



ALM and the road to production

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Agenda

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Introduction to BHC

02

Field of interest: PLM & ALM

03

Let's talk about Deployment

Who we are

Our business



BHC



- Management, business and IT consulting for auto-motive, mechanical and plant engineering

Team



- More than 50 Experts
- More than 17 years experience

We are a part of



CEO

- Philipp Hasenäcker
- Member of Management Board of PROSTEP

Partnership

- Established PLM/ALM partner of Mercedes-Benz AG
- Service Partner for PTC codebeamer



Headquarter



- Böblingen, GER

Expertise in

- PLM and ALM for mechatronic and software
- consistent design for processes and methods (IT neutral)
- Operational support of your (agile) IT tool development process



Customers



FIELD OF INTEREST: PLM & ALM

Field of interest: PLM & ALM

Would you rather...

DECUPLE?



Decoupling:

- Agile workflow
 - More flexibility
 - More speed
- ... for the software development.

But: *Leads to silo mentality*

or

INTEGRATE?



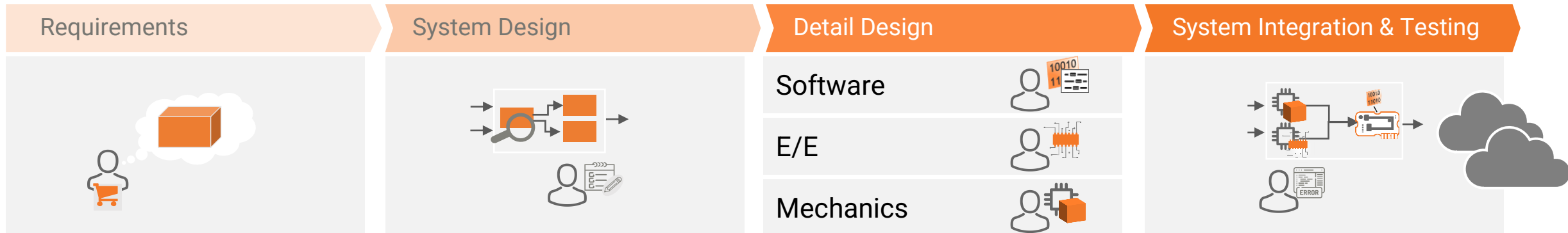
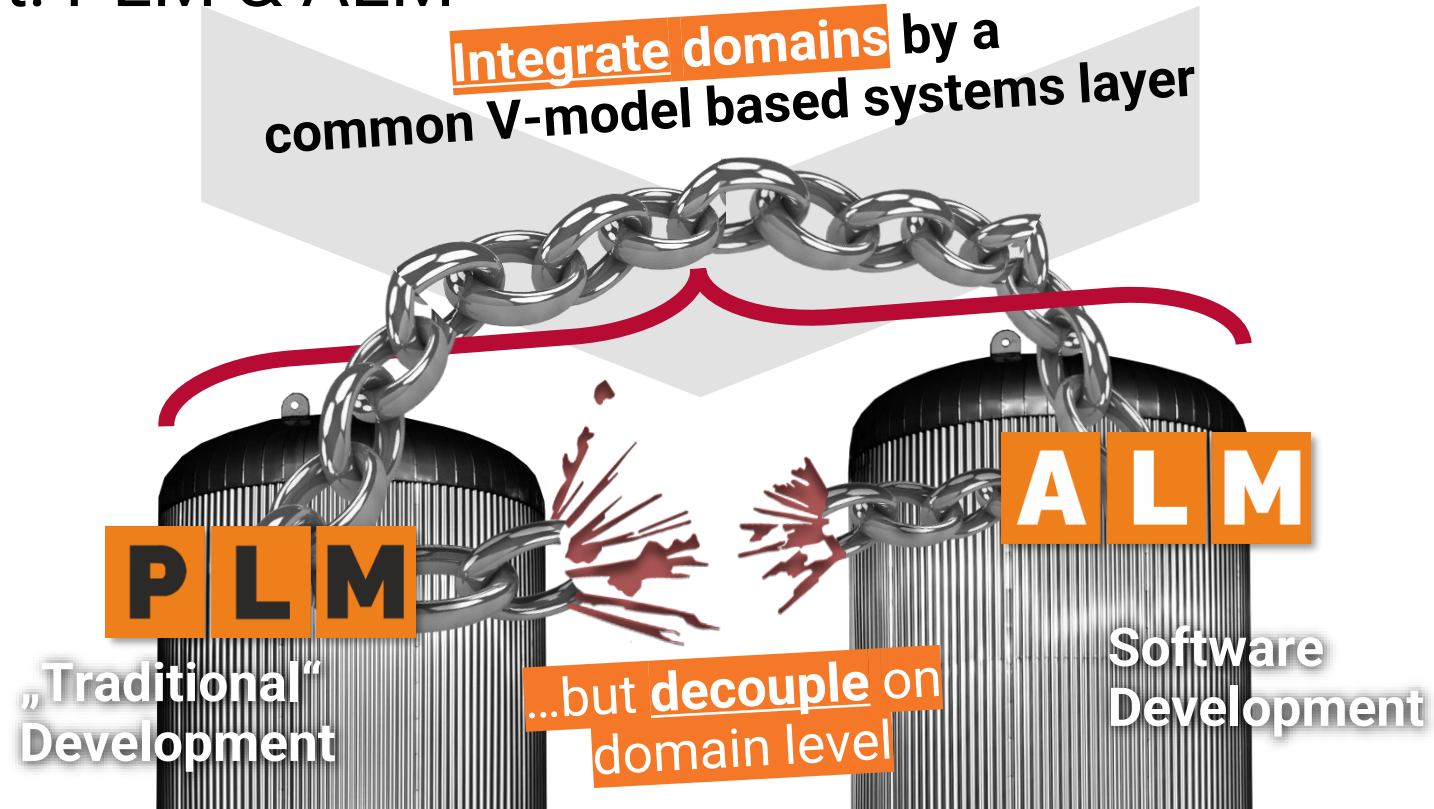
Integration:

- More consistency
- Well-known processes

But: *Like handcuffs to at least one side*

Field of interest: PLM & ALM

... do both!



LET'S TALK ABOUT DEPLOYMENT

Let's talk about Deployment

Application Lifecycle Management overview

Application Lifecycle Management

1. Plan

- Management
- Legal

2. Develop

- Engineering

3. Test

- Engineering

4. Deploy

- Production
- Engineering

5. Maintain / Retire

- After-Sales
- Sales & Marketing
- Engineering

Commitment by the whole company.

Strategic decisions

Legal requirements

Innovations

Sales opportunities



**Software will
keep us busy!**

ALM &
PLM Systems
 Engineering
IT-Tools

Let's talk about Deployment

What's the difference?

Application Lifecycle Management

1. Plan

2. Develop

3. Test

4. Deploy



5. Maintain / Retire

Testbenches, simulations, test-vehicles

Production vehicles

The difference:

- (Already on-going) high volume output
- Clearly defined production processes
- High aversion of delays/deviations of any kind
- Product completeness
- Local circumstances

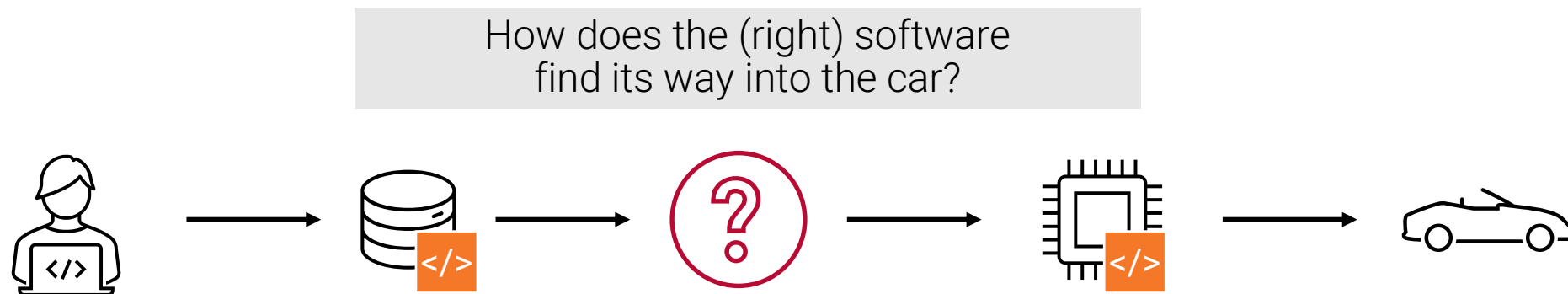
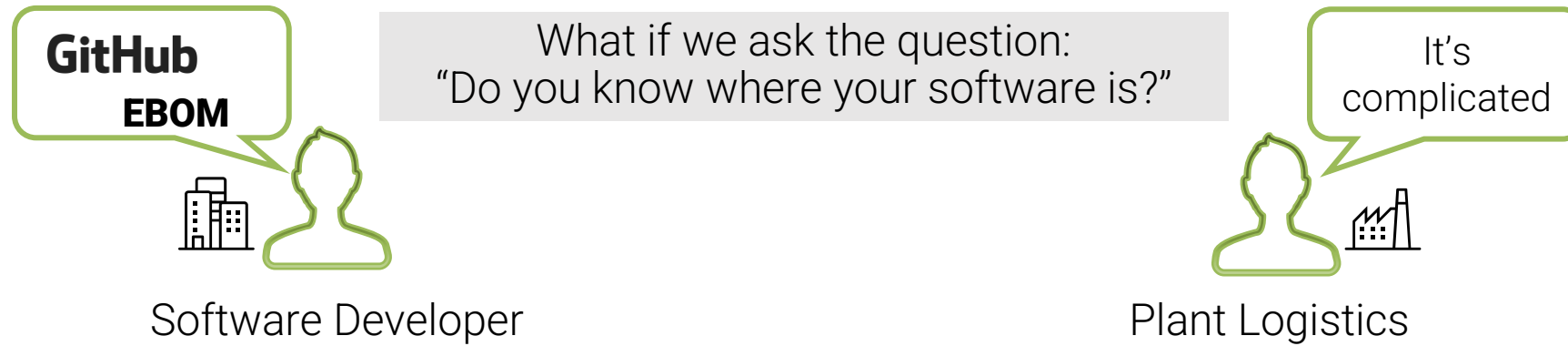
Is my software affected by this?



Software Developer

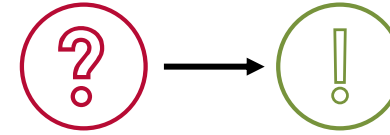
Let's talk about Deployment


Deployment strategies



Let's talk about Deployment

Deployment strategies – Benefits and Drawbacks



	Off-Site	On-Site	In-Line	Post-Production	Sales
<ul style="list-style-type: none"> Outsourced assembly Outsourced liability 	<ul style="list-style-type: none"> Flexibility (Outsourced liability) 	<ul style="list-style-type: none"> Flexibility 	<ul style="list-style-type: none"> Flexibility 	<ul style="list-style-type: none"> Flexibility 	<ul style="list-style-type: none"> Flexibility
<ul style="list-style-type: none"> Physical delivery process Purchasing of HW/SW mix Coordination 	<ul style="list-style-type: none"> Workspace and storage Coordination 	<div data-bbox="1057 599 1528 1049" style="border: 1px solid black; padding: 5px;"> <p>Is this relevant to me?</p>  <p>Software Developer</p> </div>	<ul style="list-style-type: none"> Car storage 	<ul style="list-style-type: none"> Market restrictions Infrastructure / architecture 	

Let's talk about Deployment

Deployment strategies – What can go wrong?

Off-Site	On-Site	In-Line	Post-Production	Sales
<p>Example:</p> <ul style="list-style-type: none">▪ Attempt to streamline ALM and PLM▪ Opportunity to reduce paperwork▪ Problem: Supplier contracts and the mode of delivery was already negotiated.	<p>Example:</p> <ul style="list-style-type: none">▪ Production ramp-up▪ Plan to update a defined number of ECUs▪ Problem: Software changes faster than expected. <p>Number of ECUs in need of update exceed planned storage and workspace.</p>	<p>Example:</p> <ul style="list-style-type: none">▪ ECUs to be flashed in-line for mass production.▪ Problem: One ECU with slower memory for cost reduction. <p>Flashing times are too long for assembly line.</p>	<p>Example:</p> <ul style="list-style-type: none">▪ Expansion of post-production updates.▪ Problem: Due to responsibilities, production refuses to build up and hand over cars without full customer approved software.	<p>Example</p> <ul style="list-style-type: none">▪ ECU final update outside of factory.▪ Save time and space in plant.▪ Problem: One ECU not capable of diagnostics while in use. <p>Updates cause shut down of functionality in field.</p>

Let's talk about Deployment

Conclusion

- Successful deployment doesn't happen by chance but by good planning.
- Software deployment doesn't end with compiling code.
- Software deployment doesn't start at the vehicle interface.

What we can do: Methods and tools

- Systems Engineering helps us to get the data we need.
- Application Lifecycle Management means the whole lifecycle.
- Consequent SE and ALM will lead to better requirements and from there to better production/deployment.

What we can do: Organization

- Involve experts from production in your vision of a software driven product!
- Explain to purchasing early the needs of next generation software development!



Thank you for your attention!

ご清聴ありがとうございました。



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