

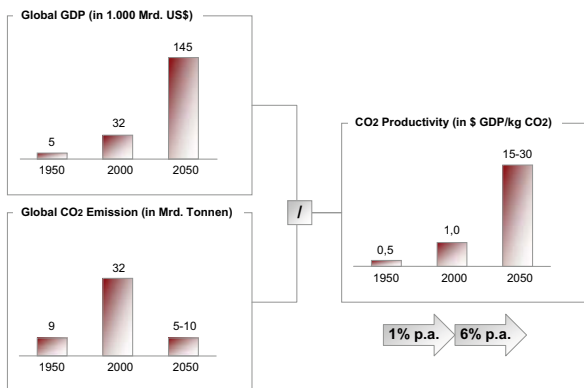
The Prospects of Product Carbon Footprints in ERP Systems

Lüneburg, den 12. September 2008
 Burkhardt Funk, Andreas Möller, Peter Niemeyer

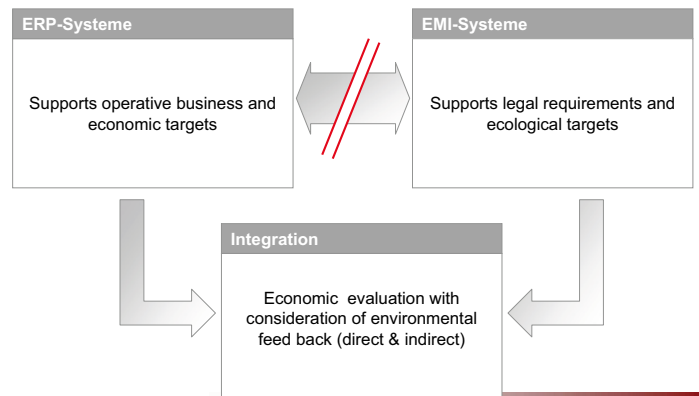
Agenda

- Motivation
- State of Research
- Current Projects
- Outlook and Open Problems

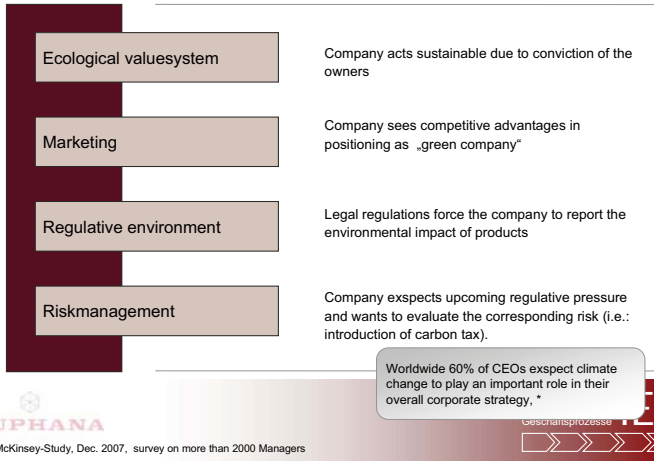
Example: CO₂-Productivity



Integration ERP und BUIS



Relevance of ecological targets in ERP-Systems



Carbon Footprint

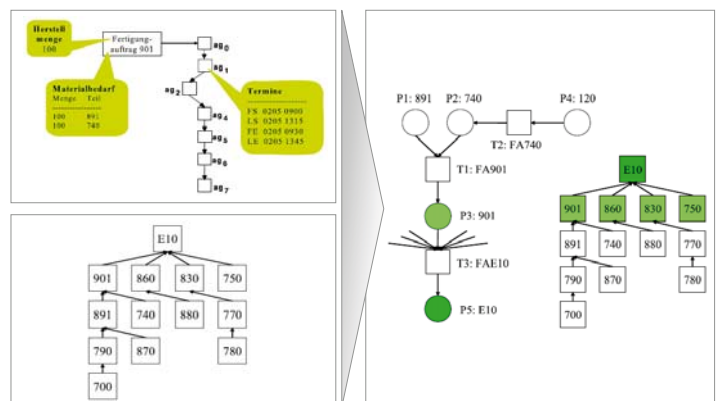
| definition and goals | history | remarks |
|--|---|--|
| <ul style="list-style-type: none"> Methodological approach to evaluate climate impact of products Volume of GHG-equivalent-emissions during the lifecycle of a product (cradle to grave) Compliance with ISO 14040 etc. announced Based on hybrid LCA Unit: kg Base of several product label projects (carbon trust, thema1) | <ul style="list-style-type: none"> Term „carbon footprint“ was introduced to scientific journals in 2006 Standardization projects in UK, Germany Controvers discussion in LCA-community. | <ul style="list-style-type: none"> Easy to communicate, sexy scalar value Covers only one single aspect of the environmental impact of a product. |



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Integration of EMIS and PPS-Systems



Completed projects with focus on ERP-Integration

ECO Integral

- Development of a referencemodel for environmental management as part of ERP-Systems
- detailed modelling of data and processes
- Referencemodel was created as blueprint for software vendors

OPUS

- Concepts for integrating environmental protection into order processing
- Concepts for new PPS-system, prototypical implementation on base of (small) ERP-vendor

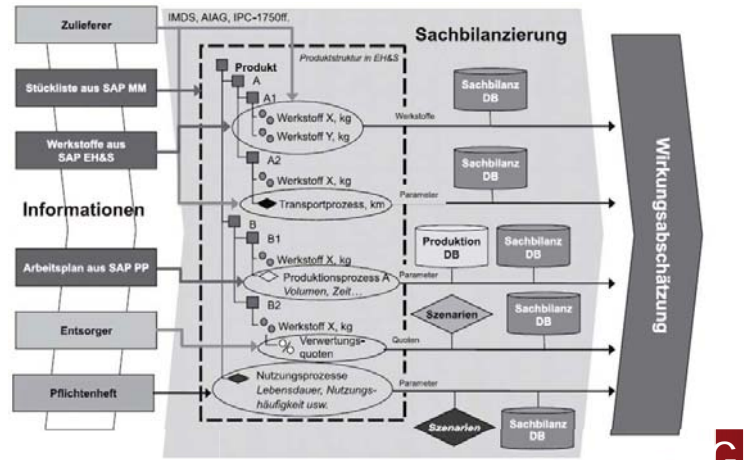
CARE

- Concept for extending economic controlling by ecological key data
- One subproject about ERP/EMIS-Integration
- Essential result: specification PAS 1025

INTUS / Intebis

- Consideration of instruments for environmental controlling
- study of expected organizational barriers in corresponding implementation projects
- development of suitable process modell

Project Ecolo. PLM (TU Darmstadt & TechniData)



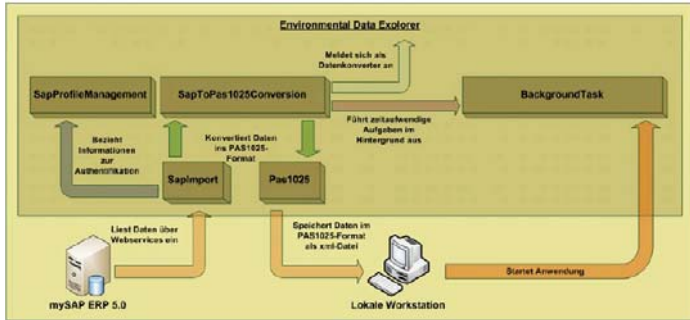
Open problems (of mentioned projects)

- Bridging the semantic gap between ERP, EMIS and LCA-Databases is crucial for further automation
- Data collection of substance data, transportation data and process data still causes large effort
- Material master data and substance master data in current projects are strongly connected, so environmental impacts of individual lots cannot be calculated
- Environmental impacts are used only in context of life cycle assessment, they are not used on strategical or operational level

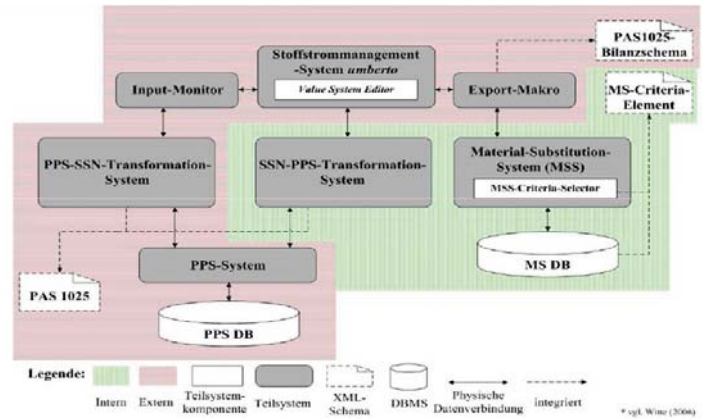
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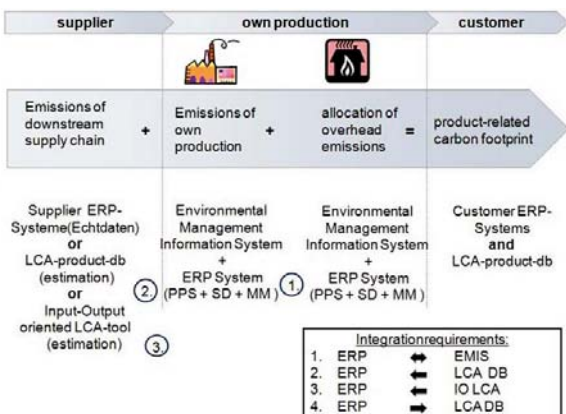
Import von ERP in BUIS (Beispiel: SAP – Umberto)



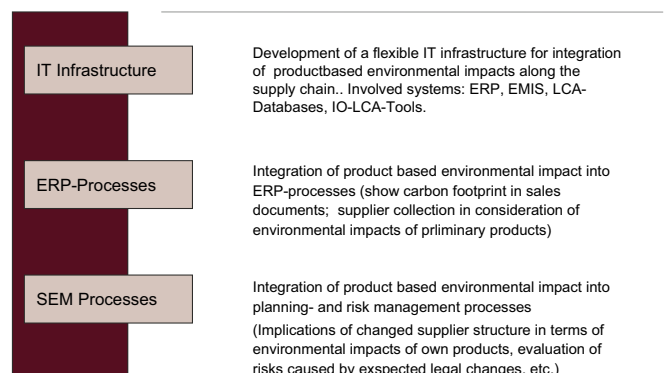
Überführung von Stoffstromnetzen in PPS-Systeme



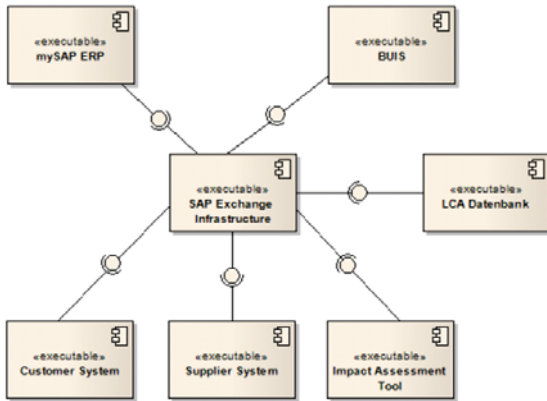
Integration Requirements



Research Objectives



Systemarchitecture



Current state

Infrastructure

- Internal pilot study using carbon footprint (cradle to gate); implementation; implementation on base of SAP XI – in process
- Next step: development of prototype in cooperation with software vendors of ERP-systems, LCA-Tools and LCA productdatabases

Integration of environmental impacts into ERP-Processes

- First concepts on base of case studies
- Next step: development of a prototype based on SAP XI and SAP ECC


Integration of SEM-Processes

- First concepts (planning processes)
- Next step: Nächster Schritt: development of a prototype based on SAP XI and SAP ECC

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Open Problems

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- How can we bridge the semantic gap between ERP system and Input Output based LCA Tool?
 - How can we bridge the semantic gap between ERP system and LCA databases?
 - How can we integrate environmental impacts into Enterprise Risk Management?