Introduction to DC-Vocamp 2017

Gary Berg-Cross
DC VoCamp Organizer
Ontolog Forum and RDA US Advisory Committee
gbergcross@gmail.com

http://vocamp.org/wiki/DCVoCamp2017

Thank you: Department of the Interior &
Thomas Dabolt (DOI's Geospatial Information Officer)

Tweet: #DCvocamp17

Outline

Intro & Call in Info

Some History

Why VoCamps

Overview of the Days

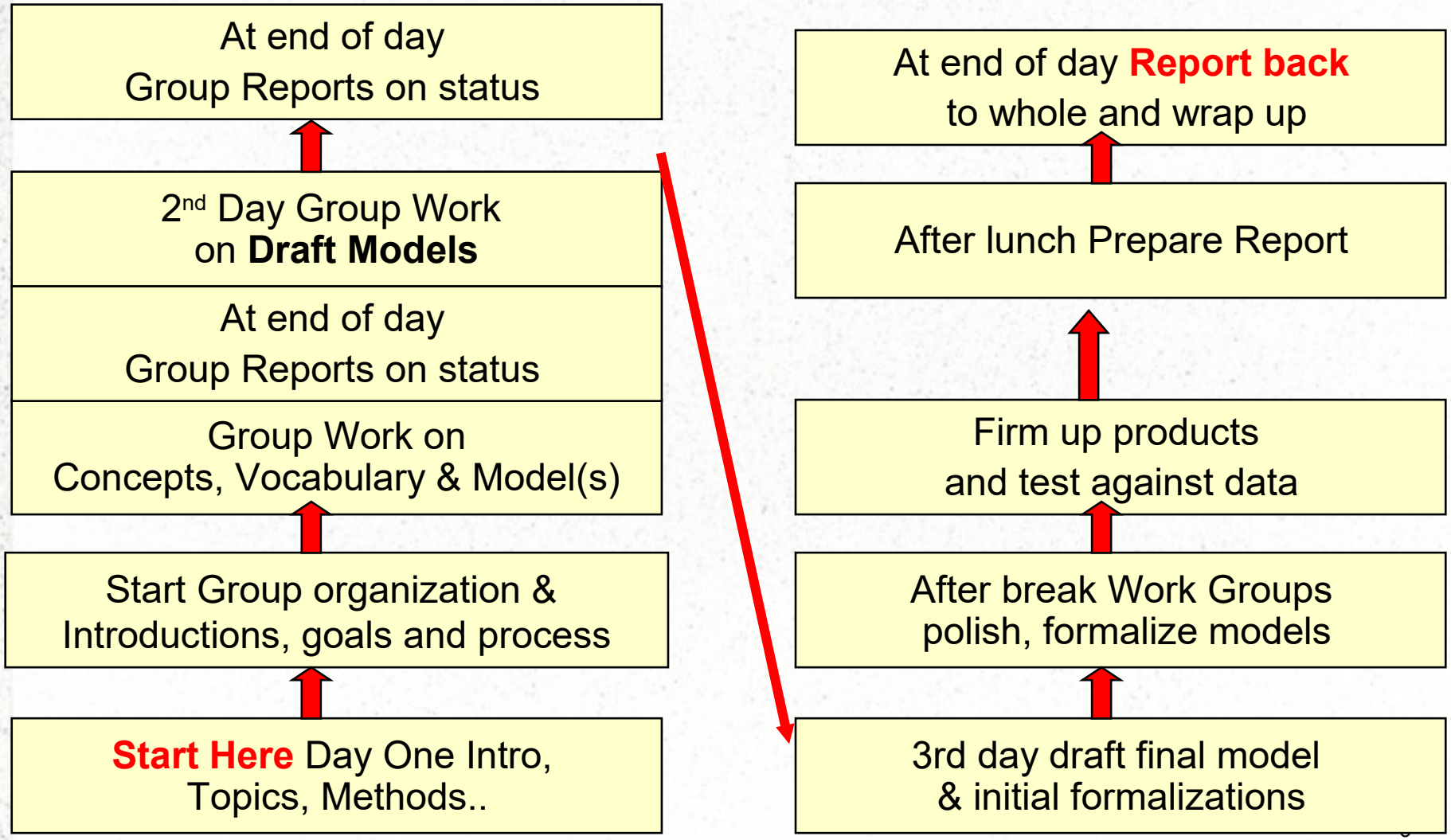
Methodology

- Conceptual/ontological engineering & Competency Qs
- Ontology Design Patterns & Illustrations

Topics

http://vocamp.org/wiki/DCVoCamp2017

Notional Logic of Work Sessions



Outline for Day 1- Tuesday Nov. 28th

9:00 - 9:30 Introductions, Welcome, Logistics & Schedule Overview –DOI

Main room OS-OCIO Magnolia Conference Room 7013 MIB Note - Morning session includes an WebEx virtual meeting

9:30 - 9:40 Pascal Hitzler briefing on the 1st U.S. Semantic Technologies Symposium planned for March 1-2

9:40 – 9:50 Workshop Vision, Strategy & methods, tools... - Gary Berg-Cross and others

9:50 -11:00 Working Topics (Presented by Topic Leaders)

11:00- 11:15 Break

11:15 – 12:15 Group organization and introductions - setting goals and process Breakout Rooms

12:15 – 1:30 Lunch

1:30 – 4:00 Resume topic breakout meetings

4:00-5:30 Group Reports to the Whole – Magnolia Conference Room as a virtual meeting

Post 5:30 PM – Groups may make arrangements for dinner on their own

Some History

The Spatial Ontology Community of Practice was officially begun in October of 2006

Oct. 2009 NeoGeoVoCamp held at the Library of Congress

SOCoPVoCampDC_2010_12_03 & GeoVoCampDC2011

GeoVoCamp Santa Barbara 2012 & GeoVoCamp Dayton 2012

GeoVoCamp SOCoP DC 2012

Descartes-Core GeoVoCamp Santa Barbara 2013

SOCoP's GeoVoCampDC2013 held at NSF Nov. 18-19, 2013

Descartes-Core GeoVoCamp Santa Barbara 2014

GeoVoCamp at USGS in DC - GeoVoCampSOCoP2014

GeoVoCampDC2015 Nov.30-Dec. 2 at USGS Facility in Reston VA

Also an Ontology Hackathon as part of Ontology Summit

SOCoP workshop info at:http://ontolog.cim3.net/wiki/SocopWorkshops.html

Why VoCamps?

Problem: data heterogeneity needs manageable semantics for WGs

The session is organized around 3-4 Interdisciplinary Work Groups made up of domain experts, group facilitators and people with web/modeling/semantic/ ontological experience.

- Facilitate group discussion
- Help with the conceptualization needed
- Help develop small, well engineered coherent, minimally constrained schemas as modular starter set

Build on and follow up previous VoCamp & RDA meetings

This will be a great opportunity for people interested in using semantics to see lightweight & more formal approaches applied in context.

Day 2 Wednesday

- Wednesday Nov. 29th 9:00~9:15 Updates, Q & A etc. (schedule etc.) Main room

9:15-9:45 Remote Presentation Torsten Hahmann

9:45 -10:45 Group Work on Concepts, Vocabulary and Model (Breakout Rooms)

~ 10:45 -11 Break

11:00-12:15 Group Work on Draft Models (Breakout Rooms)

12:15 -1:15 Lunch and Networking – on your own

1:15- 2:45 Work Groups – draft final conceptual model (Breakout Rooms)

2:45- 3:15 Work Groups identify data to test model & Prepare initial formalizations

3:15-3:30 Break 3:30-4:30 Prepare Brief Back Report (Breakout Rooms)

4:30-5:30 Interim Group reports and discussion Main Room (Broadcast as Virtual Meeting)

Dinner as organized by group interest

Thursday Nov. 30- Day 3

- 9:00-9:15 Updates, Q & A etc. (schedule, GiTHub effort etc.) Main Meeting Room

9:15-10:45 Work Groups Firming up products and alignments (Breakout Rooms)

10:45-11:00 Break

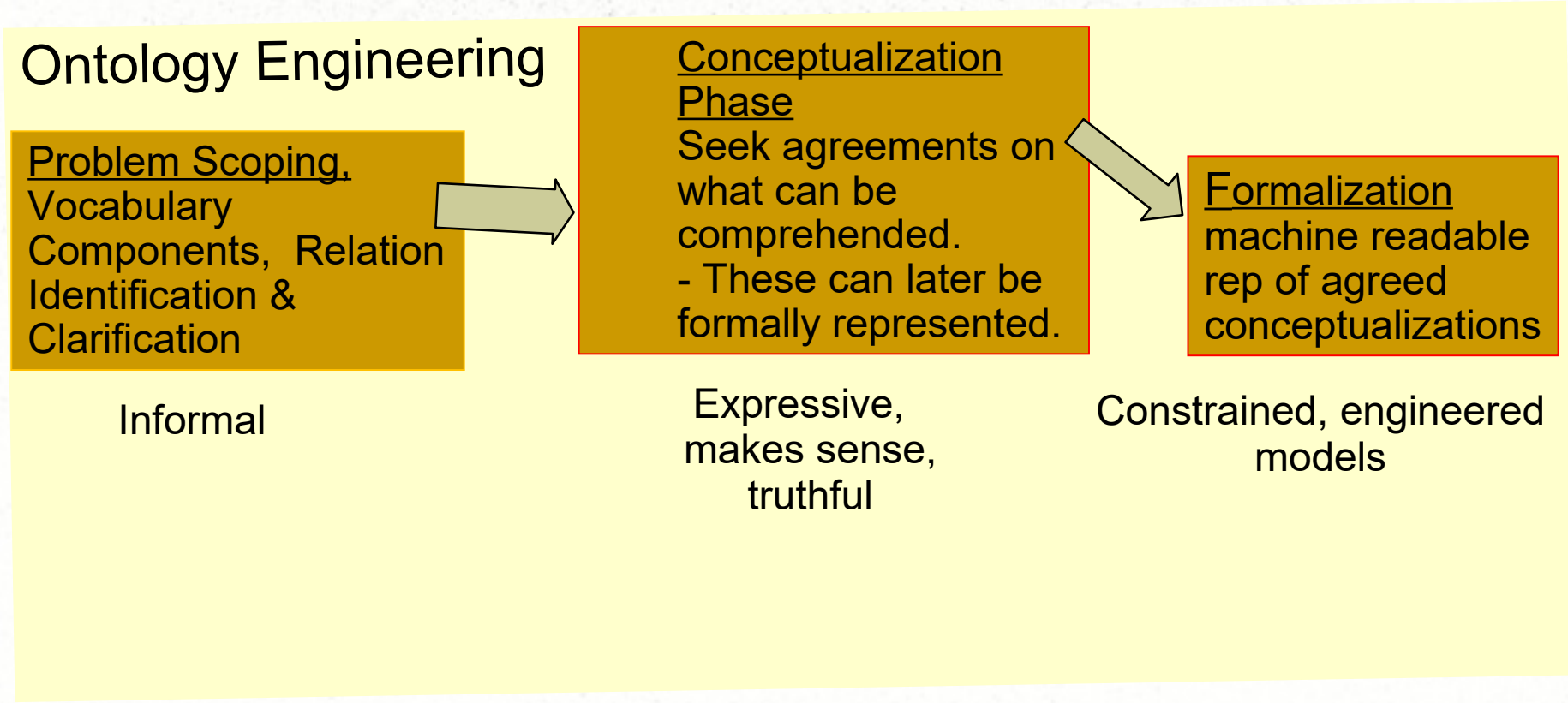
11:00-12:00 Prepare group reports and plans for follow up (Breakout Rooms)

12:00 -1:00 Lunch and Networking - On your Own

1:00 ~ 2:30 Group reports & Wrap up (Main Room)

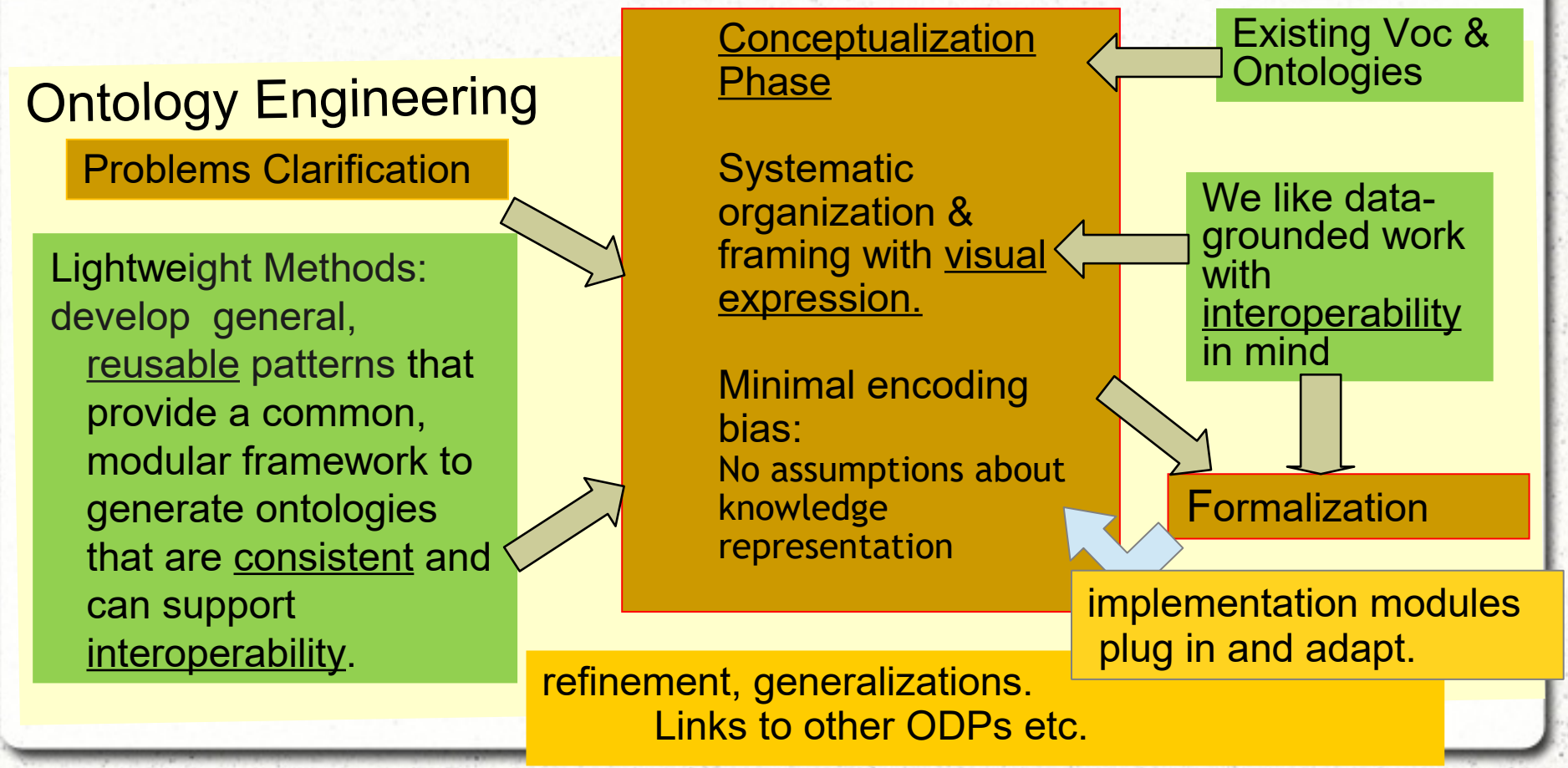
Something on Ontological Engineering Phases

- Used to clarified agreement & reduce ambiguities/conflicts on domains (e.g. geospatial, chemical, materials & related phenomena)



More on Ontological Engineering Methods

Ontologies should have some Generality, be Understandable and support reasoning at various levels of abstraction/detail



Development Example using Standard Radiation-Related Names (CSDMS)

atmosphere_clouds_radiation~incoming~shortwave__absorbed_energy_flux
atmosphere_clouds_radiation~incoming~shortwave__absorptance
atmosphere_clouds_radiation~incoming~shortwave__reflectance
atmosphere_clouds_radiation~incoming~shortwave__reflected_energy_flux
atmosphere_clouds_radiation~incoming~shortwave__transmittance
atmosphere_clouds_radiation~incoming~shortwave__transmitted_energy_flux
atmosphere_clouds_radiation~outgoing~longwave__emittance
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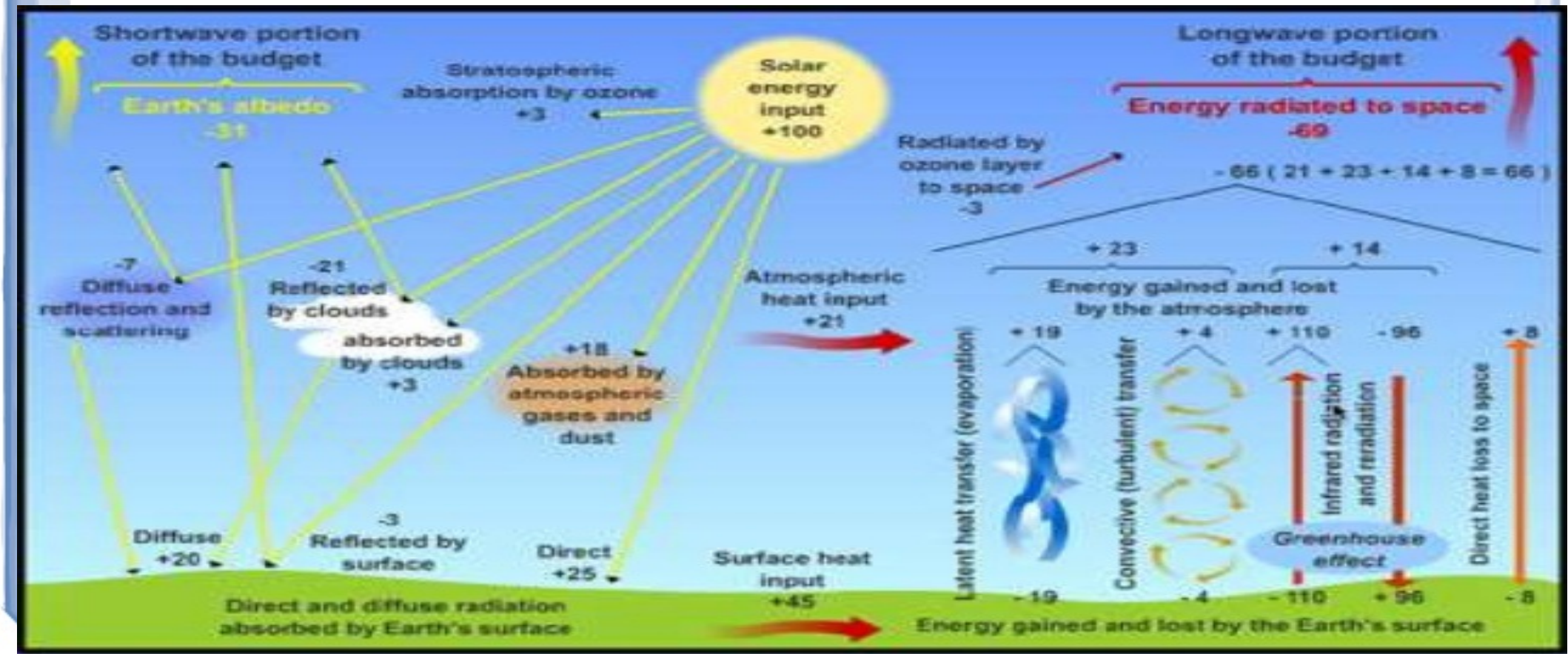
atmosphere_clouds_radiation~outgoing~longwave~upward__energy_flux



Competency Questions define Scope

What questions can the representation answer or what tasks can it support (with appropriate data)?

E.g. **Instance Existence** Qs: What absorbs radiation?

– **Data Property questions**:

What is the frequency range of short-wave radiation ?

What % of incoming radiation is reflected back as short wave radiation?

What is the total amount of radiation absorbed by aerosols?

– **Object Property questions:** Do clouds reflect long-wave radiation?

– **Classification questions:** What types of objects reflect radiation?

– **Reasoning questions**: Are cloudy nights warmer due to reelection?

Note: There should be some data in mind and available to answer these Qs.

Rationale for Ontology Design Patterns

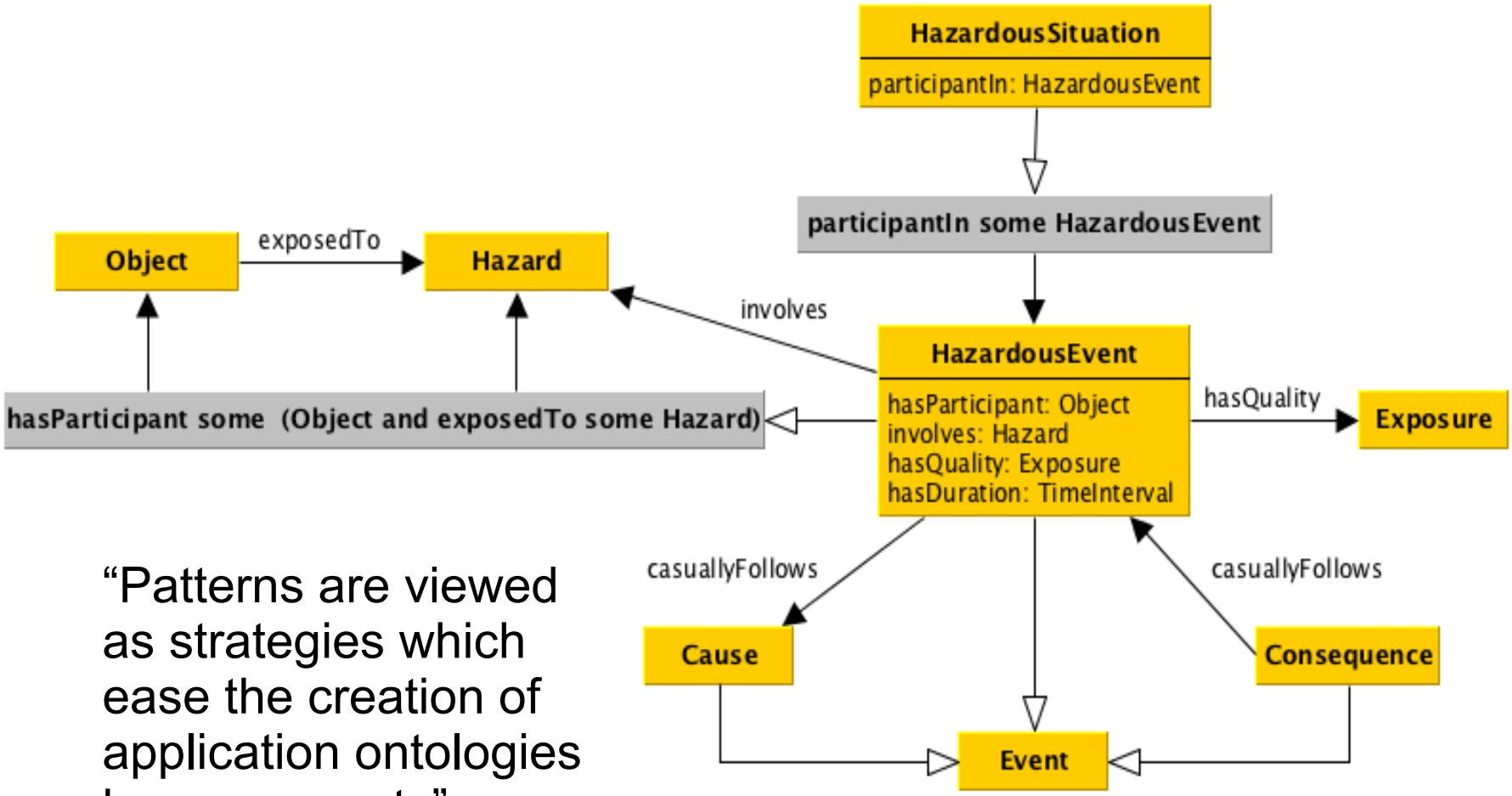
- Hard to reuse only the “useful pieces" of a comprehensive/encyclopedic (foundational) ontology, meaning high cost and maybe not right model

Solution Approach (let 100 flowers bloom)
better to agree on focused conceptual constraints

- Use coherent, minimally constrained ODP
- Standard re-engineering practices to facilitate reuse,
- Ontology building blocks and structures,
  - Product is a network of “concepts” with vocabulary which people may build on/extend from for various purposes.
  - Commonly implemented & published as small OWL ontologies

- Have explicit documentation of design rationales

ODPs, just Small, well engineered, modular starter set

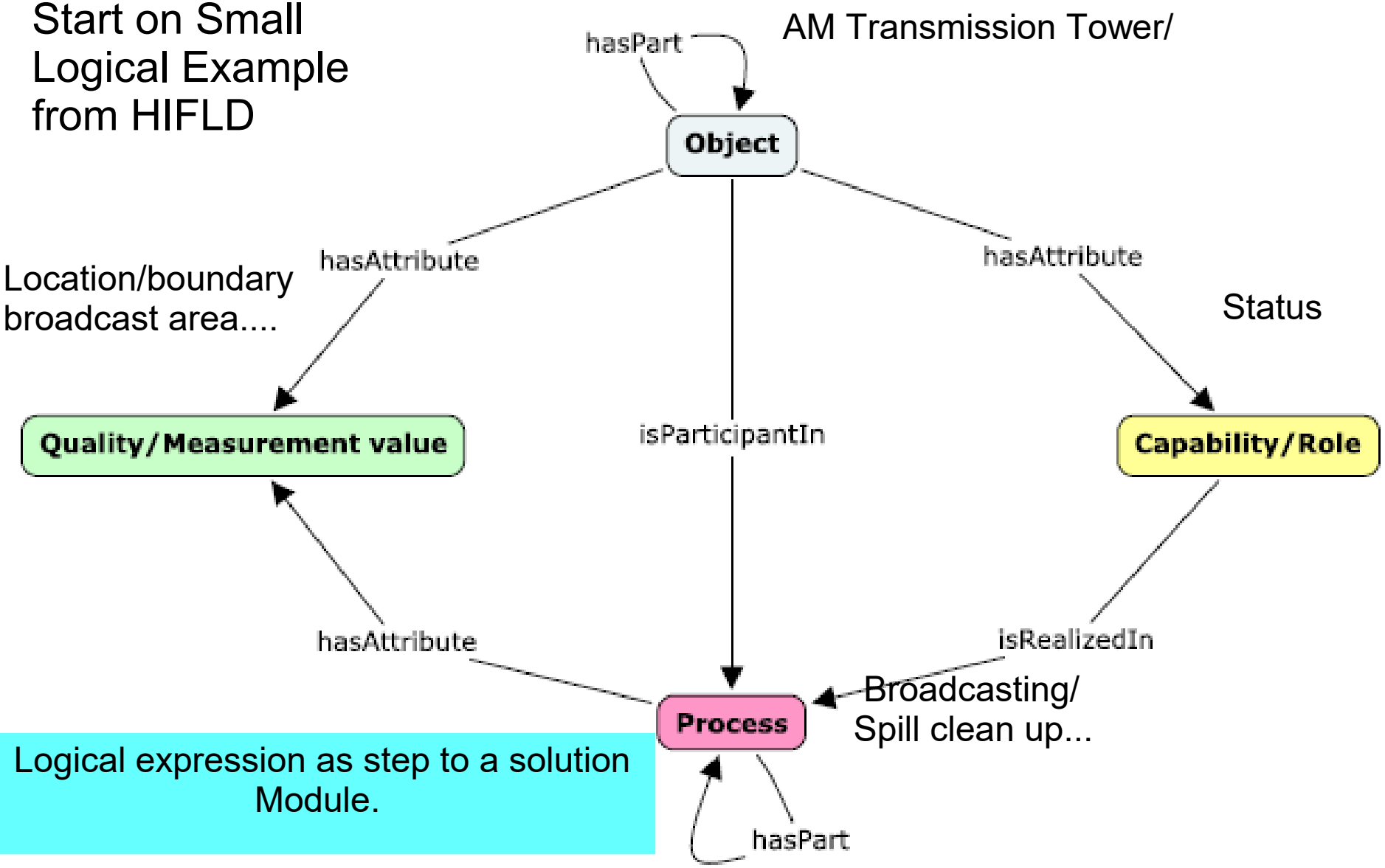


"Patterns are viewed as strategies which ease the creation of application ontologies by non-experts".

Minimal commitments helps reuse

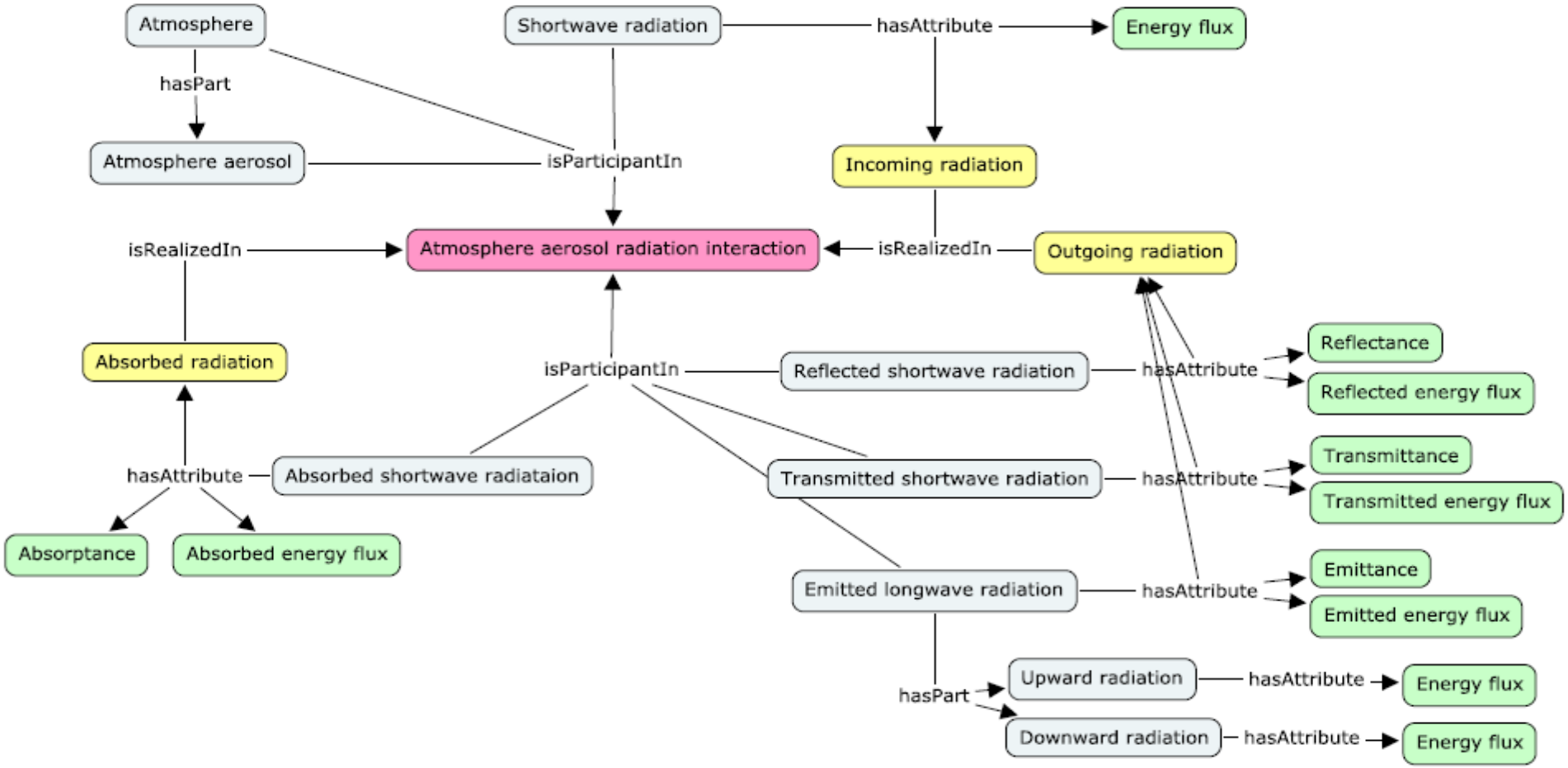
Semanticscience Integrated Ontology (SIO) for research & knowledge discovery

Start on Small Logical Example from HIFLD



Logical expression as step to a solution Module.

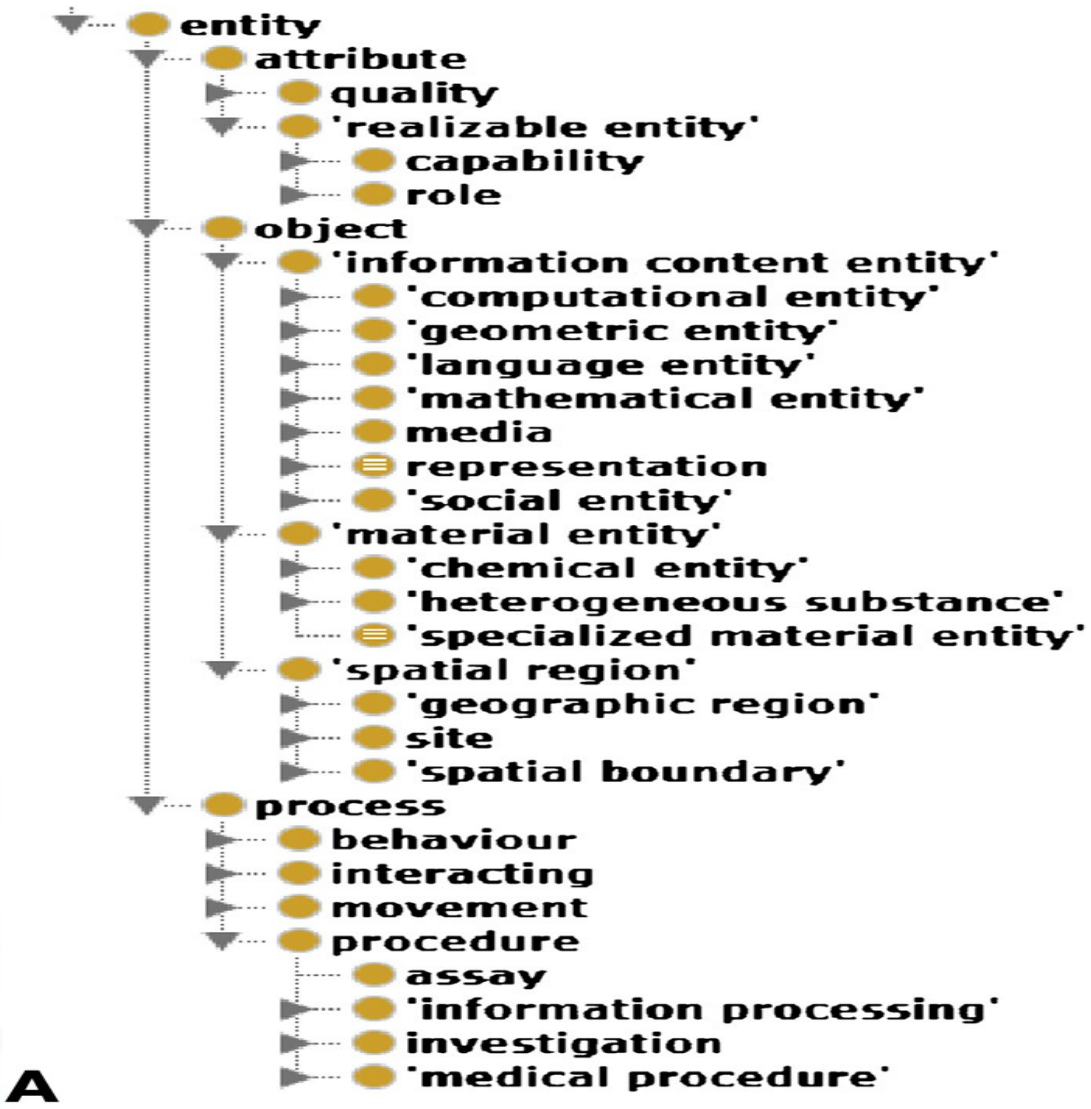
SIO View of CSDMS Model Radiation-Related Names

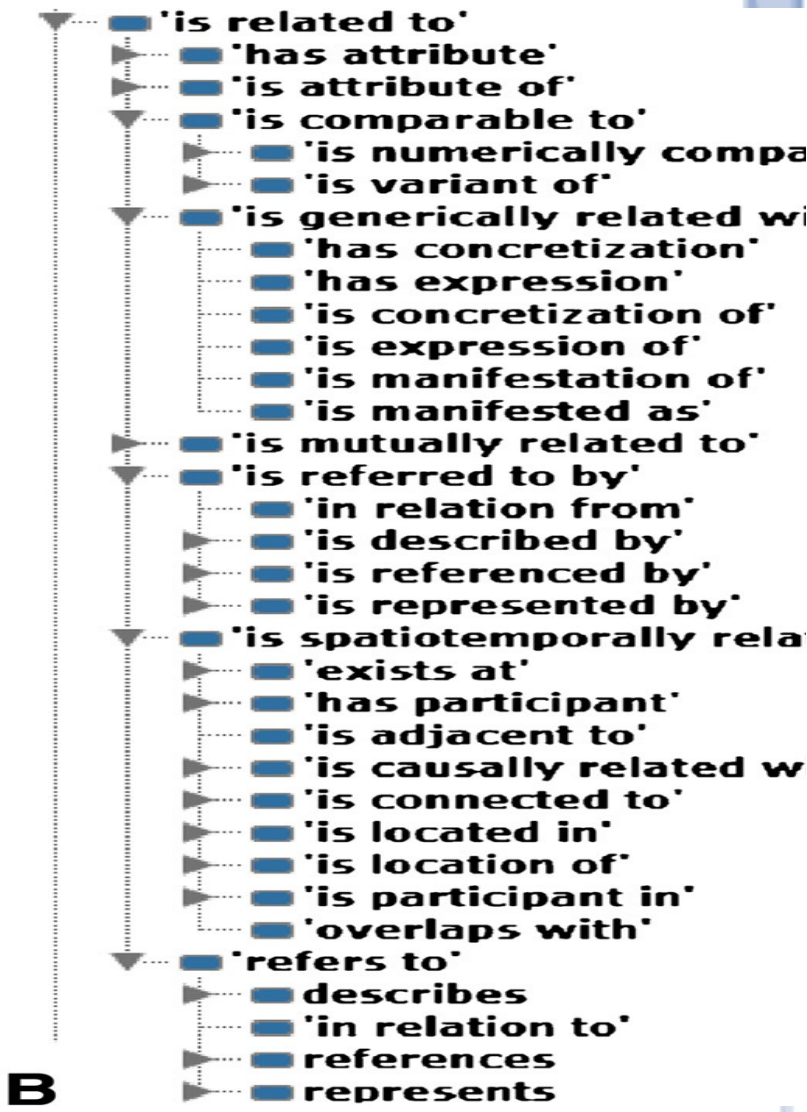


Core was extendable and can be populated

atmosphere_aerosol_radiation~incoming~shortwave__absorbed_energy_flux

Example of SIO Elements





Topics

1. Terrain feature extraction for search & rescue (Usery & Sinha)
2. RDF vocabulary for Chemical Safety & Chemical Terminology (Leah McEwen)
3. Drones and Drone Data (Janet Wyngaard):
   - best practices regarding; schema, ontologies, and formats for either the metadata or the data
4. Hazards and Infrastructure

   - Note: telecoms are available if a group agrees to them.