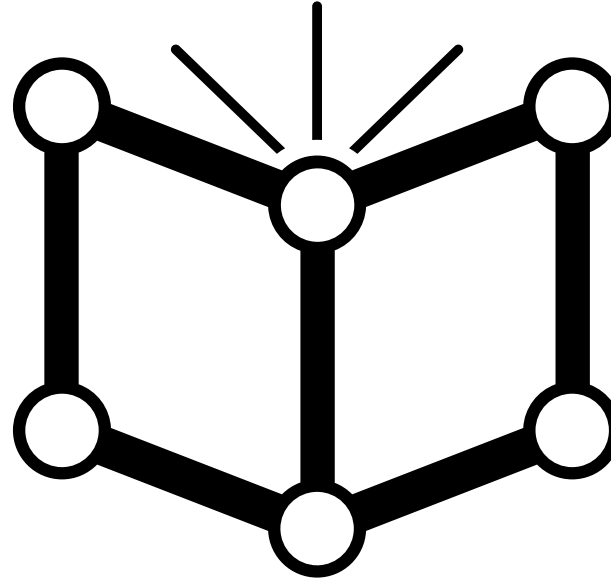


Living Textbook



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Living Textbook (LTB)

A novel way to display content digitally

Wiki + Concept map

Learners explore concepts through their relationships

Experts collaborate on representation of domain knowledge

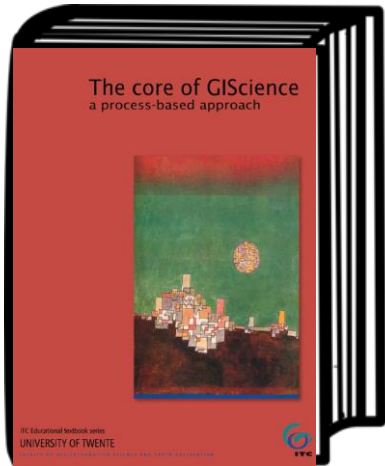
The screenshot displays the Living Textbook interface. On the left, the page title is "[IP3-1-2] Spectral indices". Below the title, there is a detailed text description of spectral indices, followed by sections for "External resources", "Skills", "Status", "Outgoing relations", "Incoming relations", and "Contributors". The "Outgoing relations" section lists: "[IP3-1-2] Spectral indices is subconcept of [IP3-1] Band maths" and "[IP3-1-2] Spectral indices is subconcept of [TA14-1-2] EO parameters". The "Incoming relations" section lists: "[IP3-1-2-1] Soil-adjusted Vegetation Index (SAVI) is subconcept of [IP3-1-2] Spectral indices", "[IP3-1-2-2] Normalized Difference Snow index (NDSI) is subconcept of [IP3-1-2] Spectral indices", and "[IP3-1-2-3] Normalized Difference Vegetation Index (NDVI) is subconcept of [IP3-1-2] Spectral indices".

On the right, a concept map is shown with a central node "[IP3-1-2] Spectral indices" in a blue circle. Four arrows point towards this central node, each labeled "is subconcept of". The nodes at the ends of these arrows are: "[IP3-1-2-3] Normalized Difference Vegetation Index (NDVI)", "[IP3-1-2-1] Soil-adjusted Vegetation Index (SAVI)", "[IP3-1-2-2] Normalized Difference Snow index (NDSI)", and "[TA14-1-2] EO parameters". A fifth node, "[IP3-1] Band maths", is also in a blue circle and has an arrow pointing to the central node, labeled "is subconcept of".

<https://ltb.itc.utwente.nl>

<https://itc.nl/about-itc/organization/resources-facilities/living-textbook/>

Living Textbook – course content



Living Textbook

Show: Own Open map Print Add Edit

Remove List

Map

Information sharing

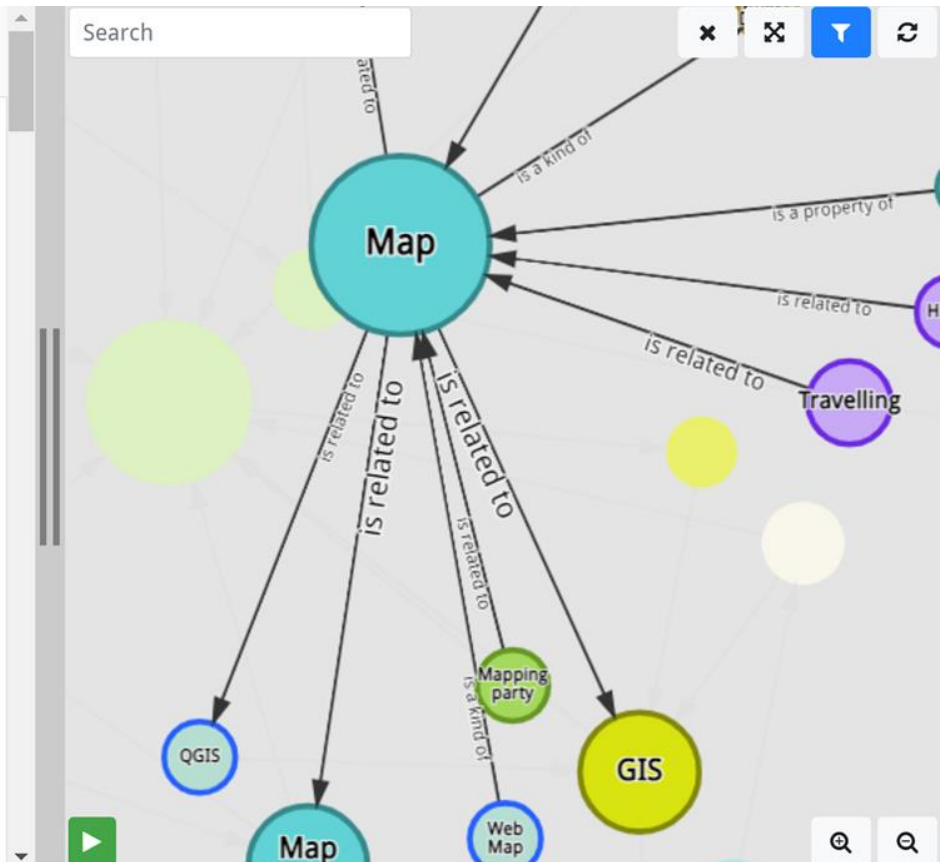
Introduction

In the GIS environment, the most familiar model is a *map*. A map is a miniature representation of a part of the real world.

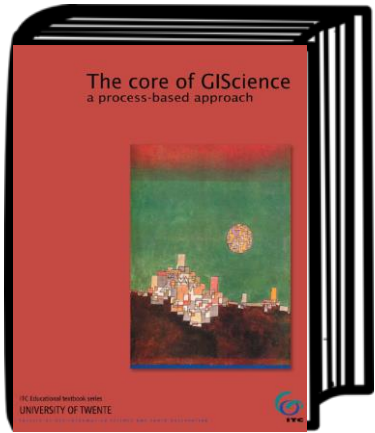
Board (1990) defines a map as “a representation or abstraction of geographic reality. A tool for presenting geographic information in a way that is visual, digital or tactile.” The first sentence in this definition contains three key words. The “geographic reality” represents the object of study: i.e. our world. “Representation” and “abstraction” refer to models of these geographic phenomena. The second sentence reflects the appearance of the map. Can we see or touch it? Or is it stored in a database? In other words, a map is a reduced and simplified representation of the Earth’s surface, or parts of it.

1.08 Visualization

Map Visual Marks and Encoding Map type Mapping of Quantitative Data



Review process



Pending reviews

The submissions below are currently pending review.

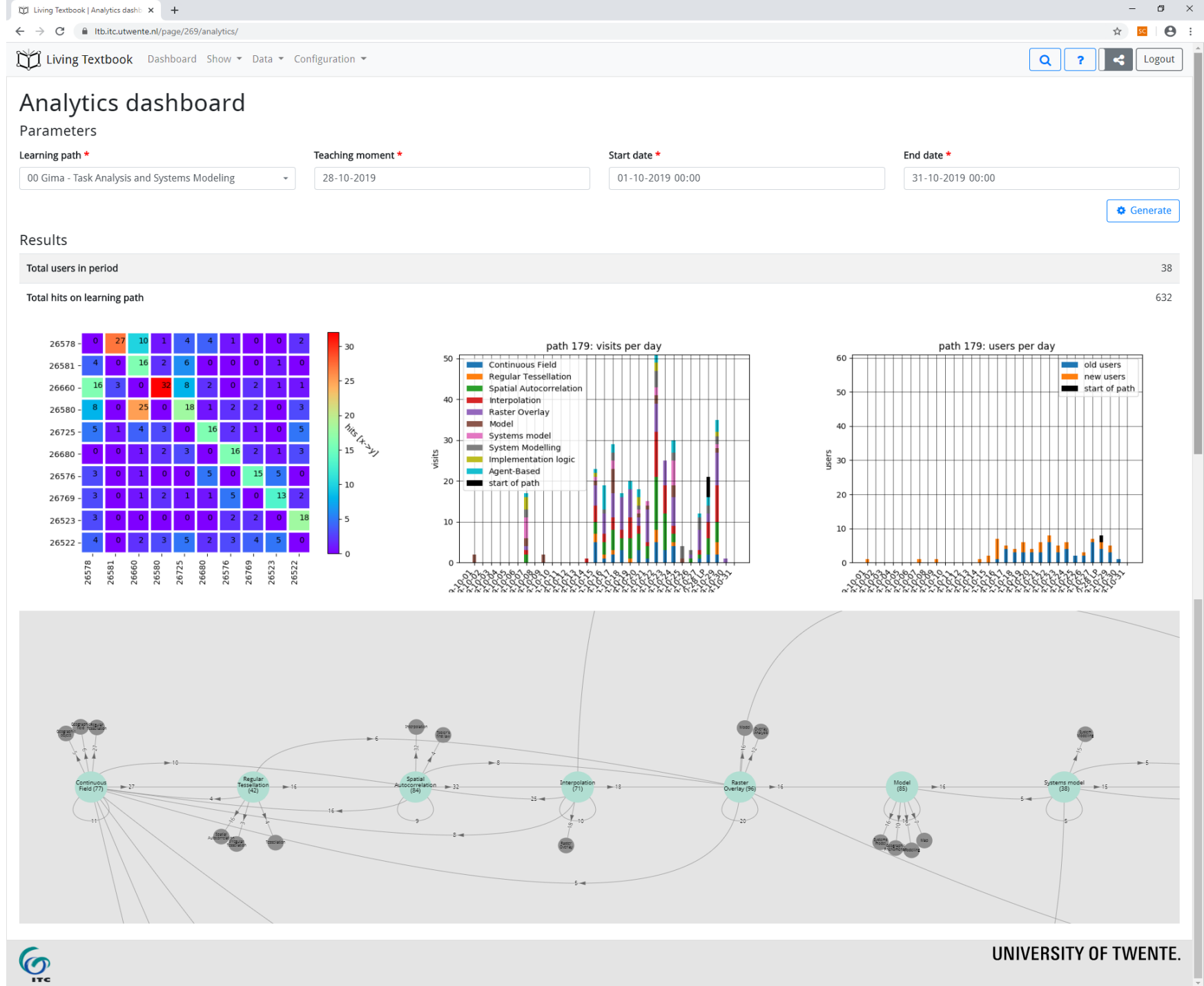
Submissions from other editors

The following submissions are pending review. !

Owner	Notes	Submitted at	Requested reviewer	Actions
Augustijn, P.W.M. (ITC)	I have added a definition. This was missing in the...	Mar 10, 2020, 12:28 PM	Krol, B.G.C.M. (ITC)	Start review
Adugbila, E.J. (ITC)	I submit the following to you for your review for ...	Jun 10, 2020, 11:44 AM	Krol, B.G.C.M. (ITC)	Start review

Learning analytics

(4TU project - Ellen-Wien Augustijn)



EO4GEO Body of Knowledge in LTB

A formal description of a professional domain represented by a complete set of concepts in a structured way, including the theories, methods and technologies.

<http://www.eo4geo.eu/tools/living-textbook/>

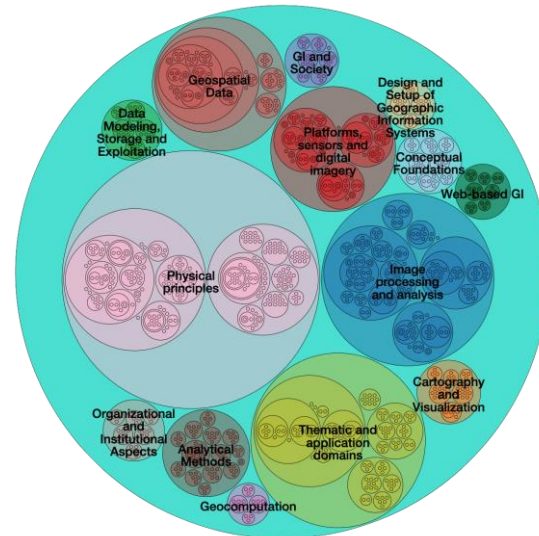
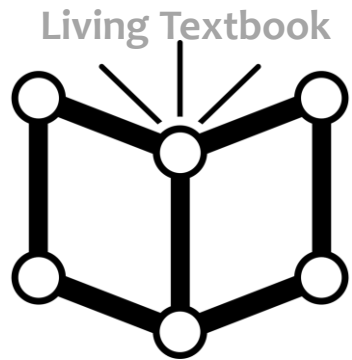
The screenshot displays the 'Living Textbook' interface for the concept '[IP3-1-2] Spectral indices'. The interface includes a search bar, navigation tabs (Dashboard, Show, Data, Configuration), and a 'Logout' button. The main content area is divided into several sections:

- [IP3-1-2] Spectral indices**: A detailed text description of spectral indices, explaining their calculation and application in remote sensing.
- External resources**: A list of academic references related to the topic.
- Skills**: A list of learning objectives, such as '1128 - Explain an application example where the spectral indices are used for vegetation, water or snow monitoring'.
- Status**: Indicated as 'Completed'.
- Outgoing relations**: Shows that '[IP3-1-2] Spectral indices' is a subconcept of '[IP3-1] Band maths' and '[TA14-1-2] EO parameters'.
- Incoming relations**: Shows that '[IP3-1-2-1] Soil-adjusted Vegetation Index (SAVI)' and '[IP3-1-2-3] Normalized Difference Vegetation Index (NDVI)' are subconcepts of '[IP3-1-2] Spectral indices'.
- Contributors**: Lists the authors of the content, including Agata Hoćcio and Florian Albrecht.

The background of the interface features a large, complex concept map with nodes and connecting lines, representing the entire Body of Knowledge. The University of Twente logo is visible in the bottom left corner of the interface.

eo4geoplatform

<http://bok.eo4geo.eu>



eo4geotools

<http://www.eo4geo.eu/tools/>

Job offer tool

Detail

Remote Sensing Specialist for Forest Monitoring WORKSHOPS

Application domain(s) [What is an Application domain?](#) EQF 5

- Forestry (Forestry)
- Geoscience (Physical sciences)

We are looking for motivated experts with a focus on remote sensing, data analysis, optimising and implementing processing chains, with also a strong forestry and environmental background, to support geo-spatial monitoring projects with a special focus on land use and forest monitoring projects in developing countries.

5 Knowledge | 8 Skills | 3 Transversal skills | Exp: 2 years | (Min: 30000 - Max: 50000) € | Castelló | English Spanish | Full Time | Fixed | Last updated: 13-Oct-2021

Knowledge i

[TA11-1-3] Users in forestry [TA13-4-2] Monitor the forest [GS3-4] Use of geospatial information in environmental issues

[PS1-3-2] LiDAR (Light Detection and Ranging) [IP3-1-2-3] Normalized Difference Vegetation Index (NDVI)

Knowledge distribution

TA - Thematic and application domains 40%	<div style="width: 40%;"></div>
GS - GI and Society 20%	<div style="width: 20%;"></div>
PS - Platforms, sensors and digital imagery 20%	<div style="width: 20%;"></div>
IP - Image processing and analysis 20%	<div style="width: 20%;"></div>

Skills i

[TA11-1-3] Apply the output of EO/GI tools to decisions in everyday operations

[TA13-4-2] Choose a viable strategy for forest operations

[TA13-4-2] Understand the health of the forests

[GS3-4] Discuss legal aspects of access to environmental data, global change/warming or sustainable development (regional, national, global) in conjunction to society.

[GS3-4] Discuss the role of public, private sector and citizens in facilitating geospatial information in environmental/sustainable issues.

[PS1-3-2] Explain and discuss the LiDAR technology

[IP3-1-2-3] Explain how the NDVI relates to vegetation activity/health

[IP3-1-2-3] Explain sensitivity of NDVI to the chlorophyll content of vegetation

[IP3-1-2-3] Normalized Difference Vegetation Index (NDVI)

[TA13-4-2] Choose a viable strategy for forest operations

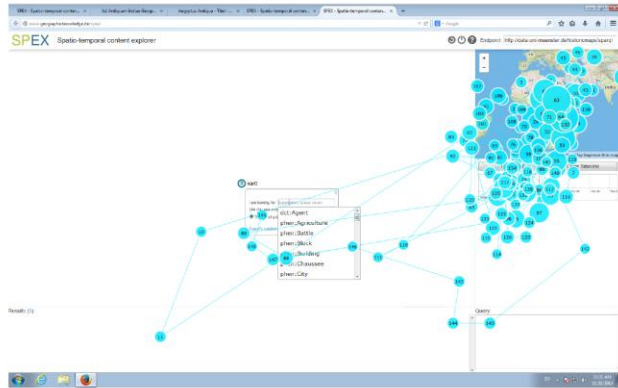
Curriculum design tool

The screenshot shows the 'Curriculum Design Tool' interface for a 'Master in Geospatial Technologies' program. The top navigation bar includes the 'eo4geotools Curriculum Design' logo. The main title 'Master in Geospatial Technologies' is centered. Below the title, there are several controls: a '+ Create new' button, a search bar for 'Explore existing educational offers', 'Save' and 'Save and Exit' buttons, and a 'Save under organization' dropdown set to 'Universitat Jaume I'. There are also fields for 'division' and 'Visibility' (set to 'Private').

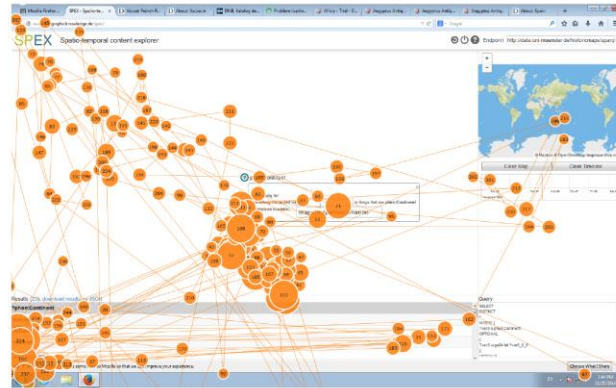
The interface is divided into two main panels. The left panel, titled 'General view', displays a curriculum map. The map shows a central node 'Master in Geospatial...' connected to three intermediate nodes: 'Foundations in Infor...', 'Advanced Data and Da...', and 'Geospatial technologies'. Each of these intermediate nodes is further connected to two or three final nodes: 'Introduction to Geoi...' and 'Geographic Informati...' under 'Foundations in Infor...'; 'Geographic Info...' and 'Design and Setu...' under 'Advanced Data and Da...'; and 'Geographic Info...' and 'Earth Observati...' under 'Geospatial technologies'. The right panel, titled 'Study Program Information', contains a form for program details. It includes a 'Title' field with 'Master in Geospatial Technologies', an 'Affiliation' field with 'UJI, IFGI, UNL', and an 'EQF' field with '7'. There is also a 'Study areas' dropdown menu and an 'Amount of semesters' field with '3'. A 'Study areas (1)' list shows 'Geoinformatics (Physical sciences)'. The bottom of the right panel has a 'Description' field.



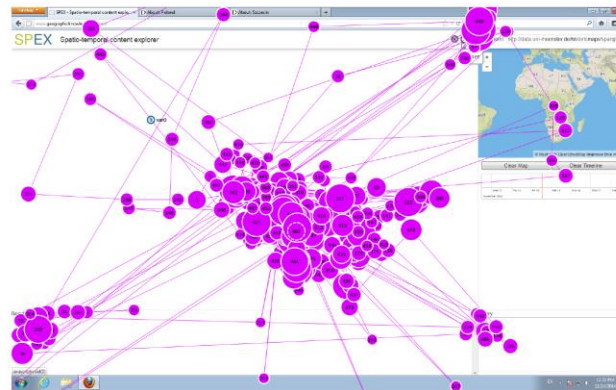
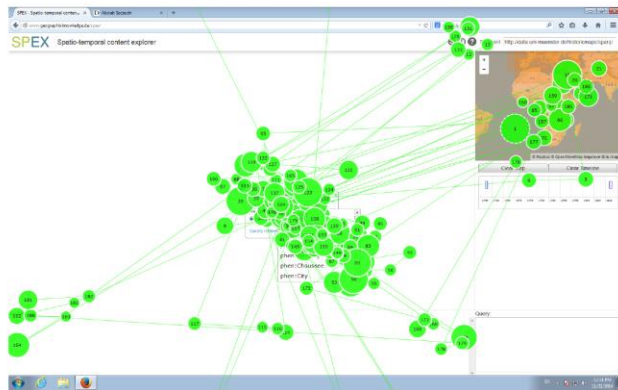
Usability testing



(a) A gaze plot of user 1 for Q 4a.



(b) A gaze plot of user 4 for Q 4a.



Development framework

Software components	Purpose
Symfony PHP Framework	Backend implementation
Twig	Page generation
Bootstrap	Styling
D3	Map animation/simulation
LaTeX	PDF generation
Webpack	Frontend asset build
MariaDB SQL DB	Data storage



Development track

- Oct 2016 Initial ideas – prototype
- Oct 2017 First version Core book content
- Nov 2017 Start development by Drenso
- Nov 2019 LTB official editor of EO4GEO BoK
- Jan 2021 Launch Open content Core
- Sep 2020-22 Postdoc on visualisation
- Q3 2022 Open source release on GitHub - trusted partners
- Q4 2022 Open source release on GitHub - public



Living Textbook (LTB)

<https://ltb.itc.utwente.nl>

<https://itc.nl/about-itc/organization/resources-facilities/living-textbook/>

Demos open content

Living Textbook launch - The Core of GIScience 2020

<https://ltb.itc.utwente.nl/page/509>

EO4GEO BoK - Master – V7.0 (current BoK version)

<https://ltb.itc.utwente.nl/page/671>

