# QGEP Documentation

### *Release 0.5*

## The QGEP Project/OPENGIS.ch

10.06.2016

QGEP is a wastewater management module for QGIS based on SIA 405 (Leitungskataster) and VSA-DSS (GEP) and developed closely to the QGIS application.

Dieses Dokument kann auch als Gesamt PDF Dokument heruntergeladen werden: QGEP.pdf .

# Inhalt:

## 1.1 QGEP Installation Guide

This will guide you through the setup of required applications and services to get your system ready for running QGEP.

**Bemerkung:** You also have the option of downloading a *Demo Virtual Machine* that has a working QGEP demo.

### 1.1.1 Setup database server

If you expect to access the data from several different workstations, you can install the database on a network accessible server. If it is just a single desktop you are working on, this can be installed on the same machine.

#### Required Software

#### Server installation

- Install PostgreSQL (>=9.3)
  - Windows download page
- Install PostGIS (>=2.1)

**Bemerkung:** In a single desktop environment (no network database server) you can setup your database to trust local connections.

This way, the database won't ask for a password if you're connecting from your local workstation while no password is written anywhere. You even can do with no database password at all.

This can be done by editing the database access configuration file pg_hba.conf and set the auth-options from `md5` to `trust`. A database service reload is required to activate changes.

### 1.1.2 Database initialization

You can use *pgAdmin* to access and manage the database server.

**Bemerkung:** By clicking the link you can learn how to *Install pgAdmin*

**Process**

In pgAdminIII

- Connect to the database server

- Create a new group role (preferably named *qgep*, but you are free to choose)

- Create a new login role (*qgepuser* for example) and make it a member of the *qgep* group

You can do this graphically or by simply opening a pgAdminIII *SQL query* window and type the following:

```
CREATE GROUP qgep;
CREATE ROLE qgepuser LOGIN;
GRANT qgep TO qgepuser;
```

- Create a new database (preferably named *qgep*, but you are free to choose)

  - Change to this database

- Create a new schema with the name *qgep*

- Open an *SQL query* Window and create the extensions (if they're not created yet)

  - `CREATE EXTENSION hstore;`

  - `CREATE EXTENSION postgis;`

- Download demo data

  - https://github.com/QGEP/data/raw/demodata/qgep_demodata.backup

- Right click the *qgep* schema

  - Click *Restore*

  - Load your download of qgep.backup

  - Restore Options #2: Activate *Clean before restore*

  - Click *Restore*

  - Click *Cancel*

- Right click the database and click *Refresh*

- Update privileges for the database

  - Right click the *qgep* schema

  - Properties -> Privileges Tab > Grant `USAGE` to group `qgep`. You can also do this as a query: `GRANT USAGE ON SCHEMA qgep TO GROUP qgep;`

  - Click *Grant Wizard ...*

  - Selection, click *Check All*

  - Privileges

    * Group *qgep*

    * Choose *ALL*

## 1.1.3 Arbeitsplatzrechner Einrichten

**Konfiguration der Datenbank**

Um einer Arbeitsstation zu sagen, wo die Datenbank steht (im lokalen System oder auf einem Netzwerkserver) müssen Sie zu Beginn auf jedem System auf dem QGIS/QGEP läuft einige Dateien erzeugen. Dies kann nicht auf dem Server selber gemacht werden.

Diese Anweisungen sind abhängig vom Betriebssystem.

### Windows

Erstellen Sie ein neues Verzeichnis indem Sie die Konfigurationen ablegen möchten (z.B. ein neues Verzeichnis `pgconfig'` in ihrem Stammverzeichnis). `Diese Anleitung wird jeweils mit` `''PGSYSCONFDIR` darauf verweisen.

Setzen Sie die Umgebungsvariable `PGSYSCONFDIR` auf den Dateipfad von `PGSYSCONFDIR`.

In diesem Verzeichnis werden zwei Dateien sein

- `pg_service.conf`

- `pgpass` (Um das Passwort nicht jedes Mal eingeben zu müssen)

> **Achtung:** In Windows müssen Sie `pg_service.conf` inm Unix Format speichern damit es funktioniert.
> Eine Möglichkeit dafür bietet Notepad++ im Menü `Editieren --> EOL Conversion --> UNIX`
> `Format --> File save`.

### Linux

Unter Linux können Sie die Dateien `.pg_service.conf` und `.pgpass` in Ihr Heimverzeichnis legen (Normalerweise `/home/[benutzername]`)

### Auf allen Systemen

Schreiben Sie folgenden Text in die Datei `pg_service.conf` oder `.pg_service.conf`. Allenfalls müssen Sie diesen für Ihre Installation adaptieren.

```
[pg_qgep]
host=localhost
port=5432
dbname=qgep
user=qgepuser
```

Um das Passwort auch auf dem System zu speichern können Sie die Datei pgpass benutzen.

```
localhost:5432:*:qgepuser:password
```

---

**Bemerkung:** Falls die Datenbank nicht auf dem lokalen Rechner läuft muss in den Anweisungen oben jeweils `localhost` mit der Netzwerkadresse des Datenbankservers ersetzt werden.

---

### QGIS installieren

- Minimum requirement 2.14

- We recommend using the latest master builds (called qgis-dev on Windows) which often offer a better experience in combination with QGEP. For Windows installation, download the OSGeo4W Installer choose *advanced installation* and install qgis-dev.

### Installation des QGEP Plugins

- QGIS öffnen

- Gehen Sie zu Plugins (Position *1* im nachstehenden Bild)

---

- Plugins verwalten und installieren

- Einstellungen (Settings) (Position*3*)

  * Hinzufügen...

    · Name: QGEP

    · URL: `https://raw.githubusercontent.com/QGEP/repository/master/plugins.xml`

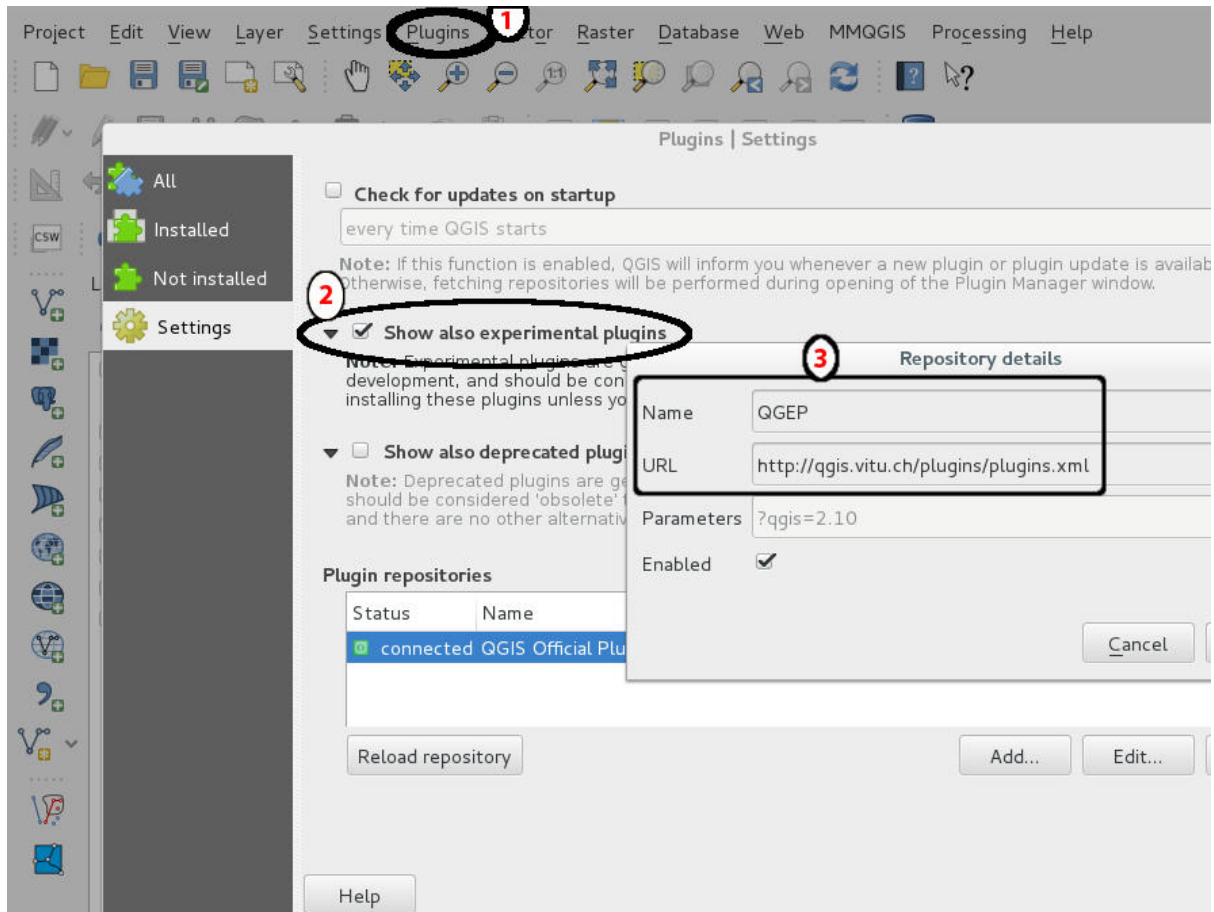  * *Show also experimental plugins* aktivieren (Position *2*)



Abb. 1.1: **Zusatzprogramm Ablage (Plug-in repository) hinzufügen**

Plugin aktivieren (siehe untenstehendes Bild)

- Alle

  - *QGEP* suchen

  - Aktivieren Sie das Kontrollkästchen daneben

## Das Demo Projekt installieren

- Download https://github.com/QGEP/data/archive/demodata.zip

- Die Datei entpacken

- Wiederherstellen der Datei *qgep_demodata.backup* mit pgAdminIII

- Öffnen Sie *project/qgep_en.qgs* mit QGIS

Abb. 1.2: **QGEP Zusatzprogramm hinzufügen**

## 1.2 QGEP Benutzerhandbuch

This represents a guide on how to collect data in QGEP (digitizing), edit existing data and use various tools like length profile, network following and plan plotting.

### 1.2.1 Digitizing in QGEP

This represents a guide on how to correctly collect and digitize data of sewer networks including building the topology.

**Data entry**

There are basically two ways:

- Data entry by constructing or digitizing in the QGEP GIS itself
- Data entry in an external programm or software and then importing the position and/or technical data into QGEP e.g.:
    - coordinates from manholes from measurement
    - position and/or technical data from another GIS or CAD system
    - using data from the surveyor (e.g. property boundaries) as a basis for defining catchment borders
    - other

Data entry in QGEP needs some understanding of the underlaying data model VSA-DSS, but is supported with some great data collecting wizards and forms that link the different tables correctly together.

**General**

Allgemein: Reihenfolge (Schacht - Kanal, Erfassungsgrundsätze)

Link: add link
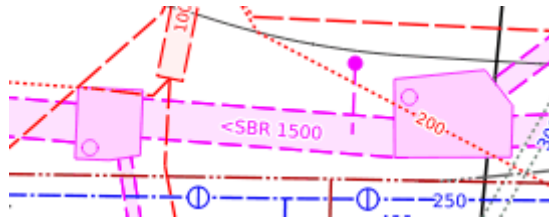


(take more from GEPView-Howto 1.2. Chapter 3)

## Digitizing Waste water structures

QGEP has a wizard to correctly collect manholes and special structures.

TO DO: Explain how it works

### General

Allgemein: Abwasserbauwerk-Bauwerksteil-Abwassernetzelement Allgemein: Wizard und Eingabemaske mit wichtigsten Feldern / Subtabellen Bezeichnung: Default, Unique, ... Schacht (Deckel) und Abwasserknoten beim Normschacht / beim Spezialbauwerk

Digitalisierwerkzeuge Abwasserbauwerk Geometrie für Spezialbauwerke evtl. weitere Verknüpfungen erstellen

### Title

**Subtitle**

- List
    - Subpoint

Link: add link

Add some screen shots



...
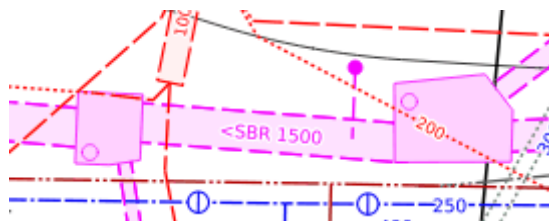
(take more from GEPView-Howto 1.2. Chapter 4.1)

## Digitizing Waste channels

QGEP has a wizard to correctly build channels and connect them to the manholes / special structures and build up the topology for waste water nodes and reaches.

TO DO: Explain how it works

**General**

- Kanal/Haltung (Digitalisierrichtung, Schnappen)
- Weitere verknüpfte: Eigentümer, Rohrprofil, Hydraulische Geometrie, Hydraulische Einbauten
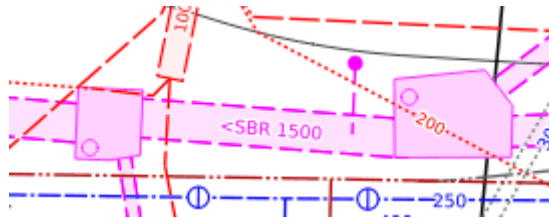- evtl. Verknüpfungen erfassen

**Title**

**Subtitle**

- List
    - Subpoint

Link: add link

Add some screen shots



...

(take more from GEPView-Howto 1.2. Chapter 4.2)
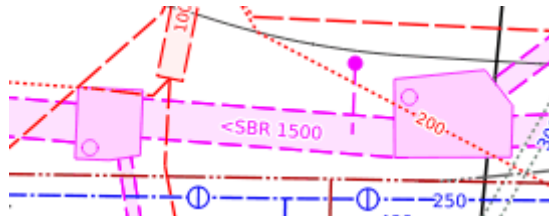
## Deleting objects

TO DO: Explain how it works

**Title**

**Subtitle**

- List
    - Subpoint

Link: add link

Add some screen shots



...

## 1.2.2 Editing of existing data

This represents a guide on how to edit existing data in QGEP.

TO DO: Explain how it works

### General

- Attribute ändern
- Verknüpfungen ändern
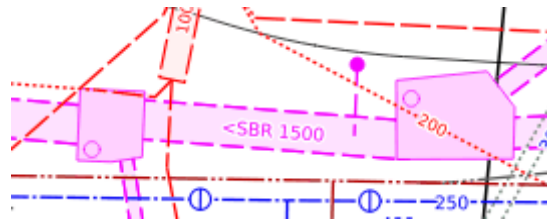- Subklasse eines Abwasserbauwerkes ändern (ObjektID ändert dann auch!)
- Kanäle unterteilen

### Title

### Subtitle

- List
  - Subpoint

Link: add link

Add some screen shots



## 1.2.3 Length profiles

This represents a guide on how to choose a section and display a length profile.

TO DO: Explain how it works
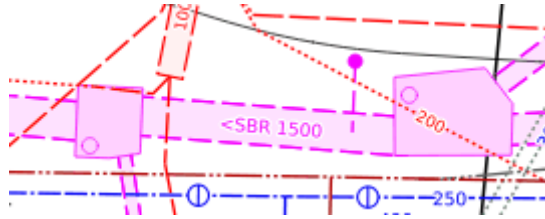
### Title

### Subtitle

- List
  - Subpoint

Link: add link

Add some screen shots

## 1.2.4 Network following tools

This represents a guide on how to use the network following tools in QGEP.
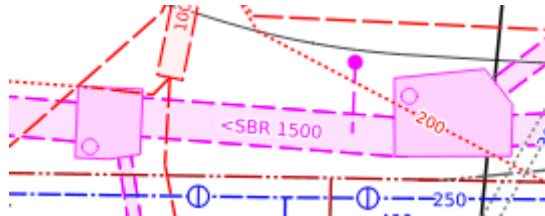
TO DO: Explain how it works

**Title**

**Subtitle**

- List
  - Subpoint

Link: add link

Add some screen shots

## 1.2.5 Plan plotting

This represents a guide on how to do plan plotting in QGEP.

TO DO: Explain how it works

**General**

- Titelblatt und Legende
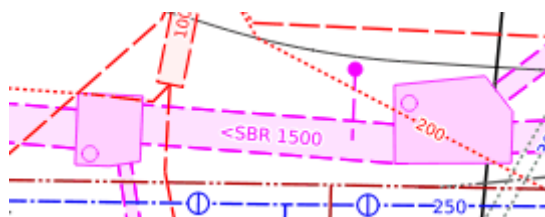- Rahmenpläne erstellen / verwalten / drucken

**Title**

**Subtitle**

- List
  - Subpoint

Link: add link

Add some screen shots

# 1.3 Admin Guide

This represents a guide on how to collect data in QGEP (digitizing), edit existing data and use various tools like length profile, network following and plan plotting.

## 1.3.1 pgAdmin

PgAdminIII is a Desktop tool that permits to access and manage the database server. This chapter represents a guide on how to do basic PostgreSQL management using pgAdmin.

### Install pgAdmin

#### Windows

pgAdmin should be automatically installed if you used the EnterpriseDB installer.

#### Linux

**Debian/Ubuntu based distros**    You can install pgAdmin by running the following command:

```
sudo apt-get install pgadmin3
```

**Fedora based distros**    `sudo yum install pgadmin3`

**Suse based distros**    `sudo zypper install pgadmin3`

---

**Bemerkung:** All the commands presented above assume that you are logged in as a user with sudo (admin) privileges. On certain systems it may be required to use the command `su` to become the *root* user and then issue the above command without the `sudo` prefix.

---

### Using Pgadmin

#### SQL query

```
.. figure:: images/001_roles.jpeg
```

> **Running SQL commands in PgAdminIII**

---

**Bemerkung:**

- Clicking the highlighted icon at location *1* opens the SQL Window. The SQL icon is active only when you're connected to a database.
- Clicking the icon at *2* runs the written SQL commands.

---

#### Database dump

---

**Bemerkung:**

- Open pgAdminIII and connect to the database
- Right click the Schema that you want to backup (in the tree structure below "Schemas")

---

- Enter the filename where the dump should be stored

- Check the following options

```
.. figure:: images/Screenshot-from-2015-01-22-102152.png
.. figure:: images/Screenshot-from-2015-01-22-102155.png
.. figure:: images/Screenshot-from-2015-01-22-102159.png
.. figure:: images/Screenshot-from-2015-01-22-102218.png
```

**Bemerkung:**

- After running the process, the exit code 0 indicates that everything went ok

```
.. figure:: images/Screenshot-from-2015-01-22-102222.png
```

## 1.3.2 Demo Virtual Machine

This represents a guide on how to download and install a virtual machine (VM) that has a working QGEP installation with a preinstalled demo dataset.

### About

The VM is based on Debian Jessie with Cinnamon Desktop.

Installed software:

- PostgreSQL 9.4.4 with Postgis 2.1.7

- QGIS Master 2.11

Settings that are changed from a default software install:

- `pg_hba.conf` has **trust** for local connections

- QGIS is setup with multithreaded rendering enabled

- QGIS is setup with postgres server side expression compiler enabled

**Bemerkung:** The users `web` and `root` have the password `qgis`

**Bemerkung:** If you decide to use the VM in production, it is recommended to:

- change the passwords

- regenerate the ssh keys by running in a terminal `sudo rm /etc/ssh/ssh_host_* && sudo dpkg-reconfigure openssh-server`

### Install

### Download

Download the vm from here

**Bemerkung:** The size of the VM is around 2GB compressed and around 7GB uncompressed.

### Extract

The virtual disk is archived using XZ compression.

To extract the archive:

- **Windows:** you can use 7-Zip to extract the archive.

- **Linux:** cd to the download directory and run `xz -d qgisplatform.vdi.xz`

You can run the VM as you would do with any VirtualBox VM.

---

**Bemerkung:** As the VM is based on Linux it is fairly simple to convert the image to a raw disk and put it on a USB stick (minimum 8GB) or a faster storage. This would enable you to run the app without the virtualization penalty and enjoy the full speed of your hardware.

---

### QGIS Server

The VM has working installations of QGIS Server and QGIS Web Client (QWC).

### Access the Web Services

The Apache server is setup to respond to requests pointing to the *http://qgisplatform.demo*. Accessing the above link with the Internet Browser of the VM will take you to the starting page of QWC depicted in the above image.

If you want to access the web services outside the VM, you need to edit the `hosts` file on your machine and point `qgisplatform.demo` to the IP of the VM.

---

**Bemerkung:** If you've setup the VM with the network adapter in NAT mode only the VM host will be able to access the services. If you want all the devices on your LAN to do it, you need to setup the network adapter in bridge mode.

---

## 1.3.3 Data import

This represents a guide on how to import data into QGEP.

- INTERLIS
- dxf
- Shape
- Text
- MOUSE / MikeUrban
- other

TO DO: Explain how it works

### Title

### Subtitle

- List
  - Subpoint

Link: add link
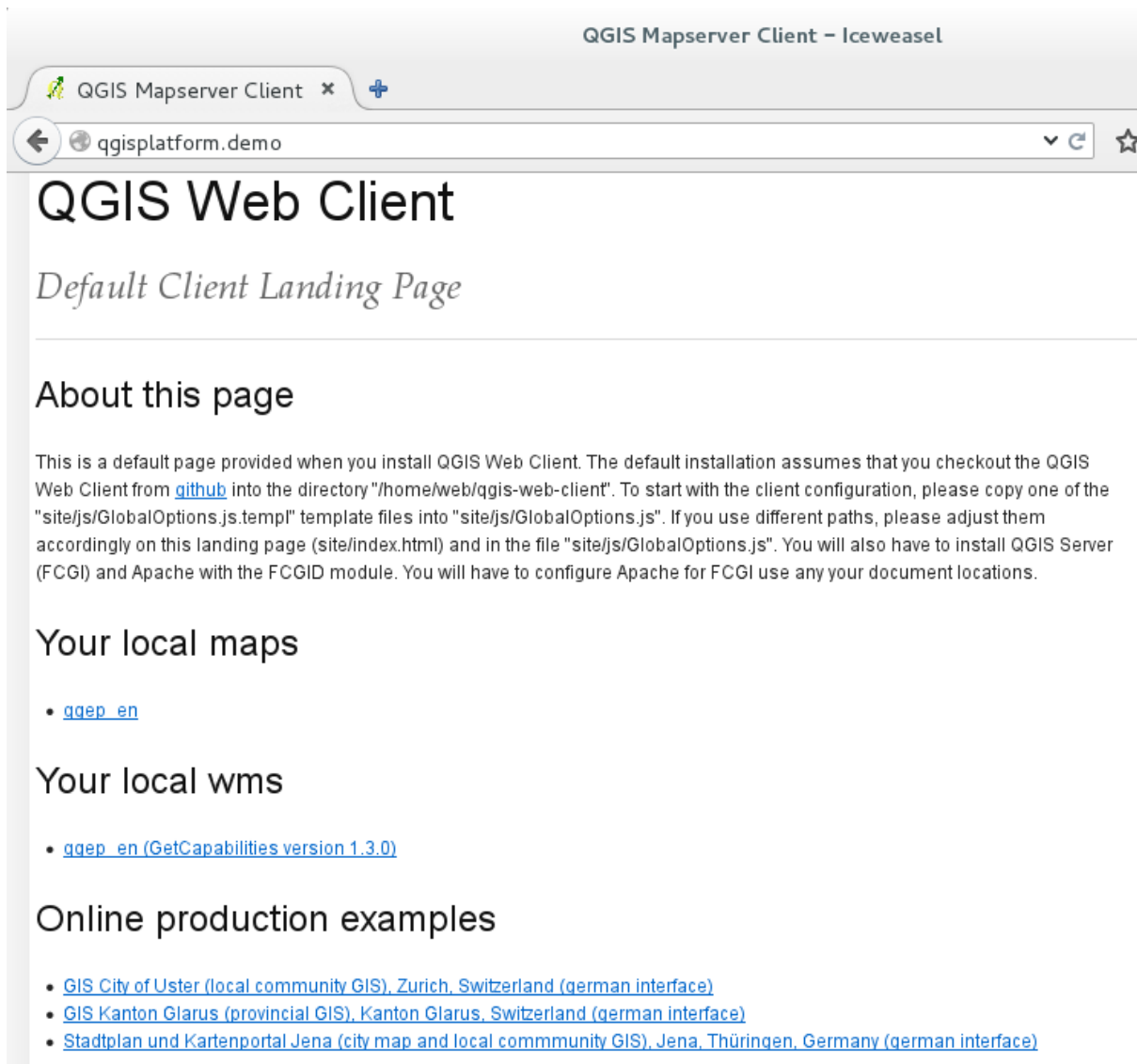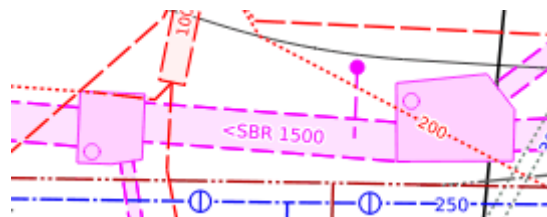
Add some screen shots

---

Abb. 1.3: **QGIS Web client starting page**

### 1.3.4 Data export

This represents a guide on how to export data from QGEP.

TO DO: Explain how it works

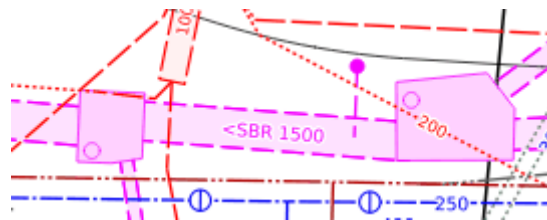- INTERLIS
- dxf
- Shape
- MOUSE / MikeUrban
- other

#### Title

#### Subtitle

- List
  - Subpoint

Link: add link

Add some screen shots

# Verzeichnisse und Tabellen

- genindex
- search