Integration of LCI and EPDs with decision making

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LCA and decision making

MCDM –approach, e.g. ToSIA

- An attempt to reduce decision-making dimensions or
- Visualisation of the problem
- …

LCIA methods

- RECIPE
- EPD….
- Methods are already decision-making tools.
- Problem is how to make use of those
  - In business
  - Policy making
  - Daily life

Both OK, here I'm worried about EPDs, how to get the business making use of those, to communicate!

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LCA and decision making

- LCA is a scientific and applied research method
- How to make use of LCA in decision making?
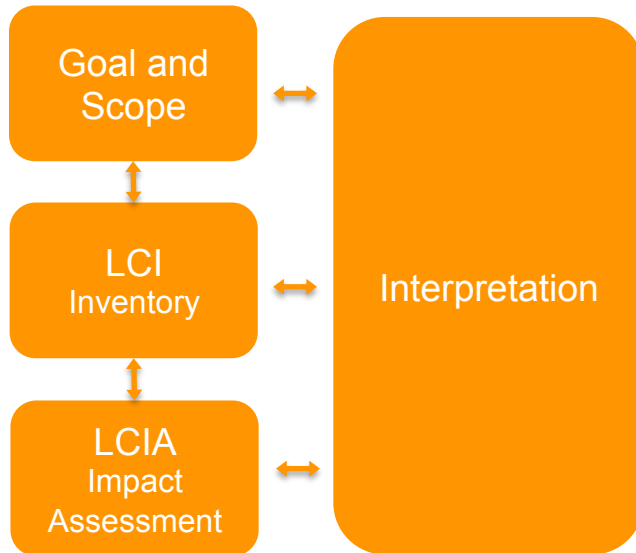
- The issue is embedded into standard LCA phases, but:
  - Experts are needed to manage professional applications (costly)
  - Reasonable level of accuracy can be time consuming
- Thus, results not necessarily:
  - contribute to actual decision making parameters (cost, profit, material choices)
  - enter into actual decision making situation (timing)

Some history

Metla

- EPDs needed for efficient env communication, but
- The system has to be a low entry level, in cost and comfort.
- **PEnA** – a Platform for Env Assessment
  - Open Access LCA data sets with ILCD compatibility
  - Simplified tailored tools to manage datasets, create EPDs and communication on env properties.
  - Emphasis in building products
  - Material independent approach
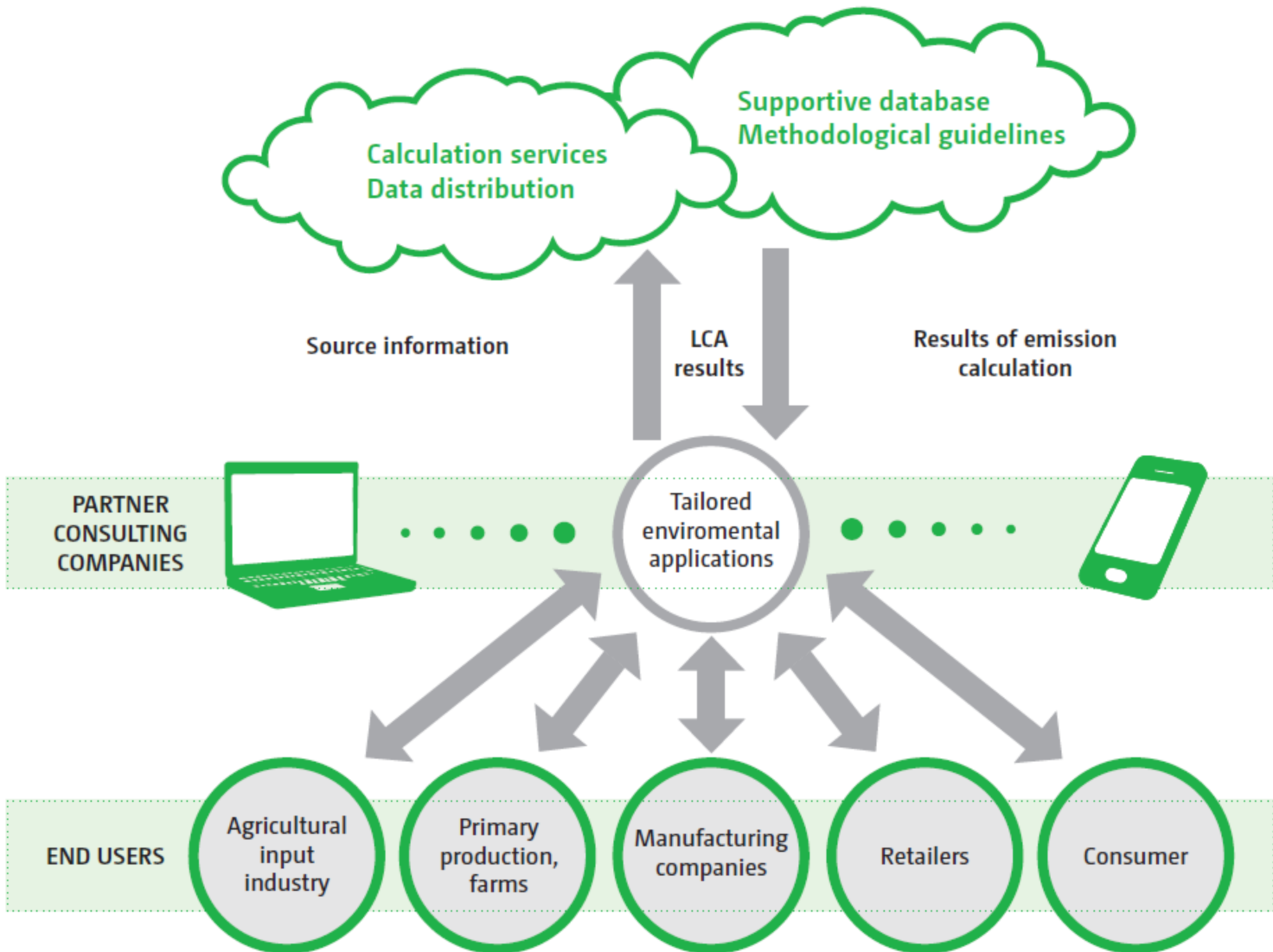
January 2015 these two groups where merged within Luke

MTT – AgriFood

- Long time experience with food value chain LCA modelling
- An extended set of primary data stored uncoordinated – how to make use of it in decision making with low cost?
- **EcoModules**
  - Confidentiality and quality issues
  - Emphasis on primary production

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"Original" EcoModules

- Developed by MTT (currently merged with Metla as Luke)
- Management system for those who prefer to produce <u>reliable LCA easily</u>
- Original target was to organize & simplify LCA over the food chain.
  - Means for the end users for gathering, analysing and delivering information

- Confidentiality of business data should be honoured.
  - Connects partners who are willing to share LCA results
  - Impact data is shared, but
  - shared data should be based on primary data.
- Elements: shared scientific calculation rules and verified data and tailored applications.
- Applications may support other business needs (e.g. cost accounting)

Calculation services
Data distribution

Supportive database
Methodological guidelines

Source information

LCA results

Results of emission calculation

Tailored enviromental applications

PARTNER CONSULTING COMPANIES

END USERS

Agricultural input industry

Primary production, farms

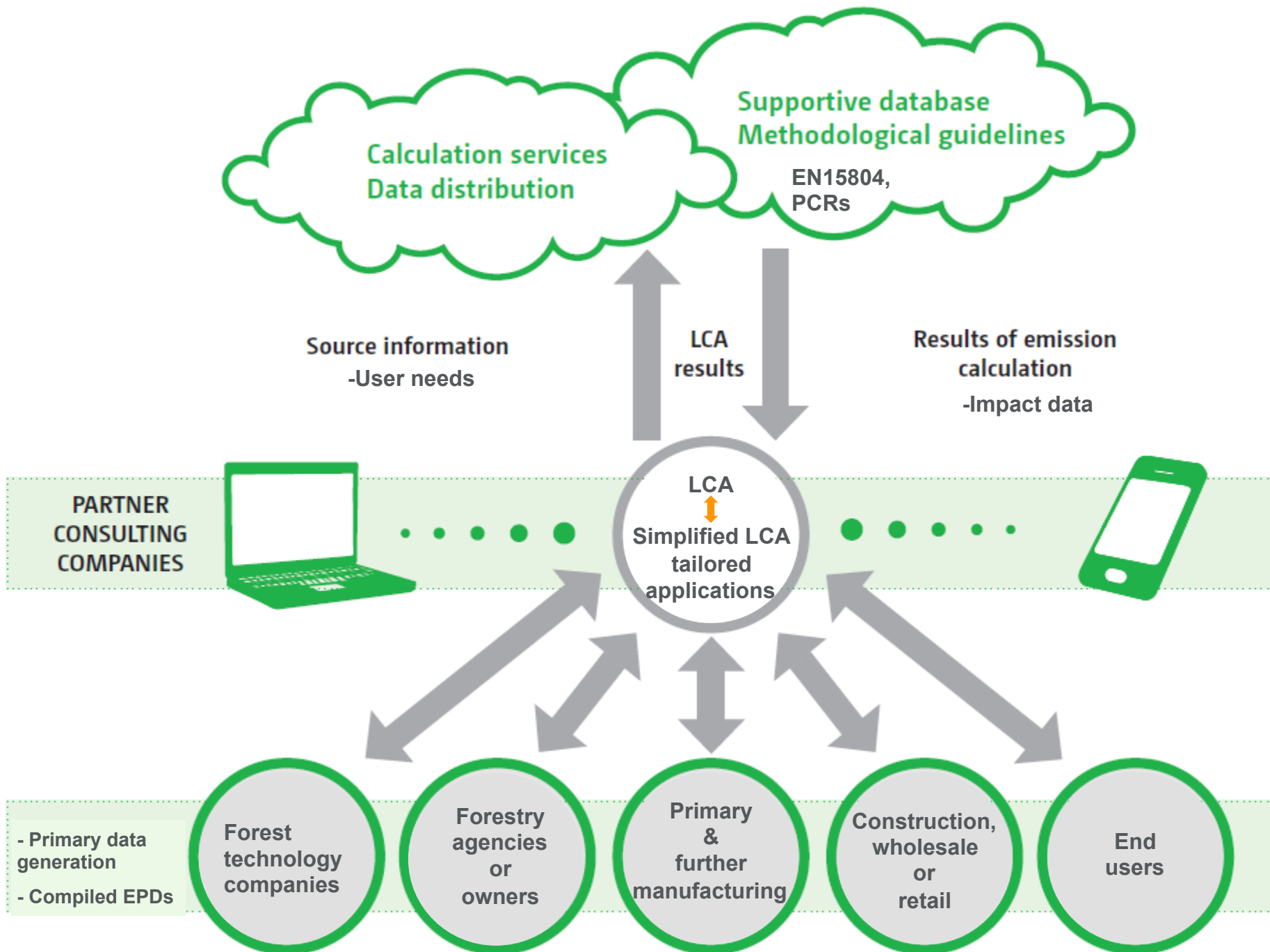Manufacturing companies

Retailers

Consumer

EcoModules

- Partners share the same datasets, but can't access primary data on processes.
- Verified primary data is stored and verified on the same server.
- LCA experts are needed to weed out information needs for the applications
  - eg. "warm boot" for each case or simulation.

- The business model has passed the evaluation
- A meta-model, implementation issues not yet considered in detail.
  - Currently a partner company is investigating implementation of EcoModules.
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Ecomodules for ModWood?

Key differences

- Forestry "primary production technologies" are more common than "farm technologies".

  – Number of species, forest types and management options are more limited.

  – A reasonable level of accuracy of forest management options can be reached using publicly produced data.

  – No need to go to the forest owner or plot level.

- Sparse and long network of low volume partners.

  – Tailoring at product category level

  – Harder to ensure integrity of EPD chains

Calculation services
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Supportive database
Methodological guidelines

EN15804,
PCRs

Source information
-User needs

LCA
results

Results of emission
calculation

-Impact data

LCA

Simplified LCA
tailored
applications

PARTNER
CONSULTING
COMPANIES

- Primary data
generation

- Compiled EPDs

Forest
technology
companies

Forestry
agencies
or
owners

Primary
&
further
manufacturing

Construction,
wholesale
or
retail

End
users

Platform for Environmental Assessment, PEnA

Forest datasets

Wood products

-**EU Life Cycle Data Network**

-EPD databases e.g. okobau.dat

ILCD Compliance

Excel

SQL

XML

PEnA-Db

Construction Open Environmental database

(GNU General Public License, GPL)

-EN15804 compatibility

-national construction material nomenclatures

IFC

SQL

- **Reporting**
- **Independent applications e.g.**
  - **cost accounting**
  - **building desing,**
  - **green building certification**
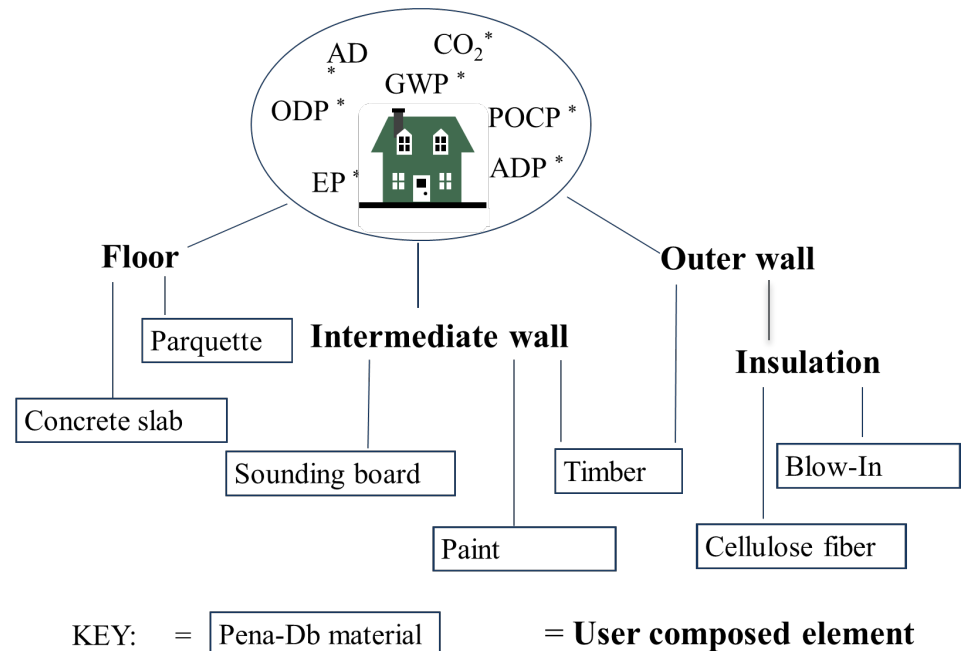- **,)**

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PEnA-Db & Calculator

- Experimental application
- Okobau.dat
  - A German construction material LCA database

Evaluates environmental impacts of building elements or houses.

Technical notes

- See http://www.metla.fi/pena/
  - PHP & MySQL
  - Works but not user friendly
  - Security concerns
  - Maintenance too complicated

AD * CO_2 *   GWP *   ODP *   POCP *   ADP *   EP *

Floor   **Outer wall**

Parquette   **Intermediate wall**   **Insulation**

Concrete slab

Sounding board   Timber   Blow-In

Paint   Cellulose fiber

KEY: = Pena-Db material   = **User composed element**

Kiitos!

Thank you

Tarmo Räty   29/08/15