MORAVSKÁ ZEMSKÁ KNIHOVNA

IIPIMAGE AND THE OLDMAPSONLINE.ORG PROJECT

Petr Žabička <Petr.Zabicka@mzk.cz>
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Moravian Library Brno: OldMapsOnline.org
R&D grant of the Czech Ministry of Culture (DC08P02OUK006)

OLDMAPSONLINE.ORG PROJECT

- Research project of Moravian Library in Brno, Czech Republic (Bernhard P. Moll's Map Collection, 12k+ scans).
- Development of a workflow based on open-source software: to assist in the management, manipulation and visualization of historical map collections on the web
- Best practices and step-by-step guides for the use of free software
- Online tools to explore, georeference, annotate and visually integrate online old maps in a Web 2.0 style, following OGC standards and known best practices

OLD MAPS ONLINE RESULTS

1. Documentation and links to free software tools, and relevant articles. Presentations.
2. We have produced open-source software you can use right now for publishing your scanned maps online: IIPImage JPEG2000, MapTiler, .. + contributed patches in OpenLayers (Zoomify), GDAL (gdal2tiles), GeoTools
3. The online service: Georeferencer.org - turn scans into maps via web browser

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HTTP://HELP.OLDMAPSONLINE.ORG/

Old Maps Online: Sites

http://help.oldmapsonline.org/

Google

Old Maps Online: Sites

Search this site

- Welcome
- Blog & News
- Code repository
- IIPImage JPEG2000: Free Software for Zoomable High Resolution Online Images!
- MapTiler: fast map publishing from geodata
- Scanning and digitization - parameters and formats
- Online publishing of scanned maps
- Georeferencing tools
- Metadata
- Geospatial Search

More information about this project and latest news are available in our blog.

Contact (email): info@oldmapsonline.org
Technical manager: Klokan Petr Pridal

Welcome

OldMapsOnline.org is a research project which aims to develop software to assist in the management, manipulation and visualisation of historical map collections on the web. We are designing online tools for collaborative georeferencing, annotation, 3D visualisation, accuracy analysis and geometadata specification. To use these tools you need only a web browser.

With our online tools it should be possible to find maps of a particular area within different online map collections, as well as allowing the visual integration of historical map layers and overlaying these on top of Google Maps and similar base maps.

We provide free software and tutorials for online publishing of your scanned maps on your own hardware infrastructure - either as pre-rendered tiles (Zoomify) or in a dynamic form directly from your TIFF / JPEG2000 images. You can use our open-source tools for publishing maps on your own websites and even choose one of the attractive pan&zoom web viewers for the visualisation of your scanned maps.

How to, links & best practice:

1. Scan your maps
2. Online publishing of scanned maps
3. Georeference and analyse online
4. Metadata creation
5. Search the map collection

News from our project (the blog):

Displayed from: http://blog.oldmapsonline.org/

Old Maps Online: Blog

MapTiler: Desktop application for map online publishing from GIS tools

We actively contributed to the development of the MapTiler application, which is an excellent tool for fast and easy to use publishing of any existing raster maps, which are already georeferenced with GIS tools.

MapTiler runs under Windows, MacOSX and Linux. It is a desktop application

Project outputs and software published:

Published open-source applications:

- **MapTiler** (desktop application): simple online publishing as mashups, for old maps in GIS formats. http://www.maptiler.org/
- **IIPImage Zoomify + JPEG2000** (image delivery system): Zoomify-compatible image delivery directly from JPEG2000 or TIFF images on your own hardware infrastructure: http://iipimage.sourceforge.net/ and http://help.oldmapsonline.org/jpeg2000/
- **TransGen/gcps2wld** (command line utility) - georeference using ground controls points, generates best-fit afffine transformation with optional limits on rotation or skew + modification of GeoTools library.
- **OAI-PMH client** (prototype) written in Python for harvesting metadata from map collections with open access catalogs.

We have several prototypes of online tools available:

- Georeferencing Tool (early prototype) - You can zoom&pan and select control points on the scanned image as well as on a the reference base map
- Bounding Box (prototype) - Visual selection of the area covered by a paper map you are cataloguing. The tool creates MARC metadata. Look at older stable version
- MapAnalyst Online (gui prototype) - We are going to generate an accuracy visualisation for old maps and display this on top of online images (vector gui

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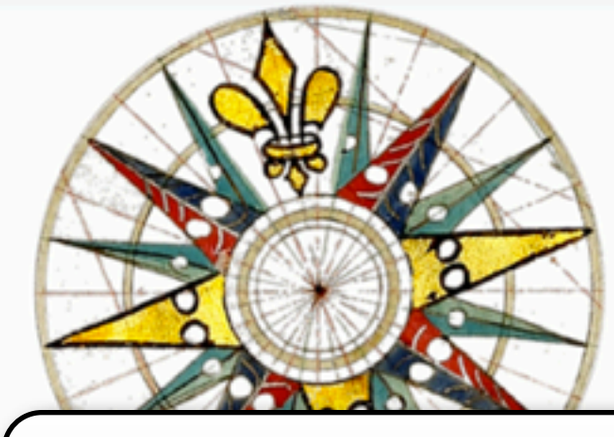

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Project outp

Published open-s

- **MapTiler** in GIS for
- **IIPImage** image deli infrastruct http://help
- **TransGen** points, ge skew + m
- **OAI-PMH** collection

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Slideshare.net:

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OUR OPEN SOURCE SOFTWARE:

- **Publishing of georeferenced maps (from GIS):**
  - **“GDAL2Tiles” automated scriptable rapid map publishing**
  - **“MapTiler” desktop application for rapid map publishing**

MapTiler

- **Publishing of scans online:**
  - **Dynamic image serving (directly from JPEG2000 or TIFF)**
    - **“IIPImage JPEG2000” with support for Zoomify + DeepZoom + Watermarking + MemCached**
  - **Prerendered tiles, rapid and simple to use:**
    - **“ScanTiler” - Desktop tiling application for generating watermarked zoomify tiles, scriptable**
    - **“OpenLayers Zoomify” - viewer component**

JPEG 2000 IIP

Zoomify

OpenLayers™

MapTiler - Tile Generator for Map Mashups

File Help

MapTiler - Tile Generator for Map Mashups

Tile Profile
Source Data Files
Spatial Reference
Tile Details
Destination
Viewers
Viewer Details
Rendering

Selection of the tile profile

MapTiler generates tiles for fast online map publishing.

What kind of tiles would you like to generate?

- (•) Google Maps compatible (Spherical Mercator)

  Mercator tiles compatible with Google, Yahoo or Bing maps and OpenStreetMap. Suitable for mashups and overlay with these popular interactive maps. More info.

- ( ) Google Earth (KML SuperOverlay)

  Tiles and KML metadata for 3D vizualization in Google Earth desktop application or in the web browser plugin.

- ( ) WGS84 Plate Caree (Geodetic)

  Compatible with most existing WMS servers, with the OpenLayers base map, Google Earth and other applications using WGS84 coordinates (EPSG:4326). .

- ( ) Image Based Tiles (Raster)

  Tiles based on the dimensions of the picture in pixels (width and height). Stand-alone presentation even for images without georeference.

http://www.maptiler.org/
(C) 2009 - Klokan Petr Přidal

Go Back | Continue

Announcement
of a finished project:

JPEG 2000

OPEN-SOURCE SOFTWARE

IIPIMAGE JPEG2000

http://oldmapsonline.org/jpeg2000/

PUBLISHING OF THE SCANS

- Easiest and fastest: Zoomify or DeepZoom/OpenZoom via “prerendered tiles”. Step by step tutorial:

  http://help.oldmapsonline.org/publish/

- Image Server software as an alternative:
  - For collections with thousands of images and their own hardware servers connected to the Internet
  - Possibly one image file for both online distribution and digital archiving (“open archive”)
  - Save the disk space thanks to advanced compression

IIPIMAGE JPEG2000

- Free and open-source software, running best on a Linux server
- Compatible with several popular viewers (OpenLayers, Zoomify, SeaDragon, IIPMooViewer, PanoJS, OpenZoom ...) and iPhone or Google Earth
- Easy to install (prepared step-by-step tutorial and a Debian package)
- Alternative to commercial products such as Lizardtech ExpressServer (MrSID), ERDAS Image Web Server (ECW),
- Direct distribution of TIFF images (with encoded pyramid)
- Support for JPEG2000 format (via Kakadu library - non-commercial use only, 100% free OpenJPEG library later)

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IIPIMAGE JPEG2000

- OpenLayers viewer
  - enables drawing on a displayed image, annotations, ...
  - Demo: http://www.oldmapsonline.org/iip/openlayers/
- Seadragon AJAX open-source viewer with natural zooming on all browsers without Flash or any other plugin
  - API: http://www.seadragon.com/ajax/0.8/doc/
  - Source code: http://seadragon.com/developer/ajax/source/
- Image Cache (a la http://zoom.it/)
  - Turn any online image (JPEG/JPEG2000/DjVu/PDF/..) into zoomable online pyramid - cloud service, possible archiving.
  - We have a scalable prototype (based on IIPImage JPEG2000).

2010 IMPROVEMENTS

- now in testing:
  - Support for optional visible watermarks (supplied as a tiff file)
    - Watermarks each tile at a random position with a specified opacity
    - http://www.oldmapsonline.org/zoomify/komensky/
  - Memcached integration
    - Speed-up of access to frequently demanded tiles
    - Allows sharing generated tiles among processes running on multiple servers
    - Sharing of tiles among different applications (IIPImage - nginx integration)
    - Same technology powers YouTube, Wikipedia, Flickr, Twitter...

JPEG 2000

WATERMARKING

Powered by Zoomify. Look at project Old Maps Online.org

JPEG 2000

WATERMARKING

Powered by Zoomify. Look at project Old Maps Online.org

IIPIMAGE JPEG2000

- Considering to use JPEG2000 format for archiving?
- Do you want to publish high resolution images online?
- Have a look at our open-source project!
- Documentation, best practice articles related to encoding to JPEG2000, software for download:

http://oldmapsonline.org/jpeg2000/

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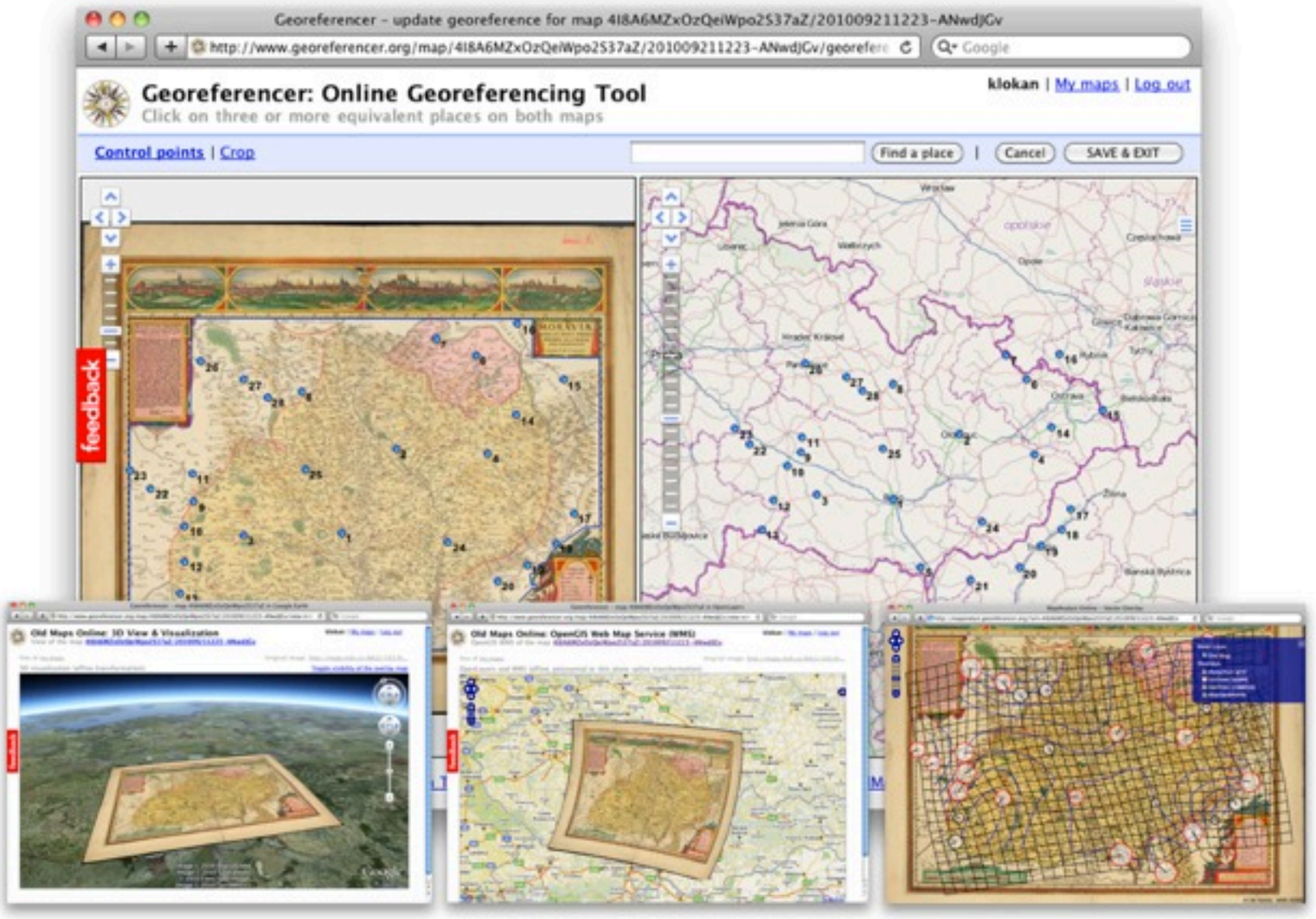
ONLINE SERVICE

GEOREFERENCER.ORG

Under active development - EARLY BETA VERSION - AVAILABLE NOW!



http://georeferencer.org/

WHAT IS GEOREFERENCER?

- Online tool designed to bookmark, georeference and annotate high resolution images of maps on the web.
- Collaborative Web 2.0 online service for all of us!
- You can create your personal virtual map collection and do a research and genealogy studies online.
- Share the results of your work with online old maps, compare and synthesize maps published at different websites
- Automatic 3D visualization and overlays of Google Maps-like base maps
- You need only a web browser to process the maps!

Georeferencer – Online Georeferencing Tool For Scanned Maps (OldMapsOnline.org)

http://www.georeferencer.org/

Google

Georeferencer (alpha version)

Online Georeferencing Tool For Scanned Maps

http://www.oldmapsonline.org/

You can add the Georeferencer browser button into your browser's Links Toolbar.
While surfing the web, if you find an interesting old map you'd like to bookmark, simply click the Georeferencer browser button.

Georeferencer

TIP: To add this button into your browser: Click on the upper "Georeferencer" link with the right mouse button and select Add to Favorites... or Bookmark This Link... from the menu. In some browsers, you can also drag and drop the link to your toolbar or bookmarks.

Or you can type here the address of a website with the map or address of the image:

http://

Georeference

TIP: You can copy&paste an URL of an image or a website you would like to georeference.
A path to Zoomify presentation (ending with ImageProperties.xml) is supported as well.

TIP: You can try to georeference one of the images of early maps on the web.
Maps collections: MZK, VKOL, UJEP GeoLab, Ryhiner, Afriterra, David Rumsey, ..

Developed by Klokan Petr Pridal and Moravian Library Brno (project OldMapsOnline.org).

feedback

PLANS FOR THE FUTURE:

- Customization for libraries, simple metadata (DublinCore).
- Clipping, composites of maps, correct merging of map series
- Map projections and custom coordinates (EPSG)
- Reference maps via OGC WMS - from national authorities
- Closer integration with library websites (via a link)
- Improvement of the community services, comments, links to research, etc.
- Image analysis: “colored version of ...”, automatic neat line detection, cropped maps and derivatives, deduplication
- A free service, hopefully a new national grant

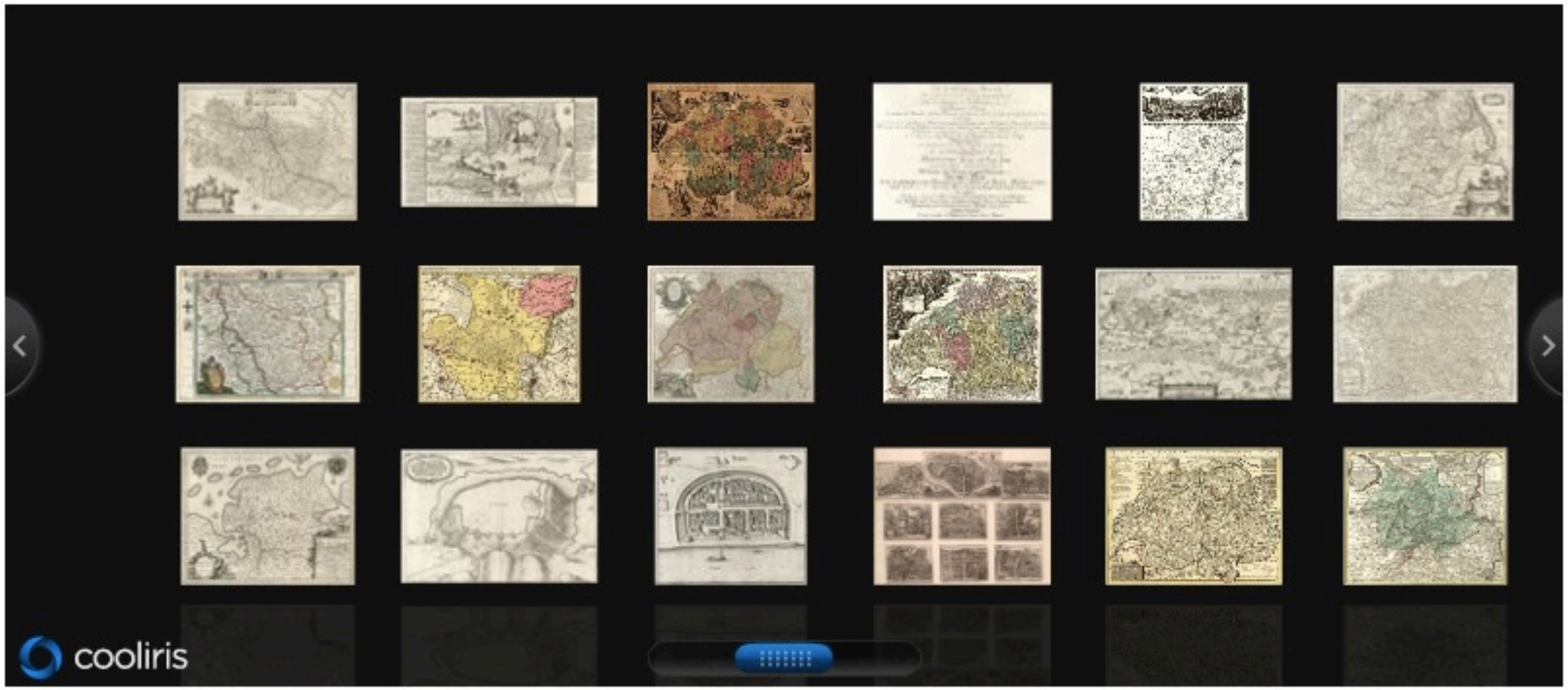
LIBRARY CUSTOMIZATION

RSS viewers for domain imageserver.mzk.cz

Log in or register

feedback

Ungeoreferenced



Georeferenced

GEOGRAPHICAL SEARCH

- Alternative projects (tested in OldMapsOnline.org and found lacking important functionality):
  - DigMap.eu Lucene GeoTemporal (LGTE)
  - Alexandria Digital Library
  - TimeMap.net (ECAI.org)
  - Google GeoSearch API
- Traditional GIS Search systems (PostGIS, ...)

KLOKAN TECHNOLOGIES
www.klokantech.com

MAPRANK SEARCH

- Intuitive interface: Where, When, Who, What
- Ranking is the core of search - it is necessary to sort the maps well to intuitively explore even very large catalogs
- Automatic import of metadata from MARC, DublinCore, ISO 19139 via OAI-PMH or OGC CWS
- Easy customization of the user interface, integration into website of library
- REST API (JSON) following OpenSearch
- Test installation in MZK: mapranksearch.mzk.cz

Kartenportal.ch: Geographical Search (beta)

http://demo.mapranksearch.com/

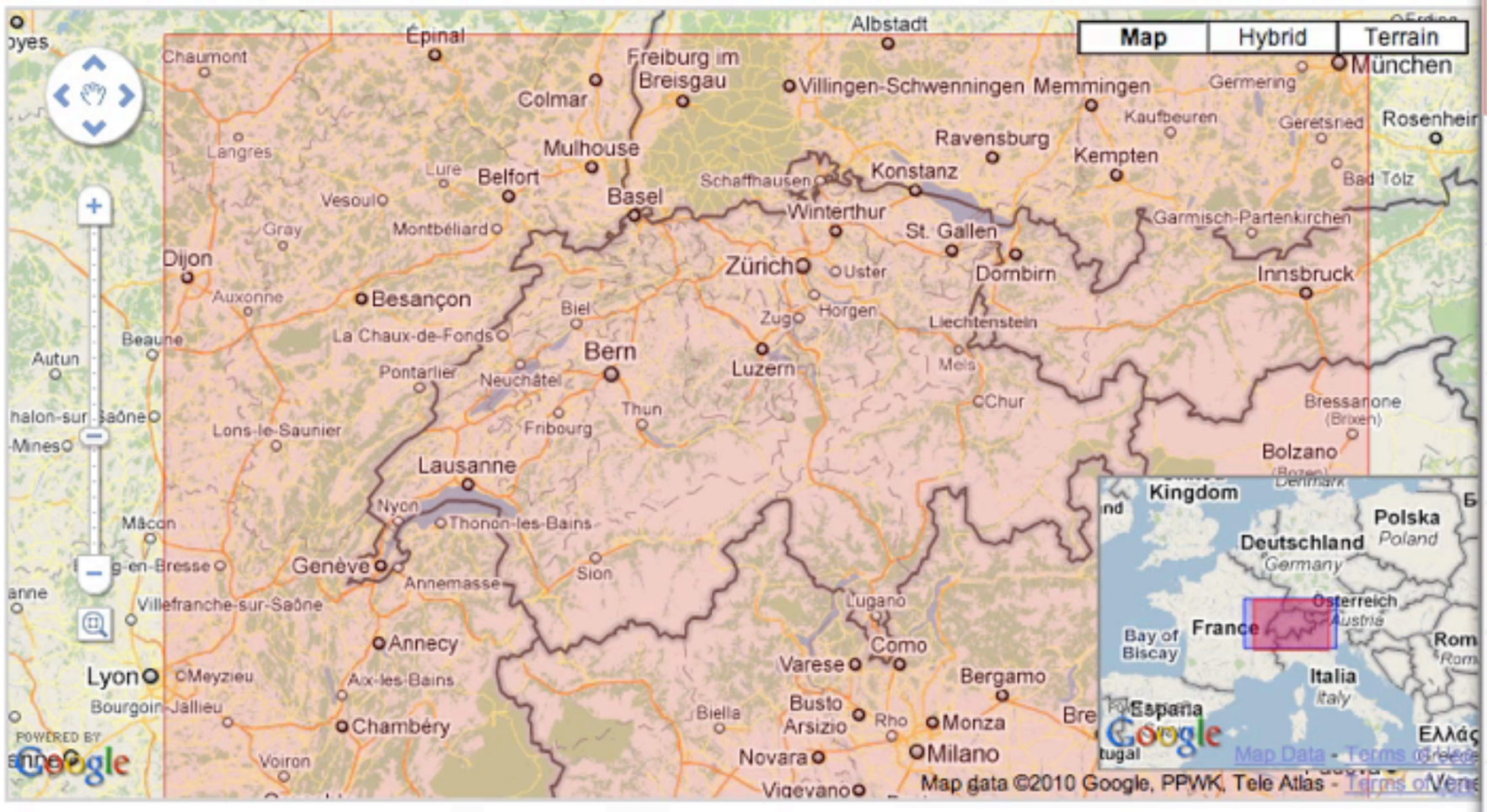
Google

kartenportal.ch

Back to the portal

1. WHERE (zoom to a place)

Find a location on the base map | Find a place



2. WHEN (select a time range)

From: 1950 To: today

1750 1770 1790 1810 1830 1850 1870 1890 1910 1930 1950 1970 1990 2010

3. WHAT or WHO (type text)

Text search: Type text to search in the results | Map scale: 1:1 to 1:∞

Most relevant maps:

Switzerland / publ. by Skyguide, AIM = Schweiz / hrsg. von Skyguide, AIM = Suisse / publ. par
» 2010 Bundesamt für Landestopografie, 1:500 000

Luftfahrtkarte ICAO 1:500 000, 2253-B, Schweiz / hrsg. vom Eidgenössischen Luftamt = Carte
» 1962 Eidg. Luftamt, Bern 1:500 000

Aeronautical chart ICAO, Switzerland, 2253-B / publ. by Skyguide, AIP Services = Luftfahrtkarte ICAO,
» 2005 Bundesamt für Landestopographie, 1:500 000

Schweiz / hrsg. von Skyguide, AIP Services = Suisse / publ. par Skyguide, AIP Services = Switzerland /
» 2004 Bundesamt für Landestopographie, 1:500 000

Luftfahrtkarte ICAO 1:500 000, 2253-B, Schweiz / hrsg. vom Bundesamt für Zivilluftfahrt = Carte
» 1995 Bundesamt für Landestopographie, 1:500 000

Luftfahrtkarte ICAO 1:500 000
Carte aéronautique OACI 1:500 000. 2253-B, Suisse =
» 1962 Eidgenössisches Luftamt, Bern 1:500 000

Schweiz
Suisse = Switzerland
» 2005 Michelin Reise-Verlag, Landau- 1:400 000

Schweiz
Touristenkarte = Suisse : carte touristique = Svizzera :
» 1998 Gesamtvertrieb: Photoglob AG, 1:350 000

E-lib.ch

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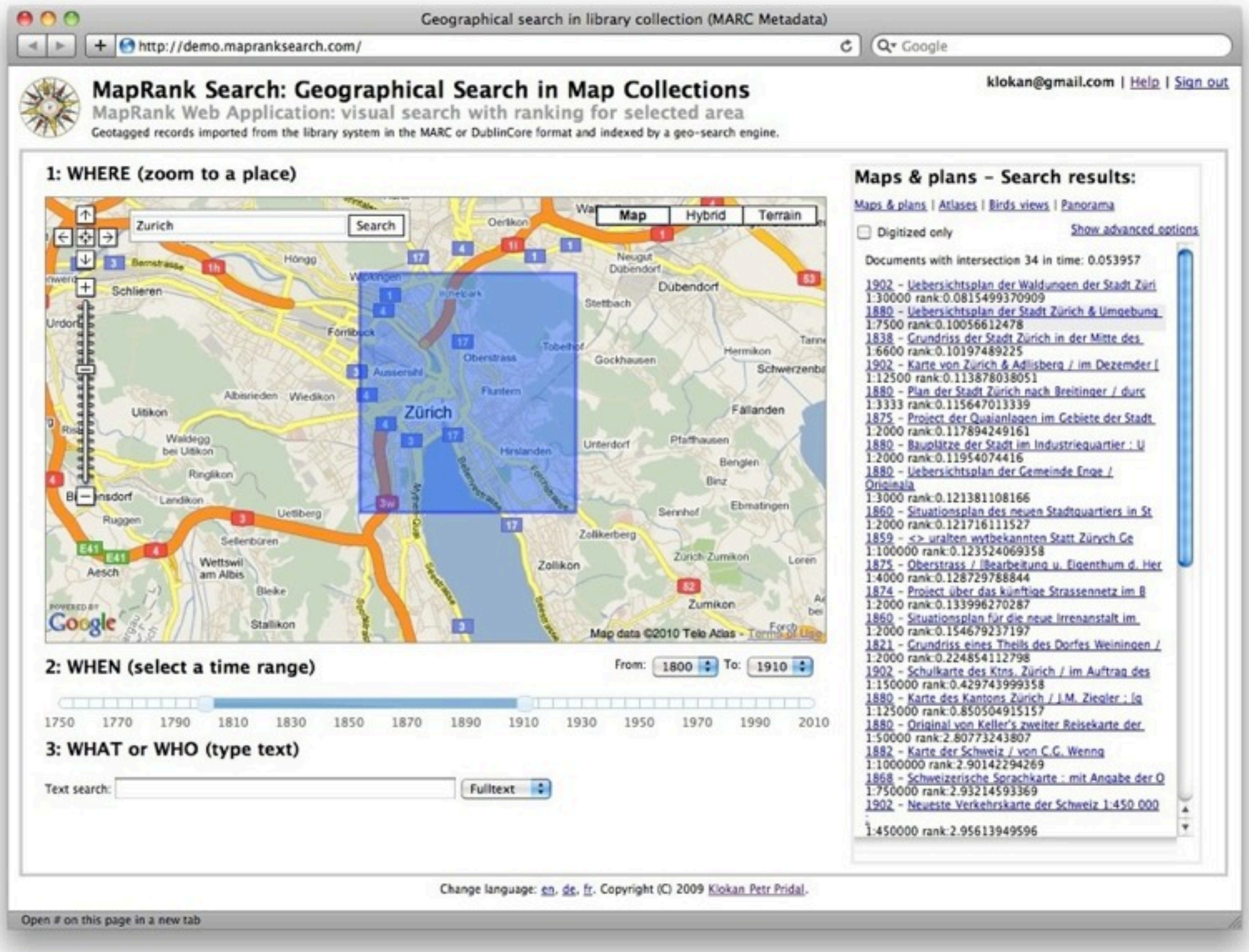
www.klokantech.com

MAPRANKSEARCH.COM



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MAPRANK RANKING & SCALABILITY

- MapRank is indexing records for maps (numerical bbox + map scale + metadata)
- The ranking is based primarily on the spatial relevance to the geographic area of the query. It is combined with the text search, filters for time range and tags.
- Data indexing implemented specifically to provide ranked real-time results even for large databases. Traditional R-Tree indexing is failing.
- User interface developed with Closure JavaScript Library + Closure Compiler.

KLOKAN TECHNOLOGIES
www.klokantech.com

ENRICHMENT OF METADATA

- **Geoparser**
- **Text parsing and semi-automatic assignment of bounding boxes to map records with detectable geonames (gazetteer), known physical size and map scale.**
- **Yahoo Placemaker, EDINA Unlock, DigMap/ Europeana, Metacarta, ...**

MORAVSKÁ ZEMSKÁ KNIHOVNA

THANK YOU!

- We are open to any kind of cooperation