



Swiss Centre for Life Cycle Inventories

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PCF World Forum

5<sup>th</sup> PCF World Summit, Zurich, April 7 to 8, 2011



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# Building Credibility into Data

the ecoinvent database approach  
to Completeness, Transparency &  
Consistency

**ETH**



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ecoinvent Centre, St-Gallen (Switzerland)



# Content



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*ecoinvent Centre*

*ecoinvent (database)  
today*

*ecoinvent (database)  
tomorrow*

→ Completeness / Transparency / Consistency

*Conclusions*

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# ecoinvent Centre

... a Competence Centre of ETHZ, EPFL, PSI, Empa, ART ...



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## **Mission**

to promote the  
use and good  
practice of LCI.



## **Vision**

to be preferred  
source for LCI  
data worldwide.



## **Strategy**

to provide the most  
relevant, reliable,  
transparent and  
accessible LCI data for  
users worldwide.

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... hosted at Empa in St-Gallen (Switzerland).



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= more than 10 years of common LCI activities ...



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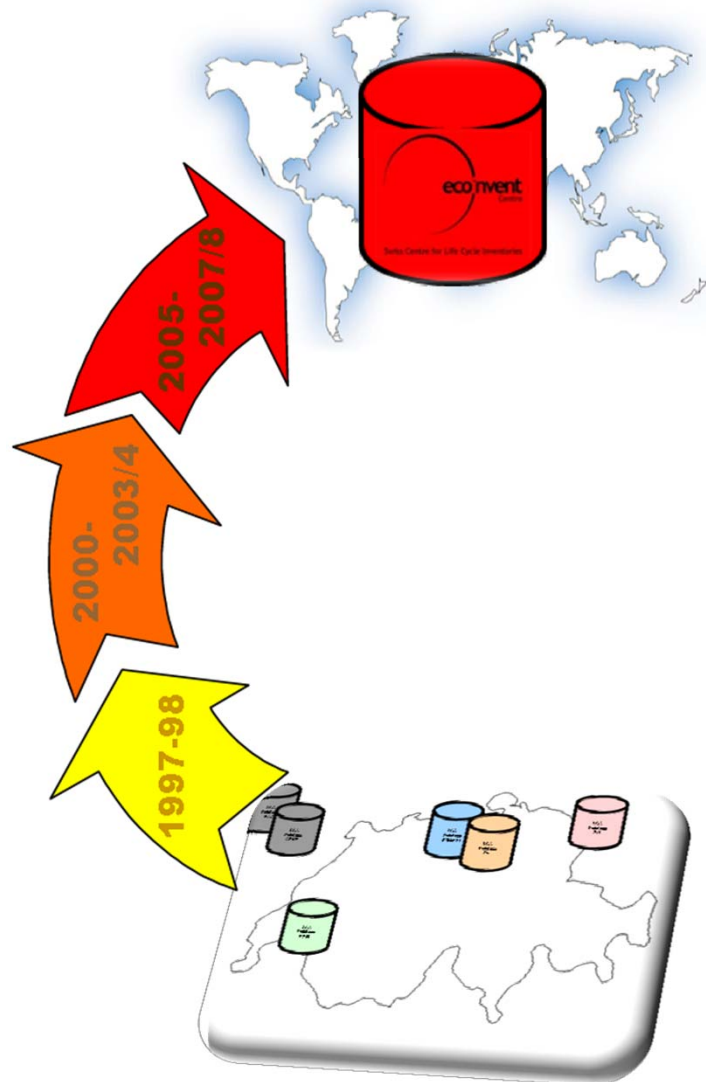
Institutions behind ecoinvent have  
a very long tradition in LCA /LCI ...  
(Empa published 1st LCI report 1984 !)

**1997-1998  
pilot project**  
- Specification DB  
- First draft Quality  
Guidelines LCI data

**2000-2004**  
« ecoinvent 2000 »  
- Finalization DQG  
- Establishing version v1 of  
ecoinvent (~2'700 LCI  
datasets)

**2005-2008**  
« ecoinvent v2 »  
Update and expansion of  
the database from v1 to  
v2 (~4'000 LCI datasets)

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# ecoinvent today

... the database «ecoinvent data v2.2»

- Online database with fully interlinked data;
- > 4'000 **product systems simultaneous calculated**;
- linking inventories to major LCIA methods;
- with an **Independent quality assurance mechanism**;
- with **full access to unit process data and rolled-up data**;
- providing all Multioutput datasets with unallocated data;
- using an ISO-compatible format in XML technology:
  - easy data exchange
  - one format for LCI & LCIA
  - working, widely applied and accepted



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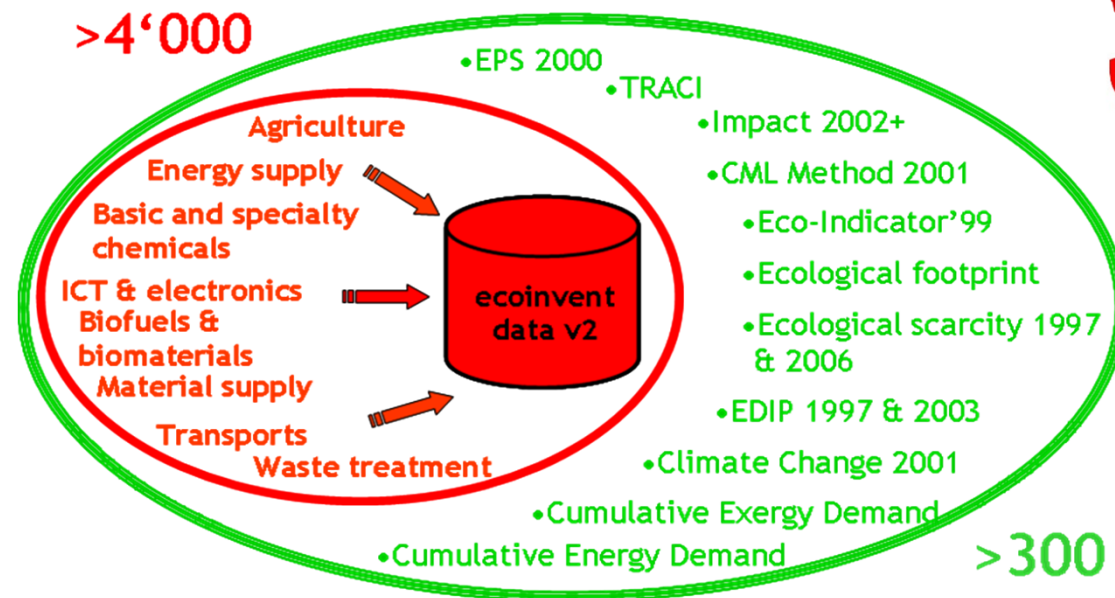
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# ecoinvent today

... a global success story ... !



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- ... with more than 2'500 clients that use the ecoinvent database in more than 40 countries worldwide;
- and data from ecoinvent either integrated / or importable into all major LCA software tools on the market ...



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*... and in a variety of  
EcoDesign tools !*



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- Broader data supply base
  - With **new tools** allowing contributions from LCA experts;
  - A limitation of a dataset on **technology description**;
- More content / more completeness
  - on the level of the **entire database**;
  - on the level of each **individual dataset**;
- More Transparency by a **more close documentation**
- More Consistency
  - (automatic) linking via **Market models**;
  - Database wide **system models** are applied

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# ecoinvent tomorrow

... broader data supplier base / New tools



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- making it easier for **3rd parties to contribute**;
- in order to get a much **broader support for new** datasets and/or **corrections** of existing datasets;
- by keeping for all data a very **strict quality control, review, and validation** procedure.



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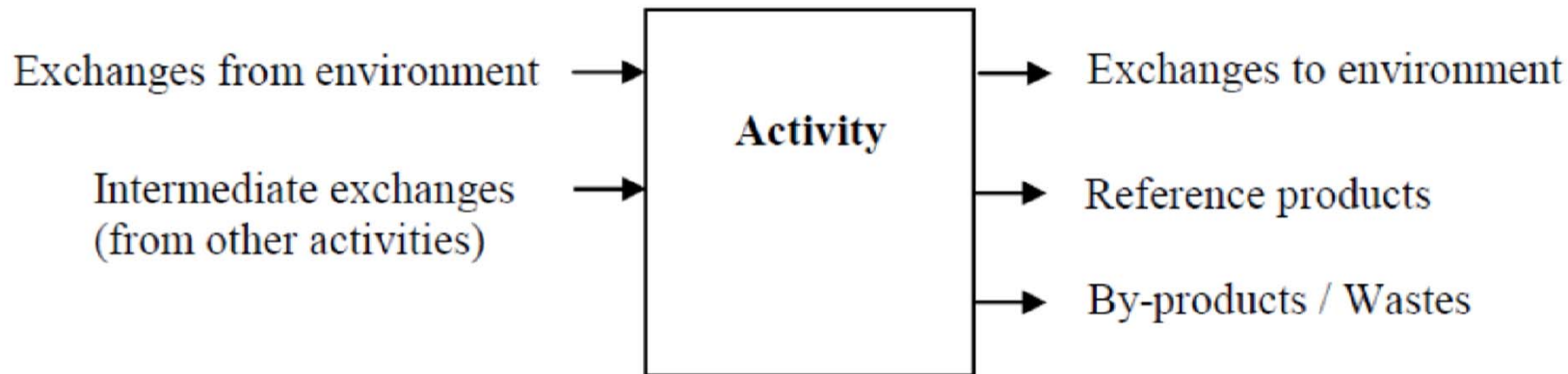


# ecoinvent tomorrow

... broader data supplier base / Reduction on Technology



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- «simple» **consistent & transparent unit processes**, describing the activity that you have information about - i.e.
- The whole data collection process needs **to be documented** & literature sources referenced **in the dataset documentation** ...



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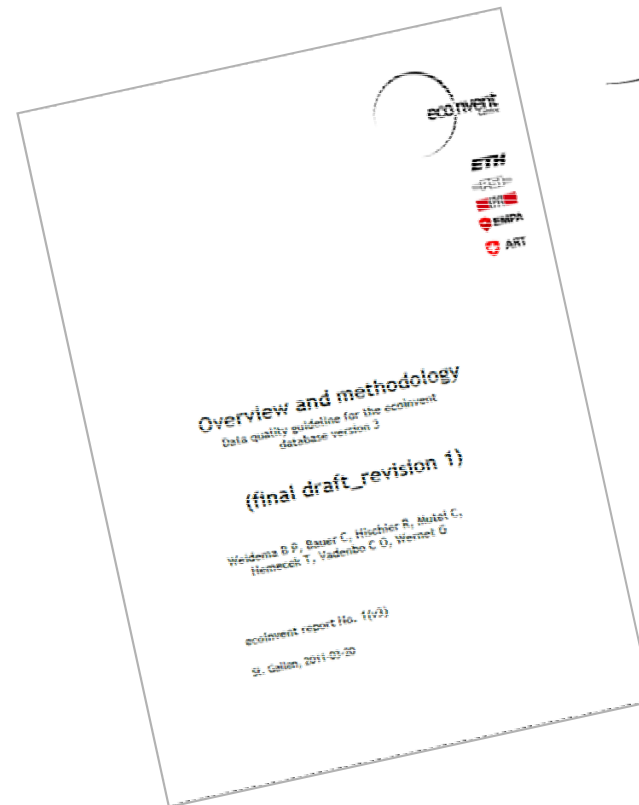
## Completeness

### (i) On level of whole database

- ecoinvent data covers **all aspects of the societal economy**, although in varying degree of detail.  
Industries where not all products are specifically included in the database, at least one activity dataset is included that represents the production of unspecified products of that industry.

### (ii) On the level of a single dataset

- coherent inclusion** of specific aspects in each single dataset ...
  - Stoichiometrics
  - Mass balances
  - Carbon balances
  - Elementary exchanges
  - Water
  - Land transformation & occupation
  - Incidents / Accidents
  - etc.



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## Transparency



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- the **information in dataset** should be sufficient **to judge appropriateness** of dataset for specific application:
  - Comments and references to sources are given on most detailed level possible (i.e. attributed to the particular exchanges of an activity, attributed to a particular property of an exchange);
  - Comments and references that are general to more than one entry are provided in the comment field most relevant for the nature of the value.
  - background information common for many datasets is available on [www.ecoinvent.org](http://www.ecoinvent.org)

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## Consistency



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- One single, consistent **data quality guideline** for all data
- No overlaps, no double-counting, no cut-offs
- A **common, transparent, unlinked** basis of unit process data for the calculation of **various (attributional, consequential) system models**, supported by
  - ... market datasets (linking activities in different ways);
  - ... linking algorithms based on the activities' geographical location and technological level, and taking into account the distinction of reference products / by-products, waste
  - ... product properties (as universal allocation keys)

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Consistency / market datasets



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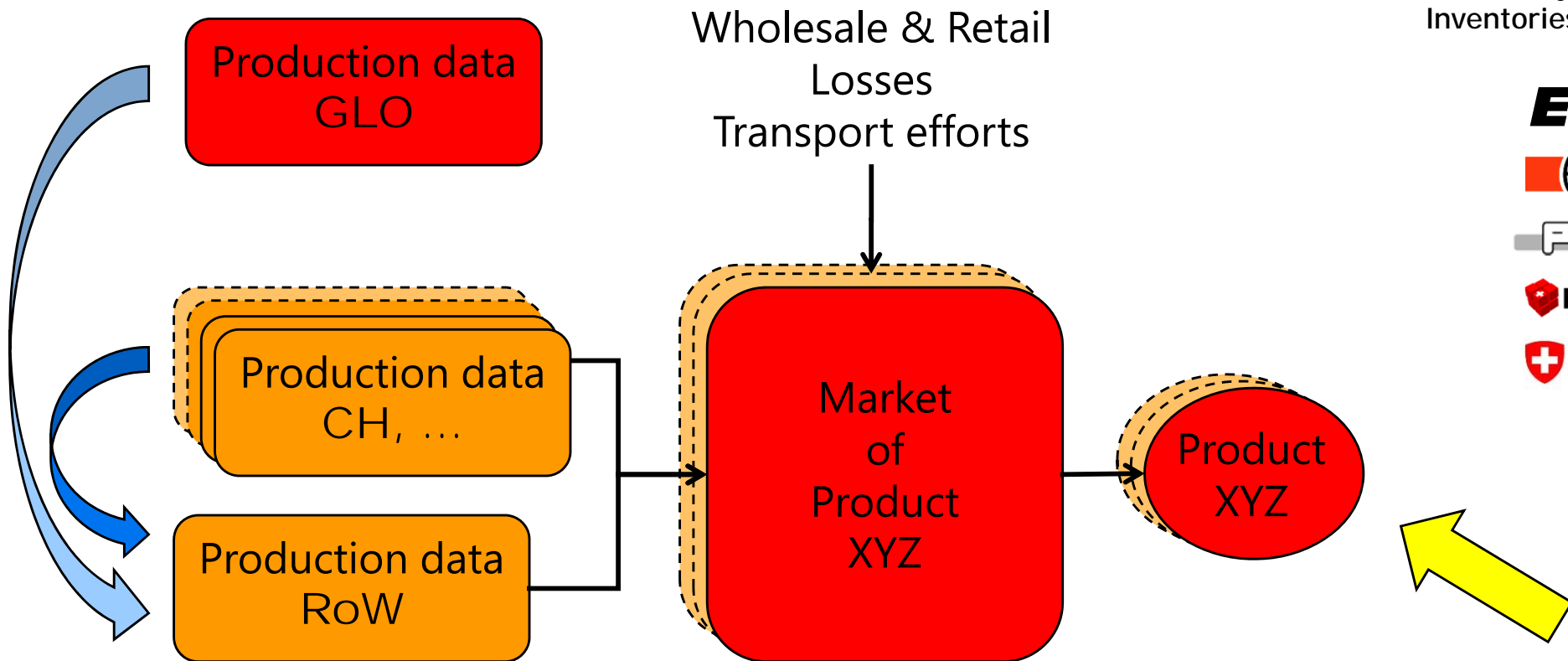
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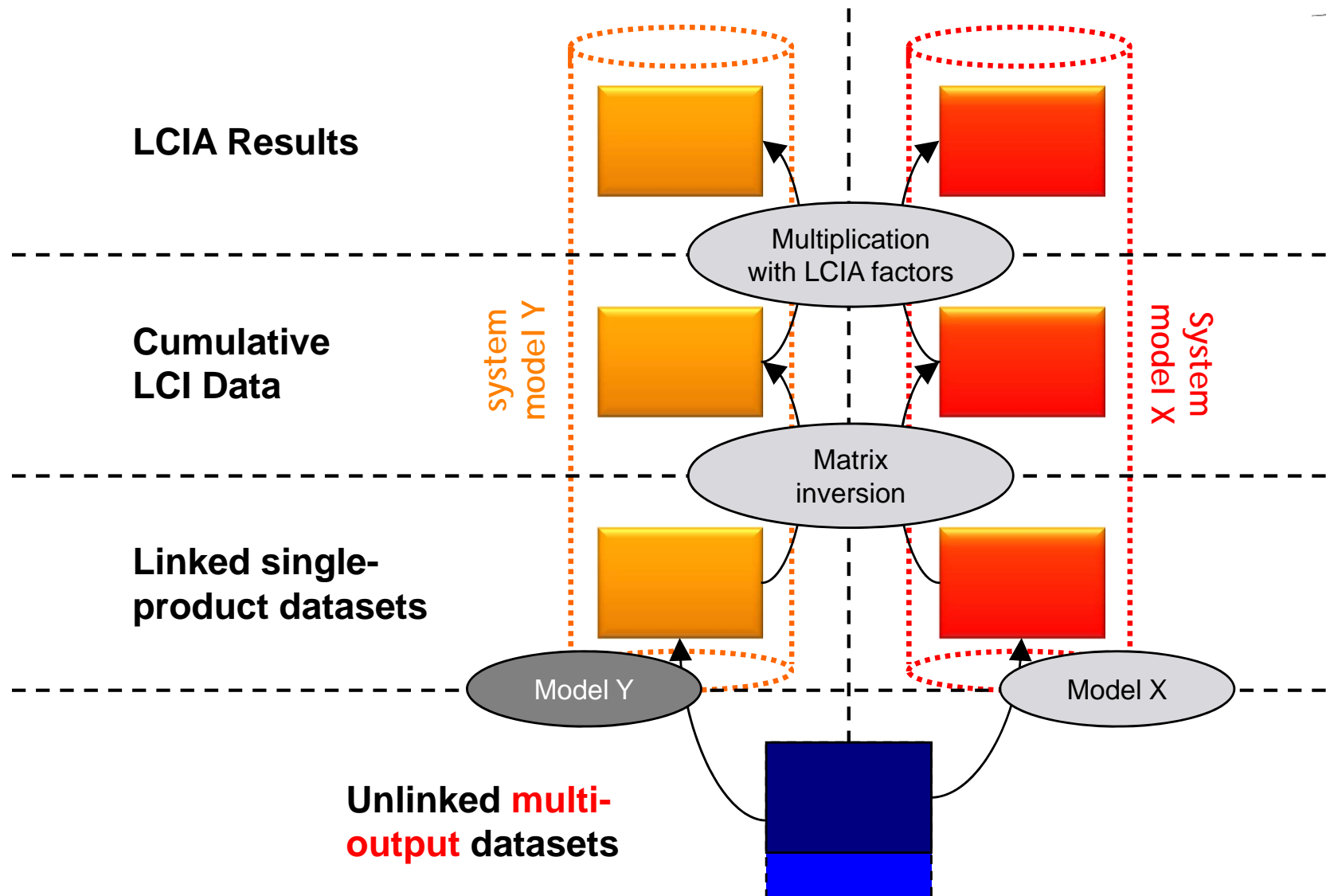
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Consistency / coherent system models



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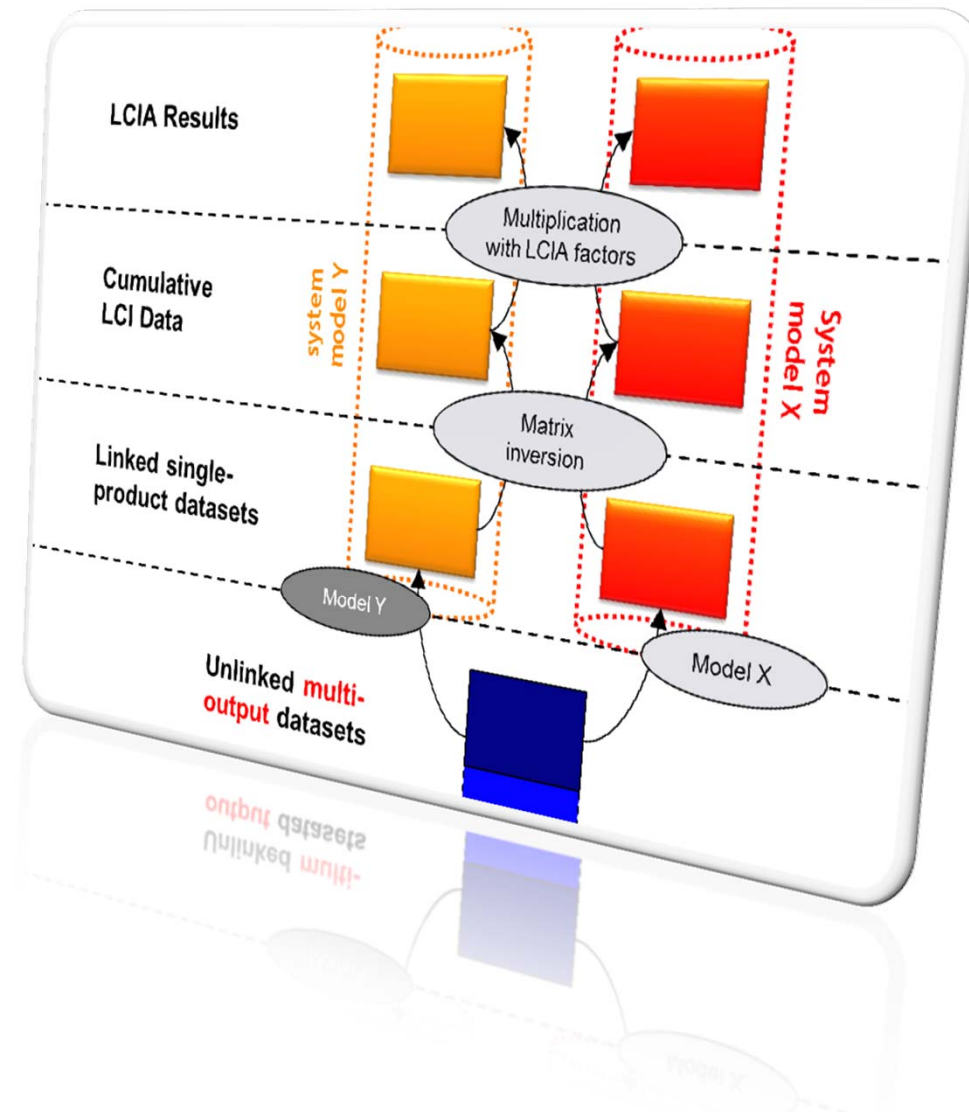
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Consistency / coherent system models

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## System models:

- True value allocation, average suppliers, with carbon correction;
- Revenue allocation, average suppliers;
- Substitution, constrained markets and technologies;
- Substitution, constrained supplies of by-products (ILCD A).



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# Conclusions

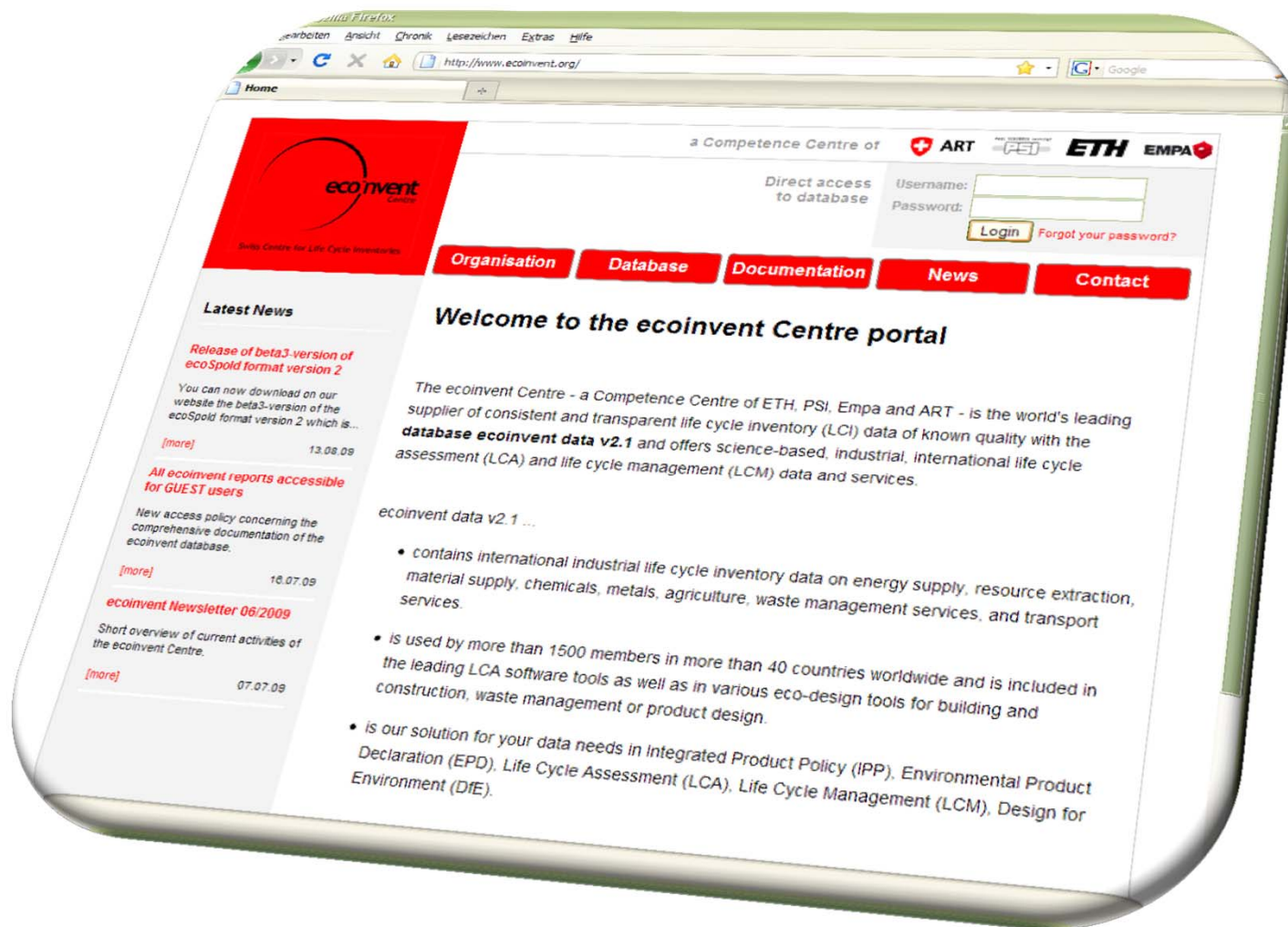


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- ecoinvent has the objective to continue to be the **most transparent, well-documented, consistent, complete** and **validated** global LCI database;
- with our assured **quality** of the life cycle data and the **user-friendly** access to the database ecoinvent is an adequate basis to establish LCA as **reliable tool for environmental assessment**; and like this ...
- ... make it easier to perform **LCA / MFA / PCF studies**, and increase the credibility and acceptance of their results!

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