

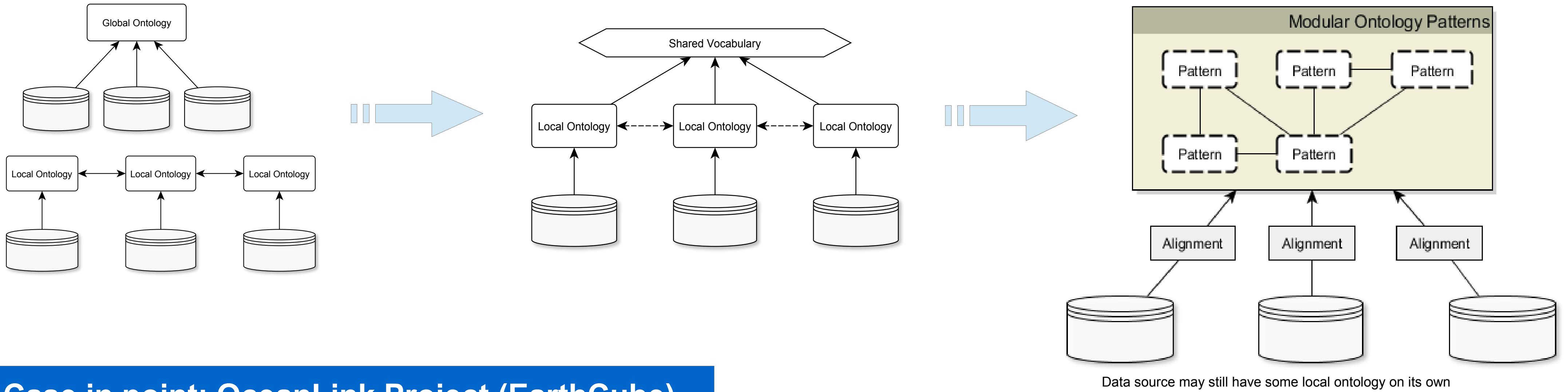
Ontology Design Patterns for Cross-Repository Integration

Adila A. Krisnadi^a

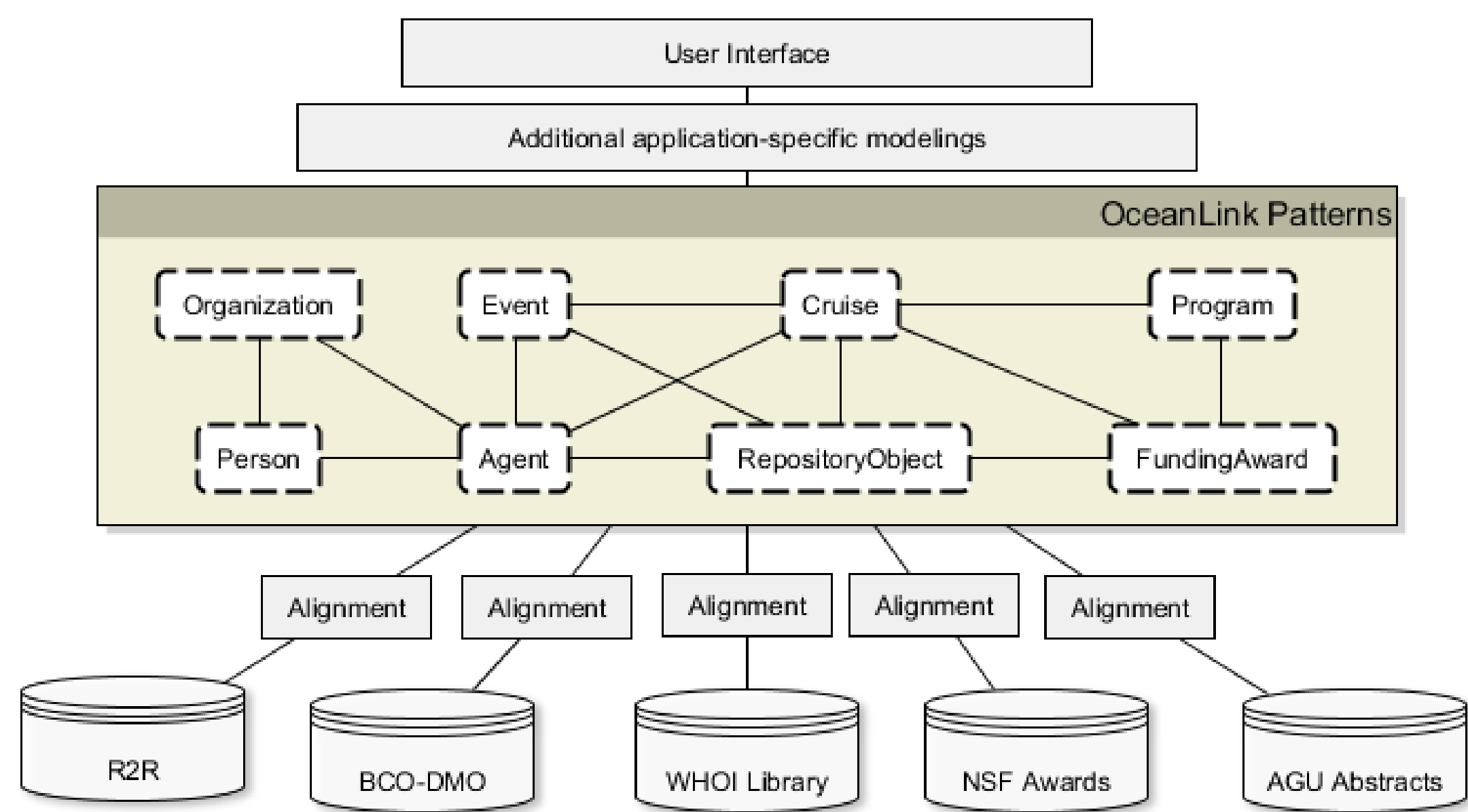
Collaborators: R. Arko^b, S. Carbotte^b, C. Chandler^c, M. Cheatham^a, T. Finin^d, P. Hitzler^a, K. Janowicz^e, T. Narock^f, L. Raymond^c, A. Shepherd^c, P. Wiebe^c

^a Wright State University, ^b Lamont-Doherty Earth Observatory, Columbia University, ^c Woods Hole Oceanographic Institution, ^d University of Maryland Baltimore County, ^e University of California, Santa Barbara, ^f Marymount University.

Classical ontology-based integration towards ontology pattern-based integration



Case in point: OceanLink Project (EarthCube)



Challenge: Enable shared discovery, access, and integration to data across various repositories that

- accommodates decentralized solutions with their technological and conceptual diversity;
- benefit, and not disenfranchise, the stakeholders

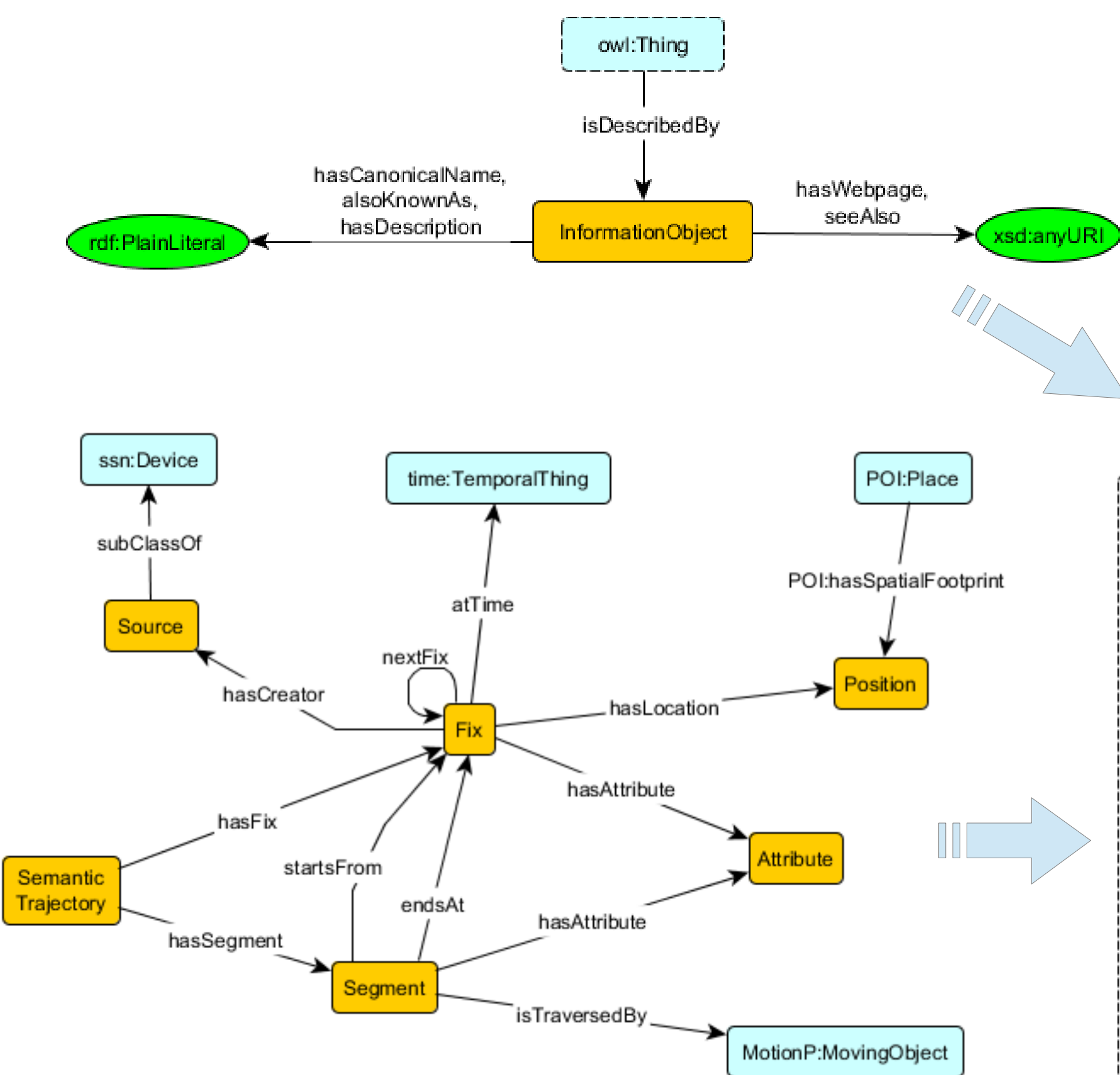
Approach:

- Use extensible Ontology Design Patterns, instead of upper ontology, to model key notions.
- Allow data repositories to define their own alignment to the patterns.

Realization (so far ..):

- Started with 6 repositories of research vessels data, biological & chemical ocean data, cruise reports, theses, funded awards, conference abstracts
- Conduct pattern modeling through VoCamp-style discussions
- Obtained 15 "small" ontology patterns axiomatized in OWL, covering key notions, incl. People, Cruise, Vessel, RepositoryObject, etc.
- Implementation of user interface and alignment is ongoing.

Pattern example: oceanographic cruise



Semantic trajectory pattern is from Hu, Y., Janowicz, K., Carral, D., Scheider, S., Kuhn, W., Berg-Cross, G., Hitzler, P., Dean, M., **A geo-ontology design pattern for semantic trajectories**. COSIT 2013.

