



Applications of Agent Technology at DaimlerChrysler

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Research Information and Communication
Manufacturing and Supply Nets

Contents of talk

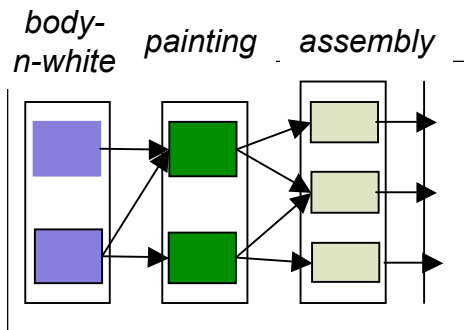
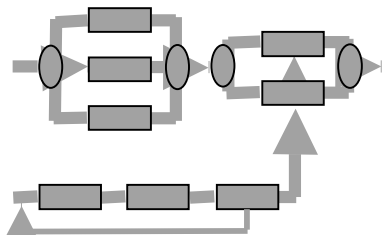
- Why does DaimlerChrysler adopt agent technology?
- Example application *Production 2000+*
- Lessons learned
- Current applications

Manufacturing and supply nets

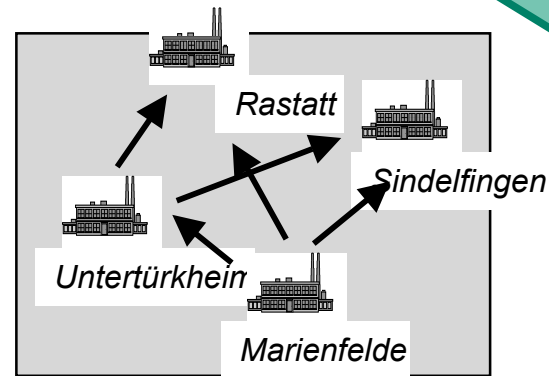
Objective

improve manufacturing
and supply processes

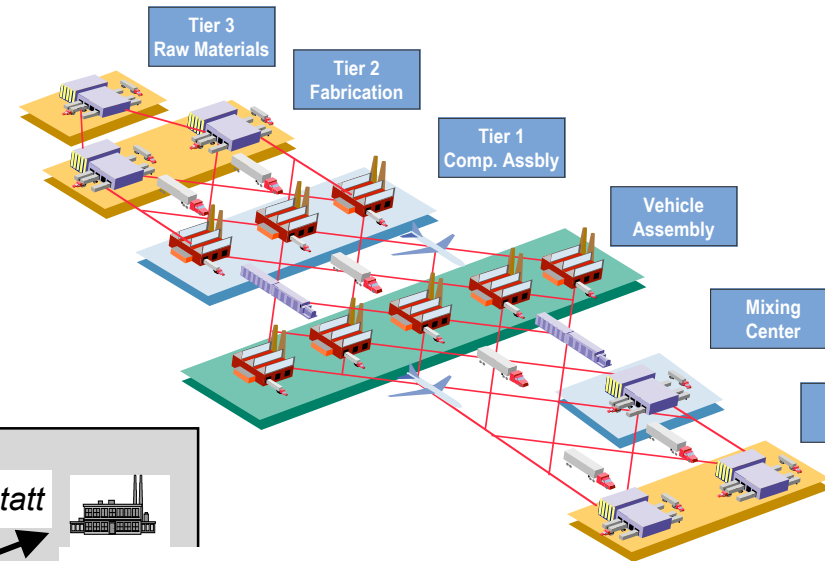
production lines



vehicle assembly plant



plant network



inter-organizational
supply net

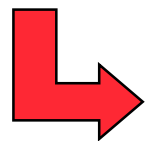


April 1st Frankfurt, January 2000

Motivation: *Business trends*

Growing surplus of industrial capacity and globalization lead to

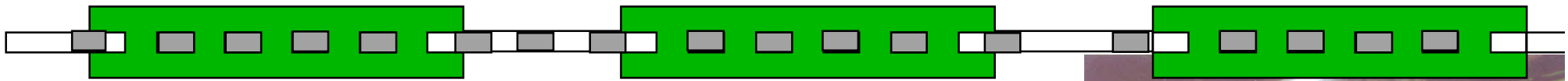
- shorter product life-cycles
- reduced time-to-market
- increased product variety
- volatile demand
- reduced investment costs



New manufacturing requirements

- **product flexibility**
- **volume scalability**
- **robustness**

Production 2000+: *Flexible and robust production system*

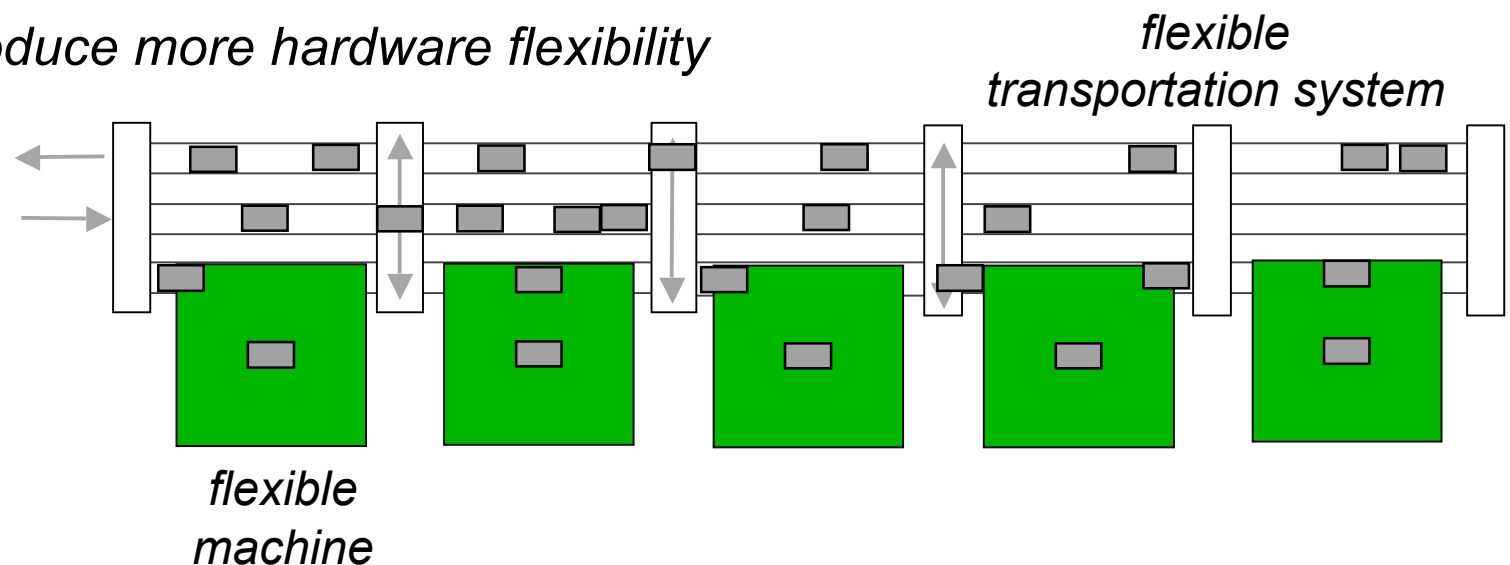


Disadvantages of transfer lines

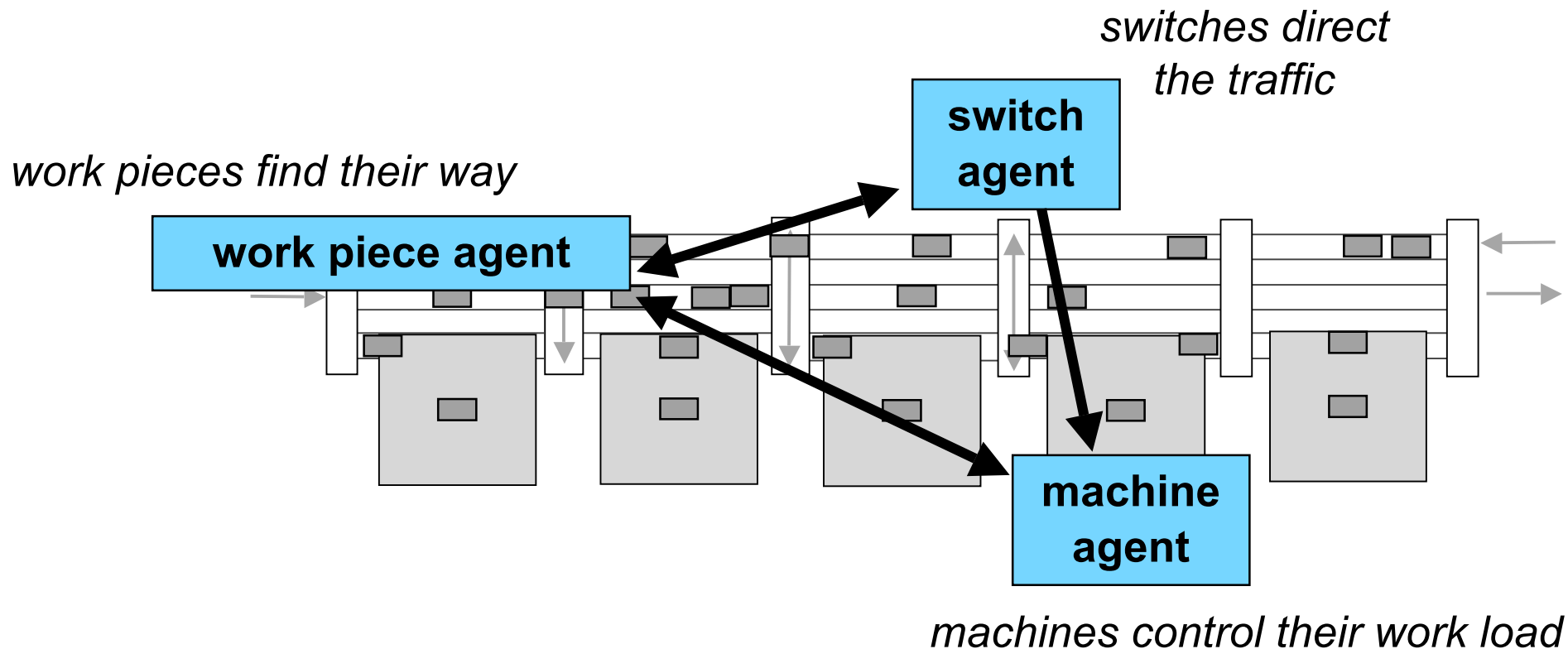
- dedicated machines
- rigid material flow



introduce more hardware flexibility



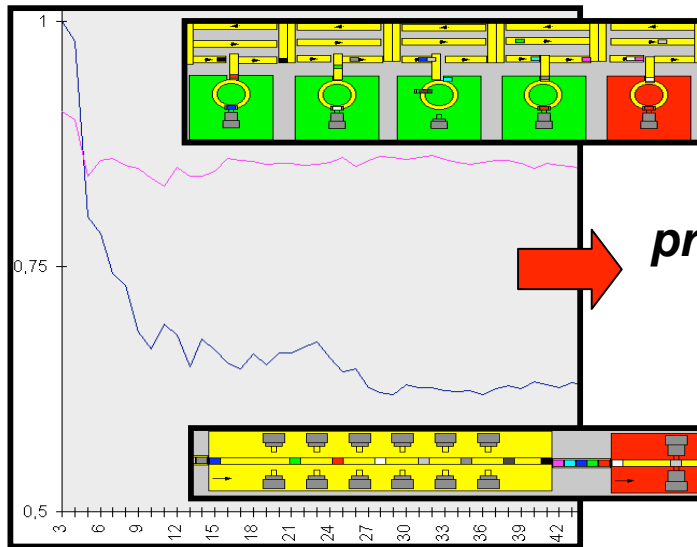
Production 2000+: *An agent-based control system*



Control forces:

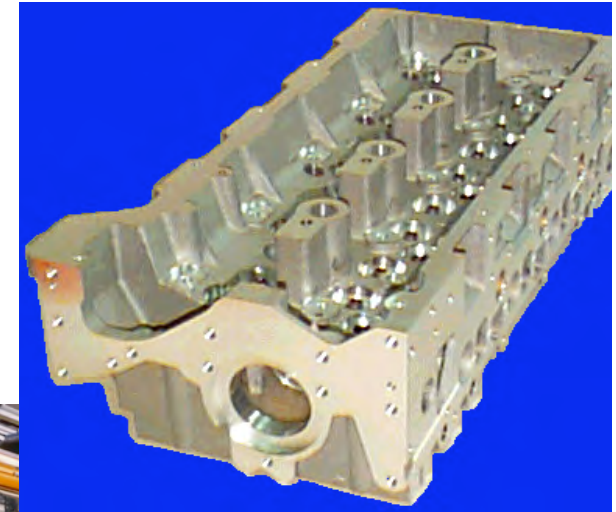
- work pieces push themselves
- machines limit work-in-process

Production 2000+: *Field test*



**productivity increase
at least 10%**

by-pass to
existing transfer line



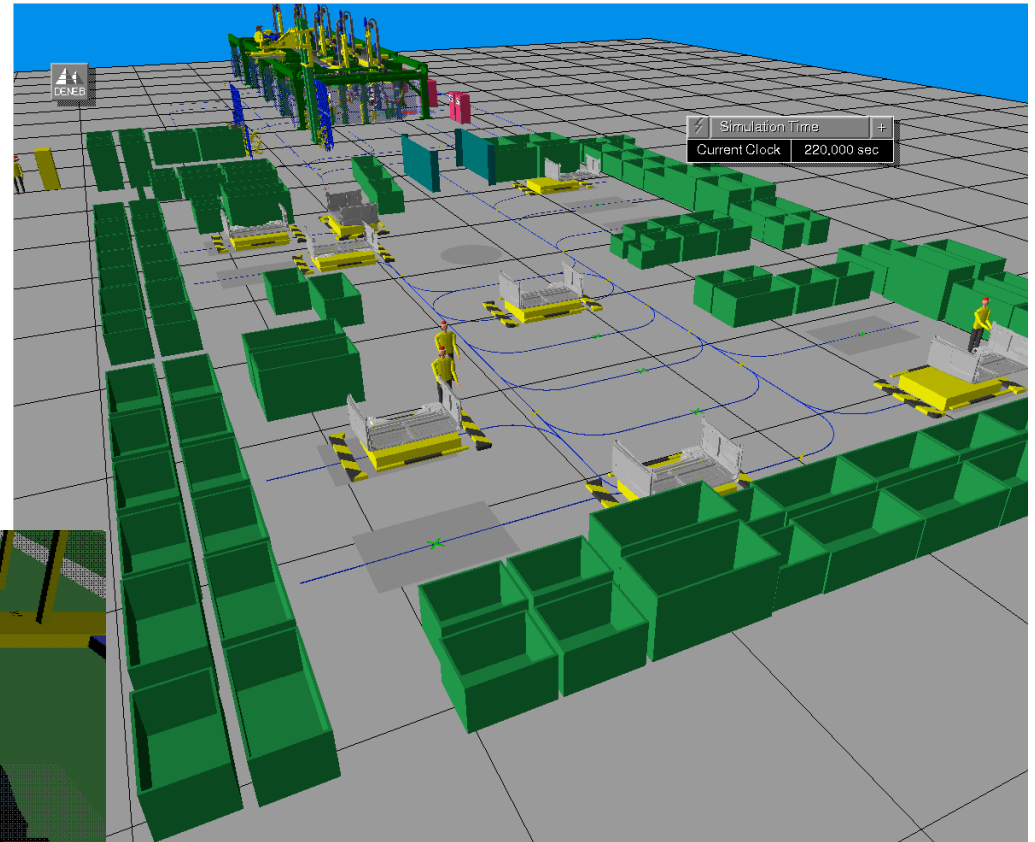
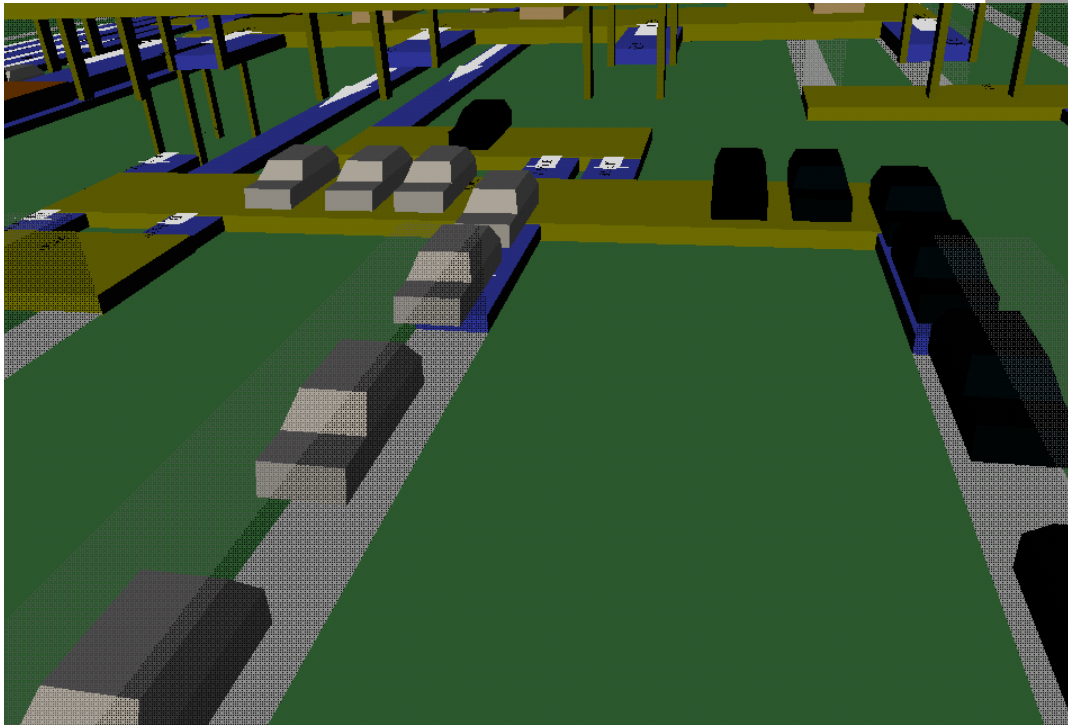
Lessons learned

Requirements for wide-spread use in industry

- show **added-value** of agent technology over existing technology
- provide development **methodology for engineers**
- provide (commercial) **tools** for agent development that comply with existing agent standards
- integrate agent technology into industrial environment
- provide migration to agent-based systems

Current applications

optimized car painting



flexible car body weldi