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**SYSTEMATIC THOUGHT LEADERSHIP FOR INNOVATIVE BUSINESS**

# Smart Items & Future Manufacturing

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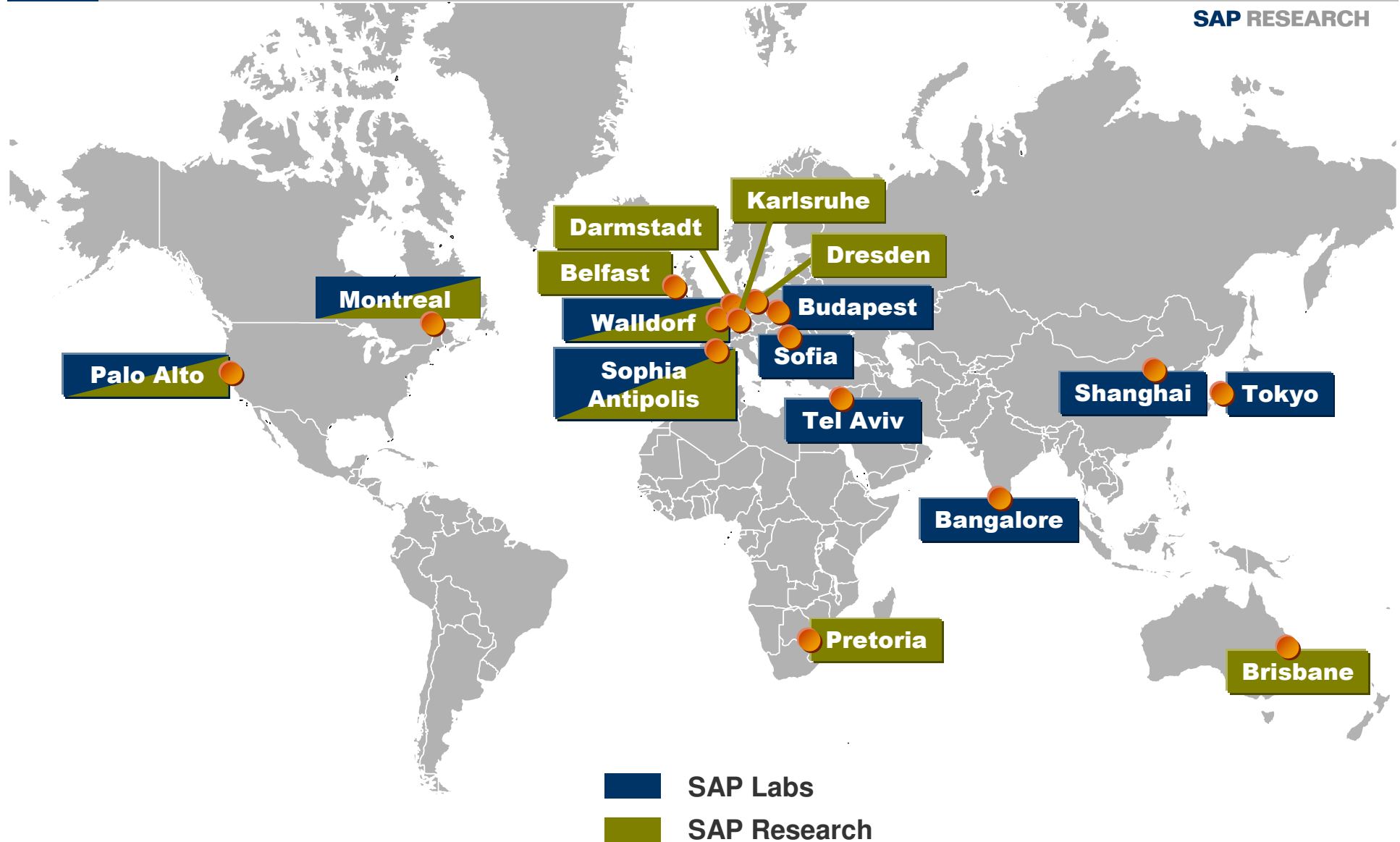
SAP Research CEC Dresden, SAP AG

THE BEST-RUN BUSINESSES RUN SAP



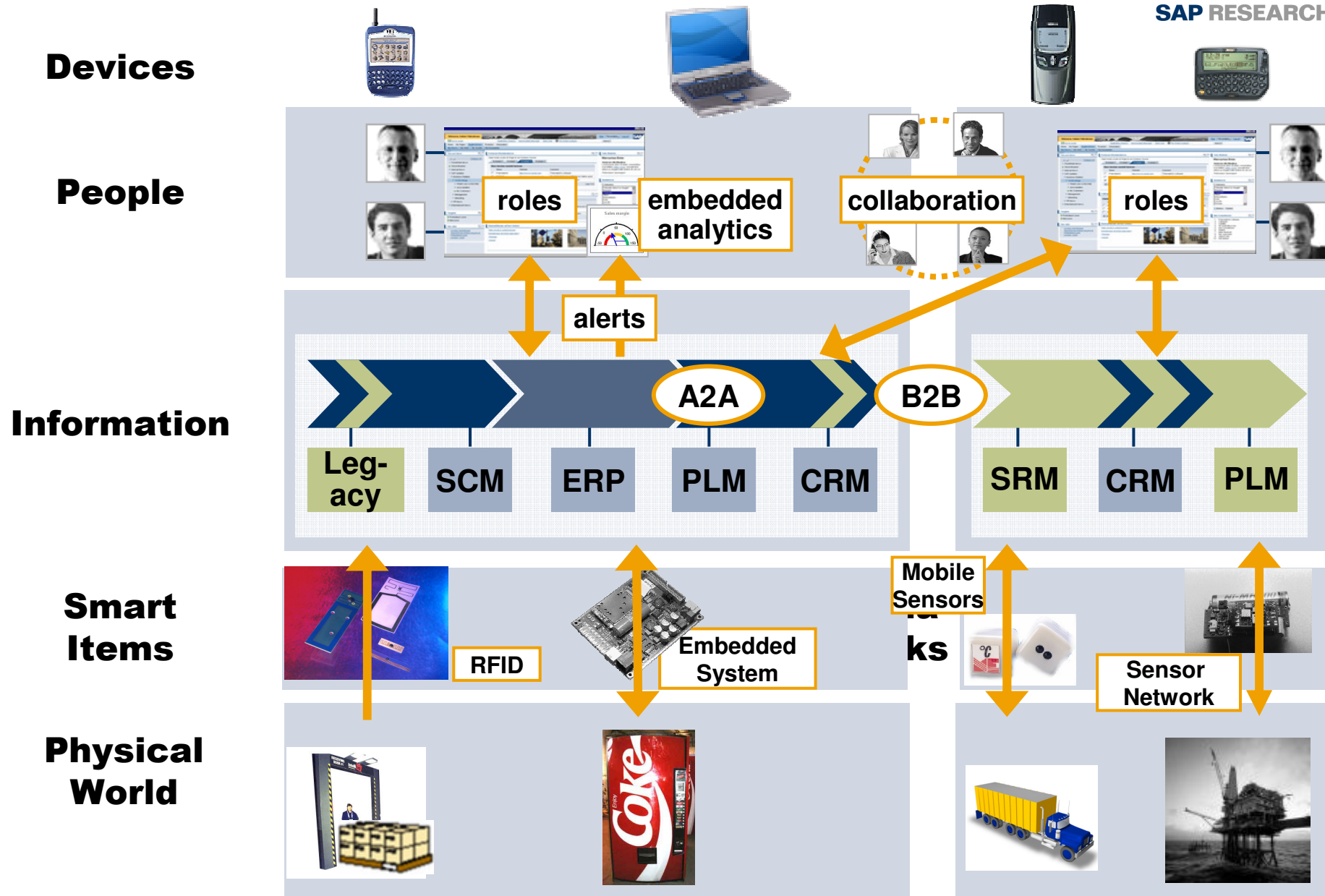
# SAP's Global R&D Network

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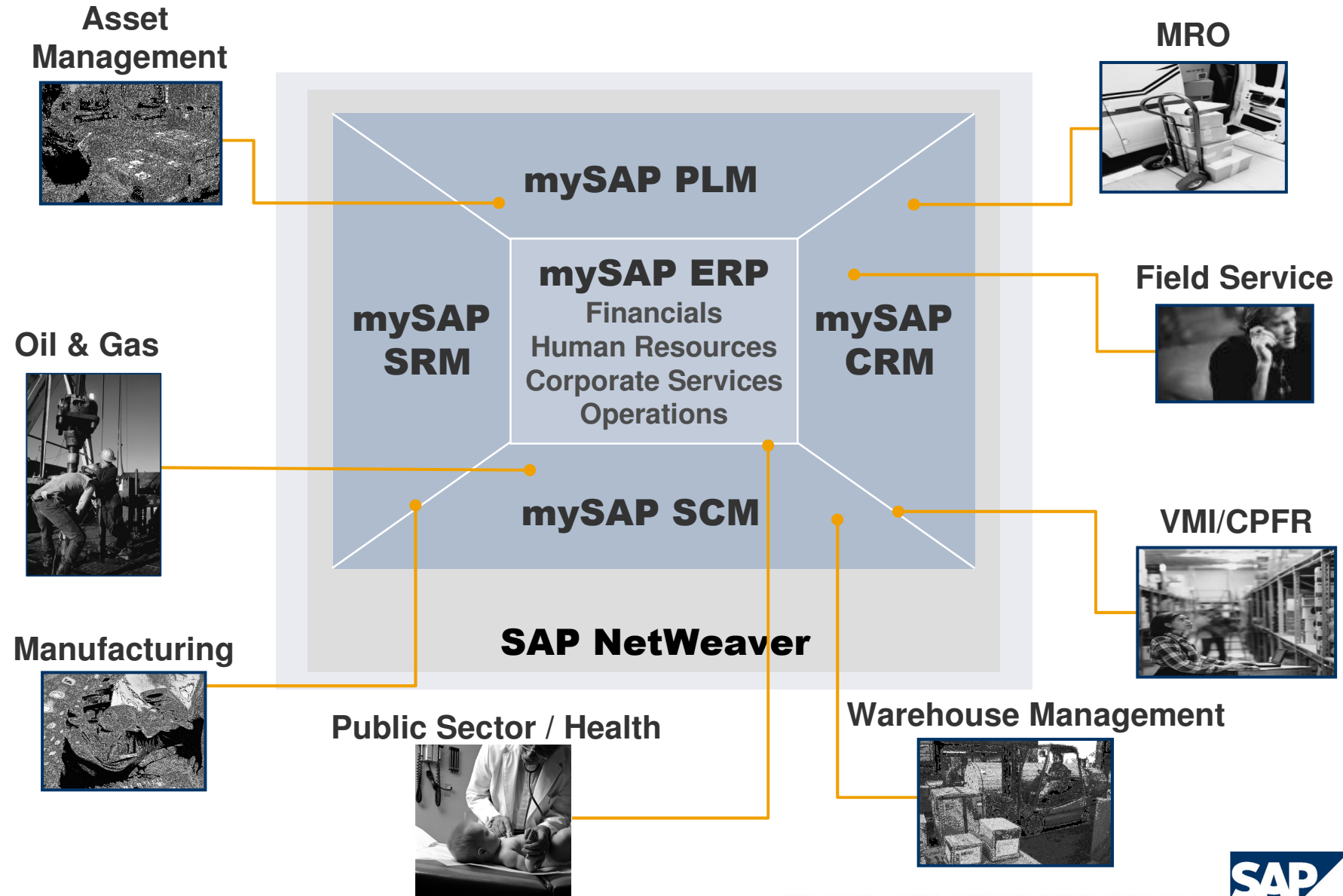
# Real-Time Information for the Real-Time Enterprise

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# Many Processes Can Be Smart Items Enabled

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## Project Details

- EU Sixth Framework Programme, Priorities IST & NMP, Joint Call 1
- Timeline: Start Nov. 2004, 42 months, 22 Partners SAP Contribution: 144 PM

## Objectives

- Close product information loop by capturing and integrating real-world product data
- Improved product design, maintenance & service, reuse & recycling

## Approach

- Generic real-time awareness framework for capturing real-world data
- Integration of networked embedded systems
- Integration and management of transactional and real-world data



## Process

- Recycling, reuse, recovery of vehicles / components

## Objective

- Optimal reuse, recycling or recovery
- Fulfill legal requirements enforced by EU directive (85% of the total vehicle weight to be recycled)

## Vision

- Automatic monitoring of critical parameters (e.g. # cold starts)
- Storage on on-board embedded system or RFID-Tag on new / replaced parts
- Decide on reuse / recycling / disposal based on stored information and market need



## Process

- Predictive maintenance of trucks

## Objective

- Integration of truck operational data, e.g. engine oil consumption, with external systems
- Customized vehicle by vehicle maintenance plan

## Vision

- Wireless transmission of operational data to dealers or Iveco
- Full integration into CRM systems
- Suggestions for a vehicle by vehicle maintenance plan



# Bombardier: Beginning-of-life of Locomotives

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## Process

- Product design

## Objective

- Seamless integration of field data into design knowledge
- New concepts for transformation of field data into design knowledge

## Vision

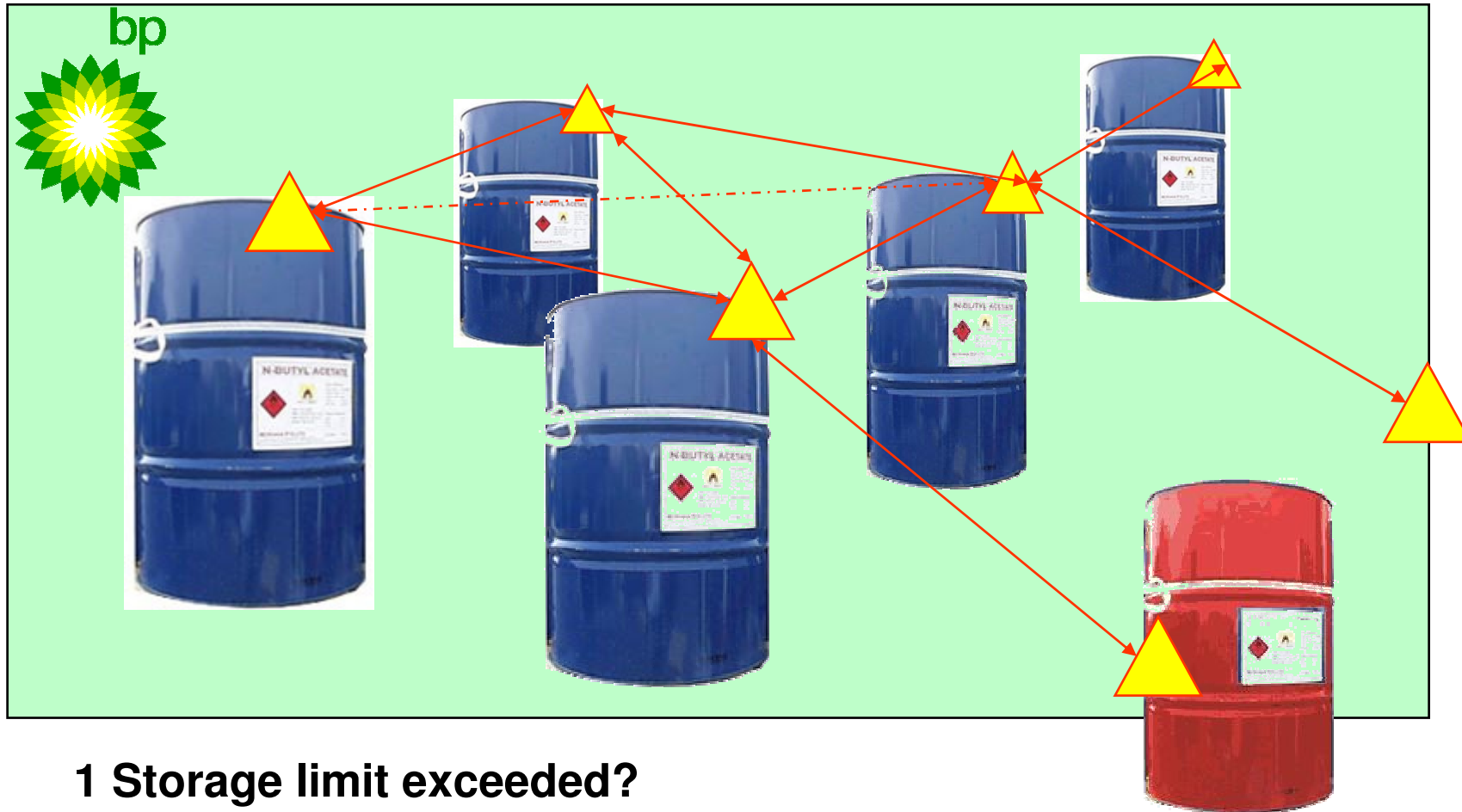
- Improve Design based on real-world field data
- Enhance performance, reliability, and product security





# BP: Hazardous Goods (CoBIs Project)

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- 1 Storage limit exceeded?
- 2 Confirmation of safe storage environment
- 3 Incompatible Goods

Source: Ken Douglas, BP

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## Project Details

- EU FP 6, Priorities IST & NMP, Joint Call 2
- Started in September 2005
- Duration: 36 months, 12 Partners (incl. Siemens, Fiat, Identec)

## Objectives

- Increase plant flexibility (plug-and-participate), enable mass customization
- Increase visibility and plant-to-business interoperability
- Integrate customer demands until ultimate point-of-no-return (late freeze)

## Approach

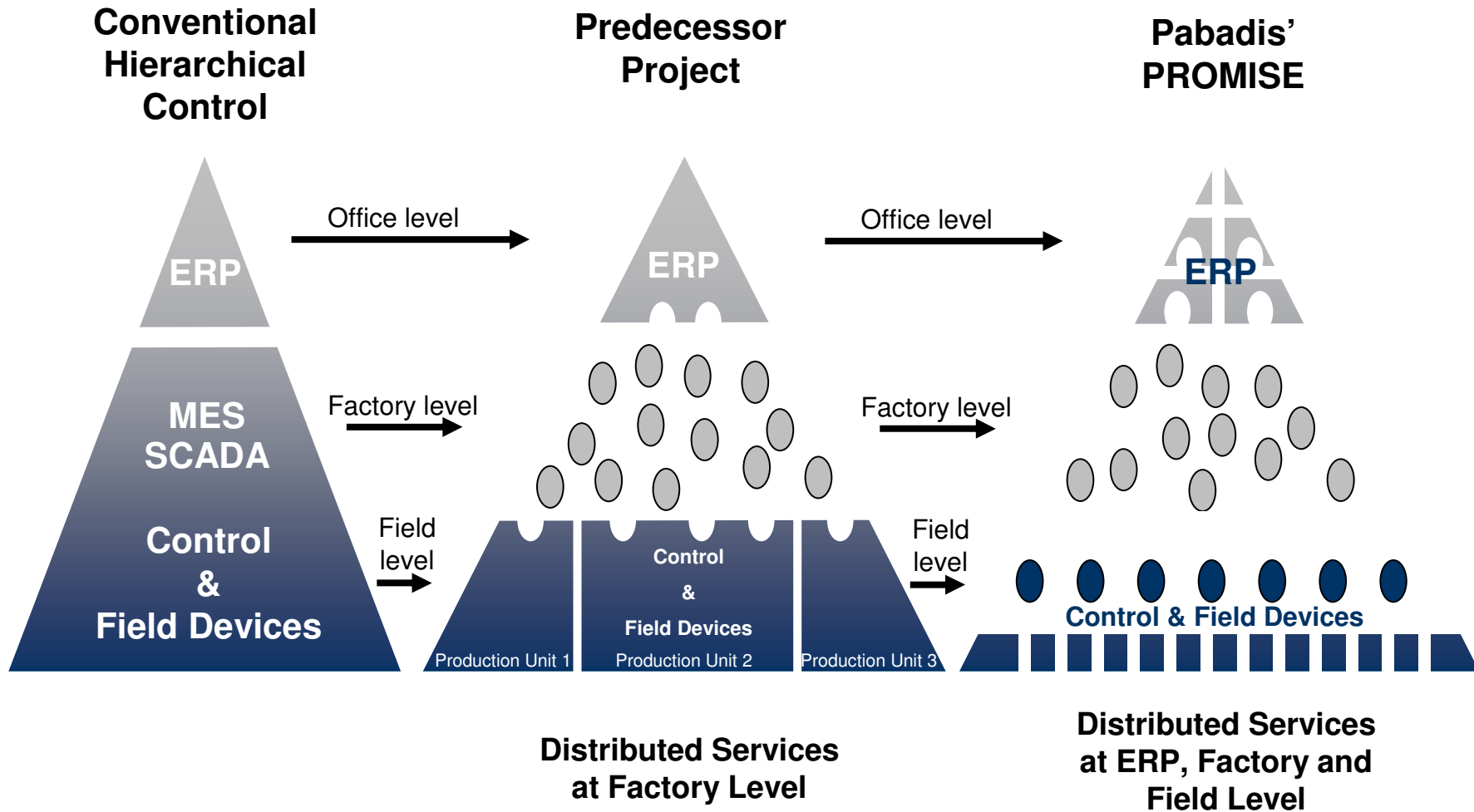
- Decentralized, agent-based control applications

## SAP

- Focus on ERP components and interfaces to MES & shop floor

# Pabadis'Promise – Distributed Intelligence

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## FP6 Activities

- **PROMISE: Closing the product information loop in PLM**
- **CoBIs: Collaborative business items pushing business logic to the network edge**
- **Pabadis' Promise: Integration ERP, MES, Shop Floor**
- **SNOW: Mobile maintenance in aerospace industry**
- **Bridge: Serial number lookup service, item level supply chain control, EPCIS**
- **STOP: Anti-Counterfeiting in A&D, Pharma and CP industries**
- **Scorades: Lightweight SOA for smart networked devices**

## FP7

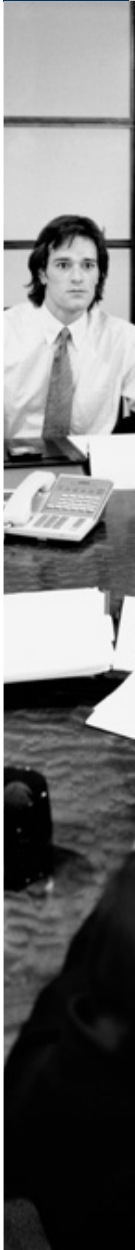
- **Focus on application domains and processes, e.g. manufacturing, public sector, warehouse and asset management**

## Vertical Dimension (Technology)

- Integration between shop floor, MES and ERP systems
- Interfaces and Standards
- Service Enablement

## Horizontal Dimension (Processes)

- Integration throughout the supply chain
- Integration throughout the product lifecycle (Design, Production, Maintenance, EOL)



*In order to operate at the speed of business manufacturers have to move from a “react to forecast changes” mindset to an adaptive mindset.*  
*W. Zwerger, SVP Application Platform SCM*

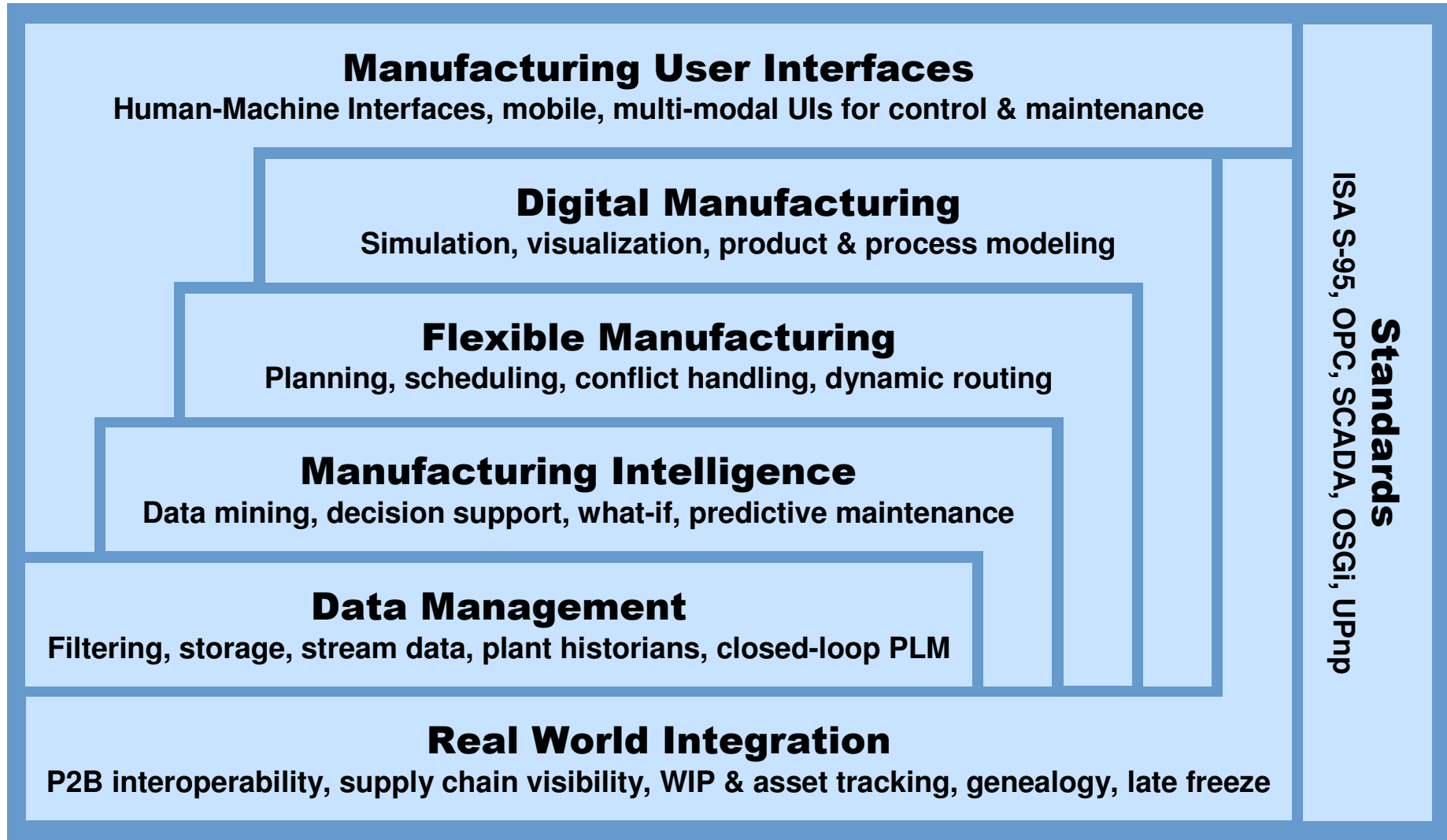


- Competition between value chains not individual players
- Collaboration to resolve exceptions
- Regulations requiring genealogy tracking

- Fragmented manufacturing facilities
- Outsourcing
- Zero defect quality
- Time-to-Market
- Time-to-Volume
- Time-to-Scale
- All-round plant

- Mass customization
- Shrinking life cycles
- Response velocity: Customer empowerment requires new levels of flexibility

**Collaboration, Adaptability (Visibility & Flexibility), Velocity**







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