

AM Technology Platform 14th AM Platform meeting General Assembly

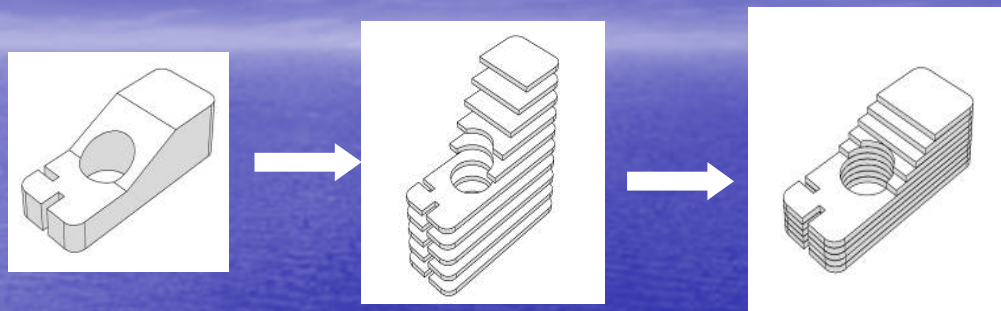
The European consolidation of
Additive Manufacturing

Brussels, 03rd of June 2014

A horizontal banner with a light blue background, featuring a collage of various images related to additive manufacturing, including 3D printed parts, industrial machinery, and abstract patterns.

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 Compolight

Business cases and Success Stories



© 2013 Siemens

Source: Airbus



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

Hints for Success

- Business conferences
- Business consultants
 - Ronald Berger
 - McKinsey

The background of the slide features a man in a dark suit standing in profile, facing right. A stream of small, white, cube-like digital particles flows from his back, curving around to form a red sports car. The car is shown in a semi-transparent, wireframe-like style, revealing its internal components. The car is positioned as if it is emerging from or interacting with a large, tilted computer monitor. The monitor displays a solid red car. The background is a blurred cityscape with blue and white tones.

SIEMENS

Siemens AG, Sector Industry

Industrie 4.0 – A vision on the way to reality

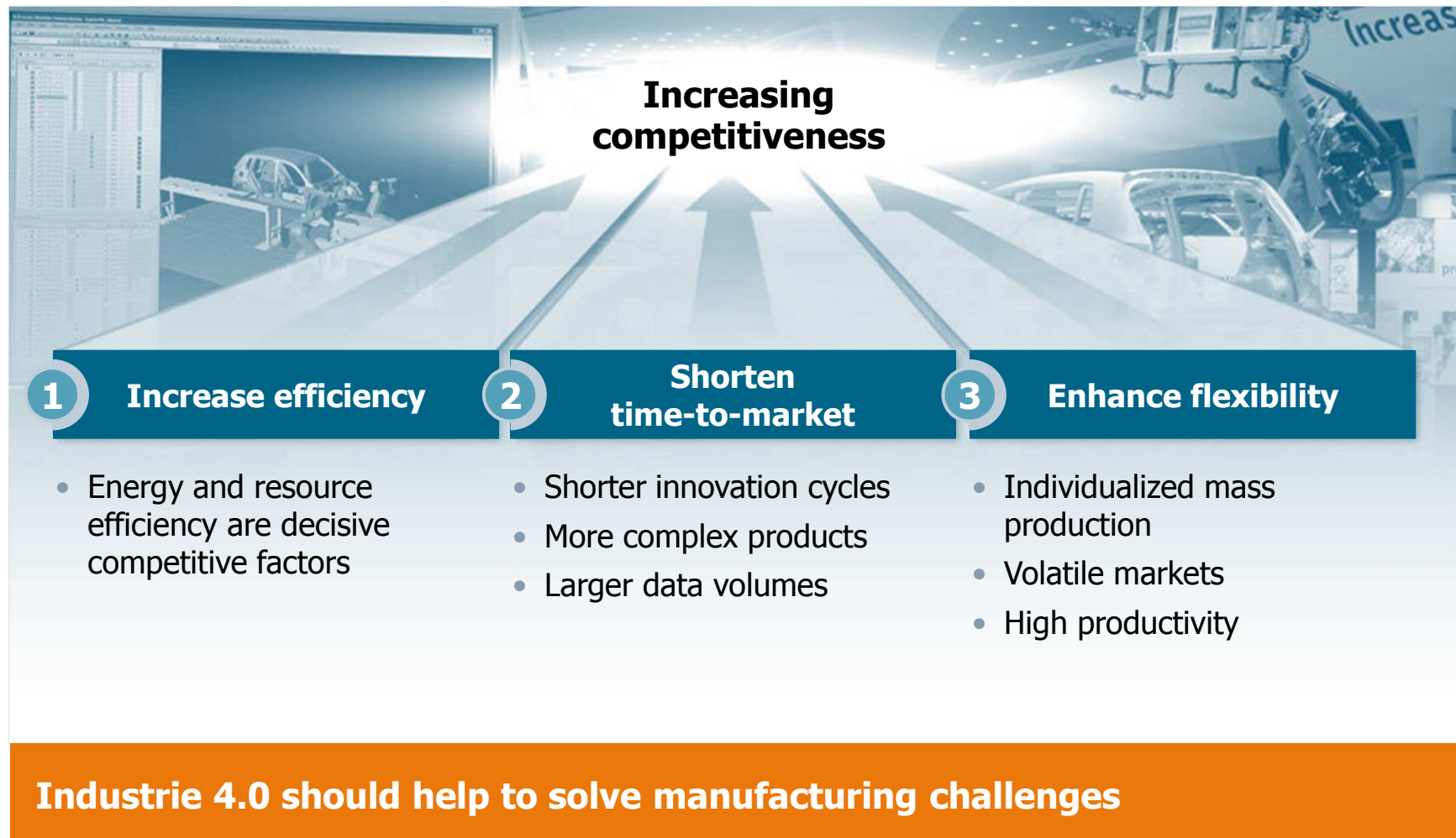
A conceptual illustration for Industry 4.0. On the left, a man in a dark suit is shown in profile, facing right. His head and upper body are composed of a grid of small, glowing white squares. A stream of similar squares flows from his back towards a large, tilted computer monitor on the right. The monitor displays a 3D model of a red sports car. The car's interior is visible, showing yellow seats and a green dashboard. The background is a blurred, blue-toned industrial setting with various mechanical parts and structures.

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



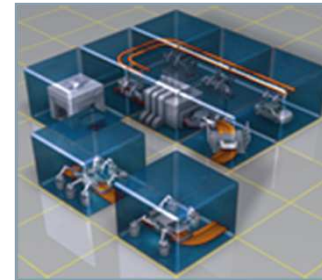
Introduction of electronics
and IT to further automate
production

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

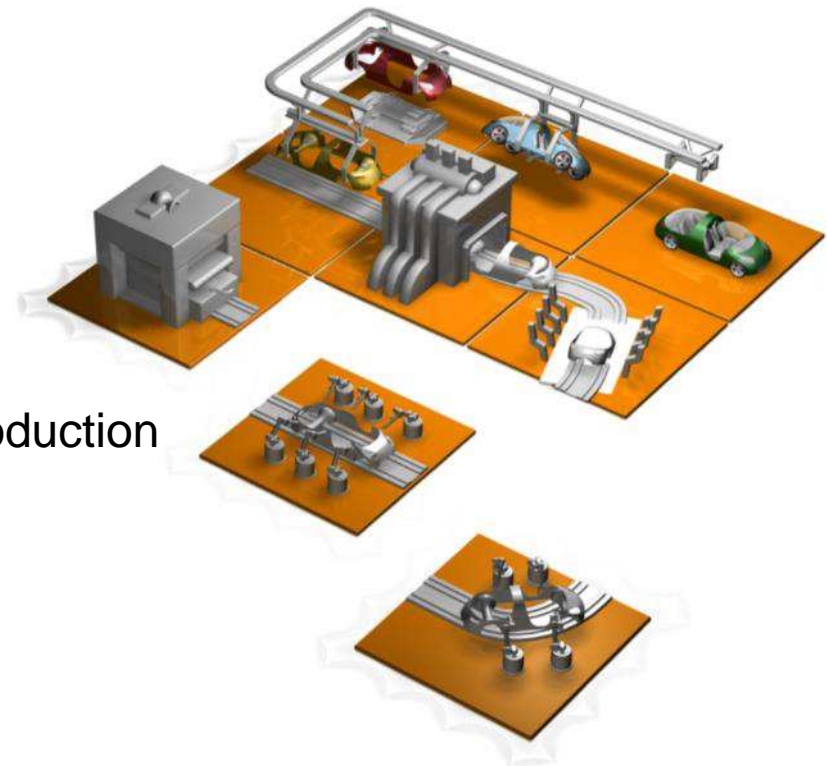
Production based on cyber-physical systems

“Smart” products

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

Modular production units

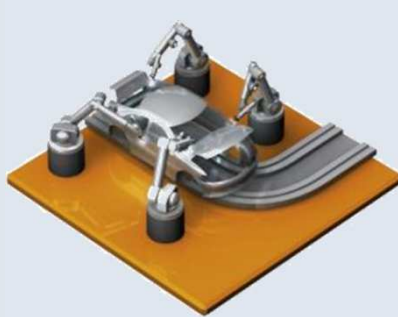
- Optimized organization of networked production facilities taking into account the entire value chain
- Production steps are configured flexibly in response to changing situations



Reduction of complexity due to “smarter” structures

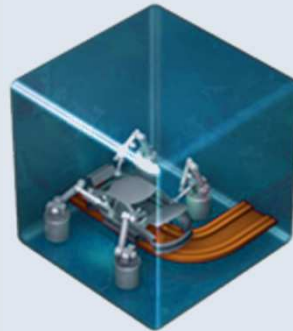
Cyber-physical systems have all the information as a digital model

Cyber-physical system (CPS)



Physical production facility

+



Digital model

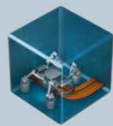
Contains all the information on ...

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

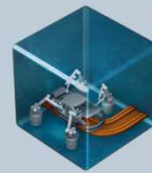
The digital model is always up-to-date and is extended over the entire lifecycle



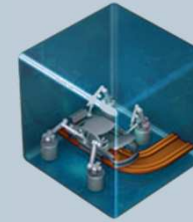
**Product
design**



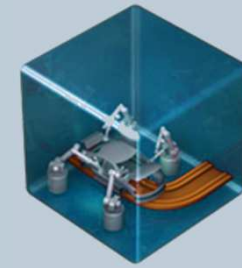
**Production
planning**



**Production
engineering**

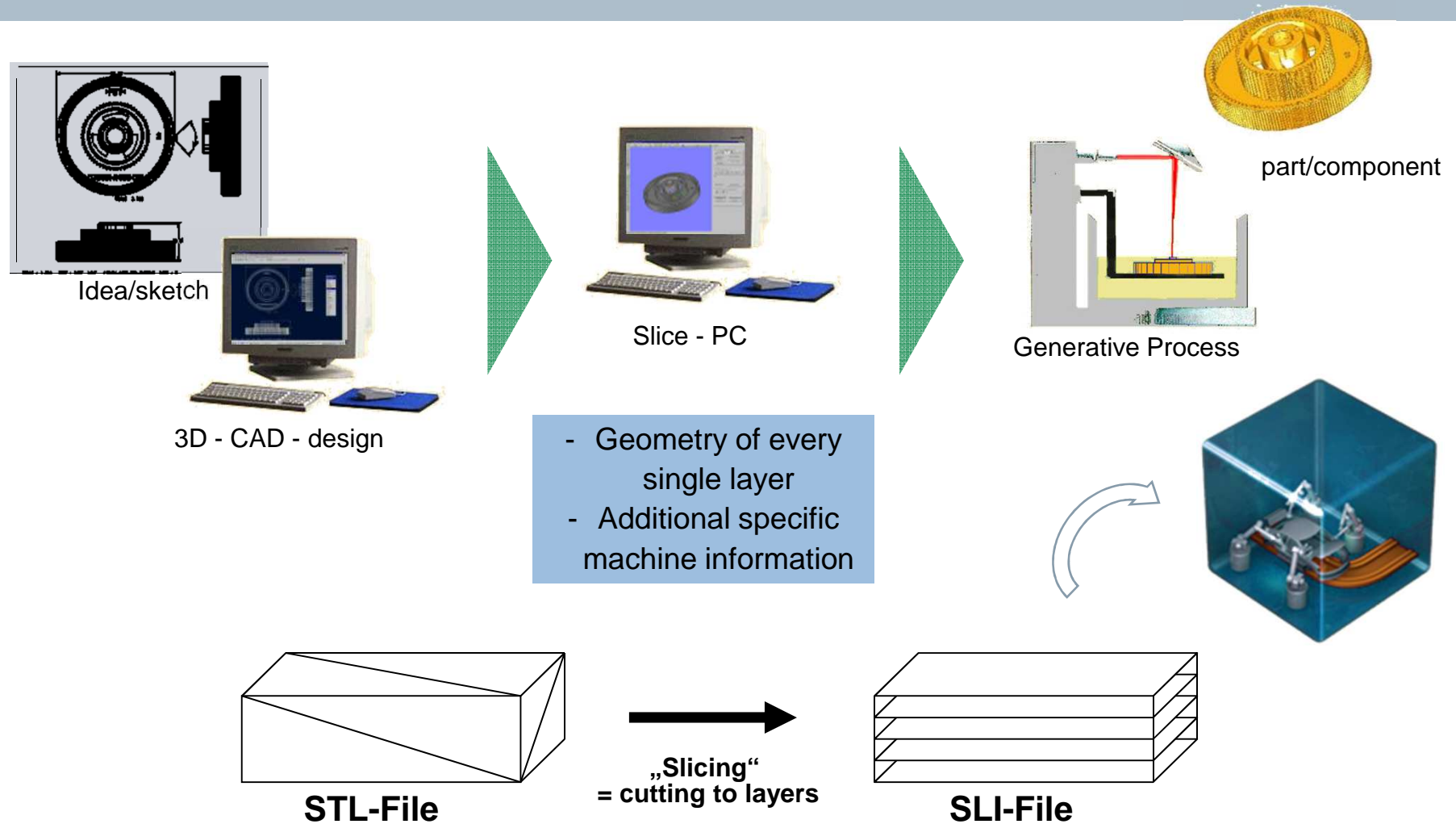


**Production
execution**



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)