Closing Plenary [en]
Thorsten Reitz, wetransform
INSPIRE and Beyond 2018
Some Final Thoughts – INSPIRE and Beyond

1. INSPIRE – A Platform Revolution in the Making?
2. Autonomous Data Transformation Levels

3. Open Plenary
   1. Comments and Questions from the Cards
   2. You want to present something? Come to the stage!
   3. You have a question that you want the audience to discuss? Come to the stage!

4. Final Words
INSPIRE – A Platform Revolution in the making?
What is a Platform Model?

Platforms enable Demand-driven Growth
Leverage underutilized resources
- AirBnB – Apartments
- Uber – Private Cars
- INSPIRE – Geospatial data?

Platforms provide value units of at least one type:
- AirBnB – Apartment Rental
- Amazon – Article that can be bought
- LinkedIn – Job Posts, Profiles, Group Posts
- YouTube – Videos
Platforms are usually two-sided or multi-sided marketplaces, such as Amazon

- Platform provider
- Data Providers
- Data Users

- One organization can take multiple roles
Platforms provide value to all actors, but there are also...

- **Positive Externalities:**
  - ParkNow - Lower environmental disturbance due to less park space search

- **Negative Externalities:**
  - AirBnB – Noise and disturbance for neighbors, value of property might go down
  - Uber – Taxi drivers lose income

Source: [https://www.theguardian.com](https://www.theguardian.com)
Balancing value capture in Platforms

Platform value capture needs to be balanced well

- Example Uber: Most risks and costs lie with Drivers, some with Passengers, basically none with the Platform operator

Source: https://www.telegraph.co.uk
Characteristics of Platform Markets

- Network effects
- Winner takes all tendencies
- Dynamics between roles
  - Same-Side effects
  - Cross-side effects

**Indicators for disruption of a market by platforms:**
- Information Intensive
- Unscalable Gatekeepers
- Highly Fragmented
- Information Asymmetries
Government (Spatial) Data Platforms

Partial disruption due to regulatory capture
- Open Street Map
- Private Data acquisition companies

Existing Platforms are still fragmented, with little consolidation so far
- Every Data Provider has their own Platform?
- How many users are there actually to that platform?
A set of open standards creates a distributed, open platform

- Reasonable use conditions
- Non-Discriminatory access
- No license costs
- No controls over participation
- No insurmountable technical hurdles
INSPIRE Value Generation

- Pollution Reduction
- Easier Integration
- Easier Access to Geodata
- Value Added Services
- International Collaboration
- Value Added Services
- Better Policymaking
- Improves Research
- Open Markets
- Re-Use of Tools and Specifications
- Easy Data Provision
- Better Policymaking
- ???
Autonomous Data Transformation Levels

...in the context of an INSPIRE platform
Autonomous Data Transformation?

**MONITORED DRIVING**

- **EYES ON, HANDS ON**
  - Driver is continuously exercising longitudinal AND lateral control

- **EYES ON, HANDS OFF**
  - Driver has to monitor the system at all times

- **TEMPORARY HANDS OFF**
  - System has longitudinal and lateral control in a specific use case. System recognizes the performance limits and requests driver to resume control within a sufficient time margin

- **EYES OFF, HANDS OFF**
  - System can cope with all situations automatically in a defined use case

**NON-MONITORED DRIVING**

- **EYES OFF, HANDS OFF**
  - Driver does not have to monitor the system at all times; must always be in a position to resume control

- **HANDS OFF**
  - Driver is not required during defined use case

**LEVEL 0**
- **DRIVER ONLY**

**LEVEL 1**
- **ASSISTED**

**LEVEL 2**
- **PARTIAL AUTOMATION**

**LEVEL 3**
- **CONDITIONAL AUTOMATION**

**LEVEL 4**
- **HIGH AUTOMATION**

**LEVEL 5**
- **FULL AUTOMATION**

Mike Lemanski
Level 0: All key decisions are made by a human

- Which types/tables in the source and target data models are related? Do they represent identical concepts or is there a mismatch that needs to be handled?
- Which properties of related source and target types are related?
- What transformation functions can be applied to convert source property values to valid target property values?
- How can a coded value from one classification system be mapped to a value from another classification value?
- How do we deal with inconsistencies in the data, especially when merging multiple data sets?
- How do we handle outright errors in the source data? How do we recognise them, and what do we then do with the data? Omit it?
- How can we augment the source data to ensure we have a complete and valid target data set?
Level 1: Transposition and Merging (2018)

Apply a human-made solution to a similar problem by...

- Atomic or complete re-use and re-combination of multiple alignments
- Application of a set of model transformation rules to the alignment to change the source or target implementation technology
Level 2: Structural Pattern Recognition (~2019)

Recognize patterns in data models and data for which the system can propose a template solution

- **Substructure Mapping**: If a certain mapping function is used on a parent element, assume specific functions on structures below

- **Aspect Mapping**

### Substructure Mapping

- **Type 1**: If a certain mapping function is used on a parent element, assume specific functions on structures below.

- **Type 2**: Any field called “name”.

- **Merge**: Geographic alName

- **Rename**: Geometry

- **Aggregate**: Geometry
Level 3: Similarity (~2020)

Identify mappings from a pool of previous mappings that are likely good matches (ML)

Features to use:
- Source and target model elements
  - Data types
  - Labels/Translated Labels
  - Constraints
- Contextual mapping cells
- Similarity of Source Instance values

What a human does...
Level 4: Complete Proposals (~2023?)

Make complete transformation proposals, and let a human validate key decisions.

*Ontology Matching/Schema-driven*
- Automated definition of mappings based on reasoning with concepts and instances

*Combination with other approaches*
- Iterative approaches with inbuilt feedback process (“local optimum”)

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Level 5: Full Autonomy (~???)

System creates better transformation mappings automatically than what a typical human expert can provide, and acts unsupervised.

or

?
Open Plenary & Feedback Round
Open Plenary

- What did we miss? Make a short ad-hoc presentation!
- Do you have questions to the audience or our team?
Feedback Round

- What would you like to see more of?
- What would you like to see less of?
- Which topics should this event address next year?
- Which topics should the INSPIRE community urgently address?
#INSPIREMadeEasy

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