



Digital Humanities in Topoi

Das Topoi-FORUM „Spatial Data“

<http://community.topoi.org/web/forum-sda/>

Räumliche Analyse & Datenbanken

Undine Lieberwirth





1 Aufgabenbereich ● ... **Fachbereiche, Methoden**

2 Umsetzung ● ... **Ausstattung, Workflows**

3 Ergebnisse ● ... **Veröffentlichungen**



Fachbereiche

Prähistorische Archäologie

Klassische Archäologie

Vorderasiatische Archäologie

Ägyptologie

Altorientalistik

Archäologie

Historische Bauforschung

Historische Geographie

Alte Geschichte

Religionsgeschichte

Geschichte



Methoden & Ausstattung

<http://community.topoi.org/web/forum-sda/devices>

-> Digitale Dokumentation

Scan



PG



GP



GPS



FE



Prähistorische Archäologie
 Klassische Archäologie
 Vorderasiatische Archäologie
 Ägyptologie
 Altorientalistik

Historische Bauforschung
 Historische Geographie
 Alte Geschichte
 Religionsgeschichte

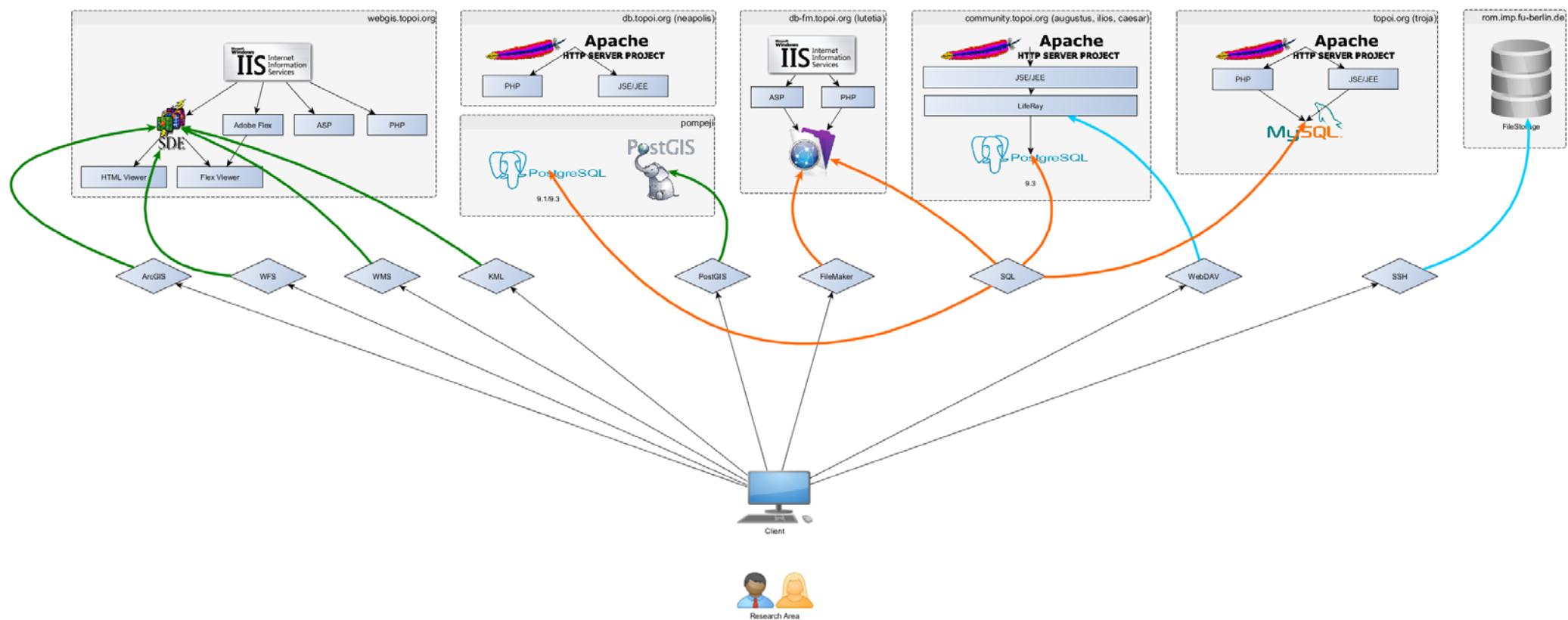
✓	✓	✓	✓	✓
✓	✓	✓	✓	✓
✓	✓		✓	
	✓	✓		✓

-> Räumliche Analyse

Scan = Laserscanning PG = Photogrammetrie GP = Geophysik GPS = Global Positioning System FE = Fernerkundung



Serverstruktur

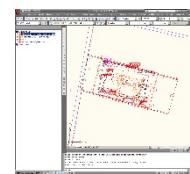




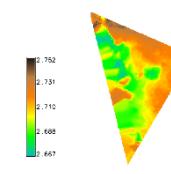
Methoden

<http://community.topoi.org/web/forum-sda/gis-lab>

CAD



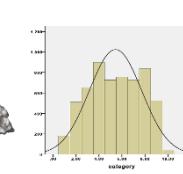
GIS



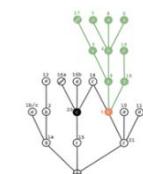
SfM



R_Project



S_Syntax



-> Digitale Dokumentation

Prähistorische Archäologie
 Klassische Archäologie
 Vorderasiatische Archäologie
 Ägyptologie
 Altorientalistik

Historische Bauforschung
 Historische Geographie
 Alte Geschichte
 Religionsgeschichte

-> Räumliche Analyse

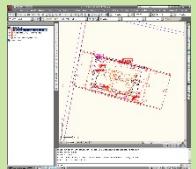
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✓	✓	✓	✓	✓
✓				
	✓	✓	✓	
		✓		
			✓	
				✓

CAD = Computer Aided Design, GIS = Geographische Informationssysteme, SfM = Structure-from-Motion, R_Project = Statistical Computing, S_Syntax = Space Syntax Analysis

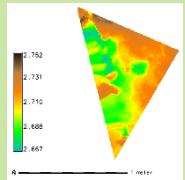


Software in Topoi

<http://community.topoi.org/web/forum-sda/gis-lab>



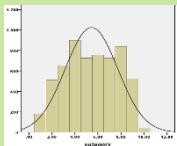
CAD = Computer Aided Design



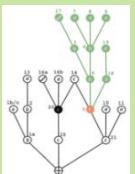
GIS = Geographische Informationssysteme



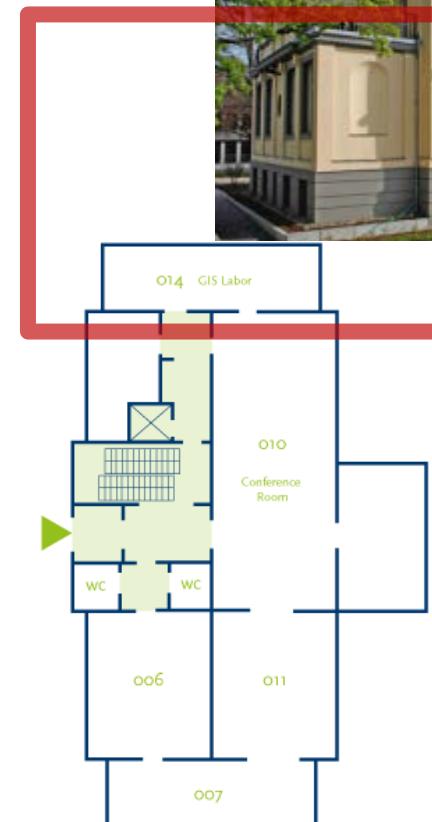
SfM = Structure-from-Motion



R_Project = Statistical Computing



S_Syntax = Space Syntax Analysis

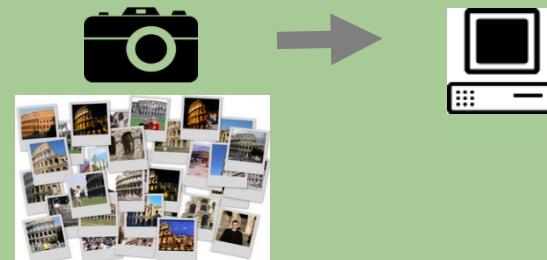




Software aus Topoi <http://community.topoi.org/web/forum-sda/software>

BundlerTools

Softwarebundle zur automatisierten 3D Punktwolkengenerierung



GRASS GIS

v.in.ply, v.rectify, v.out.ply

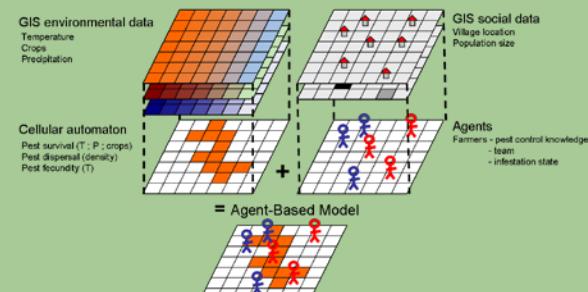
Modul zur Georeferenzierung von 3D Punktwolken



GRASS GIS

r.agent.aco

Agenten-basierte Modellierung





Topoi Home

FORUM Spatial Data -> Räumliche Analyse

BundlerTools und GRASS GIS modules

Softwarebundle zur automatisierten 3D Punktwolkengenerierung und deren Georeferenzierung

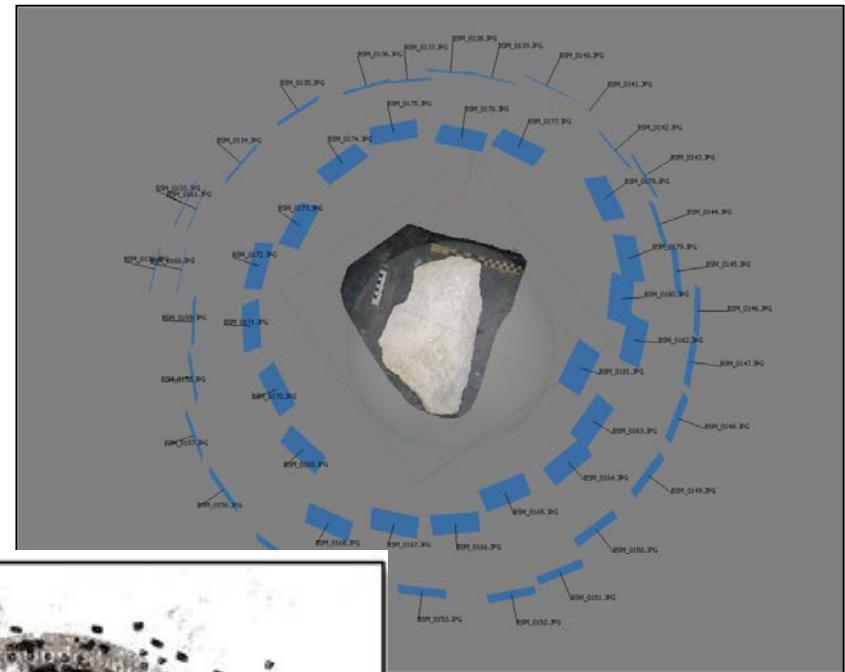
Bernhard Fritsch
Undine Lieberwirth



BundlerTools

Structure-from-Motion Softwareentwicklung

BundlerTools (Ubuntu/Fedora) = Bundler + CMVS + PMVS2



Bündelung verschiedener Scripte zur einfachen Generierung von 3D Punktwolken

Structure-from-Motion

Vielfältiger Nutzen in Archäologie und Kulturwissenschaften



Softwarebundle zur automatisierten 3D Punktwolkengenerierung

Georeferenzierung Softwareentwicklung

Affine Transformation

The figure displays three GRASS GIS dialog boxes for vector operations:

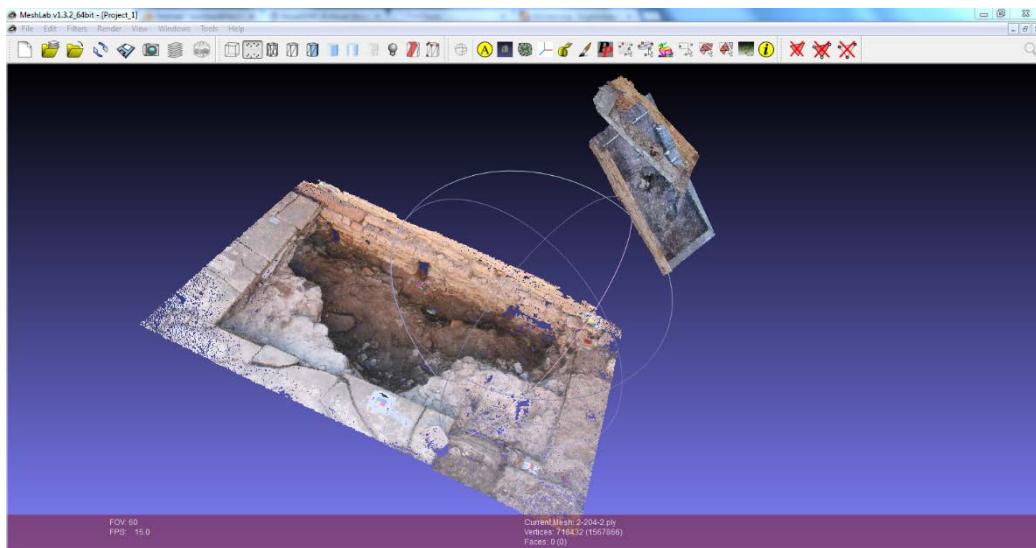
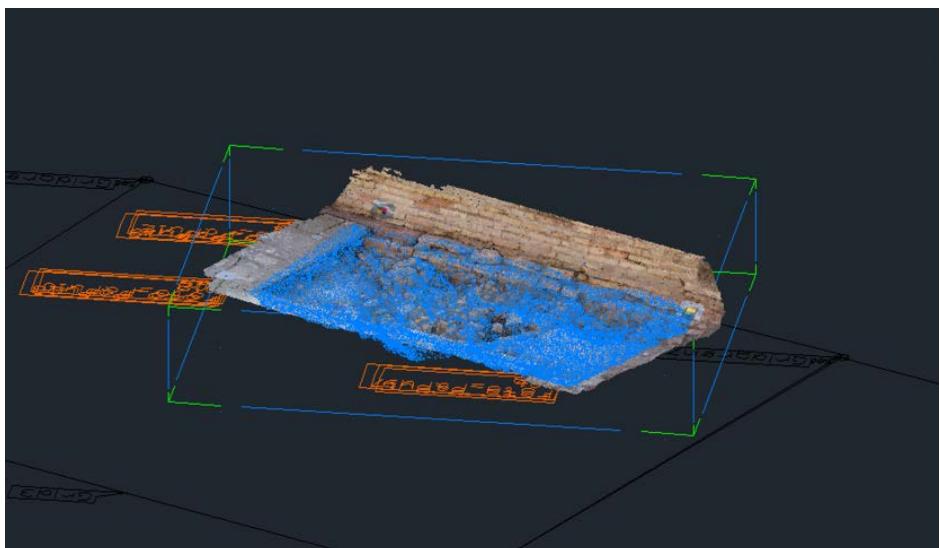
- v.in.ply [Vektor, import]**: A dialog for importing a PLY file. It shows the input file "Layer1.ply" selected. Buttons include "Load", "Speichern unter...", "Schließen", "Run", "Kopieren", and "Hilfe". Checkboxes at the bottom include "Add created map(s) into layer tree" and "Close dialog on finish". The command line at the bottom is "v.in.ply input=Layer1.ply output=Layer1".
- v.rectify [Vektor, rectify]**: A dialog for rectifying a vector layer. It shows "Perform 3D transformation" checked. Other options like "Perform orthogonal 3D transformation", "Print RMS errors", "Do not build topology", and "Ausgebadeien dürfen bereits existierende Dateien überschreiben" are also listed. Input fields include "Name of input file with control points" set to "Layer1.txt". Buttons include "Schließen", "Run", "Kopieren", and "Hilfe". The command line at the bottom is "v.rectify -3 -r -b input=<required> output=<required> points=Layer1.txt".
- v.out.ply [Vektor, export, ply]**: A dialog for exporting a vector map to a GRASS ASCII vector PLY file. It shows the output file "Layer1georef.ply" selected. Buttons include "Browse", "Schließen", "Run", "Kopieren", and "Hilfe". Checkboxes include "Ausgebadeien dürfen bereits existierende Dateien überschreiben", "Ausführlicher Ausgabemodus", and "Schweigsamer Ausgabemodus". Input fields include "Name for output PLY file" and "Name of attribute column(s) to be exported" set to "red,green,blue,alpha". A dropdown for "Anzahl der signifikanten Stellen" is set to 4. The command line at the bottom is "v.out.ply input=<required> layer=1 output=Layer1georef.ply columns=red,green,blue,alpha".



Georeferenzierung von 3D Punktwolken

Georeferenzierung Softwareentwicklung

weitere Bearbeitung:
Meshlab, Cloud Compare, Point Cloud, ParaView



Georeferenzierung von Grabungsbefunden



Workshops <http://www.topoi.org/courses/>

WORKSHOPS FOR HARDWARE AND ANALYSIS-SOFTWARE IN TOPOI

The constant endeavor to teach researchers new abilities has been resulting in numerous hardware and software courses for data modelling and data analysis since the start of Topoi.

For information on upcoming events, please visit our [Calendar](#).

An overview of all Topoi hardware devices and the most taught software, you will find in our section [Databases and GIS](#) or on <https://community.topoi.org/web/forum-sda/>

TITLE	DATE	ORGANISER
Introduction to Geographical Information Systems in Archaeology	01.07.-09.07.2014	Undine Lieberwirth
UAV (Unmanned Aerial Vehicle) Applications in Archaeology	23.5.-24.5.2014	Undine Lieberwirth
GRASS GIS introduction + Significance Tests in Archaeology	24.03.2014	Undine Lieberwirth
GRASS GIS introduction + Viewshed analysis in GRASS GIS	11.03.2014	Undine Lieberwirth
Winterschool on Modelling in Landscape Archaeology	26.02.-07.03.2014	Daniel Knitter, Oliver Nakoinz
Reflectance Transformation Imaging (RTI)	28.10.-31.10.2013	Kathryn Piquette



Konferenzen <https://community.topoi.org/web/uav-2014/>

Topoi Home UAV Conference 2014

Home Expertentreffen Rethymno Symposium Berlin Programm Flugshow Veranstaltungsort Die Organisatoren Anmeldung / Kontakt Presse Impressions Links

Watch our Air Show Trailer and Presentation Videos

Please click on the image to watch the trailer.

Presentation videos can be found under the Programm tab.



Airshow Trailer

EXCELLENCE CLUSTER  TOPOI
THE FORMATION AND TRANSFORMATION OF SPACES AND ENVIRONMENTS IN ANCIENT CIVILIZATIONS

NAVIGATION

- Home
- Expertentreffen Rethymno
- Symposium Berlin
- Programm
- Flugshow
- Veranstaltungsort
- Die Organisatoren
- Anmeldung / Kontakt
- Presse
- Impressions
- Links

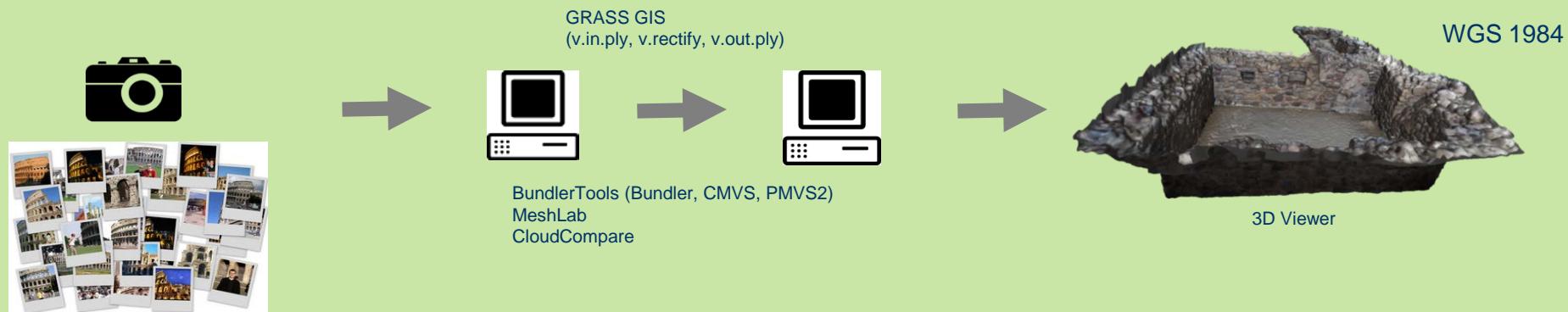
SEARCH

Everything 



Workflow

Beispiel: Structure-from-Motion Methode (SfM)



Feldforschung



Datenprozessierung



1 Aufgabenbereich ●

2 Umsetzung ●

3 Ergebnisse ●

Topoi Home

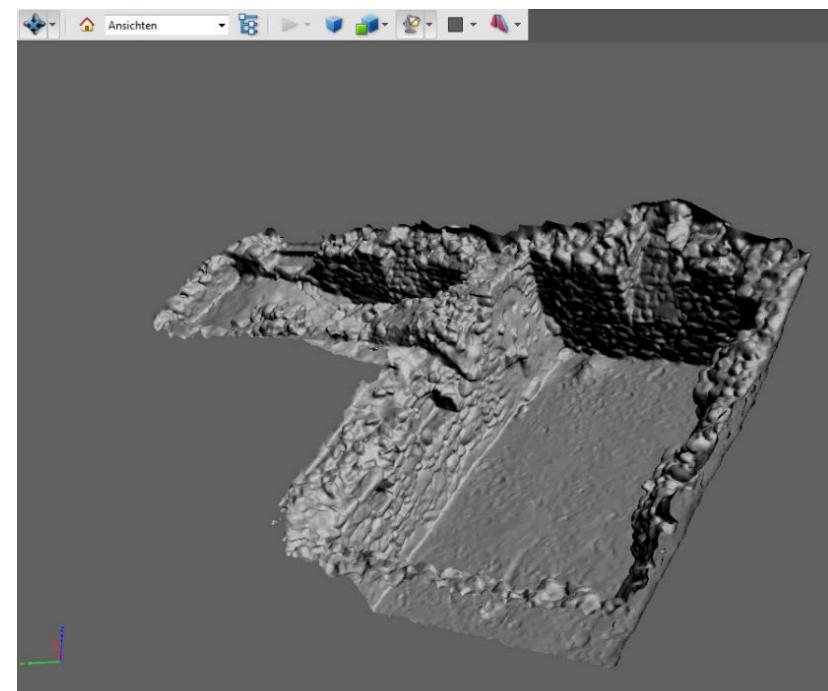
FORUM Spatial Data

-> Räumliche Analyse

Veröffentlichungen



Topoi WebGIS

<http://community.topoi.org/web/forum-sda/webgis>

3D Viewer

<http://community.topoi.org/web/forum-sda/3d-documentation>



Das Topoi-WebGIS als interaktive Karte

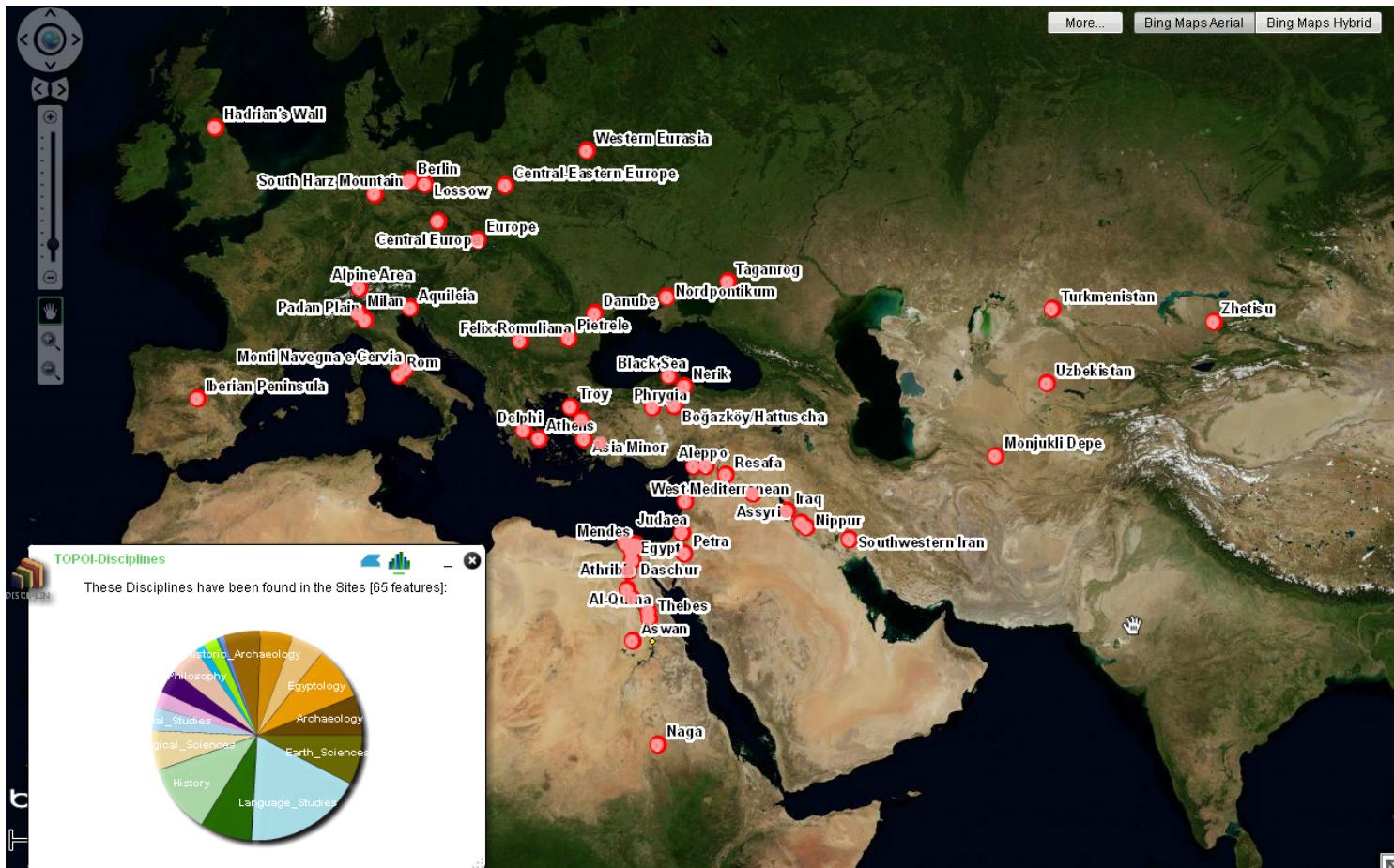
Topoi Forum „Spatial Data“

Vortragende:
Sophie Schmidt B.A.

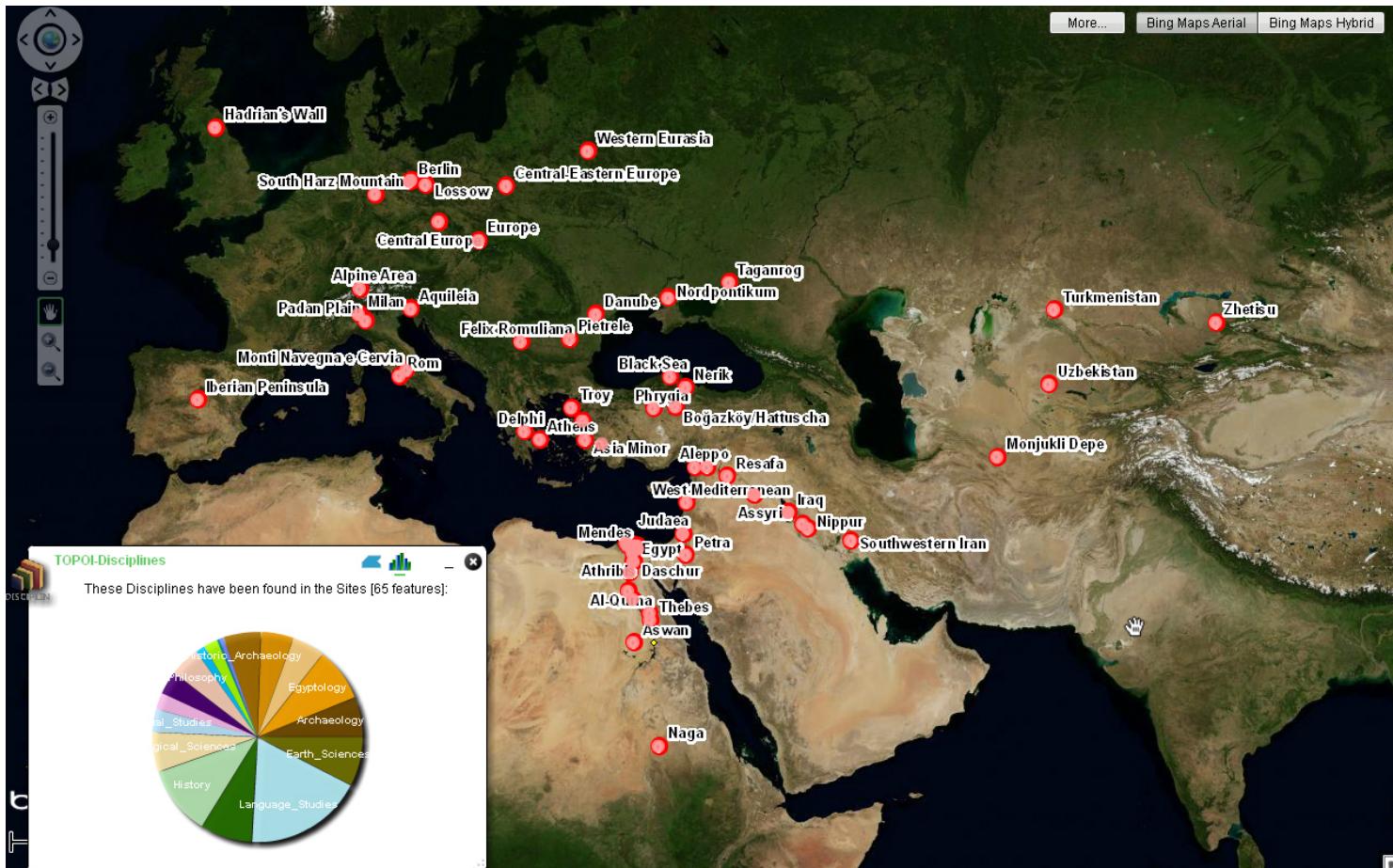


Ergebnis

ArcGIS Viewer for Flex



Statistiken



Attribute

A screenshot of the Topoi-WebGIS interface. At the top, there's a map of the region around Pergamon, Turkey. A callout box highlights a specific project entry in the list:

OBJECTID	{OBJECTID}
project_name	Ancient Landscapes in the Environs of Pergamon - Geoarchaeology in the Lower Kaikos Valley
project_type	dissertation
PDF	Open Poster
post_name	ancient landscapes in the environs of pergamon
Name	Pergamon
Country1	Turkey
place_type	project location

Below the table, there are links to 'topoi_research > TOPOI Research Projects' and 'Add to Results'.

A screenshot of the ArcGIS Viewer for Flex interface, showing a PDF document titled 'Poster-Reader_ATeil7.pdf'. The document is part of 'Research Group A-I: Central Places and Their Environment' and discusses 'Seats of Residence as Central Places' and 'Representative Projects'. It includes sections on Resafa and Rusafat Hisham, Syria, and the Late Roman Imperial Palace at Atarneus and Pergamon. There are also images of archaeological artifacts, such as a fragment of an architectural relief from the Late Roman Imperial Palace.

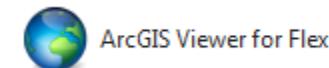
A-I-3 Resafa - Rusafat Hisham, Syria: Palaces, Paleoenvironment and water management systems

Resafa was founded as a fortress at the eastern Roman border in the 1st century AD. At the beginning of the 6th century, the fortress became a city of pilgrimage, as it was said to cover the relics of the Roman saint Sergios. Because of this sanctuary, the Umayyad Caliph Hisham ibn Abd al-Malik (724-743) decided to take residence in Resafa. For about 15 years, the city was the political centre of the Arabian empire. At least two palaces were built and decorated richly with stucco (Fig. i) and wall paintings. Gardens and water basins also served as parts of the caliphal representation. This is astonishing, given that Resafa is situated in a dry area. One main goal of the project is therefore the reconstruction of environmental conditions and the understanding of the water management system, based on a hydrological modelling. Initial results show that this system was often changed during Resafa's history, and that it attained its most effective form during the Umayyad period.

A-I-4: The Late Roman Imperial Palace

A-I-8: Ancient Landscapes in the Environs of Atarneus and Pergamon – Geoarchaeology in the Lower Kaikos Valley

Suchfunktion



The image displays two side-by-side screenshots of the TOPOI Research WebGIS interface, illustrating the search function for the term "Musik".

Left Screenshot: Shows a map of Europe and North Africa. A search dialog box is open in the upper left corner with the text "Search for Text: Musik" and a "Find" button. The map highlights several locations with yellow circles, including St. Peters Cathedral in Rome, Septizonium in Sicily, and various sites in France, Italy, and Spain. The interface includes a "Search TOPOI Projects" panel on the left and a "Map Contents" panel at the bottom.

Right Screenshot: Shows a map of the Mediterranean region and surrounding areas. It highlights the same locations as the left screenshot. The "Search TOPOI Projects" panel on the left shows a results list for "Musik (1)", which includes "TOPOI Research Projects (1)" and "Die Rolle der Musik in antiken griechischen Prozessionen". The "Map Contents" panel at the bottom is identical to the left screenshot.

Das Topoi-WebGIS als interaktive Karte

1. Form • 2. Funktion

Open Data

The screenshot displays the ArcGIS Viewer for Flex interface, specifically the 'Italy (MapServer)' page. The main map shows a grayscale relief representation of Italy's terrain, overlaid with several blue and purple points representing archaeological sites. A legend on the left lists layers such as Sampling_Location20082009, Sampling_locations_2010, Archaeological_sites, Roman_street, settlements, and ASTERcomposite.img. Most of these layers are checked. A context menu is open over the map, with the 'More Options' button highlighted by a green circle. The sidebar on the right provides detailed information about the map, including service details, layers, and document info, with the 'Export Map' button also highlighted by a green circle.

TOPOI A_I_9 Projects of TOPOI
Monti Navegna e Cervia: Geoarchaeology

Map Content

Layer Visibility

Italy

- + Sampling_Location20082009
- + Sampling_locations_2010
- + Archaeological_sites
- + Roman_street
- + settlements
- + ASTERcomposite.img

100 km
50 mi

Weitere

Info

ArcGIS Services Directory

Home > Italy (MapServer)

Italy (MapServer)

View In: ArcMap ArcGIS Explorer ArcGIS JavaScript Google Earth ArcGIS.com Map

View Footprint In: Google Earth

Service Description:

Map Name: Layers

Legend

All Layers and Tables

Layers:

- Sampling_Location20082009 (0)
- Sampling_locations_2010 (1)
- Archaeological_sites (2)
- Roman_street (3)
- settlements (4)
- ASTERcomposite.img (5)

Tables:

Description:

Copyright Text:

Spatial Reference: 32633

Single Fused Map Cache: false

Initial Extent:

XMin: 143148.122839155
YMin: 4417635.20021109
XMax: 800639.021154285
YMax: 4986490.50458836
Spatial Reference: 32633

Full Extent:

XMin: 225050.438841468
YMin: 4527424.5
XMax: 512613.438841468
YMax: 4776475.5
Spatial Reference: 32633

Units: esriMeters

Supported Image Format Types: PNG24.PNG.JPG.DIB.TIFF.EMF.PS.PDF.GIF.SVG.SVGZ.AI.BMP

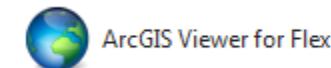
Document Info:

- Title:
- Author:
- Comments:
- Subject:
- Category:
- Keywords:
- Credits:

Supported Interfaces: REST SOAP

Supported Operations: Export Map Identify Find Generate KML

Administration



ArcGIS Viewer for Flex - Application Builder
My Applications > General

Maps Widgets Layout Design Preview Save Save and Next

Catalog

Bookmark	Chart	Data Extract	Draw	Edit	Geoprocess...	GeoRSS	Layer List	Legend	Locator
Print	Query	Search	Time						

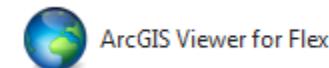
Widgets in this application (5)

Bookmarks	Find an address	Draw and Meas...	Print	Data Extract
✓ X	✓ X	✓ X	✓ X	✓ X

Click, hold, and drag a widget to change the display order

A screenshot of the ArcGIS Viewer for Flex Application Builder. The interface has a toolbar at the top with tabs for Maps, Widgets, Layout, Design, and Preview, along with Save and Save and Next buttons. Below the toolbar is a Catalog section containing ten icons for various GIS functions. The 'Time' icon is highlighted with a green border. Several other icons are highlighted with red borders: 'Print', 'Query', 'Data Extract', 'Geoprocess...', 'Layer List', 'Legend', and 'Locator'. Below the Catalog is a section titled 'Widgets in this application (5)' which lists five widgets with their corresponding icons and status indicators (some with crossed-out symbols). A note at the bottom says 'Click, hold, and drag a widget to change the display order'.

Administration



Calculate viewshed

Observation point *

A blue map marker icon indicating the observation point location.

Viewshed distance *

 Meters

Help

Submit

Drive times

Start location *

A blue map marker icon indicating the start location for driving times.

Help

Submit

Extract Data

Extract data and download zip file

1. Select area *

A row of five blue map marker icons representing different areas to extract.

2. Select layers to extract *

 Incident Areas
 Incident Lines
 Incident Points

Help

Extract

Population summary

Population area *

A row of five blue map marker icons representing population areas.

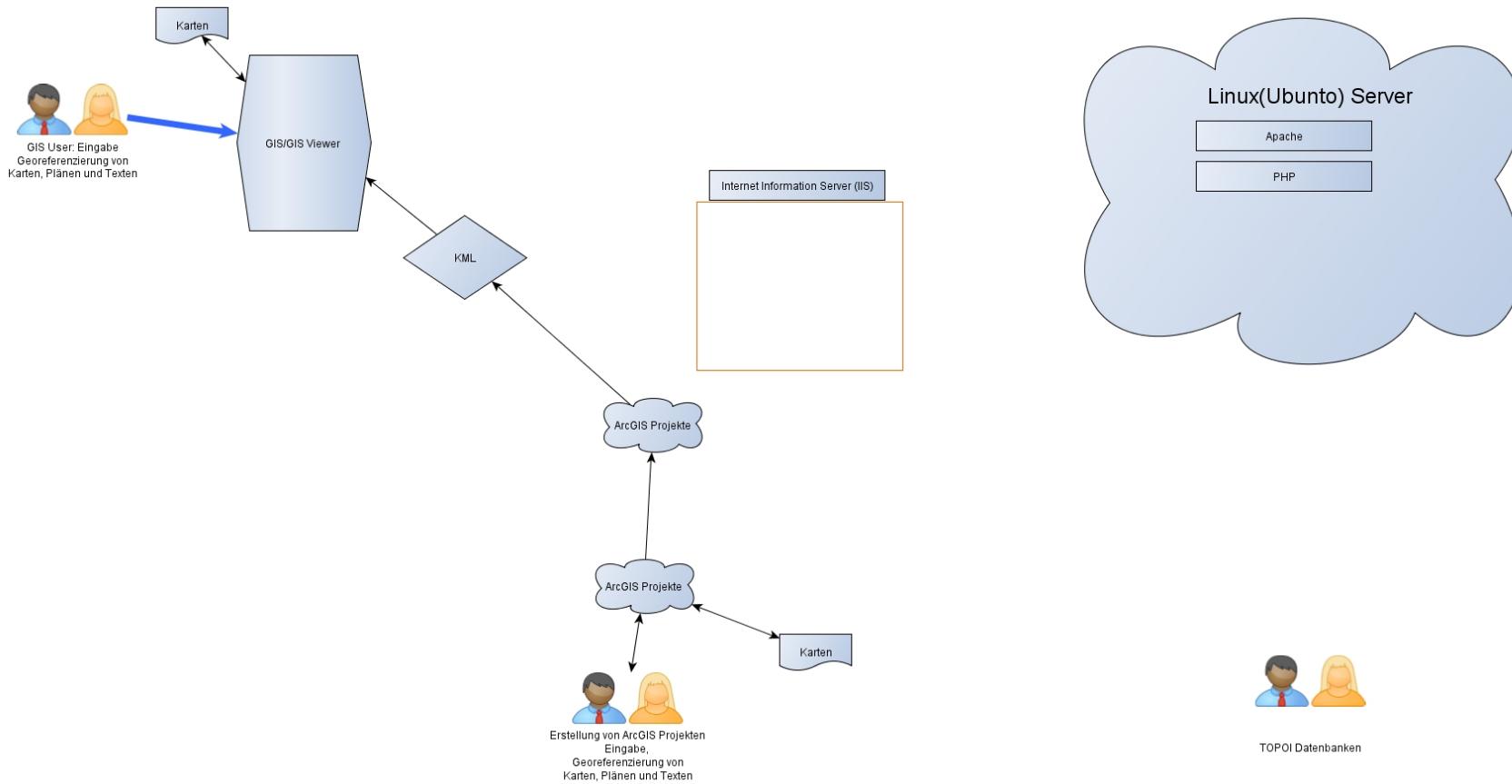
Clear

Help

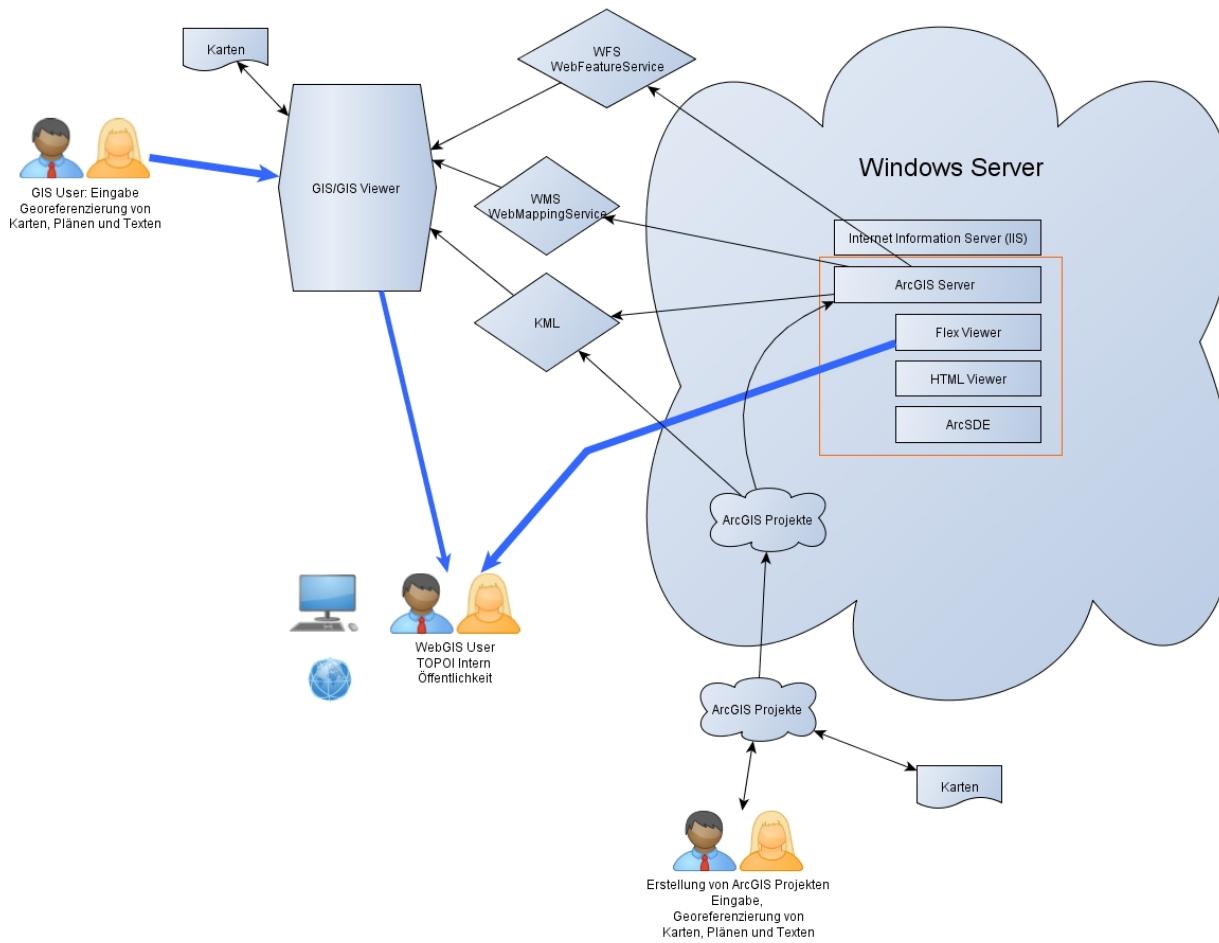
Submit

Creating Widgets (Adobe Flash Builder, ActionScript® language)

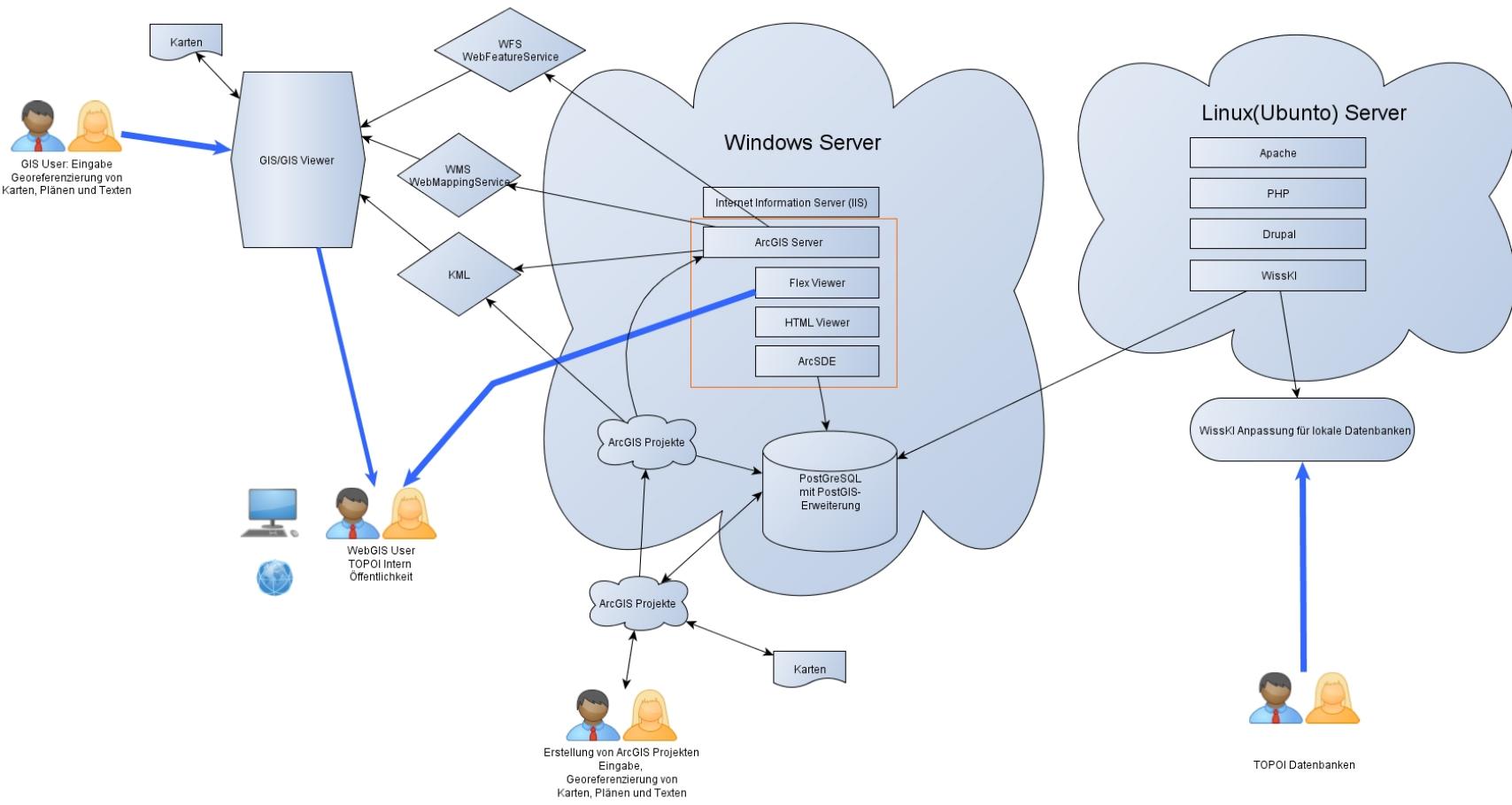
Administration



Administration



Administration



WebService

Intranet

The screenshot displays the Topoi WebGIS interface. At the top, there is a navigation bar with links: Welcome, TopoiBox - SDA, GIS Labor, WebGIS, 3D Documentation, Software, Equipment list, and Maps/Resources. Below the navigation bar, a breadcrumb trail shows the current location: community.topoi.org > FORUM Spatial Data > TopoiBox - SDA > Home > Karten Repository > Karten TOPOI. On the left side, there is a section titled "TOPOI BOX" featuring a globe icon and a "WEB CONTENT DISPLAY". Below this, a section titled "Zur Beachtung" contains a note about file naming conventions. On the right side, there is a "Karten Repository" sidebar with a "Up" button and a "Karten TOPOI" folder selected. The main content area shows a table titled "Karten TOPOI" with the following data:

	Title	Size	Downloads	
<input type="checkbox"/>	Algeria	--	--	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Atlas Barrington	--	--	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Egypt topographisch TIF	--	--	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Germany	--	--	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Italy	--	--	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Jordan	--	--	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Kazakhstan	--	--	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Middle Europe	--	--	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Morocco	--	--	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Near East	--	--	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Northern Black Sea Region	--	--	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Romania	--	--	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Russia	--	--	<input checked="" type="checkbox"/>

1. Form

2. Funktion

Anforderungen
Ziele

- alle kartierbaren Topoi-Ergebnisse präsentieren
- interaktiv und intuitiv nutzbar
- Open Access, Open Data / OGC Standard
- auch für den User leicht zu administrieren
- browserbasierte Anwendung
- schnell umsetzbar
- schnelle Internetanbindung (BACKBONE)

Darstellung

community.topoi.org/web/forum-sda/webgis

<https://www.topoi.org/research/research-concept/forums/webgis-2/>
Intranet



The screenshot shows the TOPOI WebGIS homepage. At the top, there's a navigation bar with links like "Topoi Home", "FORUM Spatial Data Analysis", "Welcome", "Blog", "Calendar", "GIS Labor", "WebGIS", "3D Documentation", "Software", "Equipment list", "Maps/Resources", "FORUM Members", and "Contact". Below the navigation bar, the main content area has a title "Geografische Informationssysteme in TOPOI". It includes a paragraph about the WebGIS tool, a detailed description of research results presented in layer-based maps, and a note about the introductory application showing project locations. There's also a section on "Open Access" and a note about selecting layers. To the right of the text, there's a large map of Europe with numerous red dots indicating project locations. A small inset map shows a detailed view of a specific region. At the bottom, there's another section titled "Archaeological and Geoarchaeological Research in Kazakhstan" with a description of the project and a screenshot of a satellite map of the region.

Das Topoi-WebGIS als interaktive Karte

Schulungen





Digital Humanities in Topoi

Vielen Dank für Ihre Aufmerksamkeit

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FORUM Spatial Data
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Website: topoi.org, community.topoi.org/web/forum-sda