**Digital Method of the Month**

**GIS**

**16/10/2023 (1200 – 1400)**

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**Today's Schedule**

12:00-12:10 Housekeeping and intro

12:10-12:25 Round of Presentation of the attendees + brief intro of those who said they would be happy to talk

12:25 –12:50 discussion using this document

12:50-13:00 discuss available resources, way forwards and wrapping up

**Intro**

The use of GIS in humanities and social science projects is a long-established practice.

Using a GIS system can help to create better analysis of studied interactions and phenomena. Maps are able to bring together different informative layers generating additional knowledge where the informative potential exceeds the sum of the single information.

GIS can also help a researcher cross disciplinary boundaries when working on an interdisciplinary project or question. The use of GIS platform can be synthesised into 4 steps:

* *Create* geographic data.
* *Manage* it.
* *Analyze* it and gather a better knowledge of the area as a whole system
* *Display* it on a map.

**Concept to get familiar with**

* [Raster vs Vector](https://gisgeography.com/spatial-data-types-vector-raster/)
* [Cartography principles and RS](https://en.wikipedia.org/wiki/Spatial_reference_system)
* [Shapefiles](https://doc.arcgis.com/en/arcgis-online/reference/shapefiles.htm) and the [other vectorial extensions (e.g., .dxf)](https://en.wikipedia.org/wiki/GIS_file_formats)
* Spatial analysis algorithms [Qgis](https://www.amnh.org/content/download/304774/4829791/version/2/file/Galante-et-al-Modeling-Suitable-Habitat-for-a-Species-of-Conservation-Concern-An-Introduction-to-Spatial-Analysis-with-QGIS-Exercise-Lessons-in-Conservation-Volume-10-Issue-1.pdf), [ArcGIS](https://pro.arcgis.com/en/pro-app/latest/help/analysis/introduction/spatial-analysis-in-arcgis-pro.htm)
* [OSM and WMS services](https://wiki.openstreetmap.org/wiki/WMS#OSM_WMS_Servers)
* [Databases](https://gisgeography.com/spatial-databases/)
* [Image processing: NDVI, DEM and others](https://docs.qgis.org/3.4/en/docs/user_manual/processing_algs/qgis/rasteranalysis.html)
* [Topology](https://www.esri.com/news/arcuser/0401/topo.html#:~:text=Today%2C%20topology%20in%20GIS%20is,on%20a%20two%2Ddimensional%20plane.)
* [Extensions and Plugins](https://plugins.qgis.org/)

**Time**

* How much will it take to learn?
* Is it possible to self learn?

**Easy Pitfalls**

* Chose the wrong RS or failing to set a RS.
* Topology errors (mostly if importing data from other systems as CAD)
* Move Project on different PC or moving files from their original location to another.
* Proprietary extensions of files

**The Big Questions**

* GIS vs WebGIS
* Implementation with other software (R, Python, 3D managing software, CAD, photogrammetry software)
* How to work collaboratively
* Managing 3D Data

**Softwares**

Two main players:

* QGis
* ArcGis

<https://gisgeography.com/qgis-arcgis-differences/>

Other free software

* [GRASS GIS](https://en.wikipedia.org/wiki/GRASS_GIS) – Geospatial data management, vector and raster manipulation - developed by the U.S. Army Corps of Engineers (Qgis now has a Grass Plugin)
* [gvSIG](https://en.wikipedia.org/wiki/GvSIG) – Mapping and geoprocessing with a 3D rendering plugin
* [ILWIS](https://en.wikipedia.org/wiki/ILWIS) (Integrated Land and Water Information System) – Integrates image, vector and thematic data.
* [JUMP GIS](https://en.wikipedia.org/wiki/JUMP_GIS) / OpenJUMP ((Open) Java Unified Mapping Platform) – The desktop GISs OpenJUMP, SkyJUMP, deeJUMP and Kosmo all emerged from JUMP.
* [MapWindow GIS](https://en.wikipedia.org/wiki/MapWindow_GIS) – Free desktop application with plugins and a programmer library
* [SAGA GIS](https://en.wikipedia.org/wiki/SAGA_GIS) (System for Automated Geoscientific Analysis) – Tools for environmental modeling, terrain analysis, and 3D mapping
* [uDig](https://en.wikipedia.org/wiki/UDig) – API and source code (Java) available.

Other commercial software

* [Autodesk](https://en.wikipedia.org/wiki/Autodesk) – Some GIS features implemented but was not born as a GIS system.
* [Bentley Systems](https://en.wikipedia.org/wiki/Bentley_Systems) – Products that interface with its flagship MicroStation software package include Bentley Map and Bentley Map View.
* [ENVI](https://en.wikipedia.org/wiki/ENVI_(software)) – Utilized for image analysis, exploitation, and hyperspectral analysis.
* [ERDAS IMAGINE](https://en.wikipedia.org/wiki/ERDAS_IMAGINE) by ERDAS Inc – Products include Leica Photogrammetry Suite, ERDAS ER Mapper, ERDAS ECW/JP2 SDK (ECW (file format)) are used throughout the entire mapping community (GIS, Remote Sensing, Photogrammetry, and image compression) and ERDAS AP

**Where to Search for Help**

* <https://gis.stackexchange.com/>
* <https://qgis.org/en/site/forusers/support.html>
* <https://pro.arcgis.com/en/pro-app/help/main/welcome-to-the-arcgis-pro-app-help.htm>

**Resources To Learn GIS**

Like a lot of other methods, the things you could wish to learn are many and potentially neverending. Rather than try to learn everything a good pathway for learning is to start from getting familiar with the basics and then google/search specific training on some aspect that you want to develop more

**GIS AND SOCIAL SCIENCES AND HUMANITIES BOOKS AVAILABLE AT THE UNI LIBRARY**

* Steinberg, Steven J & Steinberg, Sheila L, 2005. *Geographic Information Systems for the Social Sciences*, Los Angeles: SAGE Publications Inc.
* Thomas Coomans ; Bieke Cattoor ; Krista De Jonge, 2019. *Mapping Landscapes in Transformation*, Leuven University Press
* Dunn, S., 2019. *A History of Place in the Digital Age*, Milton: Taylor & Francis Group. Dunn, S., 2019. *A History of Place in the Digital Age*, Milton: Taylor & Francis Group.

**SELF LEARNING**

* Good Introductory course <https://www.linkedin.com/learning/learning-qgis-2/exploring-the-powerful-world-of-qgis?u=50251009>
* If you are going to use QGIS its manual is available online and cover a lot <https://docs.qgis.org/3.10/en/docs/user_manual/>
* And also a lot of embedded tutorials <https://docs.qgis.org/3.10/en/docs/training_manual/>
* And a basic intro <https://docs.qgis.org/3.10/en/docs/gentle_gis_introduction>
* Another basic video that has a good intro on projections and RS <https://www.youtube.com/watch?v=kCnNWyl9qSE> In general Youtube is a good place to find a lot of video tutorial both on the general principles and on specific topics
* List of ESPG codes <https://spatialreference.org/ref/epsg/>
* <https://datacarpentry.org/geospatial-workshop/>

**CDCS LIVE UPCOMING TRAINING ON GIS**

* 24/11/22-08/12/22 [Introduction to QGIS and Geospatial Data/](https://www.cdcs.ed.ac.uk/events/introduction-to-qgis-geospatial-data)
* More to come on the second Semester (Webgis, Geographical Data analysis with R, Geospatial Data Visualsiation etc..)

**OTHER LIVE TRAINING WITHIN THE UNIVERSITY**

* Introduction to Visualising Data in QGIS (Research Data Service Training) Currently not live

<https://www.ed.ac.uk/information-services/research-support/research-data-service/training>

* Digimap <https://digimap.edina.ac.uk/>
* Digital Research Service: Introduction to visualising data in arcgis (currently not live) <https://www.digitalresearchservices.ed.ac.uk/training/introduction-to-visualising-data-in-arcgis>

**BLOGS**

* <http://wiki.gis.com/wiki/index.php/List_of_GIS-related_Blogs>

**FEEDBACK**

* <https://forms.office.com/r/YYNrqvuNr8>