Project no.

513673 (SSPI)

Project acronym

EPIC-ICT

Project title

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

Instrument: STREP

Thematic Priority: 8.1.B.1.5, task 6

Periodic activity report No. 1
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Publishable executive summary

Period covered: from 1 November 2004 to 30 June 2005 Date of preparation: 30 June 2005

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Project coordinator organisation name: University of Stuttgart, IKP; Revision [draft]

EPIC-ICT Periodic activity report No. 1

Publishable executive summary

Within the scope of the European Commission’s proposal for a framework directive for setting eco-design requirements for energy-using products (EuP), mechanisms for rapid, efficient and participatory decision-making are required. One mechanism to address decision-makers in product design as well as in politics are environmental performance indicators. Against this background, the project consortium of EPIC-ICT (Development of Environmental Performance Indicators for ICT products on the example of Personal Computer) is developing a method to define environmental performance indicators for ICT products. These indicators will relate to easy to define technical product properties. Based on Life Cycle Assessment (LCA), relevant environmental indicators are defined to support and enhance eco-design requirements for the respective decision-makers.

The main objective of this project is to develop a method for environmental performance indicators for ICT products on the example of a personal computer (PC) and other information and communication technology (ICT) products based on a "life cycle thinking" approach. These indicators will be based on the assessment of environmental impacts caused by PCs and relate to measurable and understandable technical and physical units. EPIC-ICT's method will consider all life cycle phases and all relevant environmental impacts and the viewpoints of manufacturers and regulators as well as environmental NGOs and other stakeholders of society.

Key methodologies used within the project are

- Life Cycle Assessment (LCA), a scientifically established approach to analyse environmental impacts quantitatively throughout all life cycle phases of products
- Quality Function Deployment (QFD), a method that translates customer interests of product features into technical specifications
- Generic Modules, parameterized flexible and reliable partial LCA models of electronic parts and sub-assemblies with a minimum effort.

The method that will be developed in this project offers guidelines for a tool that is suitable for day-to-day work, practice oriented and applicable for industry. This method is tailored to future applicants and simplified though on a very comprehensive scientific basis. It uses environmental performance indicators to provide reliable analysis results for decision-making purposes with only a fraction of input data needed, whilst ensuring the full information range a “conventional” environmental study, i.e. LCA, provides.

EPIC-ICT will

- consider all life cycle phases and all relevant environmental impacts
- contribute to the reduction of environmental impacts of ICT equipment as foreseen in IPP and therefore promote the sustainability of ICT products
- establish a basis for a future directive on EuP
- contribute to the Kyoto protocol and 6th Environment Action Programme
- consider the viewpoints of manufacturers and regulators as well as environmental NGOs and other stakeholders of society

In order to combine scientific soundness, practical applicability and public acceptance, the consortium consists of **partners** from industry and research: IKP (University of Stuttgart), Motorola GmbH, Philips Applied Technologies, Ambiente Italia srl, Dell Product Europe B.V. and PE Europe GmbH.

- IKP (University of Stuttgart) acts as the project manager for EPIC-ICT and carries out research on Life Cycle Analysis (LCA) and Life Cycle Engineering (LCE). Furthermore IKP is responsible for defining environmental indicators.
- Motorola provides environmental assessment expertise on electronics and ensures feasibility and practicability of the method.
- Philips also supplies environmental assessment expertise on electronics, especially on supplied materials to the PC business.
- Ambiente Italia is responsible for the research on Life Cycle Assessment (LCA) and for the definition of indicators developed in EPIC-ICT.
- Dell provides required information on PC composition, available supply chain data and practical limitations of implementing LCA within the product development process.
- PE Europe ensures feasibility and practicability and supports the project with their LCA / LCE software.

Summarized, the following **objectives** were set and have been reached in the first reporting period:

- Building up knowledge on environmental indication of PCs
- Drawing conclusions on results of an LCA of a simplified PC
- Identifying product related specifics (technical functions, customer demands, components, life cycle properties)
- Setting up a methodological framework for the environmental indication of products
- Modelling the life cycle of a PC
- Defining, modelling and improving Generic Modules for a PC
- Conducting a first work shop for stakeholder involvement
- Setting up project home page

The **main achievements** of this period were

- Carried out LCA of a simplified PC
- Conducted workshop at the world's largest ICT exhibition CEBIT in March
- Set the framework of the EPIC-ICT methodology
- Defined and set up Generic Modules of a PC

Results achieved so far:

⇒ LCA of PC conducted, main technical function, customer demands, components and life cycle properties defined

⇒ Methodology to translate definitions to technical characteristics set up, application of QFD to technical characterisation carried out, Implementation/handling of technology shifts covered

⇒ Data needs and data collection finished, Generic Modules adapted, set up and improved

Appropriate environmental performance indicators developed within the EPIC-ICT project have the potential impact of truly reducing the environmental impacts of products over their entire life cycle. This will be the case as the environmental performance indicators are based on the total life cycle and on all aspects of the variety of environmental impacts. So these indicators prevent that design improvements are not only focusing on certain aspects of products, or on single life cycle phases such as end of life or merely on the ban of hazardous materials.

The EPIC-ICT project's goal is also to support a scientific reference for a possible standard concerning the simple assessment of environmental impacts of electronic products throughout their life cycle.

Exploitable results of the projects are 1) the EPIC-ICT method and 2) environmental indicators for PCs:

1. EPIC-ICT method

The method is developed to define environmental performance indicators for ICT products. These indicators will relate to easy to define technical product properties. Based on Life Cycle Assessment (LCA), relevant environmental indicators are defined to support and enhance eco-design requirements for the respective decision-makers.

This method combines

- Life Cycle Assessment (LCA), a scientifically established approach to analyse environmental impacts quantitatively throughout all life cycle phases of products
- Quality Function Deployment (QFD), a method that translates customer interests of product features into technical specifications
- Generic Modules, parameterized flexible and reliable partial LCA models of electronic parts and sub-assemblies with a minimum effort.

It can be used by policy decision makers for setting implementing measures and internally for product improvement (DfE).

2. Environmental indicators for PCs

The developed EPIC-ICT methodology will be applied at the example of PCs. In order to assure adequate stakeholder involvement workshops, meetings, conference calls and presentations have been conducted. Besides all project partners, other interested groups were asked and are delivering very valuable input: AMD, Intel, Fujitsu-Siemens, EICTA, BITKOM, etc.

The indicators can be used by policy decision makers for setting implementing measures and internally for product improvement (Design for Environment, DfE) of PCs.

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