Hackathon

INSPIRE + Open Data + Copernicus … Let’s Connect the Dots!

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Introduction
con terra

- con terra is a leading provider of solutions for spatial data infrastructures in Europe
- Founded in 1993 as a Spin-off of the University of Münster, Institute of Geoinformatics
  - Co-founder of 52°North Initiative for Open Source Software in 2004
  - Member of the Esri Deutschland Group since 2006
  - Platinum Partner of Safe Software
- Headquarter: Münster, Germany, Branch Office: Berlin
- Number of employees: 136
What’s a Hackathon?

- Hackathon
  - from „hack“ and „marathon“
  - aka hack day, hackfest or codefest
  - "hack" is used in the sense of exploratory programming
- People come together to collaborate on software projects
  - …to meet
  - …to learn
  - …to create something
  - …to have fun 😊
Hackathon: How does it work?

1. Brainstorming for ideas
2. “Pitch”: Participants suggest ideas
   > a problem statement, the solution, the data and the skills needed to make it happen
3. Participants form teams based on their interests and skills
4. Collaborative work on projects
5. Wrap-up session
**How to pitch your idea**

<table>
<thead>
<tr>
<th>IDEA</th>
<th>Brief description of project, motivation, goal</th>
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<th>TARGET GROUP</th>
<th>Who would benefit from this project? Why does it matter?</th>
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<th>What data is involved?</th>
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Lightning Talks

INSPIRE

COPERNICUS

OPEN DATA
What’s the idea?

- Create a network of national SDIs created by the Member States
  ... to enable the sharing of environmental spatial information among public sector organisations
  ... to facilitate public access to spatial information across Europe
  ... assist in policy-making across boundaries
  → To make more informed decisions

- Based on standardised Implementing Rules for Metadata, Data Specifications, Spatial Data Services ...
What kind of data can I expect?

- Data providers: EU Member States – Level: federal, state, local
- Geographic scope: All EU Member States
- Thematic scope: Wide range of themes – 34 Annex Themes
- Scale, resolution: all scales – from local to European level
- Form: Geospatial Services (View, Download) based on OGC-Standards – WMS, WFS (gml) – sometimes shape, kml, geojson
Where can I find data?

- INSPIRE Geoportal

Geoportals of the member states or federal, state, local authorities
How can I use the data?

- Directly connect to the INSPIRE View Service (WMS URL)
- Download data as a gml file (WFS URL, Atom Feed)
  > Sometimes additional formats (Shape, KML, GeoJSON, …)
- ETL (Extract – Transform – Load) with special tools such as FME to process the data
What’s the idea?

- Data should be freely available and accessible for everyone without any restrictions
  - Free to access, free to use, free to redistribute
- Open Data is expected to create value for
  - Transparency and democratic control
  - Participation, Self-empowerment
  - Improved efficiency and effectiveness of government services
  - Impact measurement of policies
  - Innovation, improved or new private products and services
  - New knowledge from combined data sources in large data volumes

What kind of data can I expect?

- Wide thematic range
- Often from governmental sources
- Data often includes geographic information or relates to a spatial region (e.g. demographic information)
- Local scale and upwards
- Formats: JSON, XML, RDF, Spreadsheets, Comma Separated Files, Text, Scanned images (e.g. TIFF and JPEG), Proprietary formats, HTML, Open File Formats, Web services, Databases

Where can I find data?

- European Data Portal: https://www.europeandataportal.eu/
- Open Data portals on all regional levels
How can I use the data?

- Web Services: Build your own client or use an existing client
- ETL (Extract – Transform – Load) with special tools such as FME
- There are tools for Scraping HTML, e.g. http://developer.yahoo.com/yql/
  or PDFs e.g. http://tabula.technology/
Copernicus
Europe's eye on Earth
What‘s the idea?

- Copernicus provides extensive Earth Observation (EO) data
- previously known as GMES (Global Monitoring for Environment and Security)
- high update frequency
- global coverage

free of charge
it‘s Open Government Data
What kind of data can I expect?

- Data provider: European Commission
- Geographic scope: world-wide
- Thematic scope
  - Atmosphere
  - Marine
  - Land
  - Climate
  - Emergency
  - Security
- Scale/resolution: depends on the mission, instrument and mode (up to 5x5m Sentinel-1 strip map mode / up to 10m Sentinel-2)
- Form: zipped archives / SAFE files
Where can I find data?

In a lot of places, we recommend:

- ESA Open Acess Hub: https://scihub.copernicus.eu/
- Code-DE (Germany): https://code-de.org/
- PEPS (France): https://peps.cnes.fr/rocket/
- Amazon: http://sentinel-pds.s3-website.eu-central-1.amazonaws.com/
How can I use the data?

- **SNAP (Sentinel Application Platform):**
  - [http://step.esa.int/main/toolboxes/snap/](http://step.esa.int/main/toolboxes/snap/)
  - for extracting and pre-processing the images
- **Python e.g. SCIKIT:** [http://scikit-image.org/](http://scikit-image.org/)
- **Most GIS e.g. ArcGIS Pro / ArcMap or R**

*Tip: look around Youtube and GIS Stack Exchange*
Brainstorming
Pitch of ideas
find your group
### How to pitch your idea

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Start talking, drawing, hacking!
Show and Tell: Sharing the results of each group
Show and Tell
Thank you!!!