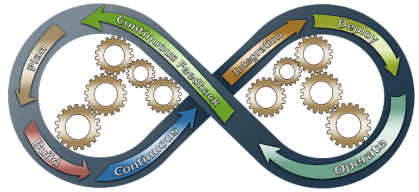
**2:** Development to the left, V&V to the right

### FuSa specific

**3:** Documentation required every step of the way

**4:** Plan required



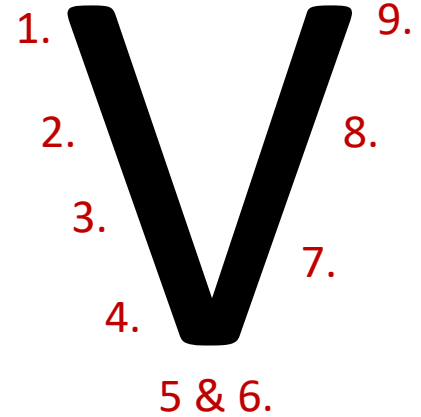


## Core Values

Agile

v.s.

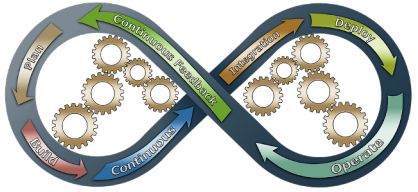
Functional Safety



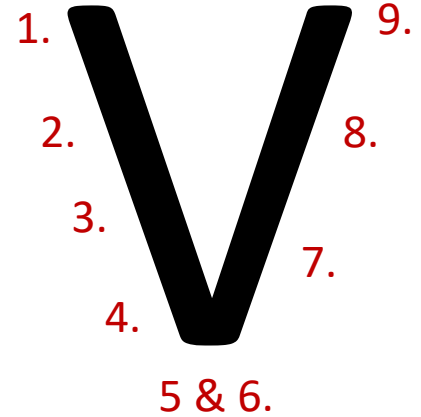
## FuSa V-model

- CV1:** Individuals and interactions over processes and tools
- CV2:** Working software over comprehensive documentation
- CV3:** Customer collaboration over contract negotiation
- CV4:** Responding to change over following a plan

- 1:** Perform one step before you move on to the next
- 2:** Development to the left, V&V to the right
- 3:** Documentation required every step of the way
- 4:** Plan required



# So how do we get these two methodologies to work together?



- Is it even possible?
- Why would we even do such a thing?

Now, That's what we are here to convey today!



# *Agile and Functional Safety*



Sofie  
Weidenlöv

*Scrum Master  
Kanban Coach  
Agile Product Owner  
Functional Safety Manager*

*Functional Safety Manager*



Johan  
Bergström

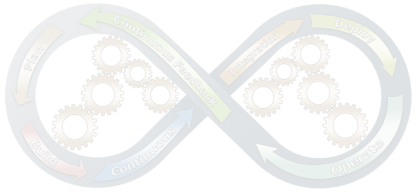
# Agenda

1. The Study
2. Challenges & Myths
3. Benefits & Potentials
4. Why we struggle
5. Tailoring Agile Functional Safety

# The study of Agile Functional Safety

- 11 participants – semi-structured interviews
- Diverse set
  - Men & Women
  - Different nationalities
  - Active in different countries across the world
- All had experience from working functional safety in an agile environment
- Highly anonymous



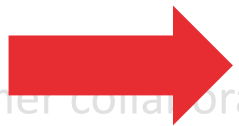


## What is the problem?

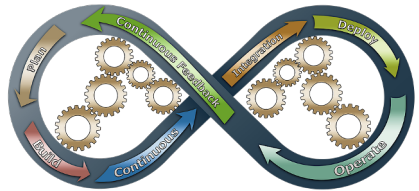


**At least 35% (!) of the statements were referring to various problems**

**It is evident that we have some obstacles to overcome for proper alignment**



- CV1: Individuals and interactions over processes and tools
- CV2: Working software over comprehensive documentation
- CV3: Customer collaboration over contract negotiation
- CV4: Responding to change over following a plan

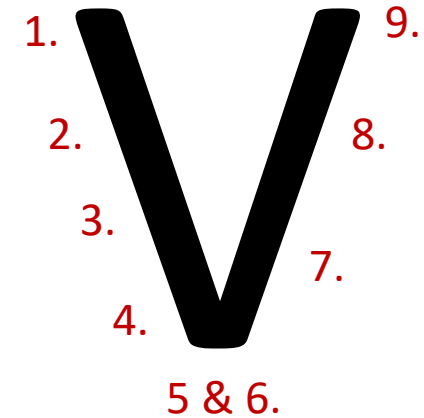


## Core Values

- CV1:** Individuals and interactions over processes and tools
- CV2:** Working software over comprehensive documentation
- CV3:** Customer collaboration over contract negotiation
- CV4:** Responding to change over following a plan

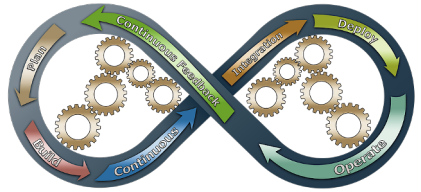
# What is the problem?

## FuSa V-model



- 1:** Perform one step before you move on to the next
- 2:** Development to the left, V&V to the right
- 3:** Documentation required every step of the way
- 4:** Plan required



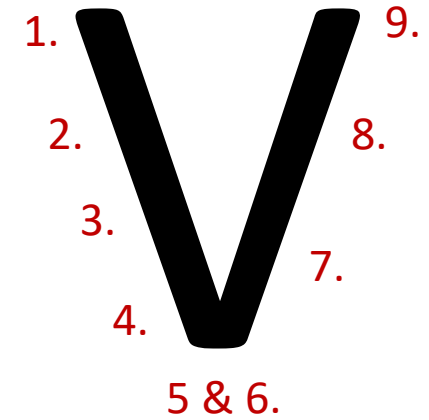


## Core Values

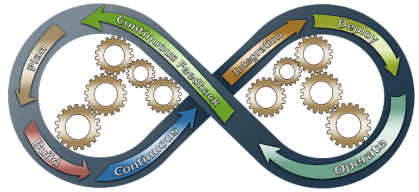
- CV1:** Individuals and interactions over processes and tools
- CV2:** Working software over comprehensive documentation
- CV3:** Customer collaboration over contract negotiation
- CV4:** Responding to change over following a plan

Are they Contradicting each other?  
What do YOU think?

## FuSa V-model



- 1:** Perform one step before you move on to the next
- 2:** Development to the left, V&V to the right
- 3:** Documentation required every step of the way
- 4:** Plan required



# Are they Contradicting each other?

## Study results:

### Core Values

**CV1:** Individuals and interactions over processes and tools

**CV2:** Working software over comprehensive documentation

**CV3:** Customer collaboration over contract negotiation

**CV4:** Responding to change over following a plan

*"One thing does not exclude the other"*

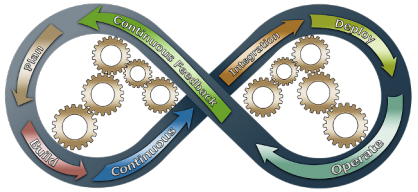
*"Weighting/prioritization is subjective"*

*"Trainers often have very limited understanding of Functional Safety or the automotive industry in general"*

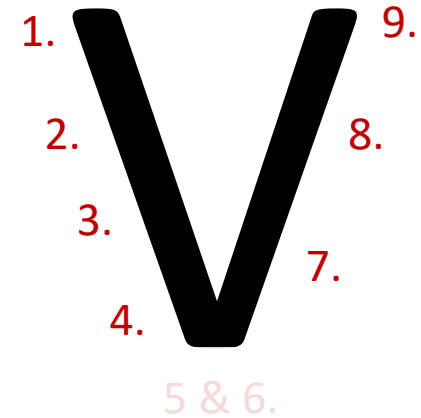
*"The meaning of the word 'over' is often misunderstood – even by trainers"*

*"It may work for SW but not For ISO26262"*





Are they **Contradicting** each other?



Core Values

**No, they are not...**

FuSa V-model

**... yet, it is evident that most, if not all of us, have experienced **problems** when going Agile.**

1: Perform one step before you move on to the next

2: Development to the left, V to the right

3: Documentation required every step of the way

4: Plan required

**- But why ?**

CV1: Individuals and interactions over processes and tools

CV2: Working software over comprehensive documentation

CV3: Customer collaboration over contract negotiation

CV4: Responding to change over following a plan

*"We do not need to move mountains to make changes"*

**Iterations  
&  
rapid improvements**

**Speeding up the process**

*Continuous:*

- Releases
- Integrations
- Planning
- Safety Cases
- ...

# **What do we have to gain from Agile Functional Safety?**

**Task orientation**

*"The Agile methods assist and promote the progress of breaking the job down into comprehensive work packages and specific tasks"*

**Quality of the work**

*Transparency; keeping track of who did what and the working progress*

*"A great teamwork increases the quality of the Work Products"*

**Cross functional teams**

*"Feasible for Safety Analyses - more aspects can be collected -- > larger coverage"*

*"Better understanding for your co-workers"*

*"We do not need to move mountains to make changes"*

**Iterations  
&  
rapid improvements**

**Speeding up the process**

*Continuous:*

- Releases
- Integrations
- Planning
- Safety Cases
- ...

**Cross functional teams**

# TEAMWORK

**Task orientation**

*"The Agile methods assist and promote the progress of breaking the job down into comprehensive work packages and specific tasks"*

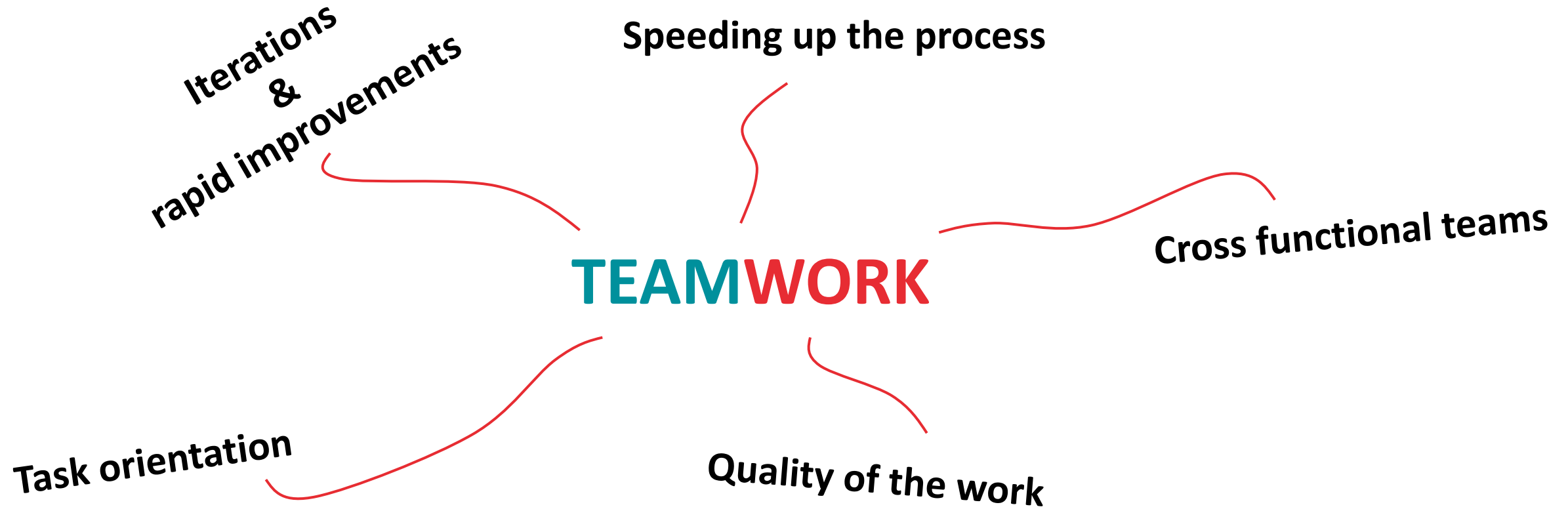
**Quality of the work**

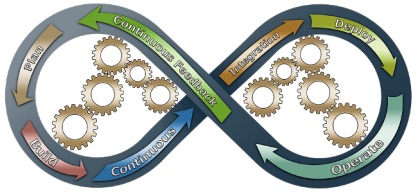
*Transparency; keeping track of who did what and the working progress*

*"A great teamwork increases the quality of the Work Products"*

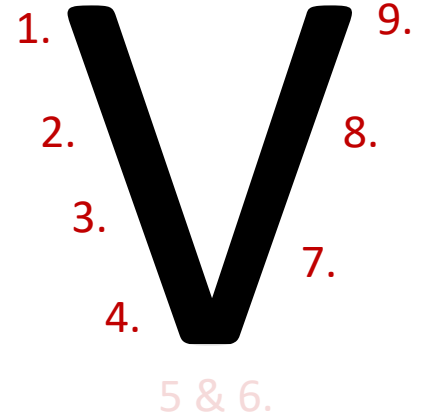
*"Feasible for Safety Analyses - more aspects can be collected -- > larger coverage"*

*"Better understanding for your co-workers"*





# Aligning Agile Functional Safety



## Core Values

**Evidently, we have a lot to gain from proper alignment ...**

CV1: Individuals and interactions over processes and tools

CV2: Working software over comprehensive documentation

CV3: Customer collaboration over contract negotiation

CV4: Responding to change over following a plan

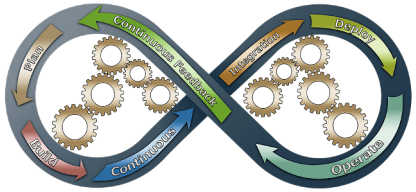
## FuSa V-model

1: Perform one step before you move on to the next

2: Development to the left, V&V to the right

3: documentation required every step of the way

- Let's talk about **why...**



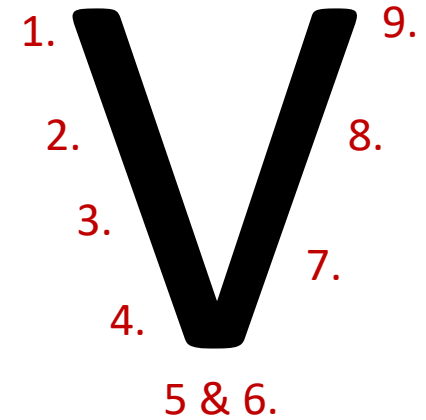
## Please raise **your hand...**

1. How many in here have been working Agile?

Most hands in the air

4. Now – how many of you were familiar with the 4 Core Values of the Agile approach?

Not as many hands in the air as we would need for a proper FuSa/Agile alignment - and this is the takeaway – this is the reason; we have all experienced problems when going agile with FuSa → we need to get more Agile training and we need to be trained by someone with FuSa or at least automotive experience



2. Automotive development in an Agile set-up?

3. Functional Safety in an Agile set-up?



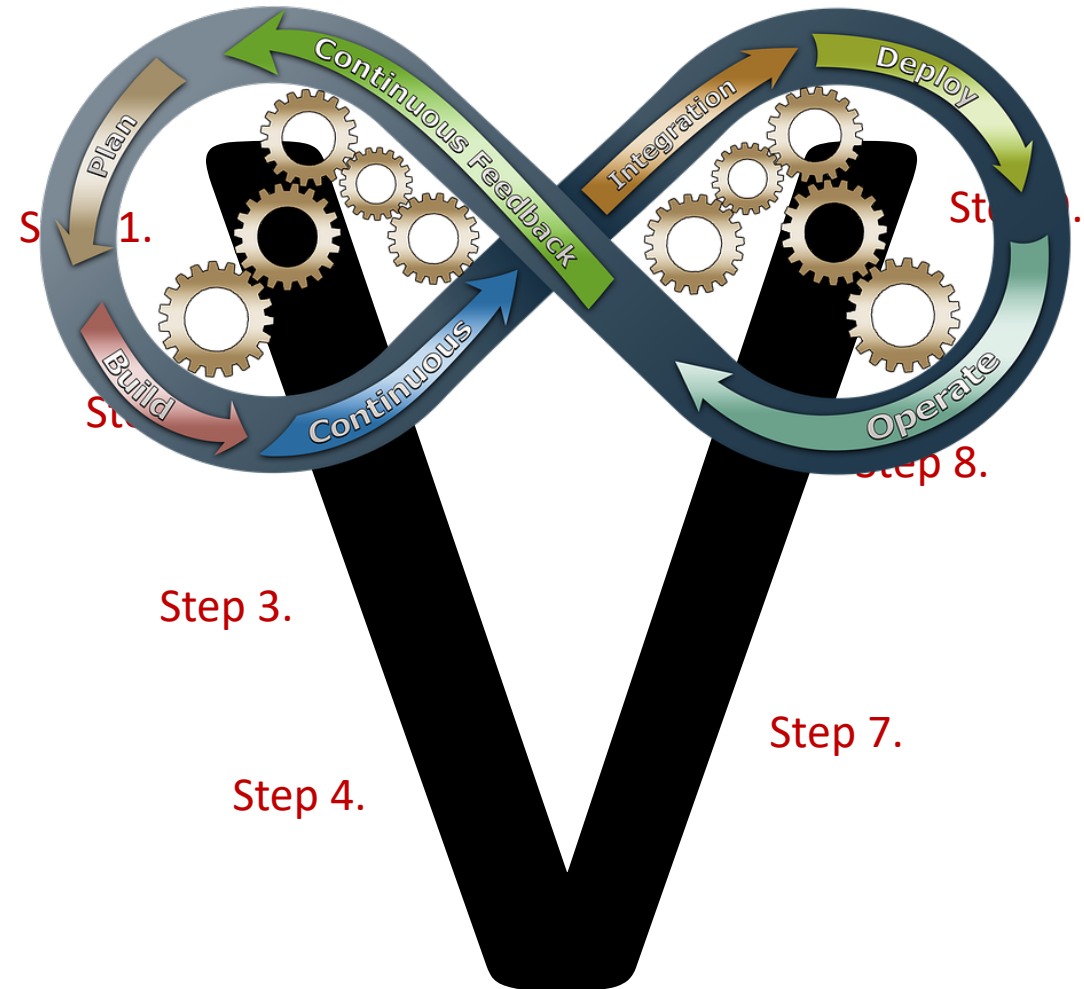
# Agile Functional Safety

So... How do we tailor this?

There is...

...No "one size fits all"

...Nor a standard recipe that is always going to work



# Tailoring Agile Functional Safety

We need to **adapt** to  
the current situation

We need to **adapt** to  
what is being  
developed

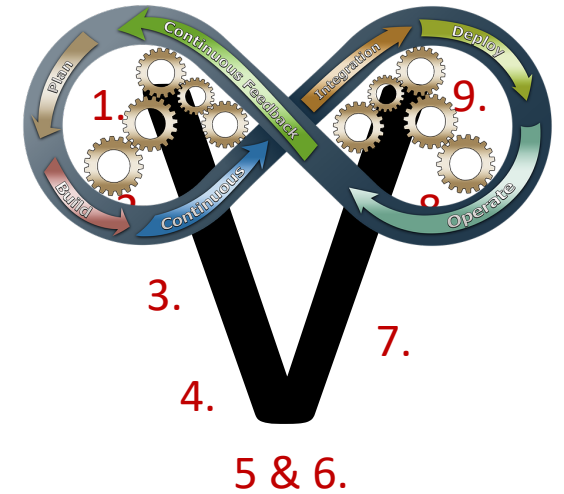
**The organisation**

**The team**

**The individual**

- *Size*
- *Experience*
- *Development phase*
- *Goals & purpose*

- *Automotive Industry*
- *ISO 26262*
- *Agile frameworks*



Adjust the  
weighting of the  
Core Values!

→ Accordingly

→ Continuously

# Tailoring Agile Functional Safety

## Example – Core Value 1

Individuals and interactions **over** processes and tools



The essence of CV 1: Applicable when we have a mature organization and experienced team with individuals with great FuSa & agile skills

Adjust the  
weighting of the  
Core Values!

→ Accordingly

→ Continuously

# Tailoring Agile Functional Safety

## Example – Core Value 1

Individuals and interactions **over** processes and tools



Momentary tailoring of CV 1: this is a suggestion of how CV1 needs to be weighted when a team or an organization is about to go Agile OR just about to deploy ISO 26262 for the first time

Adjust the weighting of the Core Values!

→ Accordingly

→ Continuously

# Tailoring Agile Functional Safety

## Example – Core Value 1

*Individuals and interactions **over** processes and tools*

Momentary tailoring of CV 1: this is a suggestion of how CV1 needs to be weighted when a team or an organization is about to go Agile AND is just about to deploy ISO 26262 for the first time

- And that is ok too, although it appears to be against the original message of the Agile approach – as that is what being agile is all about – momentary changes! Once the team/org. gets up to speed and the process and usage of tools becomes more and more automated, the weighting should change again, and refocus on individuals and interactions

Adjust the  
weighting of the  
Core Values!

→ Accordingly

→ Continuously

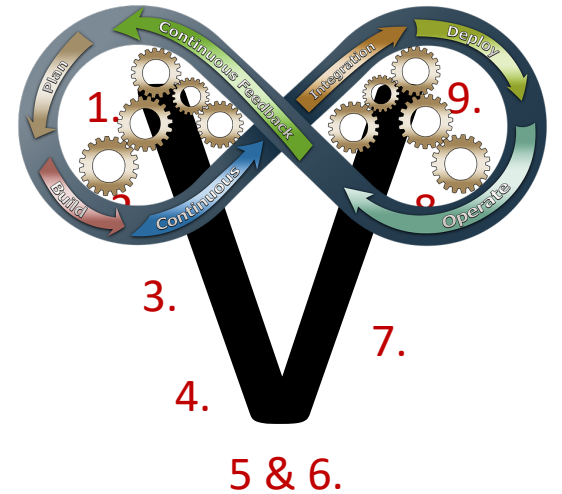
# Agile Functional Safety

And how do we do this again?

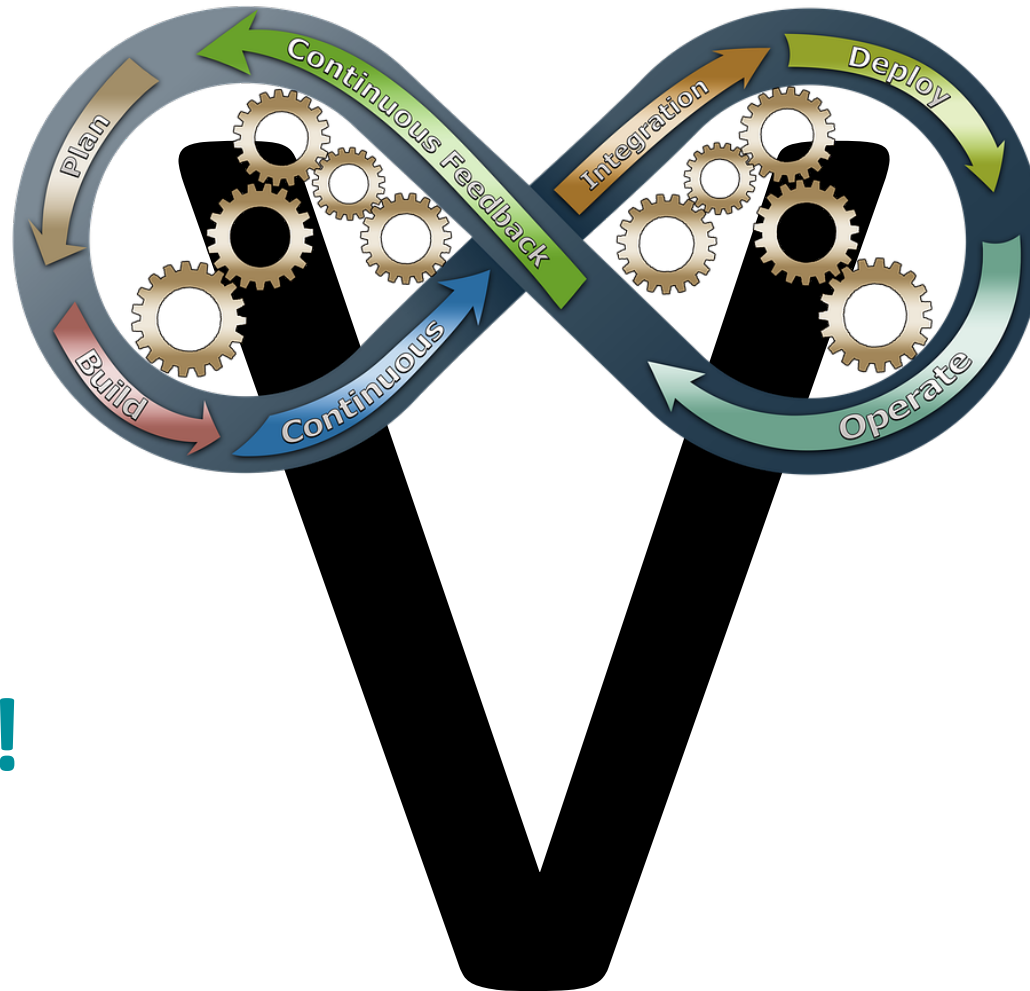
Well, it all comes down to **education!**

And it all starts with **YOU!**

So... **Let's do this!**



# Agile Functional Safety



Thank you!

Questions?