



OLDMAPSONLINE.ORG

OPEN SOURCE & ONLINE TOOLS FOR OLD MAPS

Project OldMapsOnline.org is a research project targeted to the software development for historical map collections. We are developing online tools for collaborative georeferencing, annotation, 3D visualization and geometadata specification directly from a web browser.

We recommend how to publish your scans as tiles or directly from your TIFF / JPEG2000 images only with the help of open-source software and attractive web viewer technology available for free.

<http://help.oldmapsonline.org/>

PUBLISHING SCANNED MAPS ON THE WEB

We are suggesting alternative solutions for map publishing which are available for free, are easy to use for the publisher and very attractive for online visitors of your websites: it allows fast zoom-and-pan interactive viewing for your high-quality scans.

SIMPLE AND FAST: PRE-GENERATED TILES (ZOOMIFY)

You can use a desktop application (for example *Zoomify Express* application, or built-in *Zoomify Export* functionality of *Adobe Photoshop CS3+*, or open-source *ZoomifyImage script*) to process the images on your computer. Then just copy the result to a webserver. There is no extensive configuration necessary on the server side, just plain file hosting already available at every webserver.

Your image is cut into small tiles (JPEG files), which are transferred over the Internet independently, as the visitors are zooming and panning in the viewer. The online viewer application creates illusion of the seamless image. Step by step guide for this kind of publishing is available at <http://www.oldmapsonline.org/publish/>.

ADVANCED: OPEN-SOURCE IMAGE SERVER FOR PUBLISHING JPEG2000 AND TIFF FILES (IIPIMAGE)

In case you have a large collection of scanned maps and you would like to deliver your images to the web directly from the master files, the IT department can setup in your institution an open-source image server *IIPImage*, which we extended for JPEG2000 support and Zoomify viewer compatibility. We can also provide help with installation in your institution.

ATTRACTIVE ZOOM & PAN WEB VIEWERS

Whether you use the pre-rendered (Zoomify) or dynamic (IIPImage) form of delivery of your scanned images you can choose from several free web viewers which all provides zoom & pan functionality in latest web viewers. Next the the usually used *Zoomify* viewer you can use also select one of the attractive open-source alternatives like *OpenLayers* (JavaScript viewer with vector annotation functionality), *OpenZoom* (open-source alternative to Microsoft DeepZoom), or *IIPMooViewer*.



The viewers can be customized according your design needs. Anytime you can switch between the two forms of image distribution: from the pre-rendered tiles to the dynamic distribution - without a need to change the user interface on your web.

FREE SOFTWARE
IF YOU WOULD LIKE TO...

1 PUBLISH YOUR MAPS TO WEB
WITH ZOOM & PAN VIEWER

2 USE ONLINE GEOREFERENCING TOOL
TO LOCATE THE MAP

3 MAKE 3D VISUALIZATION

4 GENERATE GEOMETADATA AND
ACCURACY ANALYSIS

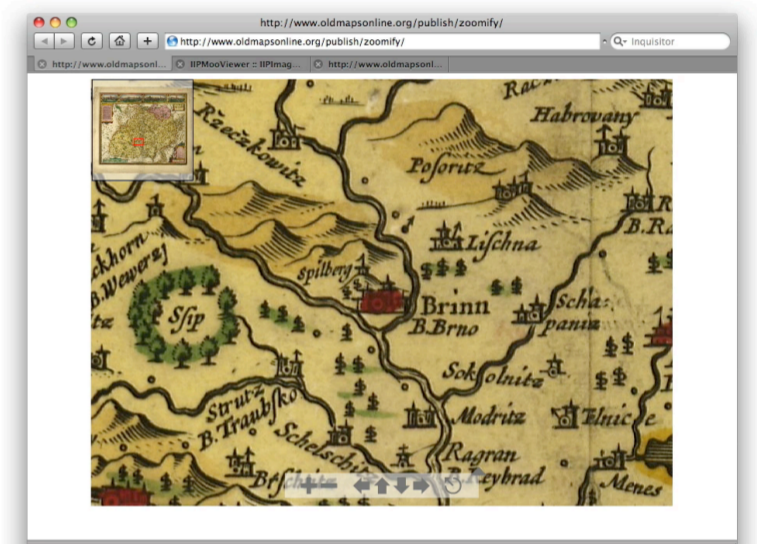


IIPIMAGE (IMAGE DELIVERY SERVER)

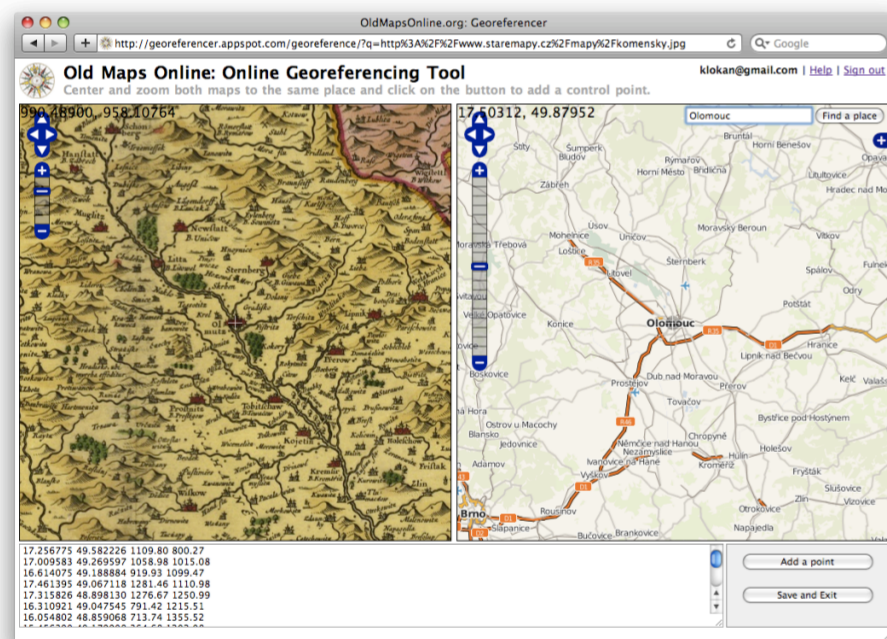
Open source server software for fast delivery of the ultra high resolution raster imagery. It serves directly from a JPEG2000 or TIFF files.

JPEG2000 image format is attractive standard for image archiving. With freely available *Kakadu* conversion tools (*kdu_compress*, *kdu_transcode*, *kdu_show*) you can switch to this format right know.

<http://help.oldmapsonline.org/jpeg2000/>



ONLINE GEOREFERENCING TOOL



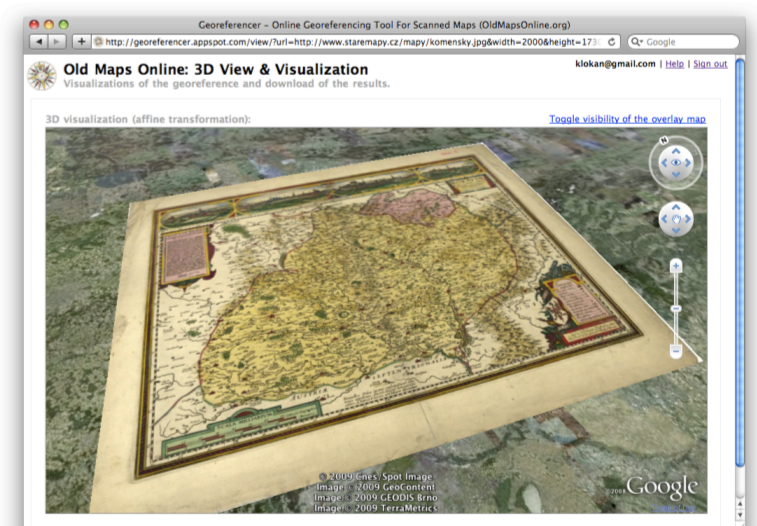
Once your scanned image of a map is published on the web it can be georeferenced and annotated with our online tool. Not only the librarians but also the online visitors can help with georeferencing of the scans which are published online. It is quite easy: you just have to visually select three or more known points (town, church, bridge, etc.) depicted on both the scanned old map and one of the provided reference maps (OpenStreetMap, Yahoo Satellite Maps, Google Maps, WMS...). You can also use a search based on GeoNames.org database to find the places by their names, including the historical alternatives or language variants. You do not have to submit your image data anywhere, the images are displayed from their original Internet address.

COLLABORATIVE GEOREFERENCING WITH GROUND CONTROL POINTS

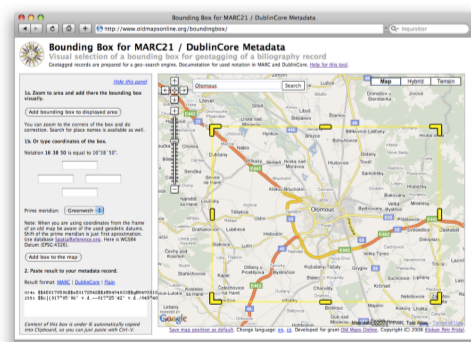
The online collaborative georeferencing allows improvement over the time as more information about the map is known and more people are interested in the map. We plan to support also selection of the neatline, specification of the used map projection, coordinate system (EPSG/WKT) as well as loading of known map indexes if they are available. There is a complete and reversible log of the operations done by the users of the online georeferencing tool. Think of a Wiki-like approach for map georeferencing.

3D VISUALIZATION (GOOGLE EARTH)

As soon as you assign the initial set of control points to the image of a scanned map the system automatically calculate from them the best fitting set of elementary transformations (translation, resize, rotation, skew) to provide a simple georeference. This affine transformation is used for interactive 3D visualization of the map image



directly in the web browser. You can enjoy the georeferenced image displayed on the virtual terrain with the latest satellite and aerial imagery - thanks to the Google Earth browser plugin. The georeference is also downloadable as ESRI World File or Google Earth KML to your computer.



METADATA FOR LIBRARY SYSTEMS (MARC 034, 752, DUBLIN CORE, ISO 19115)

From the existing georeference it is possible to derive also the bounding box, and other geographic metadata necessary for the library system. Those data are exportable in one of the standardized formats like MARC or DublinCore and the original provider of the scans can reuse them for the cataloguing or geographic search.

WARPING, OPENGIS WEB MAP SERVICE (WMS) AND TILE OVERLAY FOR INTERACTIVE ONLINE MAPS

To improve the quality of the overlay with another maps it is possible to do online "rubber sheeting" of the original scanned map, which is published somewhere on the web. With this form of transformation (polynomial, thin plate spline) the fit can be even more accurate. The small areas of the image based on the requests of a visitor are precisely warped to the target

location/map projection and the modified image is displayed to the user.

This way we can precisely overlay any of the well known interactive online maps like Google Maps, and we can even provide the maps as OpenGIS WMS for any GIS system.

The maps can also overlay each other, so an interface similar to Microsoft Research MapSynthesizer is possible.

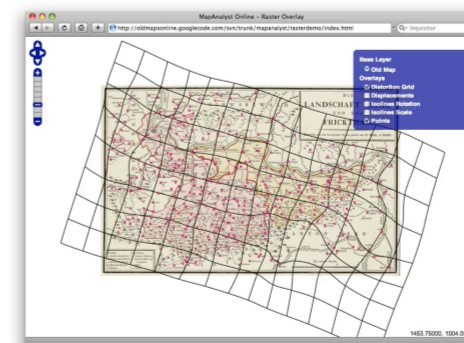
ONLINE ACCURACY ANALYSIS FOR HISTORICAL MAPS (MAPANALYST)

The system is able to compute and display in the web browser the distortion grids and other types of visualizations that illustrate the geometrical accuracy and distortion of the old maps.

INDEX FOR A GLOBAL COLLABORATIVE CATALOG OF ONLINE OLD MAPS

One of the most important results of the online georeferencing tool are the metadata necessary for the geographic search. With this form of collaborative georeference it is practically possible to create a high quality search engine for a global map collection.

With a nice map interface allowing the visual selection of **Where, When, Who, What** query and the help of ranking for the results the maps are going to be searchable independently on the publisher or institution who made the scan. We are going to use the search technology from one of the projects: Alexandria Digital Library, DigMap Lucene GeoTemporal (LGTE), The MapRank Search or Google GeoSearch for this purpose.



MAPTLER.ORG (DESKTOP APPLICATION)

Mashups and tile overlays for Google Maps, Earth and other online maps from already georeferenced maps (in a GIS system)

An open-source application for rapid and user friendly publishing of the raster maps. No server configuration necessary, maps creates overlay with changeable transparency of several interactive web mapping services like Google Maps.

<http://www.maptiler.org/>



ORGANISATION
MORAVIAN LIBRARY, BRNO, CZECH REPUBLIC

TECHNICAL MANAGER
PETR PRIDAL (KLOKAN)

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