One Data Model
Weekly Teleconference
Agenda and Content

February 21, 2022

Agenda

- Announcements & Admin
- Review
- Classes, instances, and successive refinement
- ?

Class and Instance

- Class as template for an instance
- Semantic categorization
- Reuse vs. specialization tradeoff at each level
- Composition of classes as template for composed instances, etc.
- Refinements: Class, Sub-class, Type, Sub-Type, Kind
- Classes all the way down (?) to the final specialization
- "Library instances" are templates
- IP Address, unique identifier, cardinality of one
- All values filled in or nulled

Closing

- Next teleconference February 28, 2022
    - Agenda points?
- AOB

Back up

February 14th Agenda

- Announcements & Admin
- OneDM Update for T2TRG
  - March 10
  - 10 minutes + Q&A
- Extending to include ecosystem models
  - CI process to convert new SDF models to ecosystem
  - Goal of making OneDM models work for everyone
- Extend the playground to more ecosystems
  - Bluetooth Characteristics and data types
  - Other?
- Ecosystem-specific models
  - Namespace and versioning scheme

Ecosystem-specific models

- Namespace and versioning scheme

- Playground models don't have a namespace –
  - need to add the block
  - linter check and warning?
  - Is there a default behavior when there is no namespace reference? (research) no contribution to a global ([https://]onedm) namespace
  - These are theoretically ecosystem URIs (ocf:, oma:) or should they all be onedm – is there a useful constraint beyond "onedm:"
    - Examples could help trade off

- Versioning question
  - What is our resolution of the version marking question?
  - Discuss at next call February 21
  - Ecosystem-specific versioning - is a string good enough?
  - Recommend using onedm scheme - Merging infoblocks

- What else needs to be resolved
  - SDF questions – JSON number format
  - Big numbers? 64 bit integer TD, JSON-LD? ASDF issue TBC - Bigmax

February 7ᵗʰ Agenda

- Announcements
  - T2TRG meeting – 15m on agenda
  - DTDL conversion code is in the IPSO github
  - https://github.com/EricssonResearch/ipso-odm/tree/sdf-dtdl#onedm-sdf-to-dtdl-converter
- Bespoke repositories, OMA model repo
- Adoption process
- OneDM new venue development
  - Outreach on announcement of the next meeting
  - Groups.io delivery options
- AOB
  - Expanding the playground – BT models
  - Ecosystem-specific source representations in the playground (e.g. XML)(Back-translations of all PG models to an ecosystem format)

Bespoke Repositories

- IPSO and OCF repos created
  - Carsten get admin permission
- Instantiate a repo from template for each?
  - Need to try this
- Haven't designed the linker for separate namespaces – needs to be added – can be a simple file that is manually updated for now
- Write up a document and update existing documents to reflect the addition of repos
- Blog post introducing and announcing

Adoption process

- Status and plan
  - Original model proposal still needs closure on details
  - Updates will be needed -
  - Multiple drivers needed for models? OCF + IPSO
  - Adoption in 1+ steps with deferred convergence/alignment – less strict – phase
    - For example, ISO 8601 duration
    - Common abstraction with minimal constraints
    - DTDL example
    - How can we address un-solvable issues like conversion to/from duration in months – e.g. how do we import these models
    - Units are hard
    - We should only use pattern in targeting to a representation

Announcements

- New mailing list at groups.io
    - https://groups.io/onedm

Venue shift

- New mailing list at groups.io
  - https://groups.io/onedm
- Move enterprise admin, calendar, etc. to github
- Set up a blog on onedm.org

2022-01-31 conclusions

- Review board will not push for adoptions

- (Best practices evolve)

- Sensor design by a dedicated team – breakouts vs. agenda working time

- Ecosystem repo tracking

Review, Adoption, Publication

- Review from last meeting

- Alignment as a background process

- Toolchain

- Next steps, going forward
    - Get multiple spaces going as a priority
    - Announce this on a blog article onedm website
    - Monthly publications, news and updates

- People can run private repos on their own account with onedm CI as github actions

- Public models on onedm.org
    - Template work task
    - Wouter and Carsten can work from a script (run.sh in the pg)
    - Githup platform installed packages can easily be resolved
    - Orgname in the repo naming e.g. ipso-models ocf-models sunspec-models

- Start with (ipso or oma) –models

- Bluetooth mesh? Practical considerations need characteristics and data types, need a converter – need URI for the source so translations can be automated – start by working with Simon on publishing the underlying dictionaries

Venue changes

- Teleconferences
  - TBA new teleconference venue
  - Same schedule
- Mailing list
  - Planning to move to groups.io
- Github for everything else
  - Calendar
  - Work planning
  - OneDM Causeway data

Alignment

- First pass – names, SDF usage

- Who needs to change what and why

- 2 levels of bridge
  - Same meta-model – SDF + structural isomorphism
  - Same information model – OneDM Adopted per function

- Translation across ecosystems using 1:1 translators without SDF is required if there are no SDF models

- Benefit is in adopting SDF models from other ecosystems

- Benefit in having models published under ecosystem "banner" to facilitate cross-enrichment

- Minimal alignment opportunities?

- OCF has collections – how do we model this in SDF? SDF Thing

- IPSO models compose differently – Object links with SDF Thing

- Atomic collections need one read for multiple objects + required composite read in OMA LWM2M

Alignment

- Separate folder/repo for pre-alignment

- No name conflicts due to prefix – same as separate repo

- What are common improvements that can be carried forward for alignment?

- Quick win in what we can currently translate in our own repos and how to use them – how to translate identifiers to rt, how to combine OCF interfaces, etc.
  - What if each OCF interface is a combine-able object that can be used in runtime systems?

- Can use prefixes in addition to separate governance as a quick win?

- Can use URN naming to identify which model ecosystem the models come from

- Building a bigger ecosystem of models

- Can do the unifying thing as a separate thread

Toolchain issue for creating new repos

- Can be as simple as creating more repos in OneDM
- Tooling needs to work across repos
- Github actions integration
- Recipe for the existing tools
- Clone a repo with a template

Going forward on multiple repos

- Sketch out solution and sort out on mailing list
- New mailing list – gittr?

Review Board

- Review the discussion from the week of 9/13
  - We would rather focus on function and architecture and leave naming to later in the process
  - We should prioritize developing our way of working in the first models
  - On/off switch is not so simple due to the high degree of generality and reuse; this may be the case with many common affordance types
  - Look at a few more examples and continue to review the sensor patterns – start a discussion in wiki(HackMD) => issues => PR to track the discussion
    - Units
    - Review isomorphism in existing models, what are the common elements and what is a common set of design patterns (inheritance, mixins, modularity) – common factors, leverage someone's IPSO background - sdfRef with multiple sources

Next Steps

- Models have been reviewed – need to process the review comments and proceed with the discussion
  - Can these models be provisionally accepted with the expectation that they can be refactored as we gain more experience?
  - More guidelines may be needed, what about looking at a broader set of models to see if this is the case?
  - Monday review board to further progress the models we have
- Ari has made a PR to the new repo

Review Board

- Discussed versioning into the repo – semantic version is added when a contribution reaches a certain state

- Discuss CLA signup in github – no legal org? agreement to use BSD3 is sufficient - where is this done? It is a step in submitting PR to check that the submitter has agreed to the CLA
  - Github policy is a blanket agreement where the repo carries a license:
  - https://docs.github.com/en/github/site-policy/github-terms-of-service#6-contributions-under-repository-license

- Not going to block contributions

- Note on making a private development fork+branch for contributions, ~~how to send notifications using an issue~~
  - Github has a draft PR process we can use, so we can make a PR in the fork

SDF Interim summary

- No new additions
  - not including sdfProduct
- Double check with OneDM users that SDF has the required features
  - Statements from organizations that will publish models, etc.
- Please review the latest draft

OneDM Roadmap

- SDF is almost done and on a track for evolution

- OneDM has developed SDF tools and a governance regime, playground and examples, and a good start on best practices

- Other JSON Schema based data models are proliferating in both single- and multi-domain groups

- iotschema.org is not active

- W3C Web of Things needs a semantic annotation system

How to make Progress

- Determine what kind of models are needed
- Keep the model discussion at the high level
- Use cases vs. requirements and scenarios

Sensor design pattern

- Separate the quantity from the sensing

- "Temperature Sensor" vs "Sensor" that measures "Temperature"

- Make it easy for many embodiments to be constructed

Data

- Fundamental types
- Quantity and Units
- Characteristics (i.e. averages, quartiles, etc.)
- Range and Scale
- Reusability of these definitions
- Data type (sdfData) vs sdfProperty, where do the application semantics like quantity and units go?
- Examples of different styles, use common quantities temperature (pressure is differential, gauge vs. absolute) how do we differentiate?
- Data should be standalone

Interactions

- Functional modularity

- Actions and Events could be optional and bespoke for certain protocols

- The base model could be very simple with well categorized extension points e.g. Min/Max observed

- Sensors are separate from generic Properties, sensor definitions use property definitions and add behaviors like conditional reporting

- Properties can be used for static or dynamic

- Features? Modular composition

Semantic Composability

- Modularity

- Conceptual Layering

- Composed Properties

- Syntactic considerations and structural implications for models, e.g. mixin vs collections

- Mixin should have optionality and satisfy the LCS principle

- Multiple "inheritance" requires conflict resolution

- Ordering dependencies, need to prototype

Protocol dependencies mapping

- Data reporting options including composed schemas, sequences, conditional notification

- Read/write/observability

- Late binding representations

- Mapping files add information to the model where the information comes from external namespaces. Namespaces are part of the map key and want to become segments in the JSON pointer

- Need to manage cross-namespace references

- HackMD examples
- SDF examples also, test against the current specification