Development of Environmental Performance Indicators for ICT Products on the example of Personal Computer

Within the scope of the upcoming EuP directive on energy using products, eco-design in product development plays a major role. Improving the environmental profile of a product is efficiently supported by applying product-group specific environmental performance indicators. Goal of the EPIC-ICT project (www.epic-ict.org), initiated by the European Commission, is to develop a method to define environmental performance indicators for ICT products on the example of personal computer.

The EPIC-ICT Project

Objectives

The objective of this project is to develop a method for environmental performance indicators for ICT (information and communication technology) products on the example of a personal computer, based on a "life cycle thinking" approach. These indicators will be based on the assessment of environmental impacts caused by the product and relate to measurable and reliable technical and physical units.

Funding and duration

The project is funded by the European Commission under the Sixth Framework programme.

Project duration: 18 months

Project start: November 2004

Participation / Workshops

EPIC-ICT Workshop No. 1

In March 2005 the first workshop took place at the CEBit, Hannover.

Upcoming EPIC-ICT Workshop No. 2

The second workshop will take place on February 7, 2006 in Brussels. Register now, please contact the project coordinators.

Contact – Project coordination

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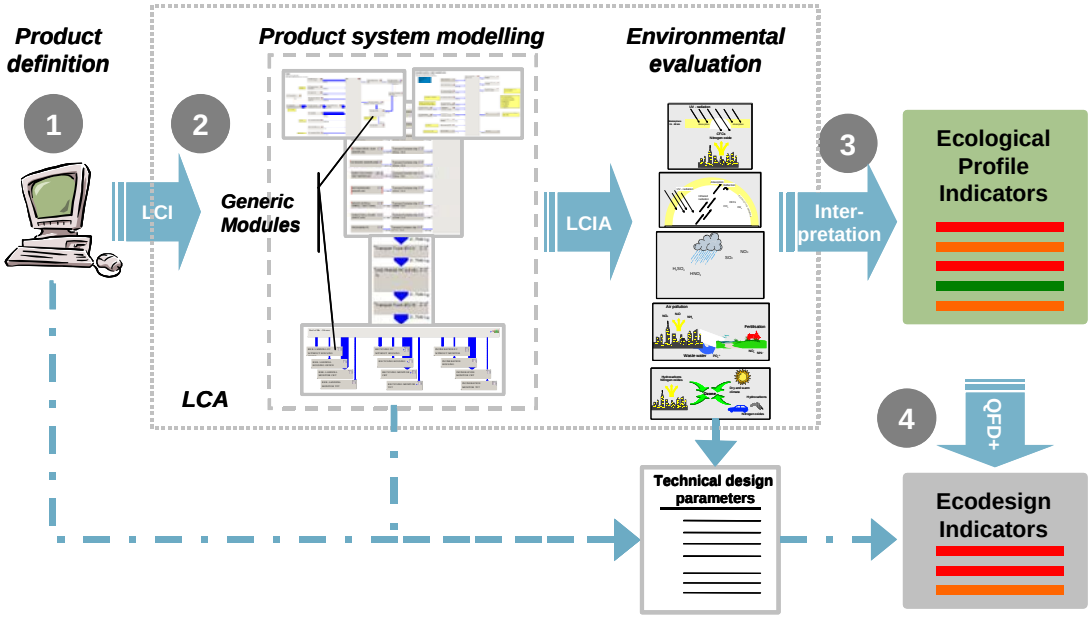
The EPIC-ICT Method

Key methodologies

- System modeling of ICT products with **Generic Modules approach**
- A full **Life Cycle Assessment** study of a personal computer
- Eco-design with adapted **QFD** (Quality Function Deployment)

The EPIC-ICT Method

The method provides easy to apply product group specific indicators for eco-design, so-called "Ecological profile indicators". These indicators are based on a profound LCA of a representative of the regarded product group. It is a list of physical and measurable product parameters which are significant from an environmental point of view. This ensures that the relevant environmental aspects throughout the life cycle are addressed. A stepwise environmental evaluation helps focusing on the significant product parts or life cycle issues.



1) Product definition phase:

- Defines the product from the product designer's perspective and in the designer's "language"
- Design parameters on identified environmentally relevant product specifics can be set, including dependencies between sub-assemblies and components and the degree of changes within product specifics (used in step 4 with adapted QFD approach: QFD+)

2) Life Cycle Assessment study in EPIC-ICT:

- Only one comprehensive full LCA study per product group is carried out (needs to be updated regularly, e.g. every 3 years, depending on product group)
- Sub-assemblies and components are modeled parameterized, flexible and with reliable and consistent partial LCA models - Generic Modules

3) Environmental interpretation

- Identifies in a stepwise procedure the environmentally relevant sub-assemblies and components of the product through a thorough contribution analyses
- Result in reliable, measurable, influenceable and scientific sound physical product specific environmental performance indicators – "Ecological profile indicators"

4) Eco-design parameters indication

- Combines information from product design (technical specifications and improvement design parameters) and environmental evaluation results
- Results in "Eco-design indicators" which can directly be used for eco-design of products

Environmental aspects:

The ecological profile indicators are taking the following product relevant environmental aspects into account:

- environmental impact categories (such as GWP, AP, EP etc.),
- energetic resource depletion indicators (primary energy),
- single elementary flows which are relevant from a toxicity assessment point of view (such as Arsenic, Mercury, Zinc, Hydrogen fluoride etc.) and water
- environmental relevant technical product specifics (such as energy consumption use phase).

Project Partners

In order to combine scientific soundness, practical applicability and public acceptance, the consortium consists of partners from industry and research.

IKP (University of Stuttgart), project manager, carries out the research on Life Cycle Analysis (LCA) and Life Cycle Engineering (LCE) in close cooperation with the industry partners.

Motorola's main tasks are in providing environmental assessment expertise on electronics and in ensuring feasibility and practicability from industry perspective.

Philips supplies major environmental assessment expertise on electronics, especially on supplied materials to the PC business and ensures applicability.

Ambiente Italia is responsible for the environmental evaluation of the life cycle of considered ICT products.

Dell provides information on the design and assembly of personal computers from a technical perspective and on product development processes.

PE Europe ensures feasibility and practicability and supports the project with LCA / LCE software and data and long-year eco-design experience.