OGC WMTS and OSGeo TMS standards: motivations, history and differences

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Introduction

• This presentation describes and compare 2 standards:
  
  – Tile Map Standard (TMS)
  
  – Web Map Tile Service (WMTS) standard

• Both standards are described and compared, including the motivation and key differences.
What we are talking about?

This is a map
What we are talking about?

This is a tile
What do we only got some time ago?

- Google maps
  - http://khm.google.com/maptilecompress/hl=en&t=3&q=90&z=4&y=8&x=9

- Amazon s3

- Yahoo! Maps
  - http://maps2.yimg.com/hx/tl?v=5.3&.intl=es&x=9&y=-1&z=5&r=1

- Virtual Earth (quadtree encoding)
  - http://h1.ortho.tiles.virtualearth.net/tiles/h3001.jpeg?g=266&mkt=es-us
A lack of interoperability
A long Story (1/2)

• March to November 2006
  – OSGeo developed and tested TMS.
  – By that time, there were also other map tiles related implementations, such as OnEarth, Google Maps, etc.

• 2007
  – the OGC WMS revision working group received a change request to include support for tiles as part of the WMS interface standard.
  – the group decided to define a separate standard: WMTS.

• September 2008,
  – there was a strong dialogue at FOSS4G South Africa meeting for about map tiling and good collaboration.
A long Story (2/2)

- October 2008 to June 2009
  - In OWS-6 interoperability experiments, four independent WMTS developments were tested.

- March 2009
  - the document went to a 30 day public comment period

- September 2009
  - the final document went to vote;

- December 2009
  - The standard was approved as OGC standard

- April 2010
  - Publicly released
How on Earth it took so long !!!???
WMTS and TMS

• Both address the problems in classical map servers that used "the whole view in one piece" approach in concurrent environments:
  − Low performance

• Both try to save server's work:
  − Limiting the request to predefined set of tiles
  − Allowing caching mechanisms on internet to help.

• Both define:
  − A set of scales available
  − A tile matrix set for each scales
  − A way to get a particular tile as a "common" browser format like PGN, JPEG etc.
Tile matrix set

Zoom 1°

Zoom 30'

Zoom 20'
Tile matrix

- General background is almost identical in TMS and WMTS but:
  - Rectangular tiles in WMTS (instead of square in TMS)
  - Different orientation of the j axis in the tile space (coherent with WMS in WMTS)
  - Tiles of different scale can have different sizes in WMTS
TMS RESTful influence on WMTS

• TMS is pure RESTful implementation build from scratch.

• OGC has its own tradition for KVP and SOAP services and OWS Common framework.

• WMTS has aligned to those, resulting in a standard easier to combine with the OGC standards baseline.

• The group made an effort to adapt RESTful ideas into OGC and suggested a RESTful approach deeply inspired in TMS, but with less granularity to make it equivalent to other encodings.
Resource representation: RESTful granularity

- The ServiceMetadata document as a single entry point to the service makes it easier to adapt to current service catalogues and more aligned to ISO 19119.
- Layers define URL templates to directly access a particular tile of a particular position and scale
- Single entry point is the service collection (root resource)
- Services
- Layers (TileMaps)
- Scales (TileSets)
- Tile
- Well known Scale Sets
- Profiles
What makes OGC WMTS better

Nothing

There are a couple of things extra in WMTS:

• 3 different encodings (KVP, SOAP, RESTful)
• in an single harmonized model (UML)
• GetFeatureInfo in a tile
• Support for extra dimensions
• Themes
End of story

• I'm telling you this because I personally went to South Africa at a FOSS4G to discuss with you the state of the specification and to look for collaboration and approval.

• It was my obligation to report on the end of the story to you.
OSGeo versus OGC as creators of standards

**OSGeo**
- Tested on developed open source solutions
- Can do that from scratch
- Can elaborate each standard independently
- Openly discussed and published in the twiki
- Faster process

**OGC**
- Tested on reference solutions and interoperability Experiments
- Constrained by
  - the legacy: OWS Common, KVP
  - OGC rules: SOAP interface, UML model
- RESTful interpretation is conditioned by the need for a generic (encoding independent) description of the service
- Procedures for proposals, CR and acceptance (votes).
- Part of the process is internal with open comments period. Final document publicly available on the web
- Slower process
It is not the end of the story: OSGeo and OGC MoU

• There is a memorandum of understanding between OSGeo and OGC that recognizes the value of mutual collaboration

• OSGeo have good developers and testers and can elaborate good standards

• OGC can help in the consensus process

Thanks!