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Shift Left: Sustainable E/E Testing via Micro HiL Ecosystem

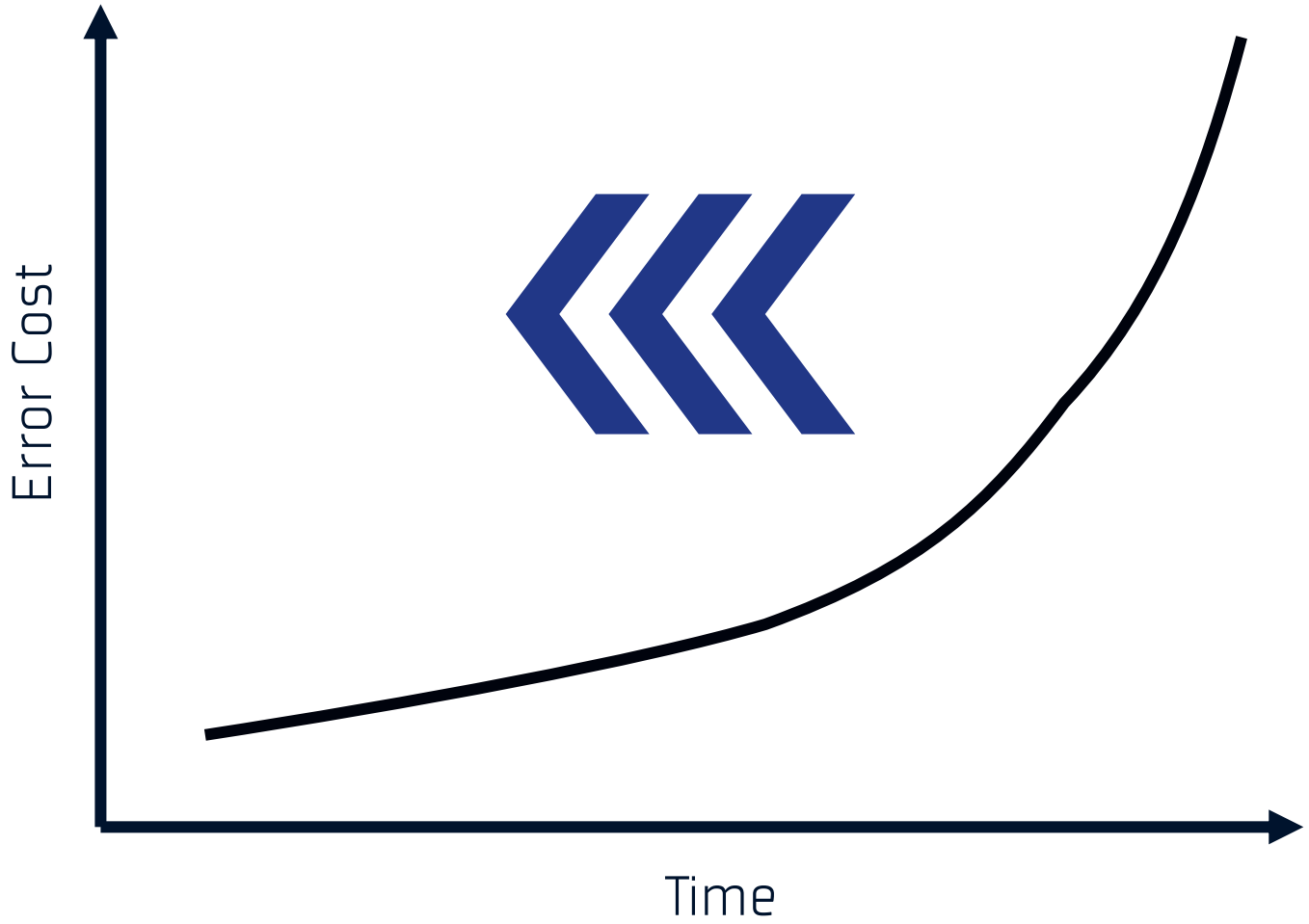
Aerospace Test & Development Show – Testing Forum

Jakov Sprljan – Sales & Business Development

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Shift Left

Why it matters



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Shift Left

What are the key principles for reducing error costs?

- Early and frequent testing
- Trade off virtualization vs. real hardware
- Harmonize and parallelize development
- Shift Left on all integration levels



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Testinfrastructure

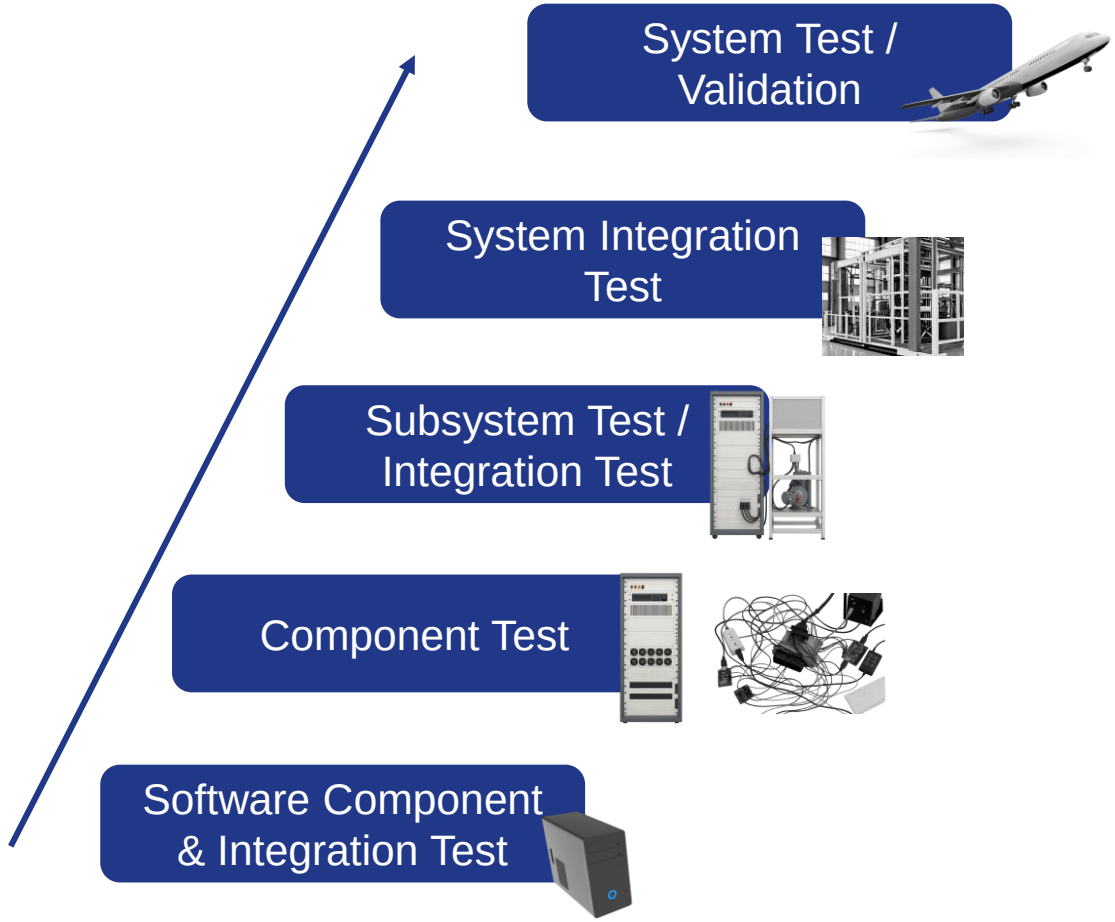
Challenges in applying the key principles

Fragmented Setups…

- … between developers and testers
- … between Aircraft OEM and suppliers
- … for different integration levels
- … for functional use cases on subsystem level

Low ROI

- Full grade HiLs often used for simple test cases
- Dedicated HiLs not used 24/7
- Late testing on higher integration levels
- Low reuse and high setup and maintenance cost



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Case Study – Micro HiL Ecosystem

Micro HiL Cluster in Wöllstadt / Germany

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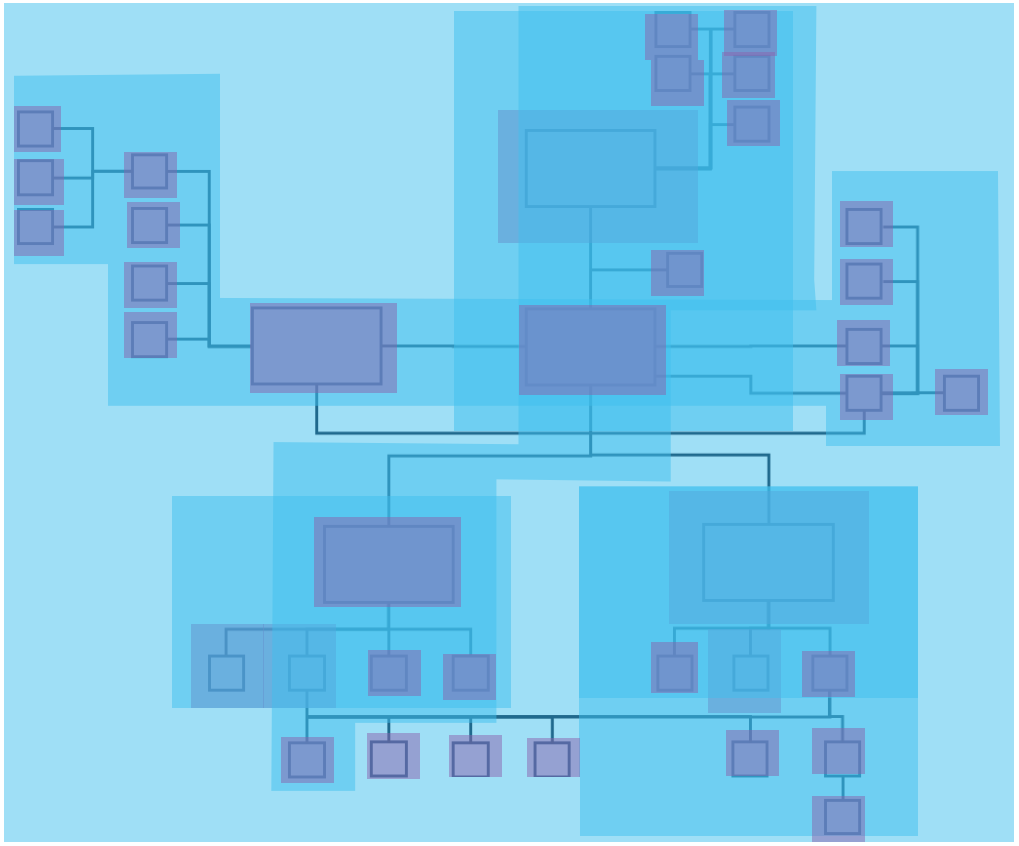


➔ Fully remote accessible Micro HiLs on component Level
➔ Designed for globally and organizationally distributed teams
➔ High Focus on automated testing
➔ Efficient use of prototypes

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Concept Study – Software Defined Bus Networks

How many HiLs do we need?



Example Aircraft Architecture with test scopes on component and (sub-)system level

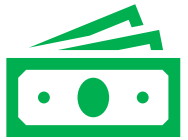
HiLs on Component Level:



HiLs on Subsystem and System Level:









Focus of Concept Study:

- Focus on component HiLs and reuse it on higher integration level
- Dynamic Configuration of multiple (sub-) systems via software
- CAN and LIN networks
- Networking range analysis

➔ With Software-Defined Bus Networks, significantly fewer HiLs are required at both subsystem and system level!

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Concept Study – Software Defined Bus Networks

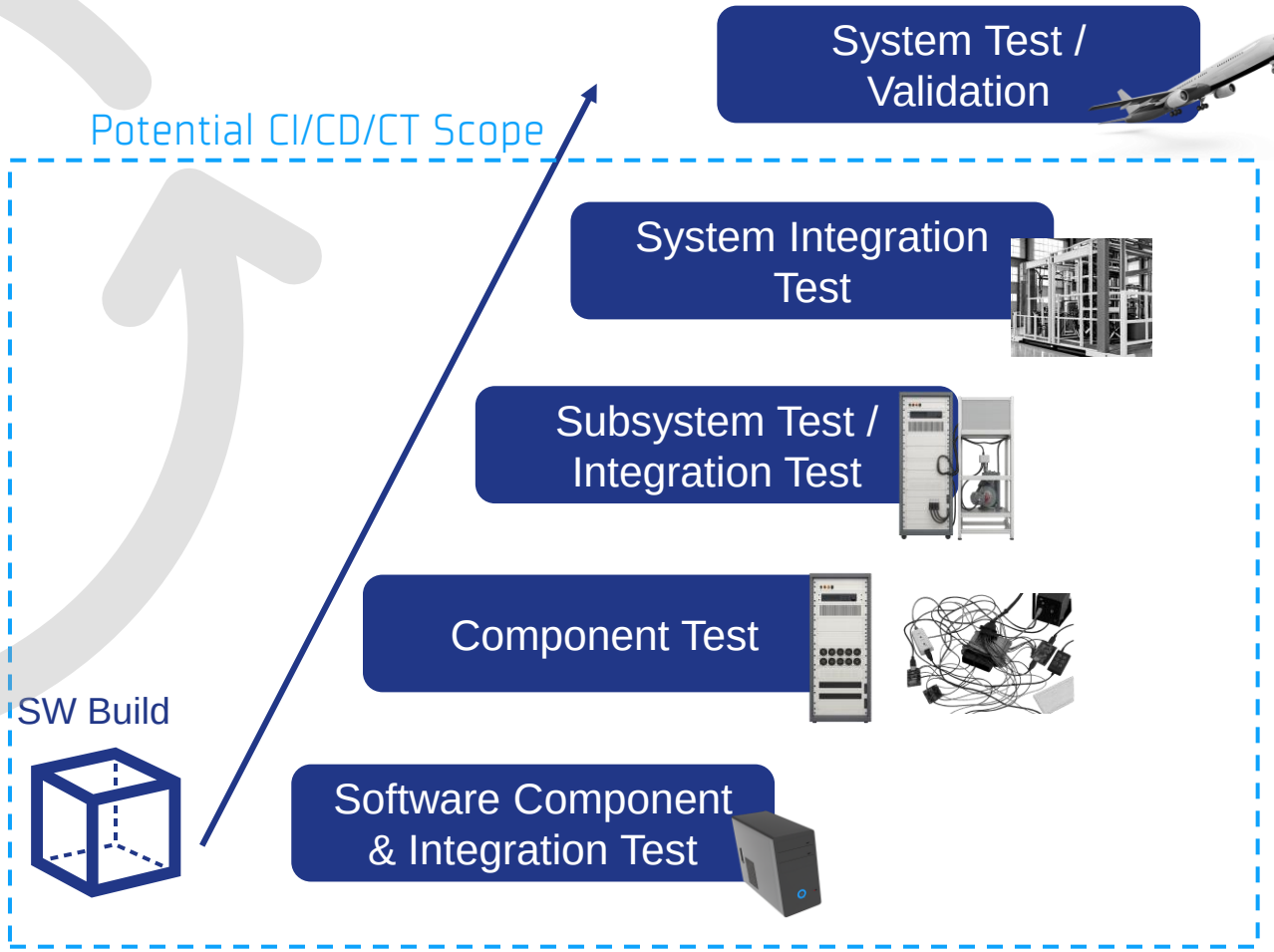
Outlook

Accelerate development

Fast iterations across multiple integration levels ⟶ earlier feedback, shorter development cycles

Maximize efficiency

Leverage test infrastructure synergies ⟶ save cost, time, and resource



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Let's continue the discussion!

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