

# IGS Metadata XML


## Implementation Plan as Presented in 2016

### Milestones to date:

- Agreement on elements to be included in Site Log XML schema version 1.0
- Agreement on certain encoding changes for consistency (e.g. dateInstalled, dateRemoved)
- Adoption of GeodesyML with Site Log XML schema version 1.0 as application schema

### Next steps:

- Documentation of schema 1.0
- Agree on GeoServer or other exchange mechanism
- Provide list of all available software (client and server) for enabling this activity
- Agree on and implement software distribution mechanism
- Sandbox exploration
- Identify 2-3 groups to do a pilot demonstration of use cases/mechanisms
- Adoption of exchange mechanisms
- Documentation of exchange mechanisms
- Adopt a process for handling future needs
- SiteLogManager system (and others as desired) implement Application Server and supporting software



Much of  
this can  
happen in  
2016

# Implementation Plan - Progress

- ✓ Documentation of Site Log XML schema 1.0 (GeodesyML 0.4)
- ✓ Tests of GeoServer in progress
- ✓ Provide list of all available software (client and server) for enabling this activity
  - ~ Software tools are being developed
  - ~ Documentation on GA site and in Google Docs
- ✓ System implementation and/or sandbox exploration
  - ~ Progress at GA, ROB, UNAVCO, BKG, others?
- ✓ At this meeting
  - ~ Evaluating progress to date
  - ~ Discussions on refinement of schema
  - ~ Regrouping to revise implementation plan

## Progress since Sydney IGS Workshop

- At Sydney, GeodesyML had just been adopted, implementation was yet to begin
- Since then, work has taken place at several institutions:
  - **Geoscience Australia** is providing GeodesyML tools and support
  - **Royal Observatory of Belgium** has worked extensively with encoding site logs in GeodesyML
  - **UNAVCO** and **BKG** have investigated GeoServer OGC application server as a mechanism for providing GeodesyML encoded Site Log metadata via OGC WFS

# Progress since Sydney IGS Workshop

## Geoscience Australia

GeodesyML Support has been built out

- GeodesyML V0.4 is available from [www.geodesymml.org](http://www.geodesymml.org)
- GitHub Code repository and documentation
- GeodesyML Forum
- GA has developed a user interface for GNSS metadata <https://gnss-site-manager.geodesy.ga.gov.au>



# GeodesyML

Helping you share, search and store  
geodetic data and metadata

Beta version now available for testing



## Is GeodesyML for me?

Learn more about how the Geodesy Markup Language (GeodesyML) can help you share, search and store geodetic data and metadata

\*I am part of the geodetic community and am interested in finding out more\*



## GeodesyML for Managers

Find out how Implementing GeodesyML can help you improve the interoperability and discoverability of your geodetic data

\*I manage geodetic networks and work with users of geodetic data\*



## GeodesyML for IT Specialists

Technical information for IT specialists supporting geodesy programs including schemas, examples and code

\*I support geodesy staff with databases, programming and web services\*



GeoscienceAustralia / GeodesyML Unwatch 32 Unstar 10 Fork 1

Code Issues 14 Pull requests 0 Projects 0 Wiki Insights

No description, website, or topics provided.

297 commits 8 branches 0 releases 6 contributors

Branch: master New pull request Create new file Upload files Find file Clone or download

heyagosp committed on GitHub Merge pull request #196 from GeoscienceAustralia/revert-to-nillable Latest commit 334d2f7 27 days ago

codelists	Bump country code list catalogue version number	3 months ago
doc/xsd-generated	Fix generation of html documentation	a year ago
examples	Add schematron validator for country codes	3 months ago
schemas	GEOD-306 fix schema for problem source types	3 months ago
tools	Revert nillable variables and connect with token	27 days ago
travis	Trigger build of ogc-schemas	3 months ago
.gitignore	#113 - Change CountryCodeISO to use CodeLists	3 months ago
.travis.yml	Add travis api token	3 months ago
README.md	Move gh-pages to separate repository	7 months ago
assembly.xml	Package schema files into a maven artifact	a year ago
ci.sh	Call 'mvn deploy' when running a CI build	3 months ago
deploy-documentation.sh	Rename gh-pages branch	2 years ago

# GeodesyML site log manager



Australian Government  
Geoscience Australia

GNSS Site Manager

ALIC ▾



You have not logged in and are not authorised to edit ALIC.

Site Information

Site Identification

Four Character Id	ALIC
Site Name	Alice Springs AU012
Monument Inscription	National Geodetic Fiducial Ntwk (AUSLIG) AU012
IERS DOMES Number	60137M001
CDP Number	None
Monument Description	PILLAR
Height of the Monument (m)	0.5
Monument Foundation	CONCRETE BLOCK
Foundation Depth (m)	
Marker Description	
Date Installed	1992-08-12 00:00:00
Geologic Characteristic	BEDROCK
Bedrock Type	METAMORPHIC
Bedrock Condition	WEATHERED



Australian Government  
Geoscience Australia

# Progress since Sydney IGS Workshop

## Royal Observatory of Belgium

Royal Observatory of Belgium is rebuilding its GNSS station metadata management system ( **M<sup>3</sup>G** – **M**etadata **M**anagement and distribution for **M**ultiple **G**NSS networks)

- To be used in the European Plate Observing System (EPOS) as well as EUREF
- Will manage:
  - station metadata: site logs, site pictures, indiv. antenna calibrations, and additional information from our GNSS station database
  - several networks (EPN, EPOS, EPN densification, ...) with different metadata validation rules
- Includes new GUI for creating, updating, and validating GNSS station metadata
- Will use GeodesyML as the format to exchange GNSS station metadata



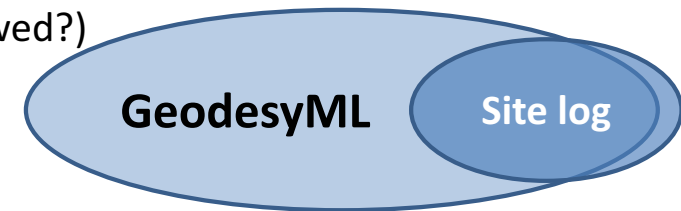
## Produce GeodesyML 0.3 encoded metadata from EPN CB database (Summer '16)

*300+ EPN stations and 1100 EPN densification stations*

Pro:

GeodesyML allows to include information that is in the EPN CB data base, but that was not available in site log:

- RINEX 3 monument and receiver number (but not mandatory in GeodesyML?)
- 3-char ISO country code
- Location (url) with individual antenna calibrations (but just one url allowed?)
- Real-time data stream details



Difficulties:

- Fields mandatory in GeodesyML, but not mandatory in site log (e.g. "Input Frequency")
- GeodesyML imposed integer, while site log accepts e.g. "<5"
- TIME/DATE format incompatibility
- Management of site owner/contact information
  - No one-to-one relation between site log and GeodesyML
  - The secondary contact of the site log Point of Contact missing in GeodesyML
- Date of previous site log release missing in GeodesyML

*Complexity for non-expert users*

## GeodesyML 0.4 recently released

- Majority of previous issues seem to be resolved
- No time yet to look at all details *Documentation and change log welcome*
- Included?
  - What RINEX data are distributed? RINEX2/3 – daily/hourly
  - Embargo time on data?
  - License info (is getting more and more important – EPOS!)?
  - DOI?
- Mapping of the site owner/contact information remains difficult → important from the network coordination point of view

ROB is faced with different validation rules for different networks (IGS/EPN, EPOS, local)

Need to implement 2-step validation of station metadata:

- 1) Using XSD\* of GeodesyML: focus on syntax validation and format of field content
- 2) Network-dependent validation rules (e.g. mandatory DOMES no, accepted antenna type as a function of available calibrations)

ROB needs:

- XSD that does not define what is mandatory or not (except for some KEY elements)
- XSD with strict rules to allow format verification of filled in elements

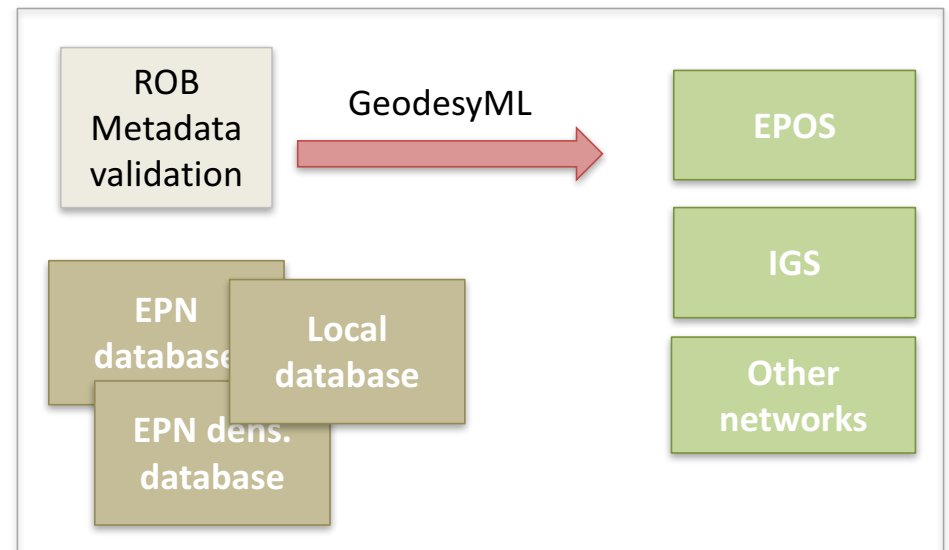
Examples in present XSD:

- Station 4-char ID is mandatory, but can be blank or three characters, two characters...
- Domes number line is mandatory, but can contain be any string
- Antenna/receiver section not mandatory

\*XSD= XML Schema Definition

## M2M exchange of GNSS station metadata :

- ROB will implement WSDL (web service definition language) for EPOS
- Independent of GeoServer applications



# Progress since Sydney IGS Workshop

## UNAVCO

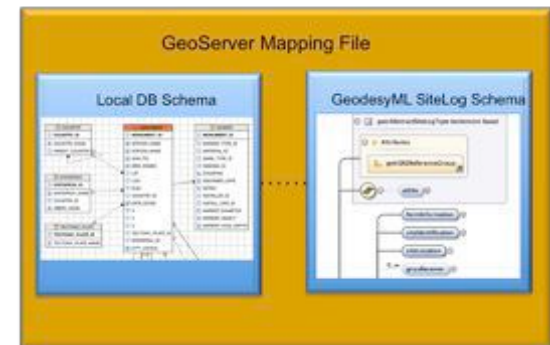
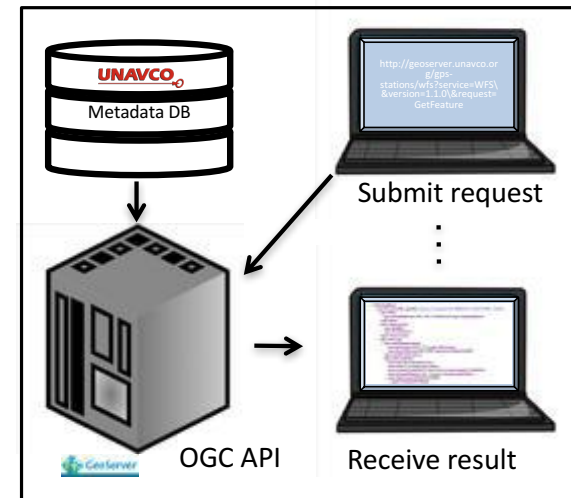
UNAVCO is using GeoServer for presenting GeodesyML Site Log metadata via Web Feature Service WFS

- Requires creating Application Schema Mapping for DB schema to GeodesyML
- Success after just 3 weeks of work by an intern
- Works for M2M accessing of metadata and will allow discovery/interoperability with external entities (e.g. GEO Portal)



## UNAVCO Activities, Progress, and Plans

- At UNAVCO we are investigating GeoServer as a platform for delivering GeodesyML encoded metadata from the UNAVCO database
- GeoServer is the reference implementation for Open Geospatial Consortium (OGC) Web Feature Service (WFS)
- We have set up an internal test and development environment consisting of virtual machines for the database and for GeoServer
- Utilizing the application schema plugin mechanism, our GeoServer test instance has been successfully configured to deliver a significant subset of GeodesyML encoded Site Log metadata and expect to be able to do the full Site Log with additional work
- Once GeoServer is set up, the effort in implementing this method is in creating the mapping file between the DB and the Application Schema (GeodesyML)



## **UNAVCO Preliminary Conclusions from Working with GeoServer**

- For the full suite of necessary functionality within IGS, GeoServer has some limitations
- Alternative is to use GeoServer for certain functions
  - ~ search and discovery with GeoServer spatial search capability
  - ~ delivery of metadata in GeodesyML and other formats to IGS users
  - ~ provide OGC web services delivery of metadata for global systems such as GEO portal
- To complete remaining functionality with needed flexibility could require building a custom API
  - ~ interoperability for more complex functions such as machine-to-machine updates

### **Near Future Plan**

- Develop the Application Schema mapping file for GeoServer to deliver GeodesyML-SiteLog for IGS Site Logs from IGSCB Site Log Manager System and deploy

## Implementation Plan – Next Steps

Interested DCWG Members can discuss during lunch break Wed.

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