



Project Status Report

FOSS4G 2015 - Seoul - 2015-09-16

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What is MapServer?

- Open Source platform for publishing spatial data to the Web
- MIT-style license
- Runs on all major platforms (Windows, Linux, Mac OS X)
- OSGeo project
- **mapserver.org**

MapServer History

- 1989-90: Tim Berners-Lee invents the World Wide Web



- 1994: Steve Lime implements Web-based Arc/Info AML generator



- 1995: NASA Fornet project \Rightarrow imgserv

- 1994-95?: Frank Warmerdam releases Shapelib



- 1996: Shapelib + GD \Rightarrow mapserv
- 1997: v1.0 (limited sharing)
- 1998: v2.0 via Fernet website
- 1999: v3.0 via UMN MapServer website

- 2000: Daniel Morissette joins development \Rightarrow Need for distributed collaboration tools (CSV, Bugzilla, Wiki)



- 2000+: Further contributors start joining quickly



- 2000: v3.1 including MapScript

- 2001: PostGIS support by Paul Ramsey in v3.6



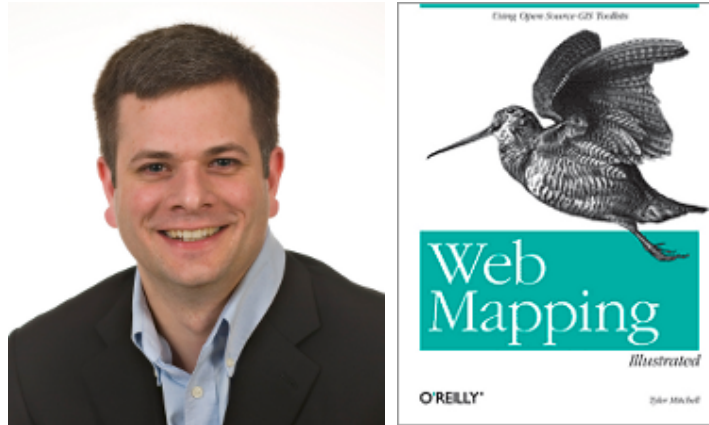
- 2002: GRASS Users Conference - Trento



- 2003-05: Yearly MapServer Users Meeting (MUM)
(Minneapolis, Ottawa, & Minneapolis)



- 2005: MapServer Book by Tyler Mitchell



- February 4, 2006: Foundation of OSGeo
MapServer is among eight founding projects

- 2006+: FOSS4G Conferences (Lausanne, Victoria, Cape Town, Sydney, Barcelona, Denver, Nottingham, Portland, Seoul)



FOSS4G 2010
Barcelona



- 2009+: C Tribe Code Sprints (Toronto, New York, Montreal, Island Wood, Boston, Vienna, Philadelphia, Lyon?)



- 2011: v6.0
- 2012: Addition of TinyOWS & MapCache ⇒ MapServer Suite (v6.2)
- 2013: v6.4
- 2014:
 - v7.0beta
 - 20th anniversary
- 2015: v7.0

Statistics

- ~150k Lines Of Code
- ~12k commits
- ~100 contributors
- Mailing lists
 - -users ~1800
 - -dev ~400
- International PSC
 - 14 members
 - NA: 9 (US: 5, CA: 4)
 - EU: 5 (FR: 2, FI: 1, AT: 1, HU: 1)
- 113 RFCs

MapServer 7.0

- Main new features
 - UTFGrids
 - WFS 2.0
 - Heatmaps/Density Maps
 - Javascript/V8 StyleItem/Geomtransform
 - Unification of attribute/geometry filtering
 - Layer Level Compositing / Blending
- Others
 - Text rendering re-factoring
 - GD Removal
 - Removed BITMAP labels
 - Layer Level Encoding
 - WCS 2.0

UTFGrids

- Specification by MapBox for vector tiles
- Implemented in a "Google Summer of Code" project
- Interactivity important (rollover, events)
- Supported by OpenLayers

WFS 2.0

- Download Services for INSPIRE

Javascript (V8) StyleItem/GeomTransfom

- Integration of the V8 JavaScript engine
- Style geometries/features programatically rather than through class expressions
- "Experimental mode": backward compatibility not guaranteed

```
LAYER
...
STYLEITEM "javascript:///path/to/my/file.js"
CLASS # empty class required
END
END
```

```
//Make symbol size 14 or 7
var size = shape.attributes.NAME.length > 10 ? 14:7;

var style = "STYLE SIZE " + size;
style += " SYMBOL 'circle'";
style += " COLOR 255 0 0 END";

//Return style to MapServer
style;
```


Unification of attribute/geometry filtering

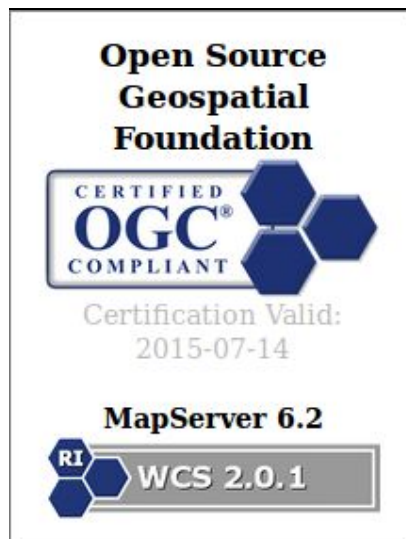
- Currently filtering done by MapServer
- PostGIS, Oracle, OGR support native spatial filtering e.g.

```
where st_intersects(the_geom, st_geomfromtext('wkt...'))
```

- Significant performance gain particularly in WFS queries
- Simpler to use
- Was blocking release of version 7.0

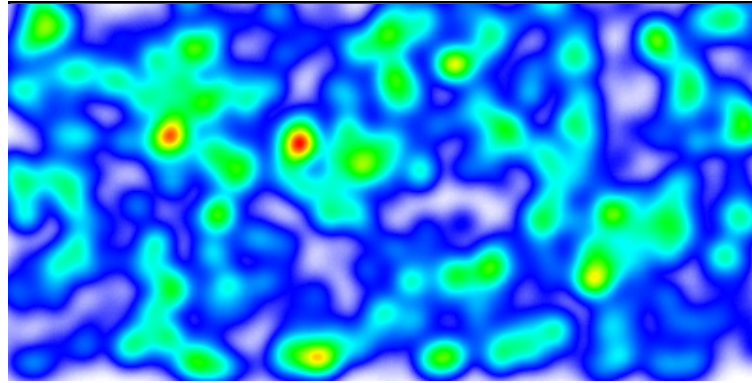
WCS 2.0

- Implements available extensions
- Passes all available CITE tests
- Official OGC WCS 2.0 Reference Implementation

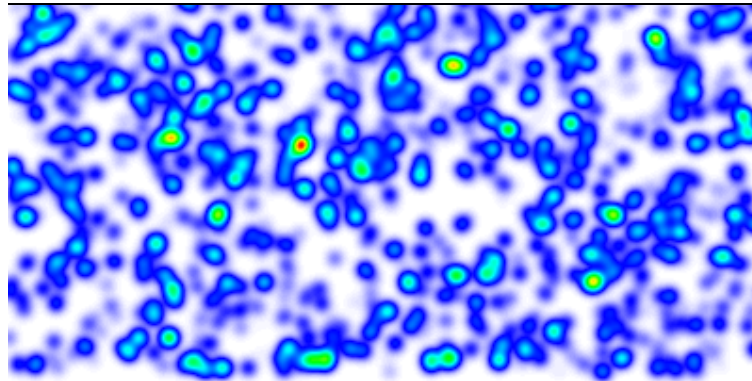


HeatMaps

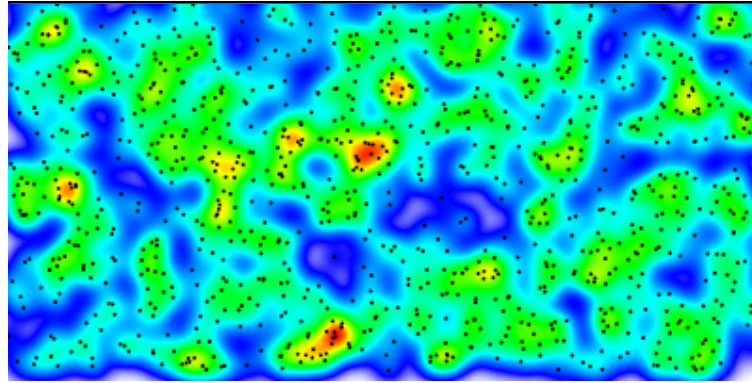
- Vector to raster processing pipeline
- Interpolation and rendering parameters
 - Automatic scaling
 - Interpolation in color spaces RGB/HSL
 - Weighting per attribute/expression
- Supports tile mode



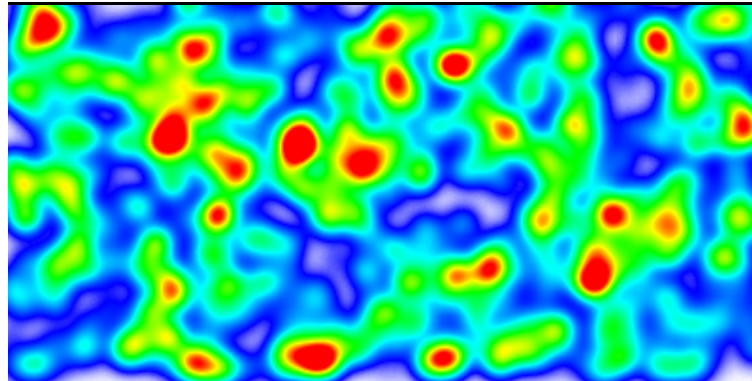
Interpolation in HSL color space



Changing the weighting



Pure density



Setting a fixed weighting to allow for tiling

Layer Blending



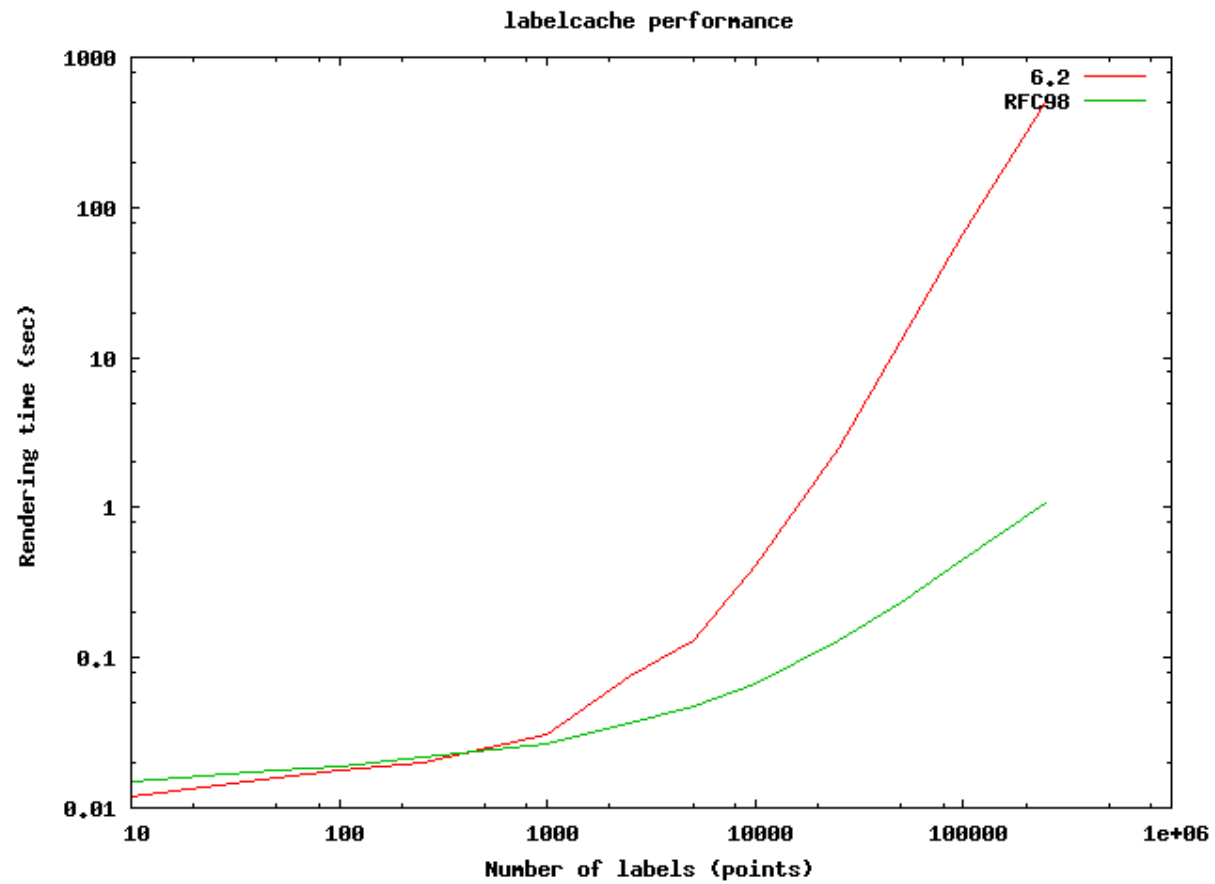
Text rendering re-factoring

- Before naive implementation duplicated for each back-end
- Integration of Harfbuzz library
- Supports complex text layout e.g. for Arabic text
 - Unprocessed characters
 - With bi-directional processing
 - With glyph shaping rendering letters according to context
- Barely visible to the end user, but
 - Exact label placement (alignment/centering/letter spacing of text)
 - Possibility of using one font per language

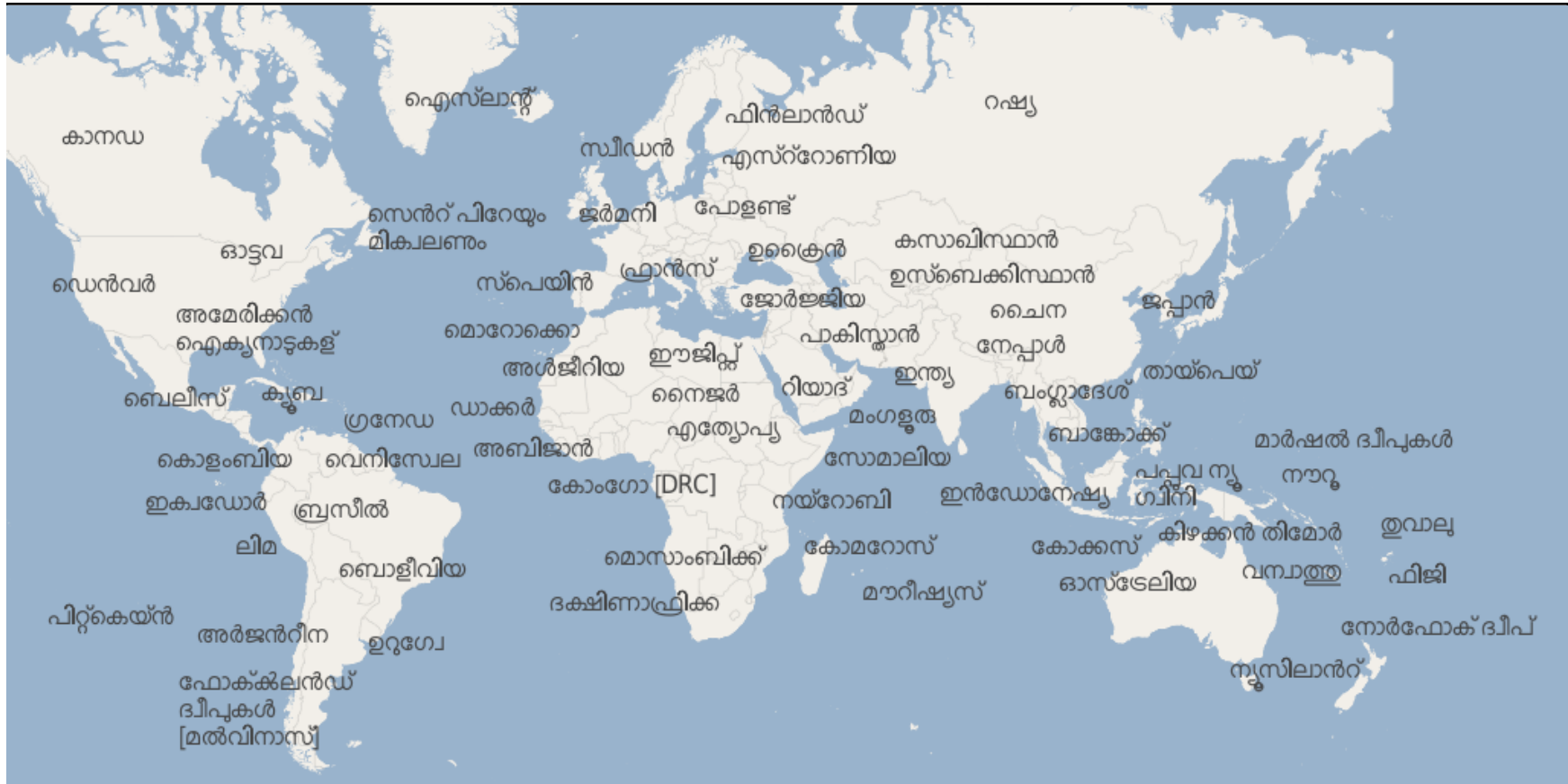
ةيبرعلا

العربية

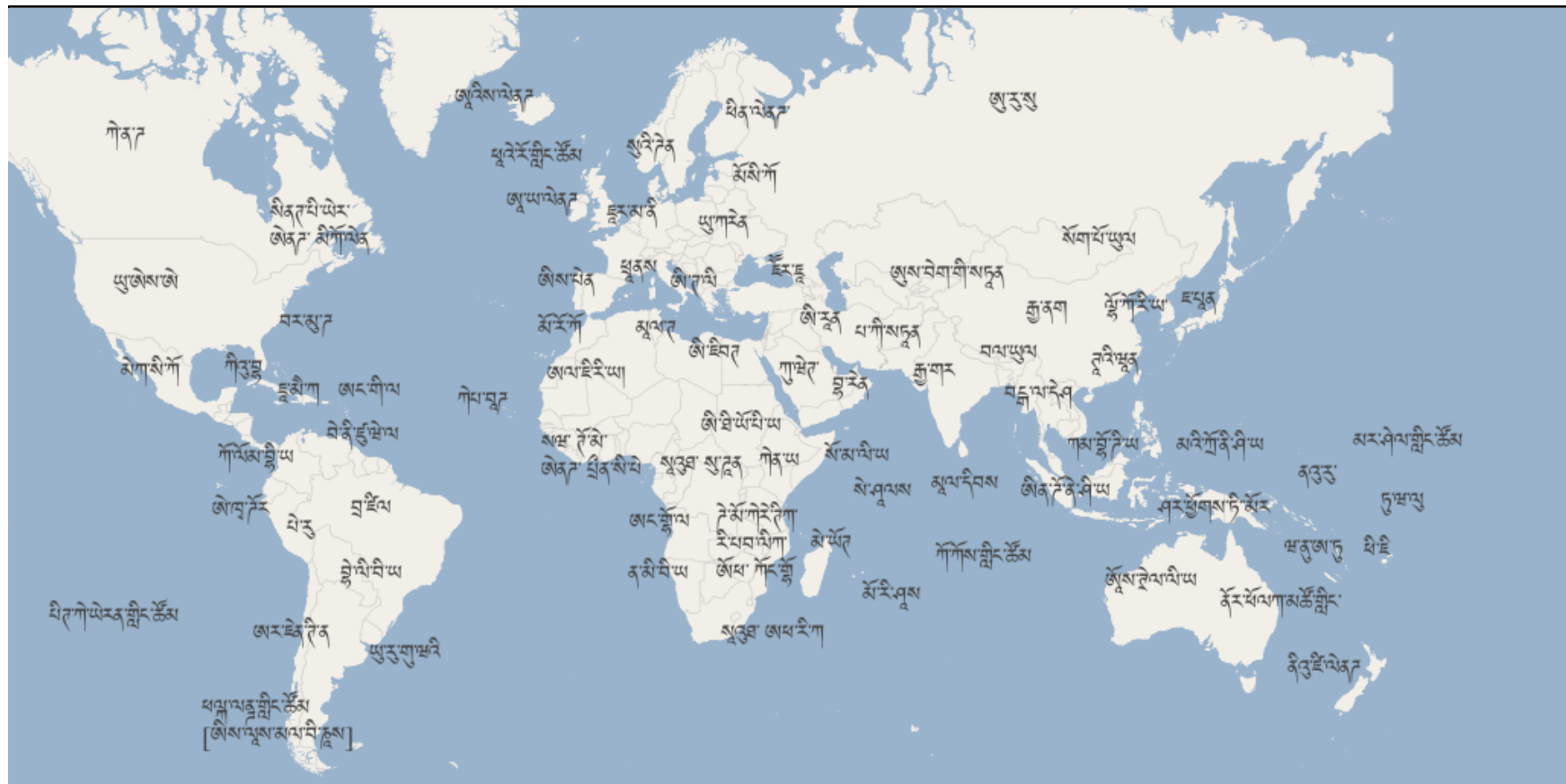
العربية



Label cache performance (notice the log scales)



Malayalam Example



Tibéto-Birman Example

GD Removal

- Added back in 1995
- Too high maintenance costs despite its usefulness in certain niches
- Automatic fall-back to AGG + 8bit

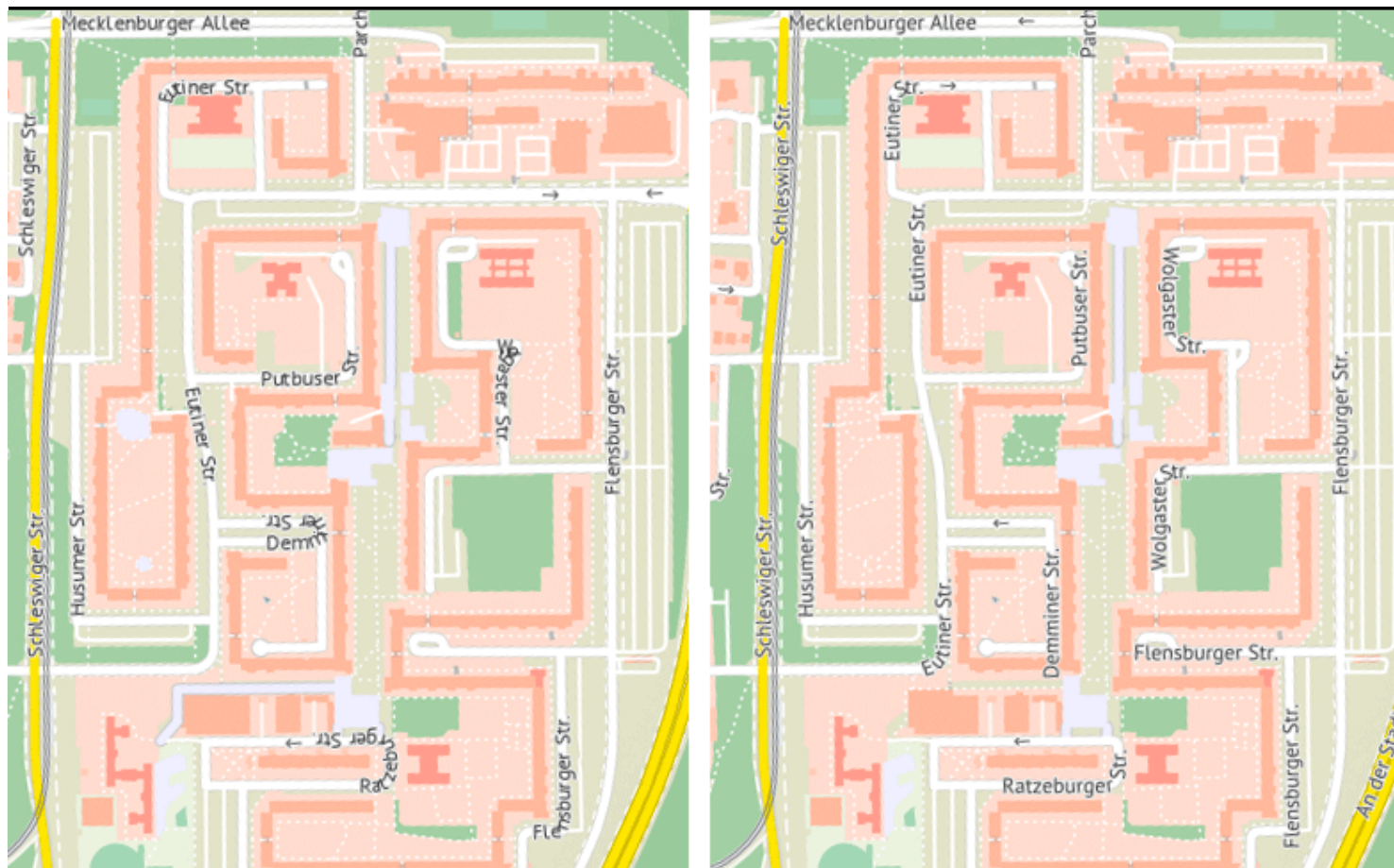
Removed BITMAP labels

- Truetype font included by default now
- Supports many glyphs without external dependencies
- A few use cases are not supported
- Automatic fall-back in place

Layer Level Encoding

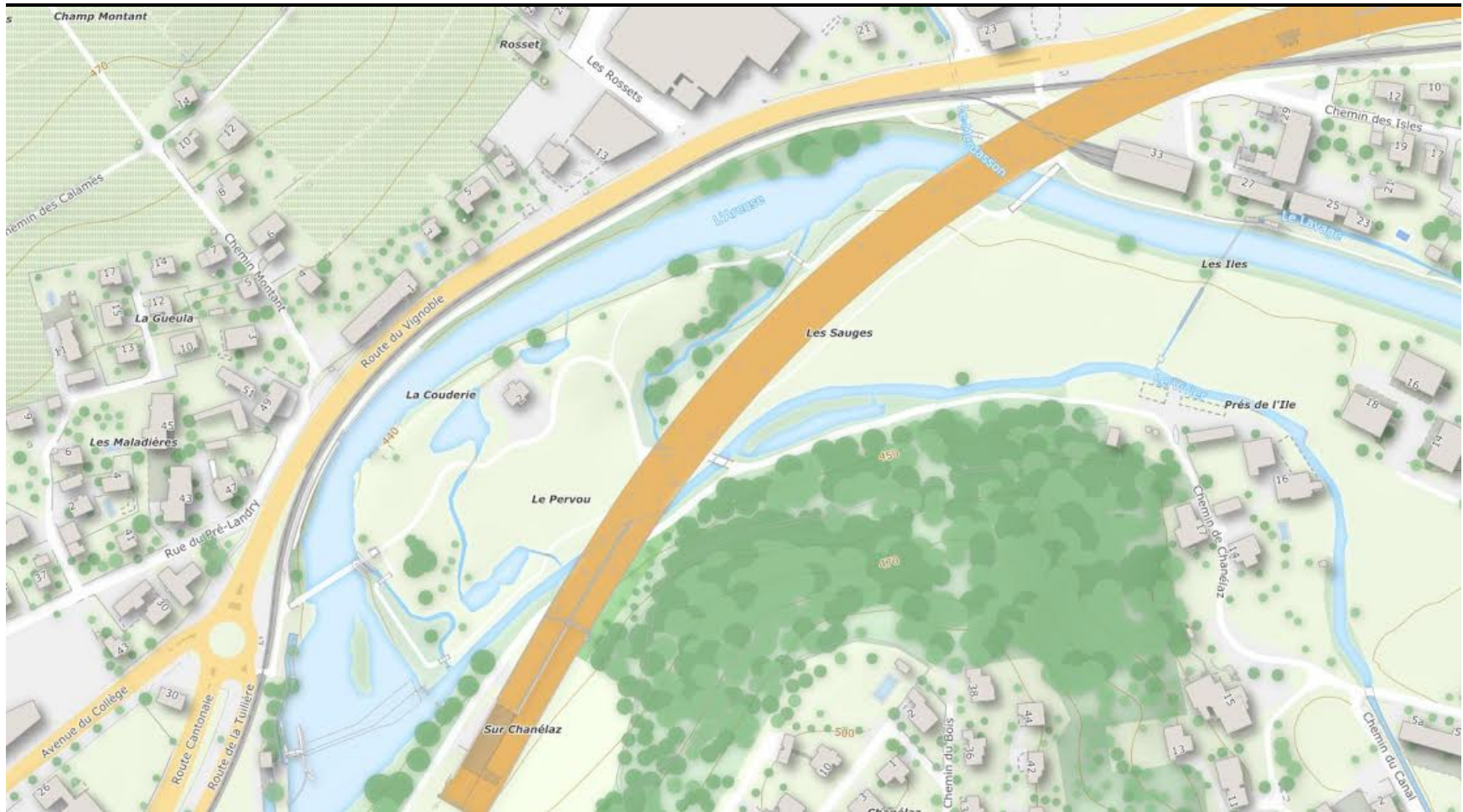
- Solves encoding handling problems e.g. data sources in multiple encodings in a single mapfile
- Data sources internally converted to UTF8
- The mapfile **has to** be encoded in UTF8 now
- All output generated by MapServer in UTF8

Future Features: Text Placement



- MAXOVERLAPANGLE used to discard labels that are too curvy
- RFC-XXX: Displace label so sharp bends fall on word breaks

Future Features: Layer Filters



Future Features: Vector Tiles

- Specification by MapBox to efficiently encode and store vector features
- x/y/z addressing, spherical mercator projection
- Mapserver support through WFS queries with added vendor options

```
OUTPUTFORMAT
  NAME "mvt"
  DRIVER "mvt"
END

METADATA
  "wfs_getfeature_formatlist" "mvt"
  "gml_include_items" "NAME,UNIQUE_KEY,CAPITAL,POP_RANGE"
  "gml_POP_RANGE_alias" "POP_CLASS"
END
```

```
http://server/mapserv?map=/path/to/vector_tiles.map&map.size=256+256&SERVICE=WFS
&VERSION=1.1.0&REQUEST=GetFeature&TYPENAME=popplace,road&OUTPUTFORMAT=mvt
&srsName=epsg:3857&bbox=-20000000,-20000000,20000000,20000000,eps:3857"
```

Documentation translation

- Started to use transifex for simple collaboration
- Attract further translations

Continuous Integration

- Each commit or pull-request launches the ~2000 functional tests
- TravisCI (Linux)
- AppVeyor (Windows)

How to Contribute?

- Users
 - Beta and release candidate testing
 - Bug reports on Github, including test cases
 - Documentation (wiki, transifex, Github pull requests)
 - Answers on the mapserver-users list and IRC
- Developers
 - Bug fixes/patches
 - New features
 - Binary builds



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<http://tbonfort.github.io/foss4g-2015-presentation/mapserver.html>

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