

ASML

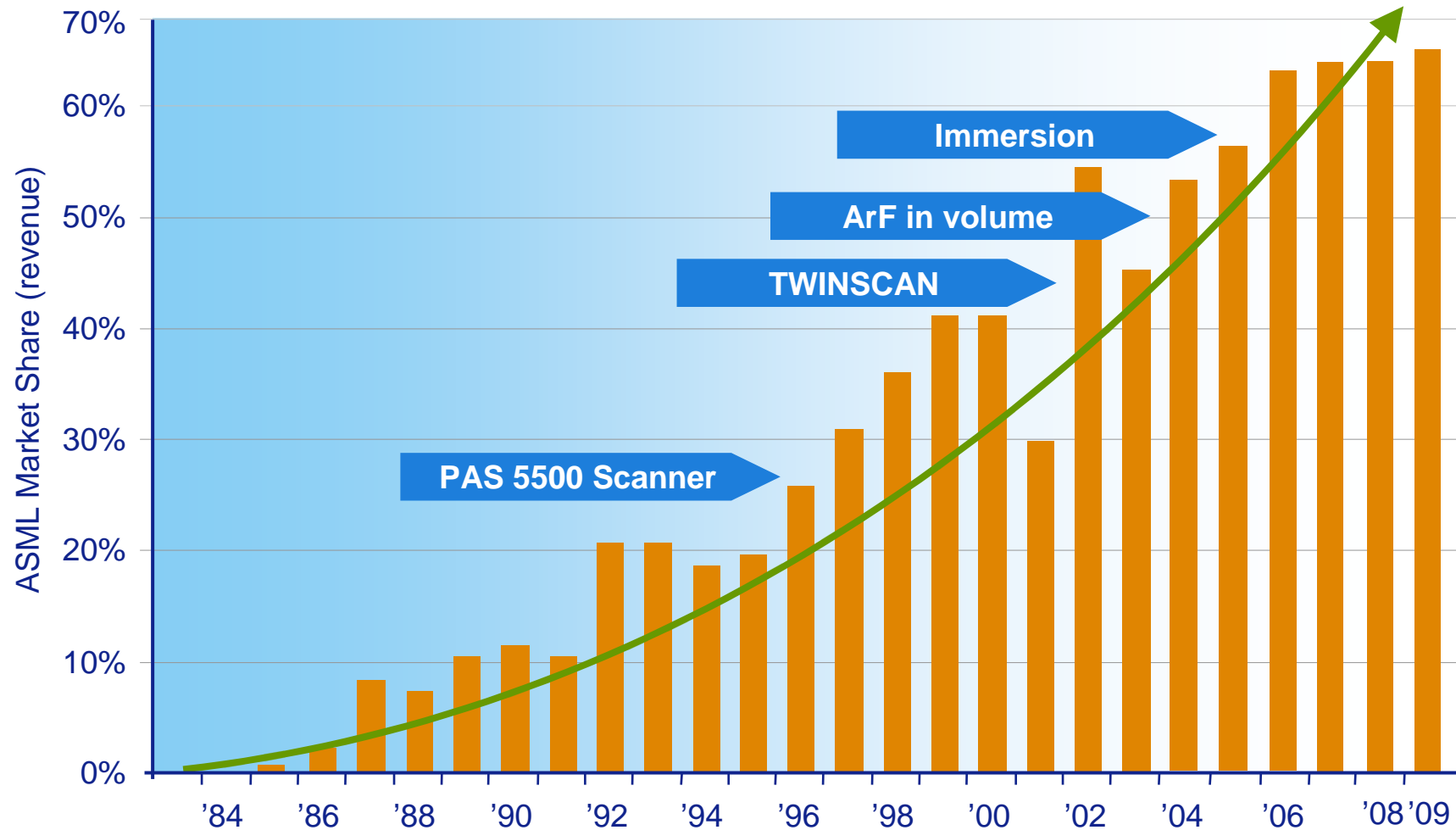
**Model-based development
The opportunity for high-tech software development**

Jan Stoeten

Director Embedded Software development

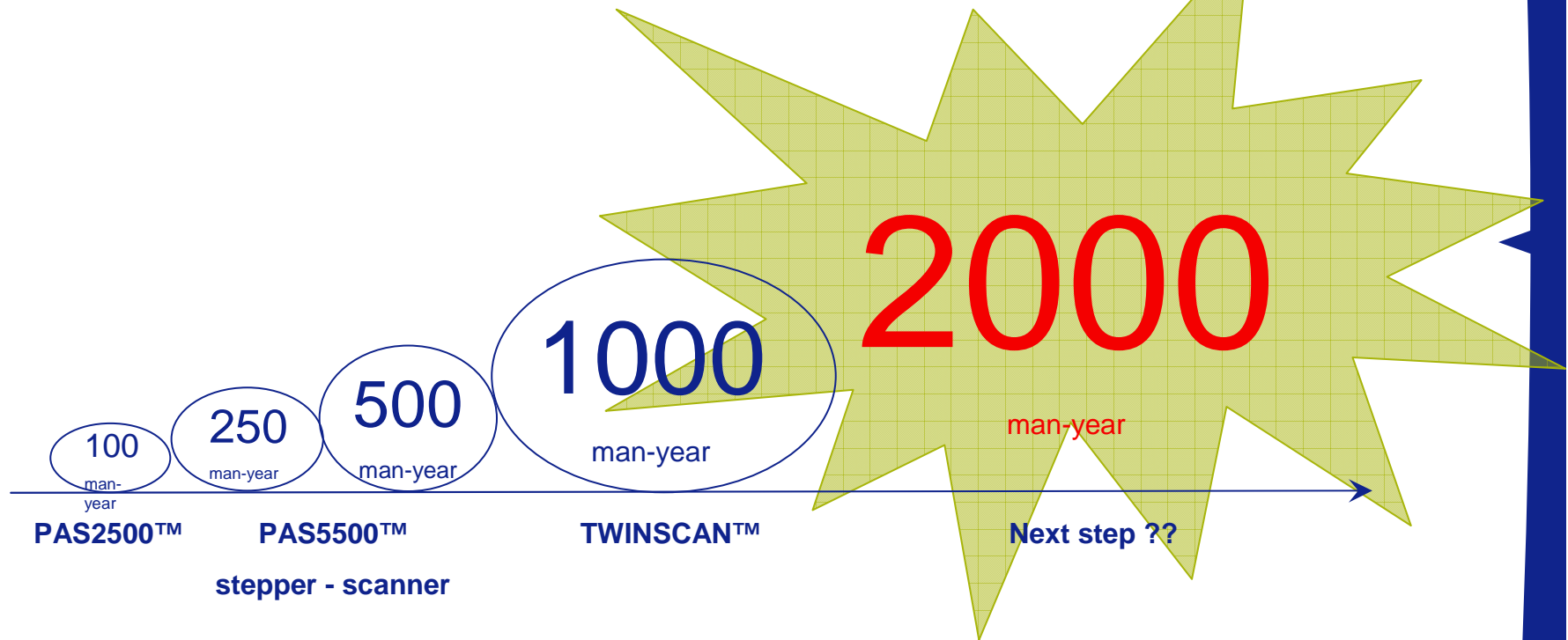
Public

ASML Road to global leadership in 25 years based on major technology steps



Source: ASML, SEMI

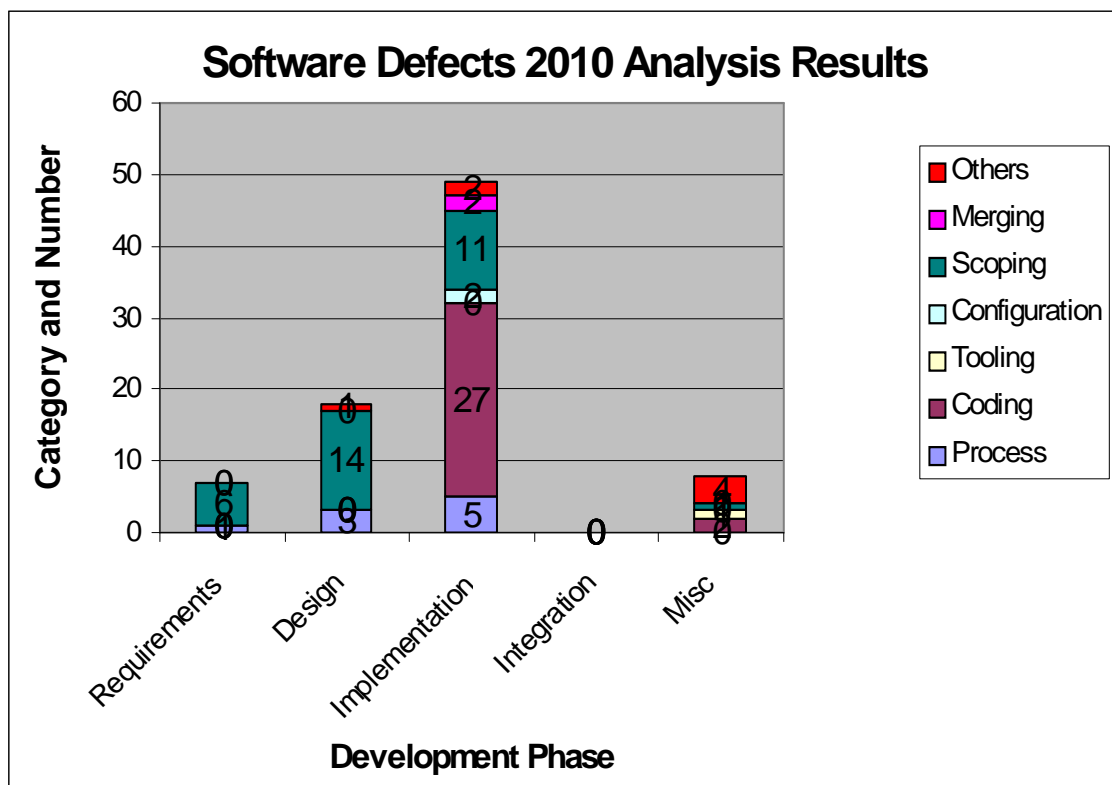
Moore's Law for ASML SW development



- Software effort doubles with every new generation

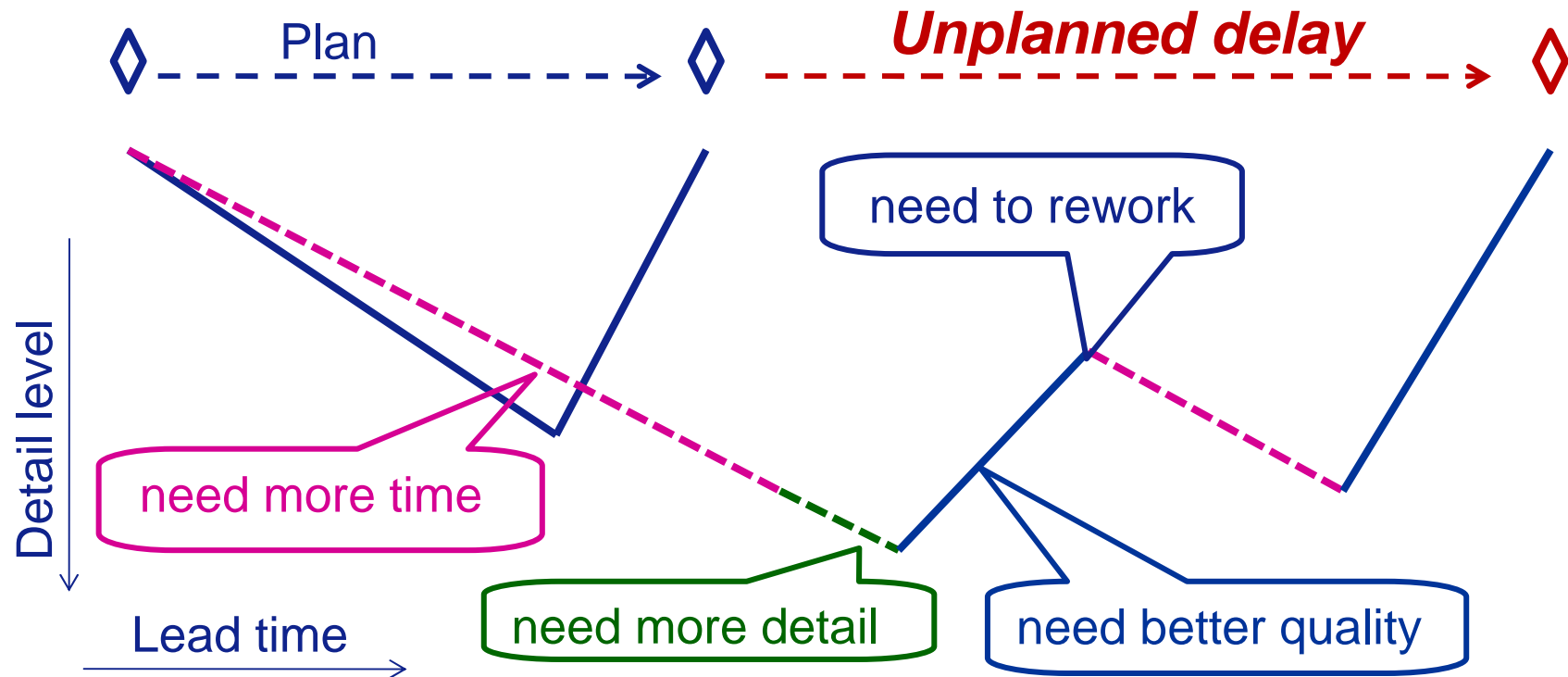
Analysis Results Software Defects 2010

About 60% of the defects are injected during implementation



- Secondary causes:
 - Human Error
 - Lack of knowledge
 - Configuration management
 - Process
 - Tooling

The V-model: expected vs real life



Summary: Iterations during integration will bring us on final performance level but much later than initially planned

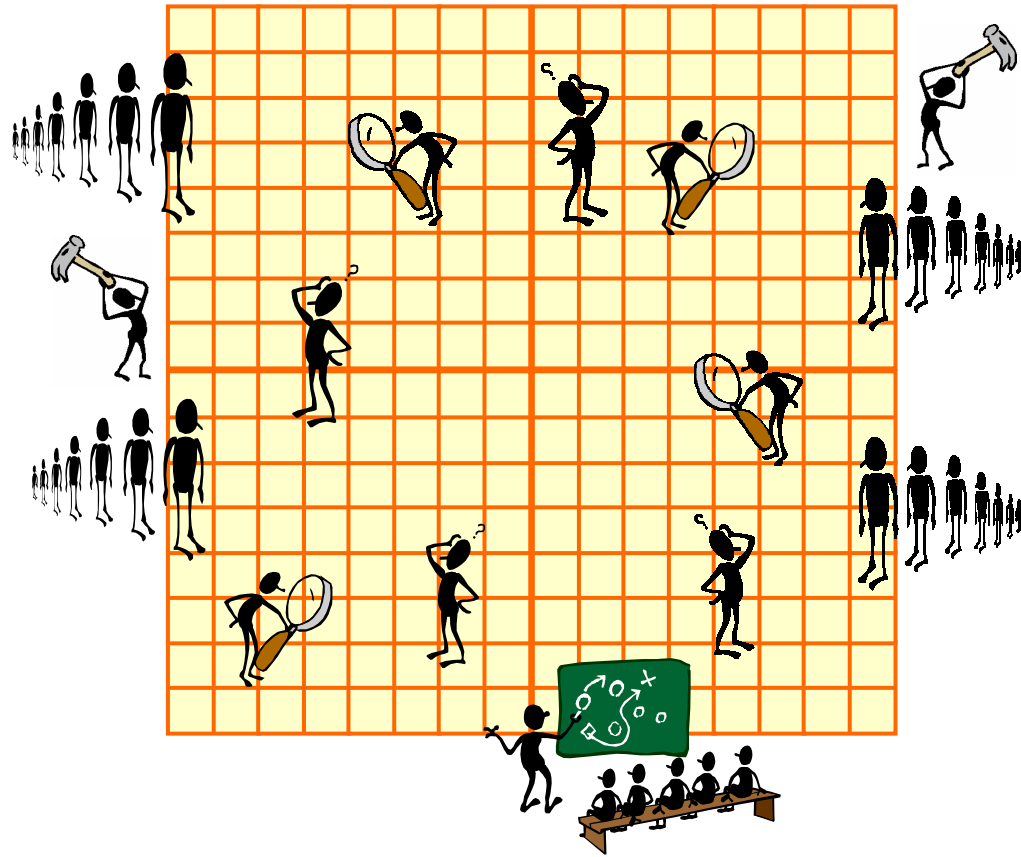
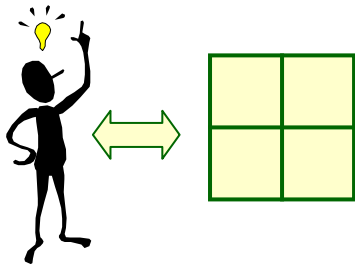
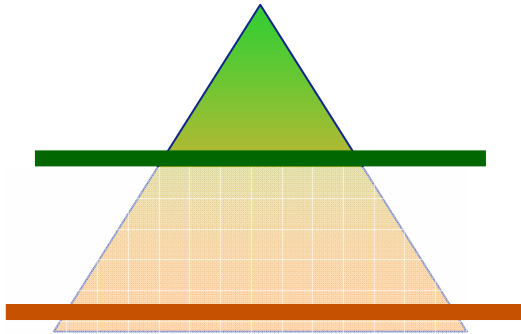


ASML

Directions for staying in control

Public

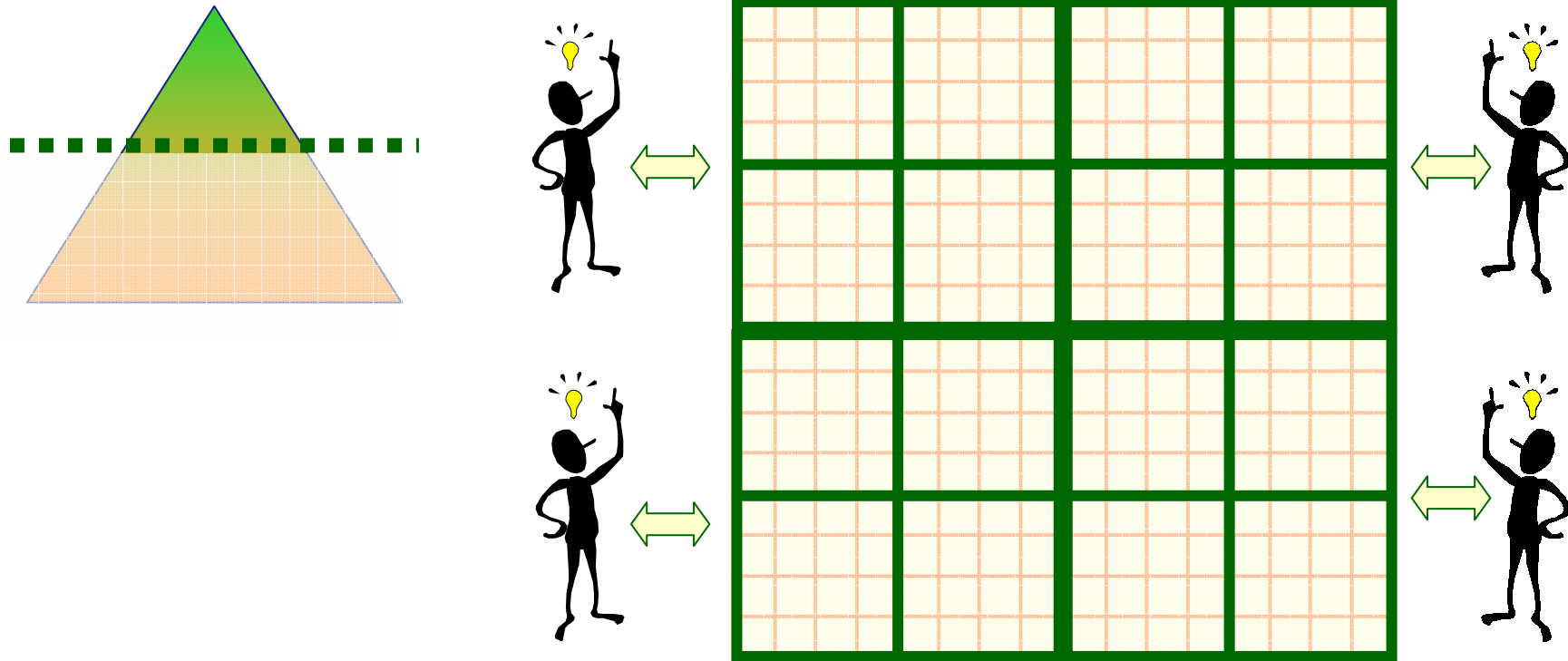
Complexity causes communication problems



What started simple...

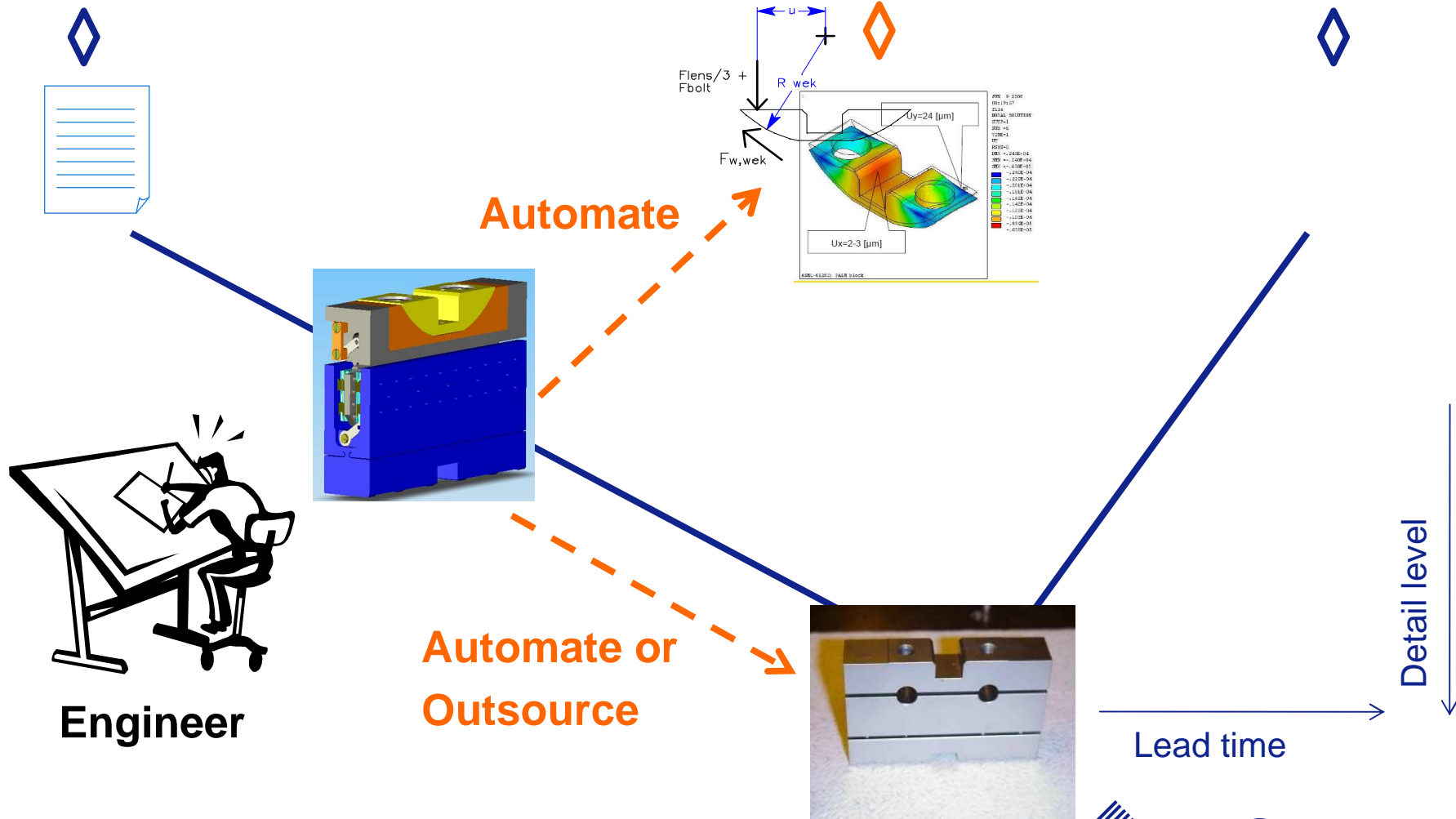
...became complex...

Simplify by providing abstraction

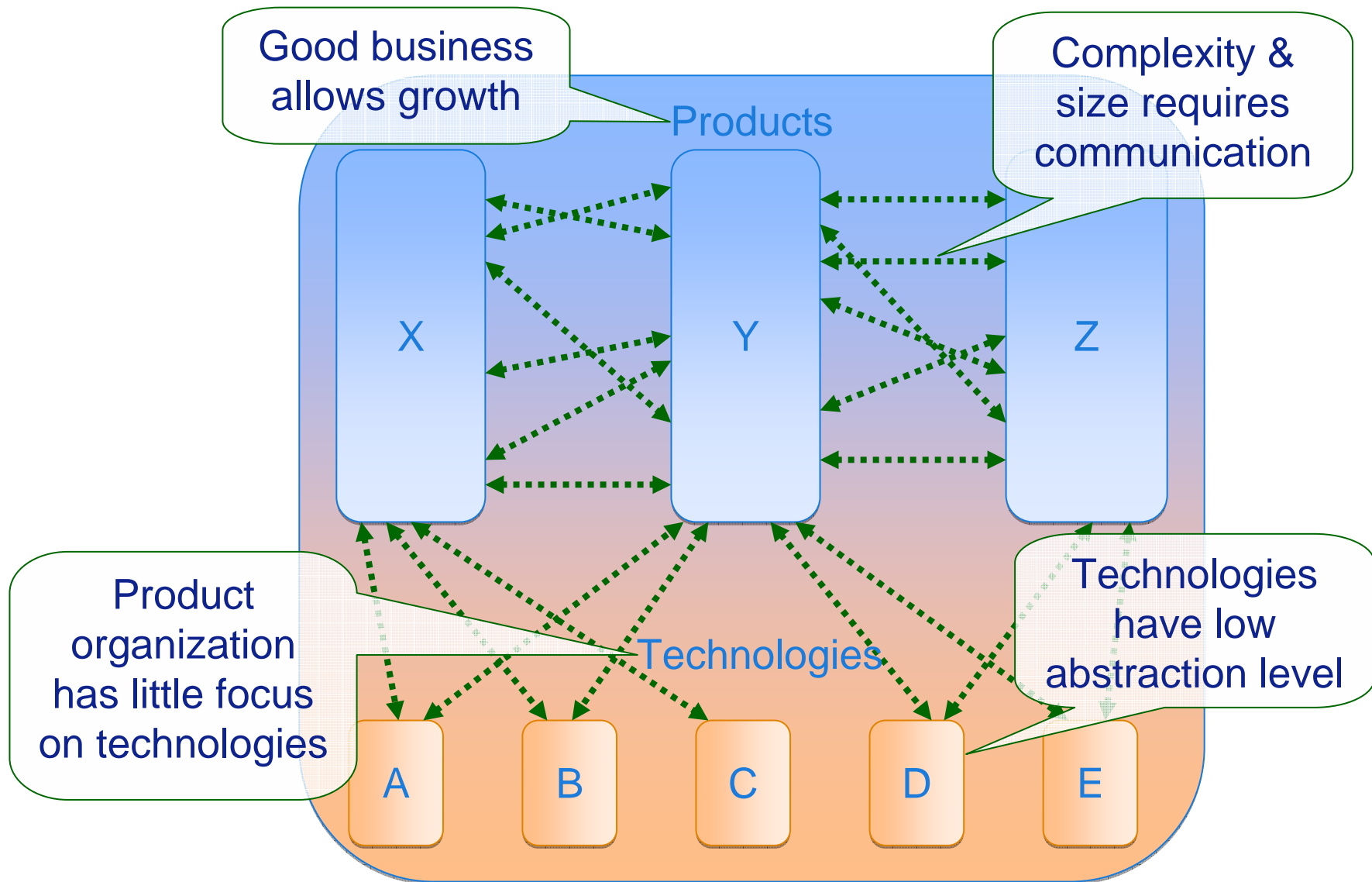


...and must become simple again.

Engineering with models: Mechanical Engineering



Organization, communication and technology: status quo



Organization, communication and technology: vision

Primary Process

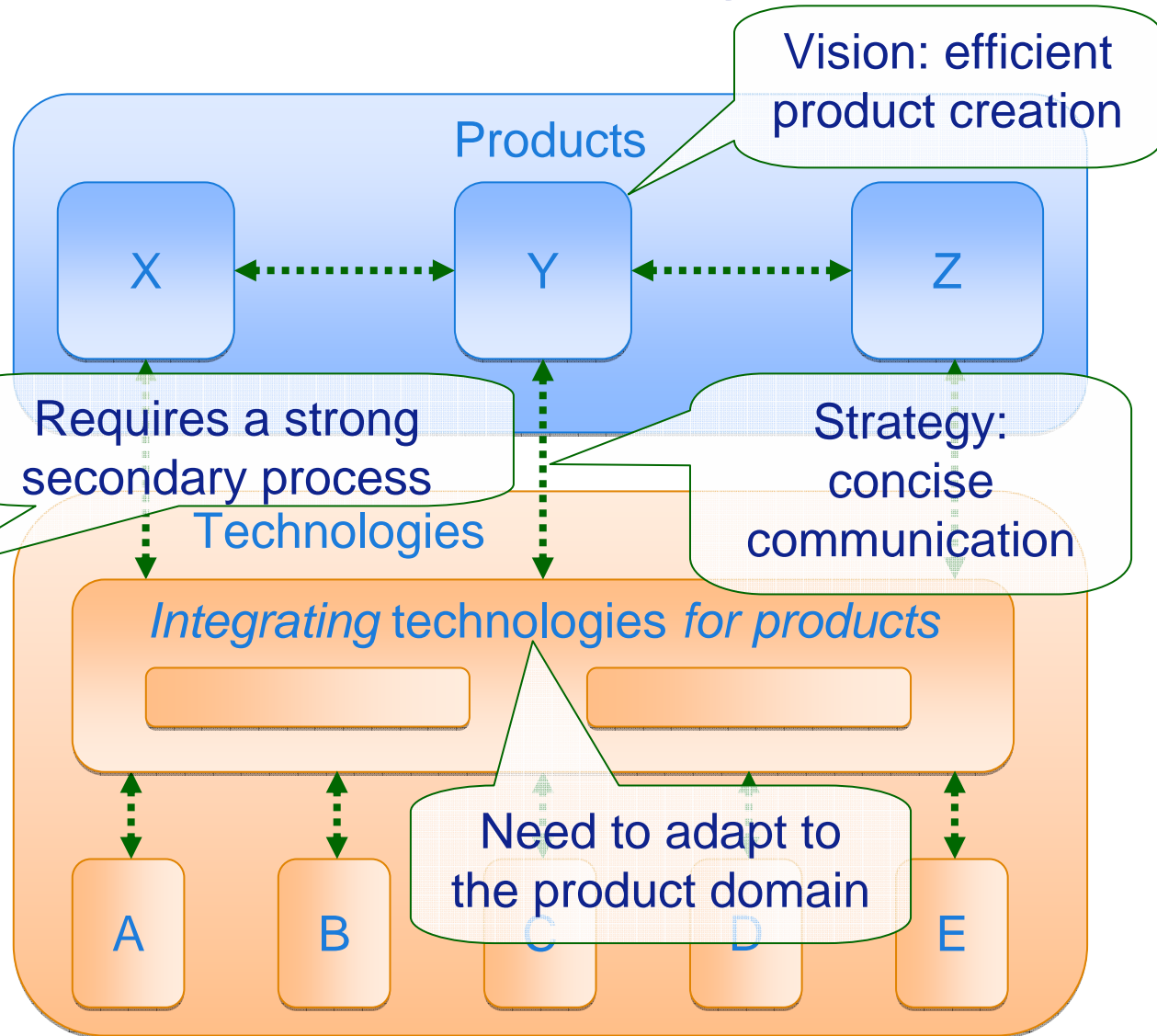


Focus on building products in the factory

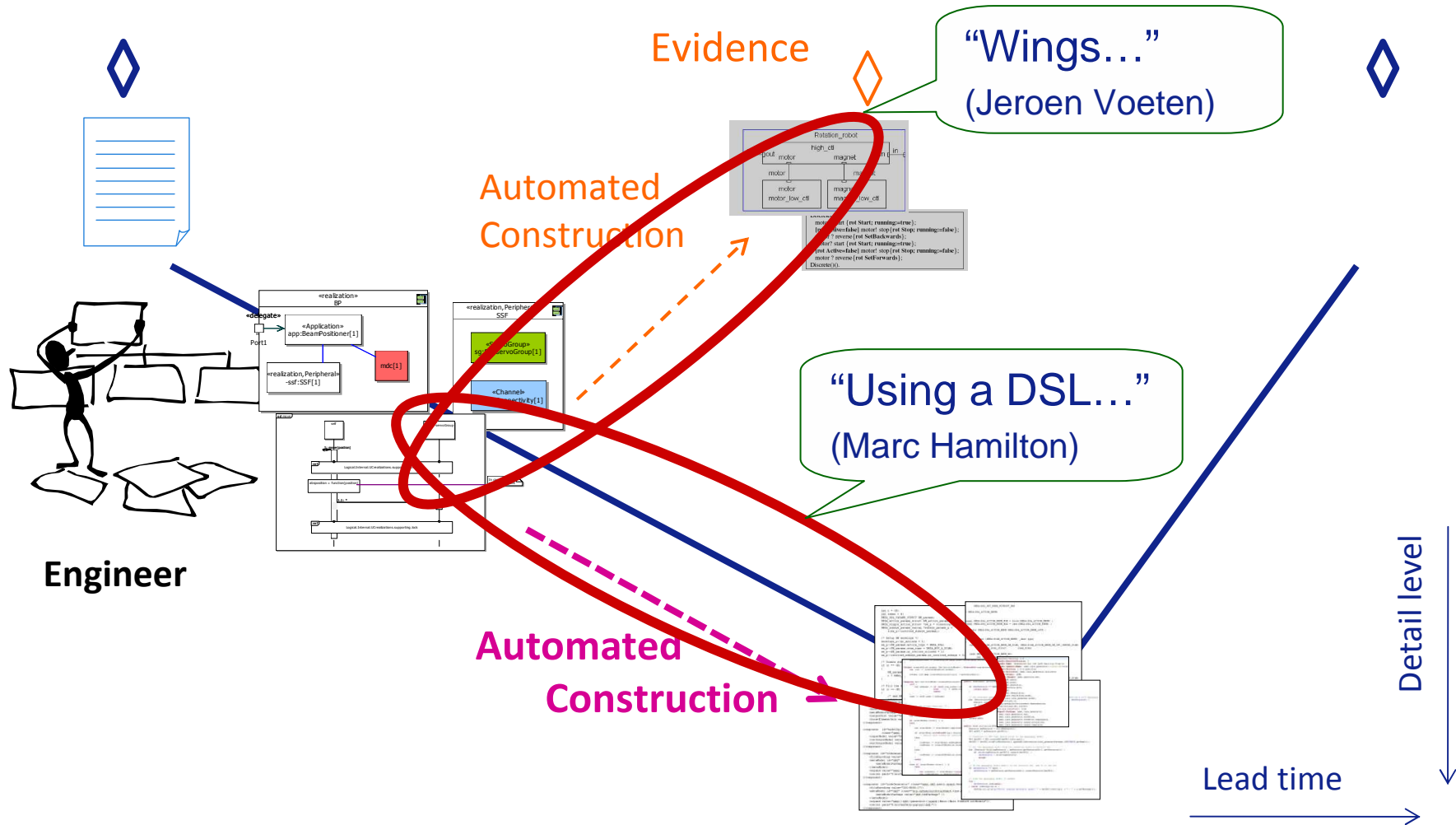
Secondary Process



Focus on building and maintaining the factory



Engineering with models: Software Engineering



Directions for staying in control

1. Organization

- Separate supporting from program related organization

2. Communication

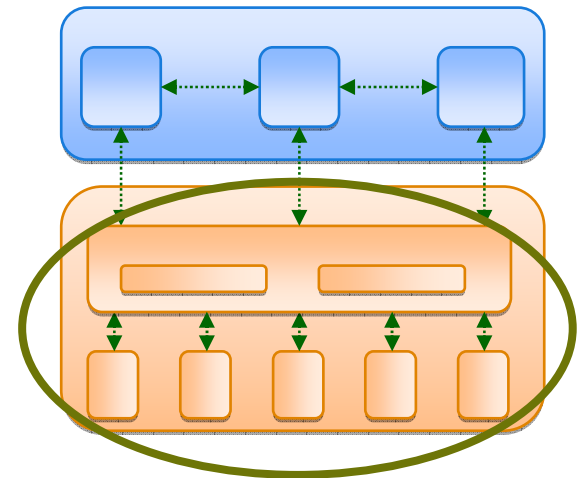
- Simplification through abstraction
- Clear responsibility of who is responsible for what information
- → With partners

3. Technology

- Make technology easy to use
- Automate for efficiency and quality
- → External knowledge: research and partners

Software contractors & other companies

- This high-tech region has the potential
- Companies can learn from each other
 - Share experiences and best practices
 - ESI as catalyst
- SW contractors: distinguish yourself!
 - The hourly rate at a low abstraction level is lower outside this region
 - Build-up your (modeling) competence
 - Complex modeling and transformation tooling is not ASMLs core competence





ASML

Commitment

Special thanks to:

Theo Baan

Marc Hamilton

Wouter Tabingh Suermondt

Jeroen Voeten

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