

WIGOS Metadata Representation & XML Schema

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World Meteorological Organization
Organisation météorologique mondiale

Reference documents

- WIGOS Metadata Standard
 - ...
- WIGOS Metadata Schema
 - <https://wmo.projecthut.com/svn/wmdr/>
 - User: reviewer / password: IcanReview2
- WIGOS Guide
 - <http://www.wmo.int/pages/prog/www/wigos/WGM.html>
- OSCAR/Surface
 - <http://oscar.wmo.int/surface>

Need URL here



Outline

- Introduction
- Formalizing WIGOS metadata
- Understanding the WIGOS metadata model
- XML schema definition (XSD) & Schematron
- Examples?

INTRODUCTION



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WIGOS Metadata Standard

1. Observed variable

2. Purpose of observation

3. Station/ platform

4. Environment

5. Instruments & methods of observation

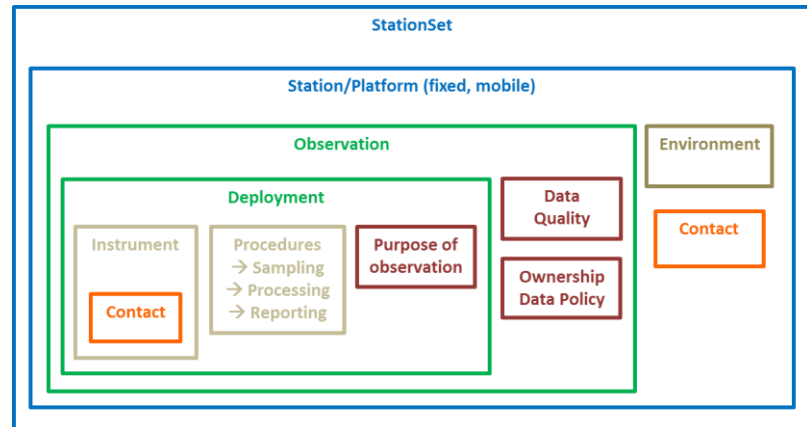
6. Sampling

7. Data processing and reporting

8. Data Quality

9. Ownership and Data Policy

10. Contact

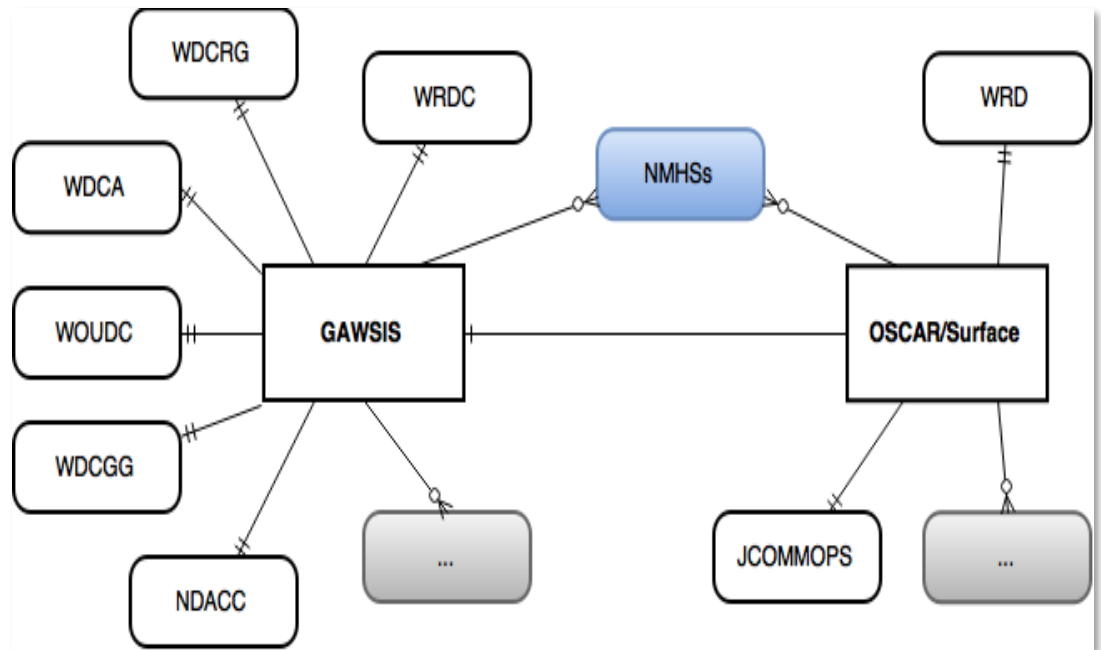


WMDS is a descriptive standard

- WMDS describes concepts and principles
- 10 categories
- Mix of general and specific metadata items
- Ambiguous without further specification
- Need formal specification of metadata items
- Need cardinalities
- Need «best practice» guidance material

OSCAR/Surface metadata sources

- NMHSs are primary source of information
- Integrate existing metadata automatically to reduce burden



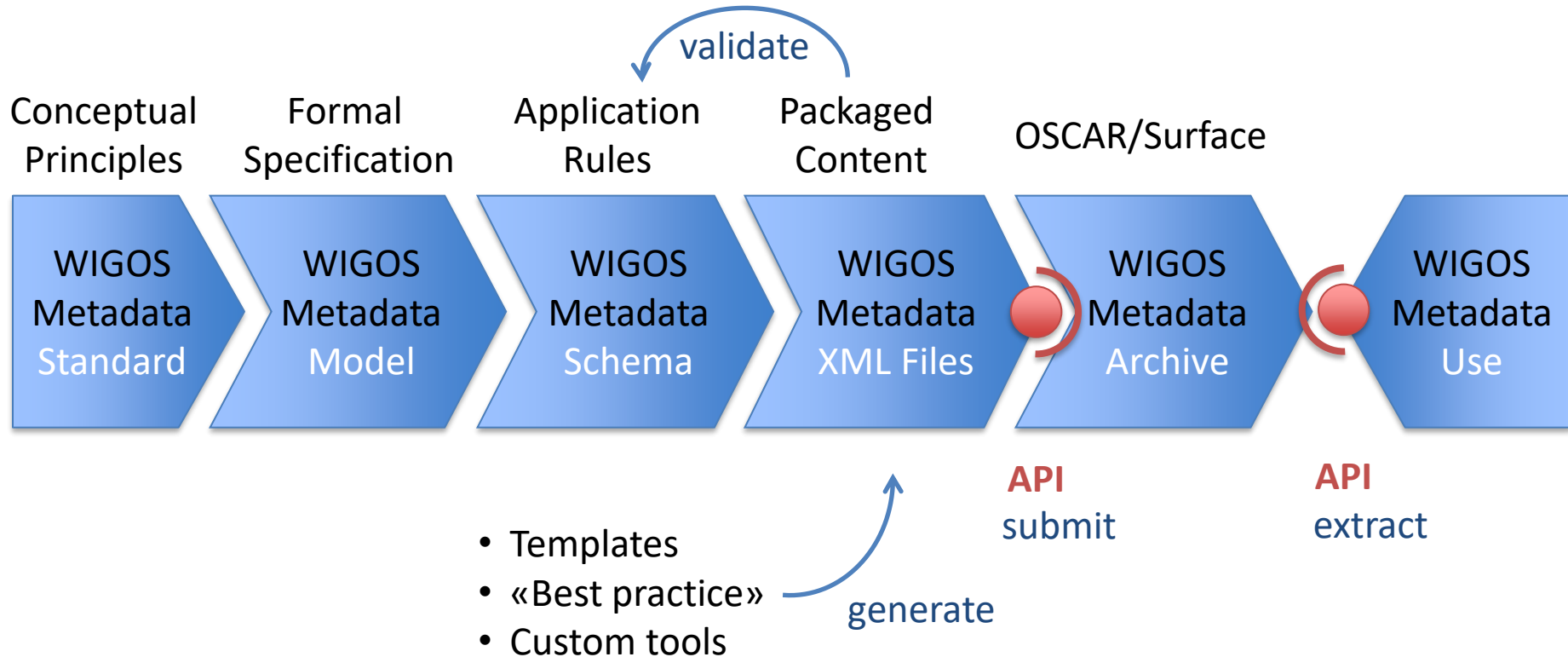
FORMALIZING WIGOS METADATA



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Formalizing WIGOS Metadata

From Standard to Use



What is a formal specification?

- List allowed elements
- Specify cardinalities
 - 0..1 (optional, at most one)
 - 0..* (optional, many allowed)
 - 1 (mandatory, exactly one)
 - 1..* (mandatory, at least one)
- Specify hierarchy between elements
 - «A» depends on «B»
- More documentation



UNDERSTANDING THE WIGOS METADATA MODEL



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Formal WIGOS Metadata Model

WMD
Record

«WIS»-type
metadata

Observation

Extensions

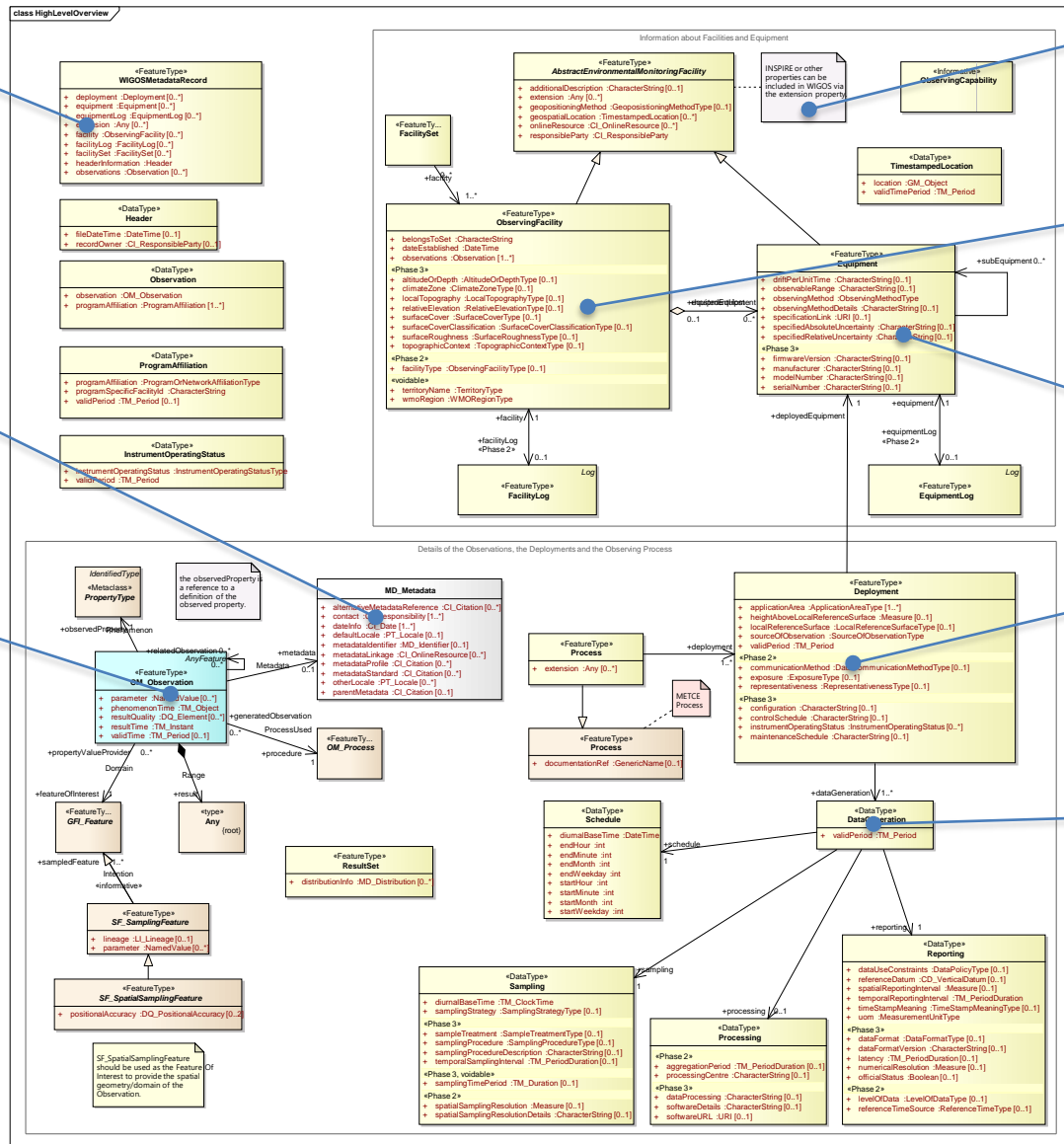
Observing
facility

Equipment

Deployment

DataGeneration

- Schedule
- Sampling
- Processing
- Reporting



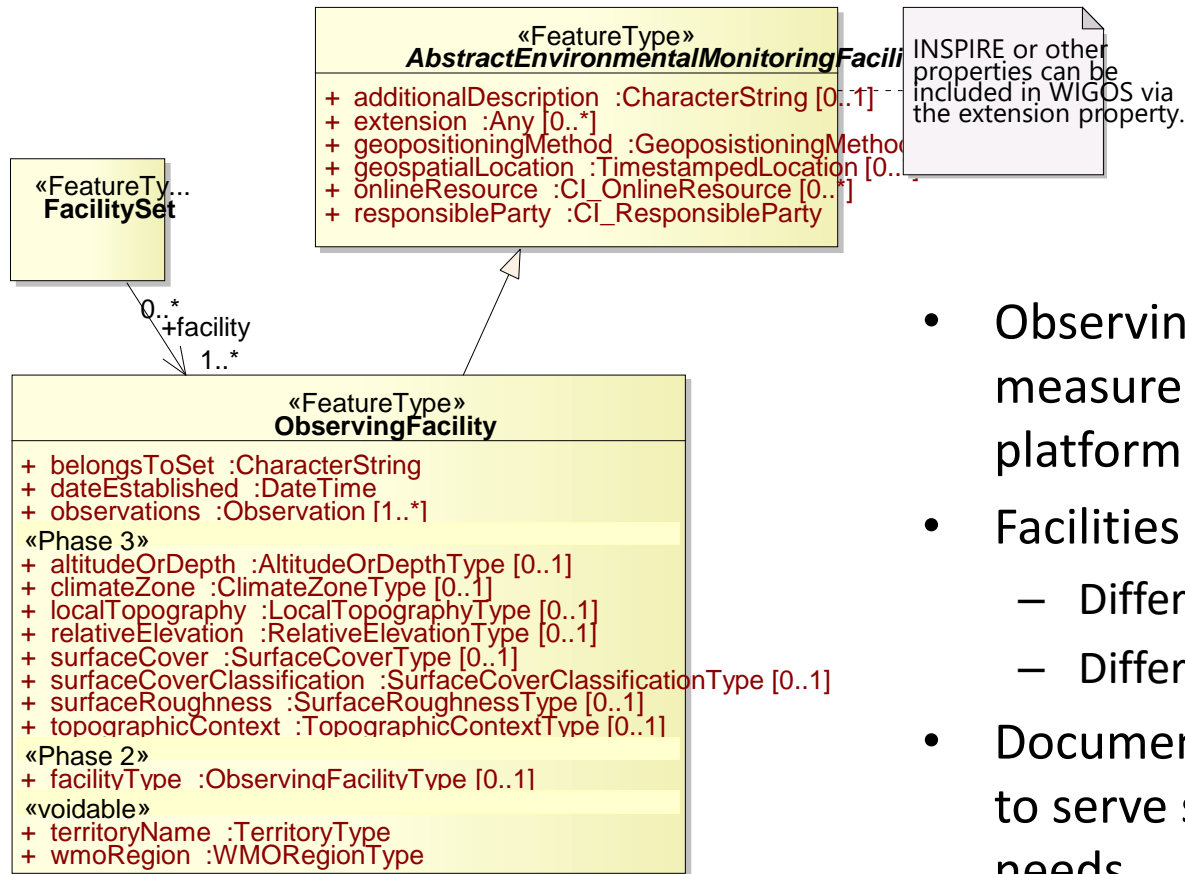
«FeatureType» WIGOSMetadataRecord

«FeatureType» WIGOSMetadataRecord

+ deployment :Deployment [0..*]
+ equipment :Equipment [0..*]
+ equipmentLog :EquipmentLog [0..*]
+ extension :Any [0..*]
+ facility :ObservingFacility [0..*]
+ facilityLog :FacilityLog [0..*]
+ facilitySet :FacilitySet [0..*]
+ headerInformation :Header
+ observations :Observation [0..*]

- A container for various sections
- All sections are optional
- Enables documentation of partial WMD records, e.g.
 - a list of observing facilities only
 - a subset of observations at a facility

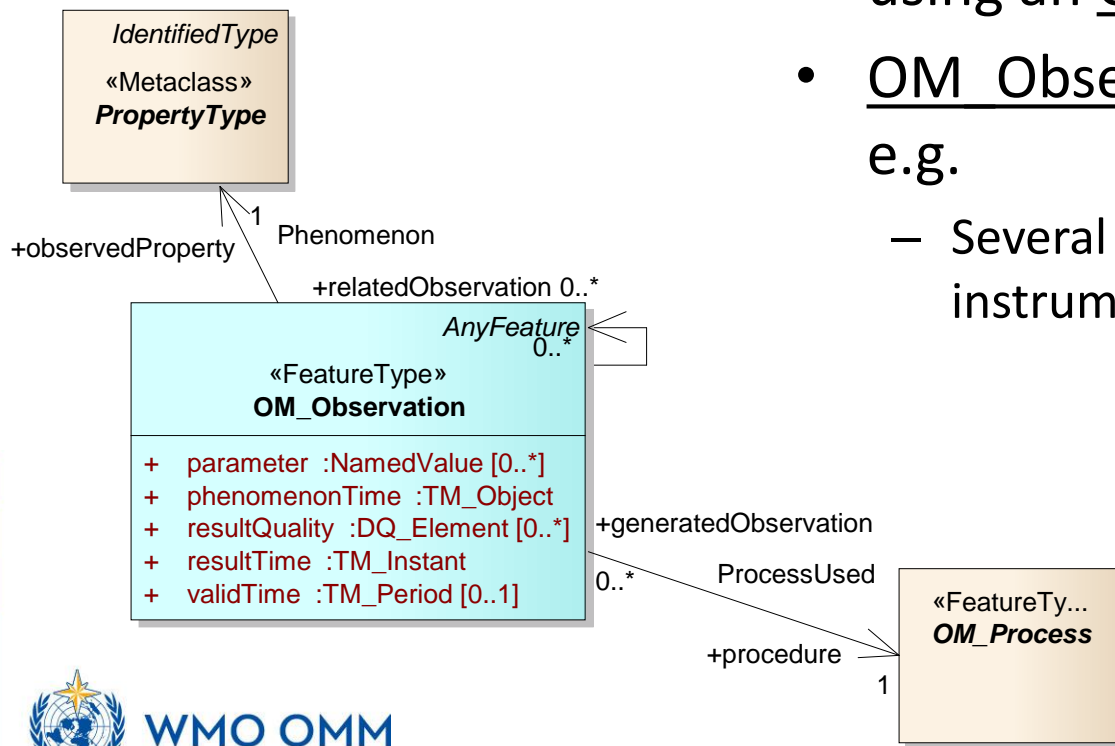
«FeatureType» ObservingFacility



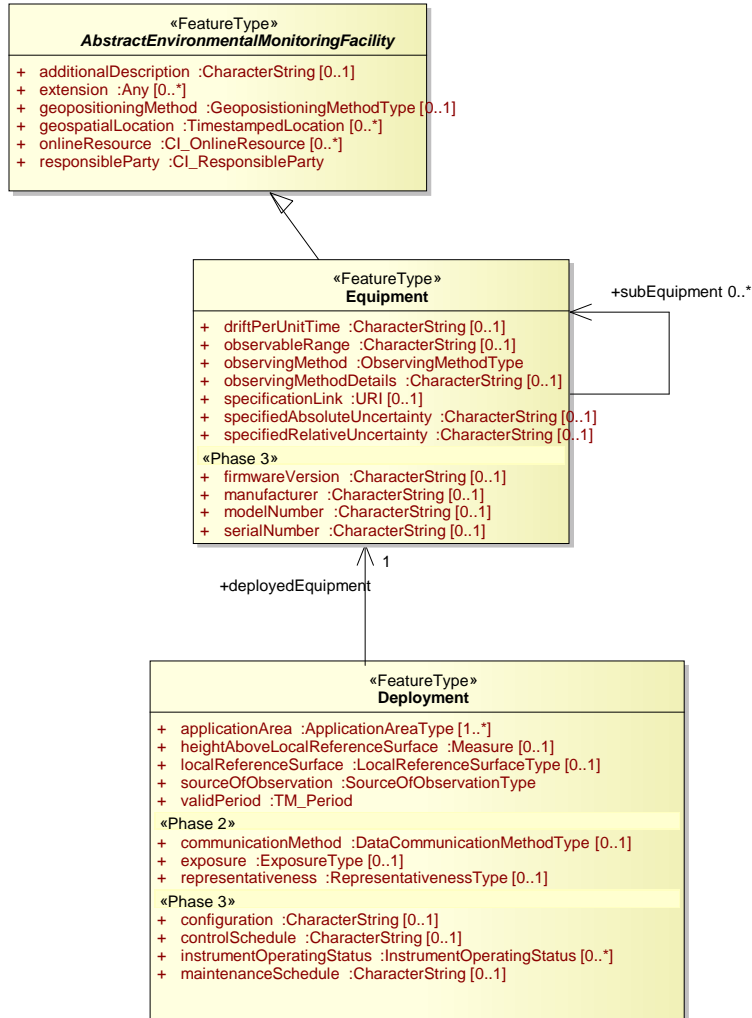
- ObservingFacility describes a measurement station / site / platform / observatory / ...
- Facilities can be grouped into sets
 - Different WIGOS IDs
 - Different sites
- Documentation can be extended to serve specific community needs
 - Interpreters will likely ignore extensions

«FeatureType» OM_Observation

- OM Observation used to describe (a time series of) observations of an observedProperty obtained using an OM Process
- OM Observations can be related, e.g.
 - Several variables observed by same instrument



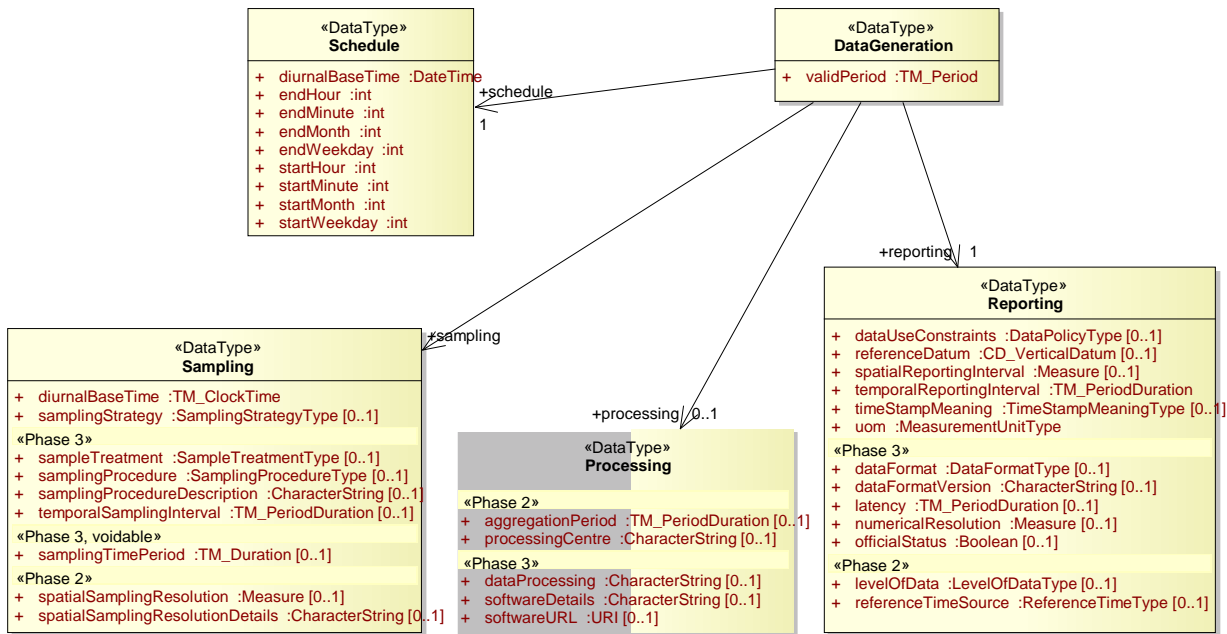
«FeatureType» Equipment, Deployment



- Deployments describe
 - when, where, why (applicationArea), what Equipment has been used
 - configurations, maintenance and calibration routines
 - instrument operating status as a fxn of time
- Deployments can be parallel or consecutive
- Deployments also describe the DataGeneration processes

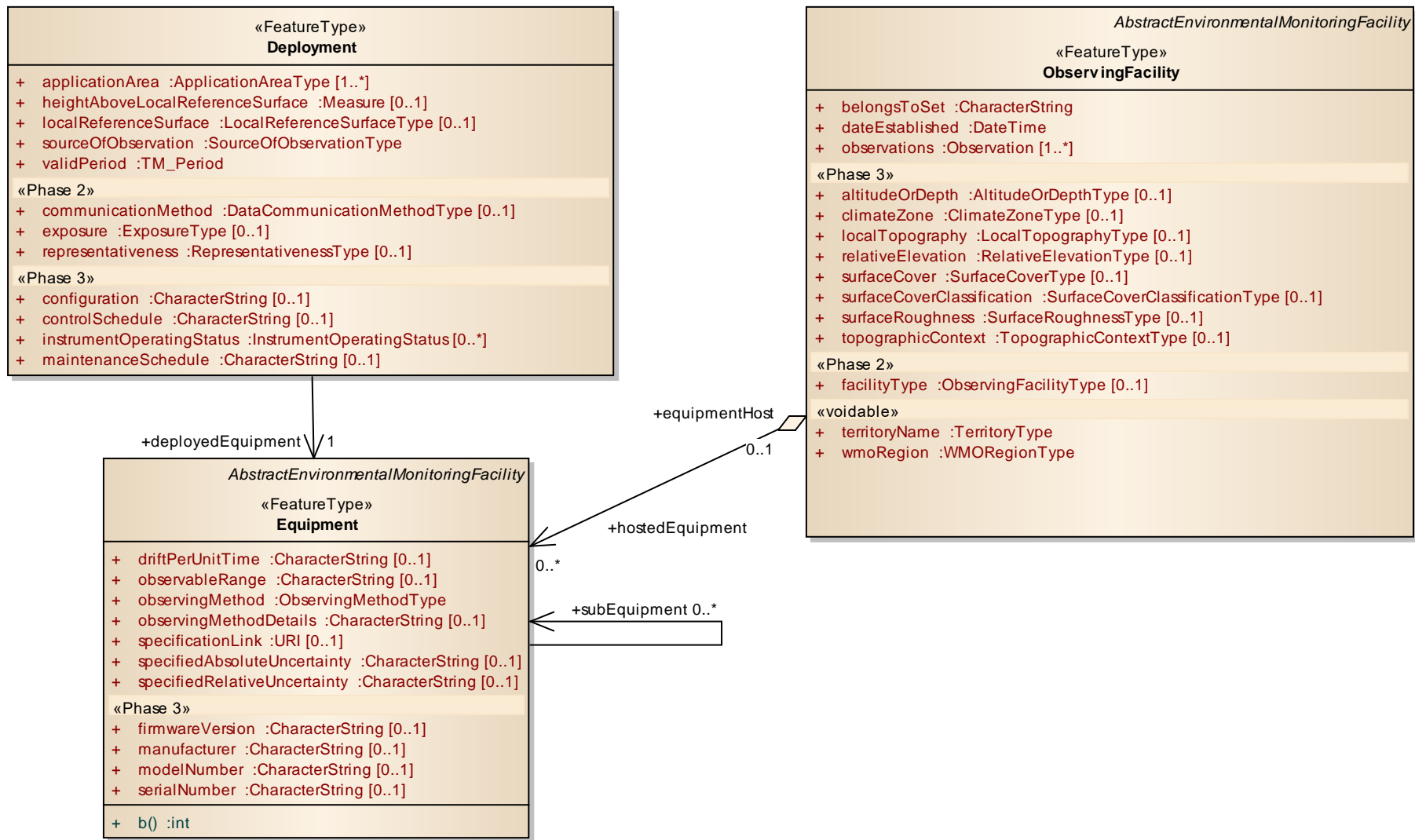


«DataType» DataGeneration



- DataGeneration involves
 - Sampling
 - Processing
 - Reporting
 according to a
 - Schedule
- Multiple schedules can be defined, e.g.
 - Working days vs weekend
 - Winter vs summer

class Deployment



XML SCHEMA DEFINITION (XSD) & SCHEMATRON

What is what?

- XSD
 - Formal validation rules
- Schematron
 - Additional formal constraints that cannot be expressed in XSD
- On-line validators exist for XSD
 - <https://www.freeformatter.com/xml-validator-xsd.html>
 - <http://www.xmlvalidation.com/>
- Stand-alone tools
 - XMLSpy



WMDR

- Development version of schema
 - <https://wmo.projecthut.com/svn/wmdr/branches/development/xsd/wmdr.xsd>
- Development version of schematron
 - <https://wmo.projecthut.com/svn/wmdr/branches/development/xsd/schematron/>
- Credentials
 - User: reviewer
 - Password: IcanReview2



EXAMPLES



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Example 1

- <https://wmo.projecthut.com/svn/wmdr/branches/development/examples/WIGOSMetadataRecordExample.xml>



How can you help?

- Think about what information you would like to send to OSCAR/Surface
 - Full records of a single station?
 - Incremental changes of your entire network?
 - ...?
- Prepare «real-world» XML example files
- Validate, share and discuss with the OSCAR/Surface team what works for you and what doesn't





You & your organization!



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