Development of an European version of the GI S&T BoK
Content

1. Background

   - Brief overview of the GIS&T BoK
   
   - The European project GI-N2K and US initiatives

2. Requirements/functionalities of the VirLaBoK

3. General architecture of the VirLaBoK

4. Concluding remarks
Background - The GI S&T BoK

What is it?
- It is an inventory of the GI S&T domain developed by University Consortium for Geographic Information Science (UCGIS)
- Published by the Association of American Geographers (AAG) in 2006.
- Presented through a collection of textual listing.

Structure
- It follows a three tier hierarchical structure.

![Diagram showing the three tier hierarchical structure of the GI S&T BoK]

- Knowledge Area: 10
- Unit: 73
- Topic: 350
- Learning Objective: Many
Background - The GI S&T BoK

GI S&T BoK and the European GI Community
- It was first introduced through EUGISES 2006
- The European GI community discussed the usage of it in quite a number of workshops and conferences afterwards

Strength
- Bridge the gap between the GI S&T higher education community and the practitioners
- Valuable tool for curriculum design, job profile creation etc.
- Agree upon categorisation and terminology
- .....
**Background - The GI S&T BoK**

**Weakness**
- It can not be complete and therefore need regular revisions
- BoK as a pure text is not very comfortable to use
- ....

**Demand of the EU GI community**
Machine readable implementation of the BoK
- Storage of the BoK content in a common database
- Need for updated content based on changed GI landscape
- Development of software tools to support various user activities
Background - The GIN-2K project

Geographic Information: Need to Know
Goal: To make the geospatial workforce training system more demand-driven and flexible by producing an advanced European-authentic and dynamic GI S&T BoK.

Project partners
31 partners from 25 European countries

Associate partners
20 associate partners from 12 European countries and the US

Funded by
EU Erasmus Lifelong Learning Program
Virtual Lab for the BoK (VirLaBoK)

The BoK as a **dynamic environment** rather than a book
- BoK should and will be regularly updated
- BoK will be shaped in a participatory way
- Should be useful and usable by different user communities for different usages

Components of VirLaBoK

Wiki/Visual WiKi

Source: Ahearn et al, 2013

- Curriculum design tool
- Job profile creation tool
US development: The project “GIS&T BoK2”
- Funded by National Science Foundation (NSF)

Restructured: concept hierarchy to concept network

Concept hierarchy in BoK1: Only parent-child relationship

Concept network in BoK2: Ensures similarity and possession of multiple parents

Source: Ahearn et al, 2013
US development: GIS&T BoK2

- UCGIS is still the proprietor of the content (BoKOnto) of BoK2
- The GIS&T BoK2 project mainly focuses on the conversion to a dynamic, ontological environment.

**Conceptual model of BoK2**

**Semantic relationship**

Source: Ahearn et al, 2013
Virtual Lab for the BoK (VirLaBoK)

- VirLaBoK will use the BoKOnto of BoK2
- A separate instance will be created for VirLaBoK
- The semantic wiki of BoK2 will also be adopted in VirLaBoK

Components of VirLaBoK

- Curriculum design tool
- Job profile creation tool
Virtual Lab for the BoK (VirLaBoK)

The BoK WiKi - General process of updating the BoK

USER
Propose and Discuss

GIS&T BoK WiKi

EDITOR

Propose
and Discuss

ADMINISTRATOR
Manage

Propose
and Discuss

Visible in WiKi

Proposal Repository

Visible in WiKi

Retrieved

 Store Approved

BoK Repository

Store Approved

Visible in WiKi

Retrieved

Approved

Propose
and Discuss

Approved
VirLaBoK – BoK WiKi Requirements

Requirements for the Administrator

User Administration
- Delete a user (editor and user)
- Reset (editor and user) password

Right Management
- Add editor rights to user
- Revoke editor rights
- Assign editor to knowledge area
VirLaBoK – BoK WiKi Requirements

Requirements for the Editors

User Administration
- Request for withdrawing editor rights

BoK Operation
- Get overview of last changes by user
- Approve a concept instance
- Approve a concept attribute
- Delete a concept
- Delete a concept attribute
VirLaBoK – BoK WiKi Requirements

Requirements for the User

User Administration
- Register as user
- Reset password
- Remove account
- Request editor right

BoK Operation
- Suggest a new concept instance
- Suggest a new concept attribute
VirLaBoK – BoK WiKi Requirements

Requirements for the User

BoK Operation - continued

- Add/delete (own) comment to a concept instance
- Add/delete (own) comment on any attribute of existing concept
- Suggest/delete (own sug.) concept attribute for existing concept
- Add/delete (own) vote (1-5 star) on any attribute of concepts

BoK browsing and visualization

- Text based, ontology based browsing
- Graphical, ontology based browsing
VirLaBoK – BoK WiKi Requirements

Requirements for the User

BoK browsing and visualization - continued

- Keyword based search for a concept
- Visualize concept instance with attributes
- Visualize relationships per concept
- Visualize concepts alphabetically
- Visualize by relationship type (e.g. all pre-requisites)
Virtual Lab for the BoK (VirLaBoK)

Wiki/Visual WiKi

Data Repository

BoK itself

Metadata

Defined courses

Job profiles

Software Tools

- Curriculum design tool
- Job profile creation tool
VirLaBoK – Curriculum Design Tool Requirements

Our understanding of a curriculum
VirLaBoK – Curriculum Design Tool Requirements

Bok browsing and visualization
- Same as BoK wiki

Curriculum creation requirements
- Instantiate new curriculum based on template
- Drag and drop concepts to the lecture part and exercise baskets
- Assignment of additional properties of a lecture part/exercise
- Grouping lecture parts and exercises to module units
- Grouping module units to modules
- Graphically visualize an already designed curriculum (Module)
VirLaBoK – Curriculum Design Tool Requirements

Curriculum management

- Store a curriculum in the server space
- Store a curriculum in local space
- Delete/modify a (own) curriculum from the server space
- Key word based searching, retrieving and visualization of other user’s curriculum
- Copy existing curriculum (create new instance)
- Curriculum printing
Virtual Lab for the BoK (VirLaBoK)

Wiki/Visual WiKi

Data Repository

- BoK itself
- Defined courses
- Metadata
- Job profiles

Software Tools

- Curriculum design tool
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VirLaBoK – Job Profile Tool Requirements

Bok browsing and visualization
- Same as BoK wiki

Job profile creation requirements
- Instantiate new job profile based on pre-defined template
- Field filling - free form
- Field filling, possibility to select BoK concept based on browsing requirements

Job profile management
- Store a job profile in the server/local space
- Copy existing job profile (create new instance)
VirLaBoK – Job Profile Tool Requirements

Job profile management - continued

- Modify/delete a (own) job profile
- Keyword based search for job profiles (job title)
- Advance search for job profiles (based on any field, including ontology concepts)
- Job profile printing
General architecture of the VirLaBoK

Managed by US BoK2 community

European instance of BoK 2 repository

Proposal Repository

BoK Repository

Managed by EU GIN-2K community

Web service

Curriculum Design Tool

Job Profile Tool

European instance of the WiKi

European instance of the WiKI

Curriculum Repository

Job profile Repository

VirlaBoK own repository
Conclusion

1. The co-operation process between US BoK2 and EU VirLaBoK is still on going
2. Major portion of EU VirLaBoK will be dependent on the US BoK2
3. The functionalities of the different components of VirLaBoK are still not completely fixed
4. We are still collecting expert opinions on the functionalities
5. We would appreciate any suggestion form audience
Thanks a lot for your attention!!

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