geoCRE - eine kollaborative Forschungsumgebung zur Verwaltung räumlicher Daten

Entwicklung einer webbasierten kollaborativen Forschungsumgebung zur Verwaltung räumlicher Daten auf Basis freier Software

Albert-Ludwigs-Universität Freiburg

UNI FREIBURG

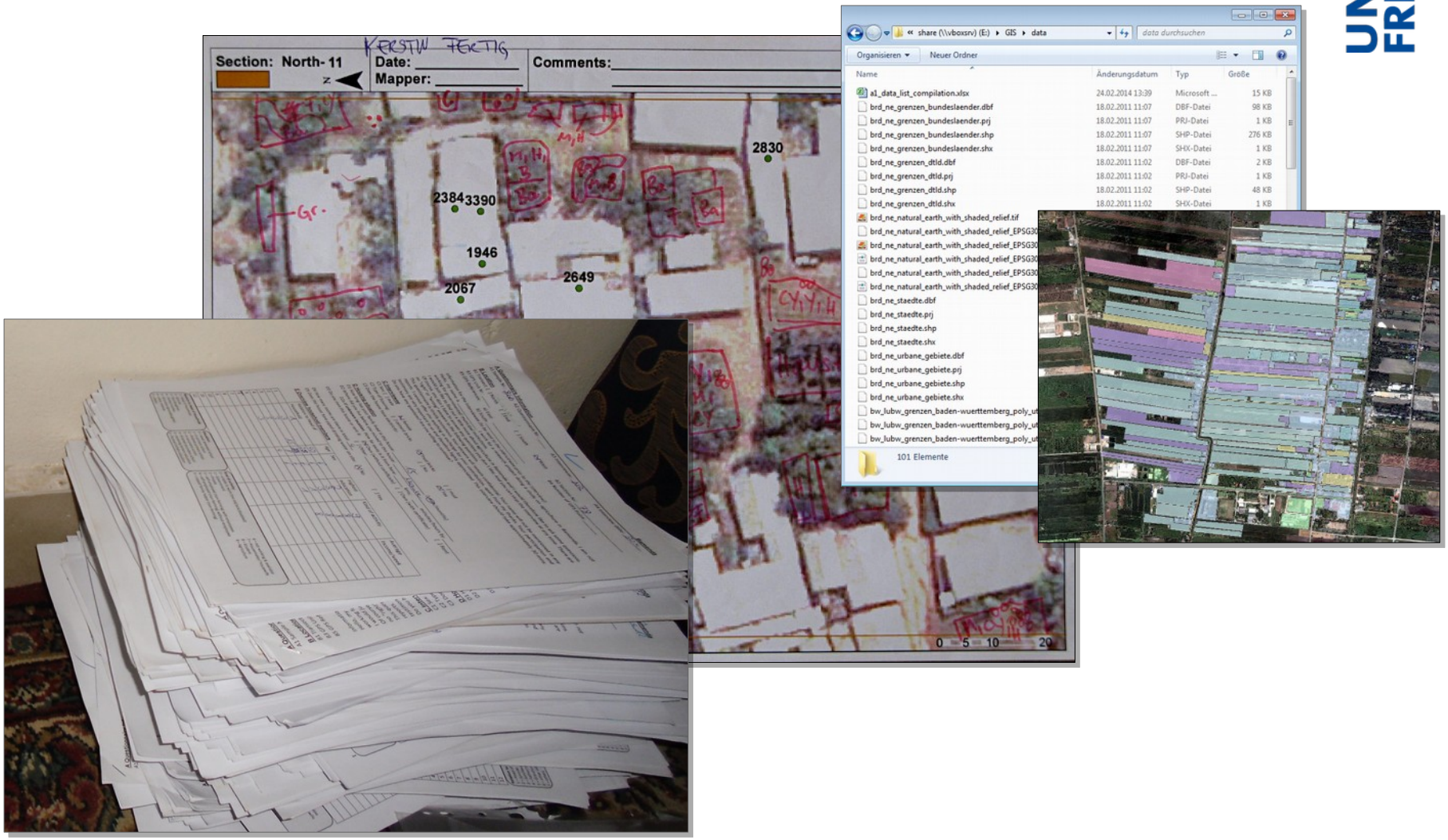
Mark Hoschek
Physische Geographie
Uni Freiburg

E-Mail: mark.hoschek@geographie.uni-freiburg.de

Worum es geht...

Fotos: Johannes Schlesinger, Rouven Volkmann, Mark Hoschek

Worum es geht...

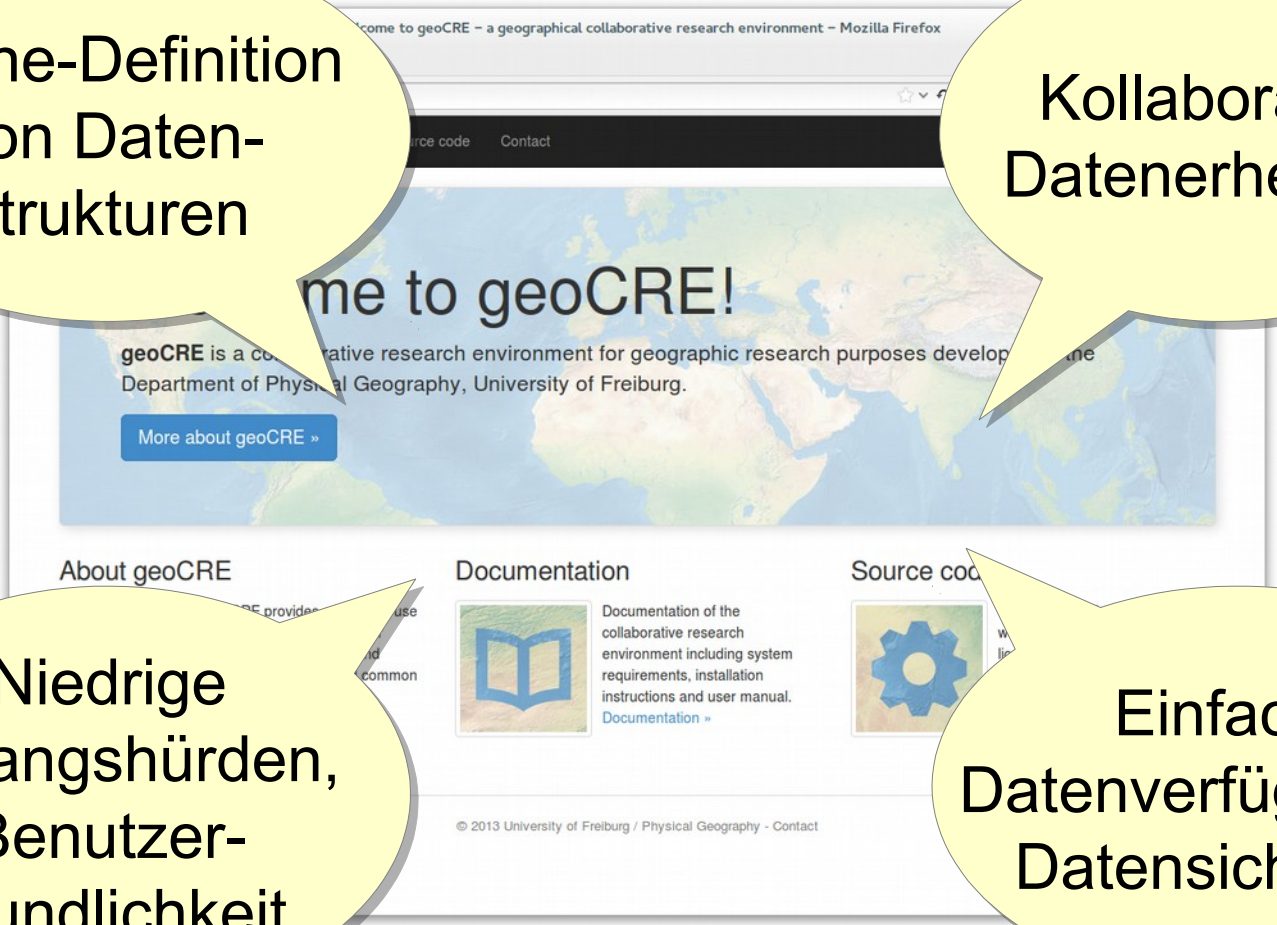


Worum es geht...

Worum es geht...

Online-Definition von Daten-strukturen

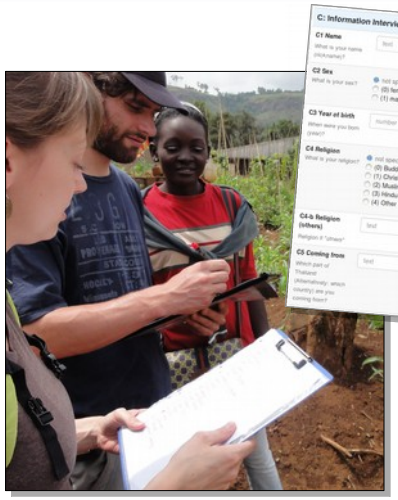
Kollaborative Datenerhebung

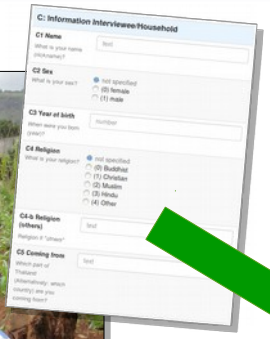


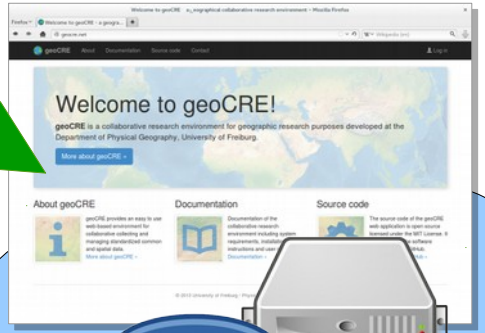
Niedrige Zugangshürden, Benutzer-freundlichkeit

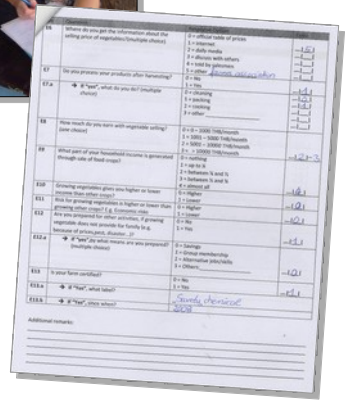
Einfache Datenverfügbarkeit, Datensicherung

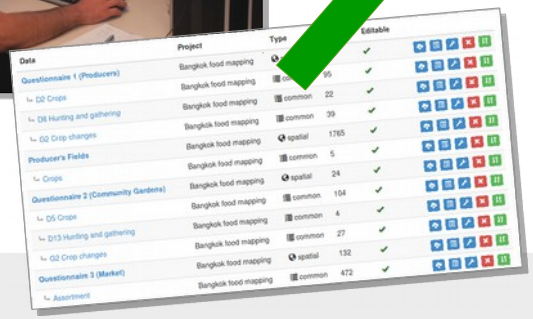
Dateneingabe

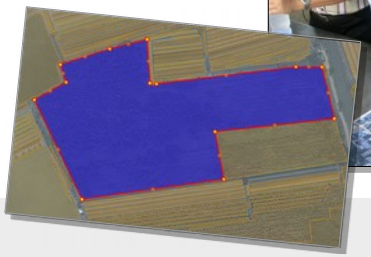




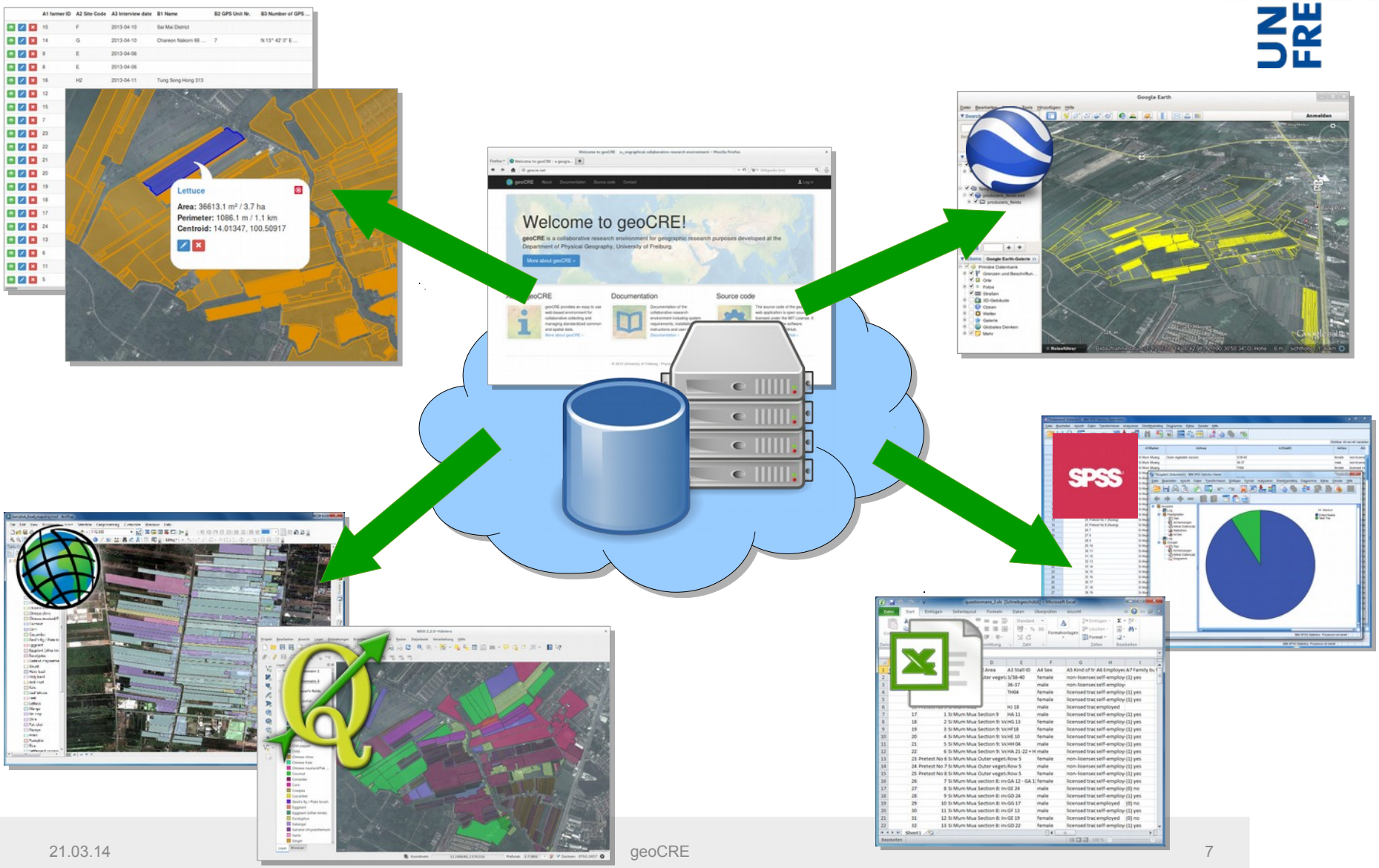




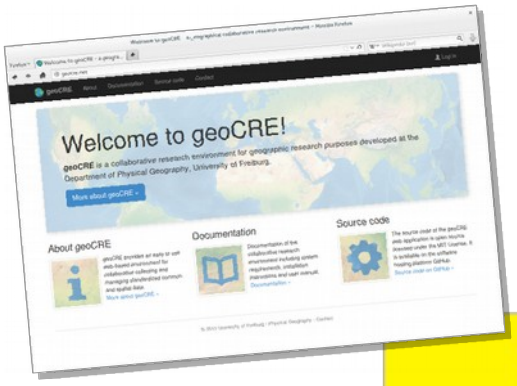




Datenverfügbarkeit und Konvertierung



Aufbau der Webapplikation



Benutzer

Browser

Clientseitiges Frontend
(HTML, CSS, JavaScript)

OpenLayers

andere Module
und Bibliotheken

Basemap-
Server

PostgreSQL/
PostGIS-
Datenbank

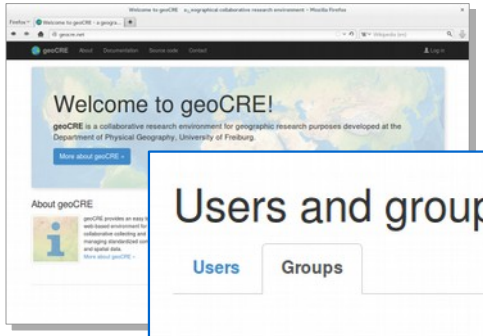
php Serverseitige PHP-Applikation

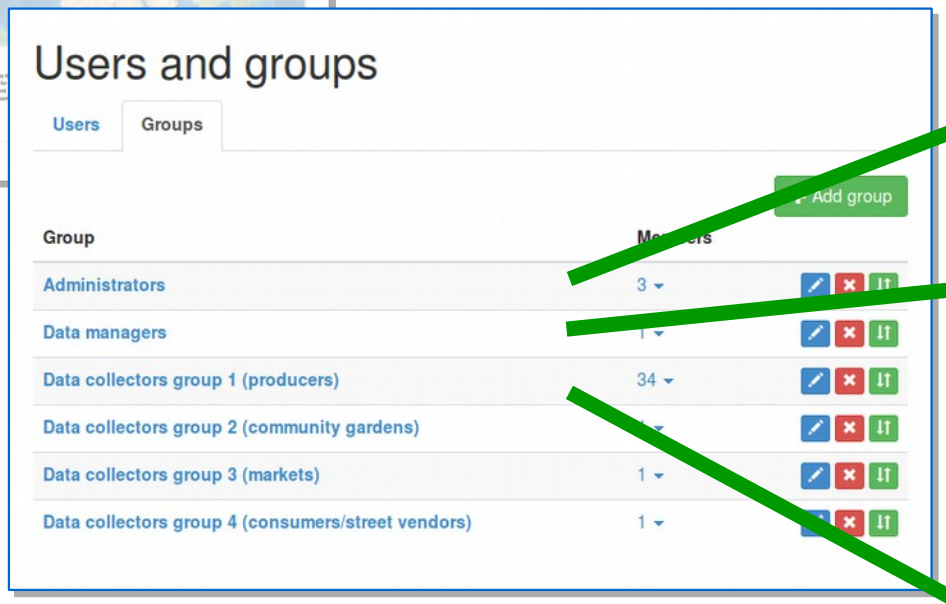
GDAL Geospatial Data Abstraction Library

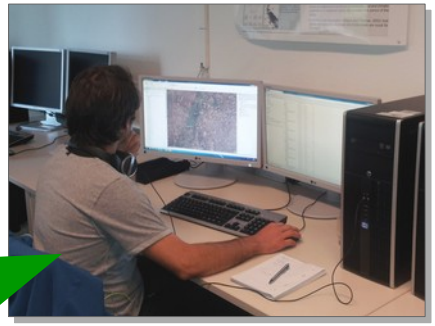
andere Module
und Bibliotheken

Apache-Webserver

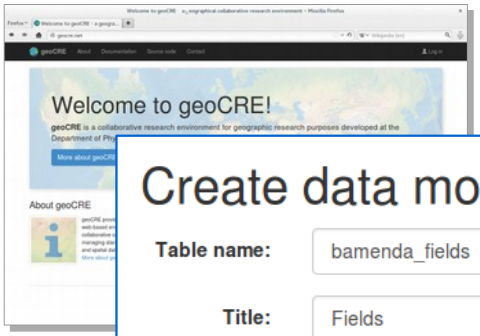
Benutzer und Gruppen







Definition von Datenstrukturen



Create data model

Table name: bamenda_fields

Title: Fields

Project: Bamenda periurban agriculture

Parent table:

Type: common / spatial

no creation of database table (n

Save

Spatial data properties

Geometry type: mixed / point / line / polygon

Geometry required

Basemaps:
- Google Satellite (default)
- Google Hybrid (default)
- Google Physical (default)
- Google Streets (default)
- Bing Aerial (default)
- Bing Hybrid (default)
- OpenStreetMap (default)

if none is selected the defaut basemaps are used

Scale range: 5000 | 0

minimum/maximum scale (e.g. 50000 / 0) to display the layer from middle to highest zoom level)

Geometry simplification tolerance: 0

Fixed simplification tolerance (e.g. 0.1)

Geometry simplification tolerance/extent factor: 0

Variable simplification tolerance dependent on map extent (tolerance / bounding box diagonal degrees, e.g. 0.001)

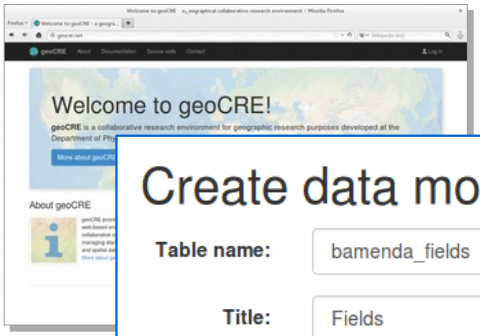
Layer overview: none / point clustering / convex hull

Simplified overview layer in lower zoom levels

Auxiliary layer: bamenda_sections

Festlegen von Eigenschaften räumlicher Daten

Definition von Datenstrukturen



Create data model

Table name: bamenda_fields

Title: Fields

Project: Bamenda periurban agriculture

Parent table:

Type: common / spatial

no creation of database table (ma

Save

Identifier: must begin with a lowercase letter and consist of lowercase letters, numbers and underscores — a11_highest_education

Label: item label — A11 Highest education

Description: item description — What is the highest education you have completed?

Item type: Type of item — data / section

Data type/length: Data type and optional length: — Small integer (smallint)

Section type: section type (if no data type is specified)

Range: range of numbers or string lengths

Choices: predefined selectable values, one value per line, optional labels in corresponding line; asterisk (*) in value as wildcard

Values:	Labels:
0	never attended
1	in primary sch
2	finished prima
3	in secondary
4	finished secon
5	receiving tertia
6	finished tertiary

Required: check if field cannot be empty

Eigenschaften eines „Datenmodell-Elementes“

Datenmodelle

Datenmodell

Eigenschaften

Bezeichnung / Titel

Typ
z.B. räumliche Daten, Geometrie-Typ (Punkt, Linie, Polygon)

Status

Metadaten

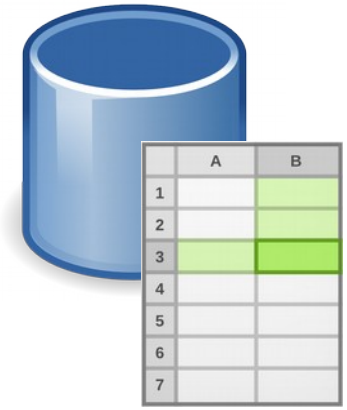
Elemente (Attribute)

Element 1
Bezeichnung, Datentyp, Eigenschaften

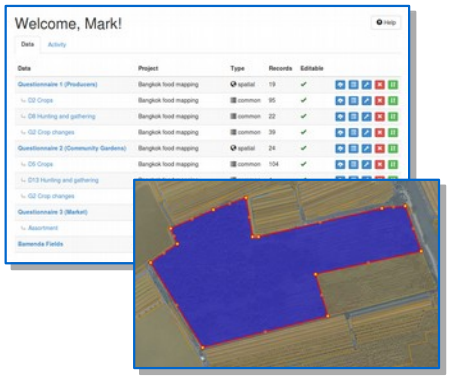
Element 2
Bezeichnung, Datentyp, Eigenschaften

...

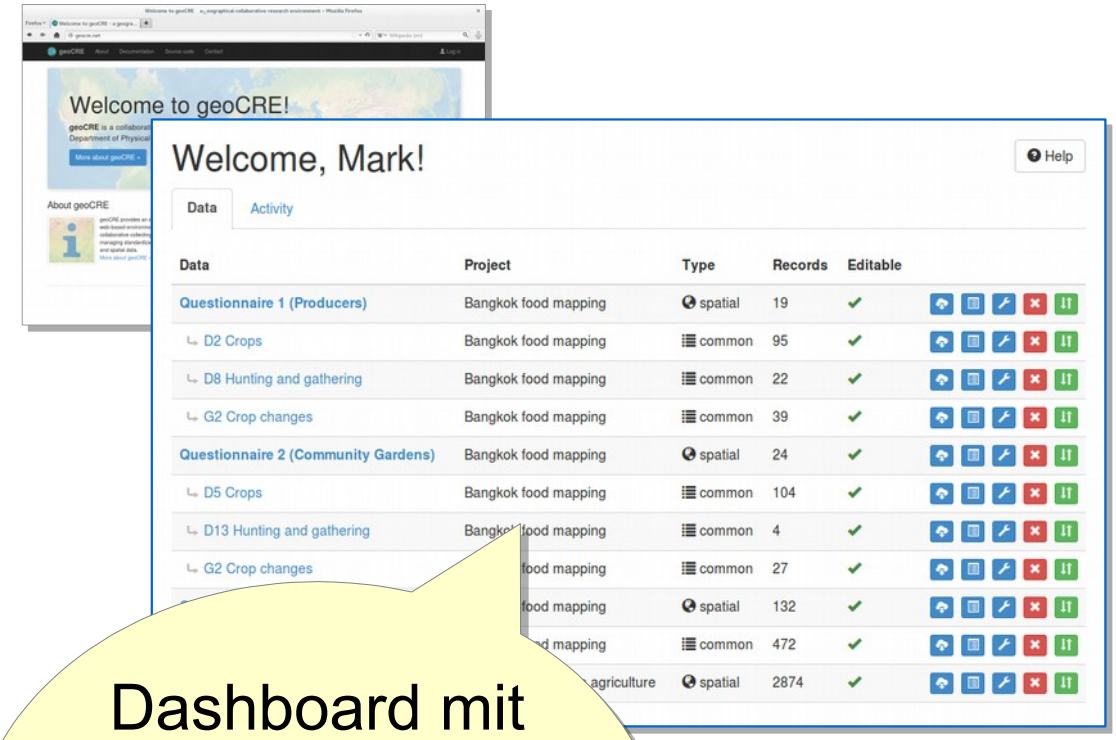
Datenbank



Frontend

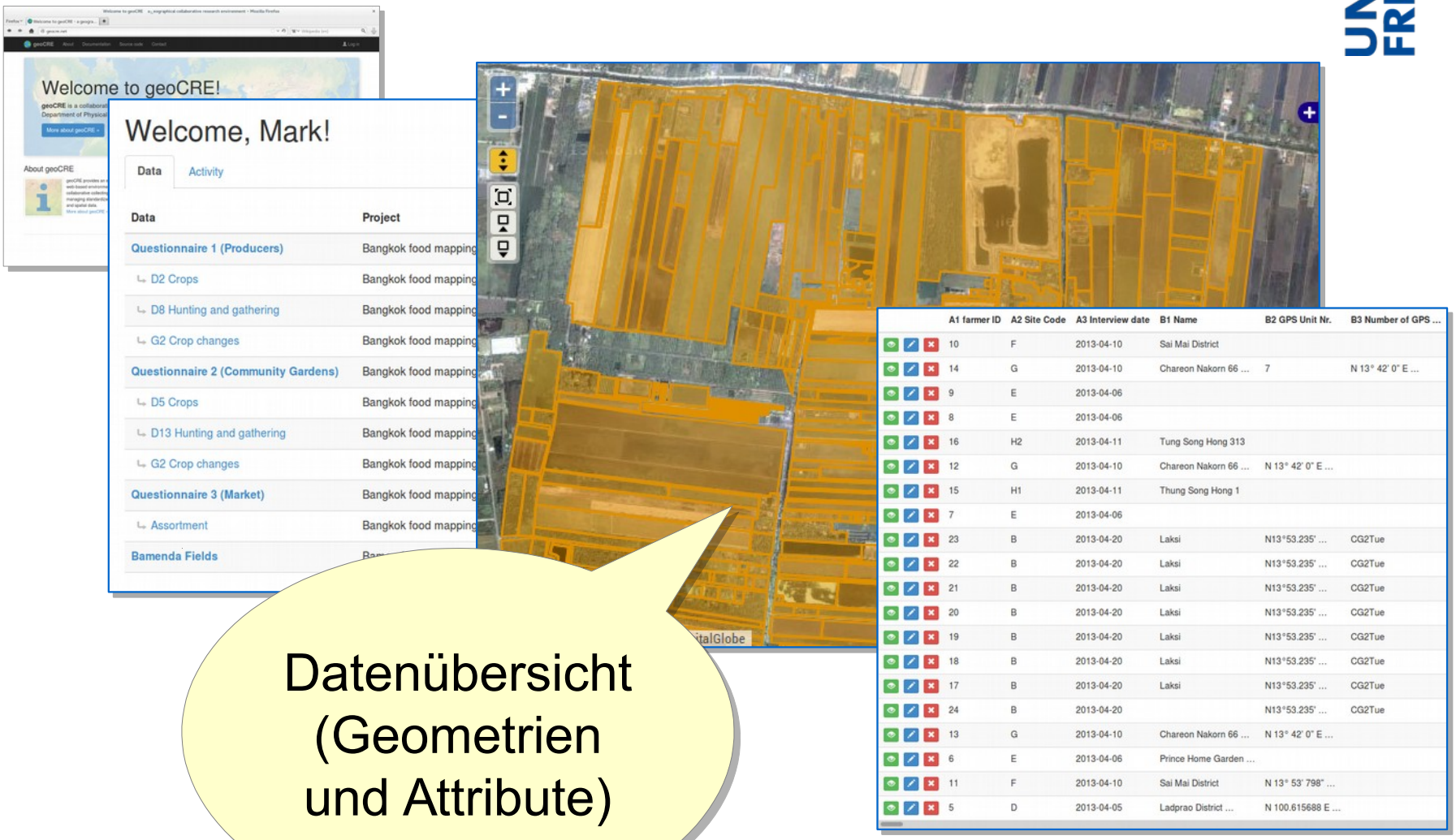


Datenzugang und -bearbeitung



Dashboard mit persönlicher Übersicht über Datenbestände und Optionen

Datenzugang und -bearbeitung



Datenzugang und -bearbeitung

vegGIS 2013

vegGIS

Understanding Urban and Periurban Vegetable Production and Marketing Systems through GIS-based Community Food Mapping in Greater Bangkok, Thailand

veggis.geographie.uni-freiburg.de

Fotos: Axel Drescher, Dirk Riemann

UrbanFood^{Plus} 2013/2014

African-German partnership to enhance resource use efficiency in urban and peri-urban agriculture for improved food security in West African cities

www.urbanfoodplus.org

Fotos: Edmund K. Akoto-Danso, Christoph Steiner

Vegetables Go to School 2014

Vegetables Go to School is a project to address malnutrition, particularly among children, by establishing comprehensive school vegetable garden programs in selected countries in Africa and in Asia.

vgts.avrdc.org

Fotos: AVRDC

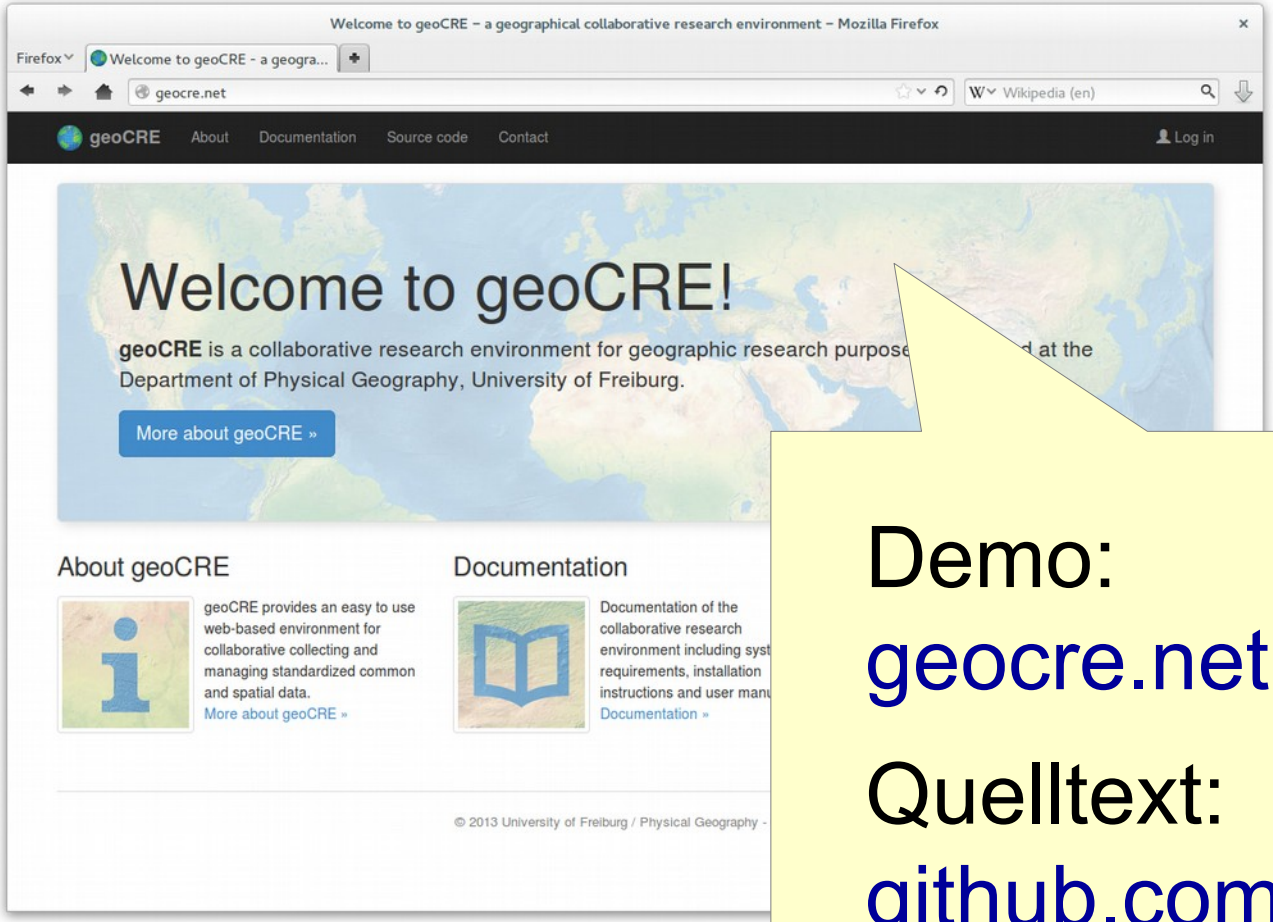
Fazit

- Ein zentrales, webbasiertes Werkzeug zur Verwaltung von Daten ist allgemein sehr hilfreich in Forschungsprojekten, an denen mehrere Personen beteiligt sind
- Die kollaborative Forschungsumgebung hat sich bewährt und wurde gut angenommen
- Selbst bei mangelnder Internet-Verfügbarkeit bestehen die Vorteile einer zentralen, strukturierten und standardisierten Datenverwaltung

Ausblick & To-do

- Datenimport (CSV, Shapefile, GPX, Excel, …)
- Unterstützung von Rasterdaten
- OpenLayers 3
- Online-Datenanalyse
- Datenvisualisierung und -präsentation
- Offline-Tools / Apps für die Datenerhebung
- ...

Demo und Quelltext



Demo:
geocre.net

Quelltext:
github.com/geocre