Towards more interoperable databases:
openLCA, SimaPro, summary of tools

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Content

1. Aspects of interoperability of LCA software
2. SimaPro
3. openLCA
4. Umberto
5. Overview of support tools
6. Overview of LCA software tools interoperability
1. Interoperability of LCA software
Interoperability and LCA Software

- Interoperability: Large term; related to LCA software:
  - Supported exchange forms (data formats, templates)
  - Supported reference lists and nomenclature
  - (mapping procedures -> ways for assigning one reference list to another reference list;)
  - internal database structure -> not covered today)
2. SimaPro
SimaPro and interoperability

• SimaPro: one (of two) leading LCA Softwares in the world, for decades, developed by PRé consultants.
SimaPro data exchange formats

- SimaPro supports two exchange formats:
  - A proprietary CSV format
  - A slightly modified version of EcoSpold 1 (different mandatory fields than the official format)
SimaPro data reference lists

- SimaPro has an own reference list, often based on ecoinvent, but with additions and modifications
- Especially, SimaPro has a fix top category list
3. openLCA
openLCA and interoperability

- openLCA is the leading and broadly used open source LCA software, developed by GreenDelta since 2006
- **Open source:** source code and software is fully free, transparent
- **Business model:** support for software development, service contracts, database sales, use in innovative studies
- **Features:** same level as SimaPro or GaBi
- Developed as follow up of the openLCA format converter → special attention to interoperability
openLCA and data formats / data exchange

- openLCA supports the following formats for import and export:
  - EcoSpold 1
  - EcoSpold 2
  - ILCD
  - SimaPro csv (only import)
  - Excel (specific template)
  - Under development: an own, intuitive ontology commissioned by US EPA
openLCA and data formats / data exchange

• openLCA supports the direct connection to an ILCD server (soda4LCA, just as the ELCD or IBICT database).

• In addition to the ELCD system, also product systems can be shared (i.e. full case studies)
openLCA and reference lists

- openLCA has a very extensive reference element list for elementary flows and other elements, basically ecoinvent & ILCD & some other sources (USDA).
- This list is created when creating a database in openLCA with reference data.
- Databases can also be created without reference elements → more flexibility.
openLCA and reference lists

* Total # of elementary flows in reference list
4. Umberto
Umberto

- LCA and material flow software developed by ifu, Germany
- Users in Germany and in some Latin American countries
- No own reference data
- Data import requires collaboration with ifu, export to EcoSpold 1, one process data set at a time
5. Overview of support tools
Overview of LCA data format supporting tools)

- **ecoEditor**: tool developed for the ecoinvent centre for submitting data sets to the ecoinvent database, including review. Freeware but not open source. Imports EcoSpold 2 (in dialect)

- **ILCD editor**: Open source application for creating ILCD data sets, not too comfortable to use.

- **openLCA format converter**: open source application for converting between major LCA data formats
EcoEditor

(here: opening a data set exported from openLCA in ES2)
## openLCA format converter

<table>
<thead>
<tr>
<th>from/to</th>
<th>EcoSpold 1 (SimaPro)</th>
<th>EcoSpold 1</th>
<th>EcoSpold 2</th>
<th>ILCD 1.1</th>
<th>CSV (SimaPro)</th>
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<td>-</td>
<td>x</td>
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</table>
openLCA format converter

• Current project with JRC to especially improve the mapping files in conversion from ecoinvent / EcoSpold 2 to ILCD
• Converter will then be officially endorsed by JRC
• Recent project commissioned by PRé to allow selecting the mapping files, PRé has provided a list from SimaPro to ILCD (→ SimaPro can be used as a tool to create PEF case studies)
ILCD editor

- Java webstart application – for security reasons blocked by modern Windows systems
- Needs to be installed for every single use (!)
  - ILCD Editor (beta 11)

(Note that it is for use exclusively by software developers; this is not a software application that would run on your computer.)
6. Summary for LCA tools
### Summary for LCA tools

<table>
<thead>
<tr>
<th></th>
<th>GaBi</th>
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<th>Umberto</th>
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<tr>
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<td>?</td>
<td>process data sets, analysis results, results of simulations</td>
<td>some lists</td>
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</table>

*own "dialect" with different mandatory and optional fields

** single data sets
Thank you!

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