



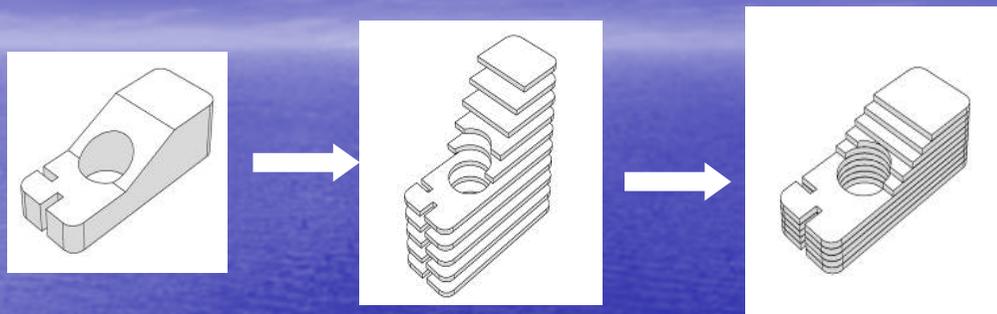
# AM Technology Platform 14th AM Platform meeting General Assembly

The European consolidation of  
Additive Manufacturing

Brussels, 03<sup>rd</sup> of June 2014

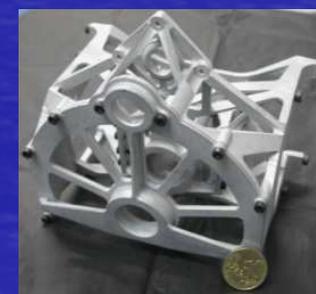
**The European collaboration on Additive Manufacturing**

# Additive Manufacturing



A processes of joining materials to make objects from 3D model data, usually layer upon layer, as opposed to subtractive manufacturing fabrication methodologies.

ISO 17296-1 and ASTM 2792-12



Courtesy of Siemens, MTU, EU FP7 Compilight

# Business cases and Success Stories



© 2013 Siemens



Source: Airbus

© AIRBUS S.A.S. 2010 - COMPUTER RENDERING BY FIXION - GWLN50

# Hints for Success

- Business conferences
- Business consultants
  - Ronald Berger
  - McKinsey

**SIEMENS**



Siemens AG, Sector Industry

# Industrie 4.0 – A vision on the way to reality

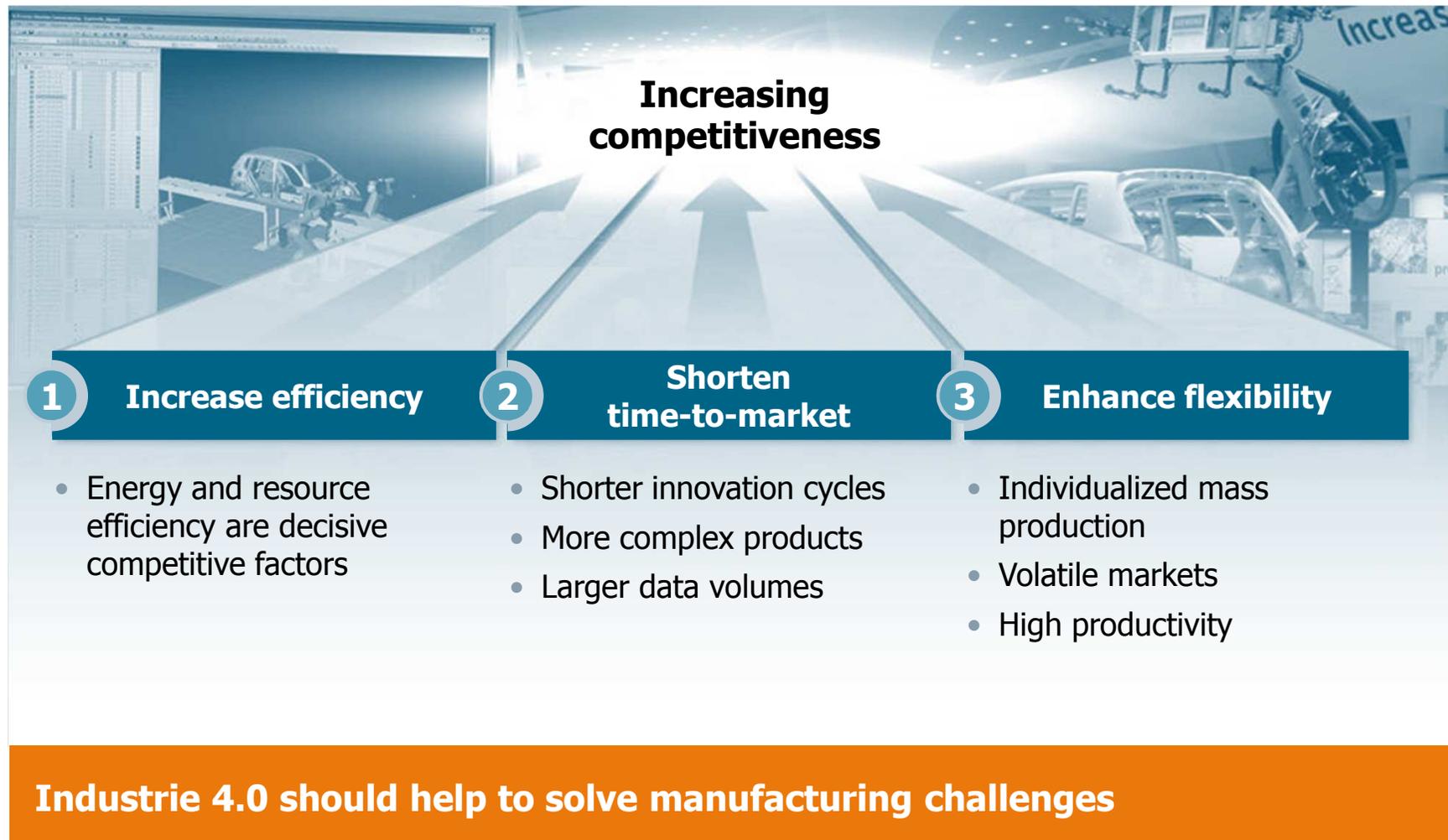


Industrie 4.0 – A vision on the way to reality

# Challenges lead to Industrie 4.0

## Challenges:

Manufacturing is changing faster than ever before



# Roadmap towards Industrie 4.0: Evolution, not Revolution



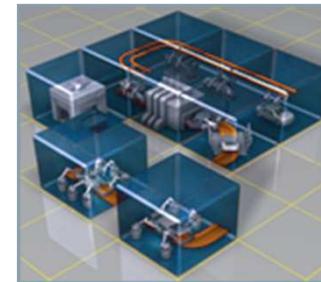
Introduction of electronics and IT to further automate production

1960



Integration and optimization of the entire product development process

2010



Industrie 4.0 –  
Optimization of production through cyber-physical systems (CPS)

2030



On the way to Industrie 4.0

## Industrie 4.0

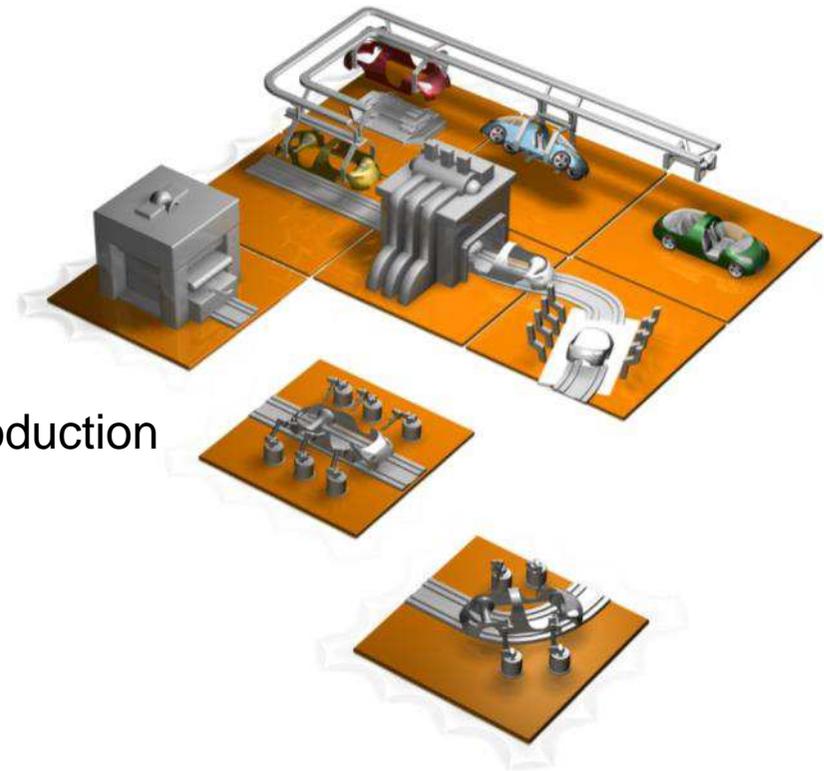
Production based on cyber-physical systems

### “Smart” products

- The product to be manufactured has all the necessary information for every step of its production

### Modular production units

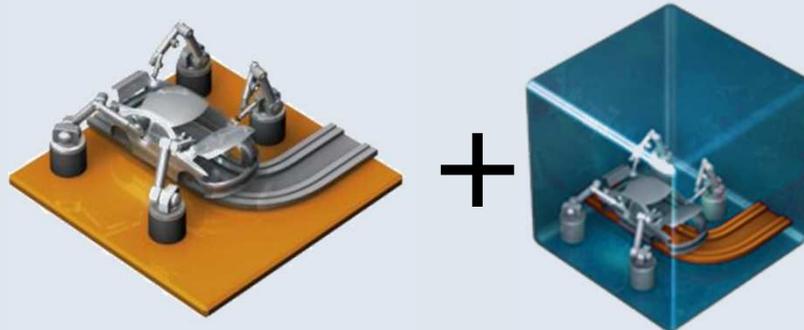
- Optimized organization of networked production facilities taking into account the entire value chain
- Production steps are configured flexibly in response to changing situations



**Reduction of complexity due to “smarter” structures**

# Cyber-physical systems have all the information as a digital model

## Cyber-physical system (CPS)



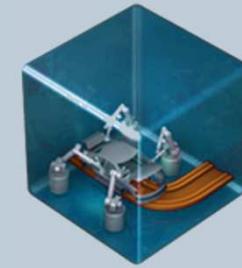
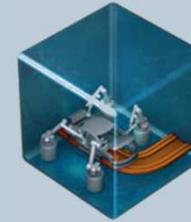
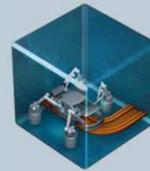
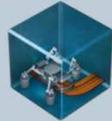
Physical production facility

Digital model

## Contains all the information on ...

- Software / Informatics
- Mechanics
- Electrics, Electronics
- Automation, HMI
- Safety, security
- Maintenance
- Location, identity...
- Status
- SW version
- Interfaces
- ...

## The digital model is always up-to-date and is extended over the entire lifecycle



Product design

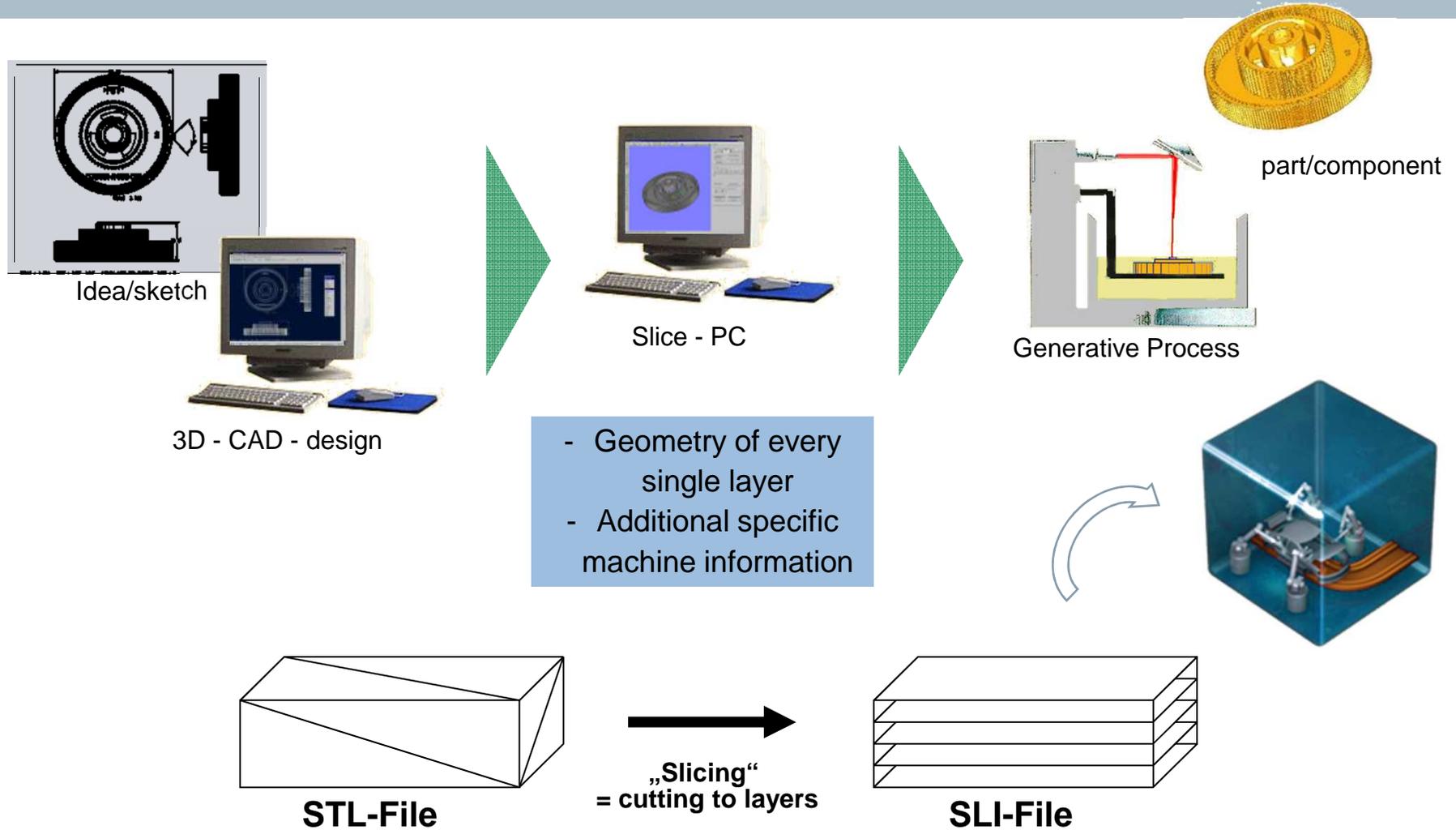
Production planning

Production engineering

Production execution

Services

# Additive Manufacturing: Basic principle



- Enjoy the meeting and fruitful discussions

# Backup

# Organisation Structure 2014

## Management Board

Chairman – Martin Schäfer (Siemens)

Coordinator – Frits Feenstra (TNO)

Members:

Oliver Jay (DTI); Rob Scudamore (TWI);

David González (Prodintec)

Interface to the EC:

Germán ESTEBAN MUÑIZ

## Scientific Technology Development Group

Oliver Jay (DTI);

Rob Scudamore, Amanda.Allison@twi.co.uk (TWI)

## Standardisation Group

Klas.Boivie (Sintef);

Martin Schäfer (Siemens);

Frits Feenstra (TNO)

## Industrial Applications Group

Axel Demmer (Fraunhofer); tba (Materialise)

## National & Regional Working Group; Public Relations

David González, Paula Rodríguez (Prodintec);

Paulo Bartolo (Univ. Leiria)