Knowledge Modeling

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Schedule for the day

10:00 – 10:30 Welcome, chat, set-up

10:30 – 11:00 Knowledge modelling playgroup

11:00 – 11:30 Group activity in Breakout rooms

12:00 – 13:00 Lunch

13:00 – 14:00 Discussion

- PhD, Computer Science – Trinity College Dublin
  - Information modeling for GDPR Compliance using Semantic Web
  - Represent, Query, Validate information
- Chair – W3C Data Protection Vocabularies and Controls CG
  - Community discussion and agreement on vocabularies for data processing
  - Influence and basis in laws such as GDPR
- Editor – Consent Receipt Specification @ Kantara
  - Schema for recording given consent
  - Update previous v1.1 spec to 'new' laws such as GDPR

Knowledge Modeling

Goal?

Domains?

Use-Cases?

Sources of Knowledge

1. Laws, Legislations, Regulations
2. Standards
3. Community / Domain
4. Internal Use-Cases

1. Terminology
2. Requirements
3. Stakeholders
4. Activities / Workflows
5. Documentation
6. Lifecycle

Methodologies

1. Requirements-first
   1. Gather requirements
   2. Identify information
   3. Model information
2. Goal-first
   1. Identify and model goals
   2. Add information about goals
3. Simulation of existing knowledge
   1. Identify properties of existing system
   2. Model as information

Requirements-first

- Perspective of an organization
- Identify requirements to meet legal compliance
- Technical approach: unit-tests, checkbox exercises

Goal-first

- Legal obligations as a goal
- Align existing activities to goals
- Analyse for compliance
- Technical approach: logic-based approaches, rules for compliance

Is there a common source of knowledge?

1. Laws, Legislations, Regulations
2. Standards
3. Community / Domain
4. Internal Use-Cases
5. Social expectations
6. Desired outcome
7. 'Ideals'

Necessary to have common agreement on:

1. Terminology
2. Requirements
3. Stakeholders
4. Activities / Workflows
5. Documentation
6. Lifecycle

1) Communication – understanding perspectives
2) Questions – gathering data
3) Quantification – identifying information requirements
4) Encapsulation – creating a vocabulary for terminology
    1) identify actors, entities, processes
    2) Identify relationships
5) Expression – create 'ontology'
6) Derivation – identify facts, rules, obligations, requirements
7) Application – apply to use-cases

- Who are you?
  - Expertise
  - Knowledge
  - Interests
  - What can you contribute?

- Does everyone understand and perceive the same information?
  - Differences in problem identification
  - Differences in goals / interests

Goals: Identify commonality ✉ document!!!

'Competency Question' – identify questions whose answers will provide desired data or lead to asking more relevant questions

E.g. for this presentation

1. What is this presentation about? ☒ topic
2. Who is presenting? ☒ person / actor / presenter
3. How long will this last? ☒ duration / temporal properties
4. When others talk/discuss, are they also presenters? ☒ navel-gazing

Goal: Document competency questions and what

- Iterate over questions, identify information
- Nit-pick over granularity and conceptual definitions
- Outcome: set of concepts (and ideally relationships)

- Time to structure these concepts as:
  - Vocabulary, Glossary, Thesauri
  - Taxonomy
  - Ontology

Goal: Create hierarchies of concepts for entities, actions, relationships

- Make generic statements about facts
  - E.g. 'presentations' are a type of 'event' that have a 'presentation' given by a 'presenter' to an 'audience'
- Make generic rules
  - E.g. each 'presentation' must have a 'presenter'

- Argue over how these arise from different domains/sources and where they clash/collide
- Make two (or more) sets if no commonality is found

Goal: Identify facts, rules, requirements and document them

1. Time to walk backwards!
2. Start with an 'application' or use-case within the group
3. Communicate with peers to discuss the use-case
    1. Sources of information – concepts, requirements
    2. Ask questions
    3. Quantify & Encapsulate information
    4. Derive facts, rules, and requirements
    5. Document everything

Documentation

- Google Drive folder - https://drive.google.com/drive/folders/1DGMjmyeFGCyZgLBkzRJ9Du1wfK1U9Au6?usp=sharing (open to alternatives) (use incognito mode!!!) (shouldn't require sign-in)
- Presentation is in folder
- Google Docs for collaborating
  - Group A
  - Group B
  - FAQ – freely asked questions

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