Center for Research Based Innovation
Norwegian Manufacturing Future
NORMAN

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RTIM

CIRP WG Species meeting

Short presentation of RTIM

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NORMAN
# CRI NORMAN

- **MAIN OBJECTIVE:** To improve the competitiveness of industry through product and process innovations

- Start 2007, will run for 8 years

- Total budget 20 Mill. Euro

- One of 14 CRIIs, the only one on production

## Research and Industrial goals

### Research:

- Basic research on manufacturing in close interaction between enterprises and research institutions
- Create research innovations that can be directly exploited by the partners to increase competitiveness and profitability
- Maintain and strengthen leading manufacturing research groups in Norway as attractive partners for international research
- Collaboration on a global industrial research arena and EU Framework Programmes
- 17 PhD and 3 Post.doc

### Industry:

- Strengthen industry’s management and control of basic and applied research
- Double product performance
- 50 % reduction of resource usage and time spent on product and process development
- 50 % reduction of manufacturing costs
Main Research Areas

- **Collaborative Product and Process Development** - From emerging ideas to manufacturing with high profit margin
- **Adaptive Factory** - Improving manufacturing efficiency, adaptability and flexibility
- **Transparent and Robust Manufacturing Networks** - Streamlining operations in manufacturing networks and global value chains

Research objectives

Collaborative Product and Process Development

- Develop new management principles and working methods for product and process design
- Utilising the new emerging technologies for modelling, simulation, visualisation, and collaborative technologies
- Result effects will be increased product performance, faster and more cost effective development, as well as products that allow cost effective manufacturing
Research objectives
Adaptive Factory

Fast Reconfigurable Manufacturing System
• Enable fast shop floor adaptability and re-configurability through modularisation, re-use of equipment with “plug and play” functionality
• Result effects will be faster and more cost effective changes on factory level and better responsiveness to long-term marked changes

The Digital and Wireless Factory
• Develop a demonstrator of a highly flexible, digital and wireless factory
• Result effects will be highly cost effective factories and better responsiveness to short term marked changes

Self Adjustable Automated Processes
• Develop new theory and models which enable self-adjustable processes, as well as building some industrial demonstrators
• Result effects will be higher process robustness, faster set-up and faster start of production of new products

Research objectives
Transparent and Robust Manufacturing Networks

Rapid Network Restructuring
• Develop methods and models to support strategic decisions on manufacturing network restructuring.
• Results will enable faster, cost effective and smarter network restructuring

Operating Transparent Value Networks
• Develop concepts, models, monitoring tools and dashboard-systems to support real-time control of transparent manufacturing value networks, with embedded KPI measures.
• Result effects will be improved control and collaboration in the value network leading to improved total cost effectiveness.
NORMAN framework and research

Global Competitiveness

Adaptive Factories

Transparent and Robust Manufacturing Networks

Collaborative product and process development

ICT Enablers

Product Development

Innovation Management

Decisions Support Systems

Operations Management

Manufact. Syst. Eng.

Research Partners

– SINTEF
– RTIM
– NTNU

– The centre is located at the NTNU/SINTEF Campus in Trondheim, with an industrial hub at Raufoss
16 Industrial Partners

Some typical products from CRI partners
International Co-operation

• International research co-operation is a MUST (of course)
• Contribute in international research groups, for example CIRP Working Groups
• Exchange of Researchers, PhD and Post Doctoral students
• NORMAN Workshops / conferences

NORMAN relation to Species

• We consider Species very relevant for NORMAN
• We wish to contribute in the future work in Species