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Federal Office of Topography swisstopo
Technology and Innovation

wissen wohin
savoir où
sapere dove
knowing where

The New Swiss National Map Series

Cartography meets GIS

Split, Croatia / October 14th 2014

Mark Wigley





An Introduction

My history and role

Having worked directly in the cartographic industry for over 20 years in both England and Switzerland I moved into the software side of cartography 6 years ago and I am now a member of the Esri Switzerland's professional services team working on the swisstopo national mapping project (Genius).

Acknowledgement

The Federal Office of Topography swisstopo, kindly agreed to me presenting this information on their behalf and this presentation originates from Francis Baca a member of the swisstopo Technology and Innovation team.



Outline

- Cartography from a GIS
- The History
- The source data (TLM)
- The Data Production Steps
 - The Base Database
 - The Immediate product
 - The Cartographic Base
 - Data Dictionary
 - Workflow Manager
 - Extra features
 - The new Product Base
 - Derived products



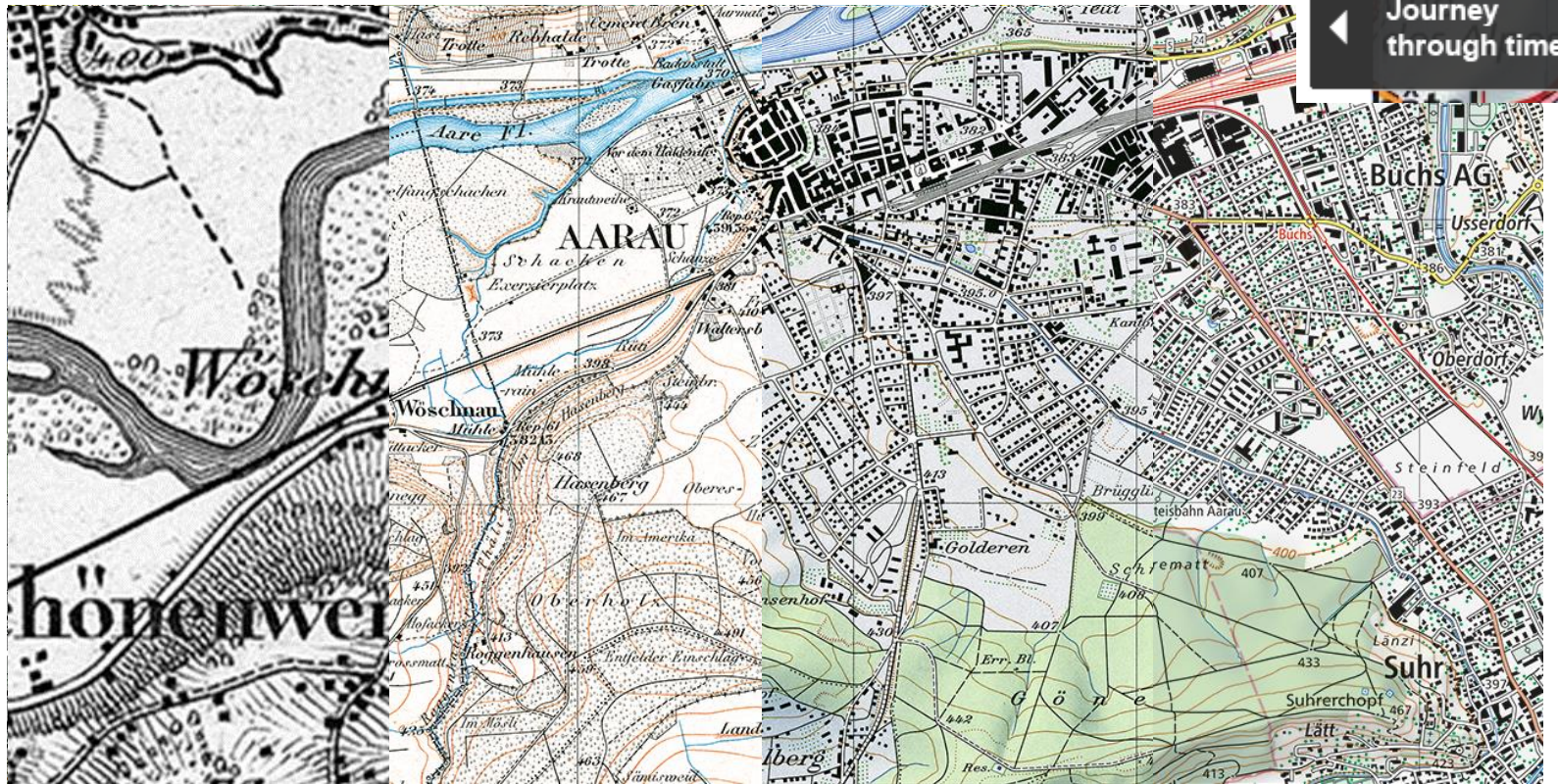
The New Swiss National Maps from a GIS...

- Structured GIS database
- Cartographic representations of the topography of Switzerland in ..
- ...7 Digital Cartographic Models (DCM's), one per scale
- Vector- and Raster hybrid
- Every Feature is linked to source data
- Derived from TLM (3D, ± 1 m) and VEC200
- Nationwide and seamless
- A Geo-Reference according to federal legislation
- Part of the National Spatial Data Infrastructure (SDI)
→ see <http://map.geo.admin.ch>
- ***The DCMs are no longer purely a User Interface and detached from the Geo-Data, but are now the Geo-Data itself...***



The History of the Swiss National Maps

The National Map of Switzerland: Initiated by General Dufour 175 years ago, enhanced through several generations.



1861

1878

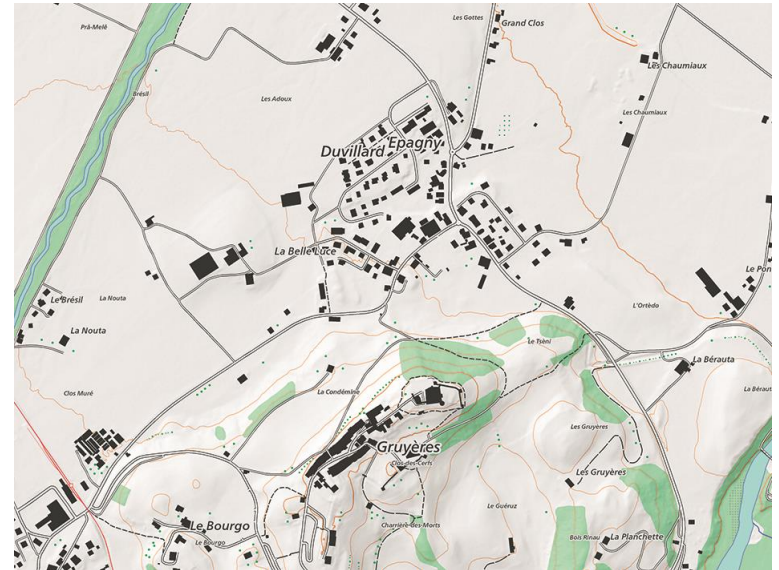
1954

2014



The Topographic Landscape Model (TLM)

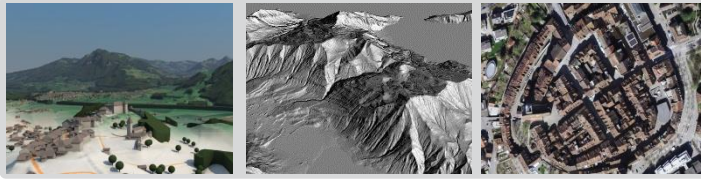
The new National Map is based on swisstopo's Topographic Landscape Model. In TLM the landscape is represented in three dimensional vector data with an accuracy of +/- 1m and combined with a Digital Terrain Model (DTM).



TLM visualisations



Data Production Steps



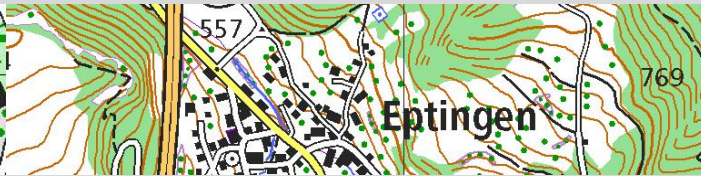
Sources: aerial images and other official data



The Base database:
Topographic Landscape Model



Intermediate product:
automatically generalised data



The Base product:
Digital Cartographic Model

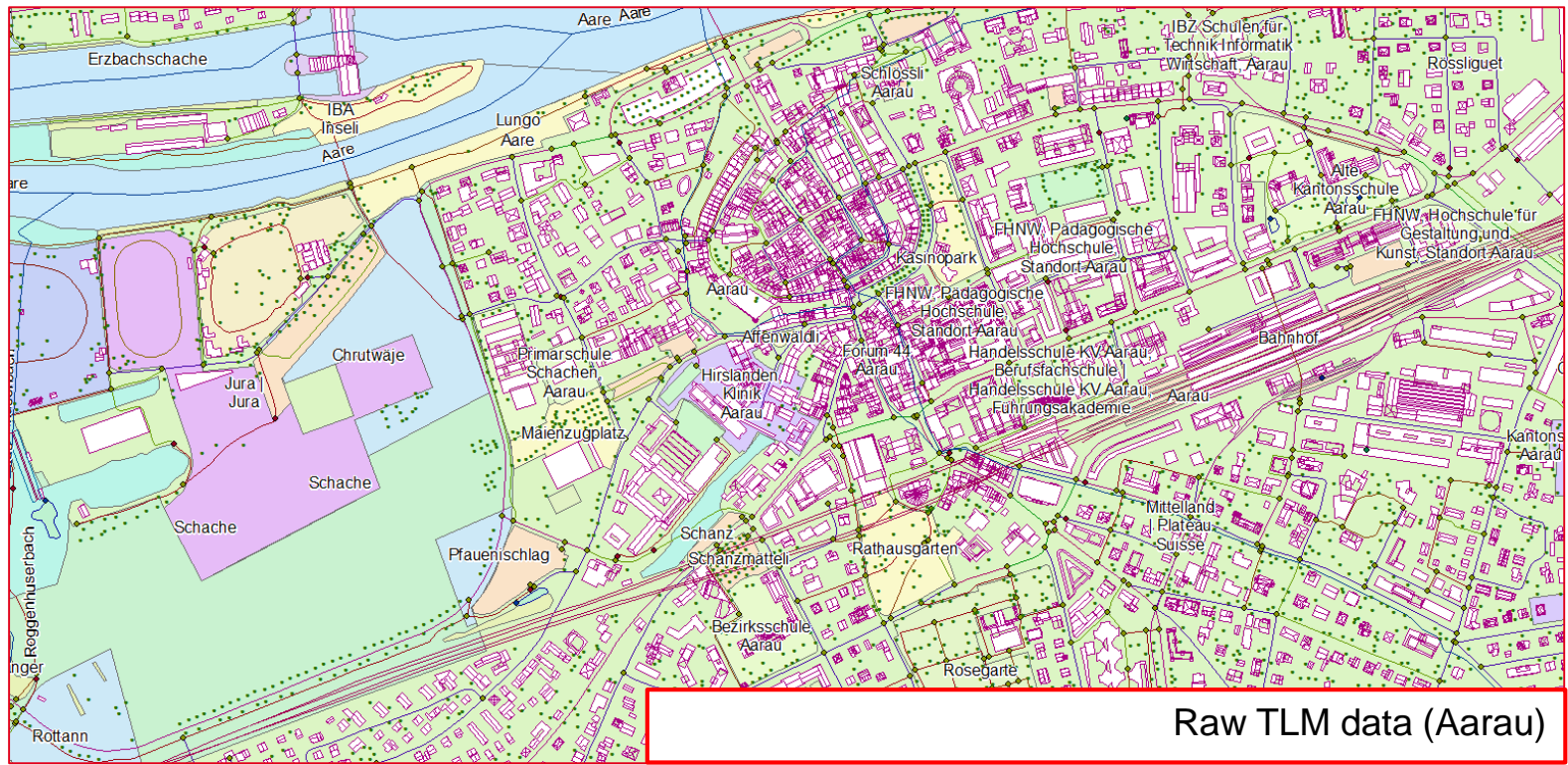


End-products: Prints, Swiss Raster Map, Swiss Map online...



The Base Database – Source Data

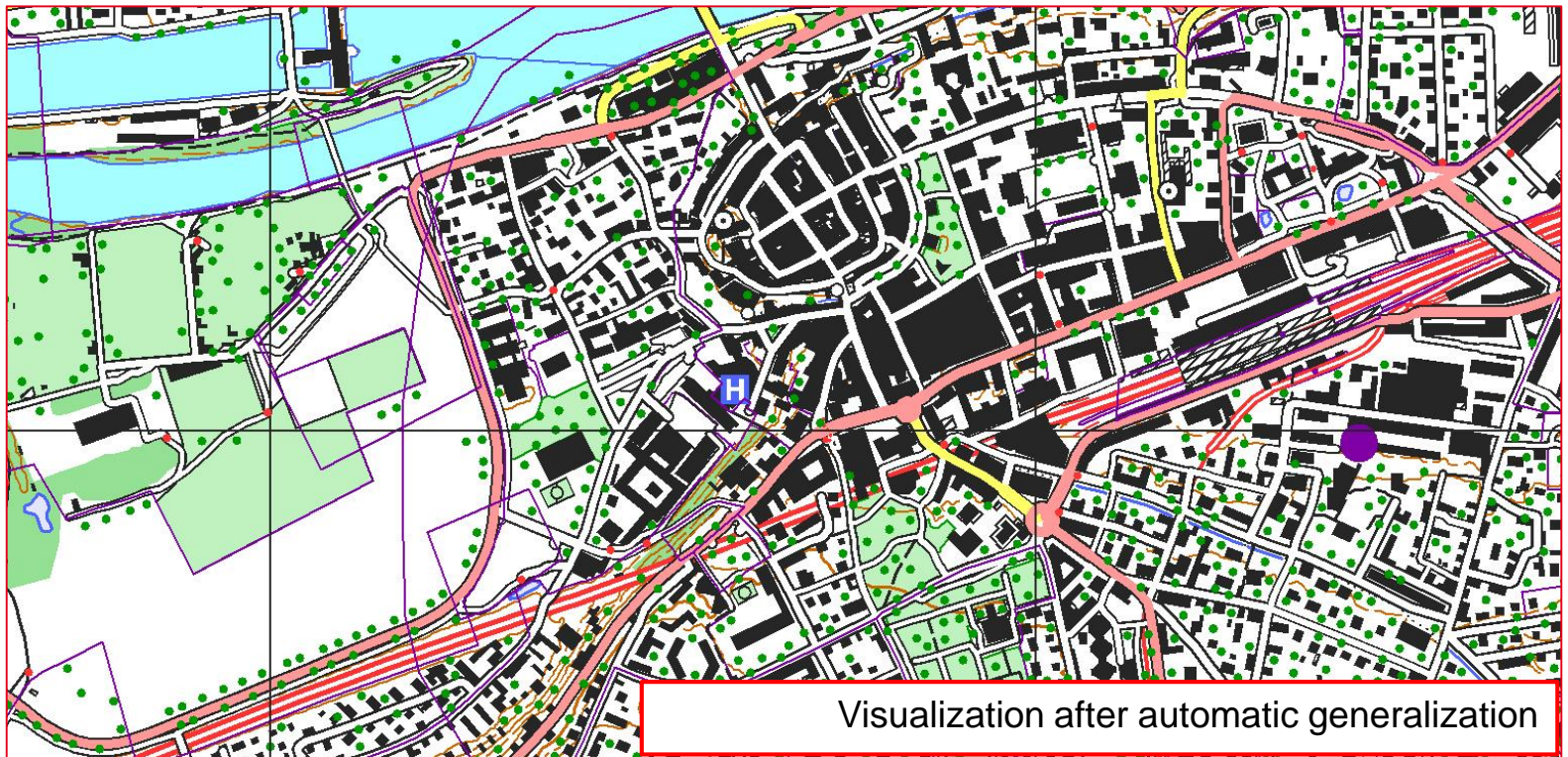
- The TLM source data is graphically «raw» but with highly detailed geometries.
- This data is the input into the automatic generalization and the visualization processes





Intermediate Product – Automatically Generalised

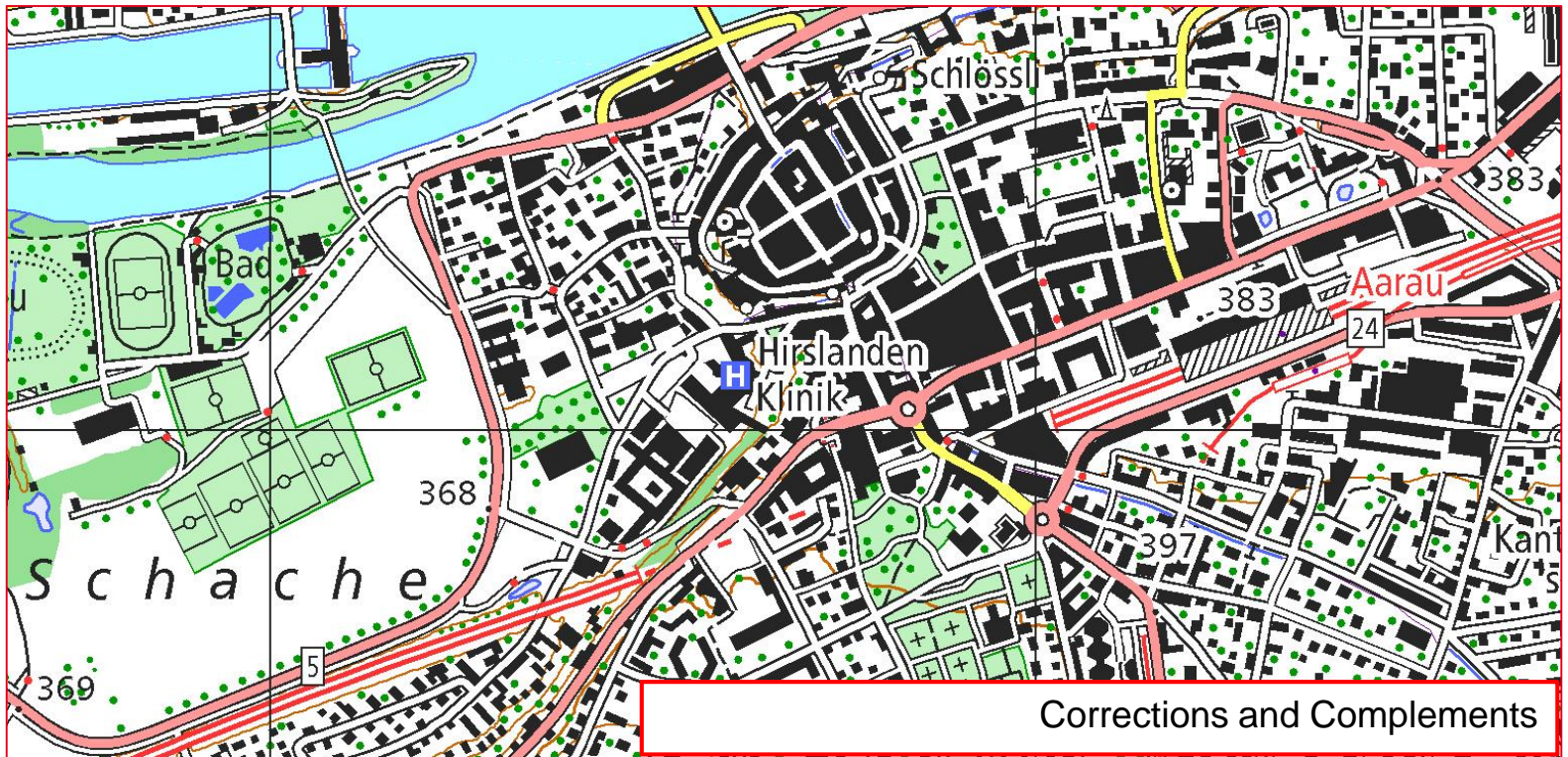
The TLM raw data is simplified and graphically displayed during the automatic generalization and visualization processes. Many features are however not yet optimally displayed.





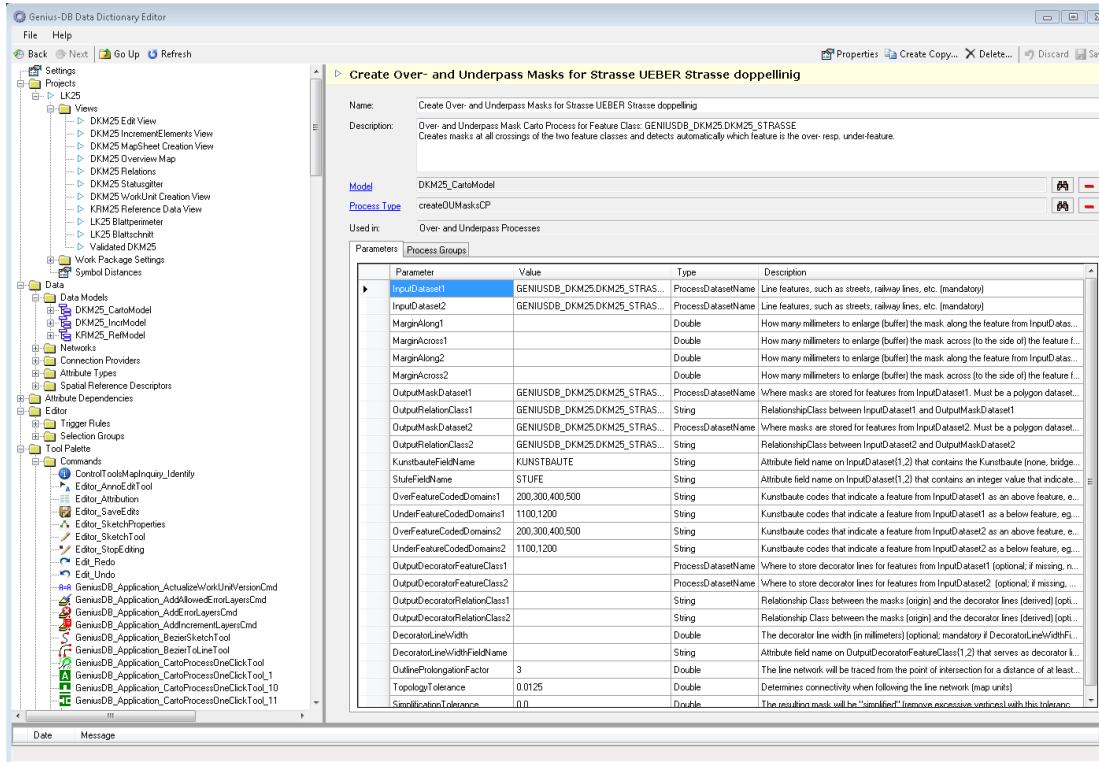
Base Product – Cartographic Editing

From an automated generated result to a manually optimized cartographic model (DCM):





GENIUS-DB Data Dictionary



• The DDX is the interface to manage all application configurations:

- Views
- Tools
- Models
- Parameters
- QA-Tests
- ...

- The configurations are available for each map scale
- Import and export possible using XML.



GENIUS-DB Workflow Manager

The screenshot displays the ArcGIS Workflow Manager interface. On the left, a 'Jobs' tree shows various query categories. The main window is split into two panes. The top pane, 'Job Query Results - List View', contains a table with the following data:

ID	Name	Assigned To	Job Type
364	Edit Map Data - MS1088_Hauenstein	U80712062	Edit Map Data
371	Edit Map Data - MS1089_Aarau	U80712062	Edit Map Data
378	Edit Map Data - MS1108_Murgenthal	U80712062	Edit Map Data
385	Edit Map Data - MS1109_Schoeffland	U80712079	Edit Map Data
486	Edit Relief Raster - Test_Performance	GENIUS_DB_SPEZIALIST	Edit Relief Raster
444	Edit Relief Raster - WU1168_Langnau_E	GENIUS_DB_SPEZIALIST	Edit Relief Raster
458	Edit Relief Raster - WU1169_Schuepfheim	GENIUS_DB_SPEZIALIST	Edit Relief Raster
430	Edit Relief Raster - WU1188_Eggiwil	GENIUS_DB_SPEZIALIST	Edit Relief Raster
472	Edit Relief Raster - WU1189_Soerenberg	GENIUS_DB_SPEZIALIST	Edit Relief Raster

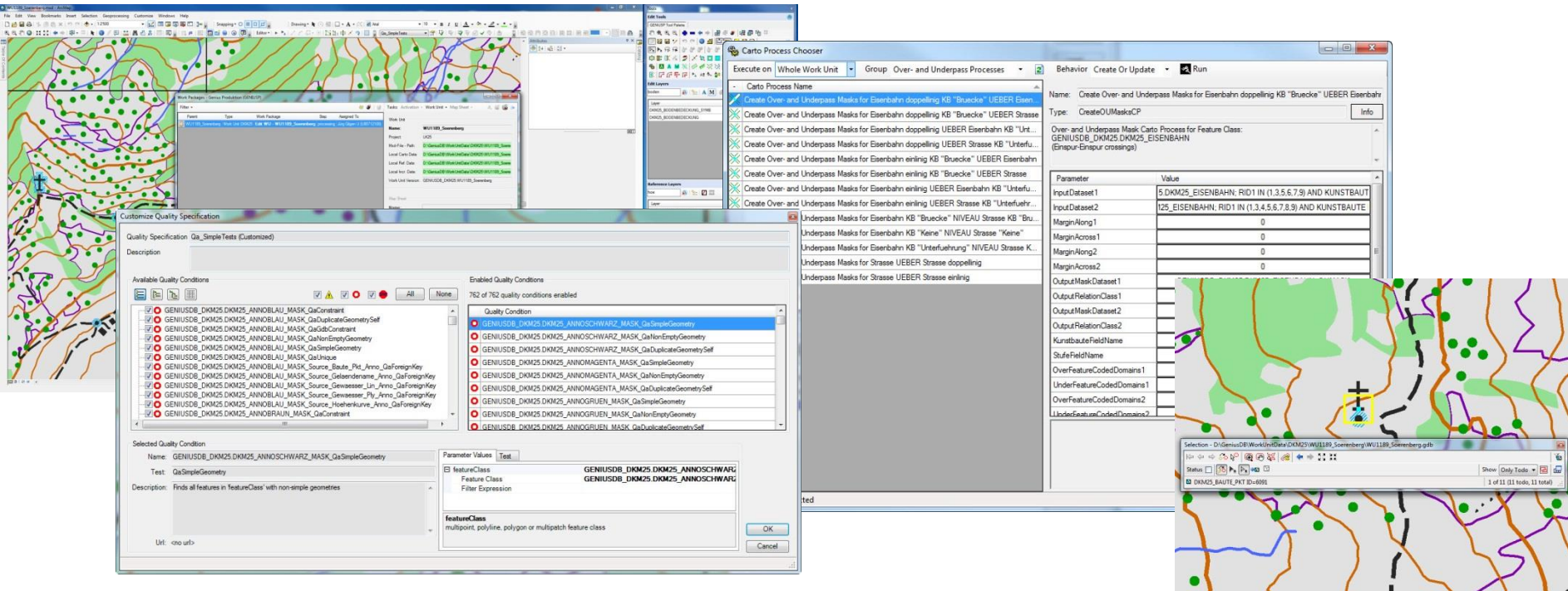
The bottom pane, 'Job Workflow', shows a vertical flowchart with the following steps: Extract Map Data (green rectangle), Edit Map Data (green rectangle), Prepare Map (cyan diamond), Complete Map (cyan diamond), Correction Reading (cyan diamond), and Print Map (cyan diamond).

- WMX regulates and manages all work packages

- GUI of ArcGIS Workflow Manager. The Production Manager, uses WMX to track the progress of all deployed work packages



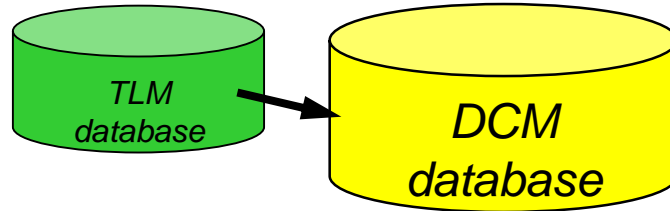
GENIUS-DB...customized features



- GUI with Custom Tool Palette, View Manager, Work Packages
- One click tools
- Carto Processes
- QA-Framework
- Work List



The new Product Base (DCM)



The Topographic map



The new finalized National Map Series design as standard representation

«The» Base Map

Base maps



e.g. light colours



e.g. grayscale

New Possibilities

Customized maps

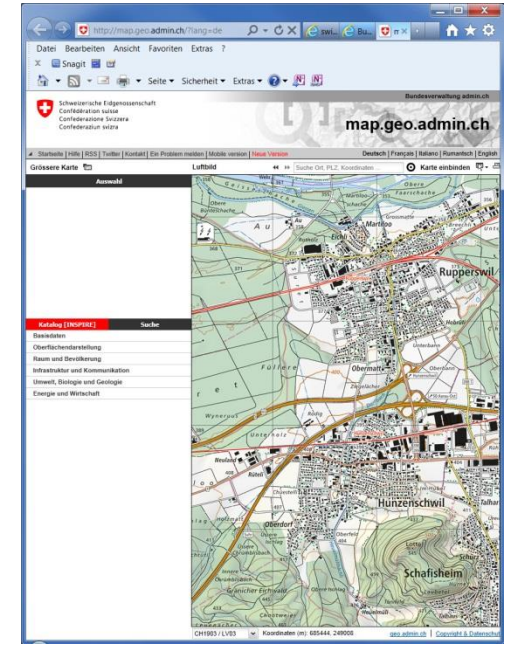
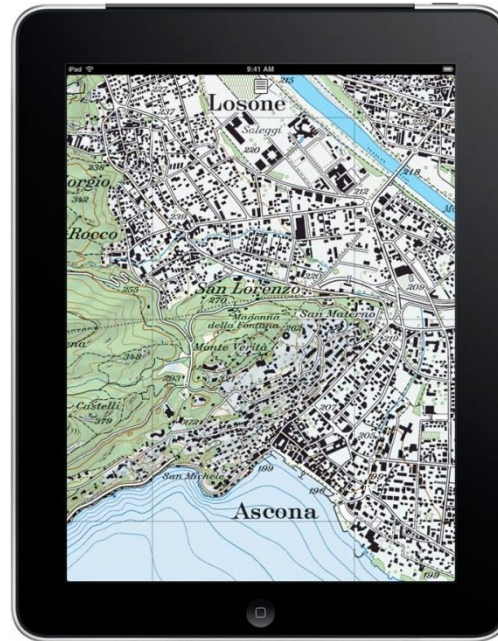
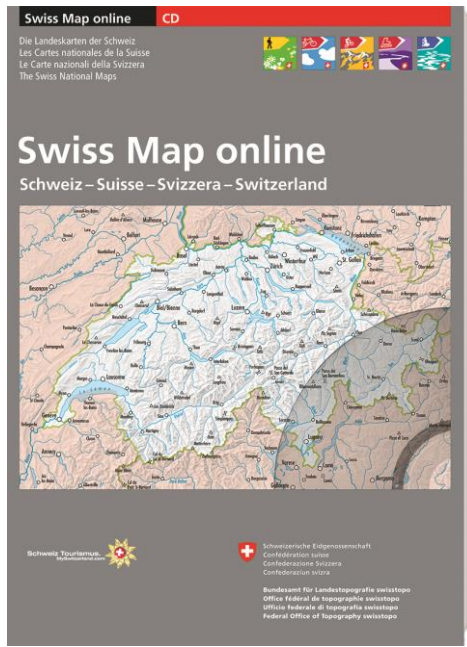
- New selection
- New symbols
- New fonts
- New colours
- New contents
- New extent

New Possibilities



Swiss National Map: Derived products

Map data in applications:





... more at www.swisstopo.ch/nlk

Browser address bar: <http://www.swiss...> swisstopo: New national m...

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Federal Department of Defence, Civil Protection and Sport
Federal Office of Topography swisstopo

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PLR-cadastre
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New national maps for Switzerland



Why does Switzerland need new national maps?

The national map 1:25,000 that dates back to the 1950s no longer satisfies today's requirements. It is based on the state of technology and topographical principles that existed at that time. Requirements such as flexible use of data for various media, efficient processes in production, greater accuracy and faster data updates can only be fulfilled if a comprehensive upgrade is undertaken and the national map is compiled on new foundations.

In 2012, swisstopo began a comprehensive upgrade of the largest official map document for

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Documentation

- [Map sheet index - New national maps 1:25 000](#)
Published: 04.02.2014 | Size: 1605 Kb | Type: PDF
- [New national maps - Infolyer](#)
Published: 15.01.2014 | Size: 5222 Kb | Type: PDF
- [geodata-news Nr.30 - Swiss Raster Map 25](#)
Published: 10.01.2014 | Size: 4266 Kb | Type: PDF



... and map.geo.admin.ch

The screenshot shows the map.geo.admin.ch website interface. The browser address bar displays the URL `http://map.geo.a...` and the page title "Karten der Schweiz - Schwe...". The main content area features a search bar with the text "Aarau" and a red circle labeled "1." around it. Below the search bar, a list of search results is displayed, including "Standorte", "Aarau (AG)", "Bezirk Aarau", "Aarau (AG) - Aarau", "Elektrizitätswerk Aarau (AG) - Aarau", "Kantonsspital 5000 Aarau", "Hintere Bahnhofstrasse 5000 Aarau", "Schachen 5000 Aarau", "Gysulastrasse 5000 Aarau", "Im Fuchswinkel 5032 Aarau Rohr", "Tellstrasse 5000 Aarau", "Rotes Haus 5032 Aarau Rohr", "Kasinopark 5000 Aarau", "Apfelhausenweg 5000 Aarau", "Aargauerplatz 5000 Aarau", "Zur Lindeninsel 5000 Aarau", and "Roggenhausen 5000 Aarau". A red circle labeled "2." is drawn around a location on the map, which is a building in the Aarau area. The map shows the city of Aarau, the Aare river, and the Schlosli area. The bottom of the page includes a scale bar (200m), the coordinate system "CH1903+ / LV95", and the website name "geo.admin.ch" along with a copyright notice.

Swiss flag logo

... and map.geo.admin.ch

Browser address bar: `http://map.geo.a...` | `Karten der Schweiz - Schwe...`

Navigation: Problem melden | Hilfe | Mobile Version | DE

Search bar: Aarau (1.)

Search results:

- Standorte
- Aarau (AG)
- Bezirk Aarau
- Aarau (AG) - Aarau
- Elektrizitätswerk Aarau (AG) - Aarau
- Kantonsspital 5000 Aarau
- Hintere Bahnhofstrasse 5000 Aarau
- Schachen 5000 Aarau
- Gysulastrasse 5000 Aarau
- Im Fuchswinkel 5032 Aarau Rohr
- Tellstrasse 5000 Aarau
- Rotes Haus 5032 Aarau Rohr
- Kasinopark 5000 Aarau
- Apfelhausenweg 5000 Aarau
- Aargauerplatz 5000 Aarau
- Zur Lindeninsel 5000 Aarau
- Roggenhausen 5000 Aarau

Map: Aarau, Schlosli, Hirslanden Klinik

Scale: 200m | CH1903+ / LV95

Footer: geo.admin.ch | Copyright & Datenschutzerklärung



See more... GIS-Cartography!



**reliable,
intelligent
and easy to read!**

map.geo.admin.ch



Thank you for listening and enjoy the rest of the Conference!

