

Location based data

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Feedback on Questions

- Short answers - one or two sentences
You don't need to write several paragraphs
- Spending data by a number of institutions, from federal level down to municipal
- When looking for data sources, stick to the original source, i.e. statistical office ([statistikportal.de](https://www.statistikportal.de)) or data portal rather than third-party site ([de.statista.com](https://www.de.statista.com))

Location Based Data

Basic Questions:

- Which different types are there?
- What about formats?
- Who provides them?
- How are data sets used?

Data Types

- Geodata
- Sensor Data
- Traffic Data
- Weather Data

Geodata: Types

- Digital Landscape Model (DLM, vector)
- Digital Elevation Model (DEM or Digital Surface Model, DSM, or Digitales Geländemodell, DGM; grid based)
- Shapes of administrative borders (all levels)
- Maps (topographical, overview)
- Geographic Names (Settlement, Traffic, Vegetation, Water, Relief, Areas)

Geodata: Standards

General Problem: Operating on an interchangeable base formats, interfaces, taxonomies, quality of data

Solution: Joint Frameworks

- INSPIRE
(Infrastructure for Spatial Information in Europe)
Shall grant harmonized geo information throughout the EU via a geodata infrastructure
inspire-geoportal.ec.europa.eu

Geodata: Standards II

- German adoption: GDI-DE
(Geodateninfrastruktur Deutschland)
 - shall improve the provision and use of geo data on federal, state and communal level
 - consists of portals, transformations services, metadata brokers, metadata catalogues, standardized interfaces or services
 - needs a national geodata basis (basic geodata, specific geodata + their metadata)

Geodata: Formats

Projection

- Gaus-Krüger, Mercator
- Standards: World Geodetic System (WGS)
i.e. WGS84 (GPS), ETRS89, UTM (official)
- CRS: coordinate reference system (EPSG:xxxx)

Formats

- Shapefiles (.shp + other files, for projection etc.)
- CSV
- GeoTIFF with layers
- WMS (Web Map Service) = images
- WFS (Web Feature Service) = data + information

Geodata: Examples

Germany

- Geodatenzentrum - Open Data:
geodatenzentrum.de
- German Housing Coordinates:
bezreg-koeln.nrw.de/brk_internet/organisation/abteilung07/dezernat_74/zshh/index.html
- Baden-Württemberg - incl. detailed data:
geoportal-bw.de/geoportal/opencms/de/index.html
 - But: egovernment-computing.de/projekte/articles/394688/

Geodata: Examples II

- Swiss Geodata:

bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung.html

- Open Data (small part):

opendata.admin.ch/de/dataset?groups=raum-und-umwelt

- European Geodata:

epp.eurostat.ec.europa.eu/portal/page/portal/gisco_Geographical_information_maps/geodata

- Overview of Berlin Geodata: srp-gmbh.de/index.php?id=117

- Geodata Infrastructure Berlin-Brandenburg:

gdi.berlin-brandenburg.de

Berlin: Open Geodata

- Berlin Geodata and Services now open:
daten.berlin.de/interaktion/artikel/offene-geodaten-f%C3%BCr-berlin
 - WMS:
stadtentwicklung.berlin.de/geoinformation/geodateninfrastruktur/de/geodienste/wms_titel.shtml
 - WFS:
stadtentwicklung.berlin.de/geoinformation/geodateninfrastruktur/de/geodienste/wfs.shtml
 - (FIS Broker:
stadtentwicklung.berlin.de/geoinformation/fis-broker)

Geodata: Encouraging Use

- Great Britain - Ordnance Survey Innovation Challenges: geovation.org.uk
 - Open Data Masterclasses: geovation.org.uk/free-os-opendata-masterclasses
- Berlin: GeolApps-Contest: geolapps.de
 - Critical Assessment: qrios.de/2013/03/das-ganze-drama-der-innovationsforderung-an-einem-beispiel

Sensor Data

- Water Levels
 - Large level of detail
- Radiation
 - Frequent measuring, live updates
- Earthquakes
 - Measured and reported data
- Air Quality
 - Gases, ozone, particulates

Sensor Data: Examples I

- Water Levels:
pegelonline.wsv.de/gast/pegelinformationen
- Radiation in Germany:
imis.bfs.de/odlinfo/?lang=DE
- Radiation in Japan:
sendung.de/japan-radiation-open-data
 - Map: japan.failedrobot.com
- Overview of all sensor services in Baden-Württemberg:
umwelt.baden-wuerttemberg.de/servlet/is/936
 - Earthquakes:
lgrb.uni-freiburg.de/led_pool/led_2_1.htm

Sensor Data: Examples II

- Air Quality - Umweltbundesamt:
umweltbundesamt.de/daten/luftbelastung/aktuelle-luftdaten
- Air Quality - Berlin:
stadtentwicklung.berlin.de/umwelt/luftqualitaet/de/messnetz/tageswerte/index.shtml
- Air Quality - Austria:
umweltbundesamt.at/umweltsituation/luft/luftguete_aktuell
- Air Quality - EU:
eea.europa.eu/data-and-maps/data/airbase-the-european-air-quality-database-8

Traffic Data

- Car Traffic: Large amounts of data
 - Sensors: magnetic, infrared, cameras
 - Position data from mobile phones and car devices
 - Police reports
- Public Transport Data
 - Few trains/busses provide live location data
 - General Timetables / Line timetables
 - Station Locations
 - GTFS Format vs. HAFAS (or combination)
 - API (or reverse engineer one)

Traffic Data: Examples

- Berlin Traffic Information Center: vmz-info.de
- Zugmonitor - Delays of Deutsche Bahn (offline now):
zugmonitor.sueddeutsche.de
 - Analysis:
sueddeutsche.de/reise/verspaetungs-atlas-so-verspaetet-ist-die-bahn-in-ihrer-stadt-auf-ihrer-strecke-1.1651455
- (Somewhat) Live London Bus Map:
traintimes.org.uk/map/london-buses/#R70
- Apps and the City: appsandthecity.net
 - VBB API, stations and timetables:
berlin.appsandthecity.net/daten

Weather Data

Deutscher Wetterdienst (DWD): is.gd/dwd_messnetz

- Temperature, Rain/Snowfall, Sunshine, Wind Peaks
- Measuring Stations (182 in DE)
- Areas (raster data, computed from station data)
- Satellite Data (also on clouds, space radiation, steam)

Examples

- Deutscher Wetterdienst: is.gd/wetterdienst
 - Satellite Data: is.gd/dwd_satellite_data
 - Worldwide Data: is.gd/dwd_worldwide_data
 - Worldwide rain/snowfall data:
is.gd/dwd_world_rain_snowfall_data

Further Resources

- PortalU - German environmental data: portalu.de
- Federal Environmental Agency (UBA) - Data: umweltbundesamt.de/daten
- Combination of official and user-provided data (Air, Noise, Water): watch.eyearth.org
- Geodata Services for European Soil Data: gsoil-portal.eu/ingrid-portal

Further Information

- Damian Paderta - Masters Thesis on Open Geo Data: paderta.com/opendata-raumbezogene-daten-full
- Geodata Formats: en.wikipedia.org/wiki/GIS_file_formats
- Shapefile Basics: en.wikipedia.org/wiki/Shapefile
- WFS Basics: en.wikipedia.org/wiki/Web_Feature_Service
- WMS Basics: en.wikipedia.org/wiki/Web_Map_Service
- QGIS - open source geodata suite: qgis.org/en/site
- Geodata converter (including WFS): geoconverter.hsr.ch
 - Documentation: giswiki.hsr.ch/GeoConverter