Performance testing of INSPIRE and OGC services

- Matti Lankinen (Tike – the Information Centre of the Ministry of Agriculture and Forestry)
- Sampo Savolainen (Spatineo Inc)
• ICT and statistics for the agriculture sector
• ICT = software development for the Ministry and underlying organisations
• Software to support both internal processes and e-services
Agricultural subsidy e-service

- Web based e-service for agricultural subsidy applications
- Developed for the Agency for Rural Affairs
- 1 month window to fill in the initial application
- Since 2009 (this 3rd iteration of the website)
INSPIRE and OGC

- Land parcels are crucial for the process
- Core subsidies directly connected parcel location and area
  - Web map tools are required for the application process
Mansikka-aho 18.26 ha - Kartta
Numbers in 2014

- 60% of applications done via web (35,000)
- 20,000 parcels modified by applicants
- 8,000 parcels combined or divided by the applicants
- 1000+ concurrent users
Technology
Geo stack

- Agriculture subsidy application e-service
- GeoWebCache
  - WFS, WFS-T
  - Tile cache
- MapServer
  - WMS
  - Orthophotos
  - Base maps
  - INSPIRE layers
- GeoServer
  - Parcel Geometries
Preparations for 2014

- The stack was rebuilt on new hardware and revamped configuration

- How to make sure that the problems are not repeated?
Testing
Testing methods

- Many tools available
  - JMeter
  - Gatling
  - Custom scripting
  - SaaS load testing tools
Challenges for tools

- Generating OGC requests
- Recognizing OGC responses
- Generating meaningful reports
Tests on multiple layers

- Orthophotos
- Base maps
- INSPIRE layers
- Parcel Geometries
- GeoServer
- WFS, WFS-T
- GeoWebCache
- Test nodes
- Agriculture subsidy application e-service

Spatineo Performance
Lessons learned: INSPIRE

- PNG vs GIF matters (MapServer)
Lessons learned: JVM optimization

- Server defaults → completely unresponsive +10RPS

```
-Xmx1024m -Xms1024m -XX:NewSize=512M -XX:MaxPermSize=128m -XX:+UseConcMarkSweepGC -XX:+CMSIncrementalMode"
```
Lessons learned: tiling

- On-demand tiling for ~25% of requests

- On-demand tiling disabled*

* Errors are expected as not all tiles are available
Lessons learned: tiling

- On-demand tiling can cause issues during production

- GeoWebCache does not have separate request queues for cache hits and misses
  
  Misses will queue up and prevent the server from serving cached tiles
Lessons learned: tiling

- Completed tiles should be served by a separate process
- .. or by an asynchronous server
End result

- No problems in the Geo Stack in 2014 during the subsidy application period
Thanks! Questions?