Quality and user feedback metadata: theoretical aspects and a practical implementation in the MiraMon Metadata Editor

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Overview

• Background
• Geospatial User Feedback (GUF)
  ▫ Conceptual model
  ▫ XML implementation
• GUF service
• GUF client
• Example use cases
• Conclusions
Background

• Final aim: help to determine fitness-for-purpose

• 2010:
  ▫ Metadata about data quality
  ▫ Extension of ISO standards
    • Producer quality model
    • User quality model
  ▫ Implementations
Background

- **Producer** Quality Model
  - Mainly included in reviewed versions of ISO 19115-1, 19115-3 and 19157

- **User** Quality model
  - Evolved in OGC GUF.SWG from
    - GeoViQua
    - CHARM
  - OGC Geospatial User Feedback Standards (03/2016)
Background

User feedback is a form of **crowdsourcing** that offers the possibility to the consumer to provide extra information about items and complement the producer’s description.

- Stars rating
- Feedback summaries
- Request for more comments
- Short description
- Reviewer name
- Long description
- Feedback about the feedback
- It can also contain other kind of annotations
Geospatial User Feedback Standard

- Conceptual model (OGC 15-097): Metadata is organized in **4 UML modules**:
  - **QCM**: Quality Common Metadata
  - **GUF**: Geospatial User Feedback
  - **UFC**: User Feedback Collection
  - **UFS**: User Feedback Summary

- The standard does NOT define:
  - Service to store feedback items that could be queried
    - UF collection would be the service answer
  - Client to show and produce feedback items
GUF: Geospatial User Feedback

Person/Organization

The Feedback Item

Resource

Do we want a multilanguage model?
GUF and QCM: Quality Common M.

Significant Events

GUF_SignificantEvent

+ abstract :CharacterString
+ citation :CI_Citation [0..1]
+ extent :EX_Extent
+ eventType :GUF_SignificantEventTypeCode [0..1]

GUF_SignificantEventTypeCode

- hurricaneNatural
- volcanicEruptionNatural
- elNinoNatural
- droughtNatural
- stormNatural
- wildfireNatural
- floodNatural
- earthquakeNatural
- tsunamiNatural
- ifsEvent
- systemEvent
- satelliteAnomaly
- dropsondeAnomaly
- aircraftAnomaly
- buoyAnomaly
- shipAnomaly
- landStationAnomaly
- mobileSensorAnomaly
- sensorAlarm

Data quality::

DQ_DataQuality

Citation and responsible party information::CI_Citation

+ title :CharacterString
+ alternateTitle :CharacterString [0..*]
+ date :CI_Date [0..*]
+ edition :CharacterString [0..1]
+ editionDate :DateTime [0..1]
+ identifier :MD_Identifier [0..*]
+ citedResponsibleParty :CI_Responsibility [0..*]
+ presentationForm :CI_PresentationFormCode [0..*]
+ series :CI_Series [0..1]
+ otherCitationDetails :CharacterString [0..*]
+ ISBN :CharacterString [0..1]
+ ISSN :CharacterString [0..1]
+ onlineResource :CI_OnlineResource [0..*]
+ graphic :MD_BrowseGraphic [0..*]

Citations to publications

Additional data quality reports
Geospatial User Feedback Standard

- **XML Encoding Extension (OGC 15-098):**
  - **Feedback item**
  - **Feedback collection**
  - **Feedback summary**

```
<guf:GUF_UserComment>
  <guf:GUF_UserComment>
    <gco:CharacterString>Surprisingly, there are no directly comparable sets of global land-cover data for two different dates. For instance, the Global Land Cover for the year 2000 (GLC 2000) based on SPOT VEGETATION (http://www-gvm.jrc.it/glcom) is not directly comparable with the International Geosphere-Biosphere Programme (IGBP) Land Cover (1992–1993, http://edcdaac.usgs.gov/glc/globdoc2_0.asp) based on the National and Atmospheric Administration Advanced Very High Resolution Radiometer (NOAA-AVHRR). The difficulties arise from the use of different sensors, different classification systems (including different definitions of forest) and different classification methods.</gco:CharacterString>
  </guf:GUF_UserComment>
</guf:GUF_UserComment>
```

About a Resource

Customer Reviews

- 4.7 out of 5 stars
- 5 star: 76%
- 4 star: 21%
- 3 star: 3%
- 2 star: 0%
- 1 star: 0%

See all 34 customer reviews.

Rick Steves Pocket Barcelona
by Rick Steves (Author)

#1 Best Seller in Barcelona Travel Guides
GUF Service

- Not described by the standard
- Catalogue Service (CSW) based on ebRIM
- Operations
  - Capabilities
  - Query (to get the feedback collection)
  - GetSummary (to get the feedback summary)
  - Transaction (to insert new feedback items)
- CSW can be used to federate of services
GUF Service: NiMMbus

- Web Processing Service (WPS)
  - MiraMon NiMMbus implementation
- Want
  - To be a service to store geospatial data, feedback information and to execute distributed processes
  - To allow a perfect integration
    - With other MiraMon RS&GIS software components
    - With resources offered by SDIs and open data paradigms
- Hybrid cloud (public service, private resources) open to everyone
  - Registration required → User profile
- Offers
  - Tools to generate new geospatial data: can be published and shared
  - Tools to see, summarize and create feedback metadata related to any the geospatial data (wherever stored)
GUF Client

- MiraMon Metadata Manager (GeMM) is a file based metadata tool
- Implementation considerations:
  - feedback in local files? → it will be limited to our own feedback
  - Assuming there are copies of the same dataset that have the same id it is possible to store feedback of many users in a service
- A new tab is added to GeMM allowing:
  - To see previous feedback items of other users
  - To submit new feedback to the server
- Moreover, feedback can be about data and metadata:
  - Integration to metadata items
  - Integration to data visualization in MiraMon
Use case scenario 1

- A user is looking at the metadata and sees the abstract is not populated in English
Use case scenario 2

• A user is looking at a particular region of a dataset and sees something wrong
  ▫ user sees the feedback that only affects the same BBOX

Conclusions

• There is a need for complementing producer information with geospatial user feedback
• There is an approved standard for geospatial user feedback (conceptual model & XML implementation)
• An implementation of a GUF service+client on the cloud is possible
• In NextGEOSS H2020 project, a GUF implementation will be completely integrated in the GEOSS Common Infrastructure
Conclusions

• **NextGEOSS**: Nest Generation GEOSS for Business and Innovation
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