Requirements for Metadata of Energy Research Software

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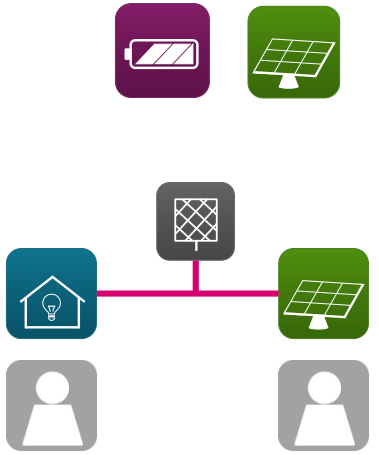
Agenda

- Motivation
- Vision
- Approach
- Requirements for the Metadata Schema
- Summary and Outlook

Motivation: Software in Energy Research

- Components of energy systems
  - Visualization of lab data
  - Simulation of behavior
- Control strategies for energy (distribution) systems
  - Simulation of different components
  - Optimization of control strategies
- Grid planning
- Transition of the energy system
  - Optimization in a large scale



Energy Research Software (ERS) is fundamental for Energy Research

Motivation: Findable Energy Research Software

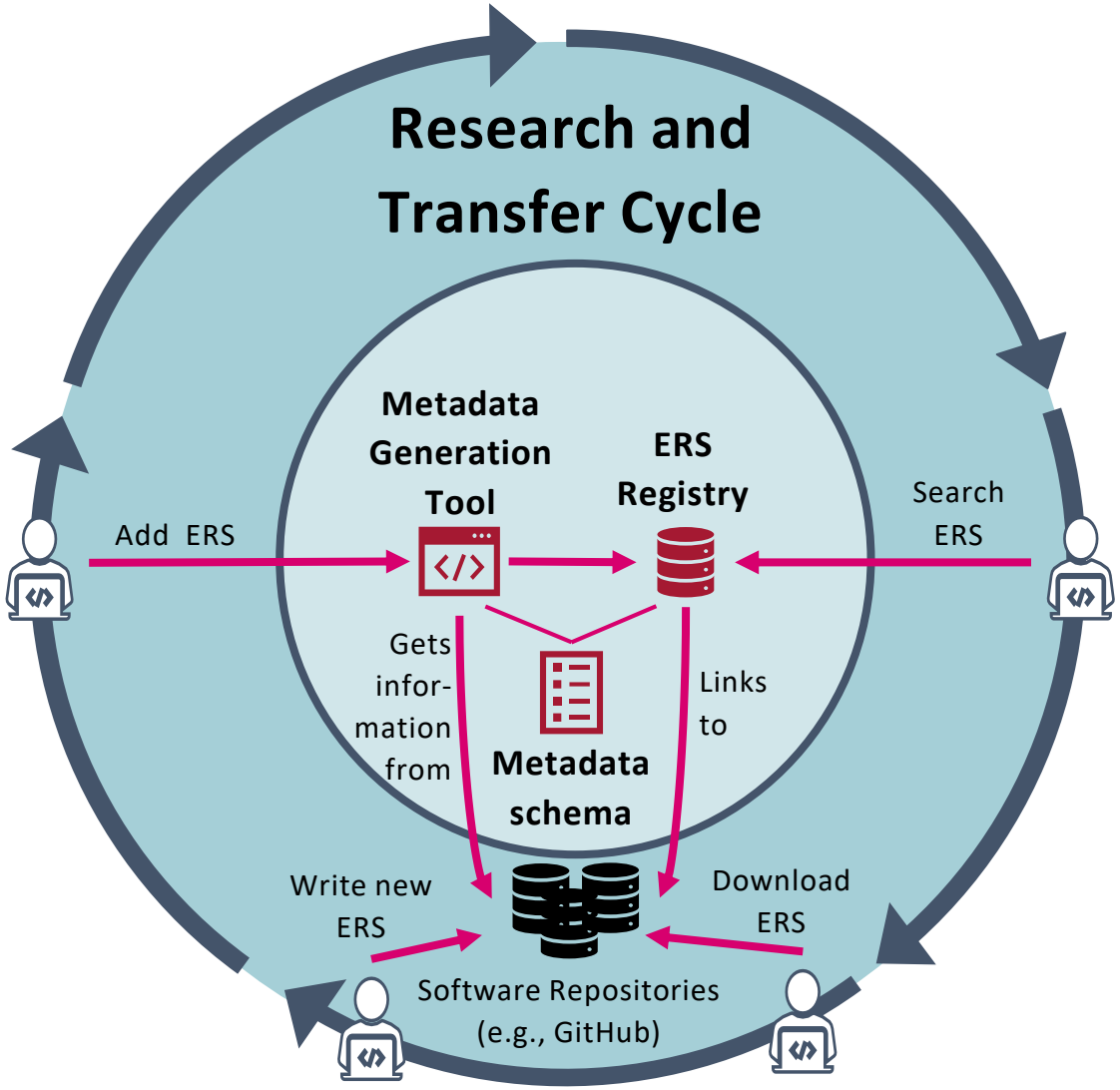
- From the FAIR criteria [1,2]:
  - Findability can be improved through
    - good general metadata
    - registration of a software with metadata in a registry
  - Accessibility and Interoperability can be improved through
    - good metadata as context
  - Reuse can be simplified
    - metadata including conditions for reuse as license and how to cite

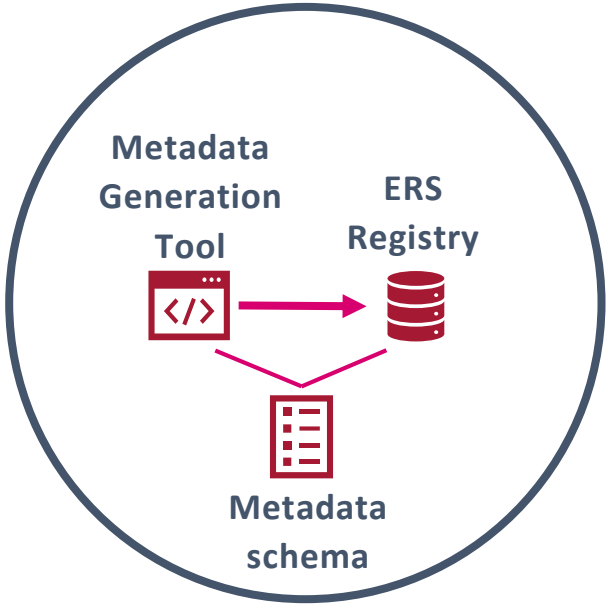
> Metadata and a Metadata Registry can make Energy Research Software more Findable

[1] M. D. Wilkinson *et al.*, "The FAIR Guiding Principles for scientific data management and stewardship,"
[2] A.-L. Lamprecht et al., "Towards FAIR principles for research software,"

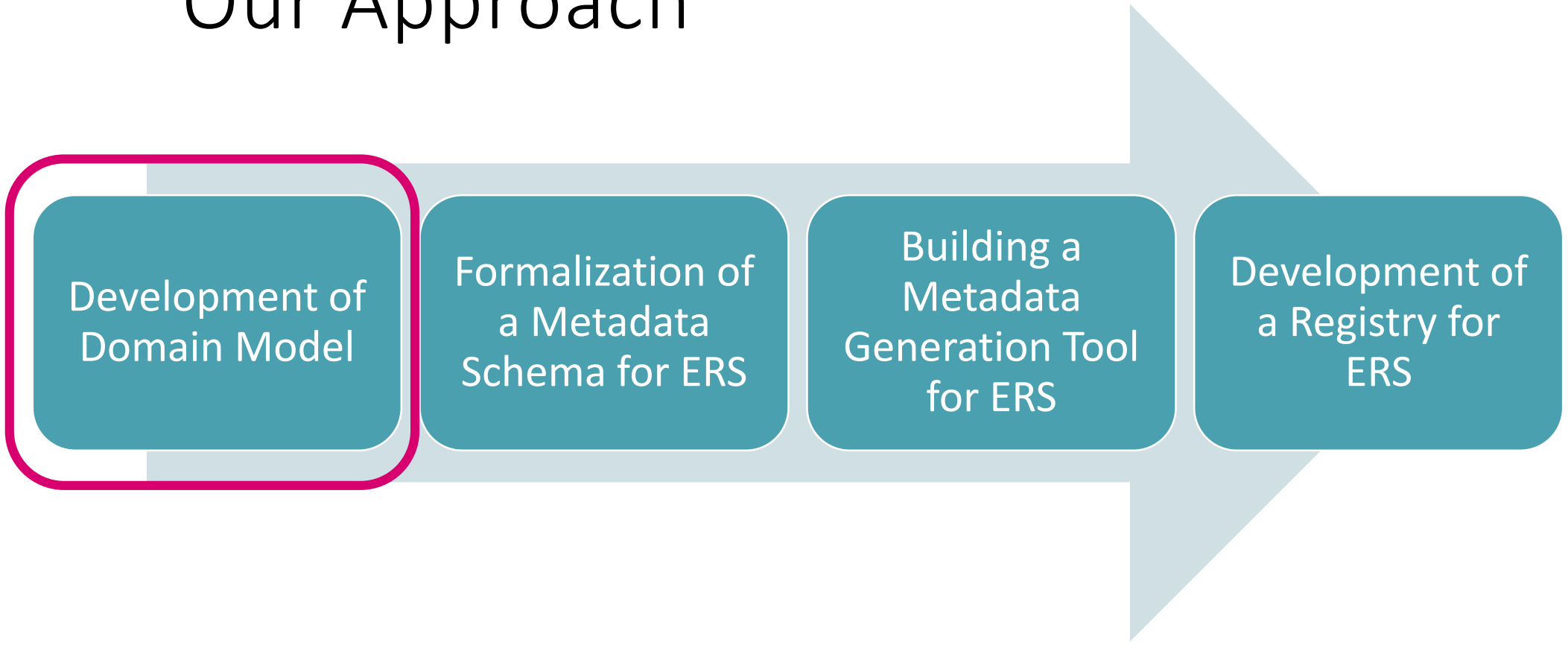
Vision

Metadata-based Registry for Energy Research Software

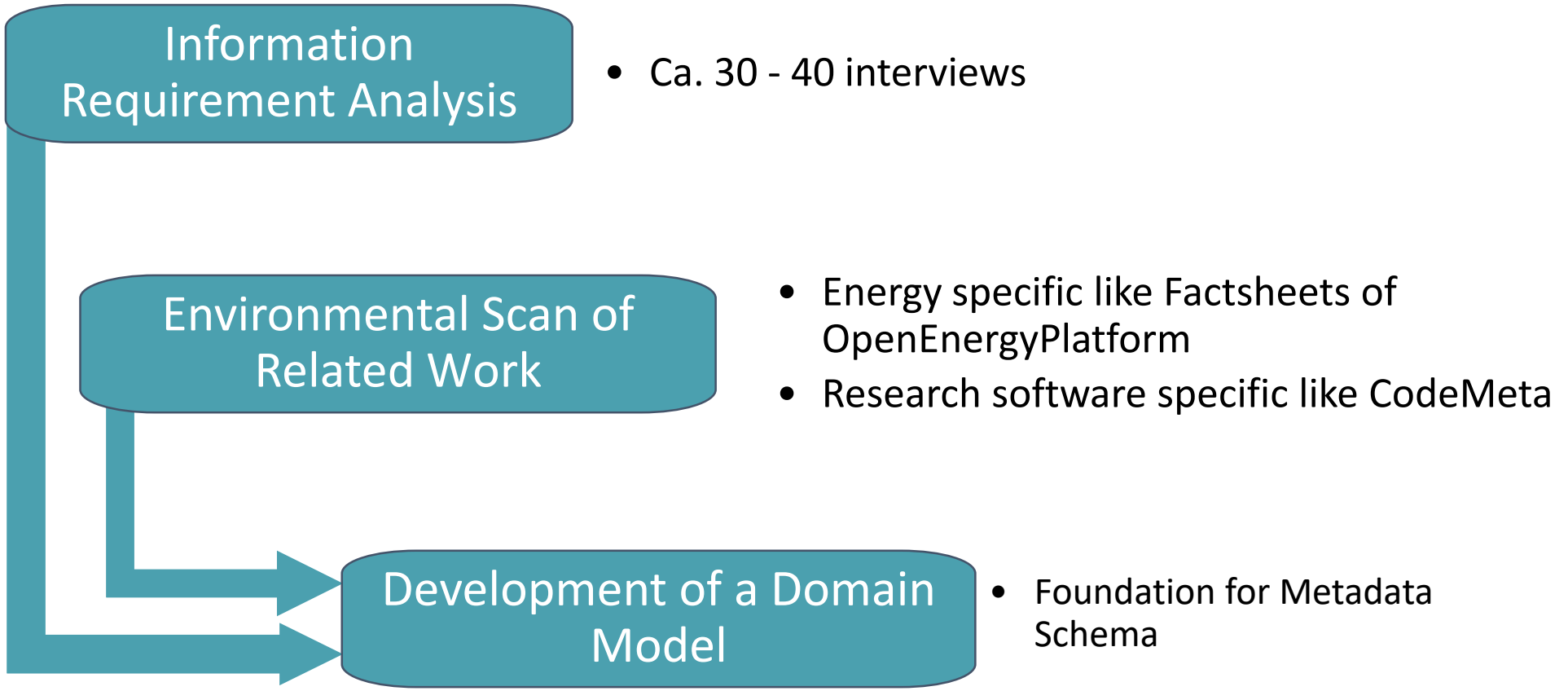

Research and Transfer Cycle
Metadata Generation Tool
ERS Registry
Add ERS
Search ERS
Gets infor-mation from
Metadata schema
Links to
Write new ERS
Download ERS
Software Repositories (e.g., GitHub)


Metadata
Generation
Tool
ERS
Registry
Metadata
schema

Our Approach



Development of Domain Model based on a Requirement Analysis

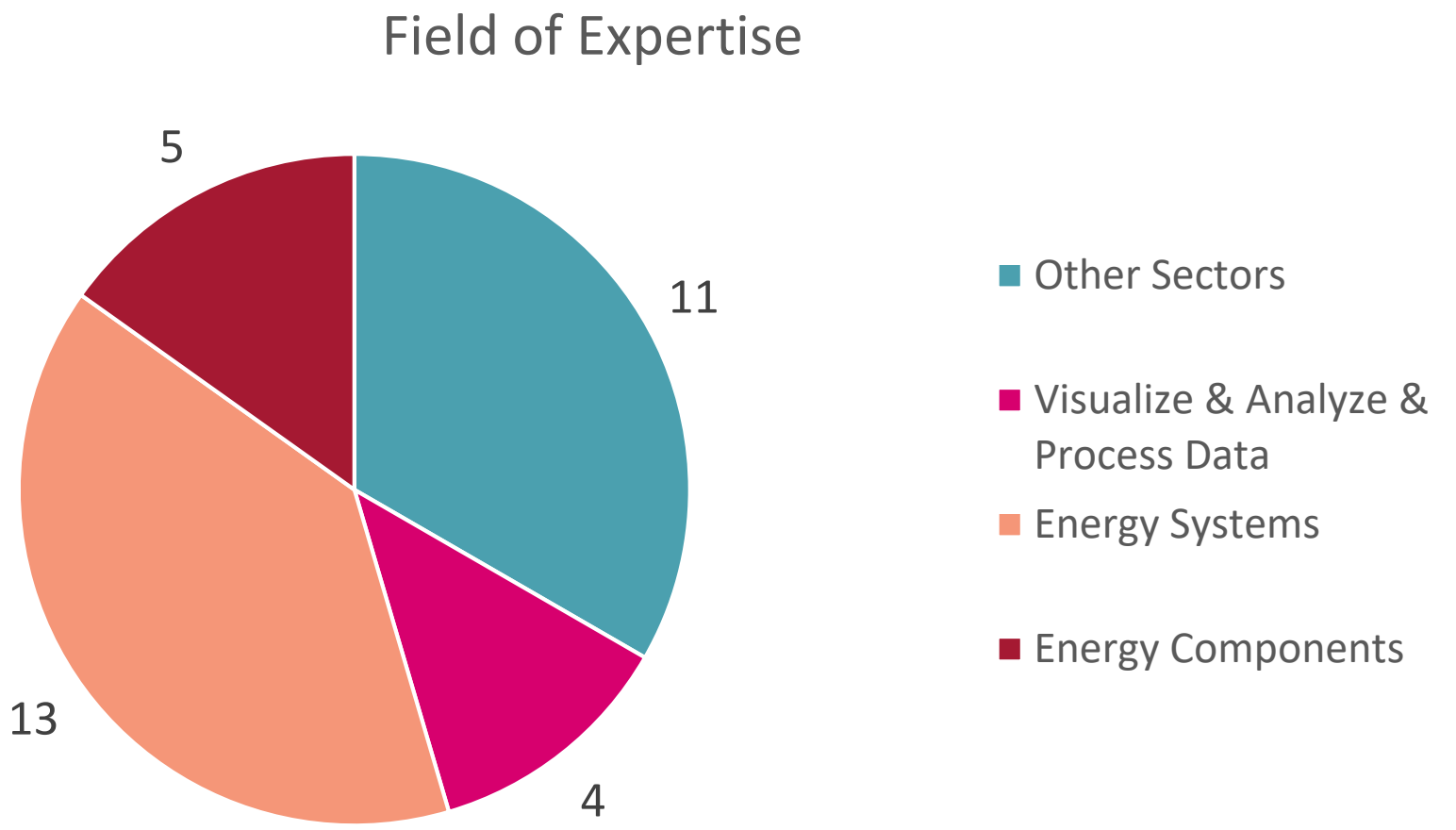


- Ca. 30 - 40 interviews

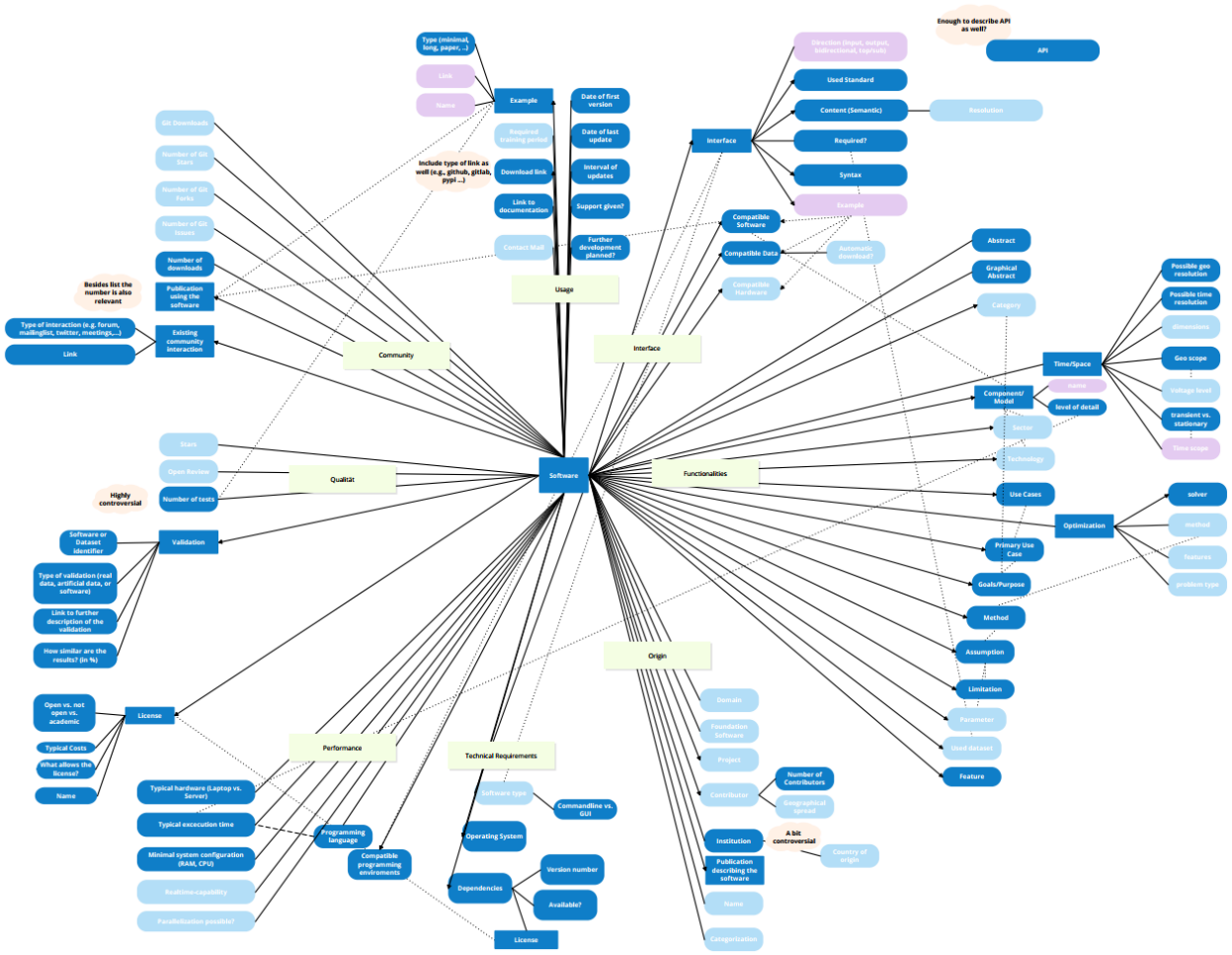
- Energy specific like Factsheets of OpenEnergyPlatform
- Research software specific like CodeMeta

- Foundation for Metadata Schema

Interviews with Energy Researchers



Domain Model based on Interviews

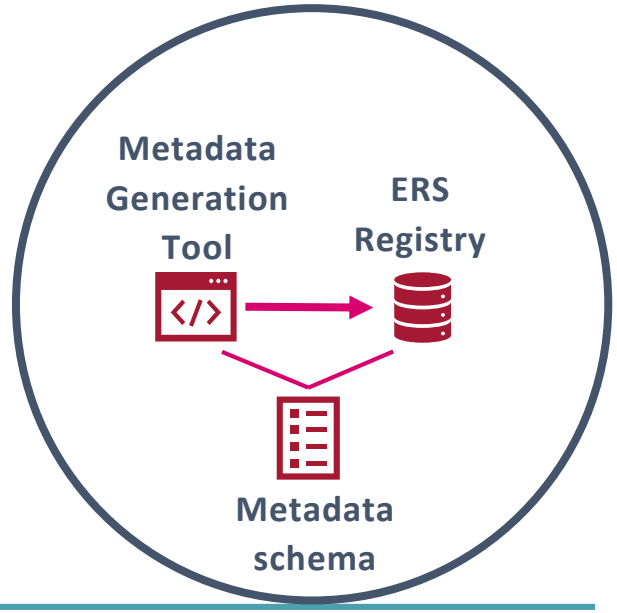


Interesting Insights from the Interviews

- Most interviewees are interested in
  - the existing community of an ERS
  - the ways they can get support when using the tool
  - in quickly getting a good understanding of what the tool exactly does
  - in seeing compatible software and data

Summary and Outlook

- What is needed to set up a metadata-based registry which can improve the Findability of Energy Research Software?
- Approach
  - Domain Model based on a Requirement Analysis
  - Metadata Schema for ERS
  - Registry for ERS
  - Metadata Generation Tool for ERS



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License

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