
Challenges of Data Transfer between CAD- and LCA Software Tools

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Structure

- General
- Process and Product Model
- Requirements for data exchange
- Data exchange for a 17" TFT monitor
- Guideline for data exchange
- Summary

General

- Environmental product performance can be determined by environmental assessment tools → e.g. LCA
 - Provide indications on improvement
 - Hard to realise when product is already implemented on the market
 - Product designers should optimise products in design stages → DfE

Process and Product Model



- Product description
 - Process model → LCA = life cycle processes
 - Product model → CAD = product construction & assembly
- Influenced by product properties and processes of life cycle
- Connect models for environmentally optimising products by designers
 - Description of products main approach for linking

Data exchange formats

- LCA data documentation format regulated in ISO/TS 14048
 - Process data
- No common LCA data exchange format
- CAD data exchange format STEP
 - Standard for the Exchange of Product Model Data (ISO 10303)
 - Product data description

Requirements for data exchange



- Consistent data structuring
- Possibility to convert data formats to a general exchange format
- Possible ways for data exchange:
 - XML (Extensible Markup Language)
 - Spreadsheets
 - Interface

17" thin film monitor

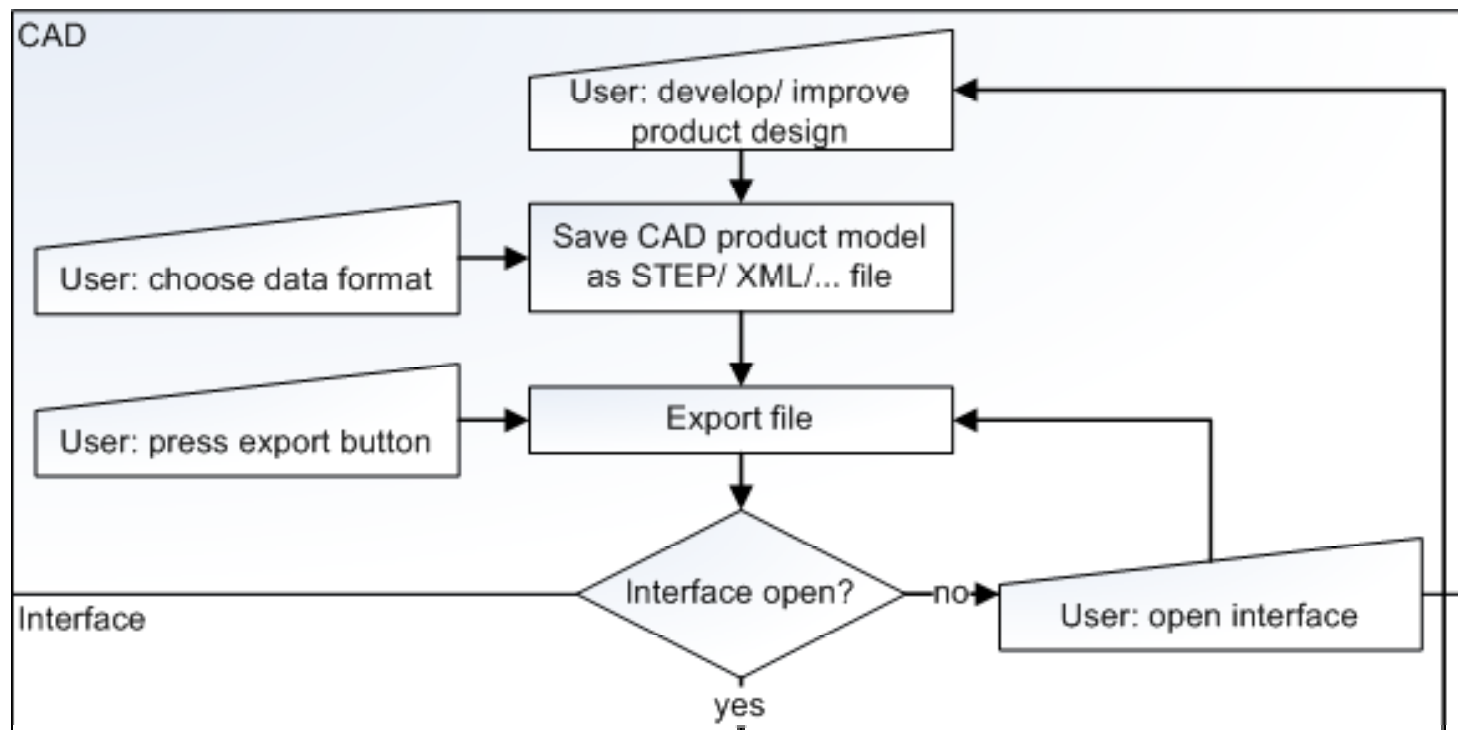
- Data exchange possibilities between CAD and LCA software tools
- Product model developed in CAD
- Data transfer to LCA → manually
 - Calculation of material masses
 - Selection of life cycle processes from database
 - Research for processes not derivable from product model

17“ thin film monitor

- Data necessary to exchange
 - Volumes of components, materials, product structure
- Processes given in database
 - Indications needed when different life cycle processes are possible
 - Database should be enlarged

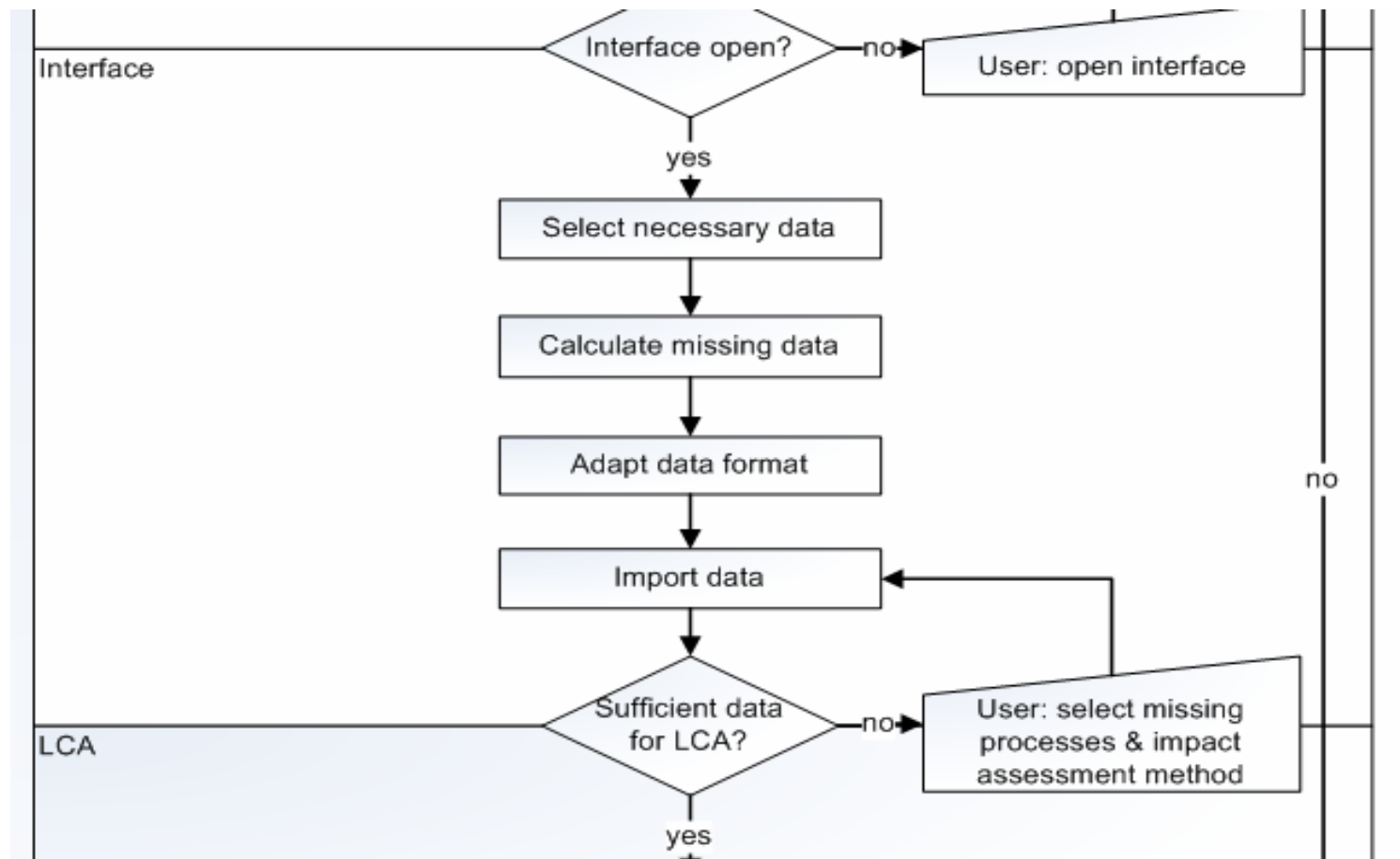
Guideline for data exchange

- CAD software tool



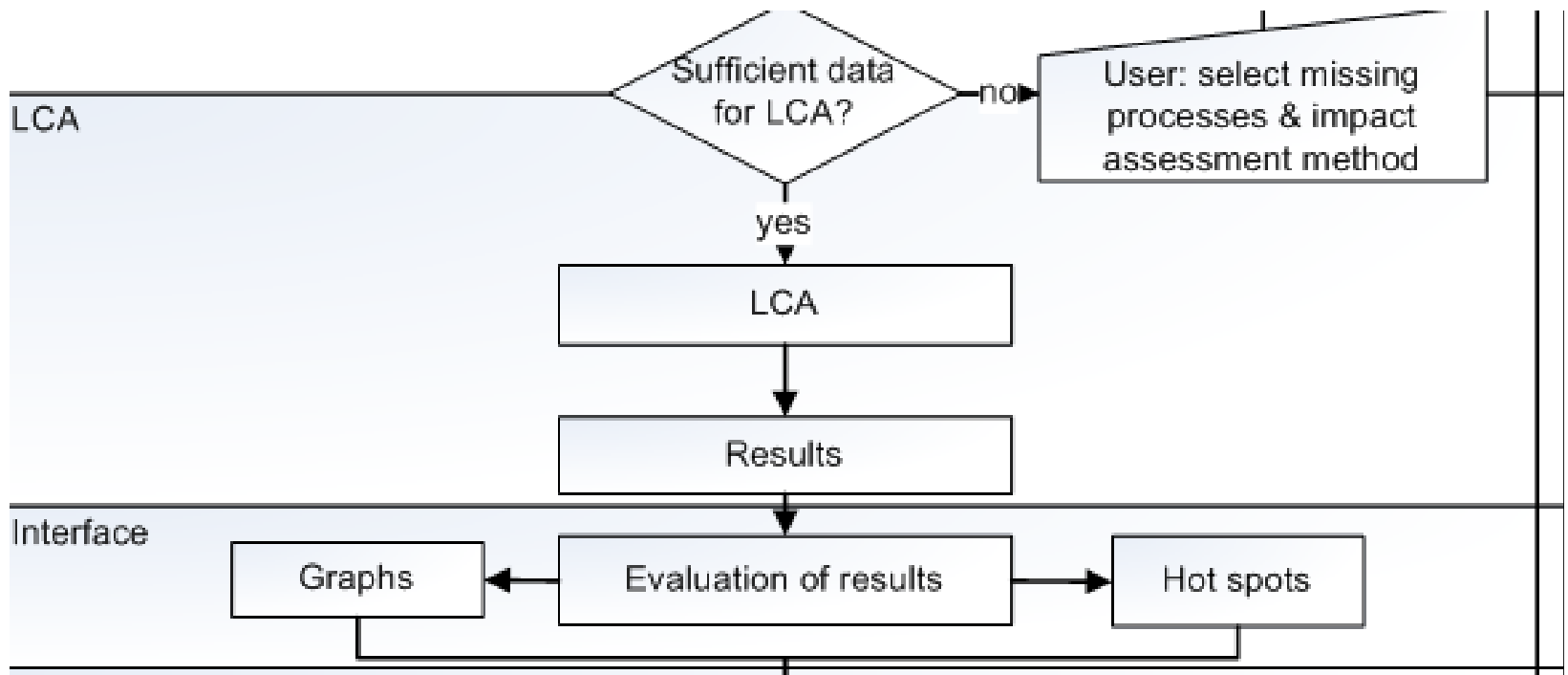
Guideline for data exchange

■ Networking interface



Guideline for data exchange

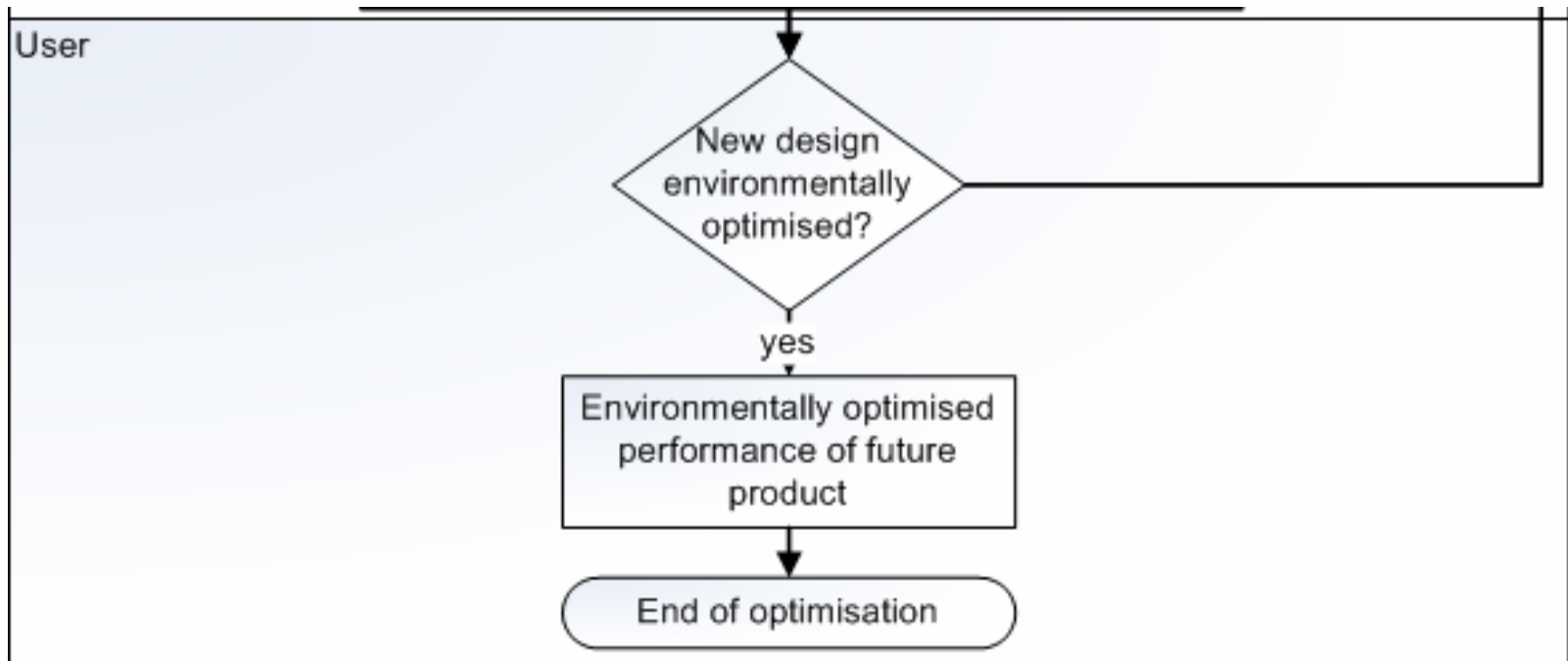
- LCA software tool
- Networking interface



Guideline for data exchange



■ User



Summary

- CAD Product models can be transferred to LCA
 - Converted to process models
 - Exchangeable data formats necessary
 - Data to be exchanged needs to be specified
 - Life cycle database needs to be enlarged
 - LCA results initiate environmental improvements
 - Increase awareness of LCA data needs among product designers