Deliverable D 3.1

Software requirement specification

Grant Agreement number:	**265096**
Project Acronym:	**LCA to go**
Project title:	**Boosting Life Cycle assessment Use in European Small and Medium-sized Enterprises**
Funding Scheme:	Small or medium-scale focused research project
Project starting date:	January 1, 2011
Project duration:	48 months
Delivery date:	April 2012
Deliverable number:	D 3.1
Workpackage number:	3
Lead participant:	Vienna University of Technology (TUW)
Nature:	Tool (alpha version) development
Dissemination level:	RE
Lead Author:	Rainer Pamminger (TUW)
Project co-ordinator:	Karsten Schischke Fraunhofer IZM Tel: +49-30-46403-156 Fax: +49-30-46403-211 E-mail: schischke@izm.fhg.de
Project website:	www.lca2go.eu

Executive Summary

This deliverable, called software requirement specification (SRS) is the outcome of task 3.1 which depicts the preparation of the general requirements for the software tools and the requirements for each sector.

The deliverable is structured in two parts: the general and the sector specific requirements. The general requirements are the basis for the alpha version of the tool in task 3.2, Software Engineering. It contains the general software flow diagram showing the whole LCA to go tool, from the start at the initial page, the registration process, entering the data to the result section of the tool. Moreover a general calculation process is proposed here. An adapted version of this structure will be used for each sector according to their requirements. Additionally the assumptions made regarding the security of private data, the databases used and the import and export functions of the tool are presented.

The second part of the deliverable shows the main software requirements for each sector (bio-based plastic, industrial machines, electronics, semiconductors, printed circuit boards, renewable energy, sensors and smart textiles). These sectoral requirements have been prepared on the basis of the methodological concepts developed in WP1 and the preliminary results of the sectoral technical reports in WP2. In this deliverable the main software requirements e.g. KEPI, databases used, etc. are defined. To find out these requirements four main questions are answered for each sector:

- Who will be the user of the tool (e.g. product designer)?
- Which kind of data should the user enter (e.g. energy consumption)?
- Which result should be provided by the tool (e.g. carbon footprint)?
- Which data will be used for the calculations?

In the bio-based plastic sector it is intended to assess products made of different types of materials, considering all life cycle phases. Therefore several environmental indicators (e.g. carbon footprint, land use, etc.) will be calculated for the most common bio-based plastic materials. For industrial machines a two-step approach is proposed. First a rough assessment using cumulative energy demand will conducted to identify environmental hot spots in the life cycle. In a second step the hot spots will be analysed in more detail to derive improvement strategies. In the electronic sector the PCF and the energy consumption of the total life cycle will be calculated via using parameterised datasets. Additionally the life cycle cost can be calculated for the user of electrical devices. The software tool for semiconductors will be developed in a Taiwanese sub-project and will not be merged with the LCA to go tool. For assessing PCBs two versions

are presented consisting of a basic module and a sophisticated module of the software tool. For the output of the software tool different environmental indicators are mentioned, e.g. energy consumption, water consumption, carbon footprint but also cost calculations are requested. In the case of renewable energy, photovoltaic products will be assessed. Therefore also two versions are proposed for analysing two different kinds of products (turn key kits and professional large scale installations). As main environmental indicators the energy and greenhouse gas emissions payback time are proposed. The tool programmed for sensors will focus on industrial processes controlled by sensor technology. It will be able to calculate energy and resource consumptions/savings as well as greenhouse gas emissions and costs. A two-step assessment is also chosen for the smart textiles sector. In the first step results will be generic eco-profiles of typical product categories and in the second step a more specific LCA will be provided.

Given that the functionalities will also depend to some extent on the outcome of other WP2 tasks, it can be expected that several of the envisioned functionalities will change during the tool development. Nevertheless, the alpha version of the software tool will be launched and developed iteratively.