

## Simplifying the consistency check and translation of different data sources in the context of evolving GHG assessment frameworks

84<sup>th</sup> LCA Discussion Forum – Did we forget about data? Challenges and needs – 21<sup>st</sup> September 2023

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# Why do we need more data?



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Future goal: differentiate the potential impacts of specific value chains



Improve the evaluation of uncertainty & variability for sector averages

**Kim, Aleksandra, Christopher L. Mutel, Andreas Froemelt, and Stefanie Hellweg.** 2022. 'Global Sensitivity Analysis of Background Life Cycle Inventories', *Environmental Science & Technology*, 56: 5874-85.

**Michiels, Freya, and Annemie Geeraerd.** 2020. 'How to decide and visualize whether uncertainty or variability is dominating in life cycle assessment results: A systematic review', *Environmental Modelling & Software*, 133: 104841.

Higher needs from all  
organisations

More specific regional  
representation

Open new options  
(e.g. DLCA)

# Available data sources & frameworks

## Many data sources of GHG emission factors

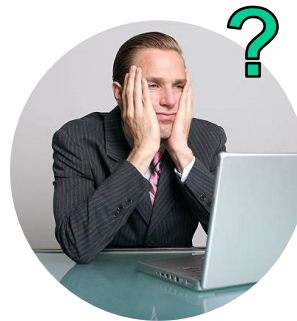


Are all options comparable ?

Can I combine data sources ?

Why so many different vocabularies ?

## Quick evolution of assessment standards



## New simplified computational tools



**! Consistency concerns !**

- System modelling choices
- Formats
- Variability

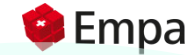
**! Trust issues might appear !**

# Other challenges in data management



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**Diverse stakeholders**



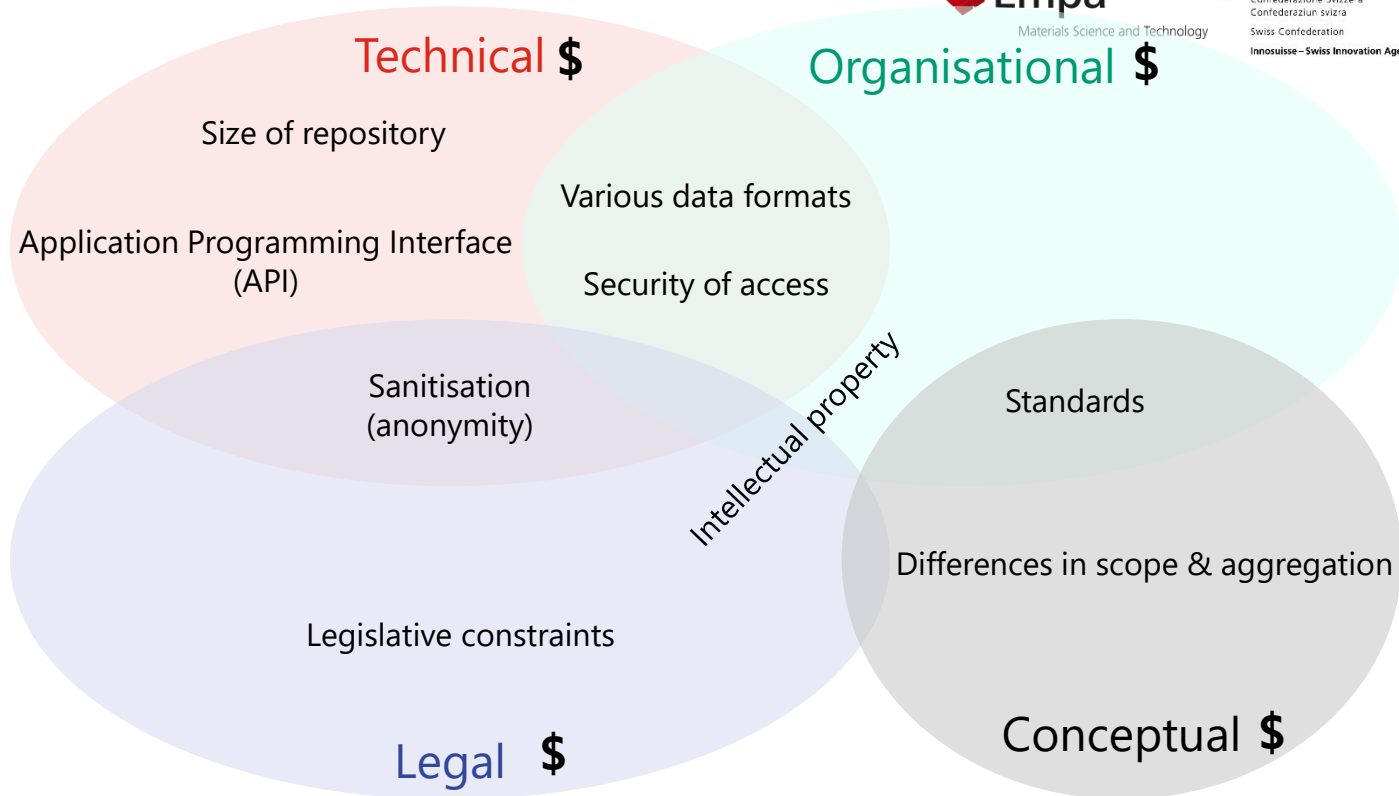
Providers



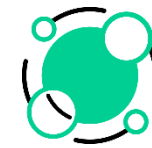
Managers



Users



# Path to access more data



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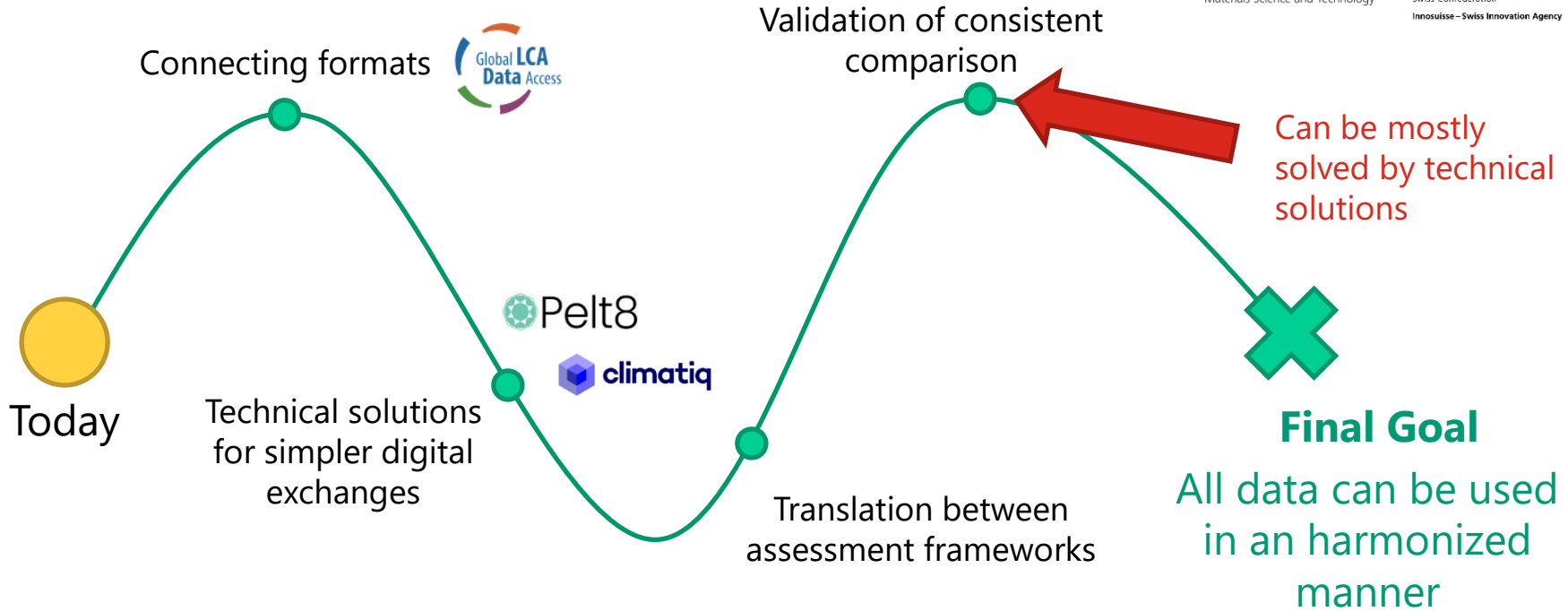
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# What should we translate?



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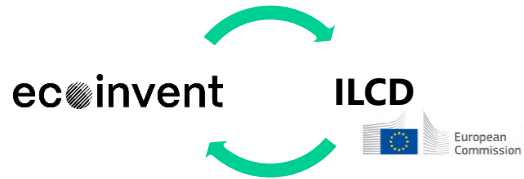
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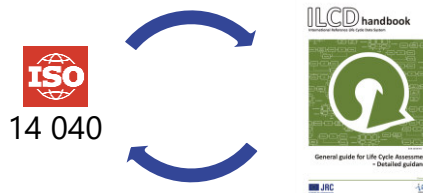


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## Between databases



## Between standards



- Vocabularies (e.g. product vs process)
  - Flows & Processes
  - Common properties (e.g. categories)
- 
- Modelling choices (e.g. allocation)
  - Requirements (e.g. review procedure)

# Example of a solution > Categories



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## Bridge ontology

ISIC classification  
(e.g. ecoinvent)

UVEK  
classification

ISO 14064-1

491-Transport via railways  
4912 – Freight rail transport

Rail  
Other transport

Indirect GHG emissions  
from transportation

502-Sea and costal water transport  
4930 – Sea and costal freight water transport

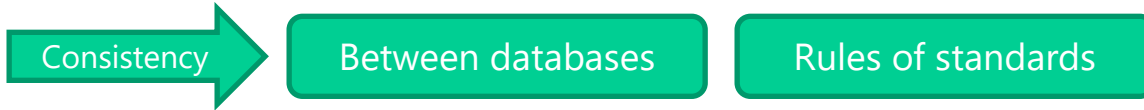
Transport systems  
Ship

Emissions from  
upstream transport and  
distribution for goods

# Validation of data

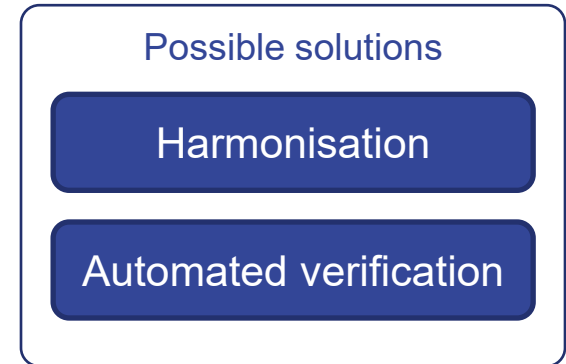


Fairly compare or merge activities/processes



- Goal
- Functional unit / Reference flow
- Scope (Technosphere & Biosphere)
- Regionalisation
- Period of validity
- Modelling choices (e.g. allocation)

**! Transparency !**





# Checking key validation aspects



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SP5 PROTOTYPE

Home

Assessments

New assessment name

STEP 1  
Assessment Definition

STEP 2  
Data Input Management

STEP 3  
Reporting Definition

Save

General settings

Region

Assessment period

Production site

Assessment framework

Consolidation approach

Operational Control

LCIA Method

Location-based or Market-based electricity models

Selection tool for activities & Products

Data source

Data source version

Activity Region

Operational Boundary

Category

Activity Search Query

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My Company

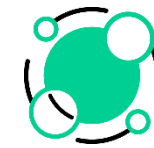
< Collapse Sidebar

Activity Name    Period    Location    Production Site    Operational boundary    Category    Actions

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# Creating bridges – digital ecosystem



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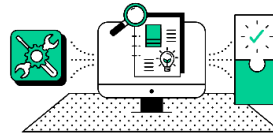
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## Repository



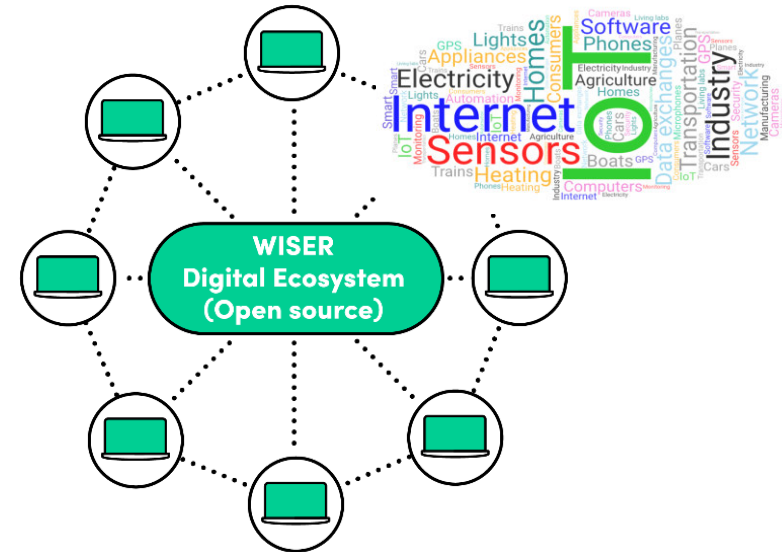
## Computational Tools



## Digital Exchanges



## Dashboards



Decentralised management of expertise

Access to solution from ICT sector

# Need for quick evolutions

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- Many changes are coming from various stakeholders with different expectations
- Much more data will need to be considered to fairly compare products
- AI solutions and IoT could flood the market with data
- Questions on consistency, validity and uncertainty
- New data formats and structure from ICT sector will need to be considered

# Collaboration is the key

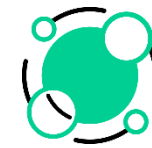
Our community is growing



Let's create strong bridges



# Thank you for your attention !



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