# 2.1 Introduction to Spatial Data and QGIS

**Length:** 8 hours
**Requirements:**

- Equipments:
  - Laptops
  - Internet Access
- Softwares: QGIS

**Prerequisite:**

**Introduction:**
Spatial data and spatial analysis methods allow us to understand geographic patterns and relations of socio-economic, physical or environmental conditions.

**Learning outcomes:** By the end of this day, participants will be able to:

- Understand the Concept of Spatial Data Modelling.
- Differentiate between Data Types (Primary & Secondary)
- Introducing Open Spatial Data Sources.
- Understand what is data validation and dealing with errors.
- Introduce QGIS and the QGIS interface
- Add raster and vector data to QGIS
- Organise and visualise data layers in QGIS
- Change raster and vector symbology in QGIS

## Summary Agenda

| Min | Example Time | Activity | Description | Presenter |
|---|---|---|---|---|
| 30 | 08:30 – 09:00 | Registration | **Participants signing up** | |
| 15 | 09:00 – 09:15 | Lecture | **Welcome and Overview of IdeamapSudan** | Inas |
| 30 | 09:15 – 09:45 | Lecture | **Introduction to GIS Modelling** | Mustafa |
| 15 | 09:45 – 10:00 | Discussion | Q&A | |
| 15 | 10:00 – 10:150 | Lecture | **Using Secondary Data** | Wafaa |
| 30 | 10:15 – 10:45 | Lecture | **Introduction to OGC Web Services** | Asgad |
| 15 | 10:45 – 11:00 | Discussion | Q&A | |
| 30 | 11:00 – 11:30 | BREAK | Breakfast | |
| 60 | 11:30 – 12:30 | Demo | **Examples of Open Data Sources** | Wafaa |

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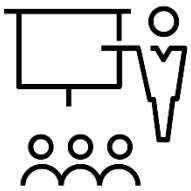
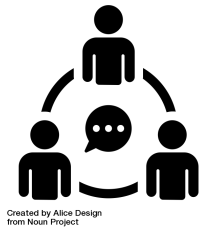
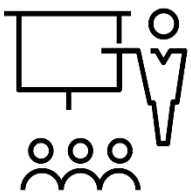
|---|---|---|---|---|
| 30 | 12:30 – 13:00 | Lecture | **Data Quality and Validation** | Fatima |
| 30 | 13:00– 13:30 | BREAK | Coffee Break + Prayer | |
| 30 | 13:30 – 14:00 | Lecture | **Primary Data Collection** | Wafa |
| 45 | 14:00 – 14:45 | Demo | **Introduction to QGIS** | Mustafa |
| 45 | 14:45 – 15:30 | Exercise | **Working with QGIS** | Mustafa |
| 15 | 15:30 – 15:45 | BREAK | Break | |
| 45 | 15:45 – 16:30 | Exercise | **Working with QGIS** | Mustafa |
| | 16:30 – 16:45 | Wrap-up | | |

# Guide

| Activity / Time | Description | Resources / Materials |
|---|---|---|
| **Registration**<br>30 minutes | **Participants signing up** | **Appendix 1** |
|  | Record the name, contact, and signature of each participant so that you can stay in touch. | Attendance list |
| **Introduction**<br>30 minutes | **Welcome & brief about IdeaMap Sudan &**<br>**Introduction to Spatial Data Modelling** | **Ideamapintro.ppt** |
|  | - Introduction about IdeamapSudan Project (what is the project about/ training main objectives)<br>- Introduction Geospatial data model and modelling. | Projector<br>Flipchart or whiteboard |
| **Discussion**<br>15 minutes | **Data differences in different institutions and participants knowledge about GIS software** | **IntrotoGIS.ppt** |
|  | - Importance of data for each participant agency and their types<br>- what are the major data gaps<br>- ask participants about their knowledge about QGIS softwares | Open discussion - Display answers on whiteboard |
| **Lecture**<br>45 minutes | **Open sources and data validation** | **datavalidation.ppt** |
|  | - Open source (OSM, USGS, scihub, world population) put links for examples<br>- Data quality (validation,dealing with errors,topology) | Projector (alternatively, make notes on flipchart or whiteboard) |
| **Discussion**<br>30 minutes | **Q & A** | |

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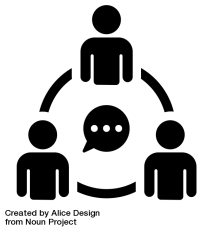
|---|---|---|
|   | Questions and answers and feedback from participants | Open discussion - Display answers on whiteboard |
| **Demonstration** 90 minutes | **Secondary data collection - Examples of open sources for data collection** | **Secoandrydata.ppt** |
|  | - give the audience an introduction about primary and secondary data and the difference between them.<br>- The participants download spatial data from open sources (OSM,Geofabric, GADM, Centre for Humanitarian Data, WorldPop).<br>- view the downloaded data in QGIS and check data quality.<br>- Prepare data in advance as a backup for the participants to avoid technical complications. | ● Demo<br>● access to internet<br>● Download QGIS<br>● Backup data<br>● Laptops/tablet |
| **Demonstration** 165 minutes | **Primary data collection - open data collection tools - Using Q-field** | **Primarydata.ppt** |
|  | - Divide participants to groups of 5 to 6<br>- Download Q-field and create an account<br>- Give pre-designed questions for participants to create the survey on Q-field<br>- Ask participants to exercise collect data<br>- Import collected data in QGIS | ● access to Internet<br>● Q-field<br>● QGIS,<br>● Laptops/tablet |
| **Wrap-up** 15 minutes | | |
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