Semantic harmonisation is not easy! Stop saying it is, it's a lie.
- Some believe "mapping" between resources is easy, they are wrong because
    - From the side experts in the domain, but not the knowledge modellers: There are gaps in expertise and understanding on what a quality mapping actually is / looks like. The peril of the situation is often realise later when technical things need to be done
    - From the side of the knowledge modellers: there are a lot of underestimations in the amount of **consequential** ambiguity, subtlety, disagreement, etc in the definition and usage of terminology. This can't be solved with dry logics. Science is as fuzzy as anything else in its terminological usage, and this doesn't typically fit into one or the other ontological modality
    - There needs to be a two-sided conversation where the limits of both sides are made clear. When this is then multilateral (domain experts + different teams of K modellers), the strengths and weaknesses of each modelling approach must be clear and **the mappings qualified by this**

Building bridges
- The various, seemingly disjointed, groups talking about semantics are building bridges
    - ESIP communities linked to Australia via groups like RDA and very active individuals.
    - High-level W3C minds are bridging to the domain groups now
- Growing scope of harmonisation
    - Emerging soil harmonisation cluster emerged from Brian Wee's pre-meeting
    - Oceans are joining cryosphere via UN Decade and Arctic Data Committee
        - [Half-day hackathons being held under IARC](#) (Amos, Pip, Taco, Oystein) - often much broader in scope than semantics (aim to federate a catalogue search across)
        - ODIS (and the catalogue tech there, also schema based) also happening, not coordinated with any Arctic
- Some efforts seem like they should be bridging, but there are mismatches with goals, scope, etc that prevent collaboration because the efforts would derail one another.
    - Can we factor out the semantics bit and solve the harmonisation problem?
    - Some are not ready for this and some are not clear on which level this should occur (simple term matching or deep semantic / ontology-level mapping)
- Broad community interest exists in how schema.org terms can assist with data interoperability (FAIR aspects)-- ongoing work to develop recommendations on "Dataset" and "variableMeasured" and representation of Provenance within ESIP cluster "Science on Schema.org"(SOSO) -- may be too complex; simple recommendations needed for many communities (e.g. for Polar Data community)
    - Strong need for SOSO to also consider how to represent Local/Traditional Knowledge (LTK) and semi-structured/nat-lang "data" using so:Dataset…e.g. ref. Eloka/nunaliit (Duerr)

- - - Current [DiscussionVariableMeasuredt](#) discussion with Steve Richard, Kai Blumberg, and Mark Schildhauer who are charged with developing preliminary recommendations for further review by the larger SOSO group.
  - IARC and some other groups are developing guidelines via "hackathons" to build a global cryospheric federated search and discovery system -- viz.: https://arcticdc.org/meetings/conference-calls-webinars/polar-to-global-online-interoperability-and-data-sharing-workshop-hackathon
    - How do we bridge to them? The outcomes of the ESIP Cryo hackathons are only very indirectly being used here, but some links are there via e.g.
      - guidance on adding ontology IRIs into EML / schema.org records
    - Time, space, and parameters are this group's focus
      - In parameters, we can link our harmonised terms through frameworks like the some of those developed by groups like i-ADOPT - what parameters are they using now?
        - A plethora of vocabularies is in play, including many that don't map to anything else (SVO, DDI?)
    - We have to make a broader point about interoperability to these groups - most of what they are using is not interoperating with anything else, and thus their records are not fully FAIR.

Maturing the community
- Making sure stakeholders know what the capacities of their semantic solutions are and if they interoperate with others
- Communicate that the semantic harmonisation / interoperability problem is only postponed by using light-weight semantics, not solved (due to the depth)
  - A schema.org readable template makes things more discoverable (which is a major achievement), but doesn't resolve whether they're understood similarly
- Communicate that the Semantic Harmonisation team has the ability to resolve these
- Communicate that keyword lists of parameters that mention entities that have deeper semantic resources linked to them (e.g. a parameter that mentions a glacier) should link to a more solid representation of that.

Mark shares in-process draft (Steve Richard, Kai Blumberg working on as well) of how we are "harmonizing" schema.org terms with external ontologies within the ESIP Science on Schema.org ("SOSO") Cluster . Question came up regarding potential use of property "so:about" with so:variableMeasured-- to explicate the "entity" and/or "characteristic" of the so:variableMeasured. so:about does not appear to be a permitted property for Type so: PropertyValue under so:variableMeasured property. Mark (and others) to check on how rigid are range constraints for using properties such as so:about with so:PropertyValue

Two examples we discussed on this harmonization call---

```
"@type": "Dataset",
```

"identifier": {"@id" : "URI that identifies and may also enable accessing this Dataset"},
"name": "My Dataset containing observations from an oceanographic cruise",
"distribution": {
        "@type":"DataDownload",
        "identifier": "HTTP URL to download "My example dataset"
        }

....
 "variableMeasured":
   {
     "@type": "PropertyValue",
     "name": "mass of ablation zone",
     "propertyID": "http://www.w3.org/2003/VOCAB:00012",
     "url": "https://www.sample-data-repository.org/dataset-parameter/665787"
     "about": http://purl.obolibrary.org/obo/ENVO_00000133
     "about": http://purl.obolibrary.org/obo/PATO_0000125
   }
```

**Prelude**:

In the above example, the string "mass of ablation zone" is referring to the mass of a glacial ablation zone.

**The key:**

"propertyID": "http://www.w3.org/2003/01/geo/wgs84_pos#lat",

Case 1: Points to a well-axiomatised / expressive semantic resource: this means that the machine knows what the parameter is about, with its subtleties
   ● If that resource is of high expressivity (e.g. a well-axiomatised and machine reasoned ontology), then the semantics of what the property value are accounted for at the other end of the IRI. In the example above, the ontology would link ablation zone to a glacier, allowing machine-driven discovery.

Case 2: it doesn't  - it's just a term in a vocab
   ● If that resource is low on the semantic ladder, and just mentions a string like "mass ablation zone", there's no way for the machine to figure out that it's about a glacier, unless we either
       ○ Harmonise that term with high-expressivity resources by adding carefully mapped IRIs to the term (requires involvement of the maintainers of the low-expressivity resource) or
       ○ Add aboutness fields to the schema block to do this loosely, but cheaply. We do that in the example above by adding aboutness links to ENVO:glacier and PATO:mass