Developing Apps for tempo-spatial meteorological satellite data - using OGC Services

EUMETSAT ImageGallery
Key Concepts for better MapApps

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New EUMETSAT Image Gallery webApp:
- Under development in context of EO Portal
- EUMETSAT data is visualized by OGC Web Map Services (WMS), including
  - On-the-fly Image generation for user-defined area
  - retaining native resolution, data values, georeferencing information
  - WMS 1.3.0 supporting horizontal and temporal Reference System (RS)
    - Important time support, e.g. moments (TIME=2000-08-03) or intervals
- provision of OGC Web Services
- Automatic updates of images
  - regular 3-hourly feed
• Client shows global base data from a WMS
• User can select a product from a list
  – Product is overlayed on base map (default: most recent)
  – Available timerange for product is displayed
• User can:
  – Zoom in/out, pan, toggle layer visibility, switch background layer
  – Switch SRS (e.g. North Stereographic)
  – Add custom WMS
  – Select date and time for product
  – Show product abstract
  – Display product in GoogleEarth
• Animation support: first select animation settings
• meteorological products mainly stored in formats:
  – BUFR (edition 4)
  – GRIB (second edition)
  – Cinesat converts into GeoTIFF
    – Most COTS geodata and map support GeoTIFF

• For temporal dimension a specific physical and logical view must be prepared:
  – one physical dataset for each timestep used
    – Advantage: every image format can be used
  – Web mapping requires logical organization of data as layers
    – here: one single layer represents the whole period
    – responsibility to request / return data for timeframe is on server & client-side
    – Time selection tbd by special parameter within requests
      – requires map service supporting WMS 1.3.0 with dimension parameters
• based on Geoserver 2.2.4
  – open source, written in Java
  – supports WMS- and WCS-Interfaces
  – lots of input (incl GeoTIFF) and output formats
  – Important(!): RESTful interface for configuration

• ArcGIS considered: good option
  – Image Server extension for
  – WMS/WCS and RESTful config interface too
  – lots of client development tools based on JS
  – But: ArcGIS 10 last version with Solaris support

For time dimension support a WMS 1.3.0 Façade (servlet filter) was developed
  – aggregates images representing points in time to virtual layer with time dimension (workspace)
  – transforms WMS 1.3.0 requests to WMS 1.1.1 requests
    – The latter reference image(s) corresponding to requested time)
for automatic updates of images, a "Publisher" (Geoserver Updating) was implemented

- publishes new GeoTIFFs to Geoserver for WMS 1.3.0 Façade via

Image Gallery Client:
- webApp accessing products via WMS 1.3.0
- implemented with:
  - Google Web Toolkit (GWT) 2.x
  - JavaScriptAPI OpenLayers 2.8 for mapdisplay
  - GWT-OpenLayers (Java wrapper to integrate GWT)
Frequent shortcomings of map applications (applies partly for the ImageGallery too):

- Focussed often on “geo-IT terminology”: layers, CRS, opacity, ...
  - user often do not (want to) know anything about this
- “Content overload”
  - often provide too much content in one single app in parallel
  - not focussed on specific content/solution
- Device often not recognized:
  - Mobile solutions often don’t consider device specific features
- Design:
  - often driven by technologists and not by user interface designers
- Known concepts of app controls not considered
  - Users prefer interface that is aligned with known concept
- Too much development needed
  - For adaptations of existing apps or for the creation of new focussed apps there is much programming needed

In the following a few key concepts will be shown which should be taken into account for better map apps
- Problem Fit: Simplified & Focused
  - Risk analysis (flooding, heavy rain, storm) for German Bundesland Saxonia
Key Concepts of Modern map applications

- Recognize the Context: Device
  - Ground values for German Bundesland NRW
Key Concepts of Modern map applications

- Design (better composed, more clear)
Key Concepts of Modern map applications

- Known Concepts: mapFlow (like music selection/information in iPod)
Key Concepts of Modern map applications

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- Collaboration: FollowMe

You have been invited to a Follow Me session

To: Christian Elfers
Cc: 
Subject: You have been invited to a Follow Me session

Please join me in my holidays at the fishing lake experience tour.

Goto my map
http://www.byteschlund.de:8080/mapapps_pre/?lang=en&app=nacht

Join me: session269764920

See you soon, cheers, Christian
Key Concepts of Modern map applications

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- Collaboration: FollowMe
map.apps: software solution to build focussed geospatially enabled app’s in an attractive, easy-to-use form

- Provides Standard Architecture, Platform and Building Blocks
- Cross-platform (web/mobile) and cross-device capable
- Pure JavaScript/HTML(5) Client (no plug-ins)
- Based on ArcGIS:
  - Esri JavaScript API, REST API, ArcGIS Server, ArcGIS Online
- OSGi Framework for JavaScript
  - s. Javamagazin 3/2013

- app.Builder creates app’s based on App-Templates

www.conterra.de/mapapps