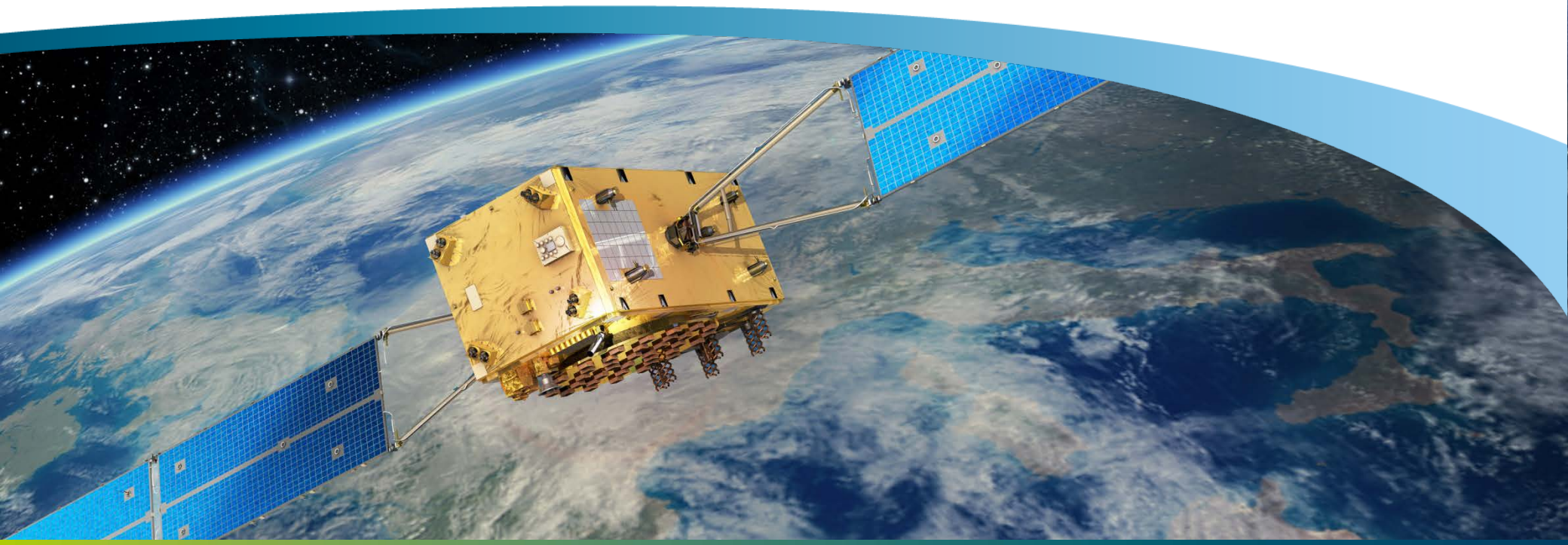
Michael Brahm
24.10.2013, ESTEC

OHB SYSTEM



SPACE SYSTEMS

OHB Position On Software Factories

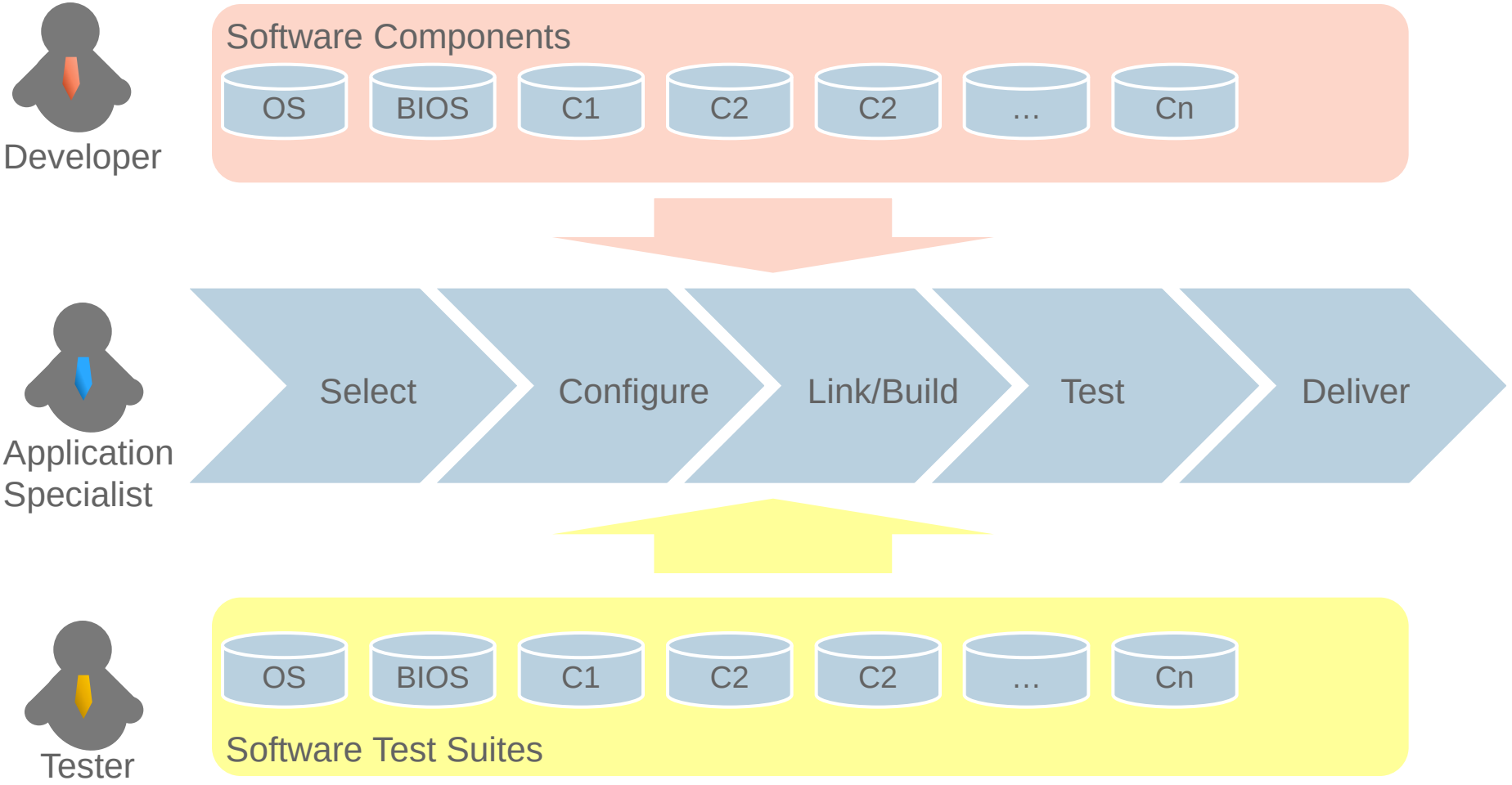
Agenda

- Understanding of SW Factories
- SW Factory Trade-Offs
- SW Building Block Classification
- Mid-Term Vision

What is a Software Factory?

- Software Product Line
- Configures Extensive Tools
- Configures Processes
- Configures Content
- Based on a Template / Scheme
- Adapting, Assembling, Configuring Framework Based Building Blocks / Components

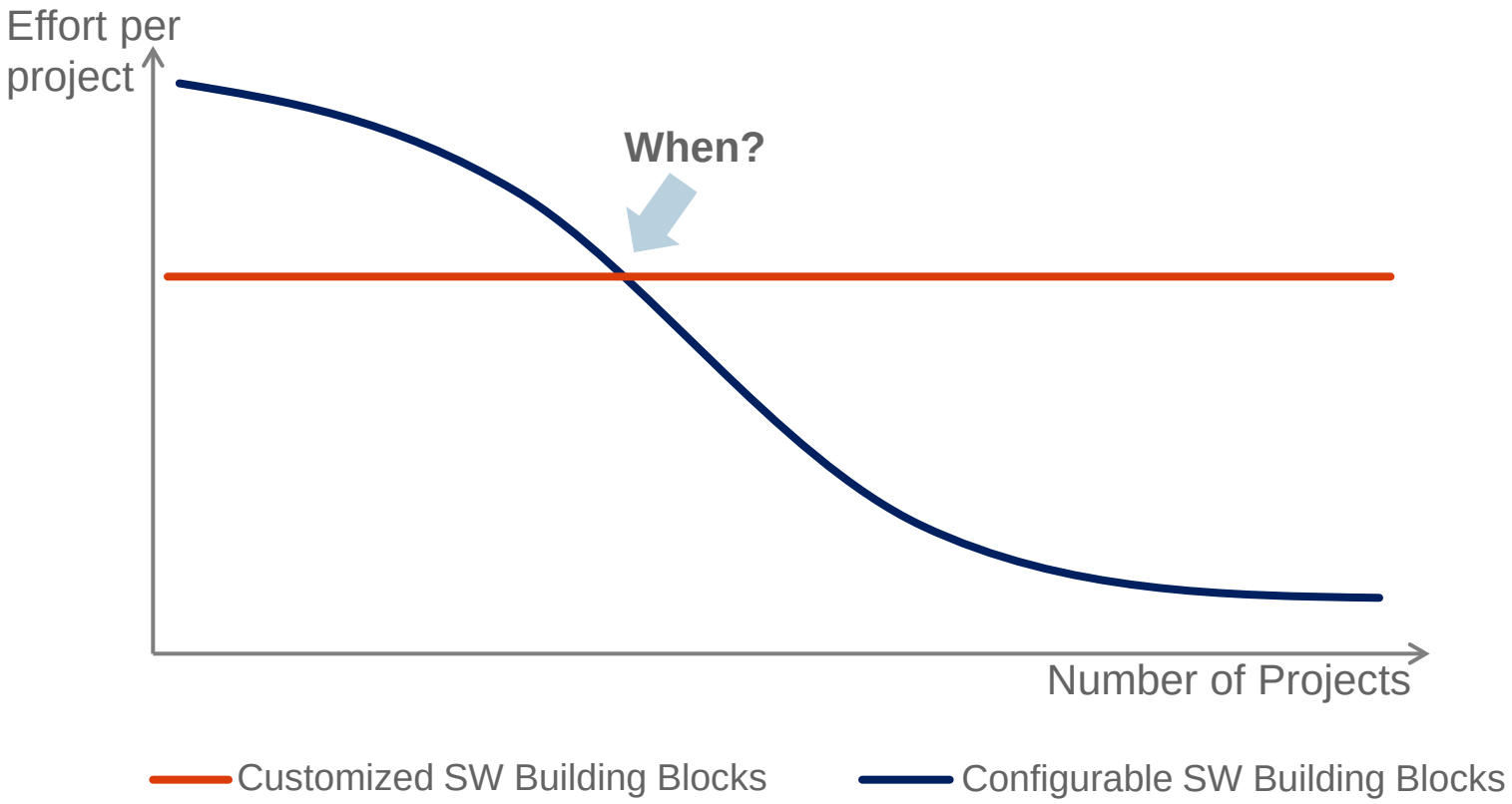
How should it work ideally?



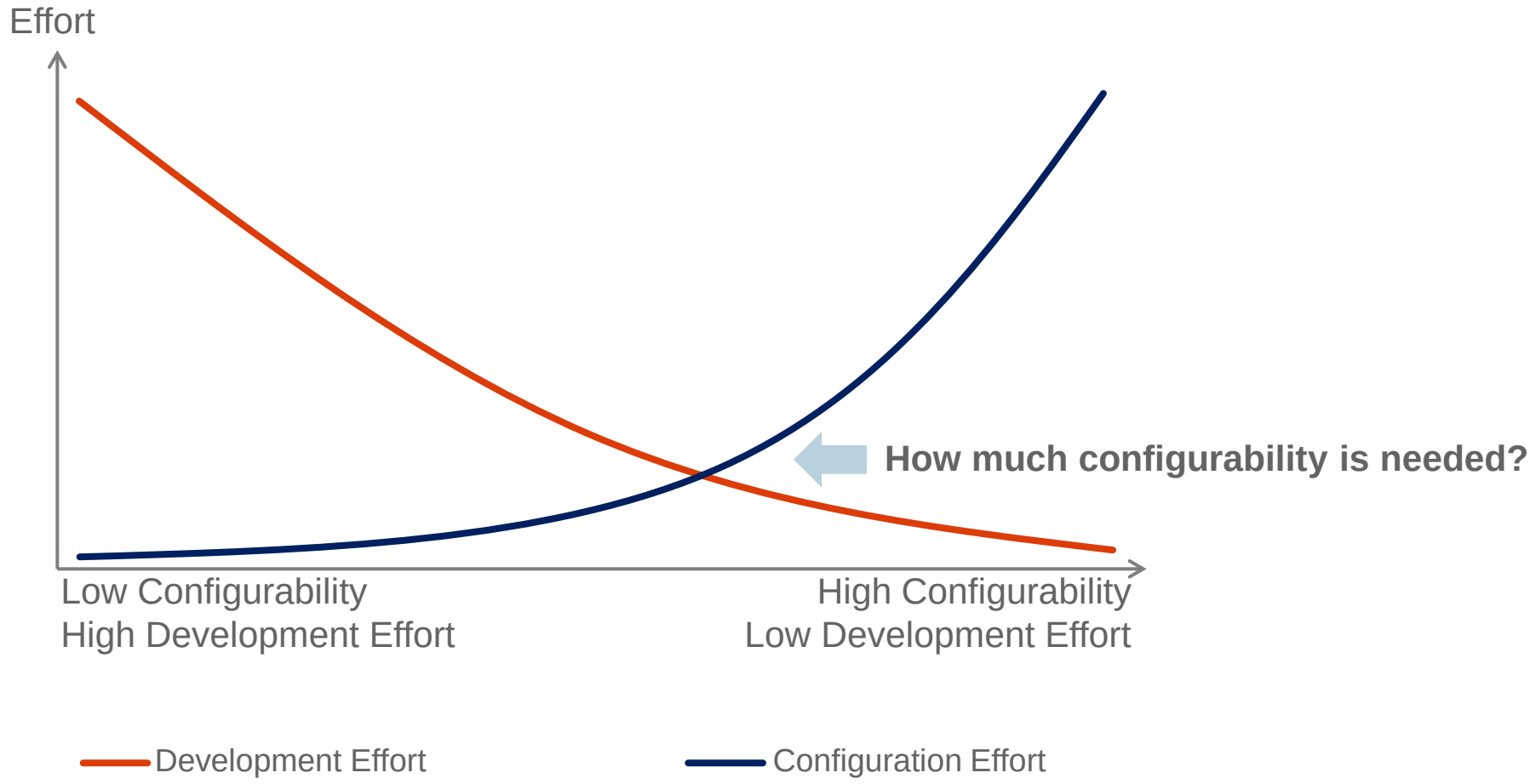
And In Reality

- Overhead for reusable and configurable SW
- Benefit to be evaluated
- Not feasible for certain components, e.g. Payload
- Even configuration can
  - Become complex & time consuming
  - Lead to inefficient & unsuitable solutions

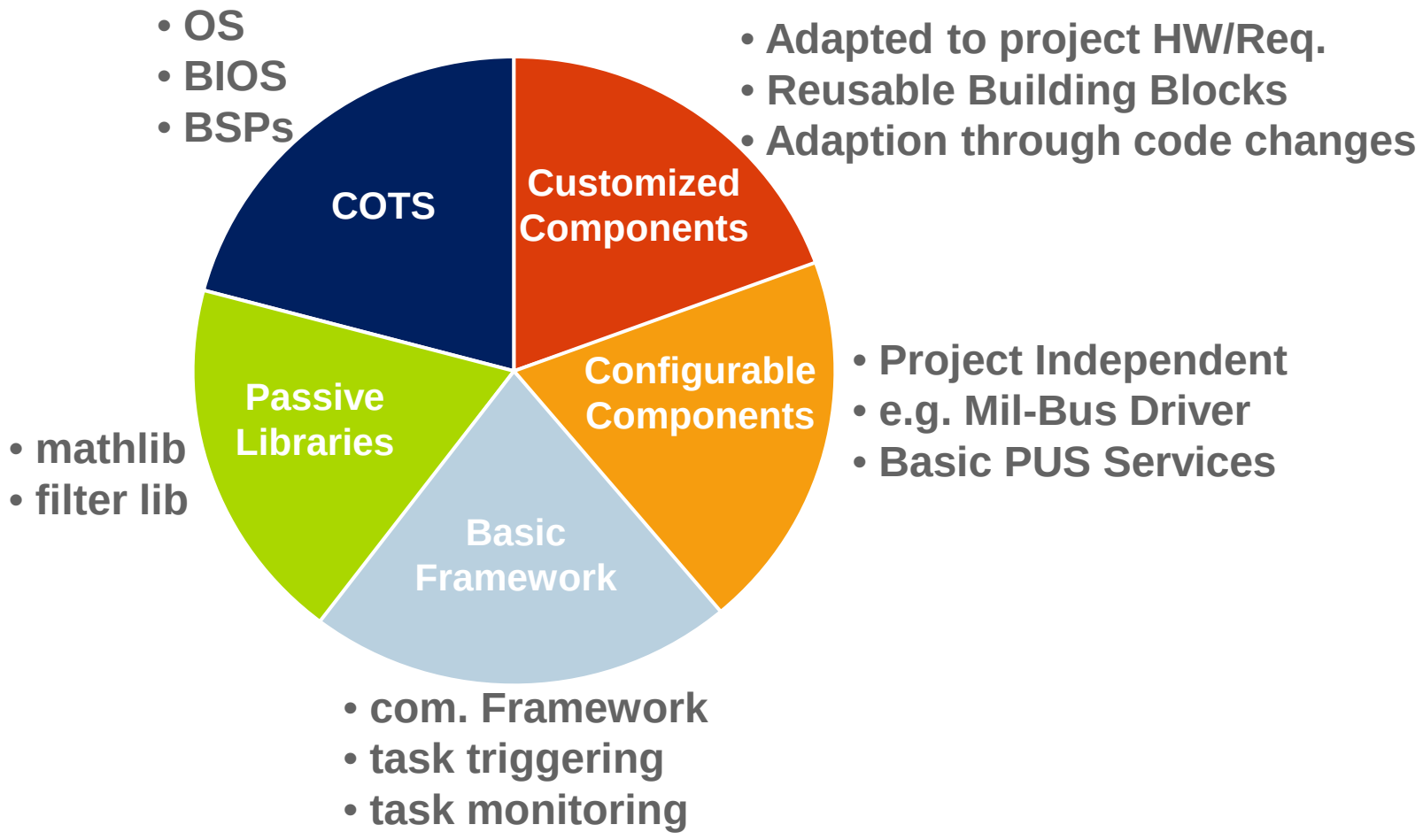
Payback Time (Several Projects)?



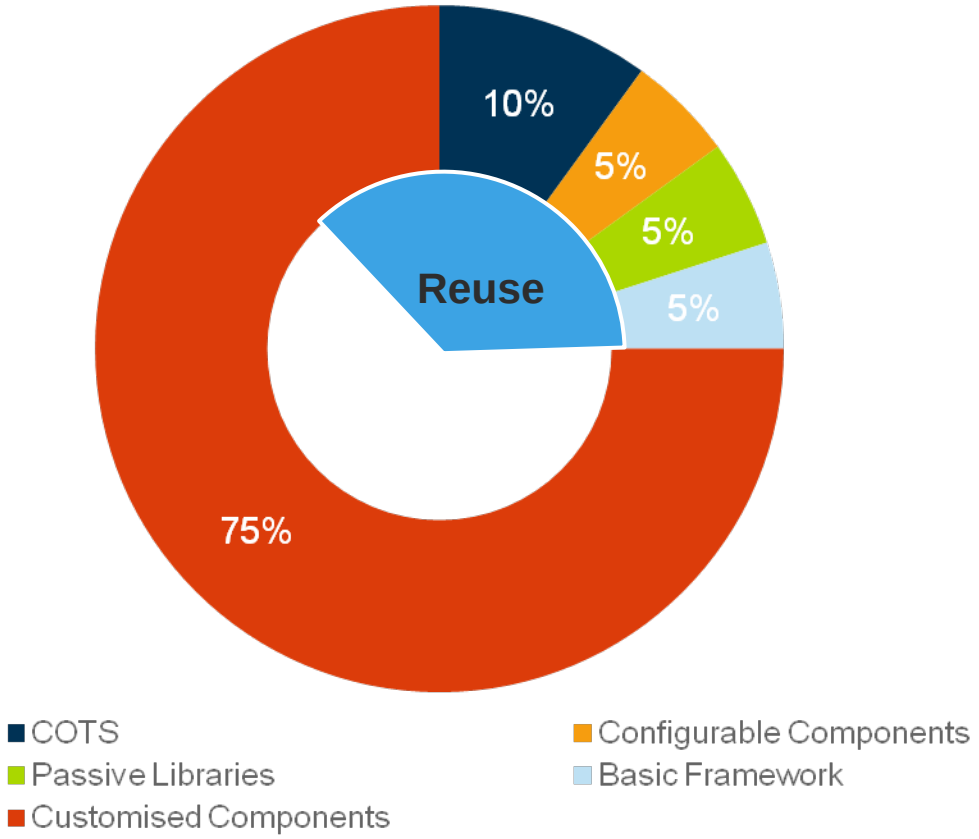
Customization vs. Configuration (Single Project)



Software Components Classification

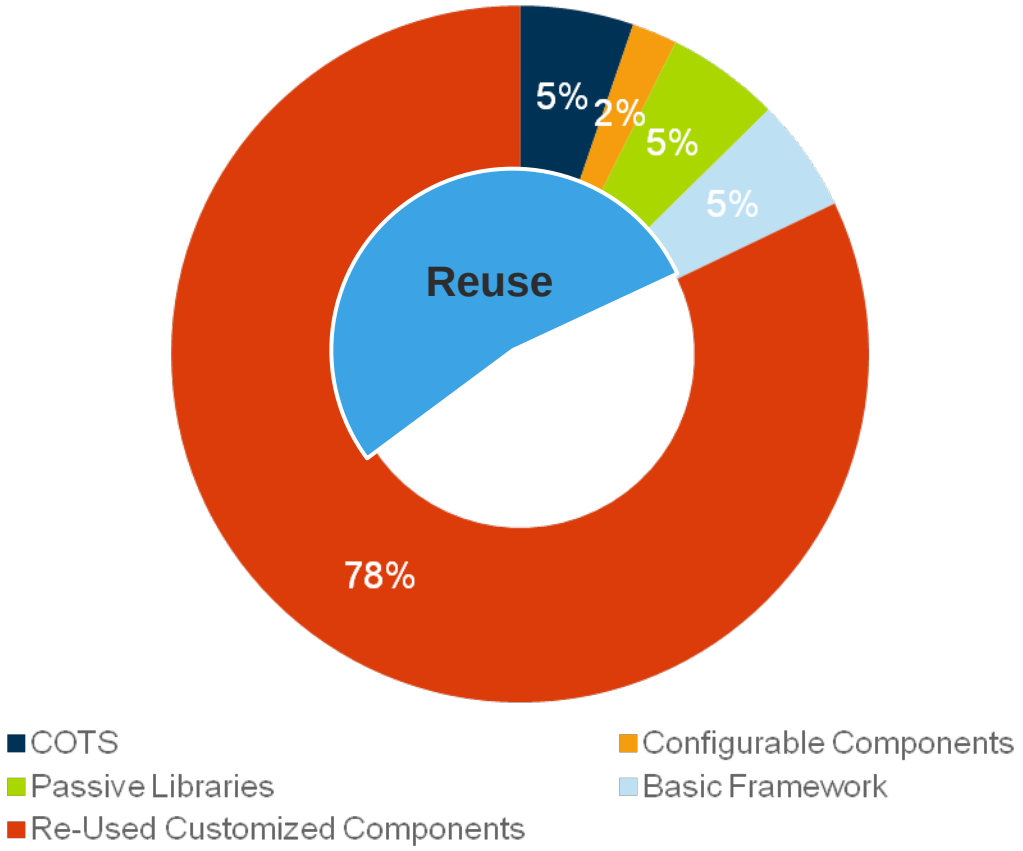


Software Structure Example – Project With Low Reuse



- New Requirements
- New Hardware
- New Tool-Chain
- New Operational Concept

Current SW Structure Example – Project With High Reuse



- Similar Requirements
- Same Hardware
- Same Tool-Chain
- Similar Operational Concept

Current Degree of Test Automation

	Unit Tests	Integration Tests	TS Validation	Review & Analysis
Generation Phase				
Design Phase				
Execution Phase				
Documentation				

Manually
(e.g. No Tool support or Reuse)

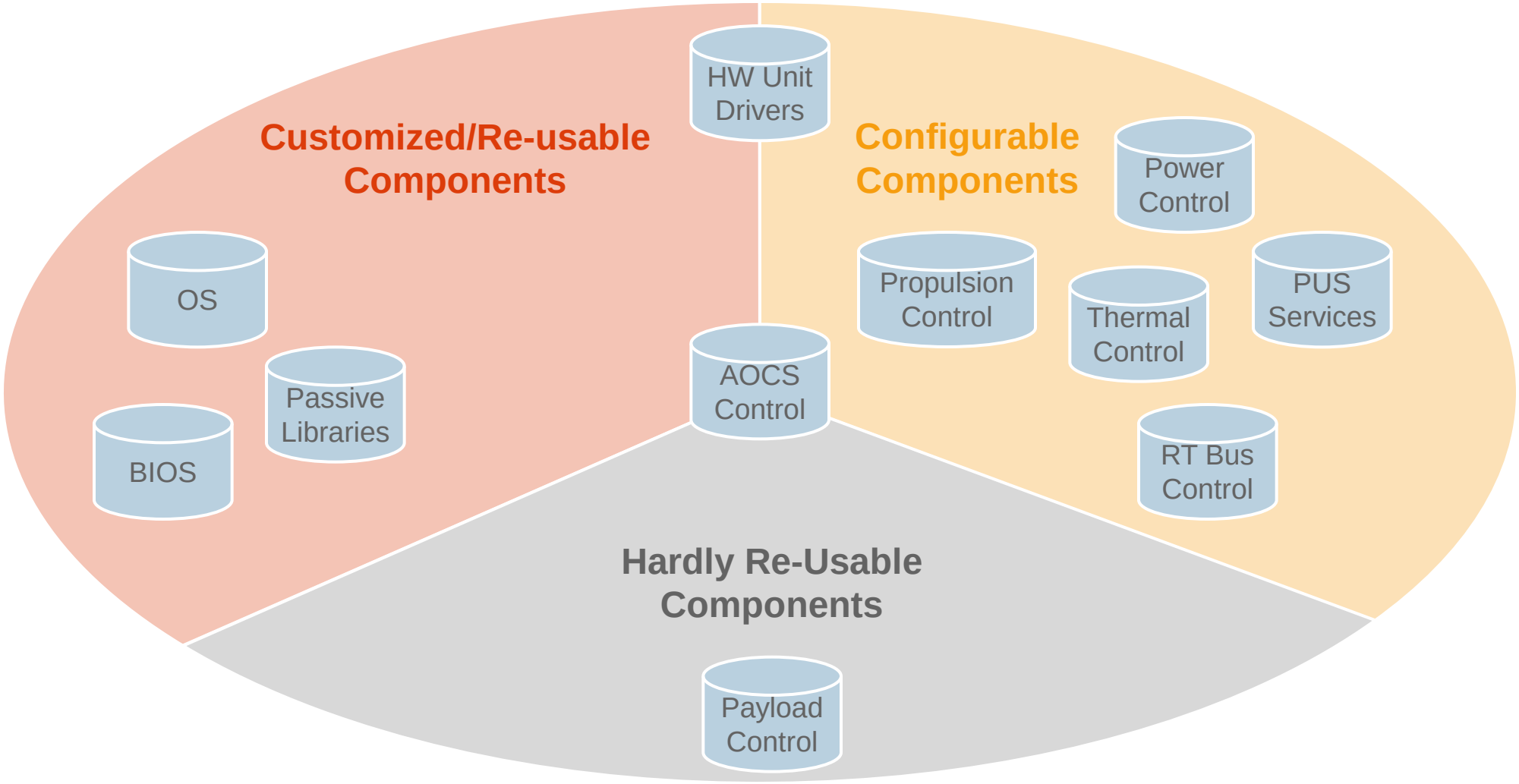
Semi-Automatically
(e.g. Partial Tool Support or Reuse)

Automatically
(e.g. Full Tool Support, Configurable, Reuse)

Constraints:

- No generic requirements
- No re-usable SW building blocks
- New HW environment

Potential for Re-use and Configurability



Mid Term Targeted Degree of Test Automation

	Unit Tests	Integration Tests	TS Validation	Review & Analysis
Generation Phase				
Design Phase				
Execution Phase				
Documentation				

Manually
(e.g. No Tool support or Reuse)

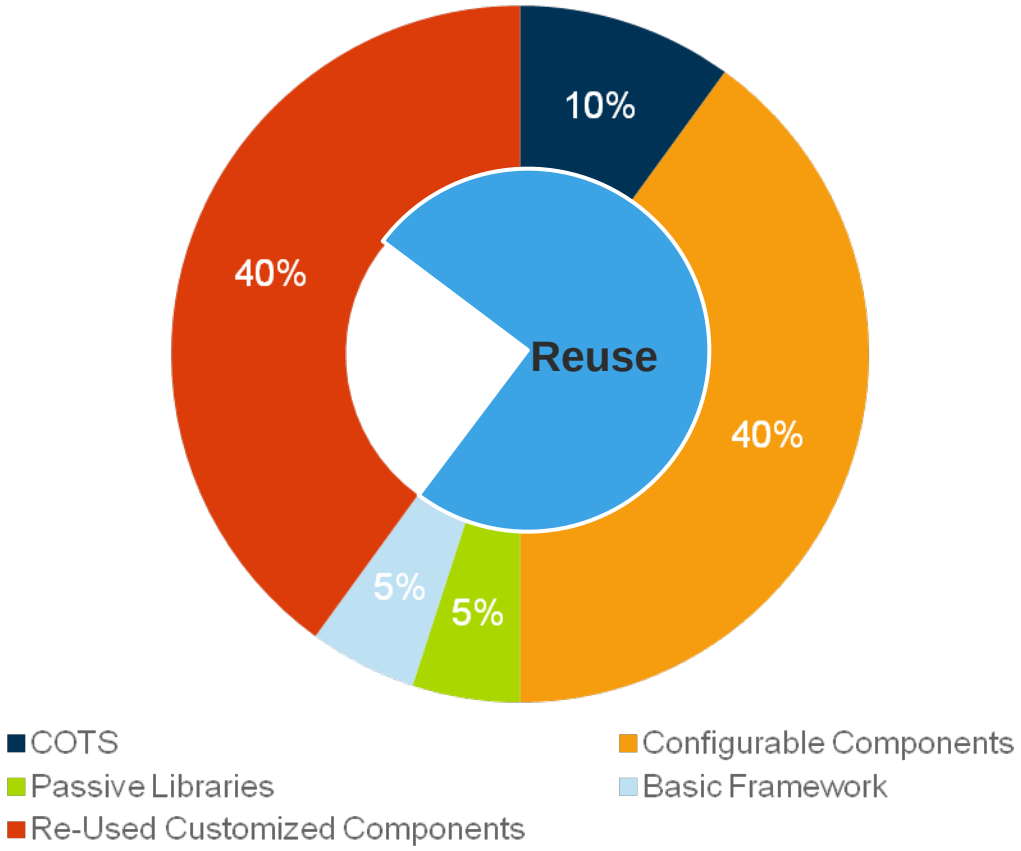
Semi-Automatically
(e.g. Partial Tool Support or Reuse)

Automatically
(e.g. Full Tool Support, Configurable, Reuse)

Key enablers:

- Generic requirements
- Availability of SW building blocks (e.g. SOIS Subnetwork Services)
- HW environment remains stable (e.g. CPU architecture, Memory Map, external Interfaces)

Mid-Term Targeted SW Structure



Needs:

- **Similar Requirements**
- **Similar or Standardized Hardware Interfaces**
- **Same Tool-Chain**
- **Similar Operational Concepts**

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Thank you for your attention!