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
    - GeoV1Qua
    - CHARMe
  - OGC Geospatial User Feedback Standards (03/2016)
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.

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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

The Feedback Item

Person/Organization

Resource

Do we want a multilanguage model?
GUF: Geospatial User Feedback

Rating

class FeedbackItem

GUF_Rating
+ rating :GUF_RatingCode

«CodeList»

GUF_RatingCode
+ 1
+ 2
+ 3
+ 4
+ 5

Comments

class FeedbackItem

GUF_UserComment
+ comment :CharacterString
+ motivation :GUF_MotivationCode[0..1]

«CodeList»

GUF_MotivationCode
+ comment
+ question
+ answer
+ response
+ justification
+ resolution
+ moderation

Usage Report

class FeedbackItem

GUF_UsageReport
+ reportAspect :GUF_ReportAspectCode[0..*]
+ usageDescription :MD_Usage[0..*]
+ discoveredIssue :QCM_DiscoveredIssue[0..*]
GUF and QCM: Quality Common M.

Citations to publications

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..*]

QualityCommon::QCM_Publication
+ target :CI_Citation [0..*]
+ abstract :CharacterString [0..1]
+ motivation :QCM_CitationMotivationCode [0..1]
+ relatedResource :CI_Citation [0..*]
+ scope :DQ_Scope [0..1]
+ category :QCM_PublicationCategoryCode

Additional data quality reports

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

Significant Events

CharMe ideas

GUF and QCM: Quality Common M.

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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/glc2000) 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

Rick Steves Pocket Barcelona
by Rick Steves (Author)

4.7 out of 5 stars (34 customer reviews)
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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