DESIGN AND IMPLEMENTATION OF A DISTANCE EDUCATION COURSE ON OPEN SOURCE WEB MAPPING

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located in Enschede (The Netherlands)

some key figures:

- since 1950
- >15,000 alumni from 175 countries
- ± 400 students/year
- average duration of stay: 14 months
- average age: 34 years
- ± 190 fte scientific & supporting staff
Education at ITC

Regular courses:

- Graduate School (PhD – 3-4 years)
- Master of Science (MSc - 18 months)
- Professional Master (PM - 12 months)
- Diploma (9 months)

In 6 programmes:

- geoinformatics
- land administration
- urban planning and management
- natural resources management
- water resources and environmental management
- earth resources and environmental geosciences

+ also special courses: Distance Education / tailor-made / on-site
Webmapping and SDI_{light}

As part of many of our courses, we provide the participants with knowledge and tools to set up webmapping applications according to our SDI_{light} principles:

➔ the technology of Spatial Data Infrastructures (SDI), applied in simple and cost–effective ways

– to provide students with a platform for low–cost, yet powerful ways of sharing data and maps

– using Open Standards, Open Data & Open Source Software
Modular webmapping exercises

modular in content:

– setting up a WebMapping site
– using OpenStreetMap data
– adding your own data using the desktop QGIS application
– serving data as Web Map and Web Feature Services
  • using Geoserver and/or Mapserver
– finally bringing it all together on interactive “slippy map” websites using the OpenLayers API
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Modular webmapping exercises

for workshops and courses in many guises
different lengths:
– from two hour informal “walk-in” workshops
– to three week modules as part of our MSc curriculum
different modes:
– in face-to-face teaching
– using Distance Learning technology
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half day OSGEOLive workshop
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Modular webmapping exercises
modular in delivery:
– starting with LaTeX sources
\section{Testing your Map File}
\label{sec:test}

To test if your `\`config.map\` file is actually working, we will now request the WMS services from the MapServer application, through OGC GetCapabilities and GetMap requests. To display the mapserver settings using the GetCapabilities request:

\begin{task}
Type the following URL in a web browser:\
\begin{verbatim}$<CGIPATH>?map=<NETPATH>$/config.map\&SERVICE=WMS\&VERSION=1.1.1\&REQUEST=GetCapabilities$
\end{verbatim}

Note again the \begin{verbatim}$<CGIPATH>$\end{verbatim} and \begin{verbatim}$<NETPATH>$\end{verbatim} parts that have to be substituted with the proper paths for your installation!
In this URL, you REQUEST the service operation you want to perform, in this case the OGC WMS standard request GetCapabilities. The VERSION parameter specifies the protocol version number. This request will return an XML document.

Look at the XML reply of MapServer. Depending on your web browser setup, this XML might already be automatically displayed inside your browser after the GetCapabilities request. In other setups, the browser might not recognise the XML file as readable output, and there might have been a prompt to open or save the file. In that case, save the file and open it in a Text Editor or an XML editor.
\end{task}
Modular webmapping exercises

modular in delivery:
– starting with LaTeX sources
delivered in many formats:
– for use in print (PDF)
3 Testing your Map File

To test if your “config.map” file is actually working, we will now request the WMS services from the MapServer application, through OGC GetCapabilities and GetMap requests. To display the mapservor settings using the GetCapabilities request:

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**Task 2:** Type the following URL in a web browser:

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Modular webmapping exercises

modular in delivery:
– starting with LaTeX sources

delivered in many formats:
– for use in print (PDF)
– as self-paced learning sheets (for Distance Education)
Check capabilities of the WMS

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To display an actual map using the GetMap request:
EuroSDR EduServ 10/11 course

Distance Education: Open Standards and Open Source Webmapping
Design of the DE-OSM course

a short (40 hour) webmapping course

self-instructive course for *distance education*

- *distance education*: accessed in your own time, at your own pace in your own location
- *self-instructive*: content of course acts as a teacher
  - material in any lesson must explain itself
  - has to provide everything necessary to gather the knowledge required

using the ICARE system:
*Introduce, Connect, Apply, Reflect, Extend*
Design of the DE-OSM course

Learning Object (= Lesson):

- “a self-contained, reusable entity with a clear learning aim that contains at least three internal changing and editable components: content, instructional activities (learning activities), and context elements”  
  
  Chiappe et.al. (2007)

- Lesson components:  
  
  ICARE system:
  
  - introduction ——— Introduce
  - lectures ——— Connect
  - demonstrations ——— Apply
  - exercises ——— Reflect
  - self-tests ——— Extend
  - a reader or book —— Extend
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## COURSE CONTENT OVERVIEW

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<td>Use of open source web mapping applications</td>
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<td>LESSON 3:</td>
<td>Publishing open source geo-webservices</td>
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<td>LESSON 4:</td>
<td>Developing web map applications</td>
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<td>Study load (approx.)</td>
<td>40 hours</td>
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Open Standards and Open Source Webmapping

Lesson 1
- Lecture
- Exercise-a
- Exercise-b
- Exercise-a_PRINT
- Exercise-b_PRINT

Lesson 2
- Lecture
- Exercise
- Exercise_PRINT

Lesson 3
- Lecture
- MapServer Setup
- Exercise data
- Exercise-a
- Exercise-b
- Exercise-c
- Exercise-a_PRINT
- Exercise-b_PRINT
- Exercise-c_PRINT

Lesson 4
- Lecture
- Exercise
- Exercise_PRINT

Study Guide

ITC
Department of Geo-Information Processing
Lectures specially made for DE

Translating face-to-face lectures to DE:
- just the lecture slides: too limited
- slides + recorded lecture (audio and/or video): not self-paced, no interaction with students => boring
- specially made video: lots of work, not self-paced => still boring: 
  \textit{lecturer} \neq \textit{actor}!
1969: start of ARPAnet

The Internet has its roots in the very modest first start of computer networking called ARPAnet. This was a network created for the Advanced Research Projects Agency and funded by the U.S. Department of Defense. Its purpose was twofold: first to create the possibility of scientists residing in different locations to work together and share information and secondly, to spread vital information over a range of computers in different locations in order to diminish its vulnerability to nuclear attacks. In 1969, four large ‘mainframe’ computers were part of this first network.

As a nice gesture to the history of web cartography, this configuration was mapped at the time.
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  \textit{lecturer} \neq \textit{actor} !

\textit{lecturer} \approx \textit{writer} :

- specially made slides/reader
  lots of work, self-paced, structured, not (so) boring
COURSE SET-UP

– “hands-on”: practice oriented, with supporting theory to better understand what you're doing (and why)
– using ITC services and your own
– using Open Source (QGIS, MapServer, OpenLayers)
– using Open Standards services (WMS)
– using Open Data (OpenStreetMap)

– online teaching materials (through EduServ's Moodle)
– supported by e-forum (peers & staff) & email support
  • 'live' during course period
  • 'off-line' at other times
Evaluation

- first run 2012 was rather successful:
  ▶ lots of work to create
  ▶ not much work to run
  ▶ positive student feedback
- next run in April 2013 [http://www.eurosdr.net/eduserv11](http://www.eurosdr.net/eduserv11)
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  - programming principles introduction, using Python
  - self-paced, ±160 hour study load
  - starting January 2013
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