

Ontology Design Patterns for Data Repository Integration

Pascal Hitzler

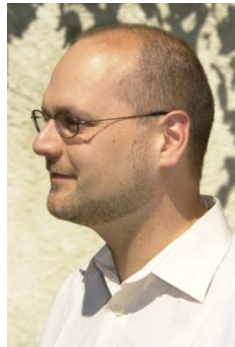
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EarthCube:

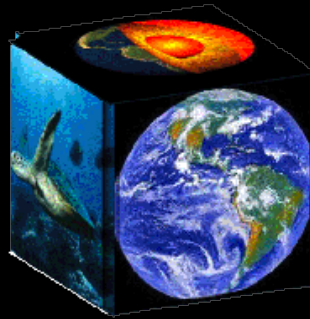
Developing a Community-Driven Data and Knowledge Environment for the Geosciences

“concepts and approaches to create integrated data management infrastructures across the Geosciences.”

“EarthCube aims to create a well-connected and facile environment to share data and knowledge in an open, transparent, and inclusive manner, thus accelerating our ability to understand and predict the Earth system.”

EarthCube requires

- information integration
- interoperability
- conceptual modeling
- intelligent search
- data-model intercomparison
- data publishing support



Semantic Web studies

- information integration
- interoperability
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- intelligent search
- data-model intercomparison
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The EarthCube “Architecture” must be

- modular
- extensible
- sustainable
- sliceable (i.e. you can adopt part of it without adopting all)
- simple enough for easy adoption
- complex enough to solve real problems
- scalable in terms of breadth of topic coverage
- elastic, in that it allows partners to decide how much they want to share
- respectful of individual modeling choices

We show that our approach meets the mentioned EarthCube challenges.

LDEO: Robert Arko, Suzanne Carbotte, Kerstin Lehnert

**WHOI: Cynthia Chandler, Peter Wiebe, Lisa Raymond,
Adam Shepherd**

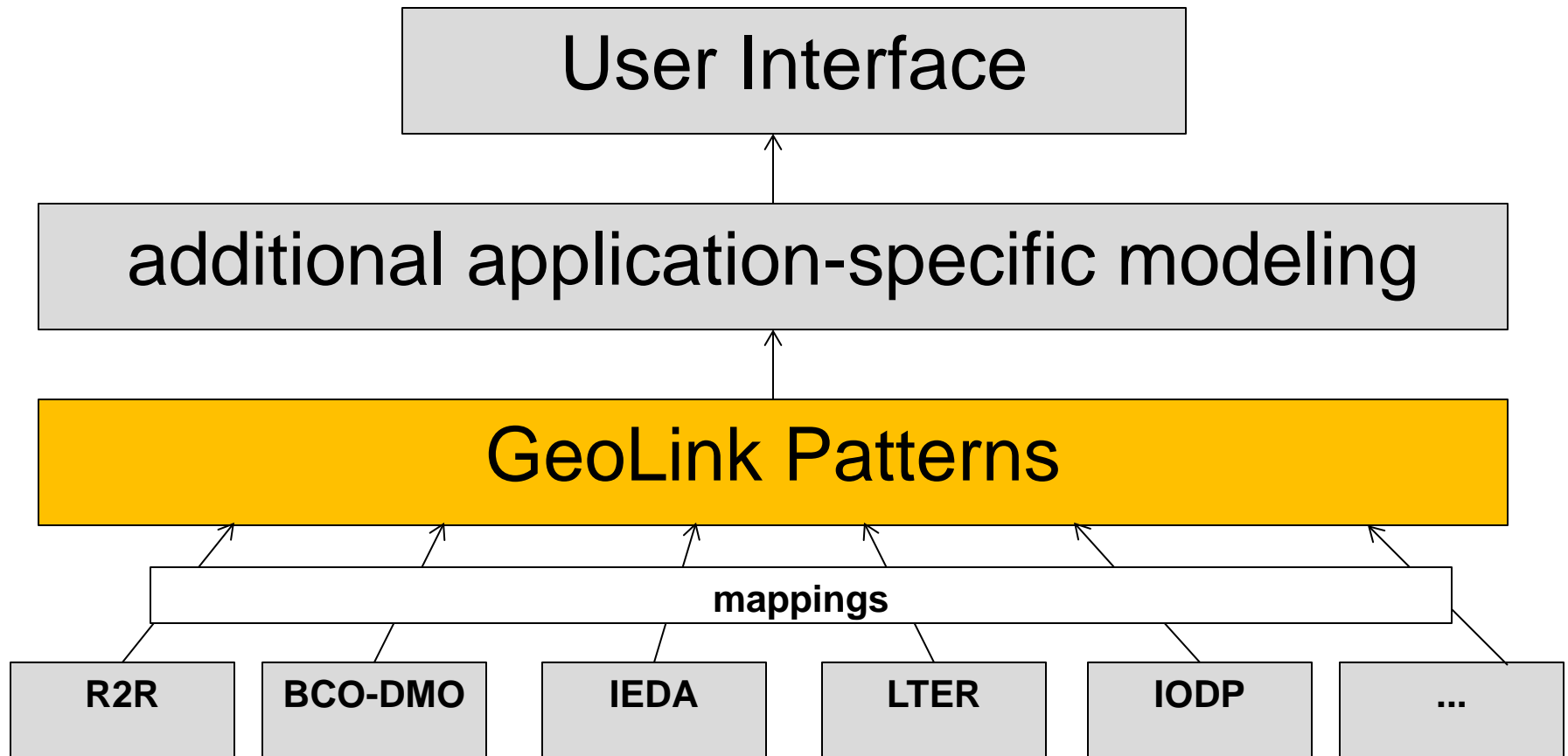
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“An ontology design pattern is a reusable successful solution to a recurrent modeling problem.”

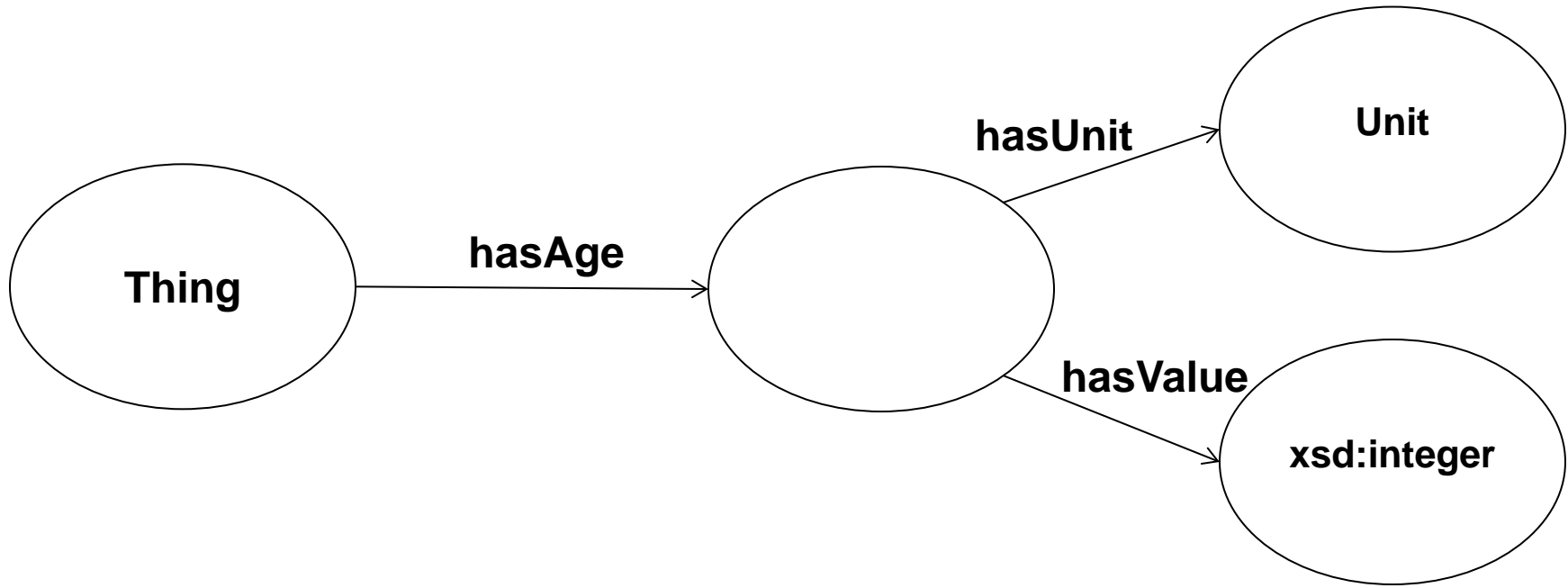
So-called *content patterns* usually encode specific abstract notions, such as process, event, agent, etc.

Patterns provide modular, reusable, replaceable, pieces.

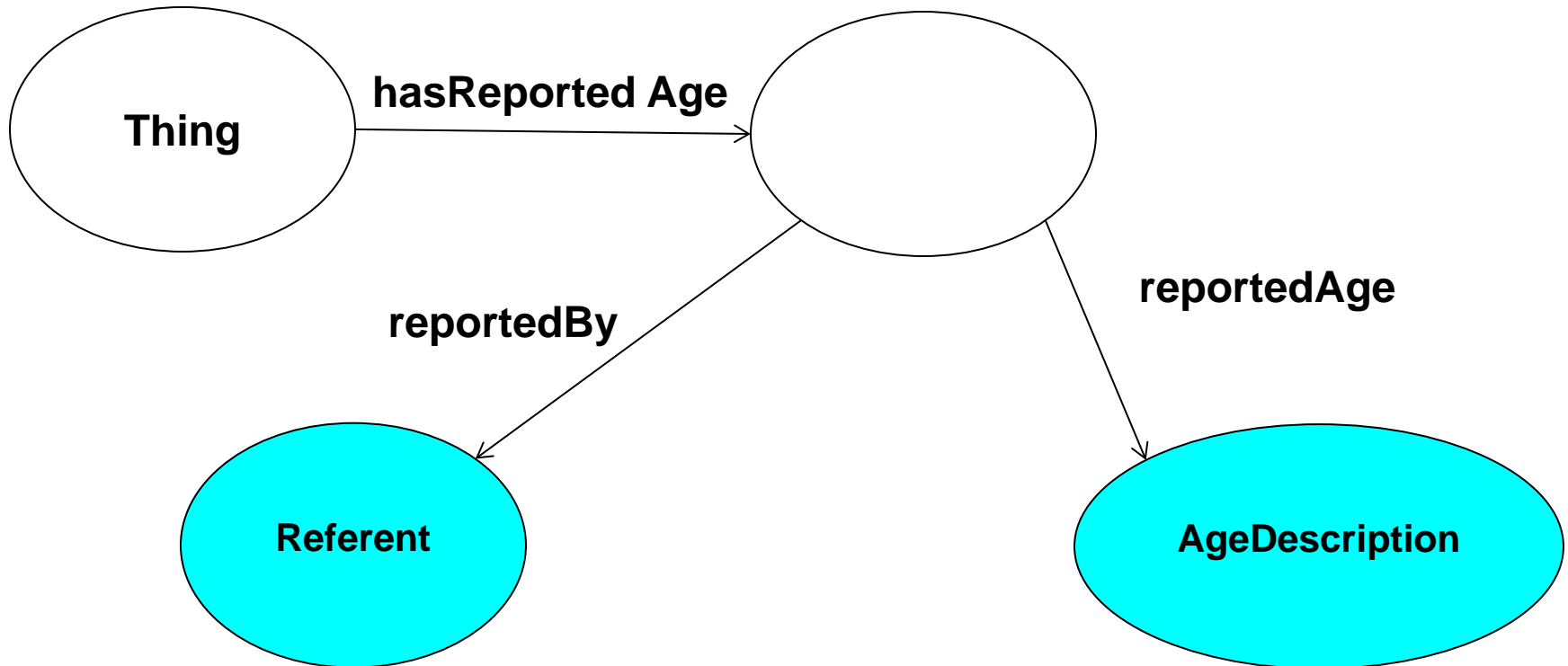
By agreeing on **reuse of generic patterns** (but **leaving the relationships** between the patterns to a specific assembly **for a special purpose**), we can have **reuse while preserving heterogeneity**.

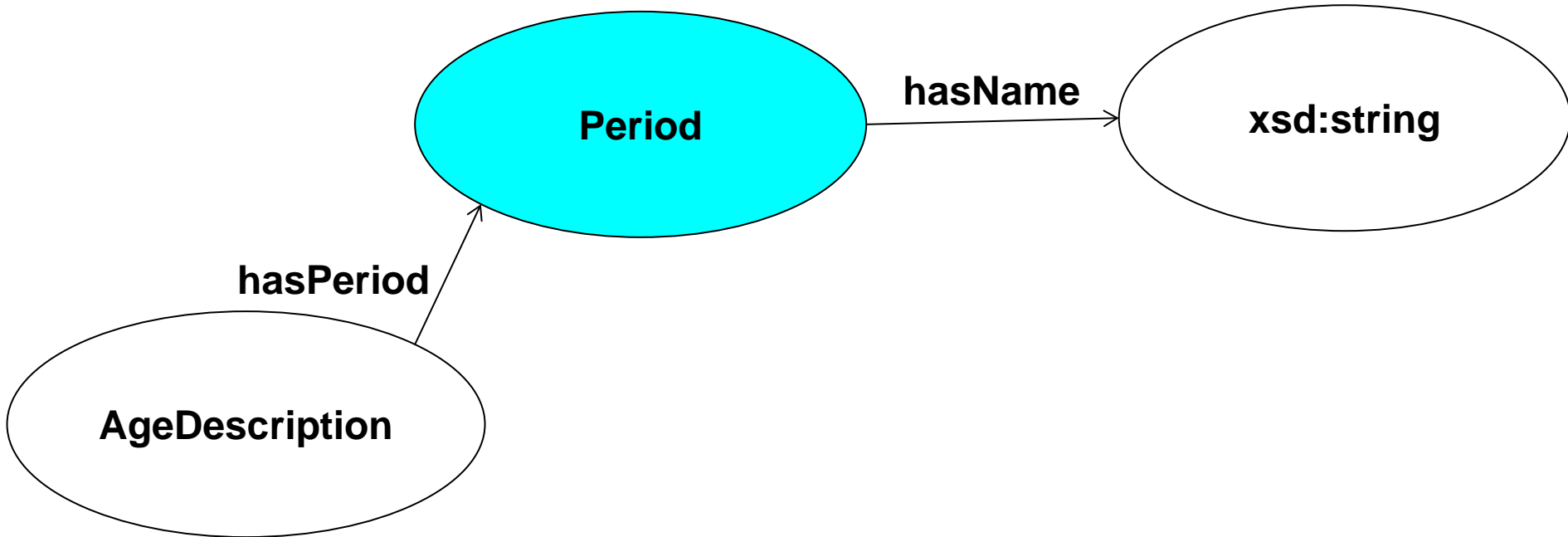


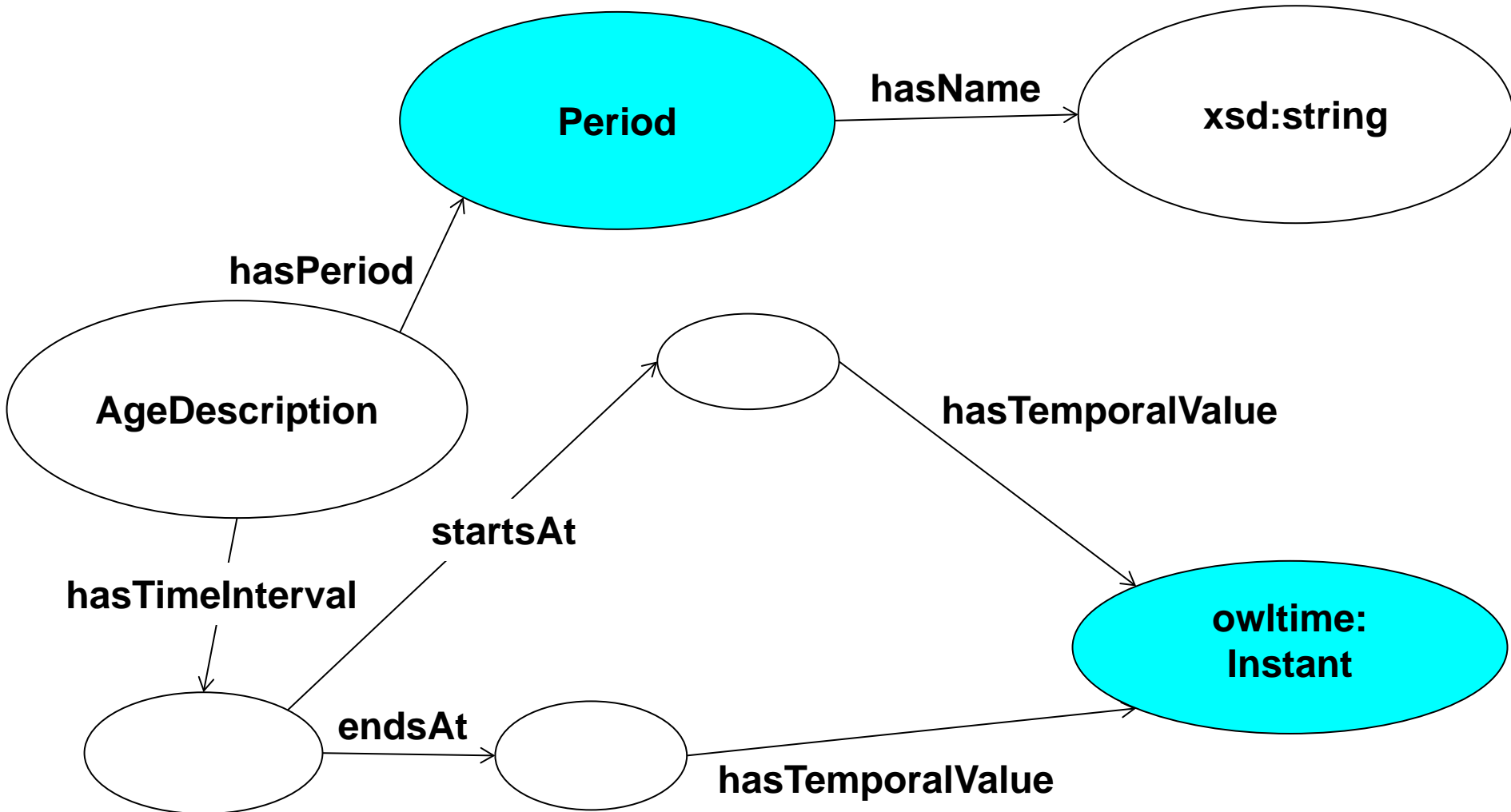
Specific, straightforward data modeling is very restrictive regarding data integration and reuse.

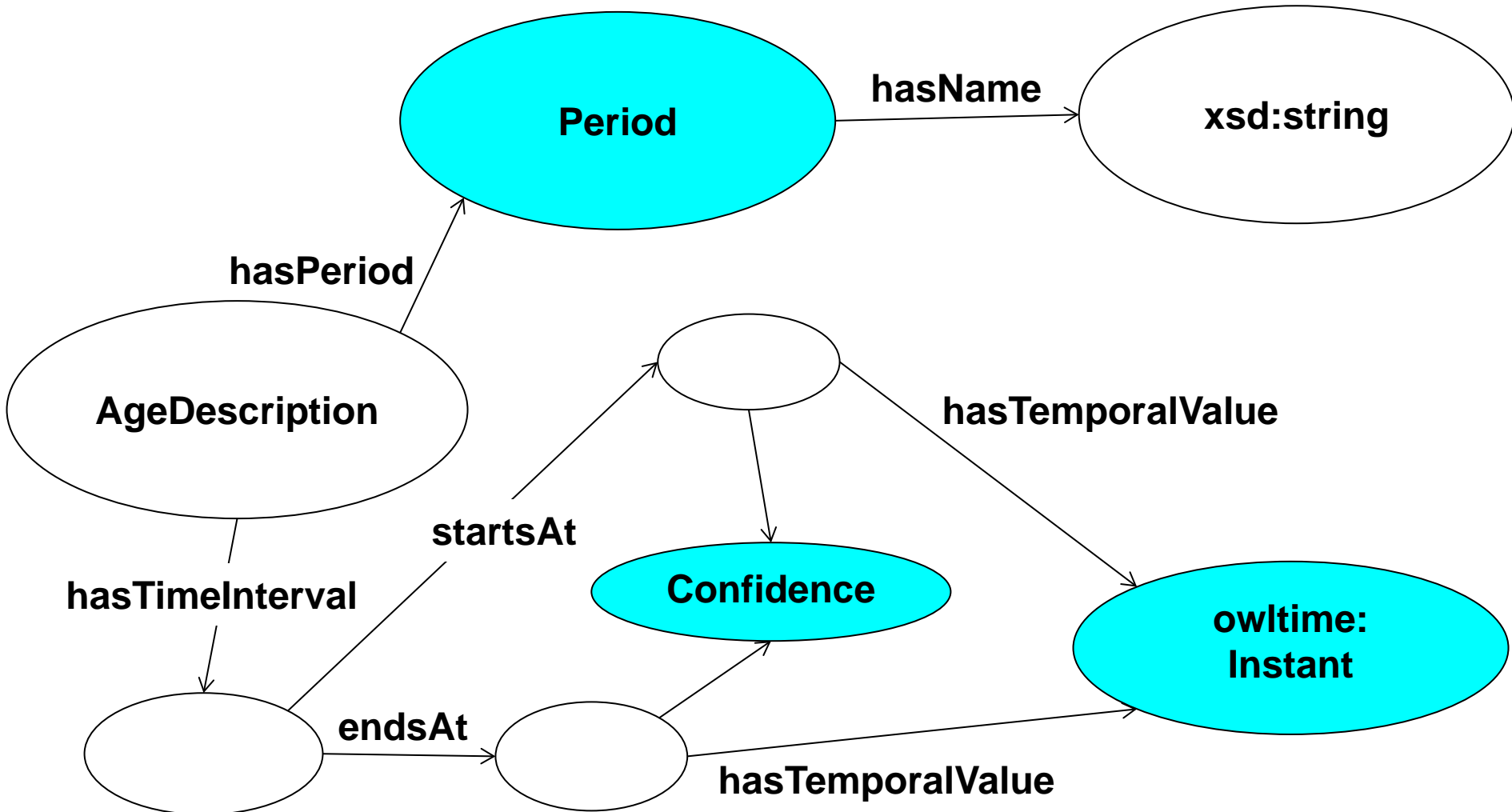


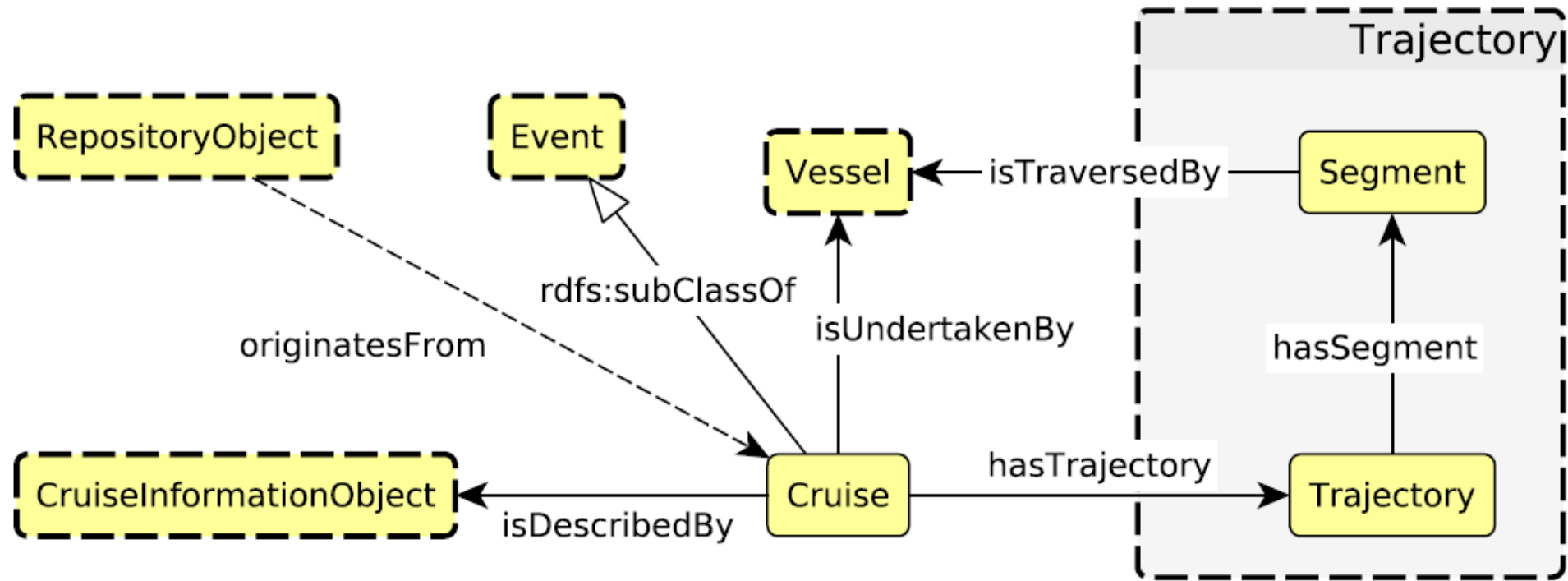
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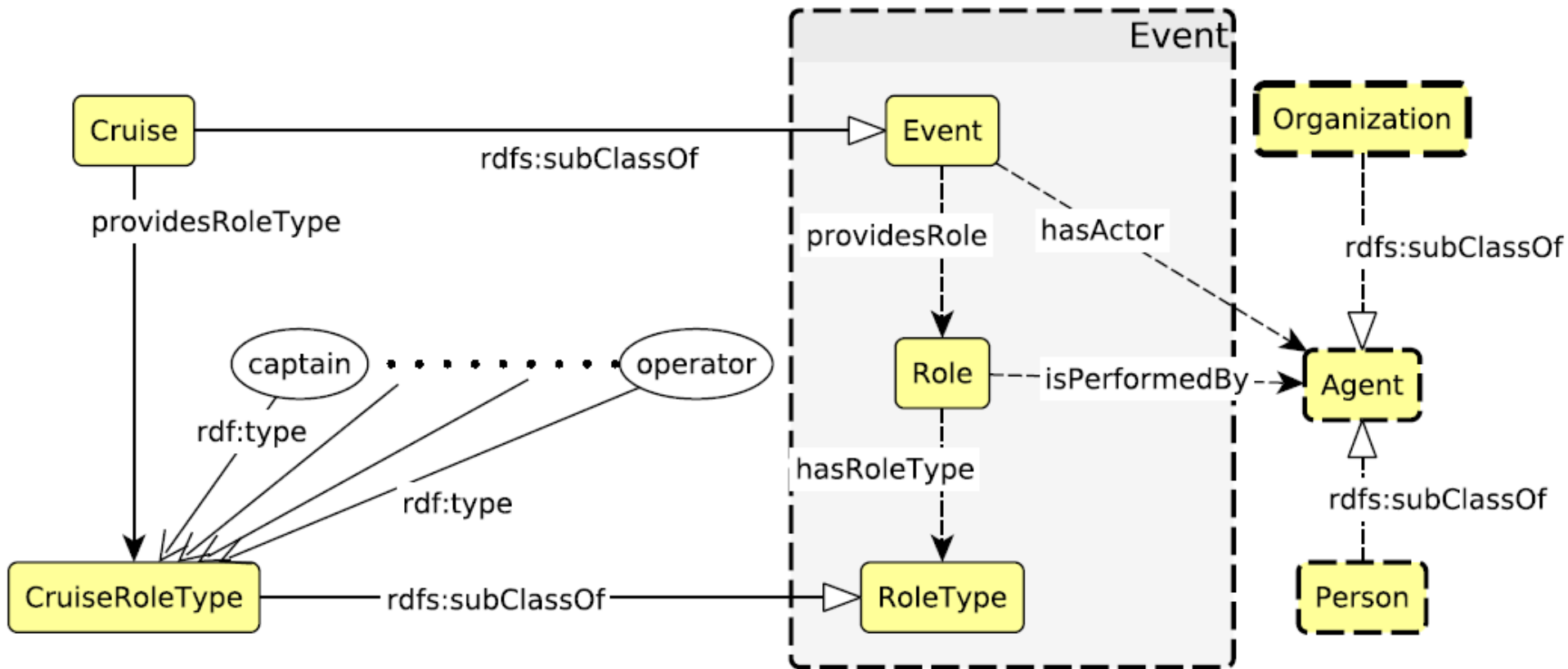


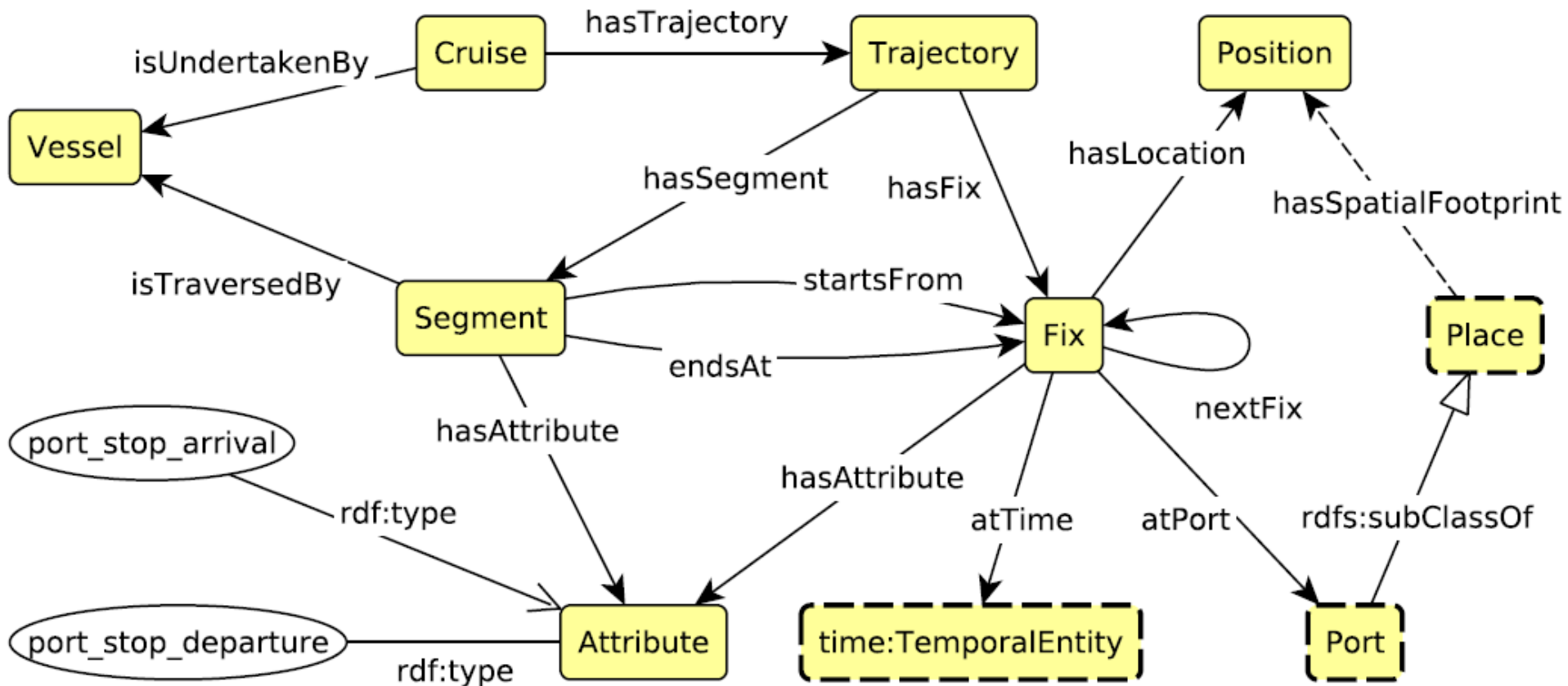


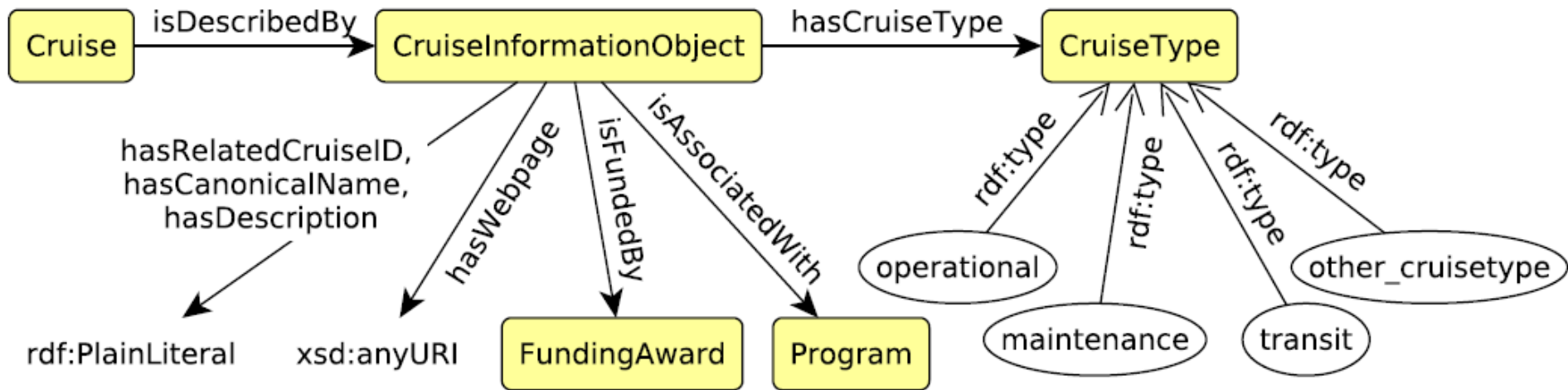




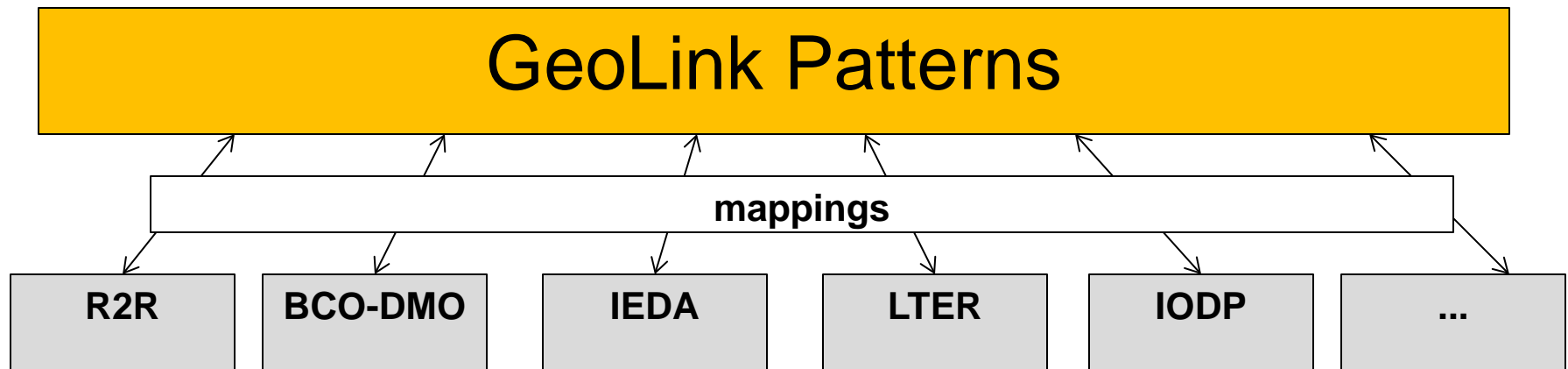
Roles (Cruise as Event)







- Aggregated data can be “pulled back” along the same mappings, if desired.
- Since the patterns are very generic, there is no loss of information by using them as interchange format.



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Thanks!

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www.geo-link.org

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