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

Joan Masó, Xavier Pons and R Singh

CREAF-UAB-OGC

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?

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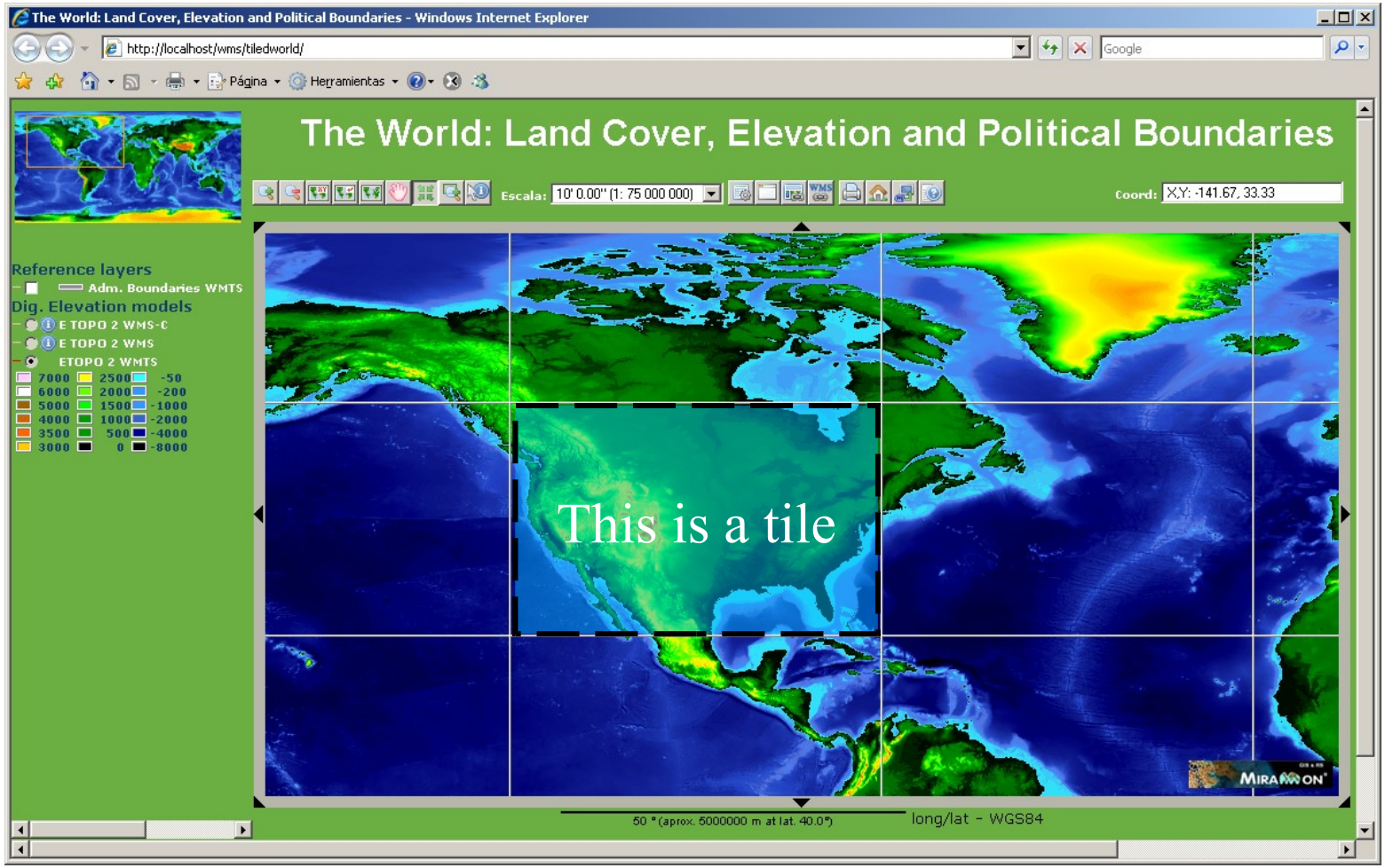

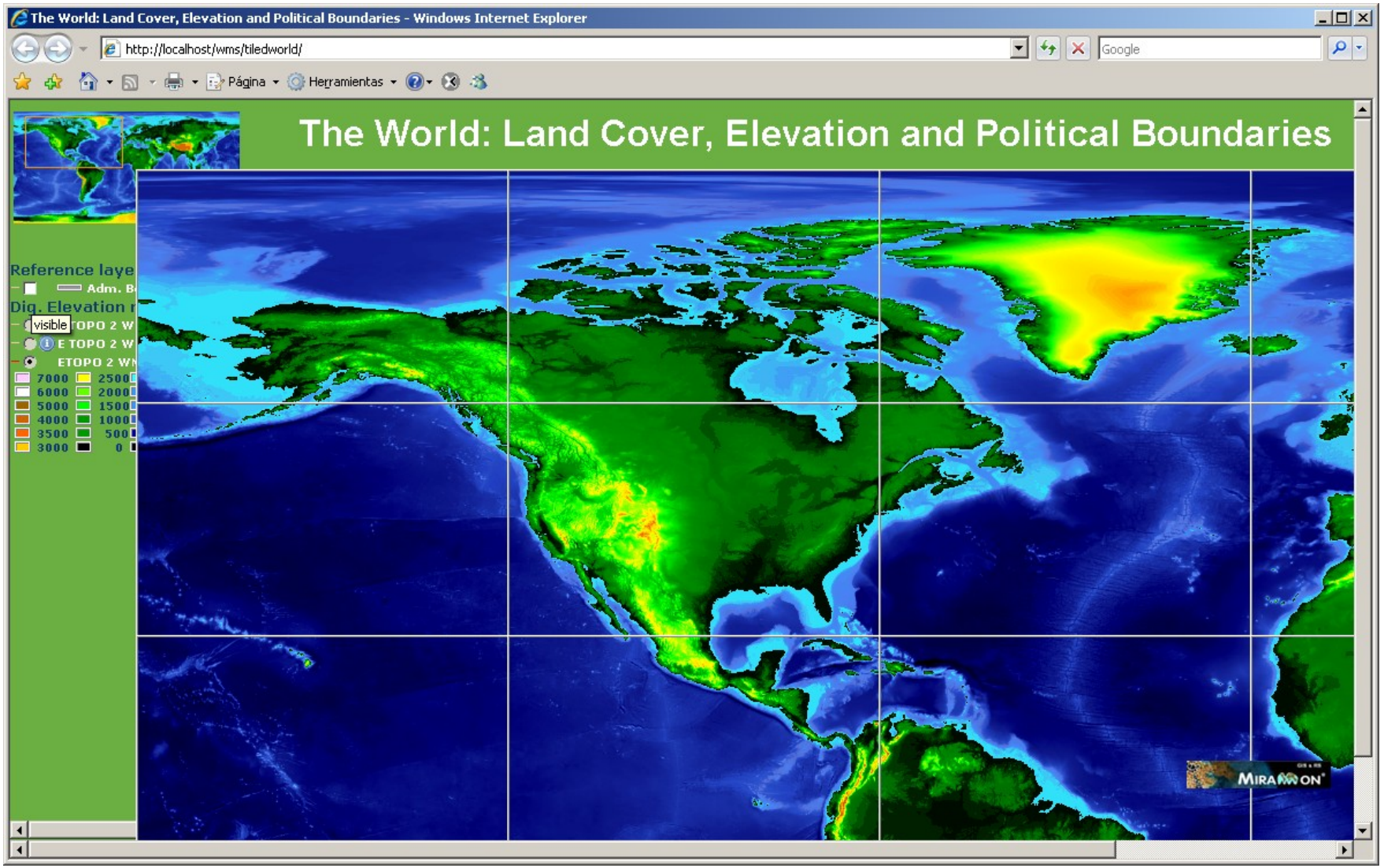
The World: Land Cover, Elevation and Political Boundaries - Windows Internet Explorer
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MIRAMON

Layer
TileMatrix
TileRow
TileCol

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
  - http://s3.amazonaws.com/com.modestmaps.bluemarble/4-r8-c9.jpg
- 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

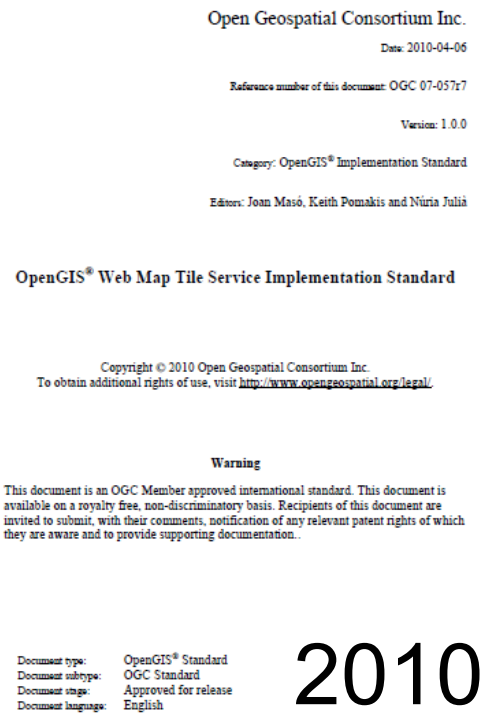
A lack of interoperability

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

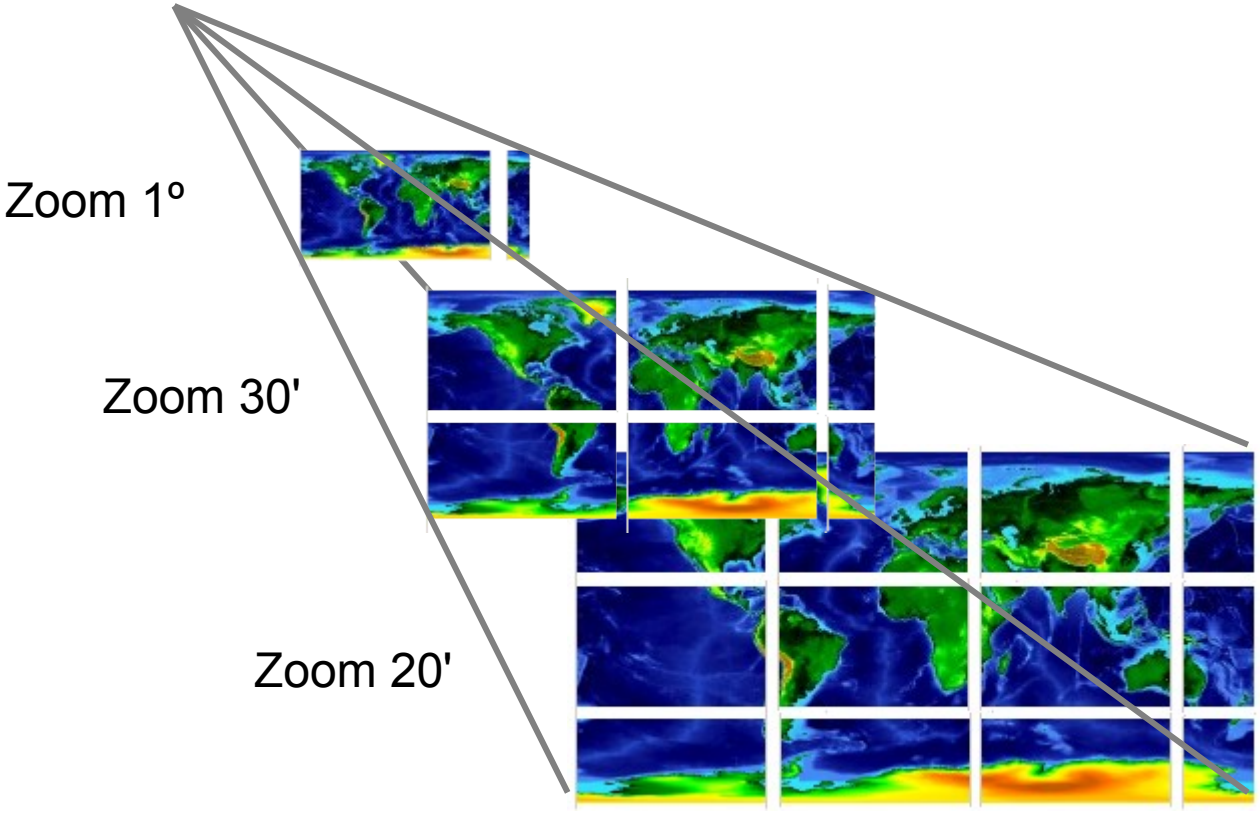


How on Earth it took so long !!!???

WMTS and TMS

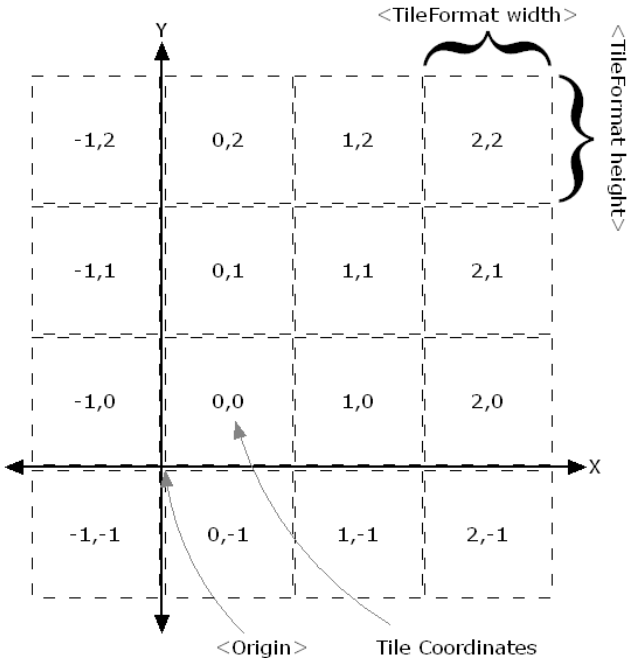
- Both address the problems in classical map servers that used "*the whole view in one piece*" approach in concurrent environments:
  - Low performance
- Both try to save server's work:
  - Limiting the request to predefined set of tiles
  - Allowing caching mechanisms on internet to help.
- Both define:
  - 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

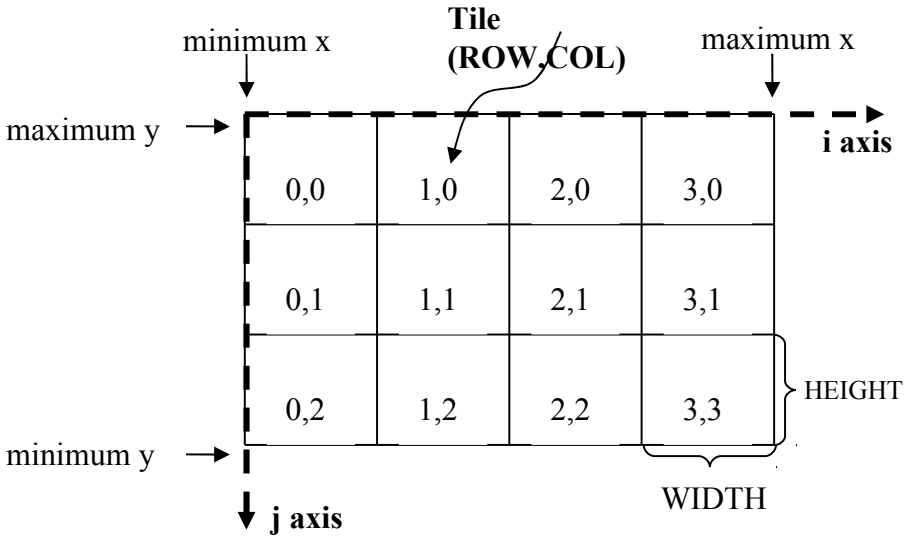


Tile matrix

- General background is almost identical in TMS and WMTS but:
  - Rectangular tiles in WMTS (instead of square en 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



OSGeo-TMS



OGC- 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
- Well known Scale Sets

- Single entry point is the service collection (root resource)
- Services
- Layers (TileMaps)
- Scales (TileSets)
- Tile
- 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 when 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!