Open Source - Basis for synergies in the ICT education and research

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EIAO

The EIAO project is co-funded by the European Commission, under the IST contract 2003-004526-STREP

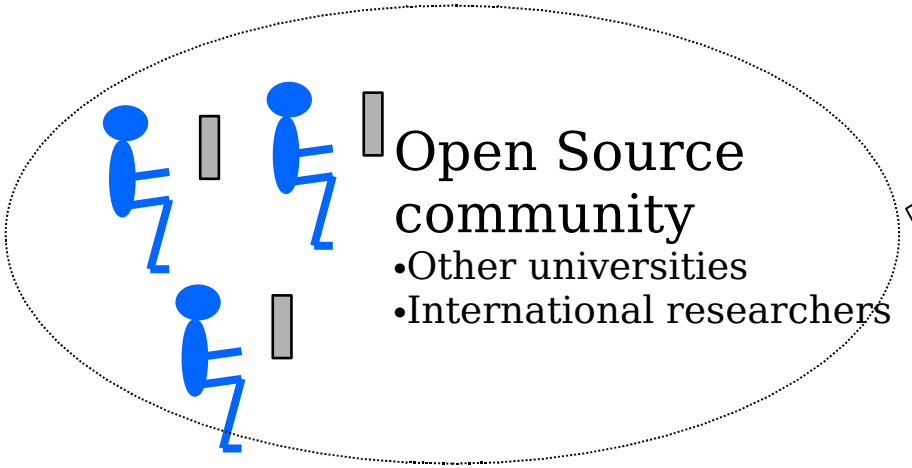
Main research and teaching

- Universal Design – Web assessments
  - Open Standards and Open Source
- Reaseach - EIAO
  - European Internet Accessibility Observatory
    10 partners, 3, years, 2.6 MEuro
- Teaching
  - Organisation and Collaboration
  - Webmining
  - Database theory
- Software Policy for the future
  Board of technology, Ministy of Modernisation, GUADEC

Agenda

- Research-based-education - Concepts
- European Internet Accessibility Observatory
  - Webmining Course
  - Peer review method
- Practical challenges and actions for introducing FOSS in ICT education

Synergies – Open Source in research-based-education



joint publications

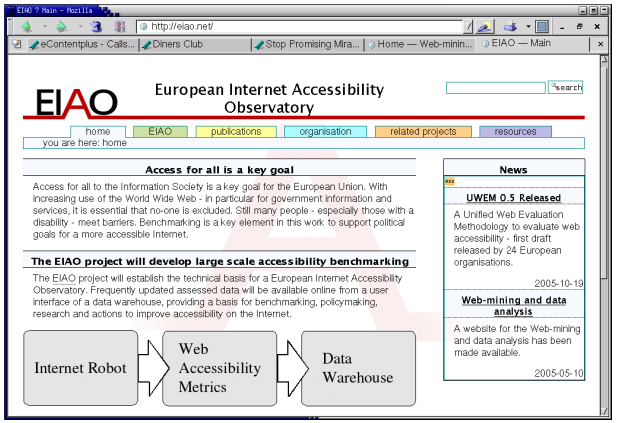
Platform for developing and sharing learning materials

Sharing
code base
development skills
results and efforts

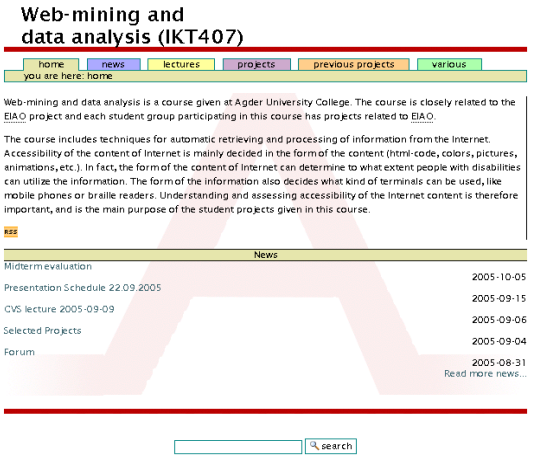
Org & Collab

Software Defined Radio

EIAO



Webmining



Research organisation
Goals and methods
Current challenges -->
<-- surveys, experiments
and test implementations
Relevant training

Open Source in Research based education

- Tools
  Trackers, Office tools, Version server
- Methods
  peer review, testing, release management
- Collaboration
  Distributed collaboration, community
- Open Source projects
  HarvestMan, Skolelinux

European Internet Accessibility Observatory

- Build the technical machinery for a possible Internet Accessibility Observatory
- Participate in the development of a Unified Web Accessibility Methodology (WAB Cluster)
- Facilitate use of measurements for Policy making
- Develop new methods to assess web accessibility

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Accessibility for whom?

Source: http://www.hi.se/

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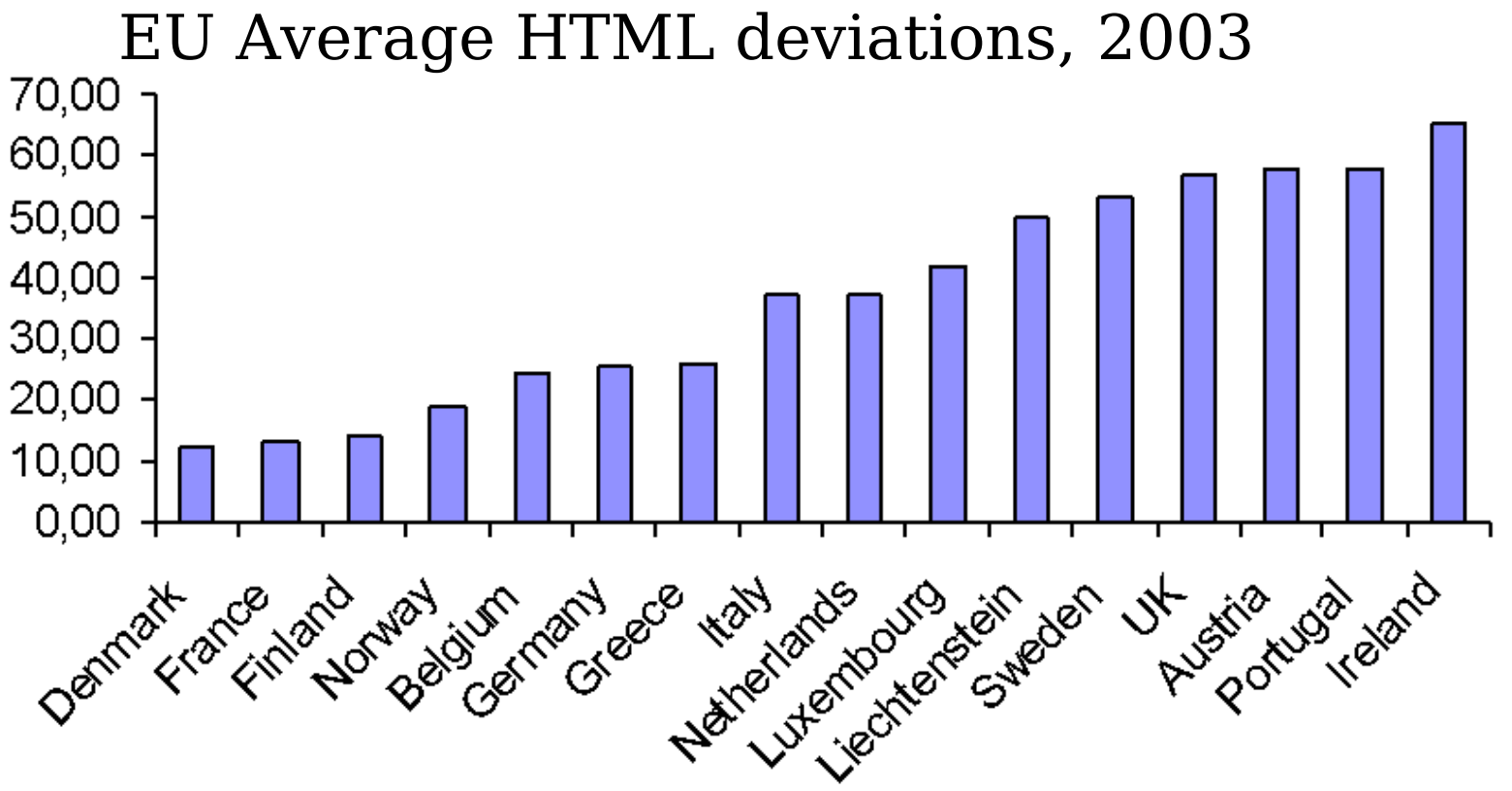
Open Standards encourage independent applications

Example data

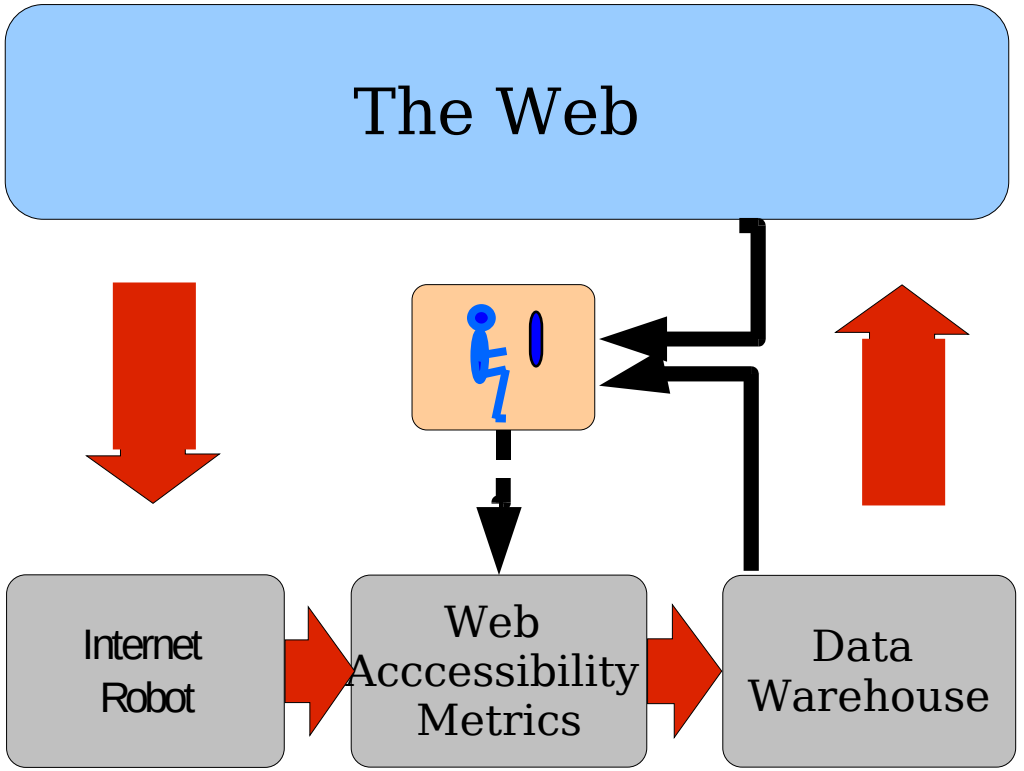


All member states of the EU and Norway have agreed to use W3C/WAI for public content

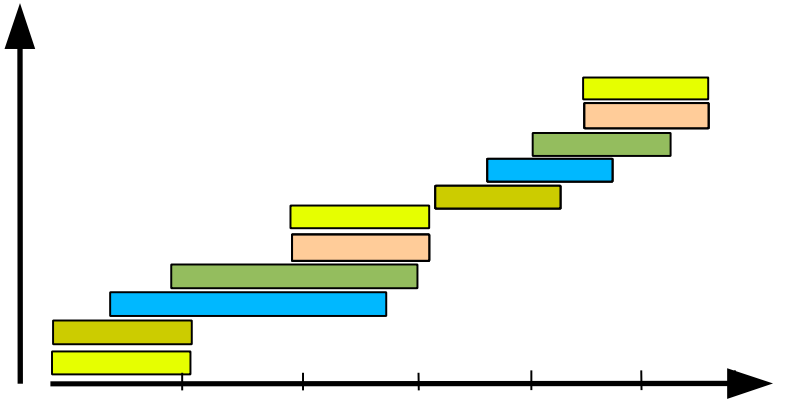
EIAO Design

- Open Source
  - Transparent measurement methods
  - Inclusive development process
  - Simple distribution
- Evaluation of 10.000 web sites
  - About 100 pages per site
  - Prototype for automatic monthly evaluation
- Design for scalability in a distributed system

Peer review:
for web assessment calibration



Software improvement cycle

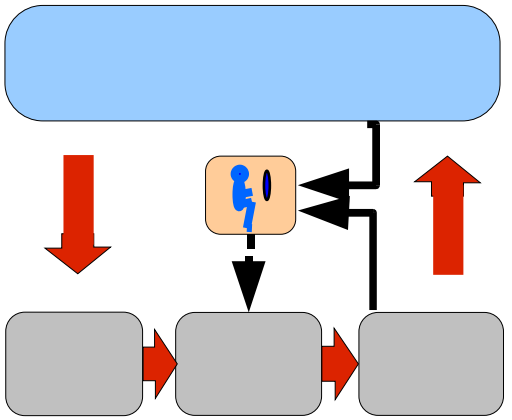


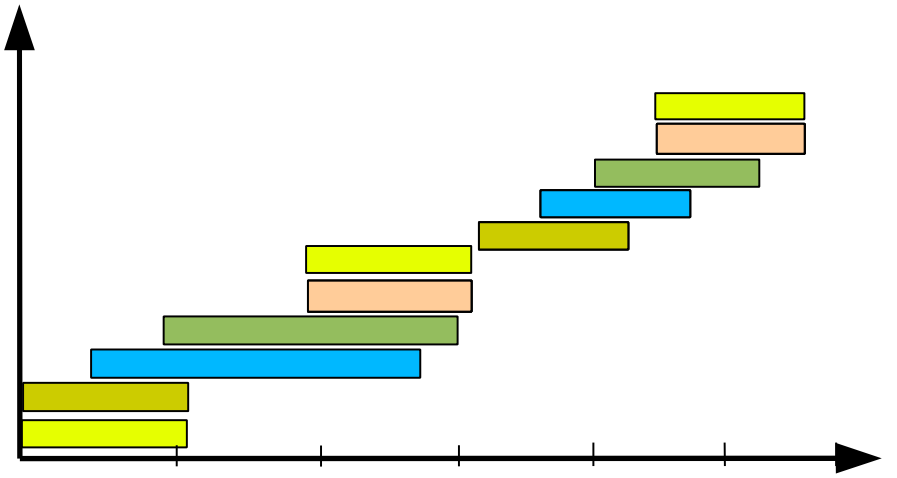
Webmining and Data Analysis

- Open Standards like HTML, XML, and HTTP
- Algorithms for pattern classification, clustering, and statistical inference
- Quality of Service (Accessibility)
- Student projects
  - Regular meetings with mentor team
  - Implementing in Python
  - Extensions to HarvestMan
- Collaboration with Open Source community

http://www.eiao.net/webminin
g

Peer review - method both for developing and teaching





A course cycle

- Peer reviewing, continuously and in half semester, by students of:
  - Report templates
  - Course content, lectures, workload etc
  - Students projects topics
- Peer reviewing continuously and 3 times in semester by professors of:
  - Student presentations
  - Student feedback on course
  - Projects and course

Platform for sharing and developing teaching materials

- Some existing platforms
  - Lektion.se, 'Ressursverkstedet' in utdanning.no and laeremidler.dk.
  - Lectures and exercises to download
  - Currently little support for collaborative development
- Master project at AUC summer 2006
  - Explore ways to support collaboration
  - Open content and accessibility in mind
  - Focus on how to deploy platform in practice

Practical challenges and actions for introducing FOSS in ICT education

Barriers for introducing Open Source for teaching ICT

- Skills and support on proprietary solutions
- Open Source and Open Standards confusion
- Available curricula on proprietary software
- Funding model may count software patents
- Wide use of proprietary document formats
- Web portal for teaching is posing barriers
- University purchase agreements result in proprietary software with new hardware

Benefits of Open Source for research-based-teaching ICT

- Students and researchers can
  - Explore how software really works
  - Extend functionality and share results
- Co-operation with Open source projects
  - Improve project continuity and software reuse
  - Learn to integrate heterogenous systems
  - Experience international co-operation
- Code access allows others to verify experiments

Open Source as basis for co-operation

- Create a research group with
  - Policy for projects (techp.org)
  - Guidelines and templates for teaching
  - Project handbook
- Organise FOSS workshops and conferences connect students and the FOSS community
- Co-operate with Open Source leaders
  Bruce Perens, Anand B. Pillai
- Co-operate with FOSS companies
  Nettkroken, Bitfrost, Plone solutions

Actions proposed to increase synergies

- Adjust courses to build on research projects
- Establish an Open Source understanding
- Define student projects as modules into existing Open Source code bases
- Improve students documentation skills
- Provide report template to
  - Structure student project work
  - Increase consistency of documentation and evaluation

Ways to migrate to Open Source

- Extend or migrate course materials
- Raise external funding for FOSS research
- Contribute to national Software policy
- Build 'adventure factor' into projects
  - International forefront research
  - Projects with universities in developing
- Create student projects for co-operation
  - Skolelinux in developing countries
  - Platform to develop and share

Tools to support research-based-education

- Similar needs like Open Source development
- Current activities on effective use of
  - Code version server
  - Trackers to support the development both of code and of teaching content
  - Collaborative annotation (WIKI etc.)
  - Tools for distributed collaboration
  - Office templates

Conclusions

- Continuous development cycle
  - Continuous development cycle for methods, tools and templates
  - Include external Open Source projects
- Research-based-education approach
  - Students learn methods
  - Synergy with Open Source projects teaching and scientific research
  - Fully transparent methods and results

For more information

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