Smart-M3 and Geo2Tag Platforms Integration

M3 Semantic Interoperability Workshop

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M3 vs V3

- M3
  - multi-vendor
  - multi-device
  - multi-par

- Big data = V3

Diagram:
- Volume:
  - Terabytes
  - Records
  - Transactions
  - Tables, files

- Velocity:
  - Batch
  - Near time
  - Real time
  - Streams

- Variety:
  - Structured
  - Unstructured
  - Semistructured
  - All the above
What is the Data?

Structured

Unstructured
No so bad
Project goal and tasks

• Goal

develop technology for performance efficient geo-coded smart spaces.

• Current tasks
  • Develop Smart-M3 and Geo2Tag integration architecture
  • Implement integration agent (PoC)
  • Test and improve performance
Geo-Coded Smart Space (GCSS)

Smart-Space where each subject could have geographical context (coordinates)
**Smart-M3 platform**

*Smart-M3* is an open source software platform that aims to provide Semantic Web information sharing infrastructure between software entities and various types of devices.
Geo2Tag LBS platform

*Geo2Tag* platform is the centralized high performance geo-tagging (geo-coding) database.

**Features:**

- geographical tags management;
- tag classification/filtering/...;
- user/session management;
- cloud back-end for geo-tagged BLOBs (Riak DB)
Geo2Tag data model

GeoTag
- Coordinates
- Link to content
- channel
- coordinates
- time

GeoFilter
- time
- 2D/3D figure
GCSS layered architecture

- Semantic FE
- Geo-coding FE

Integration

Domain engines
- Smart Space engine (SIB)
- Geotag Engine

Data cloud backend (optional)
GCSS layers responsibility

- **Interfaces** – smart-spaces and geo-coding front-ends (FE) responsible for communication with external data consumers (clients);
- **Integration** – responsible for transparency between Smart-m3 and Geo2Tag data representation;
- **Domain engines** – particular implementations of smart-space geo-coding middleware (Smart-M3 and Geo2tag);
- **Data cloud backend** – optional component, responsible for providing efficient massive data processing back-end (e.g. storage system);
GCSS use-cases

- Set/Get geographical coordinates for Smart-Space objects;
- Spacial and temporal object filtering;
- Providing extra information about objects:
  - trajectories;
  - co-location;
- Providing semantic data through Geo2Tag interface
GCSS agent ontology example
GCSS example agent architecture
State of work

- **Done**
  - Architecture
  - Working prototype without cloud back-end

- **In progress**
  - Test development & performance testing
  - Cloud back-end

- **Future**
  - Optimizations
  - Miniaturization
Resources

- Geo2tag LBS Platform: http://geo2tag.org
- Smart-M3 https://sf.net/projects/smart-m3/