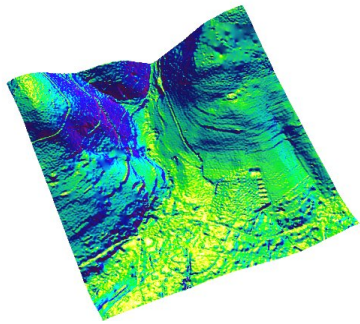




# Into the Wild: Tapping the Potential of FOSS GIS for Geoparks and Nature Interpretation



Semapedia.org



Michelstadt



Peter Löwe,  
Helmholtz-Zentrum Potsdam Deutsches GeoForschungsZentrum  
[ploewe@gfz-potsdam.de](mailto:ploewe@gfz-potsdam.de)



# Overview

- FOSS GIS- Worldview
- Geoparks - Worldview
- Test Case: Geopark Bergstraße-Odenwald
- Examples
- Reality Check / Lessons learned
- Conclusion

# FOSS GIS and Geoinformatics

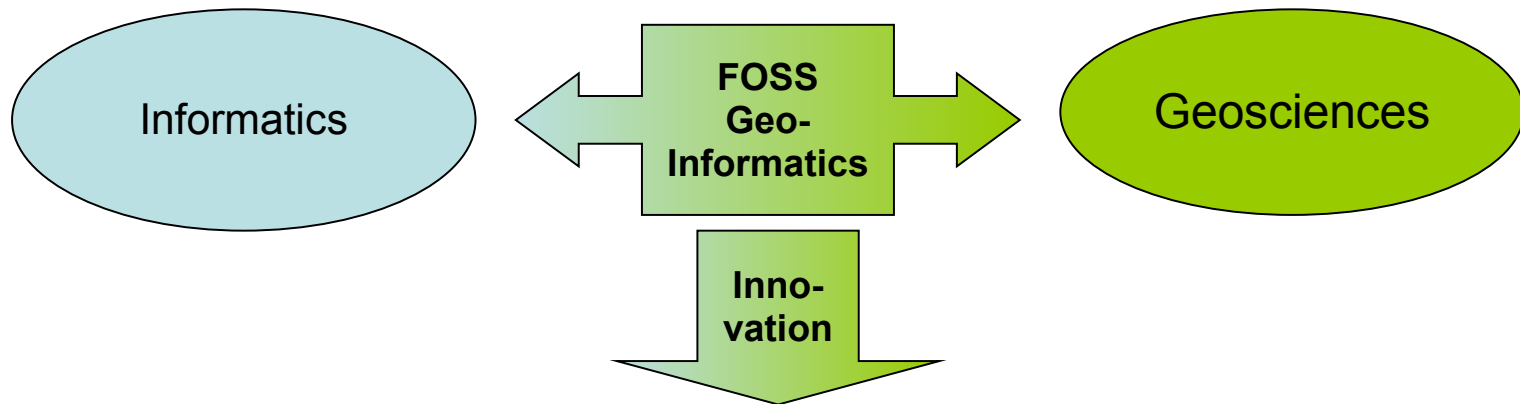
Geoinformatics:

„... the field in which geoscientists and computer scientists are working together

to provide the means to address a variety of complex scientific questions using advanced information technologies and integrated analysis.“ [UTEP PACES Project]

„Frontier“ between Geosciences and ComputerSciences/Informatics:  
An ongoing communication process, constantly shifting and changing“

FOSS GIS as the „sandbox“ to explore new tasks (Scientists View)

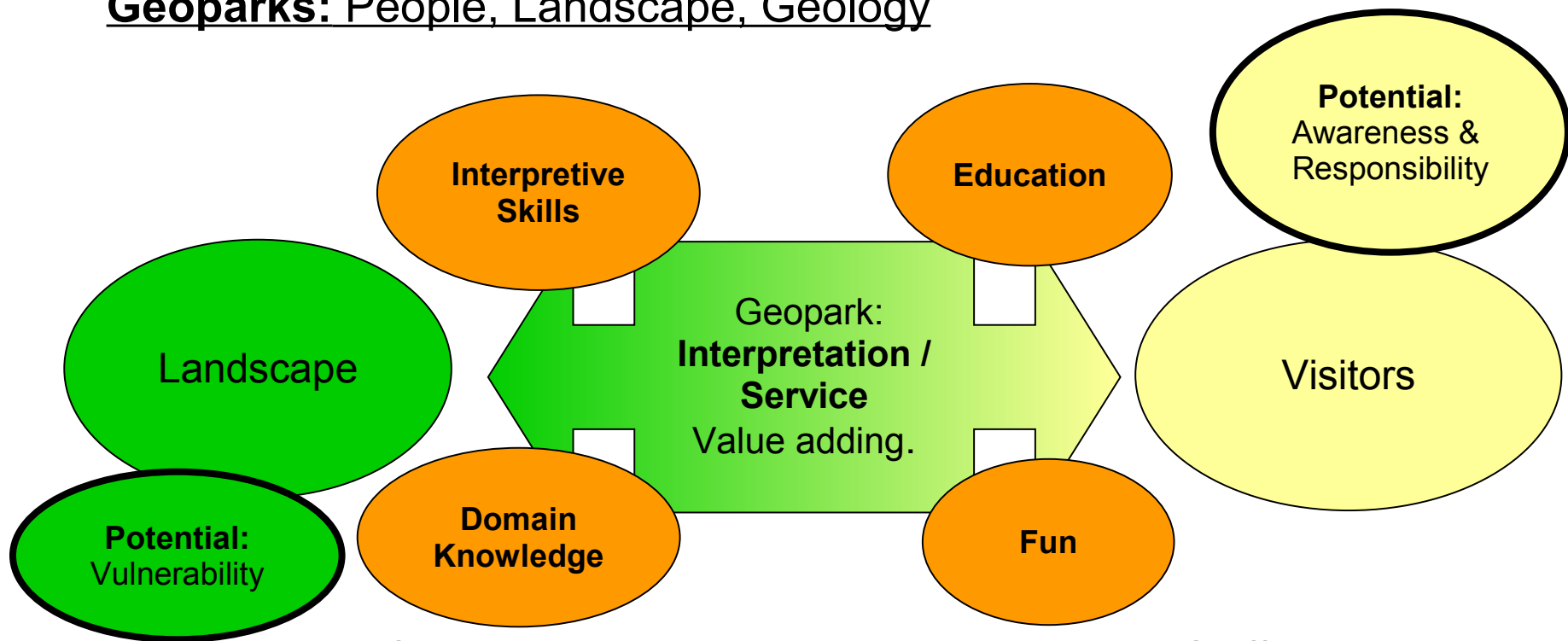


# Parks and Interpretation

**National Parks:** No inhabitants, controlled environment: nature first.

**Nature Parks / Areas of Natural Beauty:** People, Landscape

**Geoparks:** People, Landscape, Geology



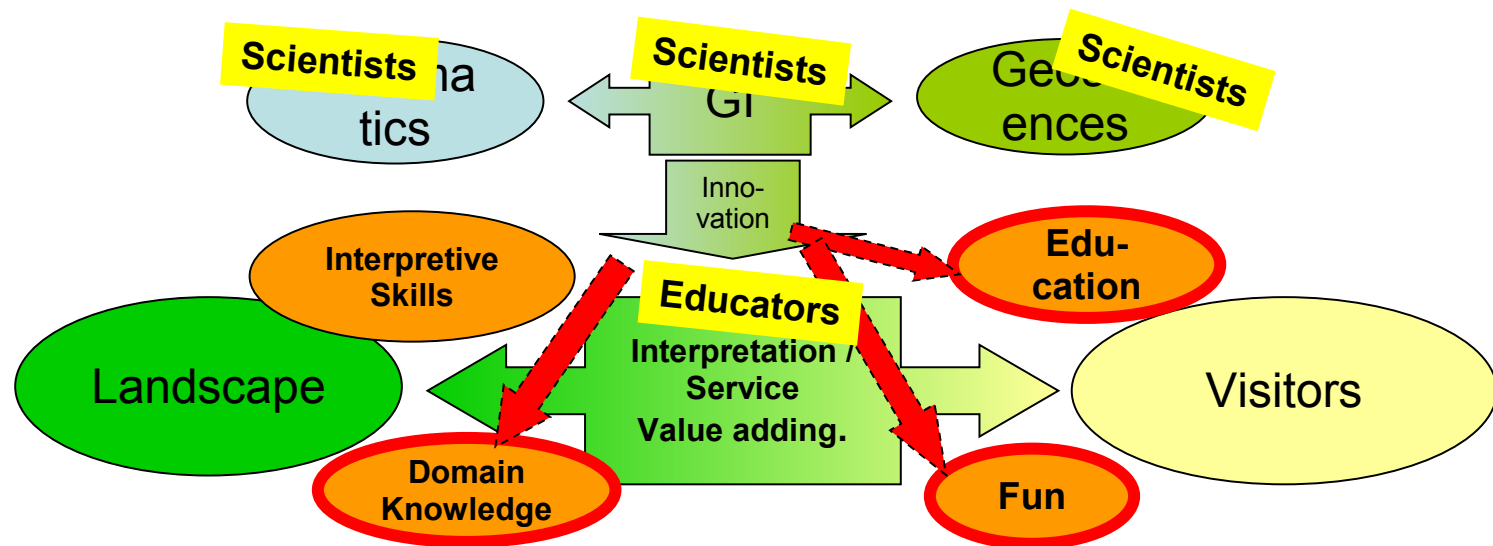
Communication Process by Educators/Park Staff

# Geoinformatics: A challenge for Scientists and Educators

„... the **chaotic distribution** of available data sets,  
**lack of documentation** about them, and  
**lack of easy-to-use access tools** and  
computer modeling and analysis codes

**are major obstacles for scientists and educators alike.**

PACES Project (U of Texas at El Paso)



# The Geoparks Concept

## „People, Landscape, Geology“



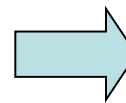
European Geoparks



Chinese Geoparks

Cerification Levels:

national



Global  
(Unesco)

These territories have an **obligatory, strong focus on the protection and communication of geolocial and cultural heritage in order to achieve sustainable regional development**

Currently also development in South Africa :  
Tswaing Crater, Vredefort Dome, etc.

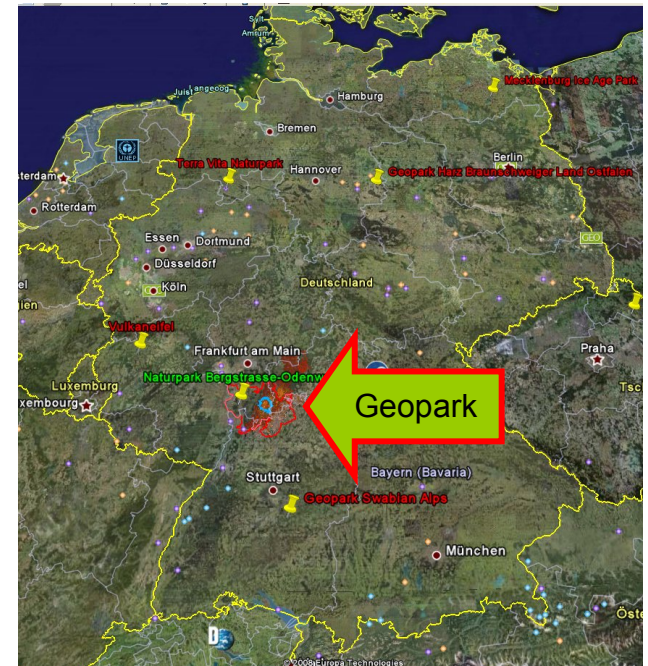
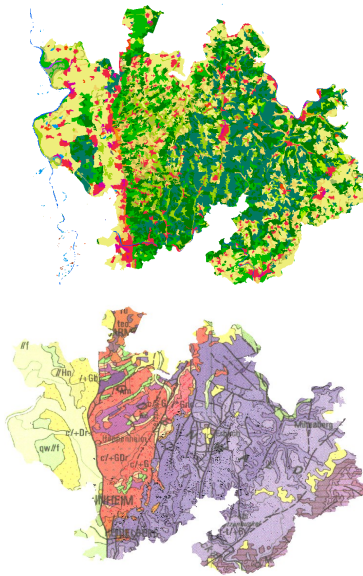


# Geo-Naturpark Bergstraße-Odenwald

The park covers the Odenwald-range and consists of counties from three german states (Bavaria, Hesse, Baden-Württemberg)

Triple certified: first Nature Park in Germany to achieve Geopark-Status on the national (2002), european (2002) and global level (UNESCO 2004).

It promotes “protection by usage”, preservation of heritage and knowledge and the empowering of local enterprises under the crosscutting objective of sustainable regional development.



# Rich heritage of geologic features and human history - Examples



**Frankenstein-Castle [Mary Shelley]**

**Messel Pit:** European Equivalent to La Brea Tar Pits.

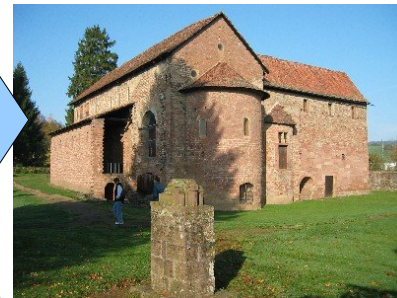
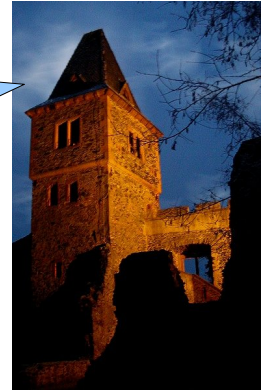
**Roman limes:** The „eastern great wall“ of the Roman Empire traversing the Geopark (UNESCO world heritage).

**Roman quarries** in the first centuries AD. Half-finished pillars and blocks are still visible in situ.

**Einhard, Scribe of Charlemaine** founded oldest surviving settlement by 800AD.

**Second oldest mining area** in Germany.

**A tramp abroad [Mark Twain]** Frankfurt - Heidelberg





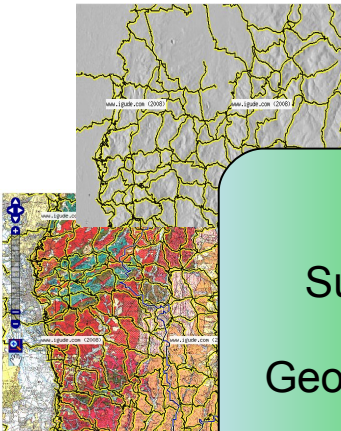
# Vertical and Horizontal Communication Aspects

Learn about the environment and geosciences !

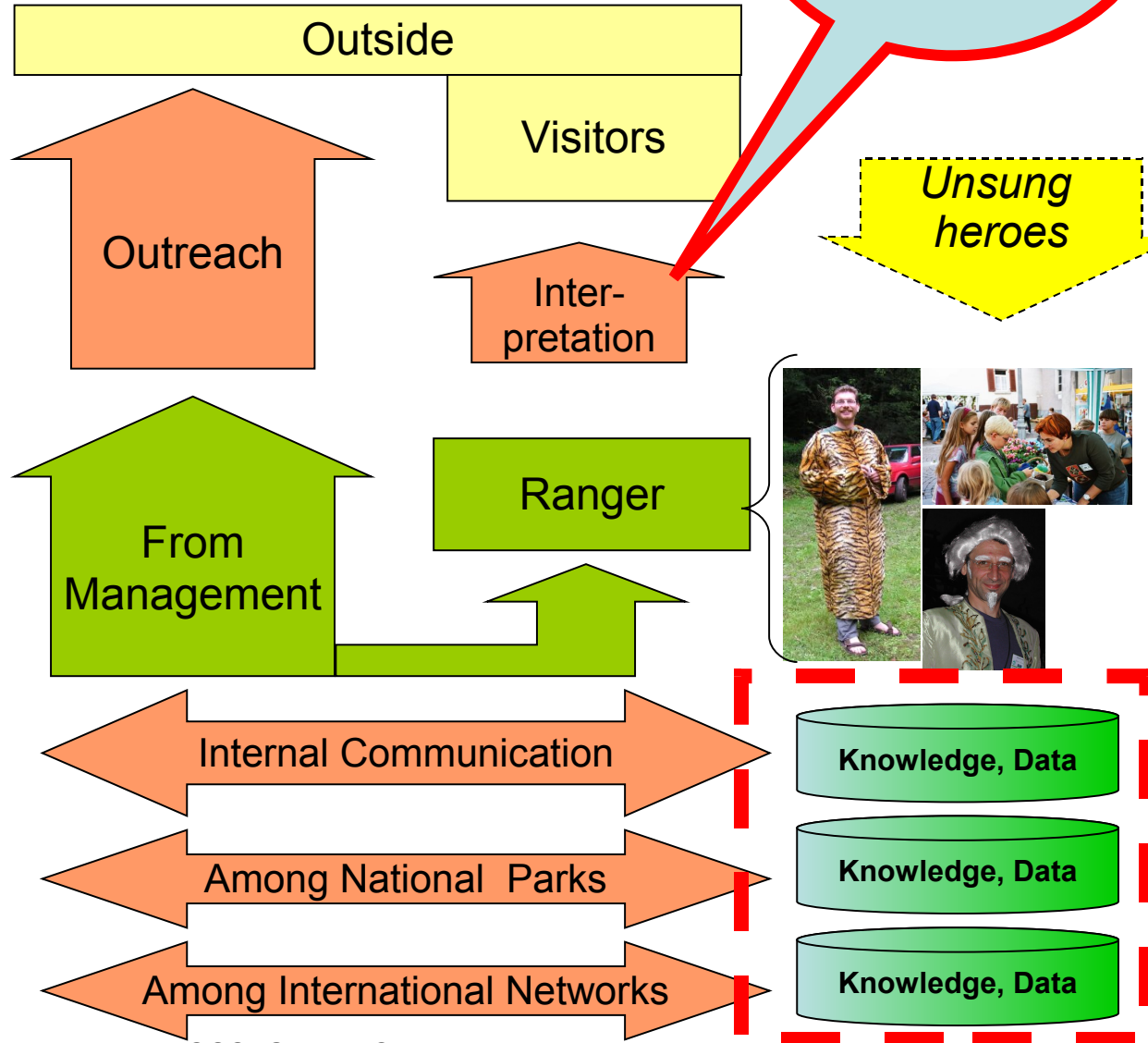
Web Portal



Webmapping (Demonstrator)



Support by  
FOSS  
Geoinformatics



# Geological Mapping Challenge

Current state-level geological GDI  
provide 100 years old information  
(„1:200,000 WMS“).

„Interstate“ ontology-matching will be  
developed by gov't agencies (BGR).

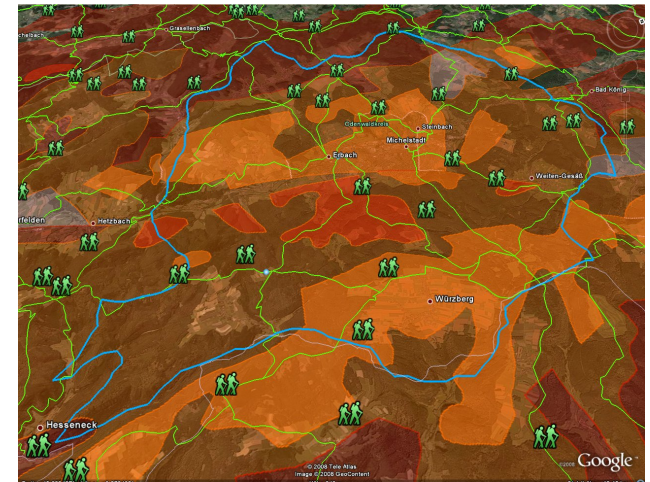
Geological Surveys are sympathetic  
(more unsung heroes), but official  
mapping campaigns unlikely

Local expertise by geopark staff exists:

Knowledge Commons ?

Knowledge preservation ?

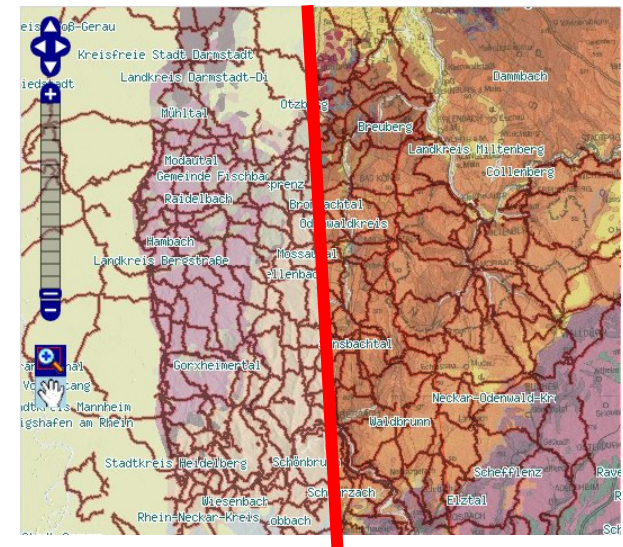
OpenstreetMaps-alike scientific mapping ?



GoogleEarth:

Hiking Trails, Trailheads/Parking, official geology,  
Einhard's Realm (800AD)

**Pretty, High Tech, Suggestive but Outdated**



OpenLayers Frontend: national geology,  
„bavarian“ geology, hiking trails



Educa  
tion

Fun

# „Telling stories“

Both the „fun“ and „education“ aspects rely on ***effective contemporary communication*** to get the message across.

Google Earth / GPS are commodities !

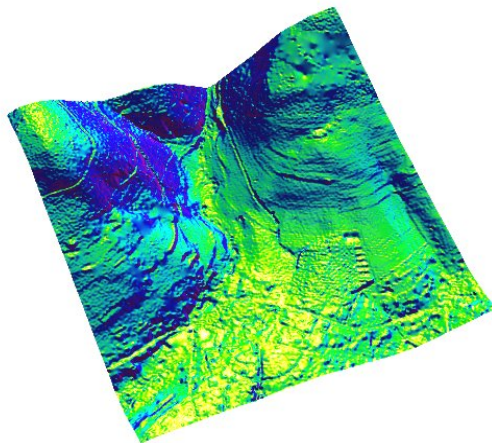
**Low-tech „Hands-on toys“ are front-ends to geoinformatics data products !**



Hands-on toys



Geocaching



Remote Sensing



„Ground truthing“

# DIY: Location-based Information Services



Apply tags here

**Michelstadt Townhall, erected 1484,  
what's its story ?**

Semapedia.org

Get a custom semapedia Moleskine!

**Hyperlink your world!**

Semapedia hat das Ziel, die virtuelle Welt der Wikipedia mit der realen Welt zu verknüpfen Erfahre mehr...

Semapedia.org



Michelstadt

English

Semapedia.org



Michelstadt

German

Semapedia.org



ミッテルシュタット街道

Japanese

Thematic linking of locations to  
online content [->ontologies] via smartphones.  
Applied Geoinformatics / Location Based Information



# Reality Check

## Nature- and Geoparks

***Funding is always limited***

Hardware/Software *constraints*

Embryonic local GDI

Frontier Communication Challenge

No broadband @ Geopark

Limited cellphone coverage !

Knowledge Management

Pre-digital, orphaned, data

Preserve current knowledge

Preserve know-how

GI  
Expertise



OSGeo

Open Source Tools

OGC Services

Best Practices

FOSS GIS helps to bridge the gap

# A worldwide challenge

United States System of National Parks  
**about 90% of the parks still lack a geoscientist in residence.**  
(Higgins 2007)

This indicates the huge potential for contributions from the field of FOSS geoinformatics.

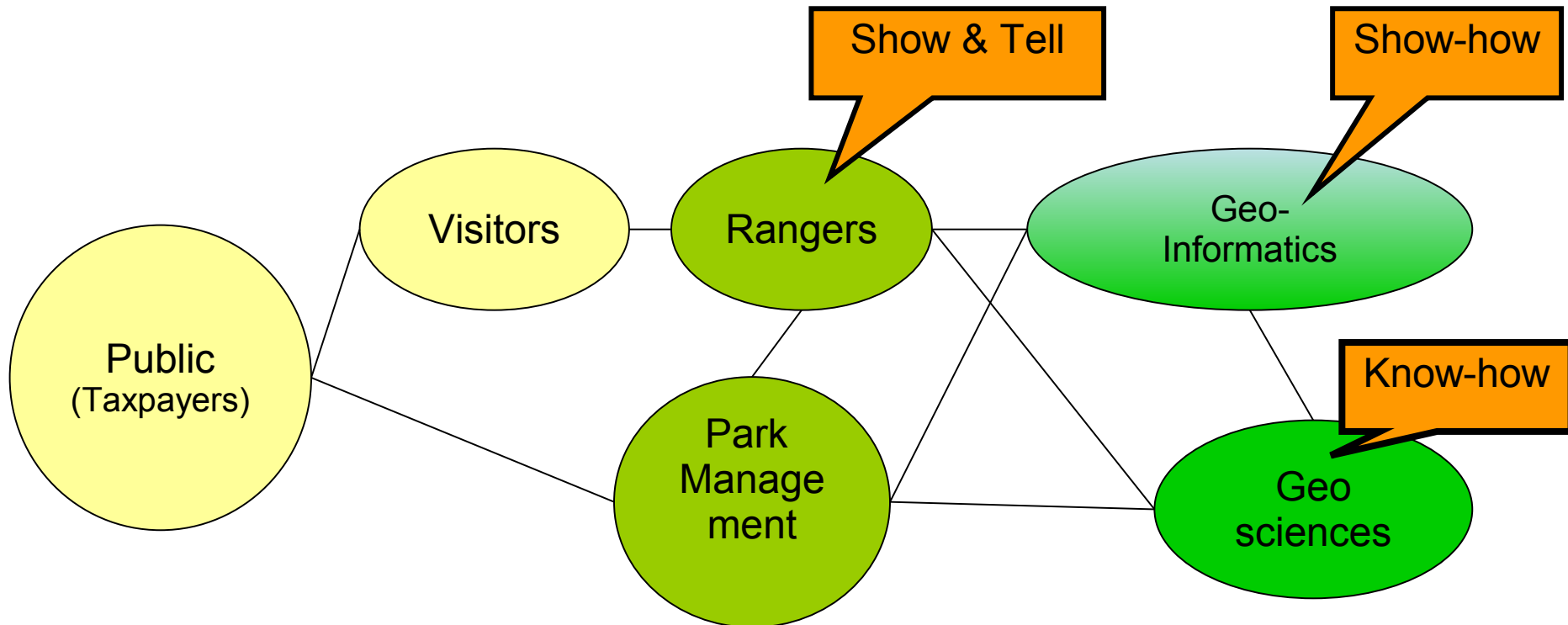
**Scarcity of Ressources as a motivation  
for worldwide collaboration (Nature Park Networks)**



# GI-based Communication

„Localised, applied, Geoscience“

„Showcasing GI / good data to taxpayers“



# Conclusions

For the FOSS GIS communities, worldwide Nature Park Communities are a frontend to reach out to the general public to create awareness for geoinformatics (GI) issues.

GI provides both internal and external value adding to support Nature Parks in their mission while enhancing the experiences for the visitors (taxpayers).

Free and Open Source Software (FOSS) GI-Tools can be used to overcome existing constraints.

FOSS GIS tools make an impact in several levels:



**Domain  
Knowledge**



**„Fun“**



ミラクルンゲン街

**Education**



# Thank you for your attention

Peter Löwe,  
[ploewe@gfz-potsdam.de](mailto:ploewe@gfz-potsdam.de)

