


**AGILE SYSTEMS ENGINEERING**  
**BRIDGE OVER TROUBLED WATER**

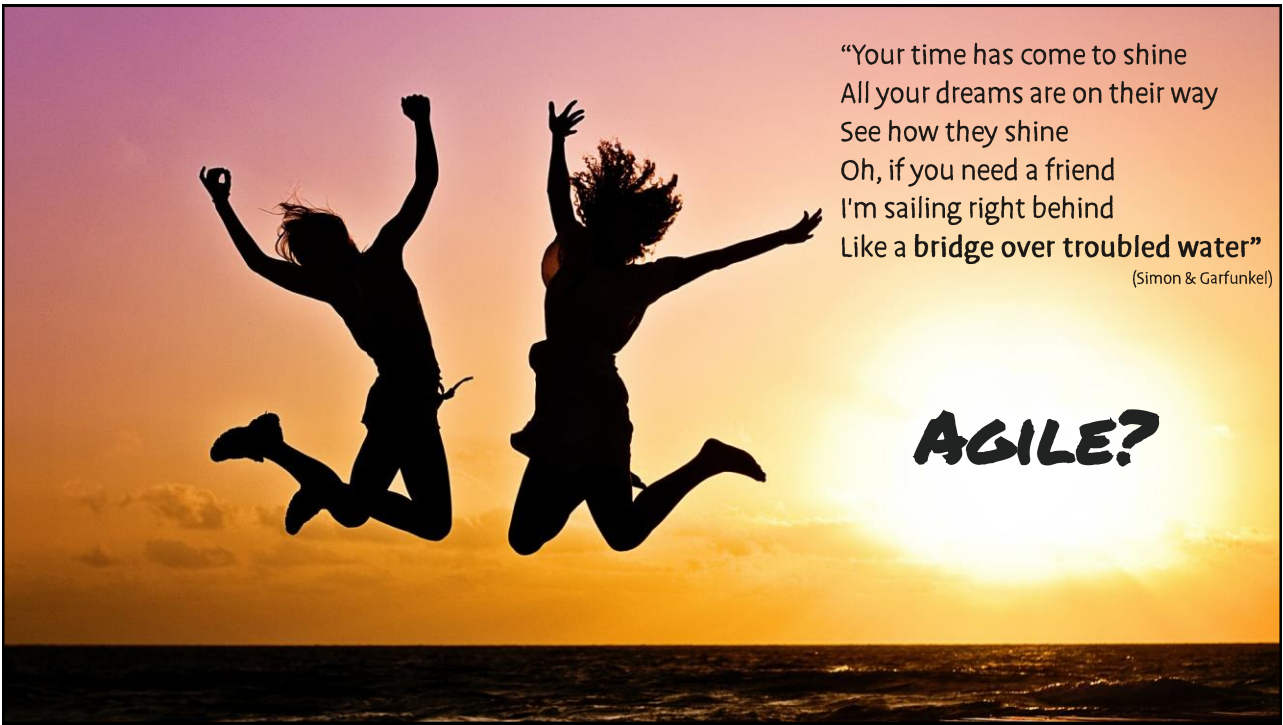
**SWISSED 2019, ZURICH**

*TIM.WEILKIENS@DOSE.DE*

**SYSTEMS ENGINEERING CRAFTSMAN**  
**CONSULTANT, TRAINER, AUTHOR, PUBLISHER, LECTURER**  
**EXECUTIVE BOARD MEMBER DOSE**



1



“Your time has come to shine  
All your dreams are on their way  
See how they shine  
Oh, if you need a friend  
I'm sailing right behind  
Like a bridge over troubled water”  
(Simon & Garfunkel)

**AGILE?**

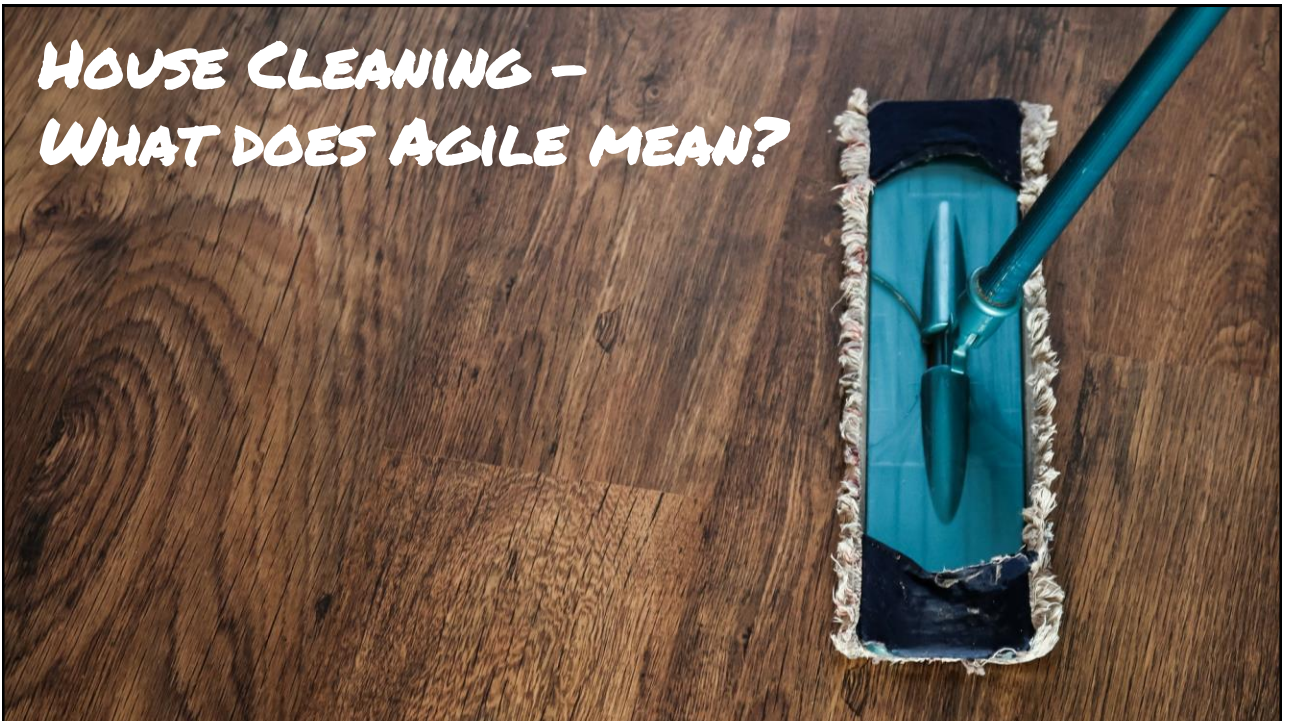
2

or is **AGILE** just another troublemaker?

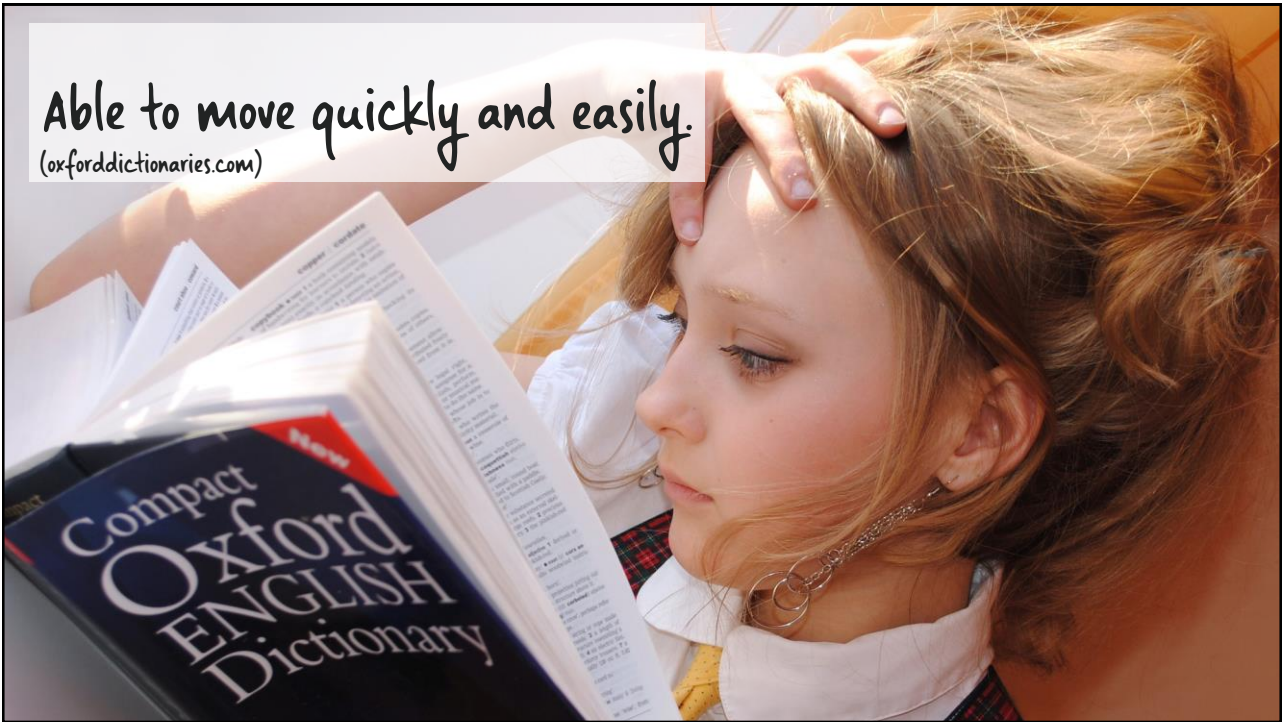


3

HOUSE CLEANING -  
WHAT DOES AGILE MEAN?



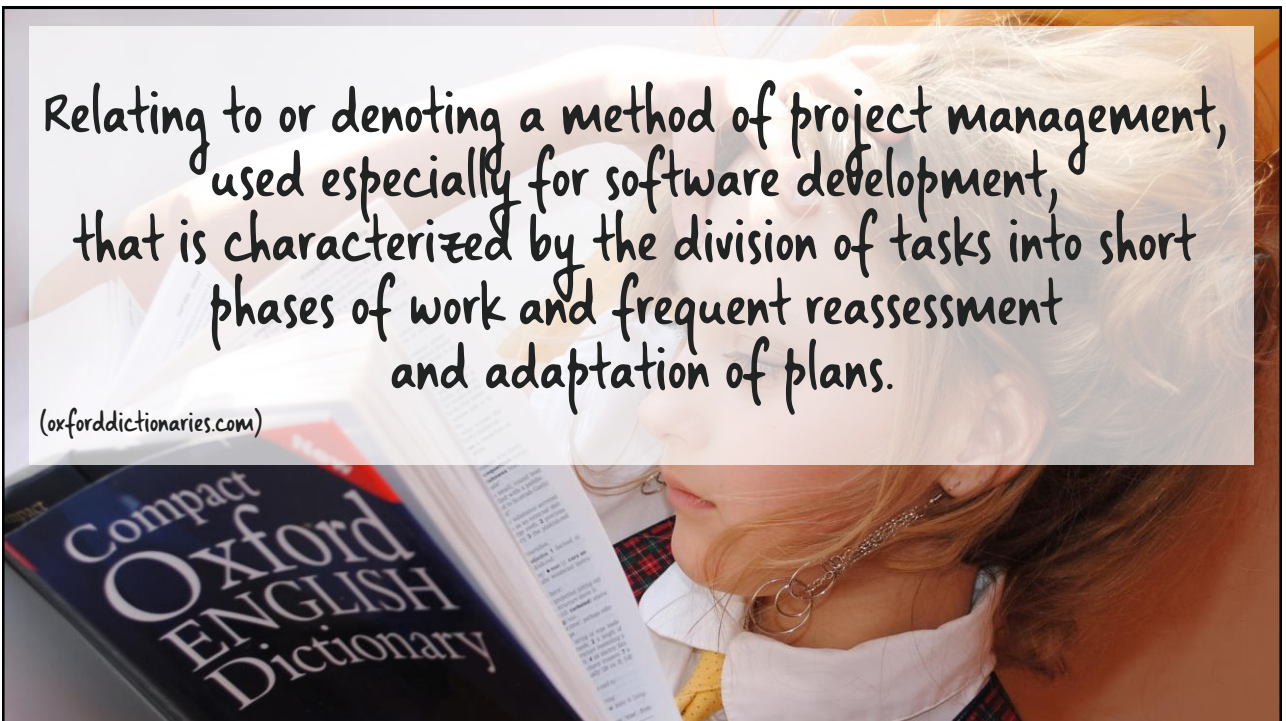
4



Able to move quickly and easily.

(oxforddictionaries.com)

5



Relating to or denoting a method of project management, used especially for software development, that is characterized by the division of tasks into short phases of work and frequent reassessment and adaptation of plans.

(oxforddictionaries.com)

6

## AGILE MANIFESTO FOR SOFTWARE DEVELOPMENT

**INDIVIDUALS AND INTERACTIONS** OVER PROCESSES AND TOOLS  
**WORKING SOFTWARE** OVER COMPREHENSIVE DOCUMENTATION  
**CUSTOMER COLLABORATION** OVER CONTRACT NEGOTIATION  
**RESPONDING TO CHANGE** OVER FOLLOWING A PLAN

**PLUS 12 PRINCIPLES!**

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

Source: [www.agilemanifesto.org](http://www.agilemanifesto.org)

- |                          |                |                         |
|--------------------------|----------------|-------------------------|
| Kent Beck                | Martin Fowler  | Jon Kern                |
| Mike Beedle              | James Grenning | Brian Marick            |
| <b>Arie van Bennekum</b> | Jim Highsmith  | <b>Robert C. Martin</b> |
| <b>Alistair Cockburn</b> | Andrew Hunt    | Steve Mellor            |
| Ward Cunningham          | Ron Jeffries   | Ken Schwaber            |
|                          |                | Jeff Sutherland         |
|                          |                | Dave Thomas             |

7

## AGILE MANIFESTO FOR SOFTWARE DEVELOPMENT

**INDIVIDUALS AND INTERACTIONS** OVER PROCESSES AND TOOLS  
**WORKING SOFTWARE** OVER COMPREHENSIVE DOCUMENTATION

**Alistair Cockburn**  
 people who still equate agile with software lost the thread somewhere about 10-15 years ago. Gim  
 11 Std. Gefällt mir Antworten

**Alistair Cockburn**  
 we definitely were talking about software in Feb 2001 - "stick with what you know". But it took only a few months to see it was more general. Poor thing has been stuck in IT prison for 18 years!!!  
 10 Std. Gefällt mir Antworten

**Robert Martin**  
 I'm one of those un-woke Neanderthals who still believe that Agile was (and is) about software.  
 In particular it is about small teams doing small projects.

**PLUS 12 PRINCIPLES!**

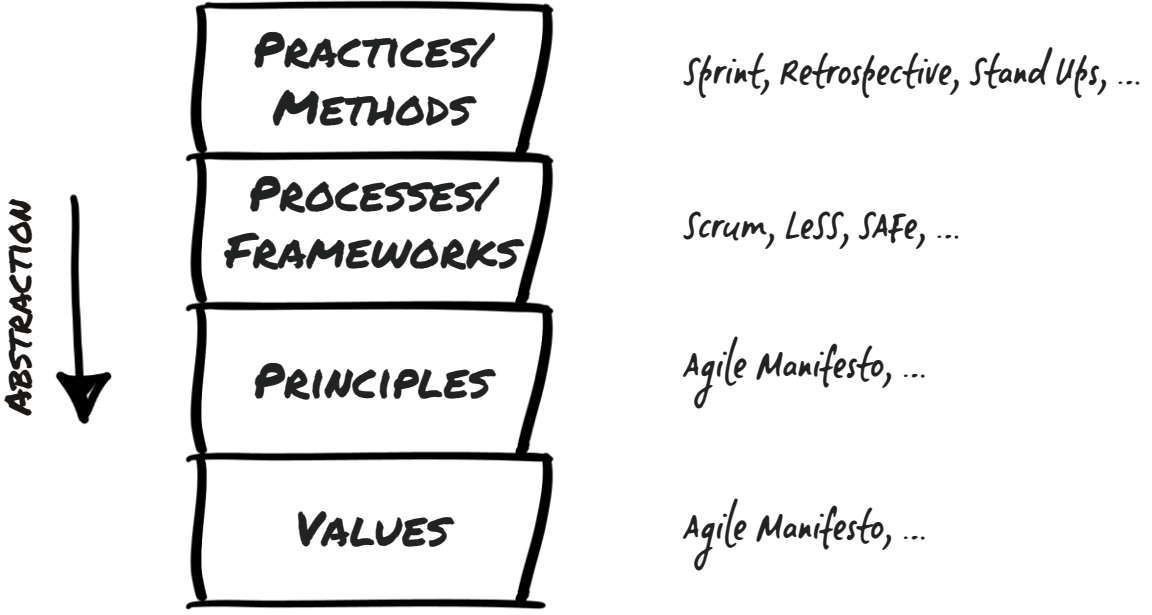
That is, while there is value in the items on the right, we value the items on the left more.

Source: [www.agilemanifesto.org](http://www.agilemanifesto.org)

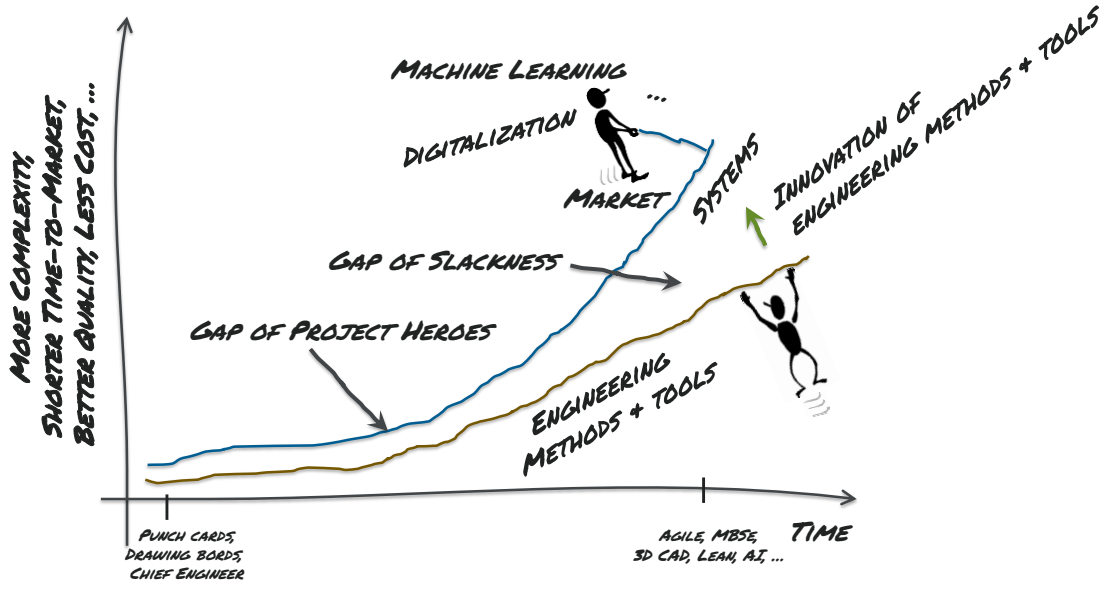
- |                          |                |                         |
|--------------------------|----------------|-------------------------|
| Kent Beck                | Martin Fowler  | Jon Kern                |
| Mike Beedle              | James Grenning | Brian Marick            |
| <b>Arie van Bennekum</b> | Jim Highsmith  | <b>Robert C. Martin</b> |
| <b>Alistair Cockburn</b> | Andrew Hunt    | Steve Mellor            |
| Ward Cunningham          | Ron Jeffries   | Ken Schwaber            |
|                          |                | Jeff Sutherland         |
|                          |                | Dave Thomas             |

8

### MORE ORIENTATION: AGILE LAYERS



### ENGINEERING METHOD + TOOLS MUST FOLLOW THE INCREASING REQUIREMENTS FOR THE SYSTEMS



11

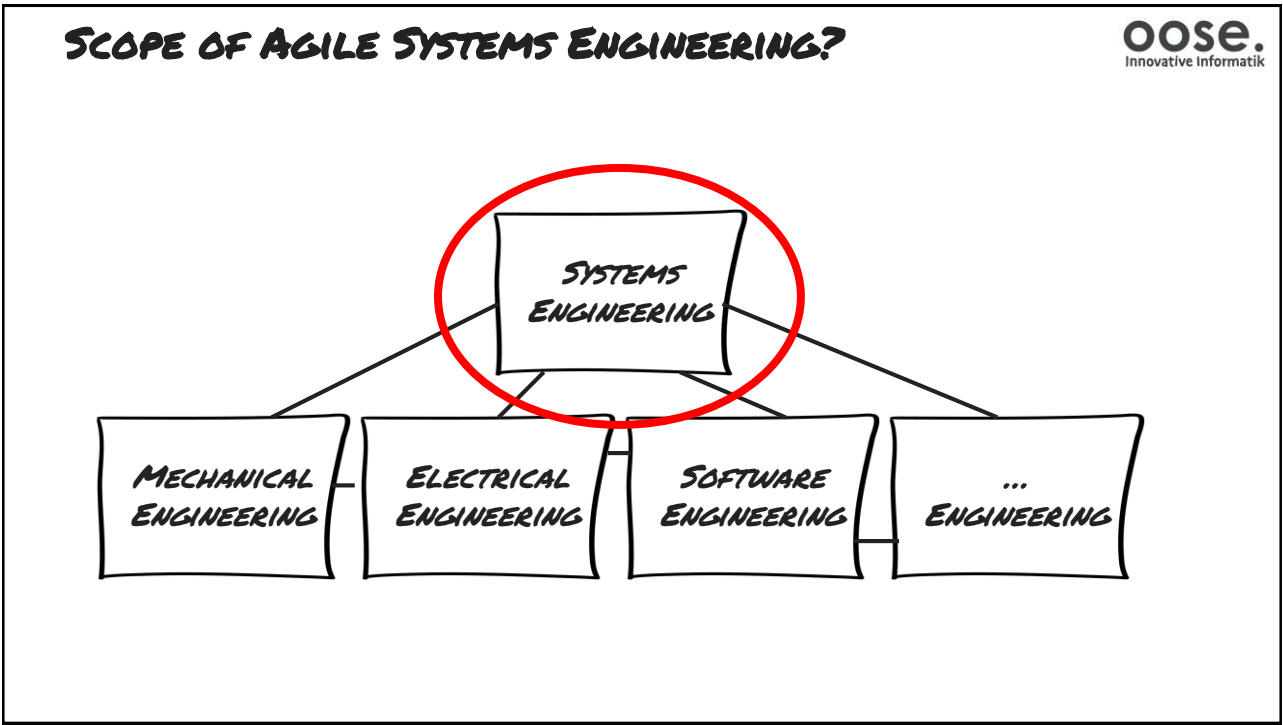
### HOW DO WE FACE THE CHALLENGES?



12

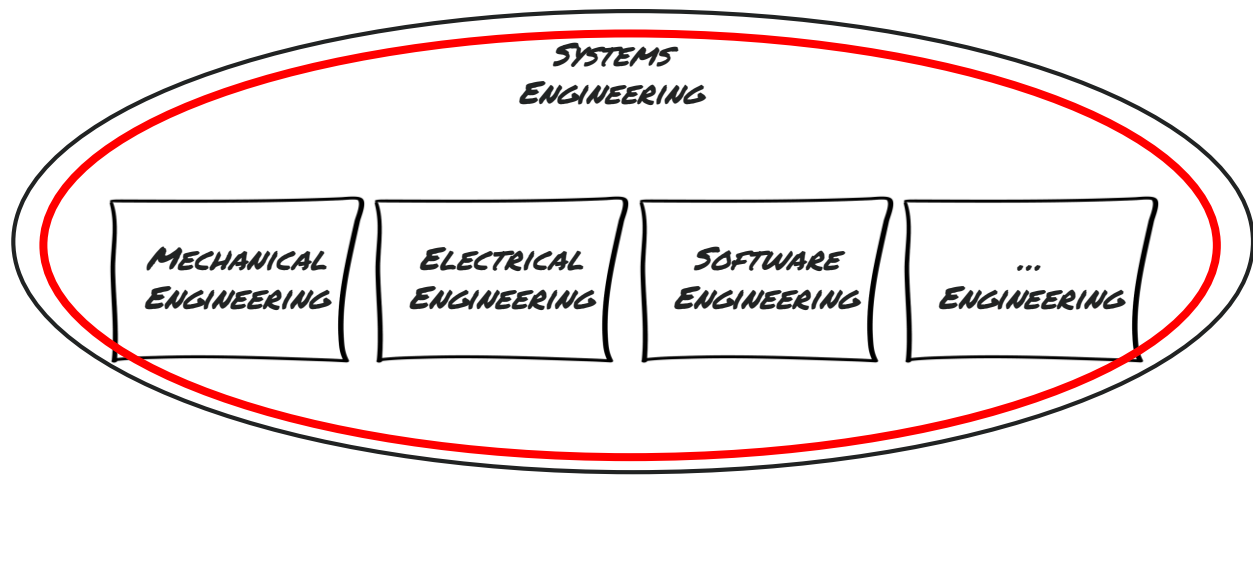


13



14

## SCOPE OF AGILE ENGINEERING?



15

## WHAT MEANS „AGILE“ IN SE?

**“AGILITY = PROPERTY OF A SYSTEM THAT CAN BE CHANGED RAPIDLY”  
(HABERFELLNER/DE WECK)**



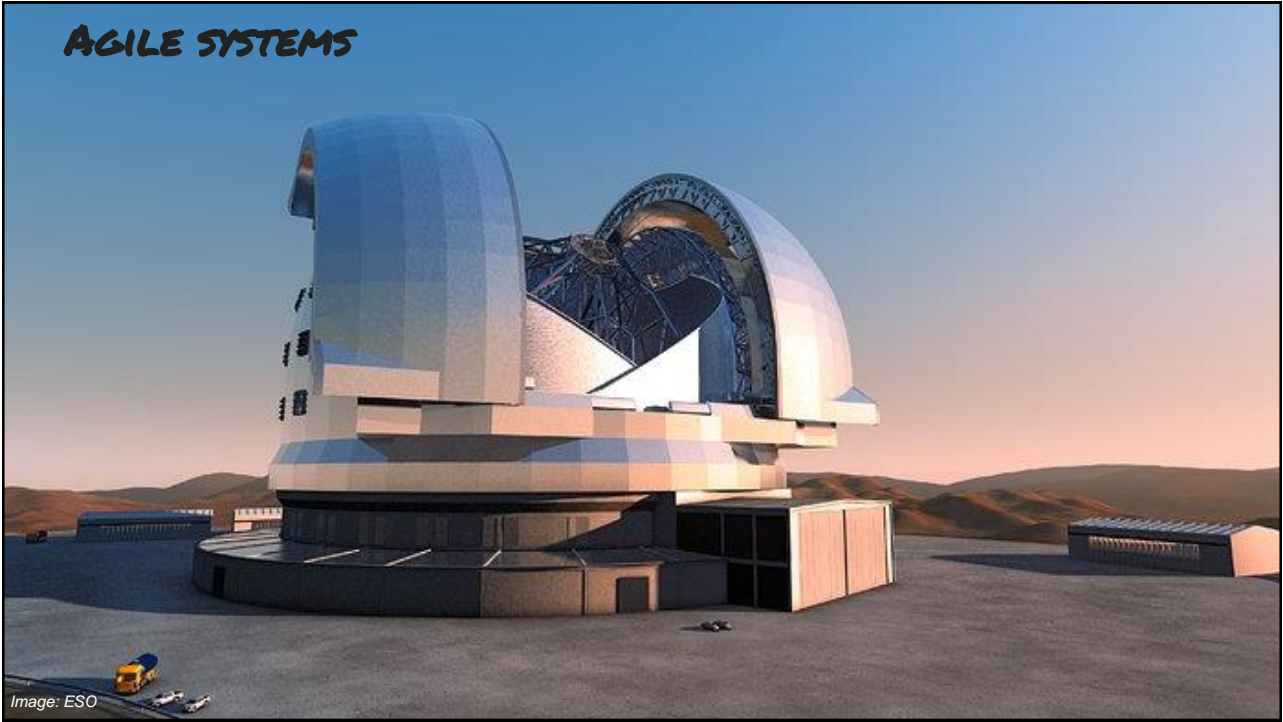
**“SYSTEM” CAN BE**

- THE SYSTEM UNDER DEVELOPMENT OR
- THE ENGINEERING PROCESS

**AGILE SYSTEMS ENGINEERING ADDRESSES  
CHANGES DURING SYSTEM OPERATION.**

**AGILE SYSTEMS ENGINEERING ADDRESSES  
CHANGES DURING SYSTEM DEVELOPMENT.**

16



17



18

**A SPRINT IS ALWAYS THREE WEEKS LONG AND MUST DELIVER A WORKING SYSTEM WHICH IS IMPOSSIBLE FOR AIRCRAFTS ETC.**

**DOCUMENTATION INCL. MODELING IS NOT ALLOWED IN AN AGILE PROJECT!**

**V-MODEL IS WATERFALL AND NOT AGILE!**

**AND MANY MORE...**

19

## **CRITICAL STATEMENTS FROM SE EXPERTS**

**oose.**  
Innovative Informatik

**"THERE IS A BASIC CONFLICT BETWEEN AN AGILE AND A FAST RUNNING SE PROCESS." (HABERFELLNER/DE WECK. AGILE SYSTEMS ENGINEERING VERSUS AGILE SYSTEMS ENGINEERING. INCOSE IS 2005)**



**"CAN SE BE AGILE? IF "AGILE" IS DEFINED BY THE CRITERIA OF THE AGILE MANIFESTO, THE ANSWER MUST BE "NO". (R. CARSON. CAN SYSTEMS ENGINEERING BE AGILE. BOING. 2011)**



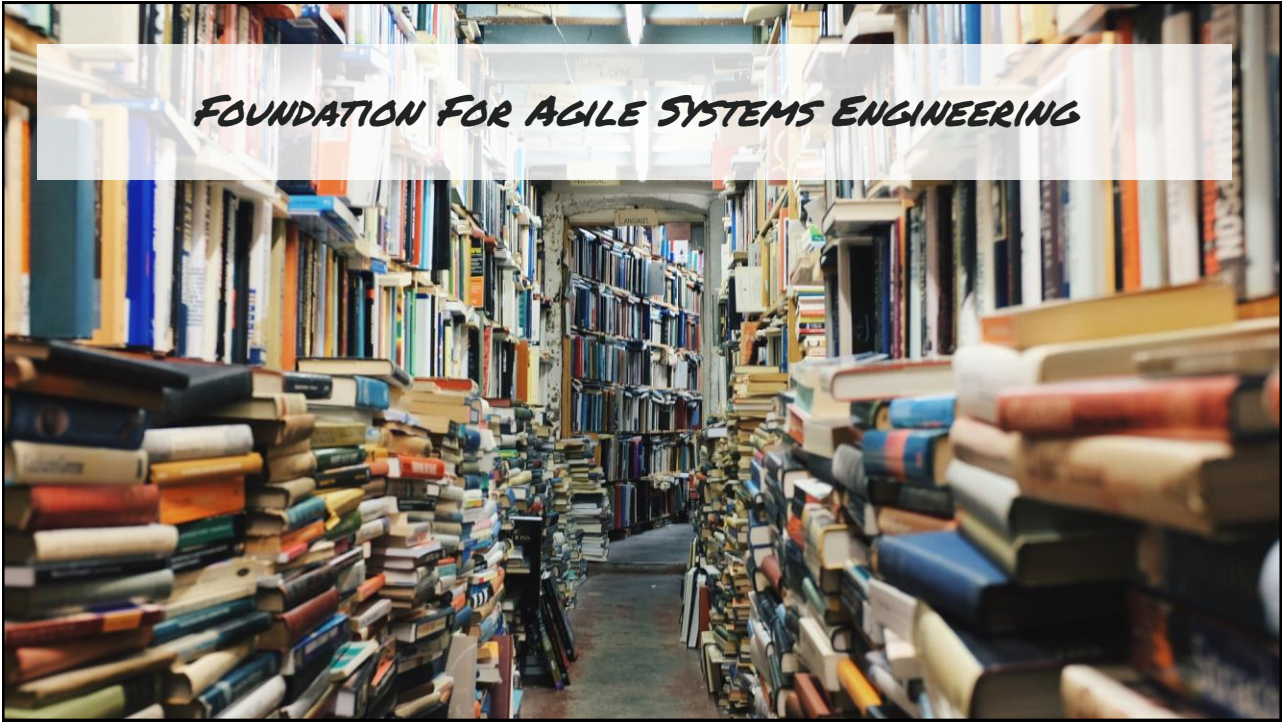

20

**STATEMENTS FROM EXPERTS**

**"THERE IS A BASIC CONFLICT BETWEEN AN AGILE AND A TRADITIONAL SE PROCESS." (HABERLACH, WECK, AND SYSTEMS ENGINEERING VERSUS AGILE SYSTEMS ENGINEERING, INC. 2005)**

**"CAN SE BE AGILE AS DEFINED BY THE MANIFESTO, THE ANSWER MUST BE "NO". (R. CARSON, C. ENGINEERING)**

**oose.**  
Innovative Informatik



**THE SEARCH FOR THE FOUNDATION...**

Tim Weilkiens

Arie van Bennekum

Josef Oehmen

Alexander Stein

Johan Oelen

**Alistair Cockburn** have you ever thought about getting back together, even virtually?  
 7 Std. Gefällt mir Antworten

**Alistair Cockburn** yes - and it won't happen  
 7 Std. Gefällt mir Antworten

**Robert Martin** Craig, some of us would agree. Some of us would not. We were a group that held diverse perspectives, opinions, and attitudes. We collaborated well once. I doubt that collaboration could be repeated.  
 6 Std. Gefällt mir Antworten

23

**~~AGILE MANIFESTO FOR SOFTWARE DEVELOPMENT~~**

<b>INDIVIDUALS AND INTERACTIONS</b>	<b><u>OVER PROCESSES AND TOOLS</u></b>
<b>WORKING : SOLUTIONS</b>	<b><u>OVER COMPREHENSIVE DOCUMENTATION</u></b>
<b>CUSTOMER COLLABORATION</b>	<b><u>OVER CONTRACT NEGOTIATION</u></b>
<b>RESPONDING TO CHANGE</b>	<b><u>OVER FOLLOWING A PLAN</u></b>

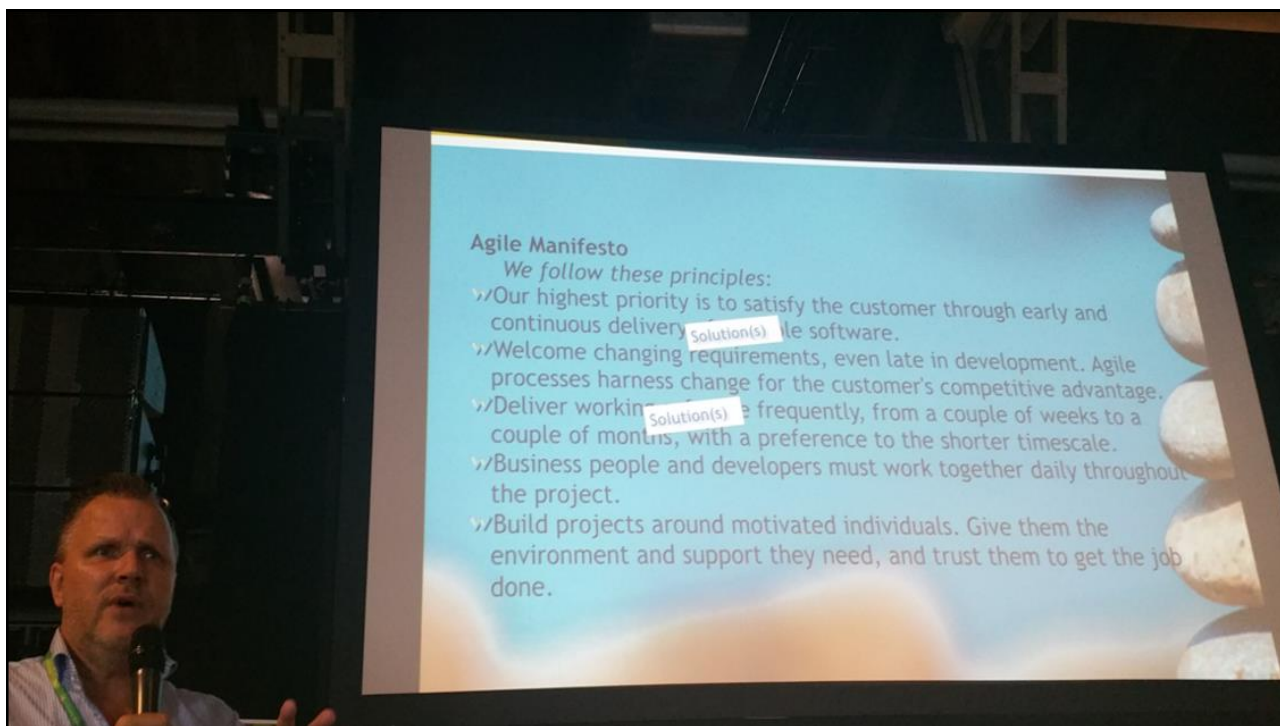
Source: [www.agilemanifesto.org](http://www.agilemanifesto.org)

**PLUS 12 PRINCIPLES!**

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

- |                          |                |                         |
|--------------------------|----------------|-------------------------|
| Kent Beck                | Martin Fowler  | Jon Kern                |
| Mike Beedle              | James Grenning | Brian Marick            |
| <b>Arie van Bennekum</b> | Jim Highsmith  | <b>Robert C. Martin</b> |
| <b>Alistair Cockburn</b> | Andrew Hunt    | Steve Mellor            |
| Ward Cunningham          | Ron Jeffries   | Ken Schwaber            |
|                          |                | Jeff Sutherland         |
|                          |                | Dave Thomas             |

24



**Agile Manifesto**

*We follow these principles:*

- ↳ Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.
- ↳ Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.
- ↳ Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
- ↳ Business people and developers must work together daily throughout the project.
- ↳ Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.

25

**FOUNDATION FOR COMPLEX SYSTEMS ENGINEERING**

**TO PROVIDE A PLATFORM FOR CONTINUOUS IMPROVEMENT OF THE DEVELOPMENT APPROACH FOR COMPLEX SYSTEMS WE VALUE...**

<b>MULTIFUNCTIONAL TEAMS</b>	<b>OVER</b>	<b>ENGINEERING SILOS</b>
<b>FOCUS ON PURPOSE</b>	<b>OVER</b>	<b>FOCUS ON REQUIREMENTS</b>
<b>EMPOWERED TEAMS</b>	<b>OVER</b>	<b>TASKED INDIVIDUALS</b>
<b>EARLY LEARNING</b>	<b>OVER</b>	<b>LATE FAILURES</b>

Source: Arie van Bennekum, Josef Oehmen, Tim Weilkiens, Alexander Stein, Johann Oelen

26

## FOUNDATION FOR AGILE SYSTEMS ENGINEERING

It is a potential reference point for a discussion about agile systems engineering.

[www.agile-systems-engineering.com](http://www.agile-systems-engineering.com)

The Foundation of Agile Systems Engineering is a combination of the Foundation for Complex Systems Engineering and a Tweaked Agile Manifesto.

### Foundation for Complex Systems Engineering

To provide a platform for continuous improvement of the development approach for complex systems we value...

Multifunctional Teams	over	Engineering Silos
Focus on Purpose	over	Focus on Requirements
Empowered Teams	over	Tasked Individuals
Early Learning	over	Late Failures

### Tweaked Agile Manifesto

Replace the word "software" by "solution" in the values and principles of the [agile manifesto](#).

Individuals and interactions	over	processes and tools
Working <b>software solutions</b>	over	comprehensive documentation
Customer collaboration	over	contract negotiation
Responding to change	over	following a plan

27

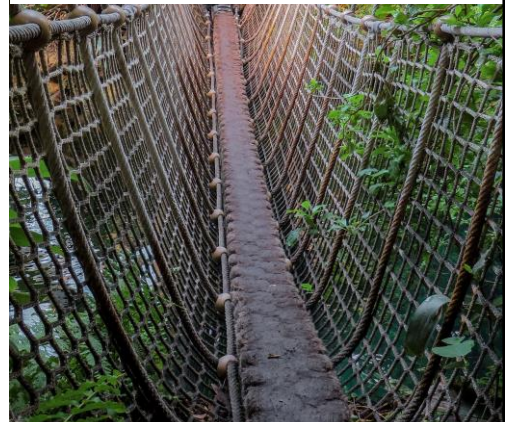
## CONCLUSION

IF YOU DON'T HAVE A COMMON UNDERSTANDING OF AGILE,

AND IF YOU DON'T HAVE A CLEAR PICTURE OF YOUR PROBLEMS AND OBJECTIVES,

YOU DO NOT KNOW WHAT TO EXPECT AT THE END OF THE BRIDGE OVER TROUBLED WATER.

**oose.**  
Innovative Informatik



28

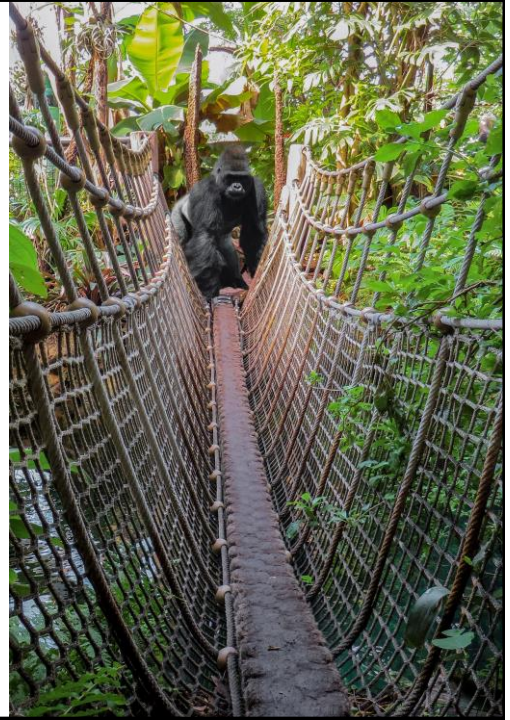
## **WHAT TO DO?**

**BE A SYSTEMS ENGINEER –  
IT IS ALREADY IN YOUR TOOLBOX!**

## **PROBLEM SOLVING PROCESS**

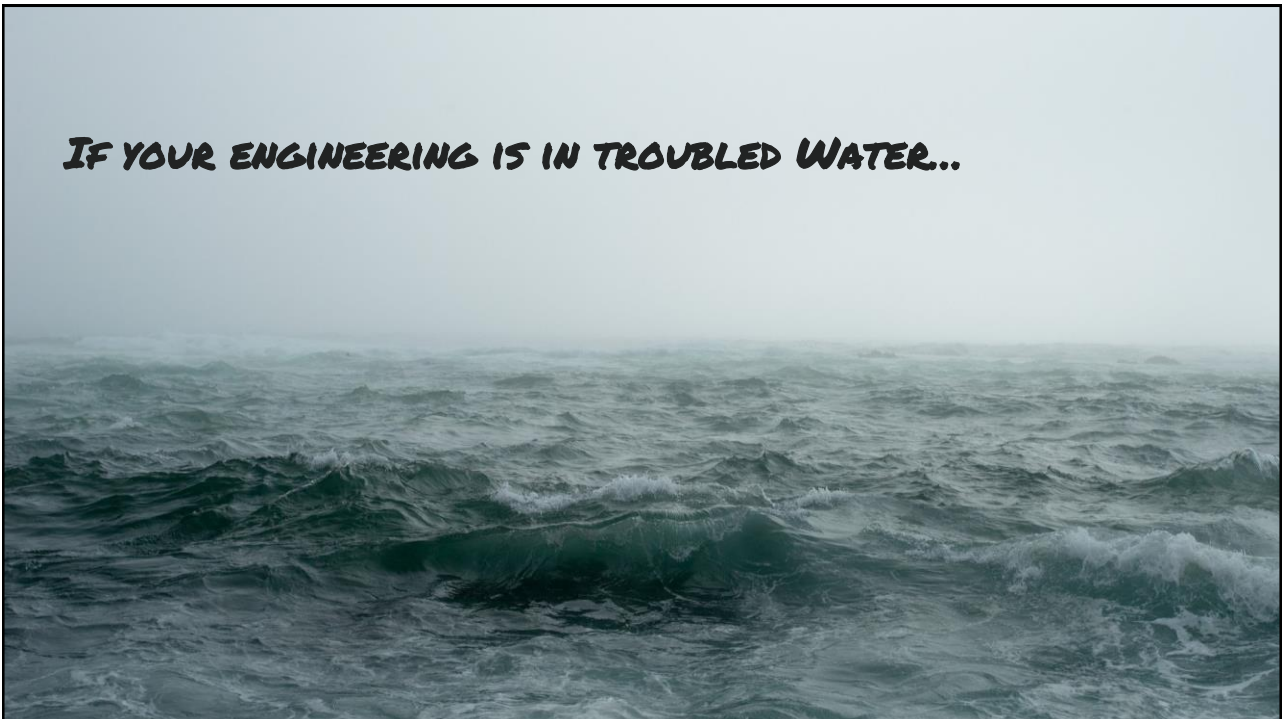
- 1. ANALYZE YOUR PROBLEMS**
- 2. STATE YOUR OBJECTIVES**
- 3. NOW START WITH THE SOLUTION...**

**AND SET YOUR REFERENCE POINTS!**



29

**IF YOUR ENGINEERING IS IN TROUBLED WATER...**



30



**...AGILE CAN BE A BRIDGE TO...**

31



**...ACHIEVE YOUR GOALS!**

32

IS  
**AGILE**  
A GOOD IDEA

[ LET'S TALK ABOUT IT ]

AGILE SE @ OOSE

**AGILE SYSTEMS ENGINEERING**  
**BRIDGE OVER TROUBLED WATER**

**SWISSED 2019, ZURICH**

JOIN THE GfSE WORKING GROUP  
ABOUT AGILE SYSTEMS ENGINEERING  
CONTACT TIM IF INTERESTED

TIM.WEILKIENS@OOSE.DE  
SYSTEMS ENGINEERING CRAFTSMAN  
CONSULTANT, TRAINER, AUTHOR, PUBLISHER, LECTURER  
EXECUTIVE BOARD MEMBER OOSE

33

**RELATED WORK**

oose.  
Innovative Informatik

- **THE CHARTER FOR AGILE PRODUCT DEVELOPMENT** ([agileproductcharter.org](http://agileproductcharter.org))
- **A PROPOSED AGILE SYSTEMS ENGINEERING MANIFESTO BY HAZEL WOODCOCK AND JOHN CHARD** (<https://www.slideshare.net/hazel-woodcock/a-proposed-agile-systems-engineering-manifesto-noteless>)
- **AGILE CRITICISM: MARTIN FOWLER, ROBERT C. MARTIN, KENT BECK**  
(<https://martinfowler.com/articles/agile-aus-2018.html>, <https://blog.cleancoder.com/uncle-bob/2018/08/28/CraftsmanshipMovement.html>, <https://www.youtube.com/watch?v=fH4gqslYzE>)
- **EXCELLENCE + CRAFTSMANSHIP**

Tim Weilkiens, Michael Vossler  
**MBSE Craftsmanship**  
MBSE Alliance

34