Manufuture 2017 – Moving up the Value Chain

THE DIGITISATION OF MANUFACTURING
Challenges and opportunities for European advanced manufacturing

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CECIMO, the European Association of the Machine Tool Industries

It represents:
• 15 National Associations
• 98% of the entire European machine tool
• leaders in metal AM machine production & hybrid manufacturing

• 39% of the MT global production
• €24.2 bn of MT sales in 2016
• Key supplier for key manufacturing sectors (such as automotive, aerospace & medical devices)
WHY:

Industry 4.0 is happening **now** in the machine tool sector.

Digitisation and new data-driven business models provide tremendous growth avenues for MT companies. These are opportunities that cannot be missed.

HOW:

CECIMO launched a large-scale digitisation campaign to promote digital practices in the European MT sector.
WHY
There is a need to keep European leadership in segments of the Additive Manufacturing value chain and support the adoption of AM adoption in the European mainstream.

HOW
CECIMO promotes interests of the European AM industry towards govts & the manufacturing community by:

- Engaging in ongoing EU-funded projects for the industrialization of AM
- Organising +100 attendees conferences & panel debates with key AM players & authorities
- Advocating AM needs in the EU context

Source: Safran
The emerging IIoT ecosystem

1. Cloud service providers (IaaS)
   - Amazon Web Services
   - Open Telekom Cloud
   - Microsoft Azure

2. Industrial cloud platforms (PaaS)
   - Siemens
   - MindSphere

3. Industrial apps/software providers (SaaS)
   - HaCon

4. OEMs and others who enable connectivity of equipment to the cloud
   - Siemens

5. End users who connect devices and use value-adding apps
   - Renfe

The diagram shows the ecosystem with cloud service providers, industrial cloud platforms, SaaS providers, and end users, including rail, power plants, and manufacturing plants.

Source: Roland Berger
Innovation: Shift from incremental to disruptive

**Conventional approach**
- Producing better capital goods
- Added value via hardware
- Focus on machine performance
- Revenue through one-off asset sale

*Most manufacturers do it; still demanded by users.*

**State-of-the-art approach**
- Understanding better how the capital good is used
- Added value via software and services
- Focus on overall process efficiency and benefits
- Constant revenue stream

*Pioneer manufacturers do it; more and more users will demand it.*
Increasing number of connected machines and data exploitation services…

…But 64 million factory machines (92%) are not network connected - IHS 2014 Machines Survey, PWC 2015

13 yrs is the avg. age of MT installed in IT mechanical industry
Solutions developed by machine tool builders

- Predictive maintenance
- Data collection

- Continuous data collection, monitoring early signs & alarms,
  long-term data clustering.

- Identify problems as early as possible.
- Show the most often problems & determine the root cause.
- Find the best solution and prevent potential interruptions.
- Viewing remotely the state of the machine in real-time.
- Connection to MT maintenance experts via video.
- Technicians access to machine parameters & troubleshooting.
- MT provider takes control of the CNC remotely even with a mobile phone.
- Web platforms that let customers automatically order and configure their machines.
- Virtual models for machine optimization. Simulation of machine behaviour & automatic tool configuration.
- E-learning courses & manuals are accessible by the operator via app on the spot.

3Vs: high-volume, high-velocity, high-variety data: insights, decision-making & overall process efficiency.

Source: Roland Berger
Catching the digital train

Few big companies at the moment provide open platforms that connect actors along the value chain; while most of them focus on digital service businesses.

SMEs machine tool firms need to enter the right collaborations to reduce risks of a scenario where new I4.0 actors establish their own bilateral businesses with machine tool industrial users.
Anticipating & responding to changing skill needs

Some jobs are disappearing from the EU manufacturing sector…
Between 2015-2025, future employment growth in the EU manufacturing sector is projected to change for:
• Stationary plant & machine operators by -5.31%
• Metal, machinery & related trades -10.69%

Source: Cedefop skills panorama

… while others are shifting & emerging because of Industry 4.0:

• WHO will generate new added-value from the machine tool?
• WHO will push down costs like maintenance and machine state monitoring?
• WHO will unleash the power of new technologies like (metal) Additive Manufacturing...
  ….where designers need a completely new thinking and H&S is critical?
Recommendations for a forward looking strategy

- Promoting & incentivizing shorter innovation cycles
- Avoiding premature regulation & remaining future-proof
- Rebuilding close links with finance and manufacturing (e.g. Italian National Plan Industry 4.0)
- Pooling resources at EU level for digitization (fragmented national, regional and European-level Initiatives in the EU for the industry)
- Promote skills-related sectoral cooperation and help modernize education across Europe
thank you

questions

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