

MAP+ Workshop

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Web- und Software-Components



Web Base:

PHP: Server script language

JavaScript: Client script language

JSON: Configuration [JavaScript Object Notation]

CSS3: Styling

HTML: Static pages



Software Base:

Geodatabases, Databases: any, for example PostgreSQL/PostGIS, MySQL/MariaDB, SQL Server, Oracle - as well combined

Mapping Server, WMS Server: any. For example UMN MapServer, GeoServer, ArcGIS Server, Autodesk AIMS - as well combined

TCPDF: PDF generation

OpenLayers: Display and query of geodata

DOJO Toolkit: Graphic elements. In addition jQuery.

Components User Interface



Background maps:

WMTS (Tile-Services = Tiles)
WMS, as well combined with WMTS
Google, Bing Maps, OSM, etc.



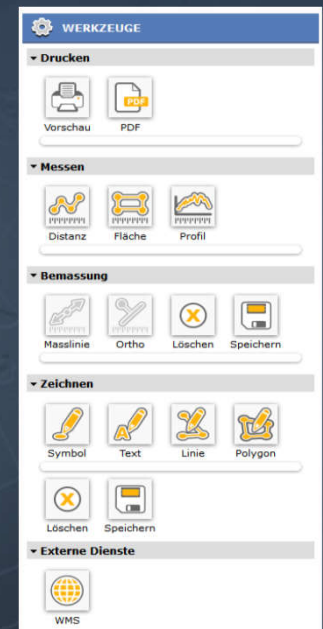
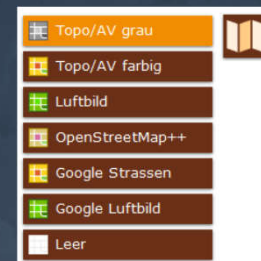
Layer-Manager:

WMS: UMN MapServer, GeoServer, any ...
WMTS
ArcGIS Server Services
Autodesk AIMS Services
GeoJSON Objects



Apps:

Print: HTML, PDF (scale, rotation, layered, coordinate grid, north arrow, layouts up to A0 etc.)
Simple measurement: distance, area, distance with cross section
Precise measurement: point to point and orthogonal. Printable as PDF, can be stored as bookmark
redlining: symbol, text, line and polygon. Printable as PDF, can be stored as bookmark
Integration of external WMS by users, can be stored as bookmark
Import- and selection- / export tools



Functions / StoryMaps / Others



Functions, configurable:

- Choice of background maps
- Home-Button
- All layers off
- GPS localization
- Google StreetView Integration
- Google Earth (=KML Export)



StoryMaps:

- HTML pages
- Any map composition including measures and redlining can be integrated
- Example GeoGR (see image): map compositions for all themes, links to metadata, link to the GeoGR shop for data download, link to the department in charge of the data



Others:

- Search: simple and using categories
- "Suggest" search using Apache Lucene Solr on millions of objects: *Solr is the popular, blazing-fast, open source enterprise search platform built on Apache Lucene*
- Overview map, scale, disclaimers, sort/transparency function for layers



Karten nach Thematik



Nutzungsplanung NUP

Amt für Raumentwicklung

Die Gemeinden sind laut eidgenössischem und kantonalem Raumplanungsrecht beauftragt, über ihr Gemeindegebiet die Nutzungsplanung (Ortsplanung) zu erstellen.

Zonenplan



Sichtbar ab Zoom 1km (Massstabsbalken)

[Detaillierte Informationen und Datenbezug](#)

Genereller Gestaltungsplan



Sichtbar ab Zoom 1km (Massstabsbalken)

[Detaillierte Informationen und Datenbezug](#)

Genereller Erschliessungsplan



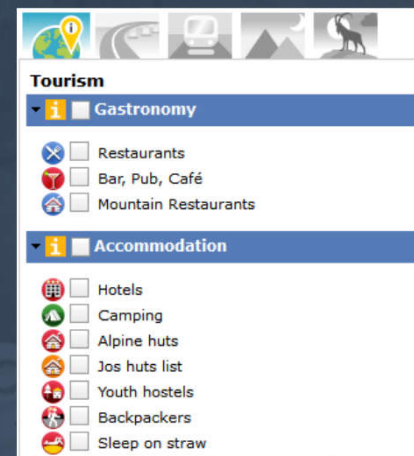
Sichtbar ab Zoom 1km (Massstabsbalken)

[Detaillierte Informationen und Datenbezug](#)

Multilingual



As many language as needed ...



Information Query Capabilities

- Database content
- Formatting of fields, such as number of digits, date ...
- Concatenate strings, for example to create a URL
- Hyperlinks
- Images, image carousel
- On-the-fly cross section
- Highlight of objects (mouse-over the info)
- Highlight cables in tubes (electricity, fiber)
- Lookups: inline, JSON-Listen, from database
- on-the-fly overlay, for example parcels-zoning
- Query other layers than shown
- Query on WMTS layers
- Support of relationships
- Parcel ownership using SIX Terravis (11.5 cantons)
- Export query result to CSV



Information Query Examples

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GeoGR - Geodatendrehscheibe Graubünden

GEOGR

Grundstücksbeschreibung

E-GRID: CH480723267030
 Politische Gemeinde: Tujetsch
 BFS-Nr.: 3986
 Grundbuchamt: Cadi
 Grundstück-Nr.: 1198
 Fläche: 220m²
 Plan-Nr: 8

Bodenbedeckung:
 - Gebäudegrundfläche und Hofraum

Flurnamen:
 - Cadruvi

Gebäude/Bauten:
 - Einfamilienhaus, Nummer: 22A

Eigentum

1/2, Miteigentum

Erwerbsdatum:
 - 26.08.2004
 - 01.09.2005

Sigismondo Wenz Glaser: 05.10.1954, Via Cadruvi 1, 7188 Sedrun

1/2, Miteigentum

Erwerbsdatum:
 - 01.09.2005

Thomas Glaser: 19.05.1967, Cadruvi 1, 7188 Sedrun

Objektinformation

▼ LIEGENSCHAFTEN/EIGENTÜMER

Tab: Liegenschaften | Eigentümer

Nummer	Fläche [m ²]	Grundstückstyp	Eigentumsart	Name	Vorname	Adresse	PLZ	Ort
1377	560	Liegenschaft	Gesamteigentum	Sigismondo	Maria	Klusweg 14	7250	Klosters
1377	560	Liegenschaft	Gesamteigentum	Sigismondo	Agnes	Holzweissstrasse 23	8704	Herrliberg
1377	560	Liegenschaft	Gesamteigentum	Sigismondo	Georgina	Klusweg 14	7250	Klosters
1377	560	Liegenschaft	Gesamteigentum	Sigismondo	Jörg Hieronimus	Klusweg 14	7250	Klosters
1377	560	Liegenschaft	Gesamteigentum	Sigismondo	Susanna Maria	Klusweg 14	7250	Klosters


Map view showing parcels 1377, 3-90, and 3-89.

Objektinformation

▼ Liegenschaften

▼ Neophyten

Gebiets-ID: 0

Pflanzenart-ID:  Armenische Brombeere

Anzahl Pflanzen: 0

Fläche aktiv (Neophyten vorhanden): Nein

Datum Erhebung: 21.04.2016

Zeit Bearbeitung (Flächenerfassung und Pflanzenentfernung) [min]: 0

Flächenmass [m²]: 8114

[Objekt bearbeiten](#) / [Objekt neu](#) / [Objekt duplizieren](#)

Objektinformation

▼ Wanderungen

Name: Greina-Hochebene 1. Tag

Startort: Vrin

Zielort: Terrihütte

Distanz: 10323.17m
 Höhe min / max: 1421 m / 2431 m
 Höhenmeter aufwärts / abwärts: 1034 m / 344 m

[CSV](#)

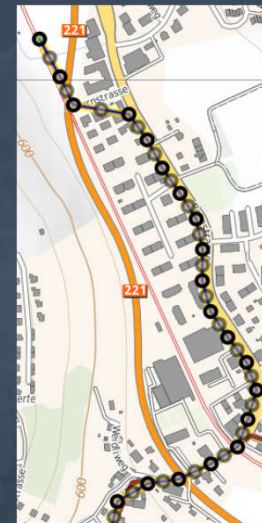
Höhe m



[Objekt bearbeiten](#) / [Objekt neu](#) / [Objekt duplizieren](#)

Editing

- 🌐 Database content
- 🌐 Only attributes, only geometry, both, delete yes/no
- 🌐 Geometry type: GeoJSON or WMS (!)
- 🌐 Geometry: *add node / move node / delete node / snap*
- 🌐 Point to point or freehand digitizing
- 🌐 Duplicate objects
- 🌐 Author based (no editing on defined authors)
- 🌐 Mandatory attributes: drop down lists, radio buttons
- 🌐 drop down lists with images
- 🌐 Default values
- 🌐 Upload of images with GPS support
- 🌐 GPX upload
- 🌐 DXF-import for backdrop
- 🌐 CSV/XLS import
- 🌐 Clip to existing objects
- 🌐 Multiple geometries in one layer (points, lines, areas)



Objektinformation

▼ Neophyten

Gebiets-ID: 0

Pflanzenart-ID: Armenische Brombeere

Anzahl Pflanzen: 1

Fläche aktiv (Neophyten vorhanden): 1

Datum Erhebung: 2016-08-10

Zeit Bearbeitung (Flächenerfassung und Pflanzenerkennung) [min]: 1

Flächenmass [m2]: 1

Massnahme (Restpflanzen):

Bemerkung: Beachten

Mitarbeiter Erhebung: Surina Gassa

Armenische Brombeere

Aufrechte Ambrosie, aufrechtes Traubenkraut

Cotoneaster

Drüsiges Springkraut

Information sur l'objet

▼ Hotels

Nom: Krone

CP: 3074

Localité: Muri b. Bern

Classe: 0 1 2 3 4 5

Description: Hotel-Restaurant

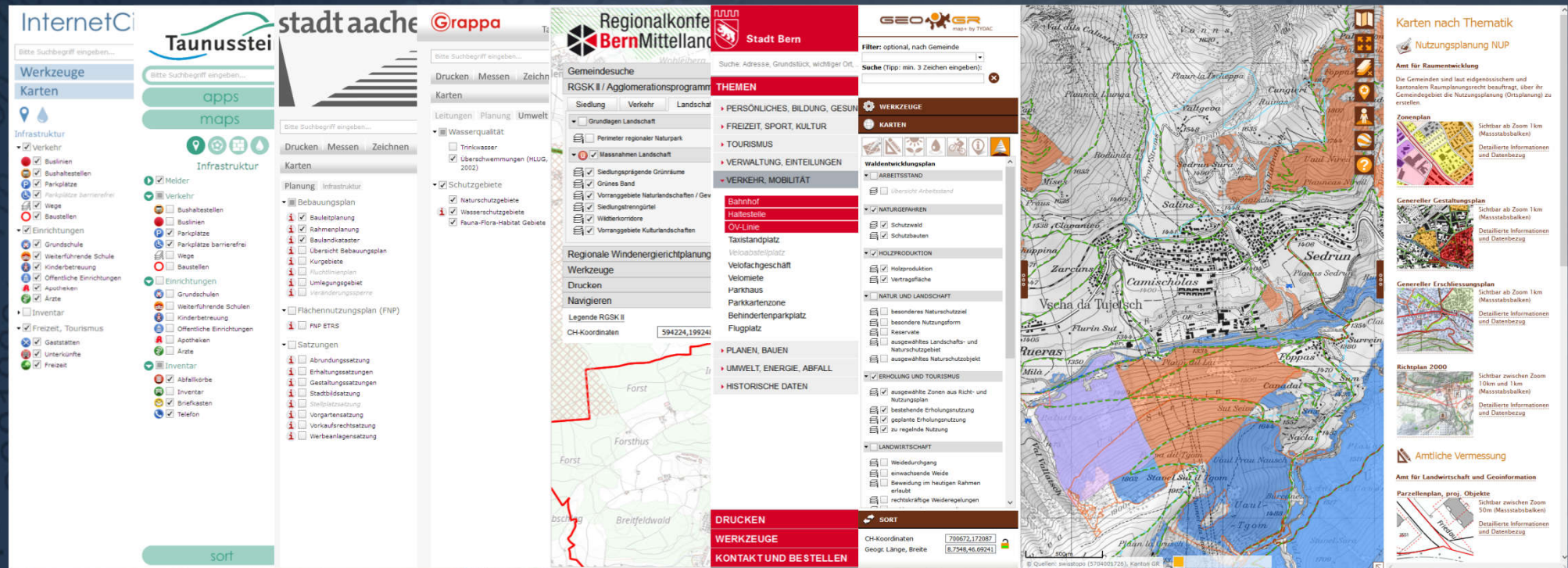
Link:

Attention: Toutes les modifications sont vérifiées

User Interface

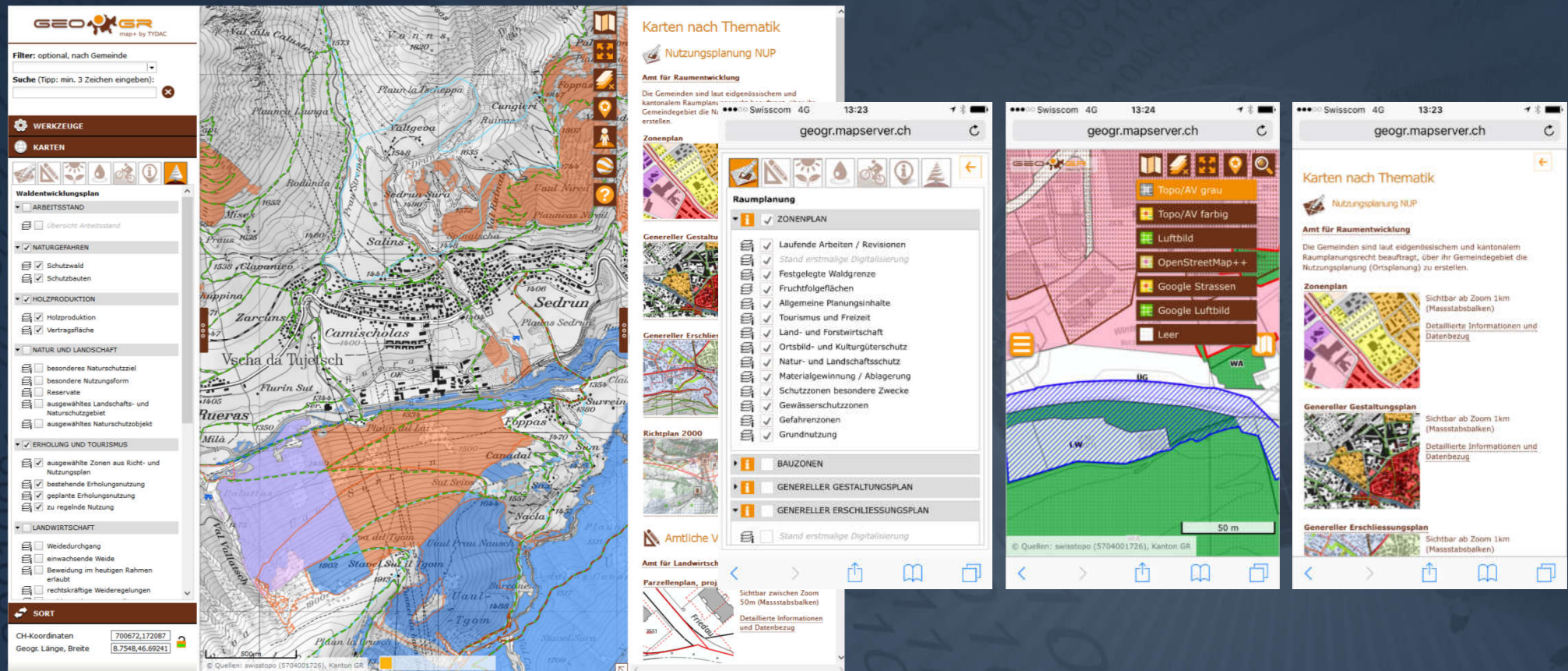


- Via Templates (CSS3, HTML) - almost anything you can imagine
- Wide choice of predefined graphic elements



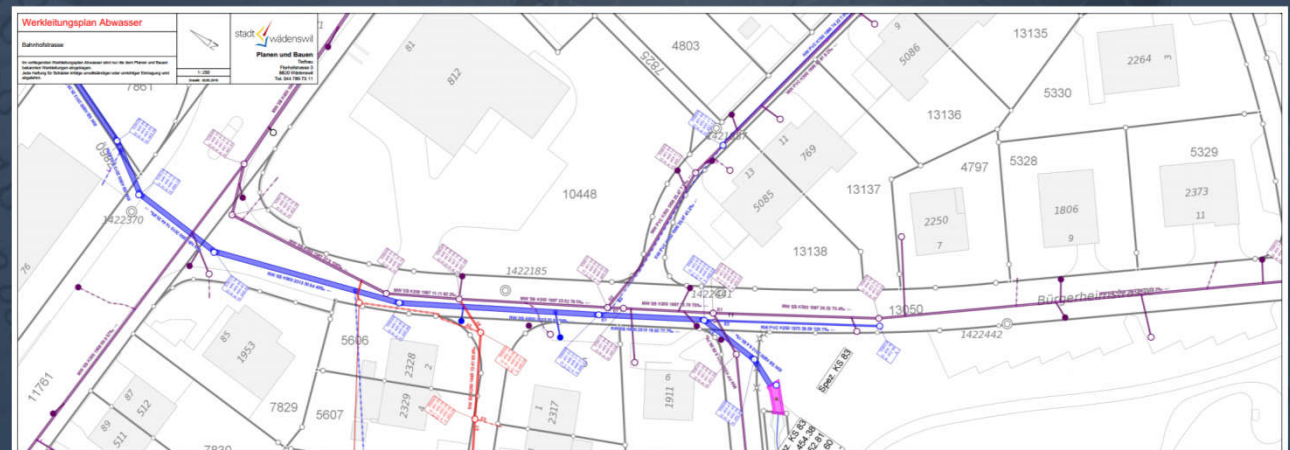
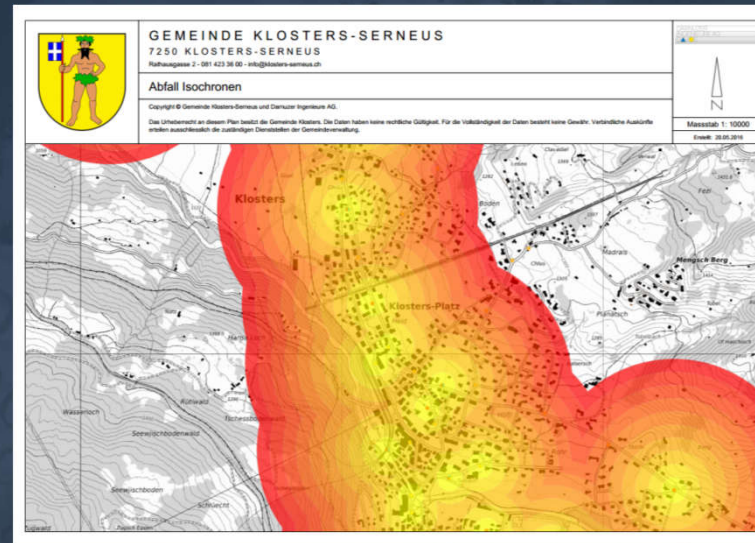
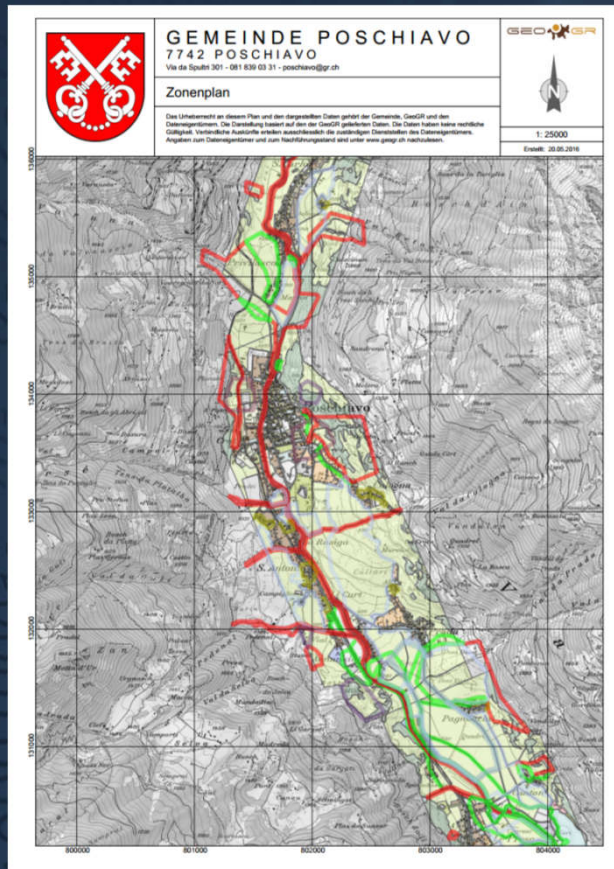
User Interface - Desktop & Mobile

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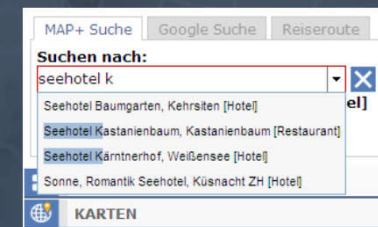
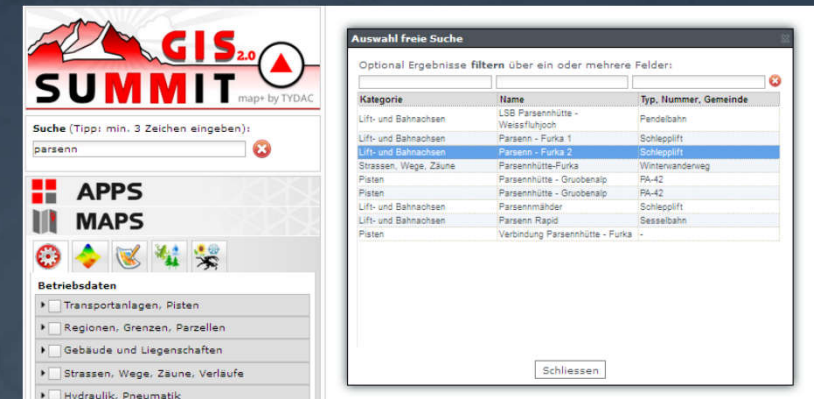
PDF Layouts

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Search / Routing

- Simple one parameter search on a search DB:
 - Normally you'd need three columns: category, name, type or commune
 - List of matching results when typing three characters or one number
 - List is sortable and can be filtered on any column
- Categorized search
 - As above, with an optional category
 - Applicable for example if you have many municipality
- Search using Apache Lucene Solr Search Engine
 - Extremely powerful Open Source Enterprise Level Search-Engine
 - Search in databases, text files, documents etc.
 - full-text search, spatial search (location aware), hit highlighting, real-time indexing, dynamic clustering, database integration ...
 - Is for example used by Instagram, Netflix, Disney, Apple, eBay etc.
 - Experience with mapplus.ch: almost *real-time* answers on millions of records
 - Our aim: *better than Google* ☺
- Google search integration
- Google routing integration



Selection and Export



Selection:

Whole table

Ability to restrict the area of selection, for example with very large datasets one can select only from a certain zoom level

Geographic selection using a polygon or a circle

Combined selection database query-geographic

Manual selection in the table

Show selected objects in the map function



Export:

Currently ESRI Shape and CSV

As we use OGR this can easily be extended with formats like SQLite, MapInfo TAB etc.

Filter, Export Shape/CSV

▼ Layer

Disten

name	typ	flaeche	laenge_m	nummer	status	color
Kein Filter angewendet						
Blaue	blue	111058	0		realisiert	RGB(0.0,255)
Rot	black	91378	0		realisiert	RGB(0.0,0.0)
1	black	19842	0		realisiert	RGB(0.0,0.0)
Brand	black	59934		Ri-10	realisiert	RGB(0.0,0.0)
Schafcalanda	red	124542		MA-09	realisiert	RGB(255.0,0.0)
TEast	red	34299	0	7	realisiert	RGB(255.0,0.0)
Grubenalp	blue	34757		PA-40a	realisiert	RGB(0.0,255)
Schlittelpiste	siedgerun	15168		-	realisiert	RGB(255.0,255)
	blue	29267	0		geplant	RGB(0.0,255)
Nulli	red	14902		Ri-04b	realisiert	RGB(255.0,0.0)
Wang	red	52299		Ri-06	realisiert	RGB(255.0,0.0)
	red	3550		MA-04a	realisiert	RGB(255.0,0.0)
Gletscherpiste	glacierslope	273		GP1	realisiert	RGB(192.255,255)
Verbindung	blue	31119		-	realisiert	RGB(0.0,255)
Standard - Höhenweg	red	97309		PA-04	realisiert	RGB(255.0,0.0)
Uellweg	red	2211			realisiert	RGB(255.0,0.0)

Icons: Map, SHP, CSV, Filter, Selection, Table, Table with checkmark

Filter

Übereinstimmung: Alle Regeln

Spalte
name

Bedingung
enthält

Wert
Persenn

Filter Abwählen Abbrechen

User Access Control (UAC)



Simple UAC

Configurable via Web-GUI

User and Roles

Profiles allow the configuration of almost anything of MAP+ to a user, including GUI



Complex UAC via Drupal CMS



Single Sign on support

Profiles (mmpag)

dkbag	
<input type="checkbox"/>	develop
<input type="checkbox"/>	intranet
<input type="checkbox"/>	intranet_edit
<input checked="" type="checkbox"/>	mmpag_demo
flumserberg	
<input type="checkbox"/>	intranet
<input type="checkbox"/>	intranet_edit
<input checked="" type="checkbox"/>	mmpag
gstaaad	
<input type="checkbox"/>	intranet
<input type="checkbox"/>	intranet_edit
<input checked="" type="checkbox"/>	mmpag
jungholz	
<input type="checkbox"/>	intranet
<input type="checkbox"/>	intranet_edit
<input checked="" type="checkbox"/>	mmpag_demo
pizol	
<input type="checkbox"/>	intranet
<input type="checkbox"/>	intranet_edit
<input checked="" type="checkbox"/>	mmpag
stmoritz	
<input type="checkbox"/>	intranet
<input type="checkbox"/>	intranet_edit
<input checked="" type="checkbox"/>	mmpag
titlis	
<input type="checkbox"/>	intranet
<input type="checkbox"/>	intranet_edit
<input checked="" type="checkbox"/>	mmpag

Save Quit

MAP+ Configuration: All in JSON (ASCII-Files)



All with a few configuration files:

Background maps: basemaps.conf
 Layer control: lyrmgr.conf
 Information query: maptips.conf
 Editing: editing.conf
 Apps: tools.conf
 Disclaimers: disclaimer.conf



PDF Print:

Options: printoptions.conf
 Layer: print_lyr.conf. This has to be configured separately from the layer display itself, on purpose. As a screen is not a printer (scale handling)
 Layouts: pdf_layout_xxx.conf, as many as you want



Others:

Definition of snap-Layer for measurement and editing: snap.conf
 Search: searchoptions.conf
 List of external WMS: import_wms_list.json



National Language Support (NLS):

Layers, Map Tips (Info), Editing, Legends, Tools, Disclaimers
 As many languages as you want

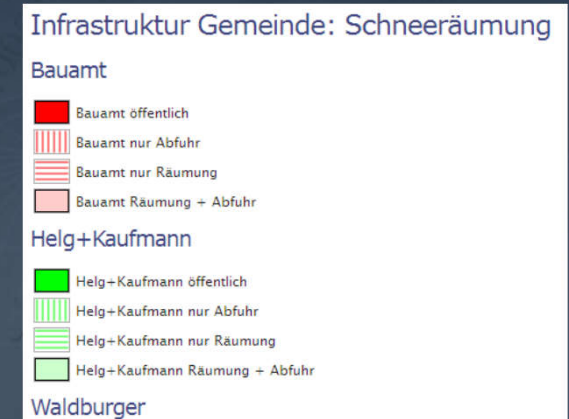
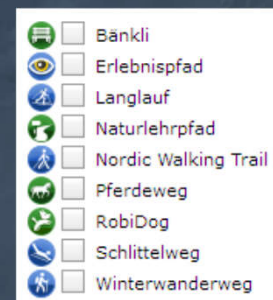


Preferred Editor: Sublime with Syntax Highlight / Checker

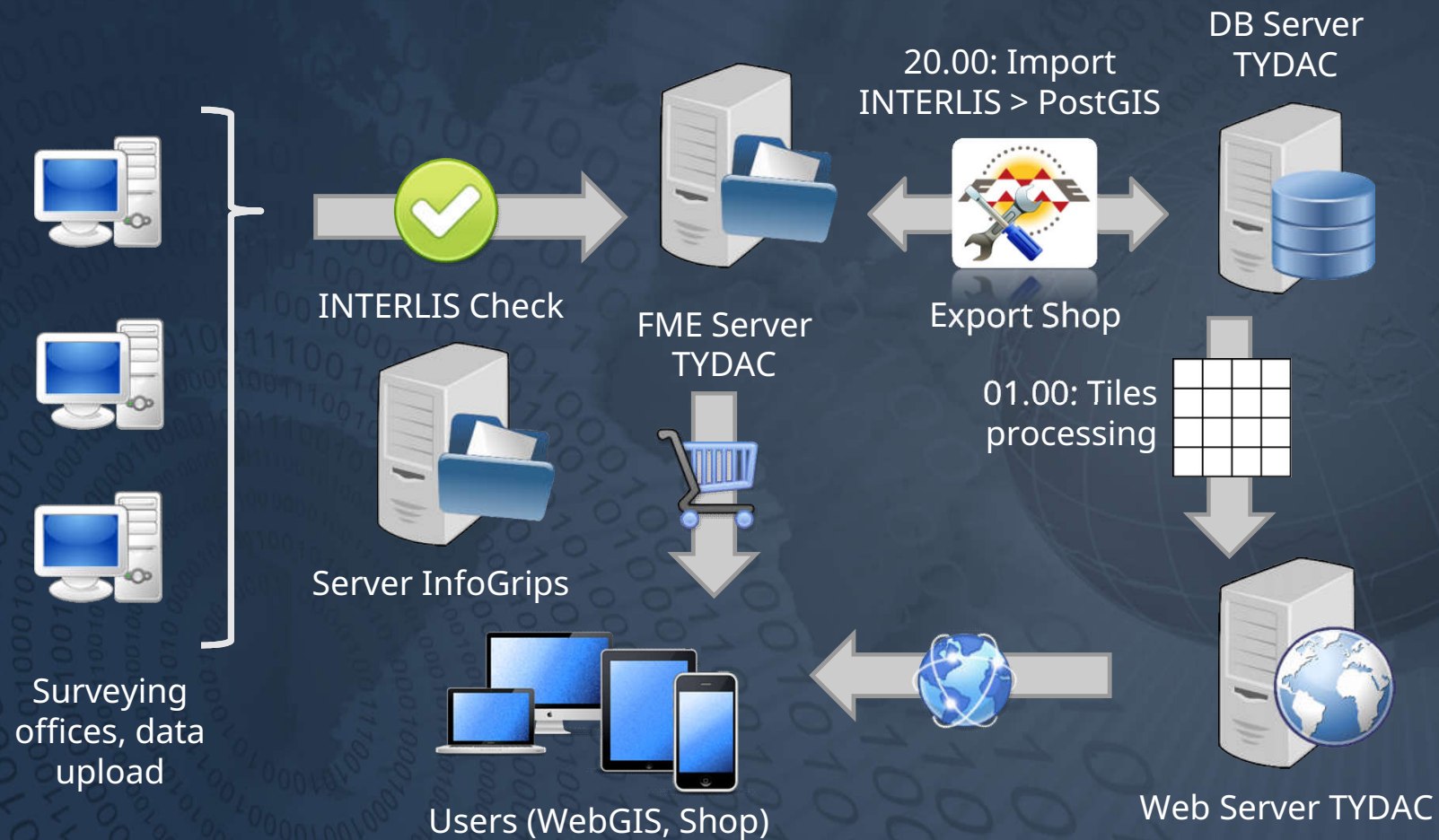
```
{
  "main_lyrmgr": {
    "type": "ClassicLayerMgr",
    "useRemoveHighlight": false,
    "targetMap": [
      "main"
    ],
    "mod_sortlayers": {
      "type": "sortable_stack"
    },
    "statemanager_cgi": {
      "url": "../mapplus-lib/mapplus-dojov2.6.2-rc/php/stateManager.php",
      "dbconn_id": "geogr_mapplus"
    },
    "categories": [
      {
        "id": "1",
        "type": "parent",
        "name": "betriebsanlagen",
        "iconClass": "njsCategoryIcon1",
        "rank": 1,
        "children": [
          {
            "reference": "transportanlagen_pisten",
            "type": "category"
          },
          {
            "reference": "regionen_grenzen_parzellen",
            "type": "category"
          },
          {
            "reference": "iegenschaften",
            "type": "category"
          },
          {
            "reference": "sage",
            "type": "category"
          },
          {
            "reference": "pneumatik",
            "type": "category"
          },
          {
            "reference": "v",
            "type": "category"
          },
          {
            "reference": "faelle",
            "type": "category"
          },
          {
            "reference": "pistenmanagement",
            "type": "category"
          }
        ]
      }
    ]
  }
}
```


MAP+ Configuration: GUI Elements

- Elements in core directory, for all user roles (however, local cores as well supported)
- Templates:
 - Styling via CSS3
 - Images: GUI elements, layer manager
- Symbol sets:
 - Symbols for POIs
 - Vector graphics (SVG)
 - Library with more than 150 symbols
- Help files with NLS support
- Legends with NLS Support
 - Legends directly from WMS supported, for example UMN MapServer using Templates
 - Combined with HTML



Example 1: GeoGR Workflow & Architecture



Example 2: Architecture geoProRegio



Example 3: Architecture EW Meilen / Wädenswil / Chur

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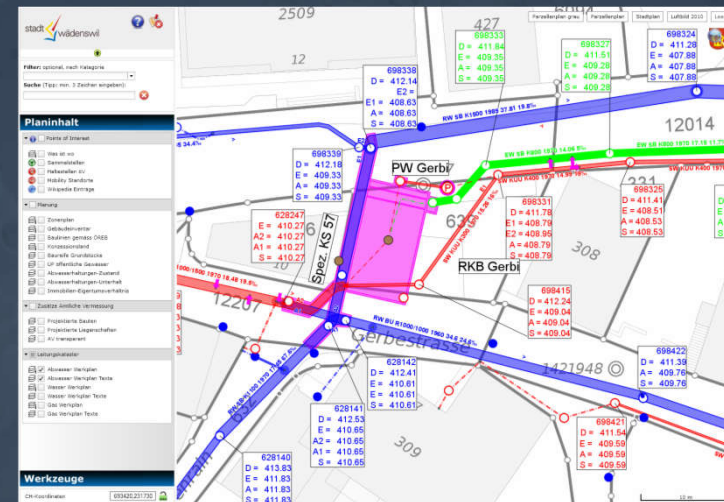
AutoCAD Map 3D
internal use

FME
Oracle -> SQLite
ftp to TYDAC, daily

AIMS
UMN MapServer
TYDAC Hosting
Chur: internal IT



WebGIS



Users