ProVis.Agent: an agent based production monitoring & control system

- A step towards real time manufacturing in automotive plants -

Fraunhofer Institut Informations- und Datenverarbeitung

Leipzig, April 5, 2006

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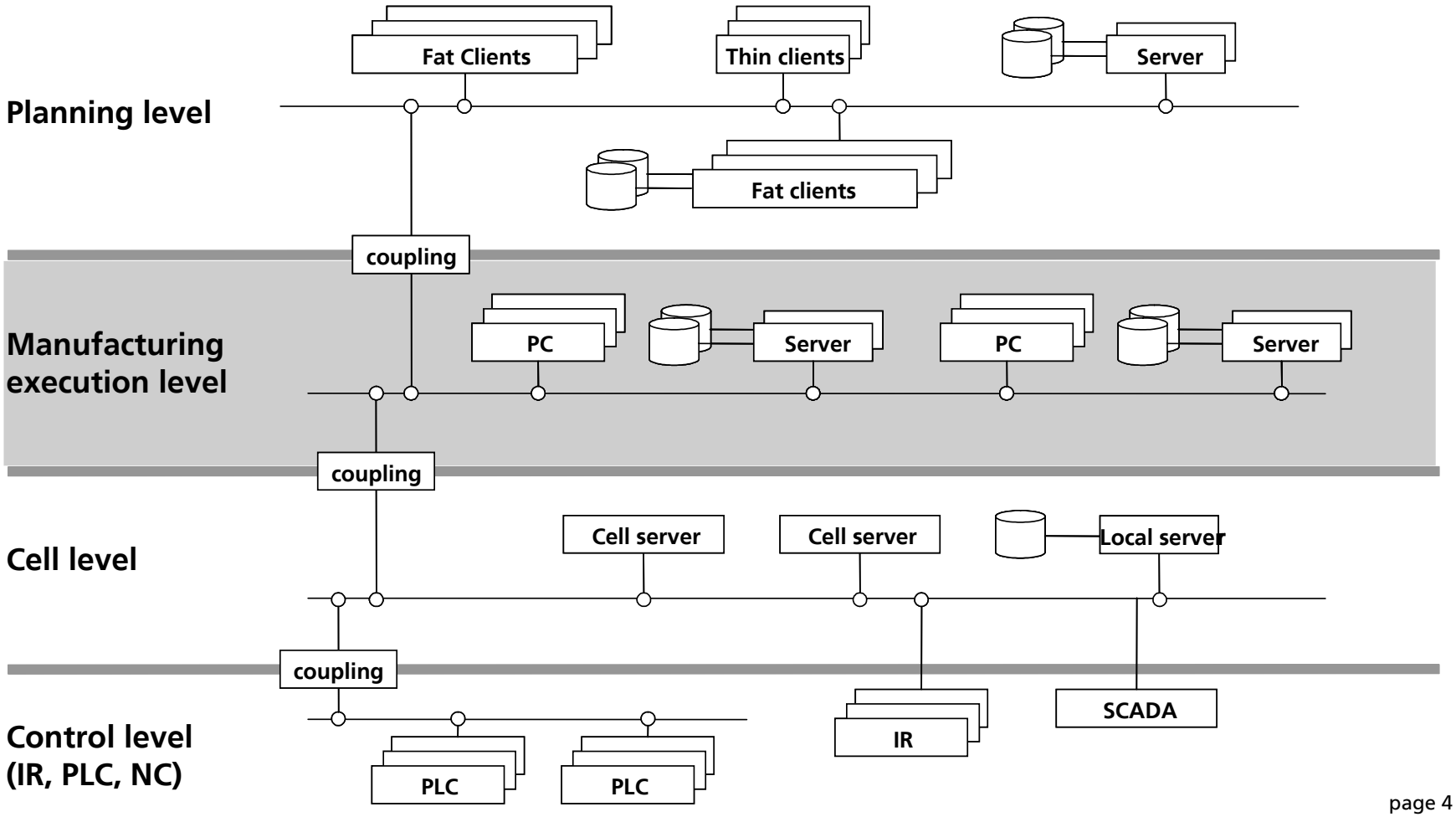
IT resources on the different manufacturing levels (source: Betriebshütte, pp. 17-19)



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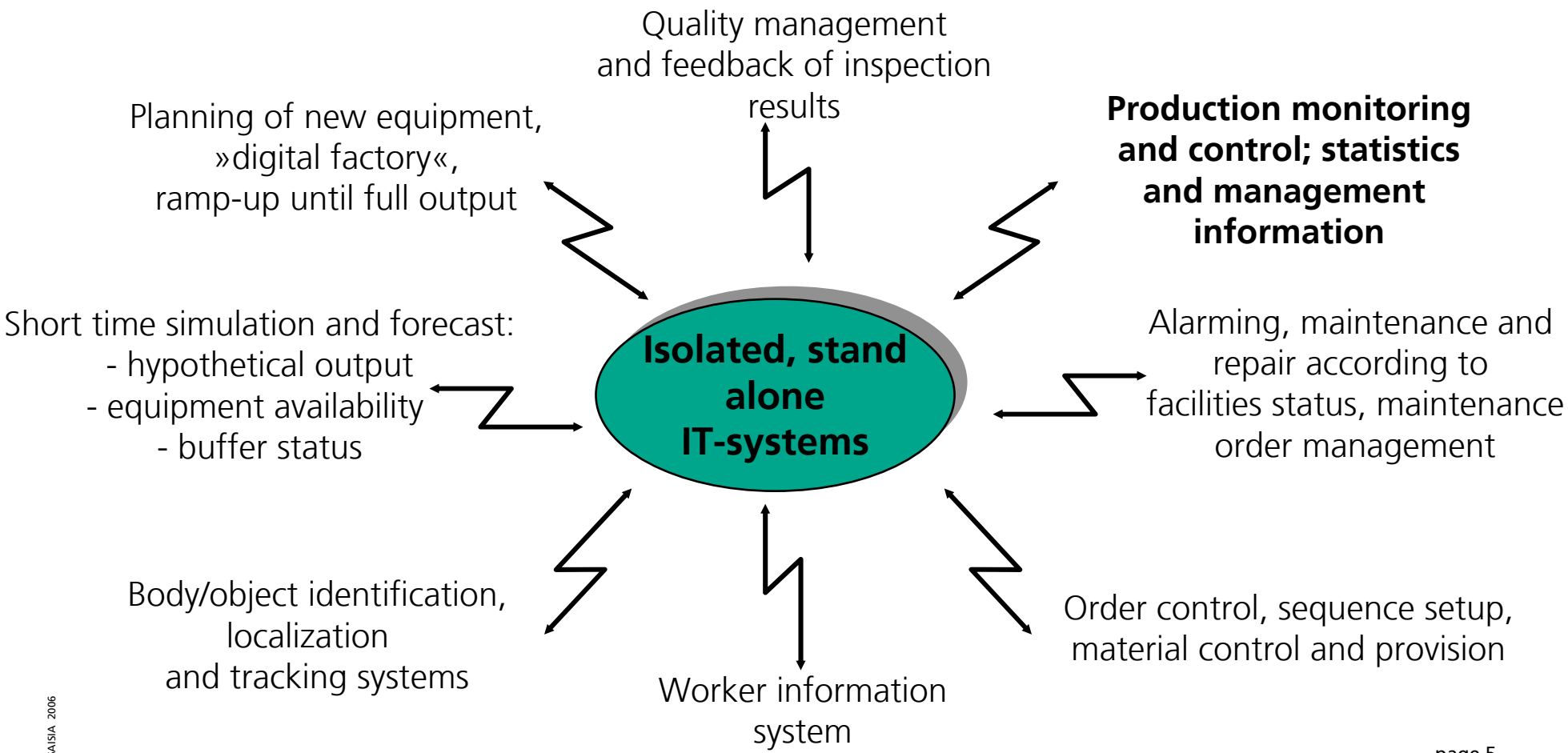
Current status in automotive factories: examples for IT-systems on the manufacturing execution level



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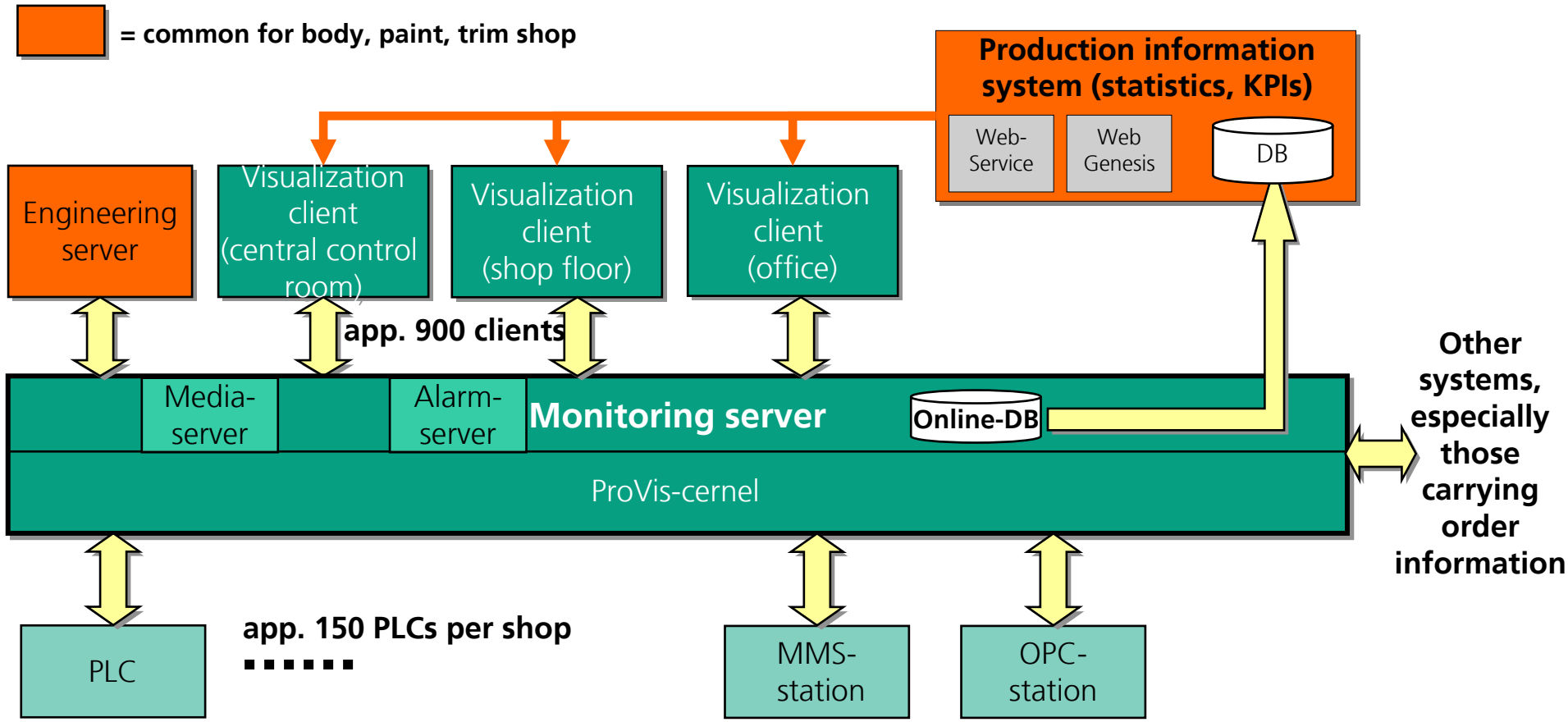
Production monitoring architecture applying software agent technology

ProVis.Agent



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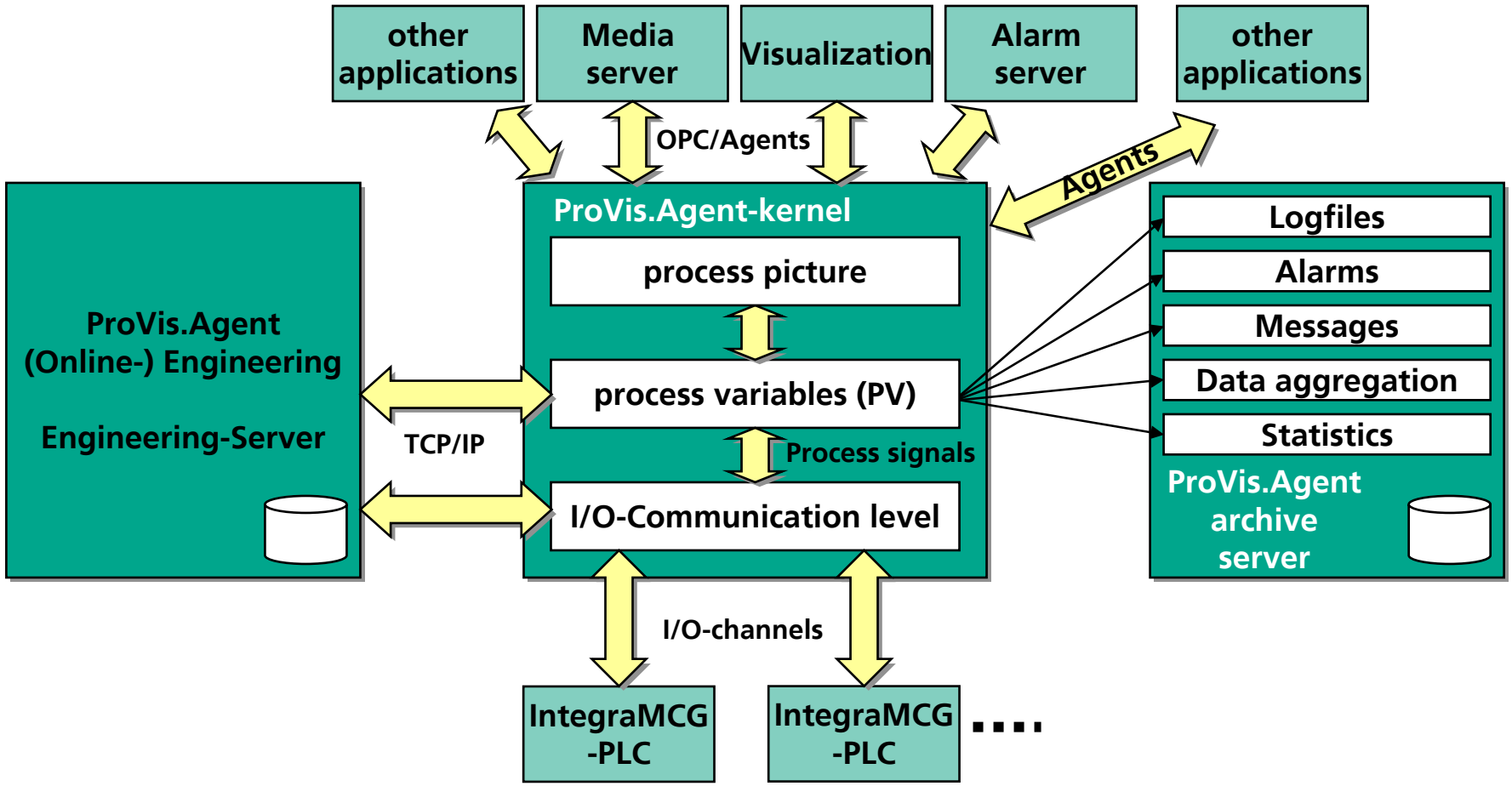
Production monitoring architecture applying software agent technology (2)

ProVis.Agent



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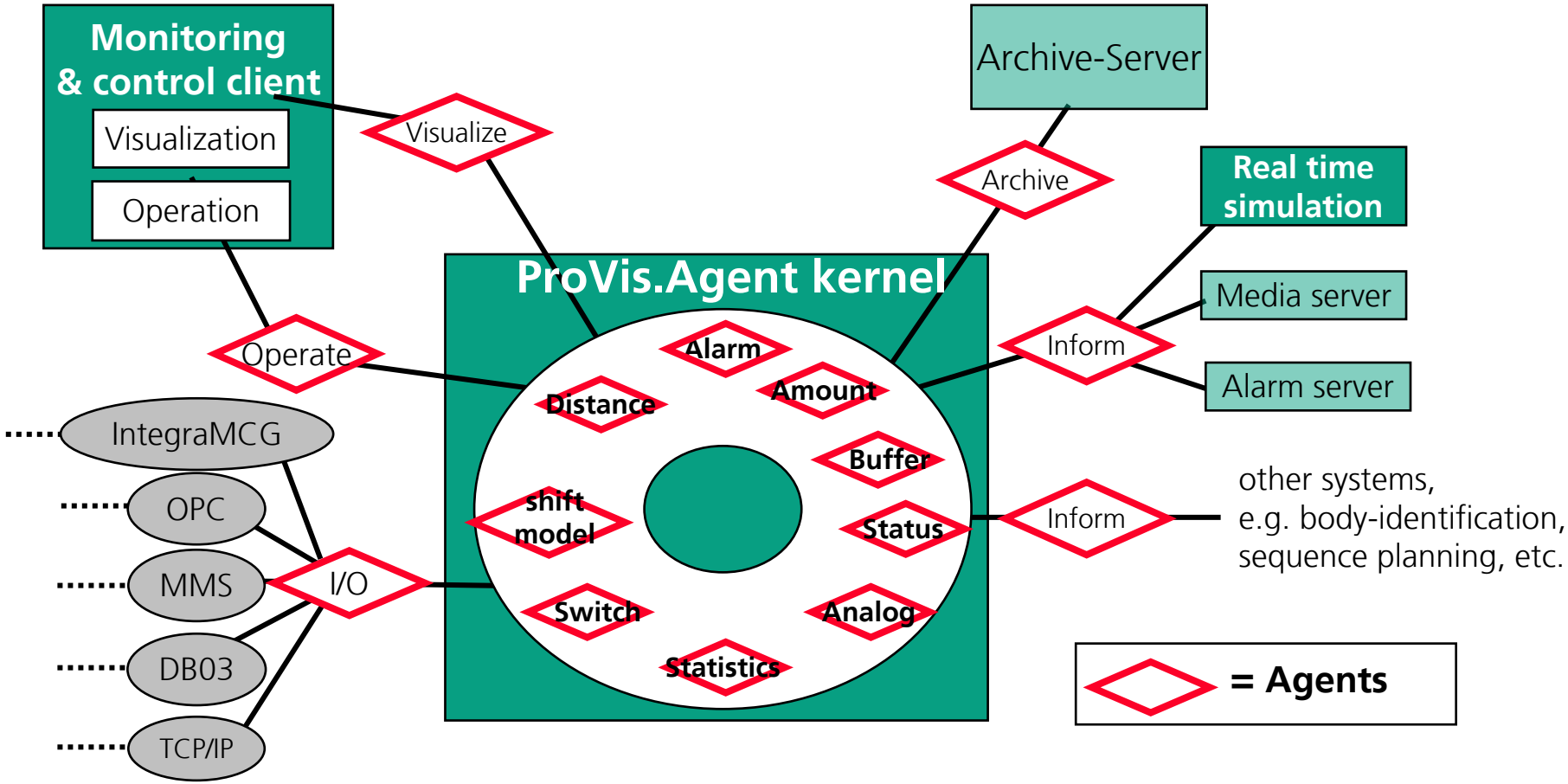
Production monitoring architecture applying software agent technology (3)

ProVis.Agent



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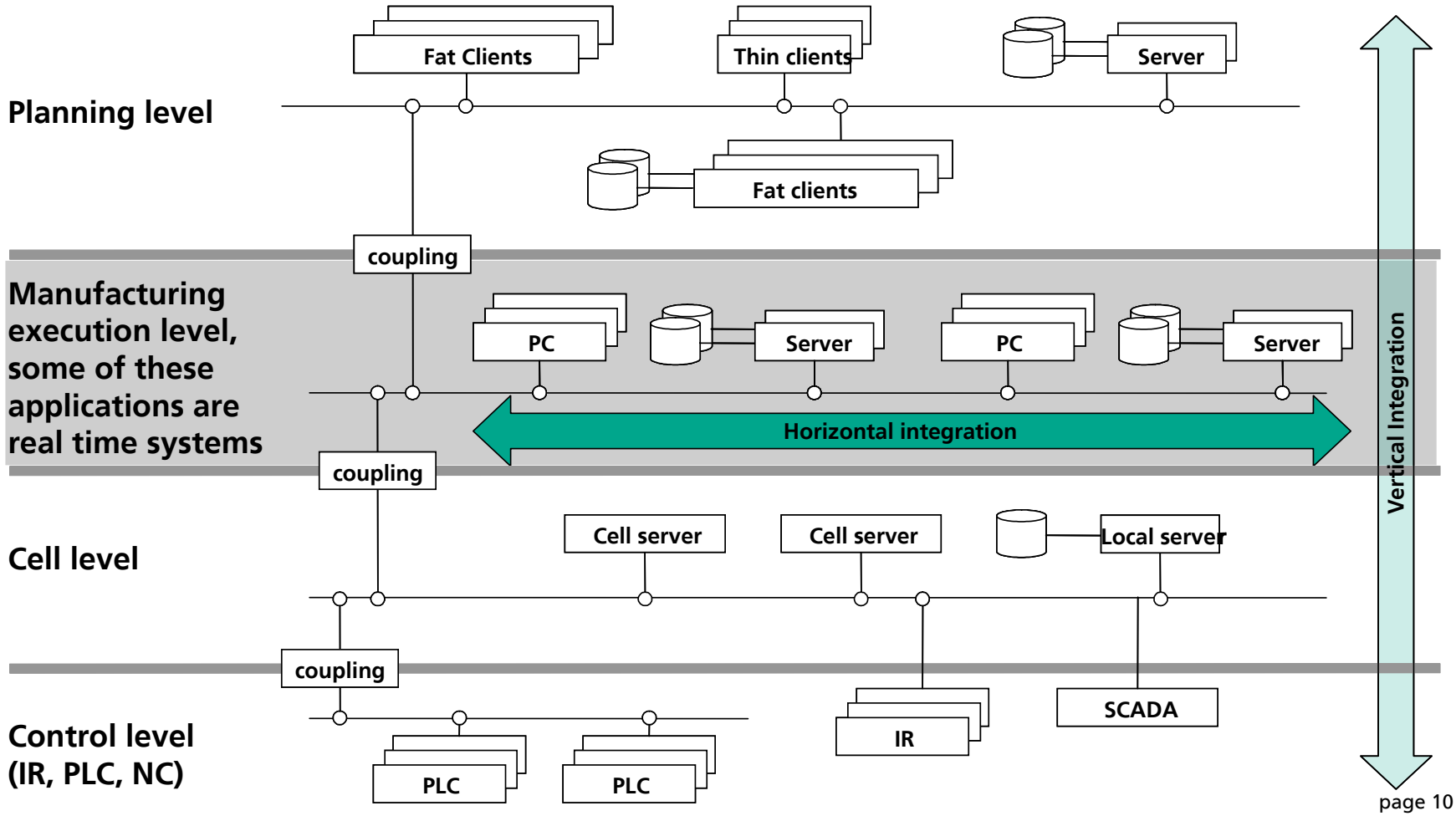
Probable applications in manufacturing, assembly and logistics

- **Horizontal integration of IT-systems on the MES-level as well as vertical integration from the shop floor to management (PLC to ERP).**
- **Production scheduling, where workpieces, material flow systems and production facilities negotiate the sequence of operations.**
- **Plug-and-produce mechanisms for adjustable factories due to fast changes of products and rising product variants.**

IT resources on the different manufacturing levels (source: Betriebshütte, pp. 17-19)



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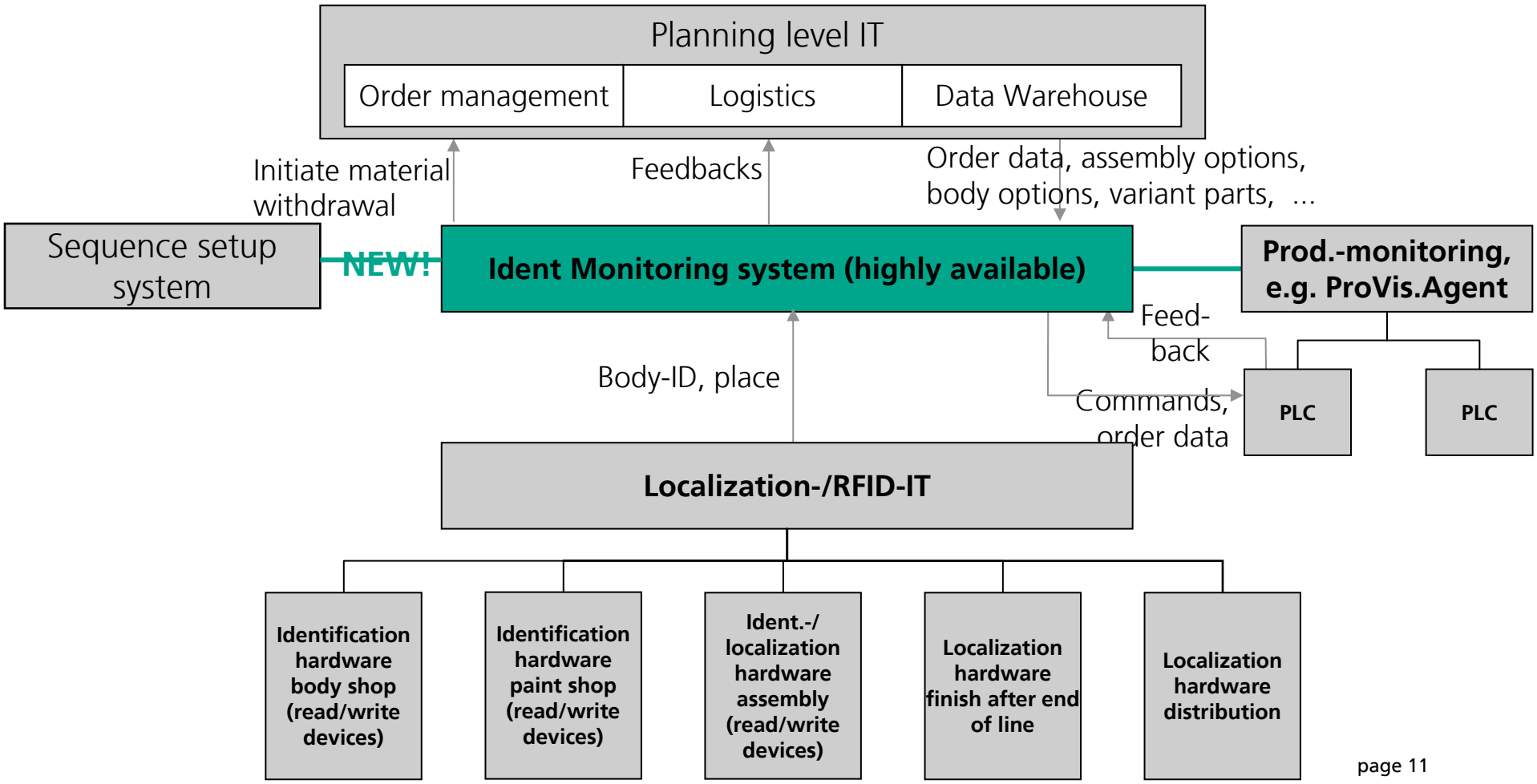
Horizontal ‘integration’ of production monitoring, body identification and sequence setup on the manufacturing exec. level



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Horizontal ‘integration’ of production monitoring, body ident. and sequence setup on the manufacturing exec. level (2)

Benefits from integration:

- **higher transparency of what happens on the shop floor**
- **faster reactions to unexpected disturbances**

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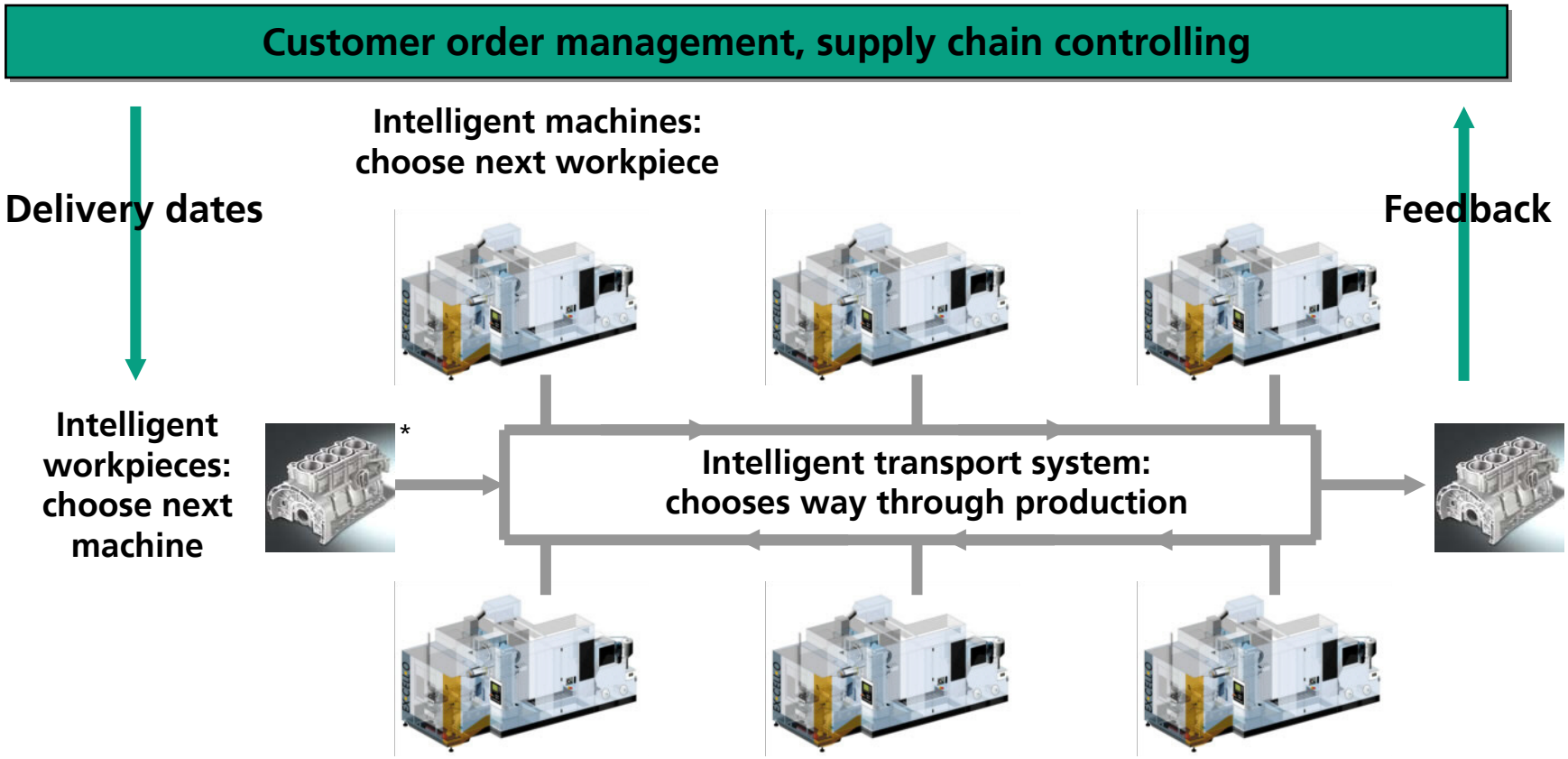
Production scheduling



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Production scheduling (2)

Benefits from decentralized negotiation:

- **fault tolerant systems through local reactions on disturbances**
- **high availability and reliability of the entire system**

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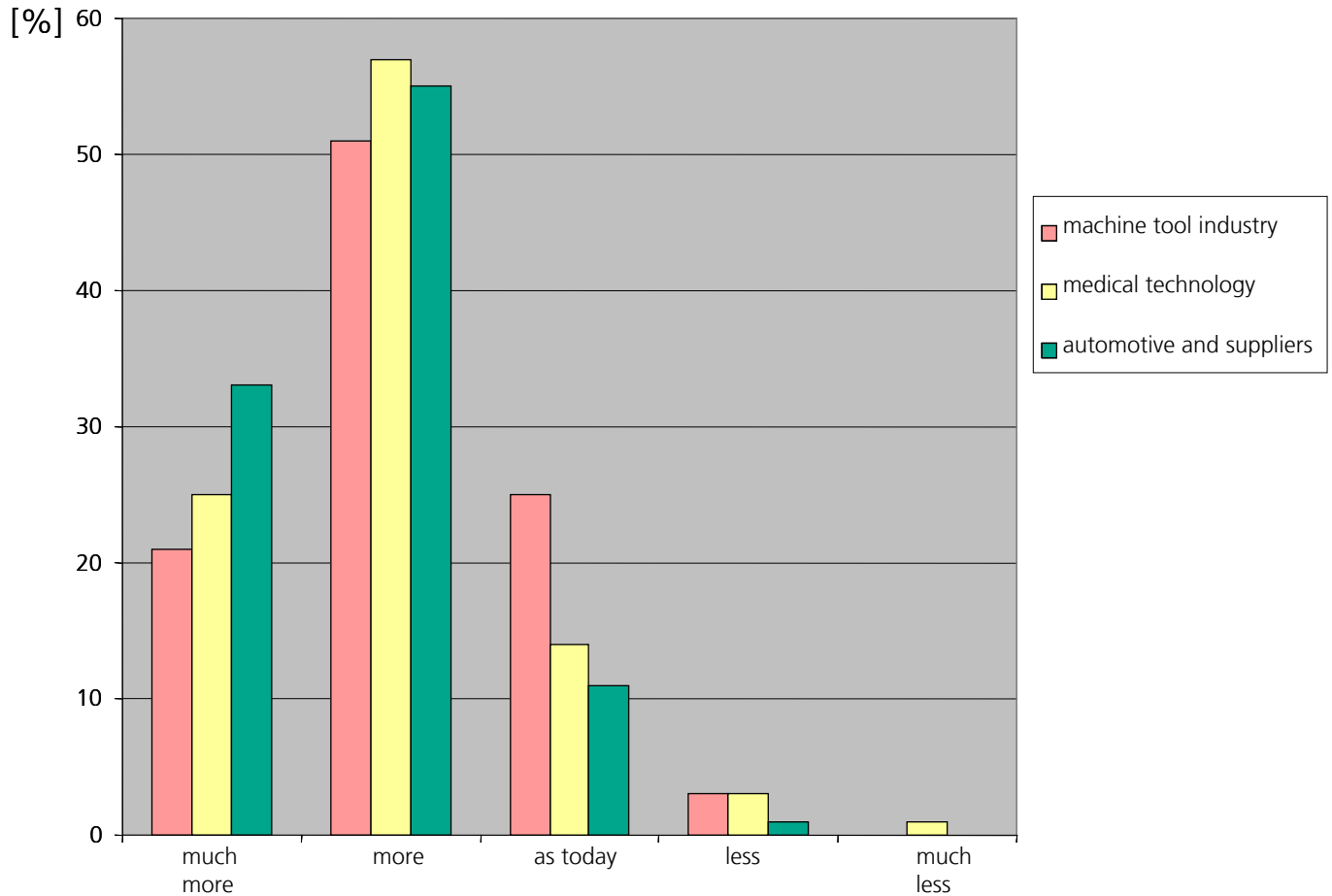
Plug-and-produce mechanisms

Development of product variants (source: requirements to tomorrows manufacturing technology, Fraunhofer ISI, September 2005; n= 613



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Plug-and-produce mechanisms (2)

Picture: Kuka

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Plug-and-produce mechanisms (2)

Benefits from plug-and-produce:

- **highly adaptive: new ‚smart players' offer their services to the production system**
- **short ramp-up-times through less engineering work**

Information technology becomes a driver for new processes in production and logistics

Thank you for your attention!

If you want to know more visit:

Conference on Production Monitoring & Control (PMC)
- Future PMC systems
- PMC in automotive industry
- PMC and Digital Factory
- PMC and Maintenance
May 2006, 11-12,
at Dorint Hotel, Karlsruhe

Imprint

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