23rd Plenary Meeting Collaborative Notes

Group(s) name(s) organising the session: *InteroperAble Descriptions of Observable Property Terminology WG*
Session link: *Challenging I-ADOPT*
Session scheduled date/time/breakout session: *Wednesday, 13 November, Breakout 3, 08:00 – 09:30 CST*
Venue: *Edificio de Ingeniería, Audiovisuales 1*

Session summary (for Group co-chairs)

We will use the content in the table below to highlight your work to the RDA community as a report organised by the Technical Advisory Board and to a wider audience through English & Spanish social media mentions.
Please complete ALL fields below by **Friday, 29th November, close of business** to be included in the report & social media activities.

Summarise the session in three sentences:
The session presented the outcomes of the I-ADOPT Variable Modelling Challenge. The overall challenge organization, materials, and the prepared variable list were presented, along with concrete examples that illustrated common modelling problems. The discussion focused on key challenges in modelling to find suitable solutions.
Key outcomes/actions/takeaways
1. *Winners of the Challenge* 2. *Modelled examples in GitHub* 3. *Key challenges in modelling variables*
Synergies and/or possible collaborations identified with RDA groups and other groups:
FAIR Mappings WG, VSSIG
Highlight text that will be used in social media mentions (please make sure the text is clear and appropriate for public consumption & comprehension)
The results of the I-ADOPT Variable Modelling Challenge highlighted pitfalls and the need for recommendations on extending the model to represent variables with statistical parameters, units, constrained properties and properties about the relation between two objects. One participant showcased initial models generated using ChatGPT.
Direct link to Group home page
https://i-adopt.github.io/

*Get involved in **RDA Community***
*Check out **P23 programme sessions***

This meeting will take place according to the **RDA Code of Conduct**

Attendee Check-in

Please complete this table to indicate your attendance (add rows as needed):

Full Name	Affiliation	Location	Email
Rossella Aversa	Karlsruhe Institute of Technology	Karlsruhe, DE	rossella.aversa@kit.edu
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Collaborative Session Notes *(To be used by participants and chairs during the session)*

Important links:

Presentations slides
I-ADOPT website
I-ADOPT Variable Modelling Challenge website
I-ADOPT Challenge Evaluation sheet
I-ADOPT Variable Examples repository with visualisation of the models
I-ADOPT variable modelling GitHub issues
SHACL and JSON validator schema in GitHub
SHACL validator

Agenda:

Barbara Magagna: Introduction to the outcomes of I-ADOPT and to the I-ADOPT Variable Modeling Challenge (15 min)
Maria Stoica: Variables modeled during the Challenge (5 min)
Gwenaëlle Moncoiffé: Results of the Challenge (20 min)
Sirko Schindler: Possible improvements (10 min)
Guided discussion about results of the Challenge and their impact (40 min)

Questions and Discussions:

From the audience: For statistic terms/parameters use **STATO** https://www.ebi.ac.uk/ols4/ontologies/stato it is actively maintained and used by many communities - thank you so much, we will include this in our recommendations - Yes, many thanks for this pointer: at BODC/NVS we will look at STATO and map our existing statistical terms (a component of our semantic model held in SKOS collection https://vocab.nerc.ac.uk/collection/S07/current/) to it.
Lindsey: Did you check to see if RO and UO ontologies had some of the term URIs for adoption prior to creating new terms? Could you have suggested new terms in those collections versus creating new ones?
Gwen: For the atomic elements, we reuse concepts that already exist in known semantic repositories; but it might be necessary to create a new variable term or more unusual atomic concepts like e.g. constraints that do not exist in any known vocabularies.
Alexandra to Andrea: chatgpt chose sometimes terms from vocabularies that were not good; did you actually ask ChaGPT to refine the results?
Andrea: ChatGPT also gave a URI that did actually not exist (CHEBI terms with random numbers). We used a free ChatGPT version and this might be the reason for this behaviour. It would be nice

to find out if we could request to review the answers based on a selection of vocabularies to search on.
Alexandra: It would be nice if the I-ADOPT WG could come up with suggestions of very well used vocabularies in a domain; this links to the VSSIG work and the task group “Ontology and Term Selection”
Barbara: we are working in a project to provide an annotation service that allows to modify
Joonas: Can you explain what the mapping compliance would look like
A: We are creating the mappings between the variables and between the components (atoms). We want these mappings to be compliant with whatever recommendations the FAIR Mappings WG will provide; we want to be able to rely on those mappings for the long term
Joonas: are these variables designed to be reusable?
A: yes, but in some cases, you could also have a blank node instead of a composite variable.
Joonas: What are the mappings between variables looking like?
Gwen: We are testing the different interoperability use cases using SPARQL queries, see here:

- two variables using the same vocabularies for the component;
- variables that use concepts for the components that relate to each other (with broader, narrower relationships);
- variables that have concepts for the components that are mapped to common reference ontologies
- No existing mappings between atomic concepts, but automated mappings are used instead
- Mappings between a dataset annotated with a variable and a dataset annotated with a blank node with atomic concepts mapped to each other

Alexandra: in NERC vocabularies we have used the I-ADOPT Framework to go up and down the granularity scale, we have P01 (description of variables is very detailed), and we have a coarse vocabulary and we describe both aligned with I-ADOPT and these descriptions act as definitions to create SPARQL queries and dynamic mappings instead of doing the mappings by hand, so one coarse variable may be associated with many detailed variables.
Discussion point: How to allow statistical parameters in the model?
Barbara: proposal is to specify an I-ADOPT variable with additional qualified references using object properties acting as modifiers of the whole variable, see here a discussed example on github, where we can add statistical information (like maximum), time resolution (like daily) and units.
Petra: this would be very good suggestion, I was really missing this
Andrea: why can’t you use multiple constraints on the object of interest?
Barbara: You can use multiple constraints, but the mentioned additions are not constraints of the object of interest but of the whole variables, therefore we need additional object properties

variable definition within I-ADOPT framework								M	U	T
type of concept	Variable (preferred label)	hasProperty	hasObjectOfInterest	hasMatrix	hasConstraint	hasContextObject	constraint	usedModifier	usedUnit	usedTimeResolution
variable	air temperatu	temperature	atmosphere	troposphere	at 1.7 meter (atmosphere)					
variable+M	maximum air temperature at 1,7 meter	temperature	atmosphere	troposphere	at 1.7 meter (atmosphere)			maximum		
variable+U	air temperature at 1,7 meter in degree Celsius	temperature	atmosphere	troposphere	at 1.7 meter (atmosphere)				degree Celsius	
variable+T	daily air temperature at 1,7 meter	temperature	atmosphere	troposphere	at 1.7 meter (atmosphere)					daily
variable+M+U+T	maximum ai	temperature	atmosphere	troposphere	at 1.7 meter (atmosphere)			maximum	degree Celsius	daily

Discussion point: Shall we allow the property class to be constrained?

- Quantities measured relative to a scale or a standard or a datum
- Quantities expressed as something specific like e.g. Carbon or Nitrogen

Barbara: you could use a more specific property (a subconcept of a property) and if it relates to the whole variable you might need to model it within the whole measurement model with another concept, but best is to create github issues here and come up with examples and discuss the pros and cons of the different solutions

Discussion point: What to do with properties that relate to two objects and none fit the matrix or the context object definition

- Distance between two habitats (see https://github.com/i-adopt/examples/issues/14)
- Measurements related to prey/predator or parasite/host relationships
- Fluxes of something across an interface between two systems

Sirko: We need a few new ideas on how to describe a property of the relationship and not so much of two individual objects. One idea would be to model the object of interest we model as a pair of objects, one entity representing this relationship between the two objects which then is detailed out somewhere else. However, it is not sure if this additional layer helps or complicates the model understanding

Lindsey Anderson: at some point I-ADOPT moves from an ontology relationship to a knowledge graph, we don't want to get there because then it gets just super hard, maybe simplicity is best, gives more flexibility

Gwen: I-ADOPT can solve lots of simple variable use cases but obviously there are more complex elements and some are on the verge of what we can or should do with I-ADOPT and we need to think of other solutions (e.g. address some of them in the context of the greater data model)

Barbara: we are working with an OGC task group to extend the OGC standard ontology for observation, measurement and samples (OMS) with I-ADOPT for the observable property concept, but before we can go so far we have to model on real example like time series observation data with OMS plus I-ADOPT. We plan to have such a modelling workshop in March 2025. We will inform you about it when we have organized it.

Gwen: it would be good to aim to close the open github issues before that workshop

Barbara: yes and the second milestone would be to have done the interoperability test and the improved guidelines
Gwen: Alexandra and I are involved in a European project where we will have to build in the next three months those SPARQL queries to demonstrate the usefulness of I-ADOPT, so we will have something to show by then
Q: Alexandra - could you add a link to an example of the dynamic SPARQL based mappings that you mentioned? I'm especially interested in what the I-ADOPT versions of the vocabularies (fine-grained and coarse) look like.