[Interoperable] Digital Rights Management for Geospatial Web Services

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Agenda

- DRM: Introduction
- DRM vs. GeoDRM
- GeoDRM Reference Model
- Looking ahead: Implementations
Digital Rights Management: Introduction

- At minimum, DRM provides the following:
  - Governance
  - Secure association of usage rules with information
  - Persistent protection

- Trendy & very disputed technology
  - Promises a lot to service providers
  - Fears of inappropriate limitations of usage
  - Hard to agree on usage policies
  - A lot of technologies & standards
Digital Rights Management: Definition

- “Digital”
  - The material over which the rights exist
- “Rights”
  - Intellectual property rights linked to the material
- “Management”
  - Defining a policy and enforcing it. Making sure that the rights are respected
Traditional DRM
[as opposed to Geospatial DRM]

- Digital:
  - Music, Video

- Rights:
  - Play, Copy

- Management:
  - Policies usually involve only two actors (B2C): Owner, User
  - Static products, use "as is"
  - Enforcement usually accomplished by packaging
Geospatial DRM (GeoDRM)

- Digital:
  - Geospatial information (ex. Maps)
  - Not always sold as one product

- Rights:
  - View, Copy
  - Transformation, Edit, Combine

- Management:
  - Policies include several actors (B2B)
    - Longer value add chains
  - Usage
    - Combine different sources of information
    - Information is processed before usage
Open Geospatial Consortium: GeoDRM Reference Model

- Open Geospatial Consortium
  - Non-profit, international, voluntary consensus standards organization
  - Leading the development of standards for geospatial and location based services
  - http://www.opengeospatial.org

- GeoDRM Reference Model
  - Based on the ISO RM-ODP
  - Conceptual model for digital rights management of geospatial resources
  - Metadata model for expressing rights
  - Requirements for DRM systems in order to enforce the rights
  - Relation to the broader DRM context
Enterprise Viewpoint

Geo-License

- Extents
  - Rights
  - Space
  - Time
- Expression
  - Legal
  - Human readable
  - Formal
- Delegation
  - Smaller extents
- Chaining
  - Owner
  - Licensing agent
  - Licensee
  - ...
Computational Viewpoint

- Roles within the DRM System
- One entity could have several roles
Information Viewpoint

Rights
- Use
- View/Display/Print
- Combine/Merge
- Extract/Copy
- Spatial Transform
- Derive Resource
- Edit/Adapt
- Modify
- Derive Graphic
- Encode
- Execute

Meta-Rights
- License
- Sublicense

Conditions
- Properties
- Spatial
- Temporal
- Layer
- Implementation
- Meta-Rights
- Side effects
Looking ahead: Implementation

DRM Components

- Data
- Policy languages
- DRM Framework
  - Distribution
    - Access Control
  - Enforcement
    - Encryption
    - Identity & Authentication
      - Users / Devices
      - Data

Bitmap Images/GML
ISO REL/ODRL/XrML/...
OGC Web Services/SOAP
XACML
XMLDS/XMLENC/WSS/...
X509/SAML/...
URL/URN/...
Policy languages: ISO REL

**Facts**
- Part of the MPEG-21 initiative
- Based on XrML

**Issues**
- Not exactly an open standard
- Needs to be extended
- OASIS WS-Security Profile
Policy Languages: ODRL

- Facts
  - Open Digital Rights Language
  - Specifications are freely available
  - Profiles
    - Open Mobile Alliance
    - Creative Commons

- Issues
  - DRM “Patent War”
  - Needs to be extended
DRM Framework

- Distribution
  - Access Control

- Enforcement
  - Encryption
  - Identity & Authentication
    - Users / Devices
    - Data

  - Support for DRM Content
    - SOAP/REL
    - HTTP GET / POST - ?

  - GeoXACML
    - Extension of XACML 1.0

- Profiles / Best Practices are required
Thank you!

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