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ATHENS UNIVERSITY OF ECONOMICS & BUSINESS
E-Business Research Center

Green Products and Processes through Extended Collaboration, Advanced Decision Support and Consumer Involvement GREENSENSE

Assist. Professor Katerina Pramatari

Scientific Coordinator ELTRUN/SCORE Research Group
Athens University of Economics & Business

k.pramatari@aueb.gr

Rationale

- Companies all the more try to monitor the environmental impact of their products in manufacturing processes but also across the supply chain:
  - LCA methodology
  - Carbon footprint
  - Ecological footprint etc.
- Yet, data collection is based on manual processes and estimations
- Environmental thinking has not been integrated in ERP tools and supply chain decision making
- Collaboration among supply chain partners under this perspective is limited but the first signs are there
- Limited knowledge regarding the impact to consumers and the stimulation of green consumer demand

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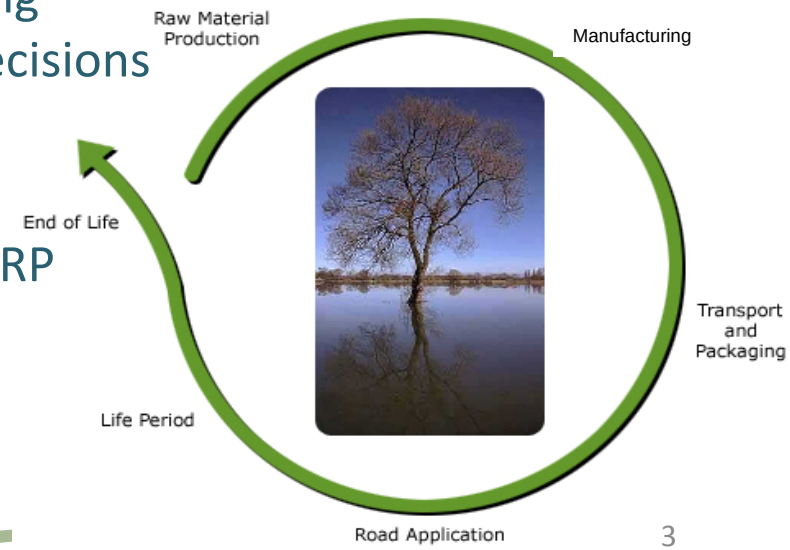
The GREENSENSE Project

- The GREENSENSE project aims to efficiently support green products and processes through automatic sensing, extended collaboration, decision support and consumer involvement.
- Specifically:
  - Automate data collection and measurement of environmental KPI's through sensors and Auto-ID technologies
  - New decision support tools incorporating environmental KPI's into operational decisions (e.g. production planning, distribution, replenishment orders etc.)
  - Integrate environmental thinking into ERP
  - Supply chain collaboration
  - Innovative consumer services



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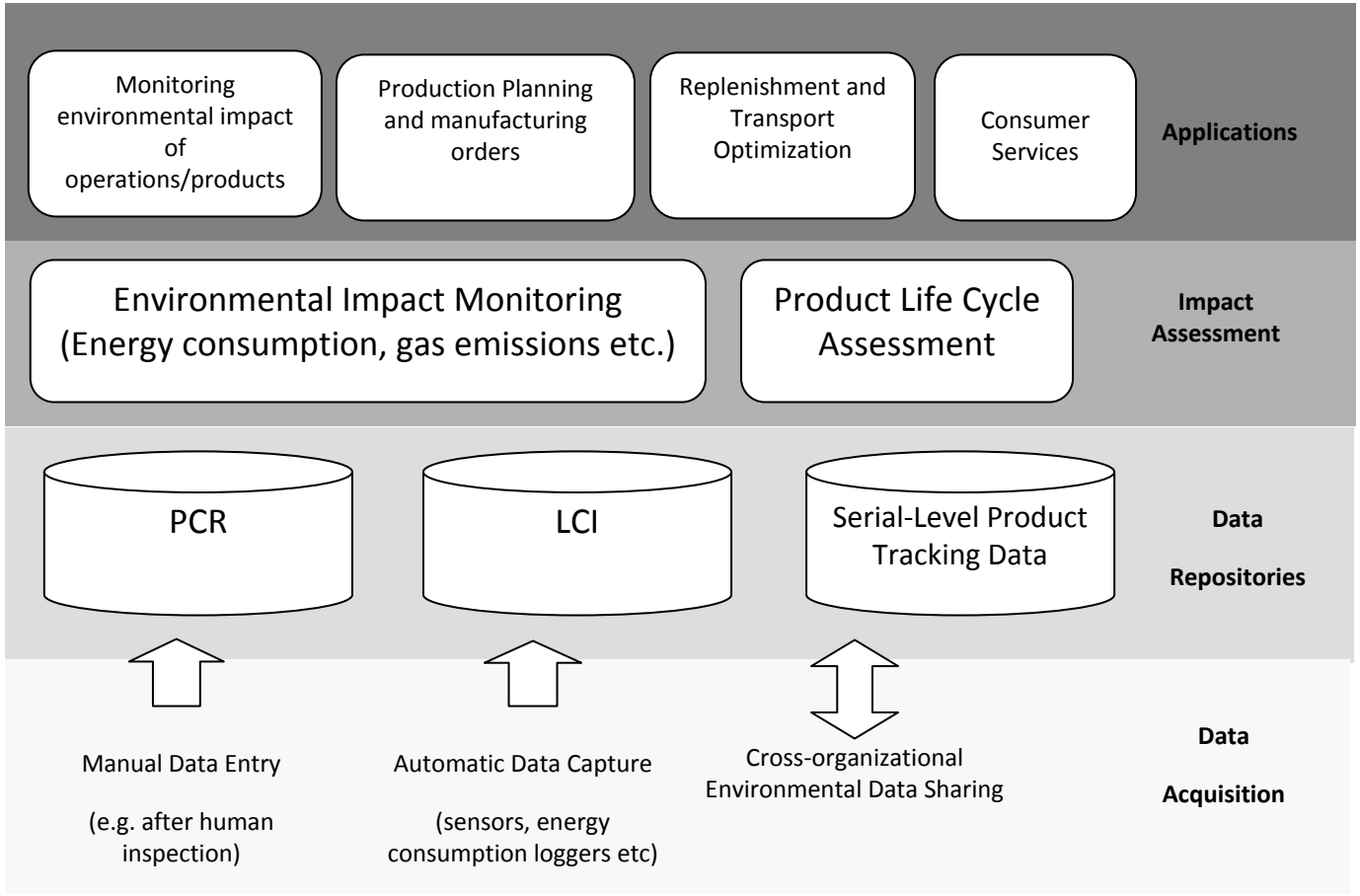
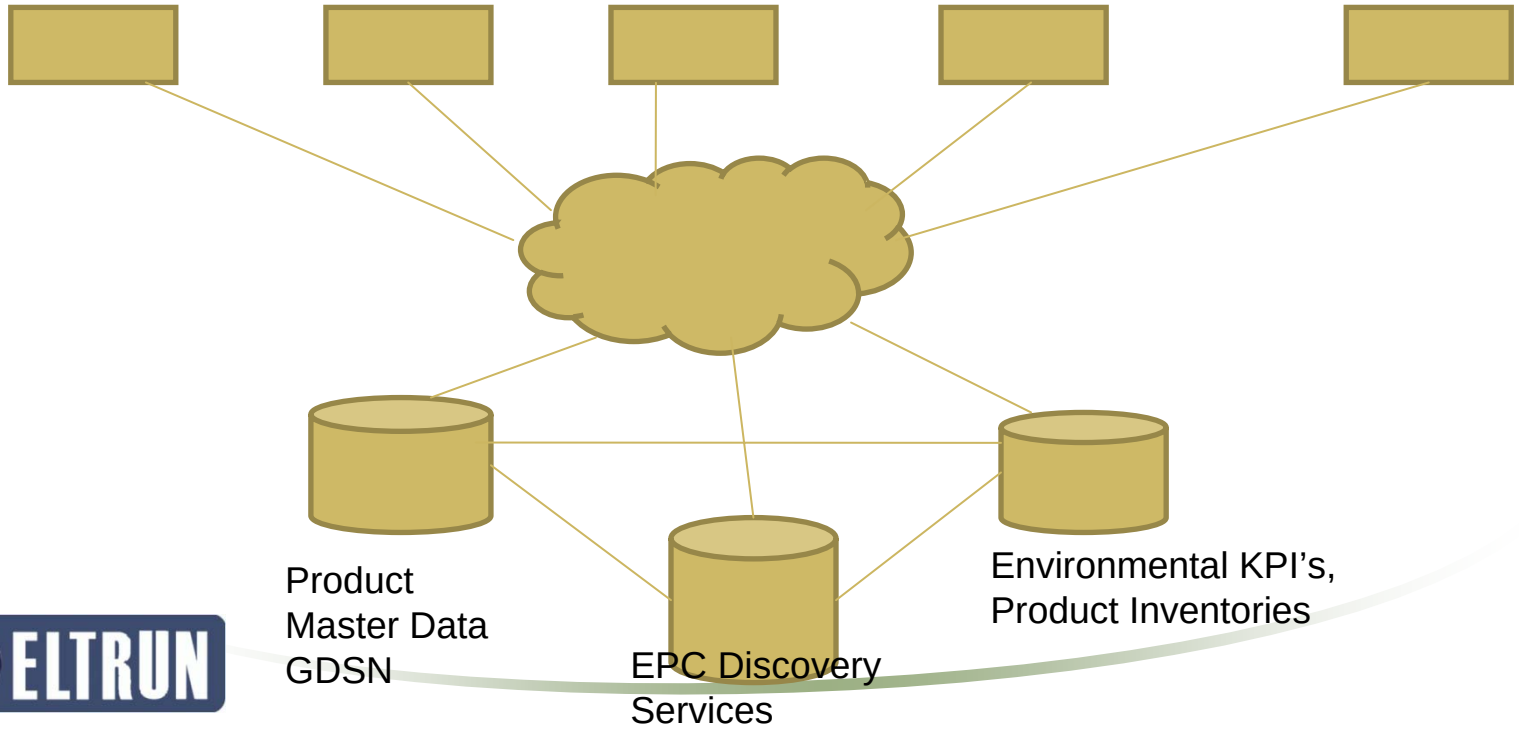
Architectural View



Network View – Distributed Approach



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Project Innovations – Automatic Sensing

Advance current state-of-the-art by:

- associating sensor data with RFID events and unique-instance-identification information

  (no standard currently exists in this area associating product to process instances)

- feed them into Life-Cycle-Assessment and Carbon-Footprint methodologies, also allowing for manual data entry

Project Innovations – Decision Support

- New mathematical models and algorithms integrating environmental concerns/ limitations into production and supply chain optimization processes
- E.g.
  - Production orders
  - Replenishment orders
  - Deliveries schedules
  - etc.

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Project Innovations – Supply Chain Collaboration

- Supply chain partners currently collaborate on achieving supply chain efficiency:
  - From ordering to CRP/VMI to CPFR
- Lately (e.g. May 2010) manufacturers and retailers have started asking their suppliers to report on environmental KPI's through Excel
- Need for standards development re:
  - Information sharing
  - New collaboration processes
- Need for efficient collaboration tools

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Project Innovations – Consumer Involvement

- Walkers Carbon-footprint Label: “It’s not something that drove sales particularly, but it helped with consumer perception”. Whether this will lead to increased sales it’s still to be seen…
- Room for innovative consumer services, involving the presentation of the dynamic environmental product profile to consumers either at the shelf (e.g. through smart phones) or at the cashier (e.g. through ‘green’ reward points)
- Experiment with different “green” services towards the customer to get consumer perceptions and monitor impact on consumer demand

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Project objectives

- To design and develop an **infrastructure that will facilitate the seamless capturing and communication of product life cycle and process environmental performance** data
- To **develop decision support and simulation tools** that will support the design and management of sustainable and efficient supply chains both at an operational and strategic level
- To explore how the generated environmental data can be used to **stimulate green customer demand** through related **consumer services**
- To adopt a **service approach** and explore **new business models** in order to facilitate adoption among supply chain partners

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