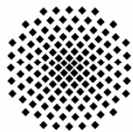

Requirements as aspects of regionalization solutions

A contribution to the discussion from the GaBi Group as a professional software provider

Tabea Beck, Jan Paul Lindner, Martin Baitz, Bastian Wittstock, Thorsten Volz, Matthias Fischer, Ulrike Bos



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Regionalization in day-to-day business


- ▶ Regionalization of inventories: country specific data
- ▶ Regionalization of impacts (adapted CFs)
- ▶ No automated (consistent, standardized) method available
- ▶ But regionalization (specific characterization and interpretation) is done already since years
- ▶ ...on LCI and LCIA level...
- ▶ Main problem is not missing method...
- ▶ ...but aspects that come up if methods are applied in daily practice by thousands of users (consistency)



GaBi 4 database content
Professional Database

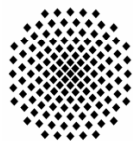


Country	Process name	Data provider	Process group
US	Power from hard coal	PE	Power from hard coal
AT	Power from hard coal		
BE	Power from hard coal		
IT	Power from hard coal		
GB	Power from hard coal		
FR	Power from hard coal		
DK	Power from heavy fuel oil		
SE	Power from heavy fuel oil		
FI	Power from heavy fuel oil		
GR	Power from heavy fuel oil		
NO	Power from heavy fuel oil		
ES	Power from heavy fuel oil		
US	Power from heavy fuel oil		
PT	Power from heavy fuel oil		
AT	Power from heavy fuel oil		
BE	Power from heavy fuel oil		
CH	Power from heavy fuel oil		
GB	Power from heavy fuel oil		
IT	Power from heavy fuel oil		
DE	Power from heavy fuel oil		
FR	Power from heavy fuel oil		
NL	Power from heavy fuel oil		
DK	Power from hydropower		
RER	Power from hydropower		
NL	Power from hydropower		
AT	Power from hydropower		
BE	Power from hydropower		
CH	Power from hydropower		
DE	Power from hydropower		
ES	Power from hydropower		
FI	Power from hydropower		
FR	Power from hydropower		
GB	Power from hydropower		
US	Power from hydropower		
SE	Power from hydropower		



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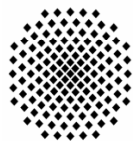
Country	
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SE	Power from heavy fuel oil
FI	Power from heavy fuel oil
GR	Power from heavy fuel oil
NO	Power from heavy fuel oil



Requirements from a software provider's point of view

- ▶ Solution to address different spatial resolution necessary for different impact categories (GWP needs other resolution than TOX)
 - ▶ Regionalization information has to allow aggregation procedure (user driven)
 - ▶ Detailed regionalized information may not always and anywhere in the calculation be needed (smart solution needed)
 - ▶ Flexibility of choice of LCIA method needed (granularity must not limit interpretation)
 - ▶ Regionalization needs to provide significantly better results without increasing uncertainty and without severely increasing data acquisition and modeling effort
 - ▶ Results also have to be (efficiently) interpretable for non-academic clients and in day-to-day business
- Added value for users leading to enhanced decision support has to be incentive for development

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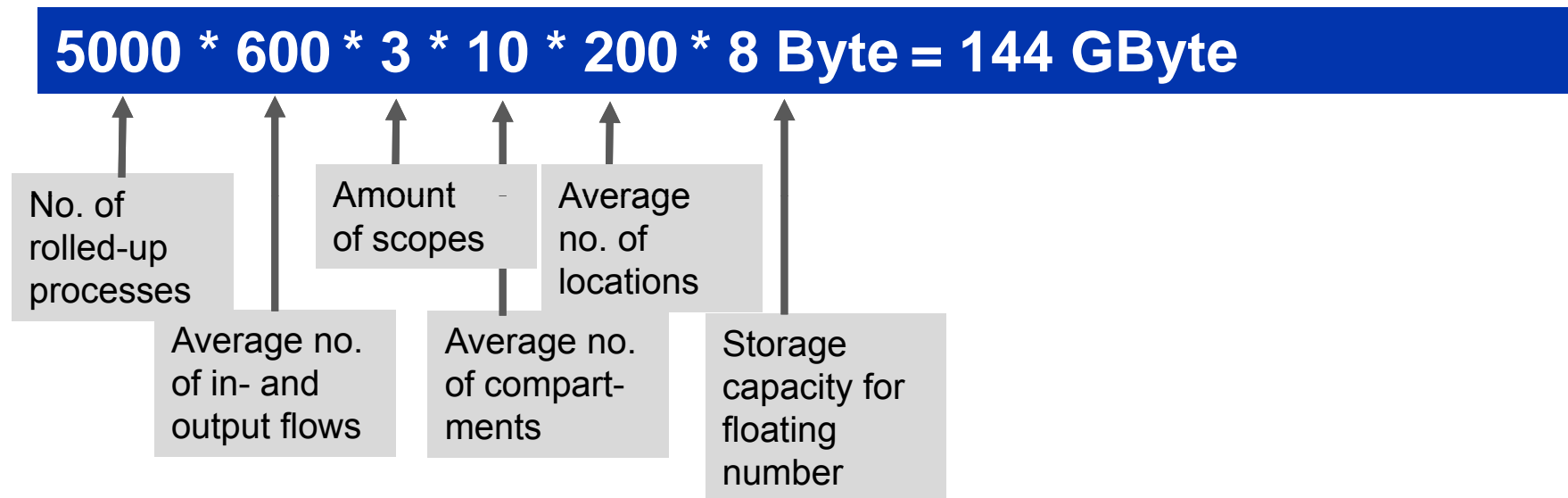
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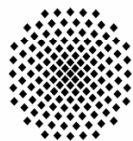
Important aspect from a software provider's point of view

High amount of data, computing power and storage capacity required independent from software/database system:



- How to handle this with view into future developments? We are still at the beginning!
- Data mass is drastically increasing! Comprehension of LCA user possible bottleneck?
- Is the quality of the results also drastically increasing?

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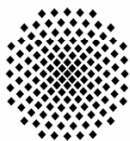
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Idea

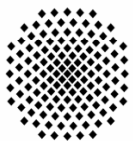
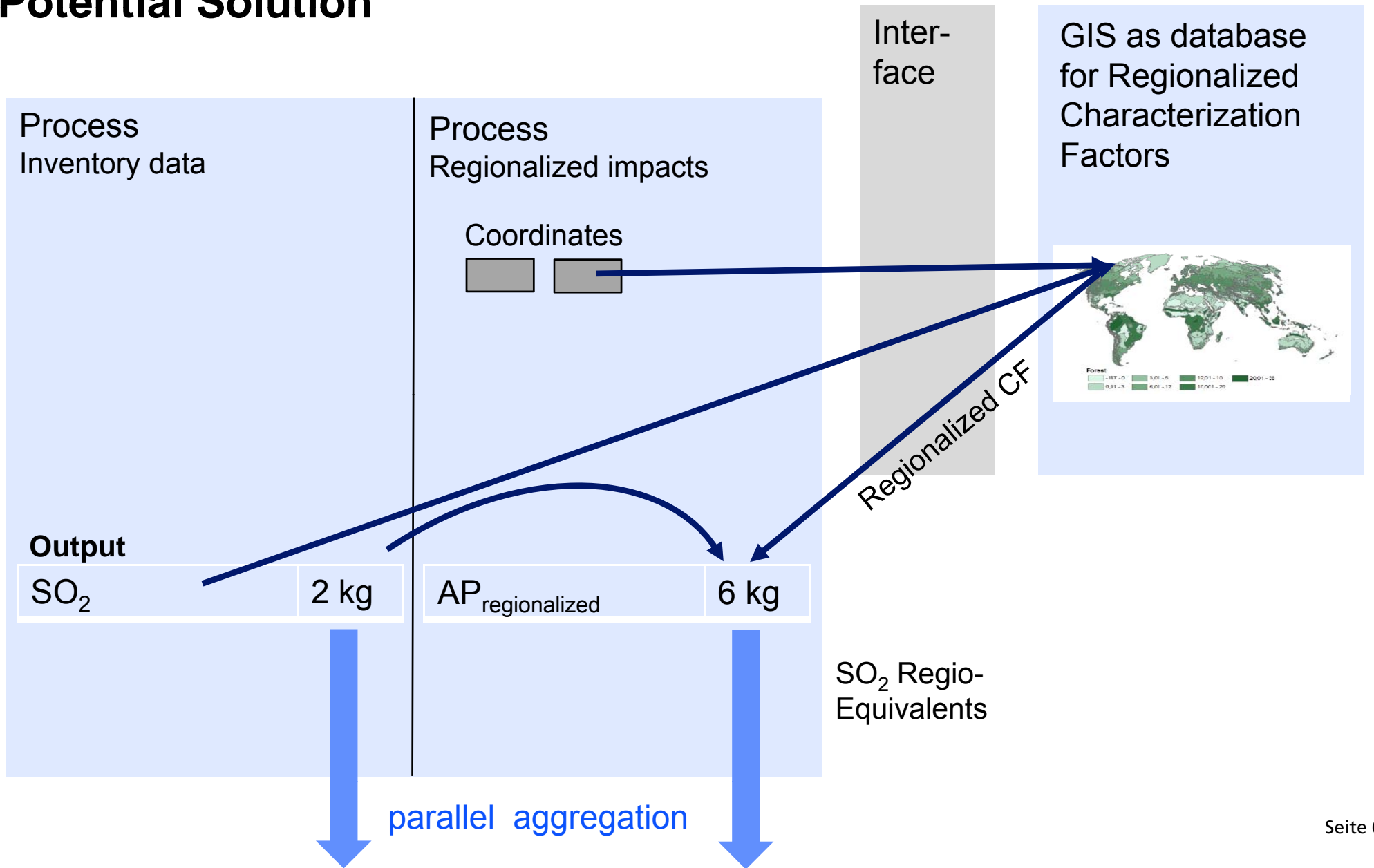
- ▶ Decoupling of technical and regional information
- ▶ Communication over interfaces (standard)
- ▶ Tabea Beck of LBP-GaBi is currently elaborating on the topic in our group

Possible Effects

- ▶ Maintenance/Updates better focused on specific needs
- ▶ Storage capacity decoupled
- ▶ Development of (new) regional information independent from (established) technical information (continuity of existing information guaranteed)
- ▶ Failure of new methods does not influence technical data



Potential Solution

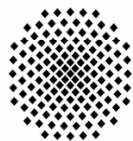


Summary and Future Requirements

- ▶ Regionalization must provide significant added value for users in practice and academia.
- ▶ Regionalization should be possible for any impact method.
- ▶ Results still have to be (easily) interpretable.
- ▶ Storage capacity/speed is a topic for any software/database. Avoid data explosion.
- ▶ Continuity of technical information is important.
- ▶ Regionalization data must not influence technical reality.

- ▶ Idea: Separate technical information and regionalized impact information
- ▶ Need: Regionalized Characterization factors for consistent GIS datasets (e.g. format shapefiles) needed
- ▶ **Goal: Meaningful regionalized datasets in applicable format for professional use**

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Messages to inspire discussion

▶ Message to all

Regionalization is a topic and we work on it. We are open to any idea and solution pathway, if this is based on an interrelated LCI and LCIA solution.

▶ Message to method developers:

Better roughly right than exactly wrong! Applicable and stable!

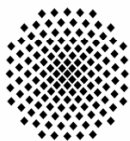
▶ Message to software/database providers:

Smart and flexible methods based on existing data needed!

▶ Message to users:

Support solutions that combine LCI – LCIA aspects consistently. Only use regionalization data if it improves the quality of your results (see your individual goal and scope)!

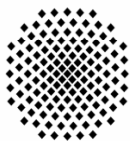
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Two quotes from Einstein

When the number of factors coming into play in a phenomenological complex is too large
scientific method in most cases fails.

You do not really understand something unless
you can explain it to your grandmother !



Contact

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