

Working with vagueness

A pragmatic incremental approach to
ontology development in the
Japanese Visual Media Graph project

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Outline

1. Challenges faced in the Japanese Visual Media Graph (JVMG) ontology development process
2. A pragmatic incremental approach to developing a unified ontology for the JVMG knowledge graph

Challenges faced in the Japanese Visual Media Graph (JVMG) ontology development process

Challenges for the JVMG ontology development

1. Challenges stemming from the **domain**
2. Challenges arising from the **data sources**
3. Challenges from the **goals** of the project itself

Domain specific challenges

- **Modeling areas such as manga** is still not as developed as that of other more established publication types
- How to handle the level of the **media mix, franchise** or “**superwork**” entity?
- The centrality of **fictional characters**
 - The [GOLEM project](#) and the [workshop on "Ontologies for Narrative and Fiction"](#) at the University of Groningen

Challenges stemming from the data sources

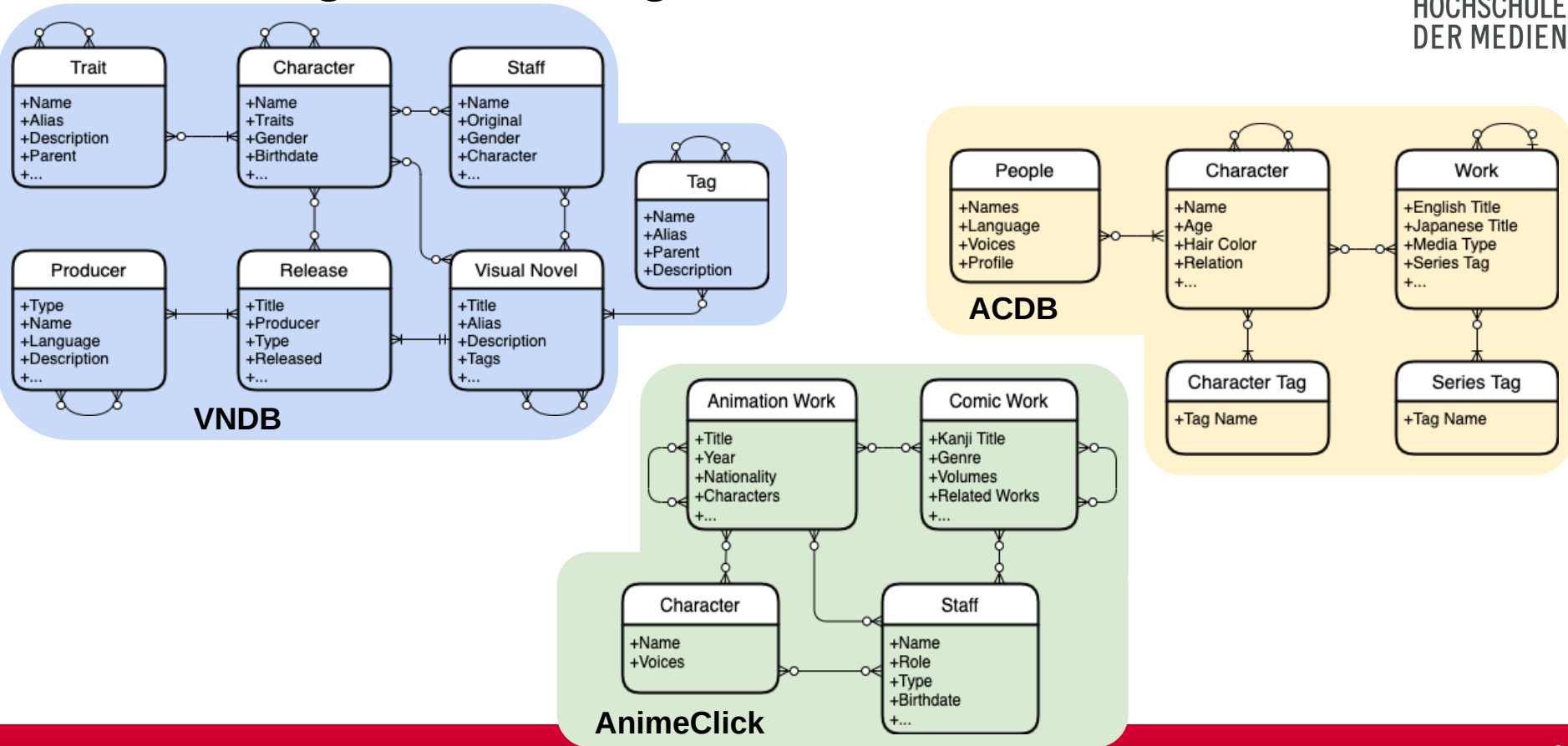
- **Heterogeneity** of the data sources
- **Changes over time** in the structure of the source data
- The source data itself is **not always as strictly structured and defined** as an ideal version of a data model for the domain could be

Challenges from the goals of the JVMG project

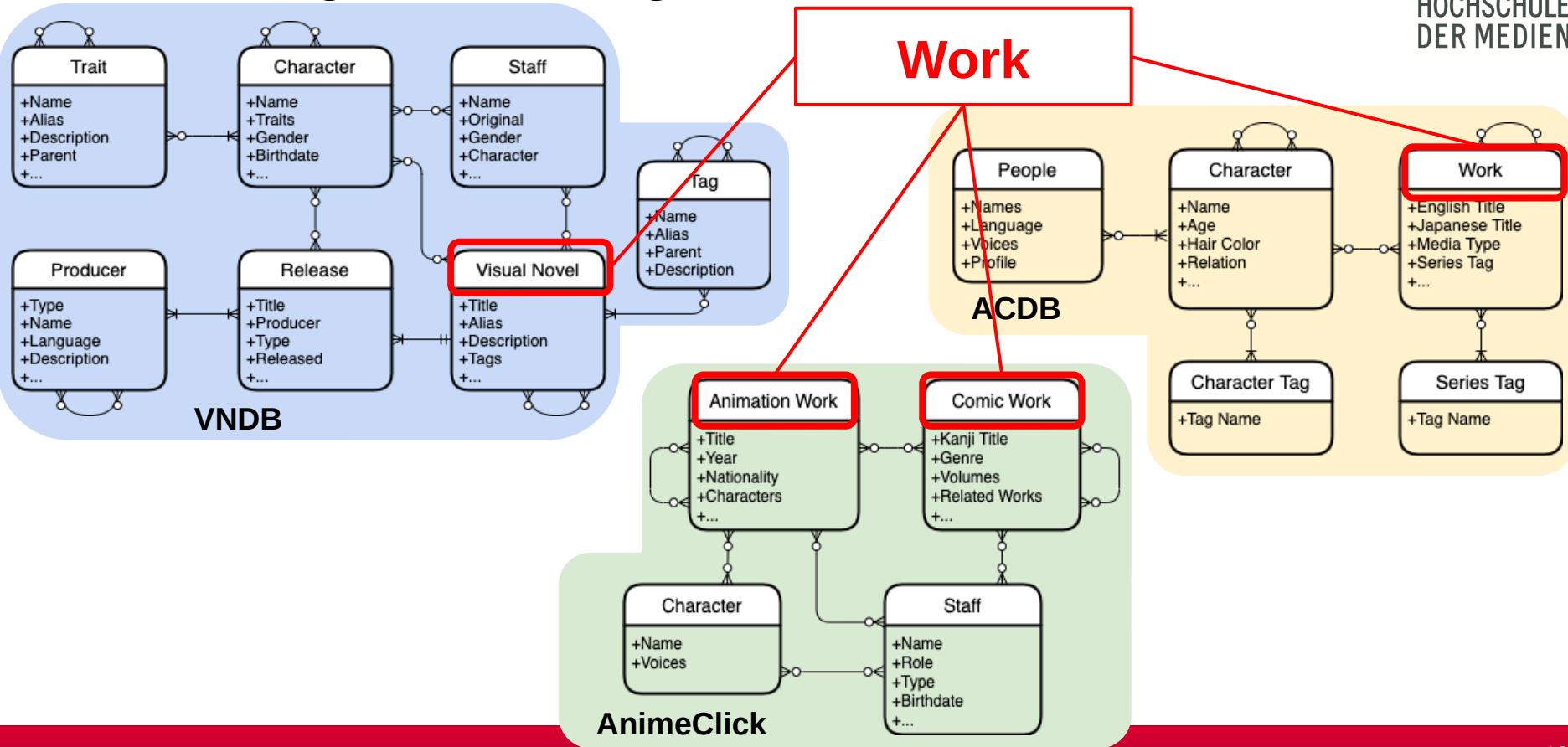
- Need to **provide material** for researchers to work with
- **Data completeness** (or lack thereof) can be an issue for a range of questions
- The JVMG ontology needs to be both **flexible and extensible**

A pragmatic incremental approach to developing a unified ontology for the JVMG knowledge graph

Examining the ontologies of the sources

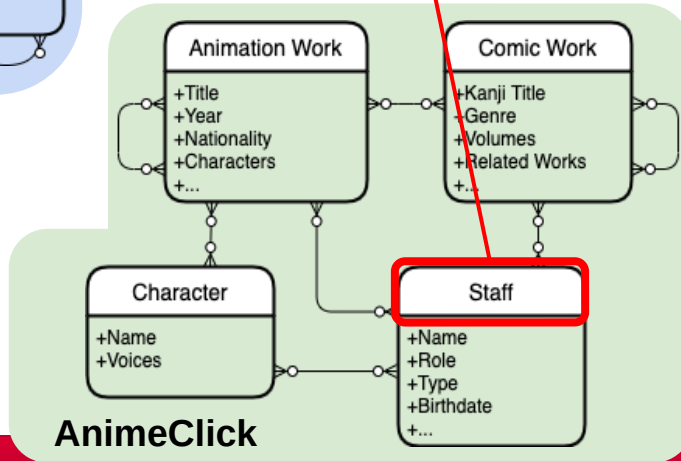
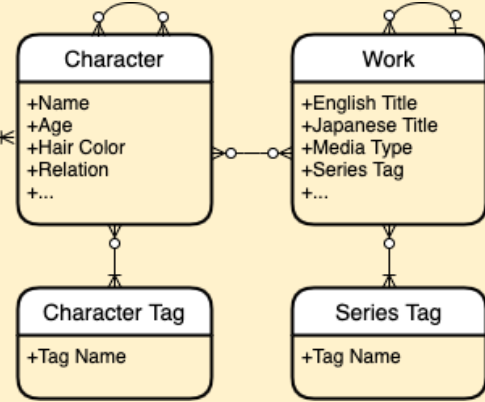
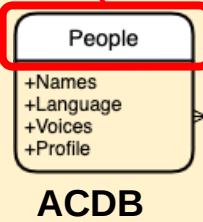
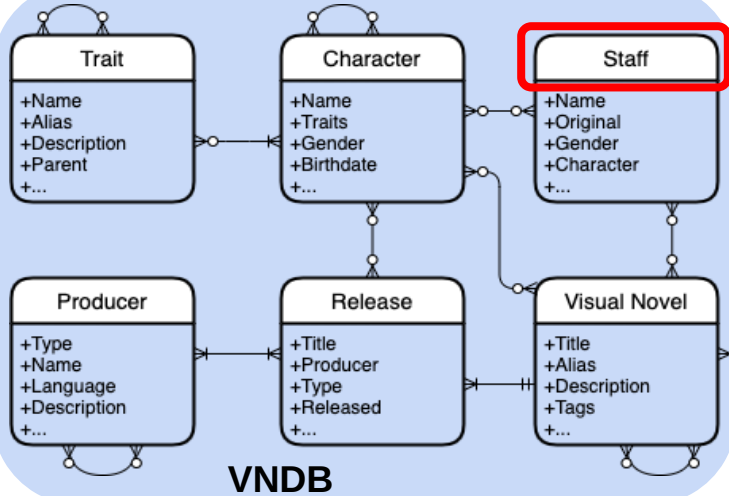


Examining the ontologies of the sources

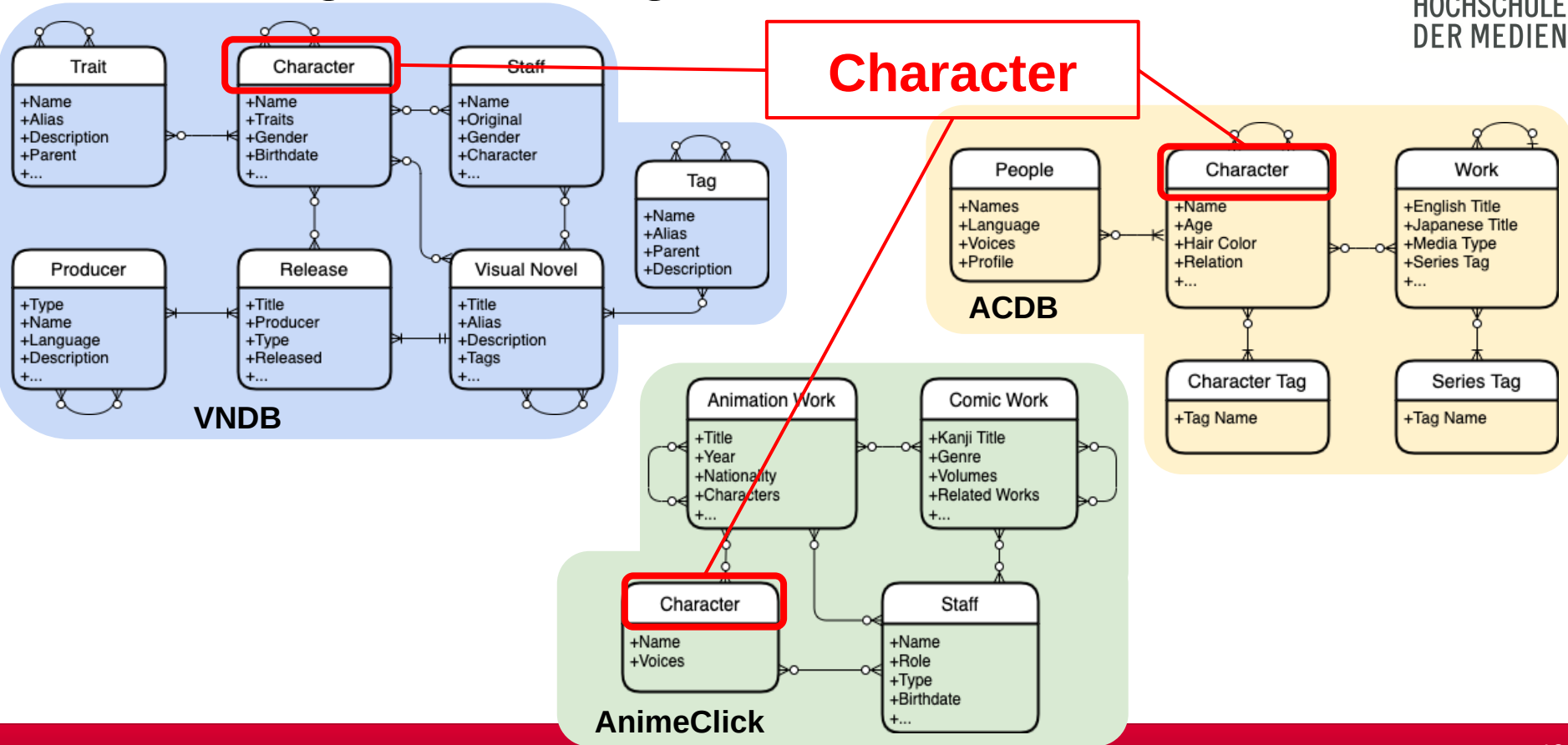


Examining the ontologies of the sources

Person (creators)



Examining the ontologies of the sources



Needs of the JVMG ontology

- Has to be **feasible**
- Has to fit the **characteristics of the domain**
- Has to fit the **needs of the researchers**
- Has to be **extendable**
- Potentially compatible with CIDOC CRM and FRBRoo

Two phase – two layer approach

- Phase one: The **Core JVMG Ontology**
 - Small number of core entities to enable traversing the knowledge graph between its subgraphs
 - Needs to enable the connection of all subgraph elements to this layer
- Phase Two: The **Extended JVMG Ontology**
 - The full expression of the JVMG ontology
 - Not all subgraph elements will be connectable to this layer
- (Phase Three: Further extensibility)
 - Extending the JVMG ontology with more granular ontologies

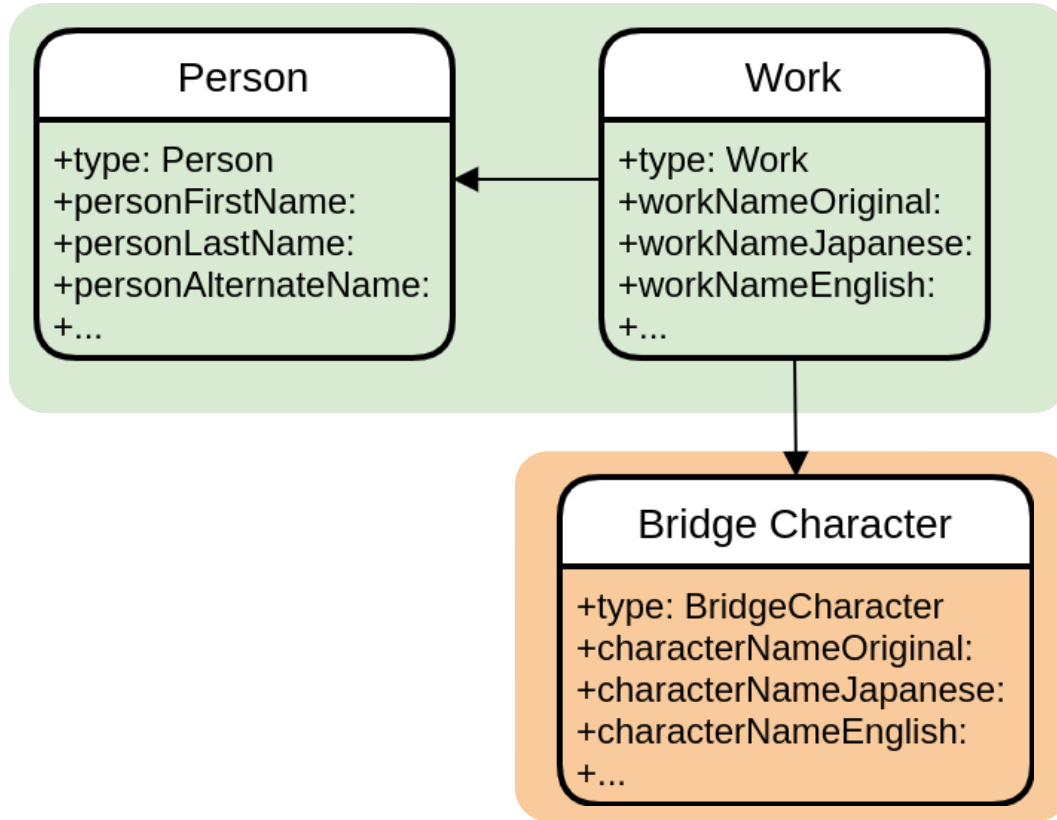
Phase one: The Core JVMG Ontology

- **Work**
 - Abstract entity describing a specific expression, like a manga or anime or game
- **Person**
 - Literally a 1:1 representation of real people

Phase one: The Core JVMG Ontology

- Problem regarding **characters**:
 - Characters in our data sources can be both specific for a given work or generic for a franchise
 - E.g. Naruto (*Boruto* TV Anime) ↔ Naruto (*Naruto* franchise)
- Solution: **Bridge Character**
 - Technical ontology element to enable the connection of both (meta-)**Characters** and **Realized Characters** without needing to distinguish between them

Phase one: The Core JVMG Ontology



The Extended JVMG Ontology: Works

- **Franchise**
 - Mediamixes, shared universes, “superworks”
- **Work** (already part of the Core JVMG Ontology)
- **Release**
 - Physical (CD, DVD, Bluray, LD, VHS, ...), broadcast or digital (Download, Stream) form of publication units

The Extended JVMG Ontology: Persons

- **Person** (already part of the Core JVMG Ontology)
- **Organization**
 - Juridical persons, like companies or agencies, NGOs, loose groups of doujin artists, etc.

The Extended JVMG Ontology: Descriptors

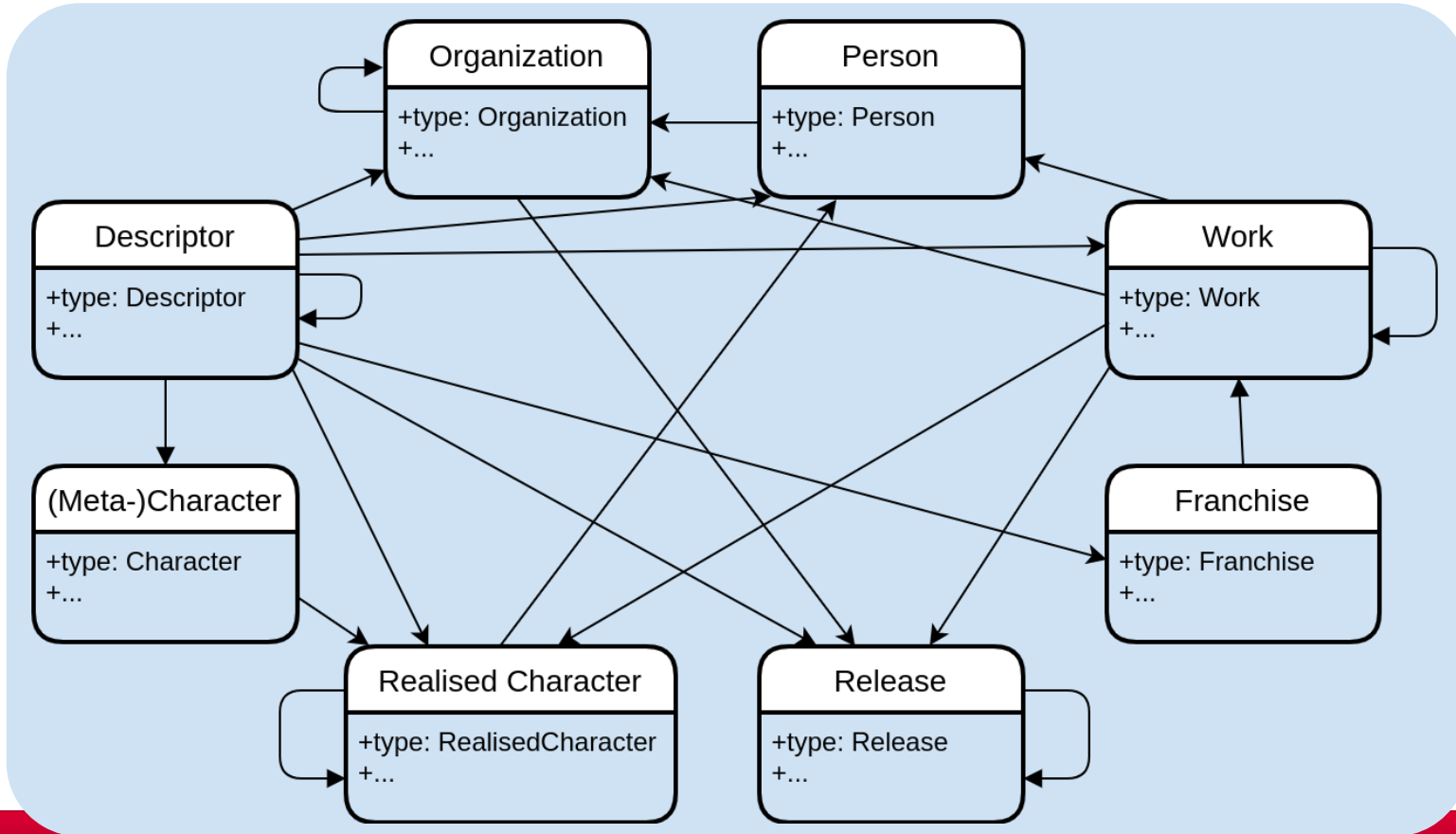
- **Descriptor**

- Abstract concepts that are used to describe works or characters
 - tags, keywords, genre for works
 - tags, traits for characters
- Organized as multiple concept hierarchies

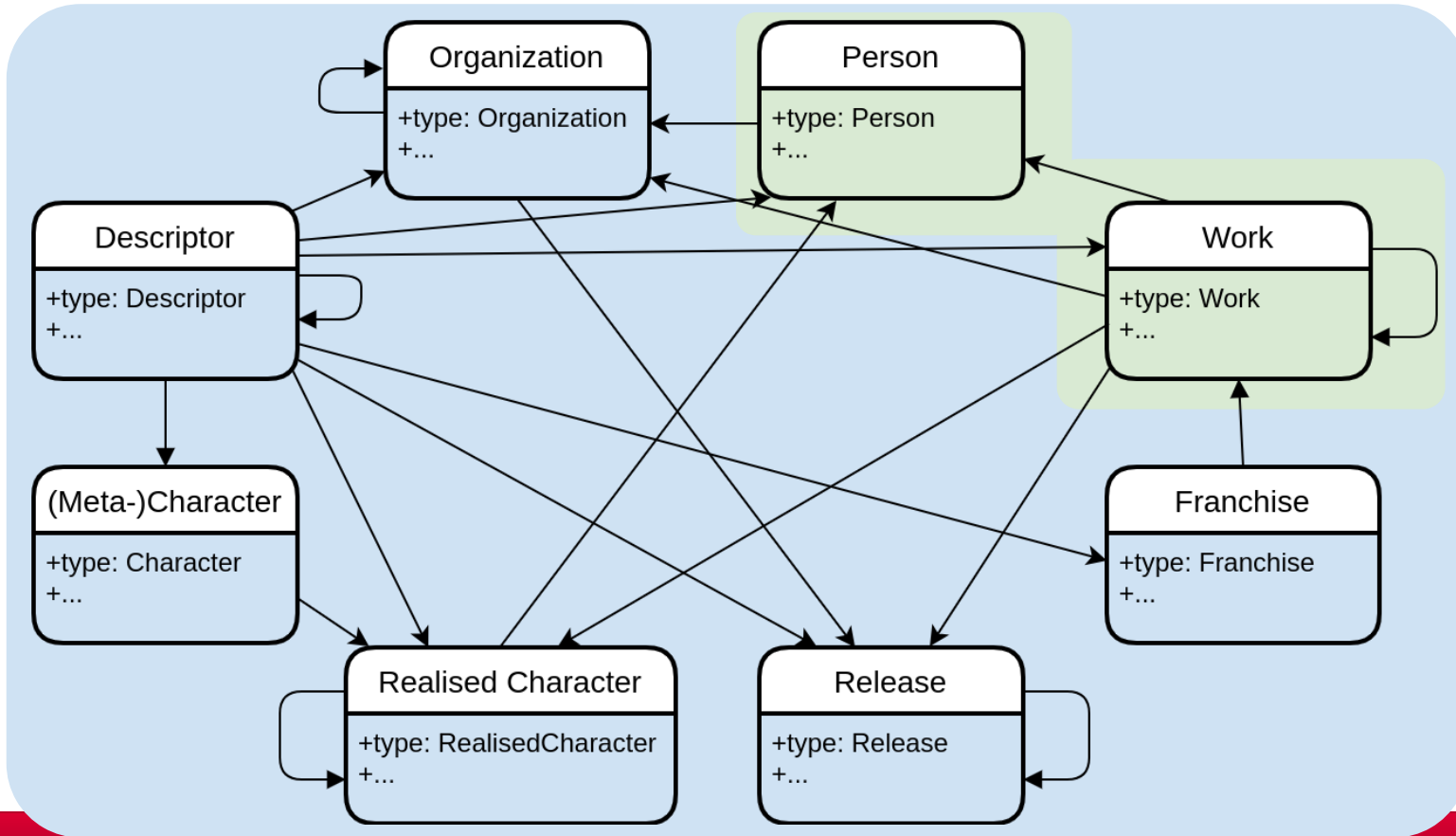
The Extended JVMG Ontology: Character

- **Character**
 - Abstract character that combines/connects all instantiated versions of it
- **Realized Character**
 - Distinct recognisable representation of a (visual) character in a specific work
- **Bridge Character (NOT part of the Extended JVMG Ontology)**

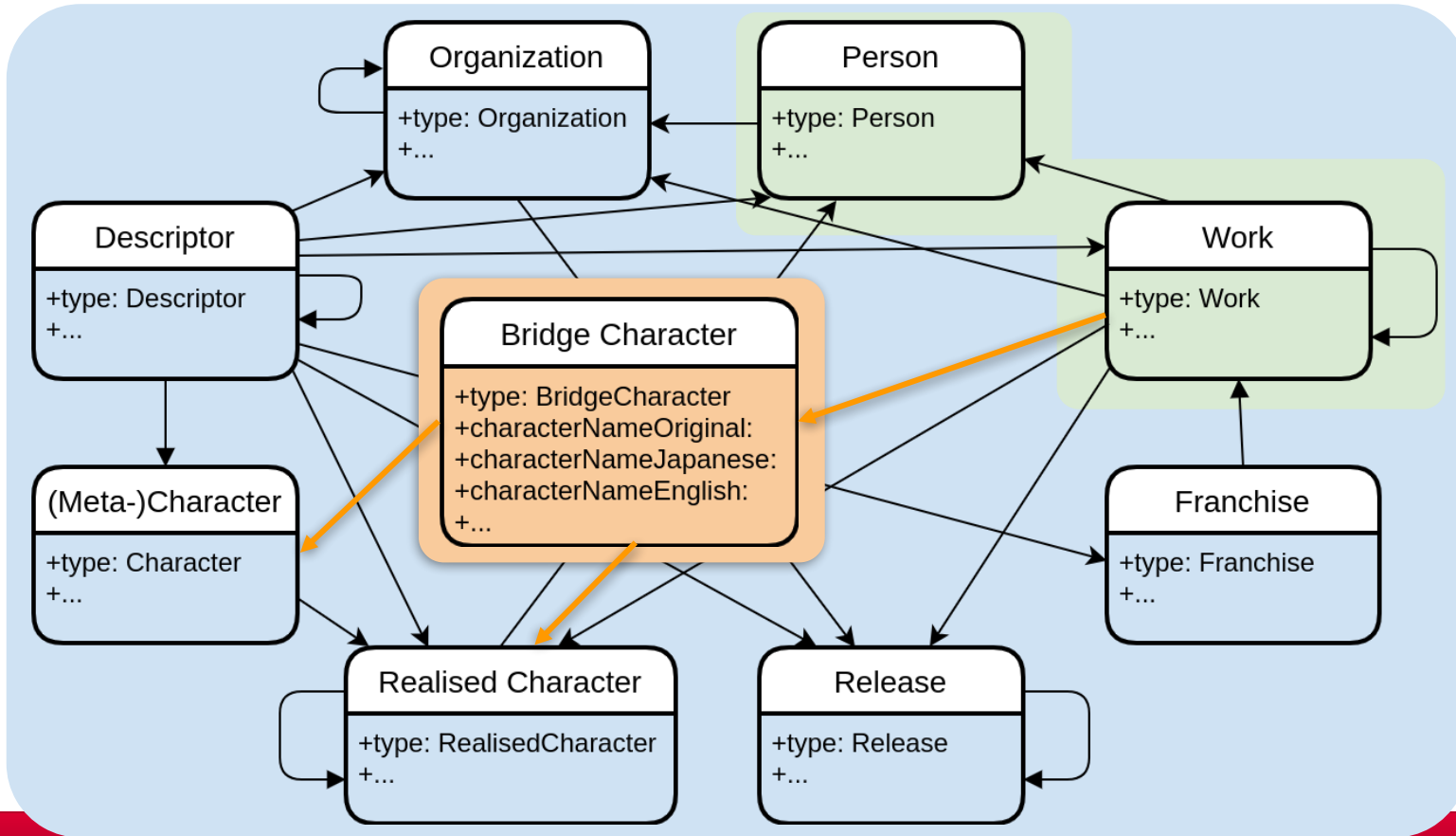
Phase two: The Extended JVMG Ontology



Phase two: The Extended JVMG Ontology



Phase two: The Extended JVMG Ontology



Summary

- **Heterogeneous** data sources
- Need to **create connections** between the subgraphs:
 - **Core JVMG Ontology**
 - Entities on this level should have corresponding data points in each subgraph if possible
- The **Extended JVMG Ontology** provides a more complete model:
 - Not all entities have corresponding data points in all subgraphs
 - Relationships are modelled with the minimal possible required relationships for all possible relationships to be then inferrable

Thank you for your attention!

Get in touch at: kacsuk@hdm-stuttgart.de

Visit our project website:

<https://jvmg.iuk.hdm-stuttgart.de/>

Visit the JVMG knowledge graph:

<https://mediagraph.link/>