University of West Bohemia

Faculty of Applied Sciences

Department of Computer Science and Engineering

Diploma Thesis

Presentation of research group

Pilsen, 2013

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Acknowledgement

Statement

I hereby declare that this diploma thesis is completely my own work and that I used only the cited sources.

Pilsen, ...

.....

David Gorschenek

Abstract

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1 Introduction

2 IBM DeveloperWorks

IBM DeveloperWorks is the premier web-based technical resource and professional network for IT practicioners, students and university faculty worldwide. It has language support in English, Chinese, Japanese, Russian, Korean, Vietnamese, Brazilian Portuguese and Spanish. It is also the place where developers and IT professionals can congregate to connect, share, and collaborate.

With the developerWorks community, it is possible to join the network of millions of IT professionals all around the world. Then it is possible to debate and collaborate through developerWorks groups.

IBM DeveloperWorks tools:

Activities - It is a set of tools, which helps to keep track of all contributions, shared resources and deadlines.

Blogs - It allows members to share their thoughts on particular topics and converse with each other.

Bookmarks - User can use this tool to save, organize and share bookmarks of web pages. The bookmarks are stored in a central repository.

Files - User can upload any type of file and share it with others (specified people, everyone or no one).

Forums - User can put his problem in front of group of people. There are plenty of forums that user can choose.

Groups - Information about groups are mentioned below.

Profiles - User can describe himself (his role, skills and interests). User can then find another user with same interests.

Wikis - It allows users to share comprehensive information. User can make wiki public or private.

You can see the main page of the user's profile (see Figure 1).

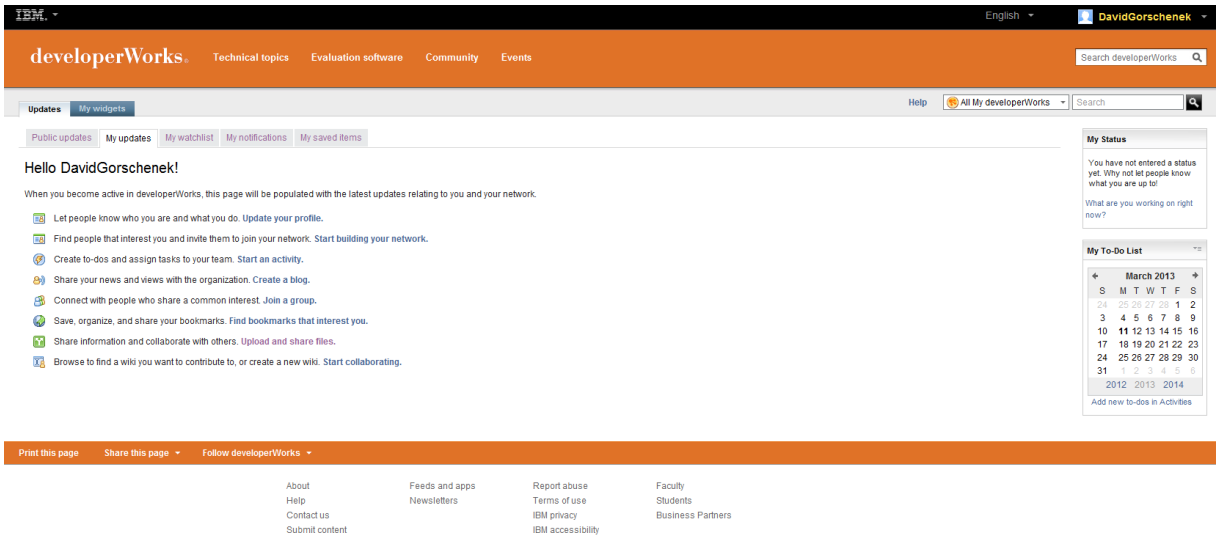


Figure 1: Main page of the user's profile

2.1 IBM DeveloperWorks groups

On the left side you can see main menu, which contains:

Overview - general information about your group and windows with all information mentioned below (MessageBoard, Wiki, ...).

MessageBoard - a table with short messages, where you can join discussion to the given theme after clicking on the theme.

Members - it contains a list of members of the group.

Wiki - it is an internal wiki with comprehensive information.

Activities - There are stored all activites of the group.

Bookmarks - it is a list of references to other websites.

Blog - it is an internal blog.

Files - there are stored all files of the group.

Feeds - there is option to insert information from other websites. Users of the group then do not have to leave websites of the group.

You can choose one of the three possibilities during the process of the creation of the group:

Allows public access, and anyone can join - it is public group, which anyone can join and becomes a member of the group.

Allows public access, but users must request to join - it is group, which is opened to public for browsing but users have to send request to become a member of the group. All users, who are not members of the group, can download files in the Files menu item. But they can not comment messages in MessageBoard so there is no chance to spam. Wiki and Blog can be read only too. Only members of the group can insert comments.

Does not allow public access - it is a group, which is closed to public.

Options of the group:

Customize - a member can add menu items on the left side of the window (Blog, Wiki, ...).

Mail group - an option to send email to all members of the group.

Leave group - an option to leave the group.

Invite others to join - it immediately redirects the member of the group to the site where the member can write email to somebody who the member want to invite to become a member of the group.

Group actions (edit, delete) - edit redirects the member of the group to the same site as during the process of the creation of the group (see above). Delete deletes the group.

Integration with social networks is done by containing link named *Share this page (facebook, LinkedIn, Twitter)* in the bottom part of each site of the group. After clicking on the link the log in to the social network is requested and consequently the link to the active site of the group is sent to the account on the social network.

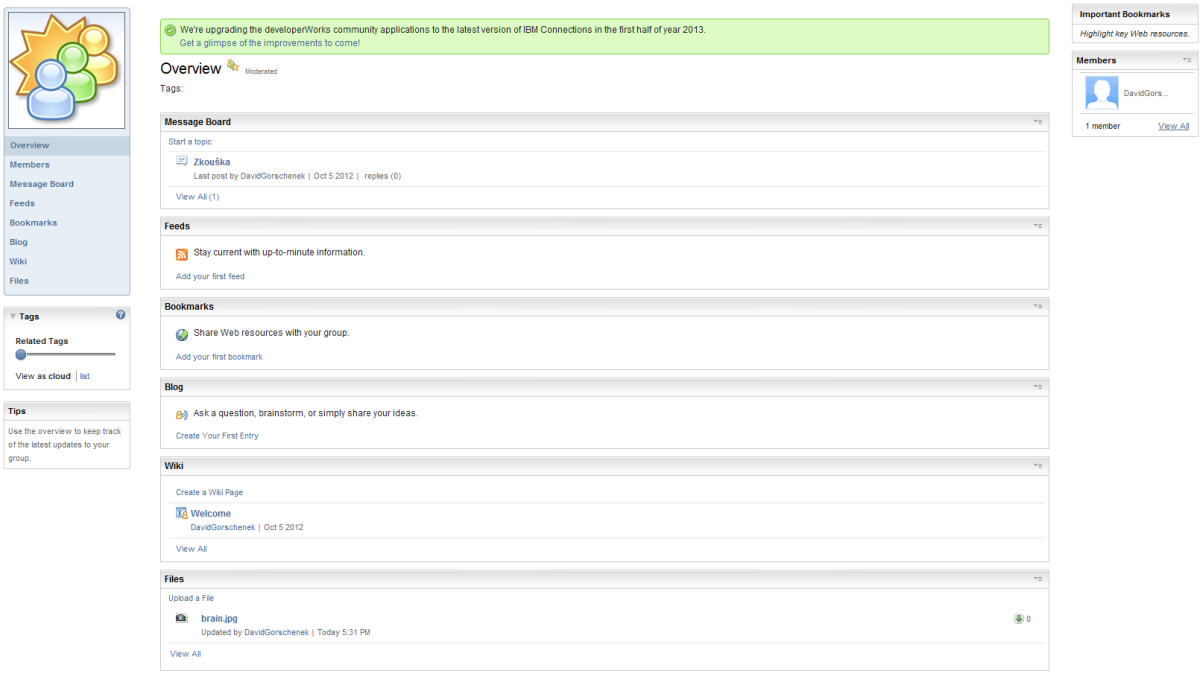


Figure 2: Main window of the group

3 INCF

INCF (International Neuroinformatics Coordinating Facility) was established in 2005 to develop neuroinformatics infrastructure and to improve data sharing. INCF has 16 member countries (Belgium, Czech republic, Finland, France, Germany, India, Italy, Japan, Netherlands, Norway, Poland, Republic of Korea, Sweden, Switzerland, United Kingdom and USA).

3.1 INCF Software Center

INCF Software Center is a resource for software users and developers in the neuroscience community.

Software Center is accessed to public, it means that everybody can browse through the accessible software tools without registration. But after creation of account user can insert comments, apply for membership in selected development team and download software tools.

Software tool is accessed to public by inserting to INCF Software Center. It is possible to upload documentation and executable files too. Then it is possible to create wiki page and to establish a development team.

The process of software's registration:

Required Fields:

- name of software
- brief description of software
- purpose of software
- prerequirements of software - hardware, programmes needed for using of the software

- license - it is possible to determine how others can use the software by choosing appropriate license
- maturity of software - it is possible to choose from experimental, intermediate and stable
- who can view and dowload items in your project when you create them - it is possible to choose from access for anyone who visits the site, access for just a select group and access for logged in users only

Optional Fields:

- topics of software - it is possible to pick from given options
- keywords of software
- link to external website for the software tool
- ease of use - it is possible to choose from given options (anyone can use it, intermediate, steep learning curve)

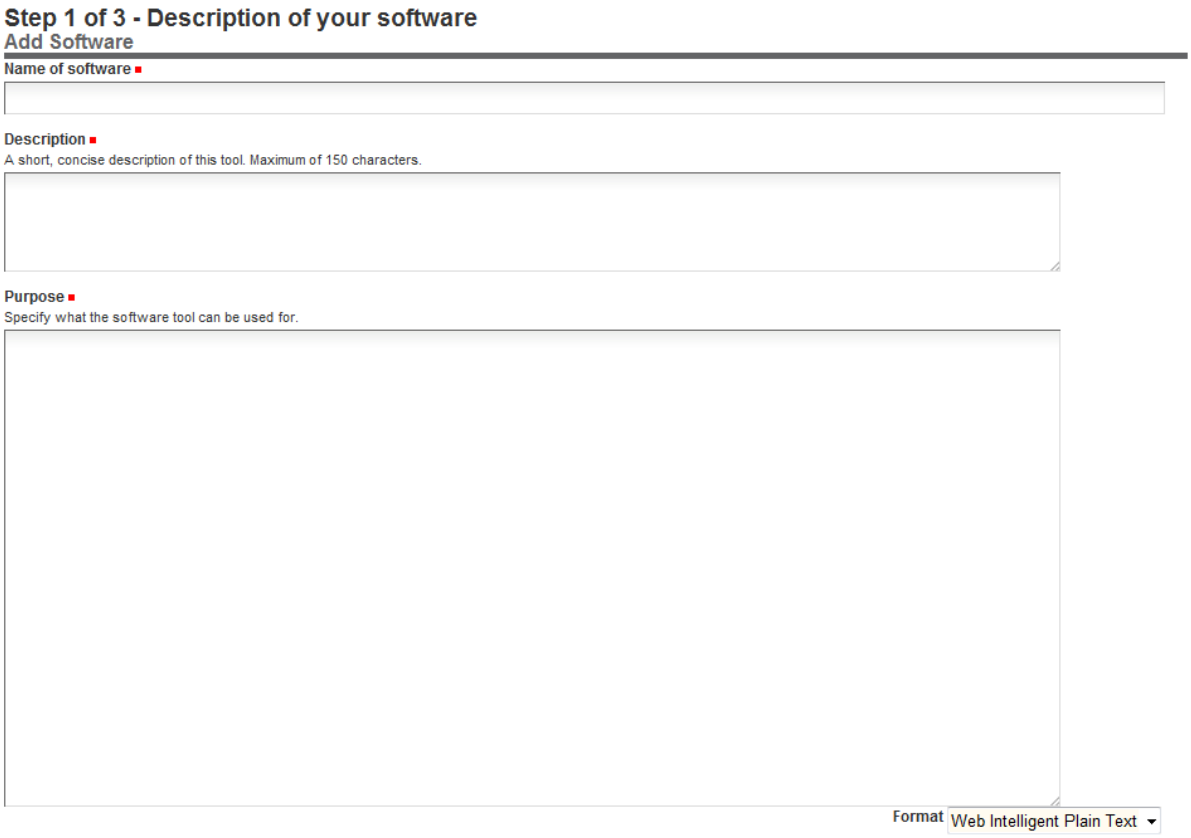


Figure 3: Process of registering new software on INCF (1/2)

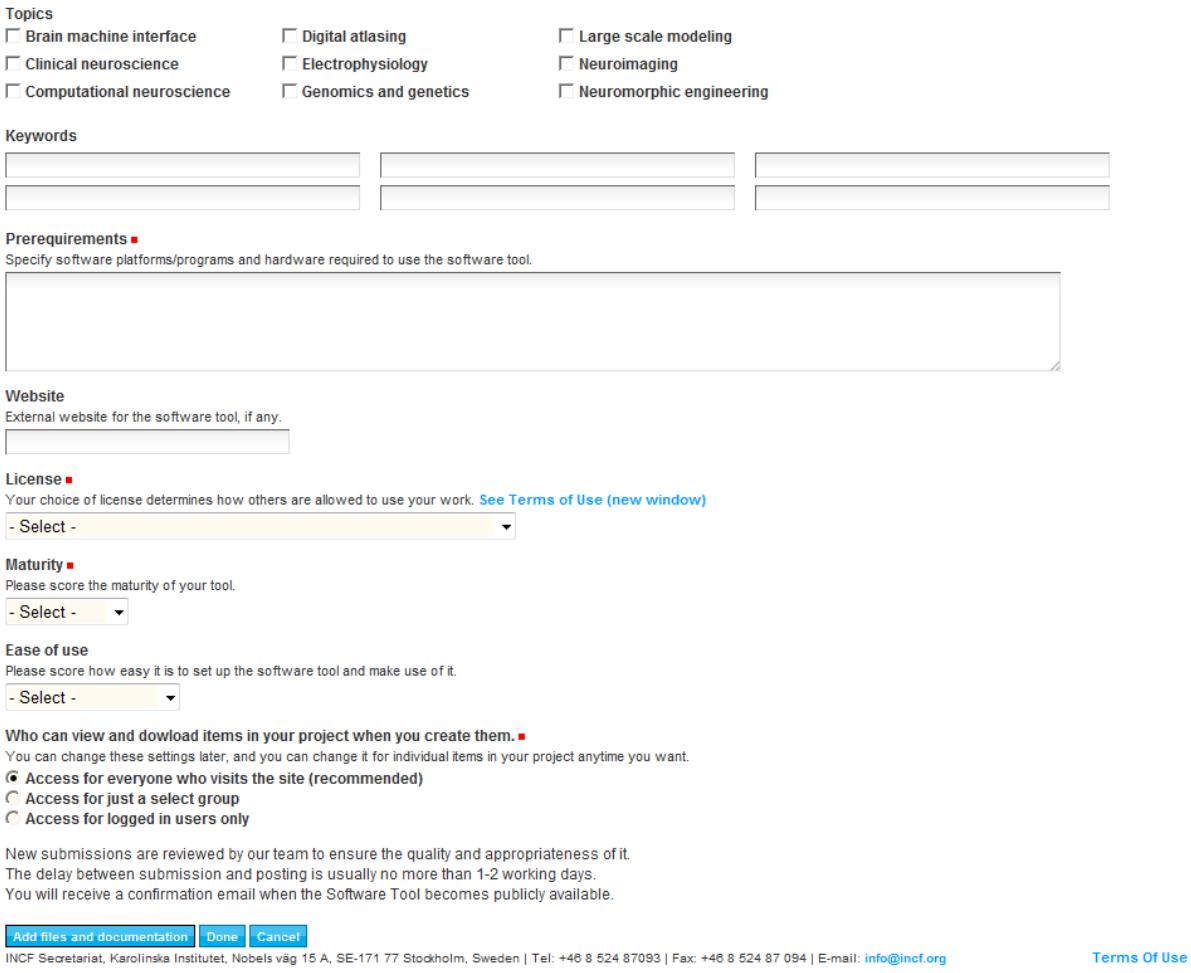


Figure 4: Process of registering new software on INCF (2/2)

3.2 INCF Dataspace

The purpose of INCF Dataspace is to allow collaboration among researchers by sharing data, files, images, sound records, movies, models and simulations.

INCF Dataspace provides a single interface for globally distributed neuroinformatics datasets.

Features:

- Access diverse data repositories from around the world through a single resource. Model is aimed for organisations to put together their repositories into Dataspace. Then Dataspace provides only one namespace, which puts together all these repositories.
- Browse and access data using different user interfaces (Web, File Navigator, Command line).
- Upload and download data from all over the world.
- Set and get arbitrary metadata for files and folders.
- Search metadata.
- Manage large data.
- Keep directories synchronized.
- Create temporary public or private links to share data.

Use cases:

- Access diverse data repositories from around the world.
- Make any local data visible globally or only visible to collaborators.
- Enable data from collaborators to be mirrored and archived.

Usage of Dataspace:

Every user of INCF Dataspace has his own "home collection" called /incf/home/username but he has no storage size available by default. If user wants some storage size, he can attach his own repository to home directory according to these instructions.

Structure of the INCF Dataspace:

File - It is possible to refresh the content, to create a new folder, to rename existing folder or to delete existing folder.

View - It is possible to browse the selected directory or file to see info and tags, then it is possible to see access permissions, metadata, gallery, audit or tickets.

Upload and Download - It is possible to upload one file, bulk upload or to add items to cart.

Tools - It is possible to create a public link here.

Apply an action to all selected items - It is possible to add all selected items to the cart or to delete all selected items.

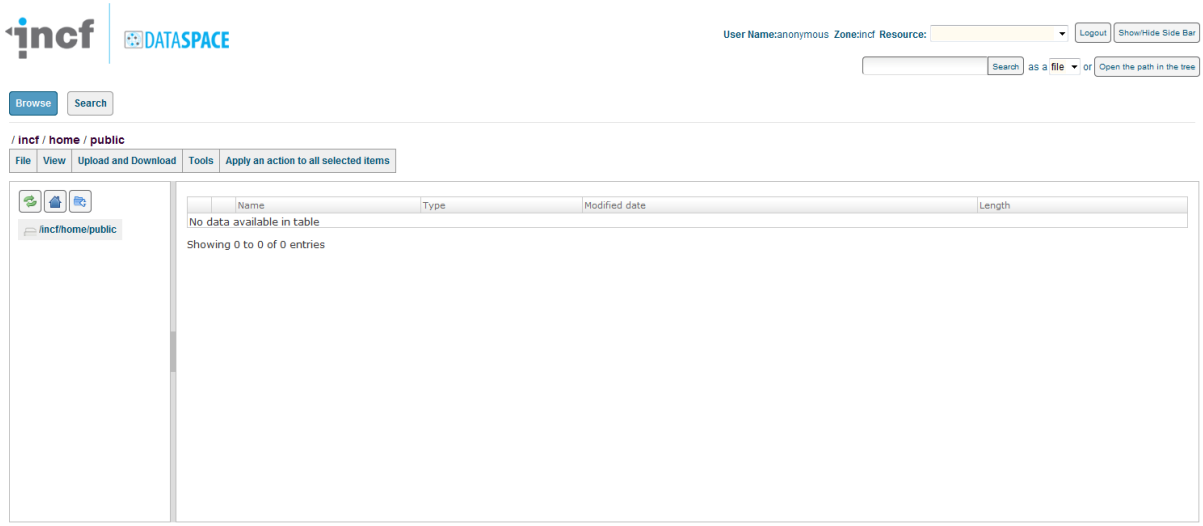


Figure 5: Homepage of user's INCF Dataspace

4 EEG base

EEG base is a system for storing and managing EEG/ERP resources (data, metadata and tools).

Features:

- Management of EEG/ERP data and metadata
- Management of EEG/ERP experimental scenarios
- Management of tested subject's data
- Storage of signal processing tools

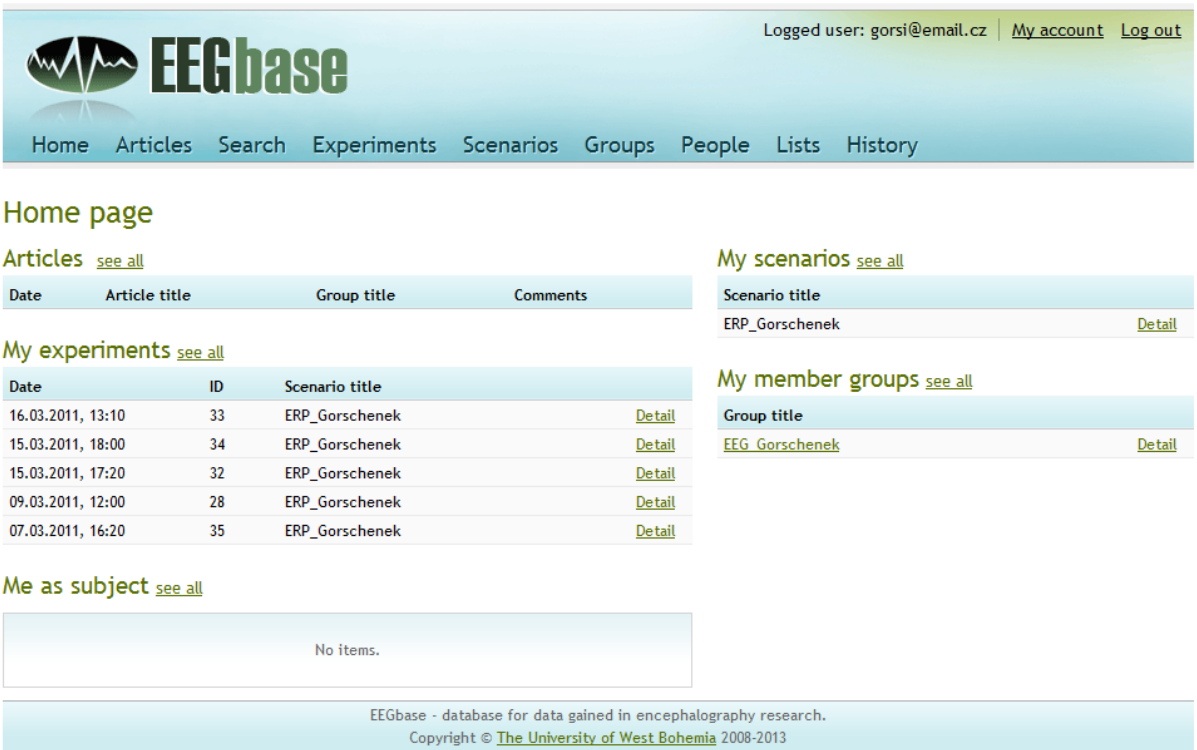


Figure 6: EEG base's home page

5 EEG/ERP Portal

The structure of EEG/ERP Portal's websites on INCF:

Overview - It contains required fields as purpose, license, prerequirements, ease of use and maturity.

Downloads & Documentation - This menu item is shown to logged user only (it is optional during registration of software).

Screenshots - There are uploaded screenshots of EEG/ERP Portal websites.

Team - There is a list of members of the EEG/ERP Portal group.

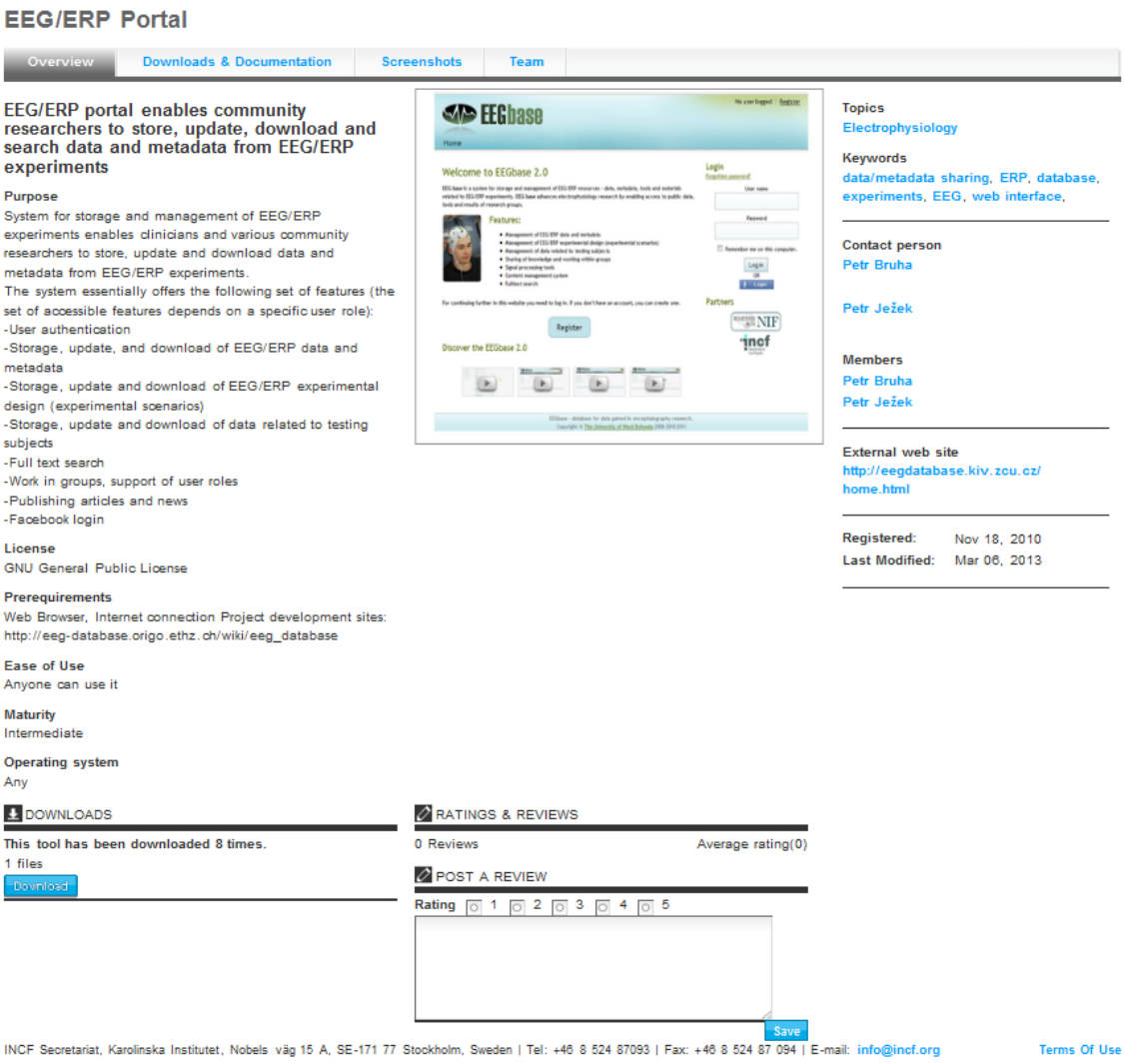


Figure 7: EEG/ERP Portal's website on INCF

The structure of other teams' websites(Waxholm Space Atlas, Pandora) on INCF, which have more information here against the EEG/ERP Portal team:

Code Repository - There is a link to the subversion repository of the project.

Bug Tracker - It is possible to browse here the open issues of the team.

Wiki - It is internal wiki of the team. It contains tutorials, FAQs, News.

Figure 8: Pandora's website on INCF

6 KIV Research software

Required fields during register of new software are - Short name of the software, type of license and year of creation of software. Lately you can add description of the software.

At the sites of the softwares are:

- Short header of the software (author, date of the last edit, year of creation of software, size of the software, number of downloads, short name of the software)
- Then description of the software follows short header.

Comparison with INCF Software Center:

- INCF also contains Overview of the software with its description.
- Then you can add members of this software and logged people can send request for joining this team.
- INCF contains own bookmark for documents and files, which can be downloaded so it is not all at the front page (at the front page is just description of the software).
- In INCF you can also upload some screenshots of your software into proper bookmark called screenshots.
- In INCF you can also set up wiki with some information, tutorials or news. Then you can put a link into the code repository.
- INCF seems to me as a better option because of more possibilities with registred software and because of the fact, that at the sites of INCF are groups involved in neuroscience and it is also international node of these groups.

7 KIV Research groups

The research in the Informatics department at the Faculty of Applied sciences is oriented to following fields:

- Applied Computer Geometry (Centre of Computer Graphics and Visualization)
- Distributed Systems, Simulations, and Software Engineering
- Embedded Systems, Specialized Hardware, and Computer Networks
- Text-Mining Research Group
- Intelligent Communication Systems (Laboratory of Intelligent Communication Sysems)
- Medical Applications (Medical Information System)
- Human-Computer Visual Interaction (Centre of Computer Graphics and Visualization)

Screenshots.

Structures of their websites:

1. **Centre of Computer Graphics and Visualization**

Home - There is a profile of the group, names of the projects' leaders, their adresses, contacts. Then there is some information about history of the group, their awards and students' awards.

People - There is a list of people with their photos. After clicking on particular person more information about him is shown (email, number of office, phone number) including his publications, projects, in which is involved, his field of research and projects, in which is member.

Grants - There is a list of grants, which is divided into ones that are in progress and ones that are finished.

Research - It is divided into the active research areas and inactive research areas. After clicking on particular research area, description of the research, members and projects related to this research are shown.

Publications - There is a list of publications, which is divided according to published years.

Education - There is a list of subjects. After clicking on individual subject, the website of the subject is shown.

Seminars - There is a list of seminars and conferences.

Vacancies - There are some job offers to be involved in grant solving.

Links - It is divided into links to the websites of the University of West Bohemia and the Faculty of Applied Sciences and into links to the projects of the group.

Informal - There is a list of informal meetings of the group (beerparty).

Files - The files are divided into folders.

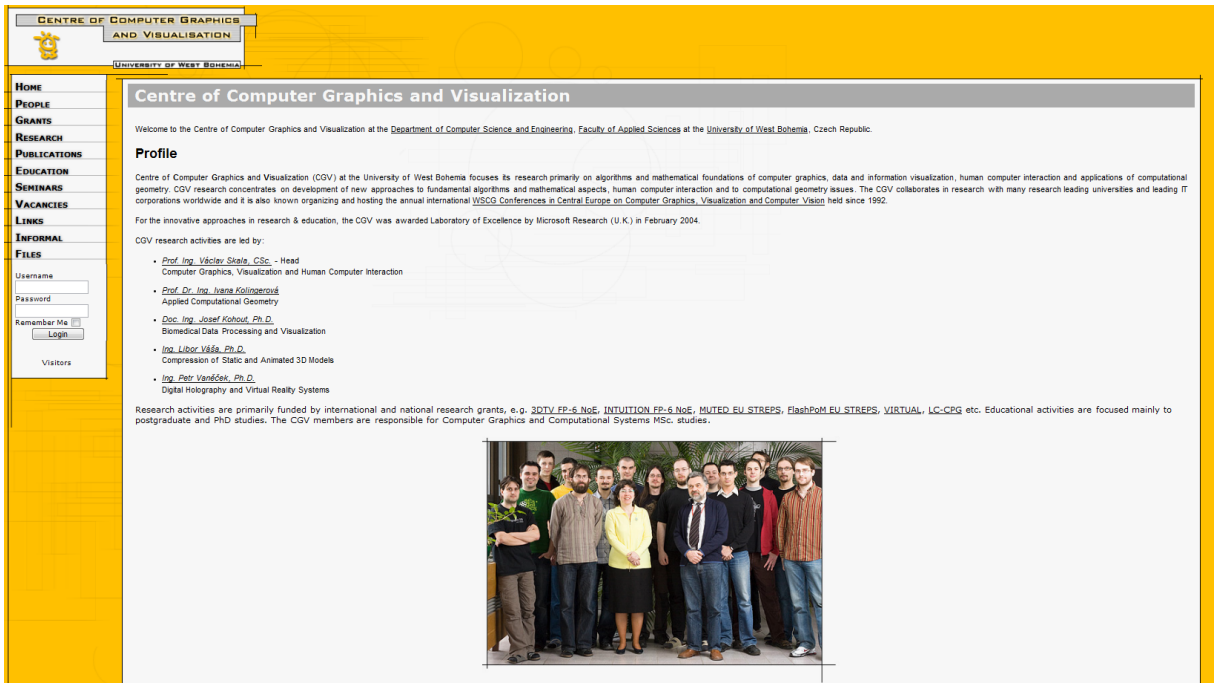


Figure 9: Homepage of Centre of Computer Graphics and Visualization

2.**Text-Mining Research Group**

Home - There is only a picture of the group.

Then there are *About us, People, Research, Publications, Download, Links* with the content as the research group above. *Links* contains links to some dictionaries on-line and to other research groups. *Publications* are divided according to published years too.

Figure 10: Homepage of Text-Mining Research Group

3. **Laboratory of Intelligent Communication Systems**

Main page - There is some information about the group and there are some links to other menu items.

Staff members - There is only a list of people without links.

Research - There is a list of projects and conferences.

Downloads - There is a list of files to download.

Publications - The publications are divided according to the people, who published the publication.

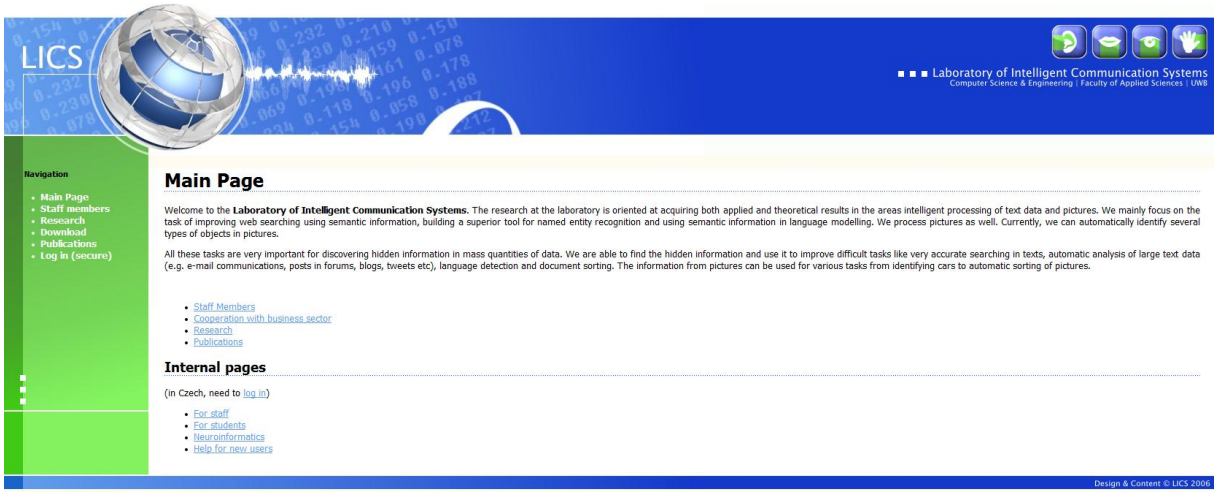


Figure 11: Homepage of Laboratory of Intelligent Communication Systems

4.**Medical Information System**

Home - There is some information about the group and contacts to the group.

Publications - There are publications divided according to the published year.

Partners - There is a list of collaborators.

Members - There is a list of people without photos. After clicking on the particular person, his publications are shown.

Then there are *Research* and *Projects* tabs with corresponding information.

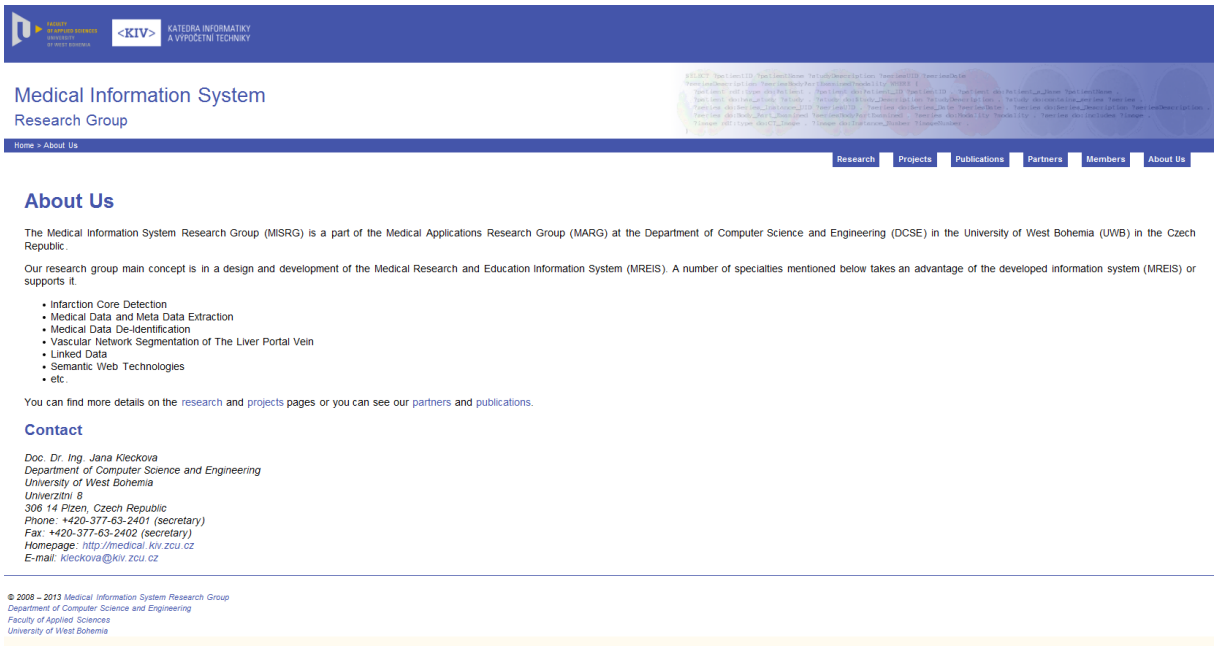


Figure 12: Homepage of Medical Information System

5.**Embedded Systems, Specialized Hardware and Computer Networks**

Home - There is some general information about the group.

People - There is only a list of people without links.

Publications - There is a list of publications divided according to the published years.

Functional Samples - There are some pdf files to download (e.g. communication module HART).

Contact - There is an adress and email of the docent Vavřička.

Research - There is some general information about the field of research.

Links - There is nothing in this menu item.

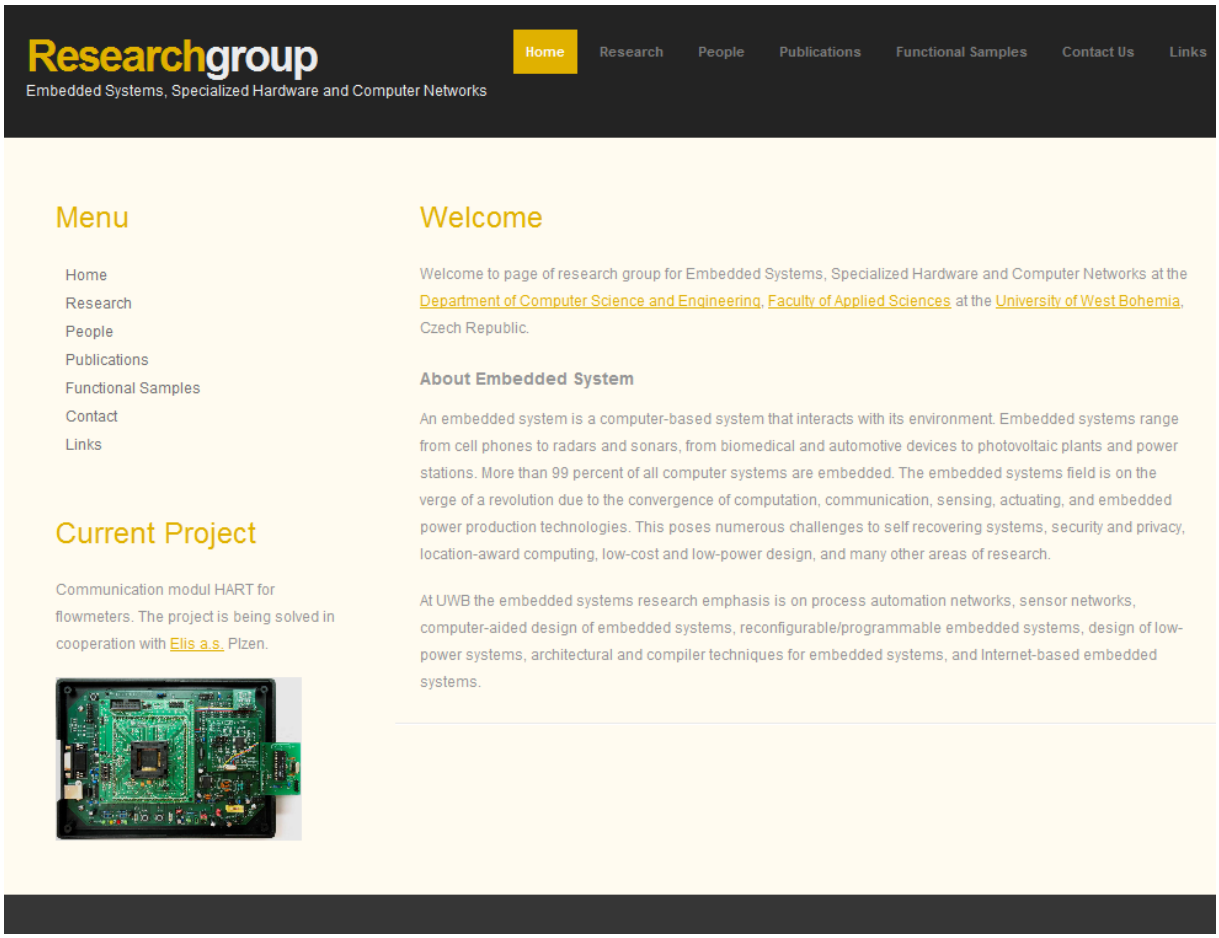


Figure 13: Homepage of Embedded Systems, Specialized Hardware and Computer Networks

6. **Distributed Systems, Simulations, Software Engineering**

Home:

- *Members*

Seminars

Research:

- *Projects*

- *Publications*

- *Components* - There is some information about work on the software components.

Resources:

- *Conferences*

- *Links*

- *Software* - There is possibility to download software from their research.

Internal:

- *Acknowledgements*

- *DSS Library* - There is a list of books and conferences related to the research of the group.

- *Emails archive* - There is a link called *direct access*, which redirects to the empty website.

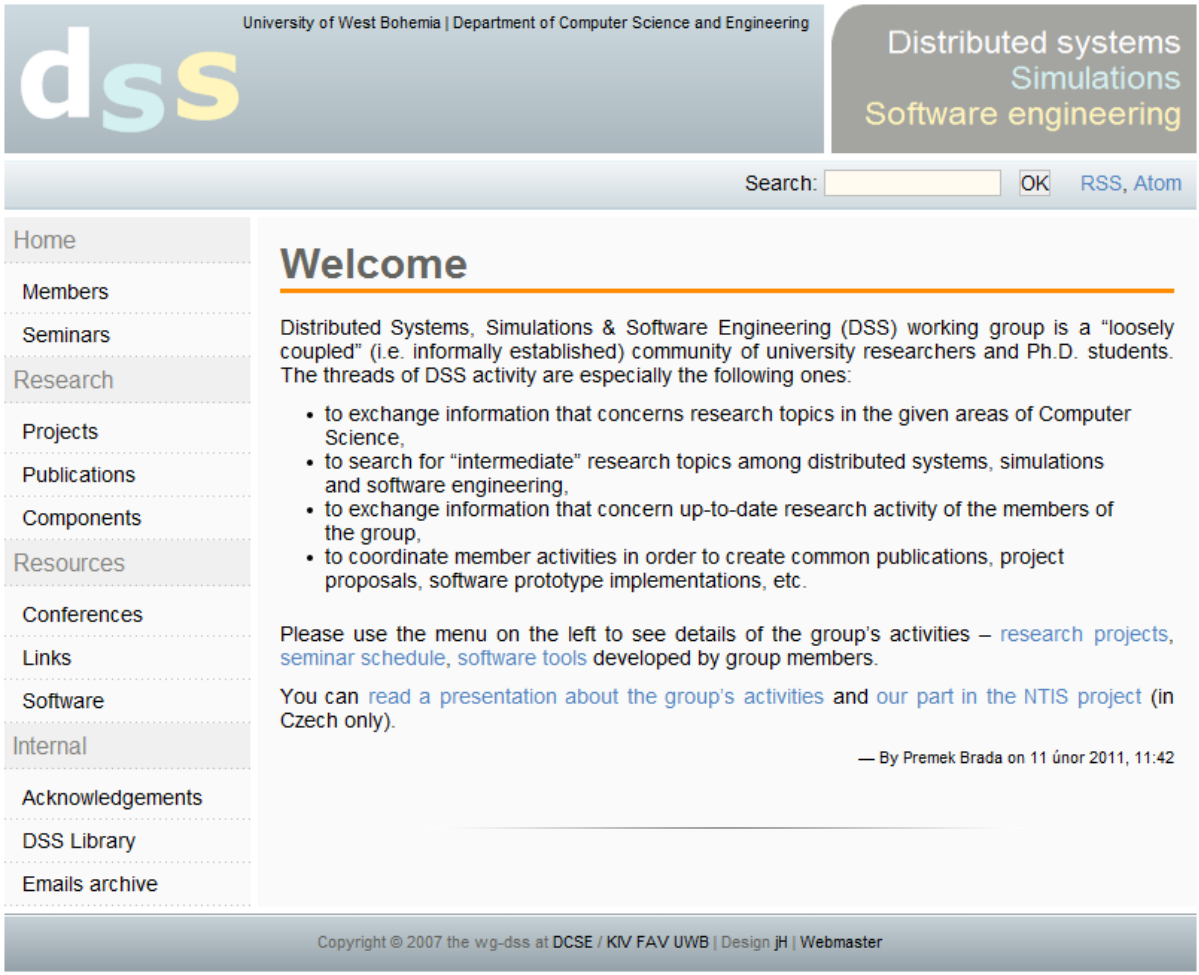


Figure 14: Homepage of Distributed Systems, Simulations, Software Engineering

7. **INCF and presentation websites of the neuro groups**

Most of the countries have similar structure of their presentation websites.

France has only *Overview* on their websites with some brief information about their group.

The Dutch have a *calendar with actions*, which can be connected with google calendar, which could be very helpful with organisation of the upcoming events (see Figure 15). Their presentation websites are designed in the content management software Drupal.

Most countries in INCF have links to their presentation websites, which are mostly called neuroinf or neuroinformatics (e.g. *neuroinformatics.be, neuroinformatics.nl, neuroinformatics.org.uk, neuroinf.fr, neuroinf.it, neuroinf.jp, neuroinf.pl, g-node.org*).

Neuroinformatics or *neuroinf* seems to be the most suitable name of the domain for the Czech neuroinformatics node. The presentation websites of the Czech neuroinformatics node will be designed using the content management software WordPress.

Figure 15: Presentation websites of The Dutch node

8 Presentation of the research at foreign universities

First something about universities and why I chose those universities. Screenshots.

Structures of their websites:

1**. Oxford University**

About - Introduction of the group and their collaborators.

News - Information about upcoming events.

People - There is a list of people, their photos and for each person his function in the group. After clicking on the person is shown more information about particular person (his field of research, his results and plans in his research).

Research - There is a summary of the themes of research. After clicking on particular theme of research is shown more information about the concrete theme of research.

There are links to posts with upcoming events and news about researchs and results of the researchs of the groups on each group's website.

2. **University of Cambridge**

About - Introduction of the group and its field of research.

Members - There is also a list of people, their photos and for each person his field of research. After clicking on the person is shown more information about his field of research and there is listing of keywords for the particular person, which could be used for looking for this person in database by typing these keywords.

Upcoming events

Seminars

News

Archive

On their websites there is a picture, which serves as a link on the research group's account on the social network.

Cambridge presentation websites of their research groups contains more information and there is possibility to create your own account on these websites.

3. **Massachusetts Institute of Technology**

Research - There is presentation of the field of research of the department, overview of the research themes and there is also a list of members, which contains only information about field of research of the whole team of collaborators.

People - There is more information about each member of the group.

News - There is video archive, information about upcoming events and actualities about whole team. Then there is a calendar of events in the given month. There is also possibility to comment news (for logged people only). There are links to newsletters in pdf file formats, which is one of the way of presentation of the research group.

4. **My design of websites**

About - Introduction about field of research of the group.

Members - There is a list of people with their photos and their field of research in the research group. There is also an email, phone number and a link to each person's profile on LinkedIn.

Research - There is an overview of the themes and people, who work on particular theme (it is a list of people, each person is a clickable link to the website with information about this person).

News - There is a link to newsletters in pdf file formats and links to posts with information about upcoming events and news about the research group.

Publications - There are list of publications of the research group.

Grants - There is list of grants, which this group is solving.

Contact us - There is simple form for sending an email to the research group.

There are also possibility to insert comment (for logged people only) below each post. Then there is a calendar with upcoming events, which can be imported into individual calendar of each member.

What is very important in these ages is a link to the research group's account on the social network websites, so this feature is not missing here too. The solution is to collect news and feeds the account on social network with them by using RSS feeds:

- **TwitterFeed** - It allows automatic actualization of social sites from RSS feeds. All it needs is to put URL of the source of news and to put information about how often you want to update your content. It is necessary to be logged in on facebook and twitter and to allow an access of the application.
- **hootsuite.com** - There can be used 5 social profiles and 2 RSS feeds for free.

9 CMS

Some information about CMS in general and why I chose those 4 CMSs.

9.1 PLONE

It is a free content management system (CMS). It can be used for designing of various types of websites, including blogs and eshops. Plone allows users to create and store information on the public websites using just web browser. Plone offers many modules add-ons.

Plone integrates with Active Directory, Salesforce, LDAP, SQL, Web Services, Oracle. It is built on application server Zope, which is written in Python.

Plone is mainly designed in Python, however there are used other languages too (JavaScript, XML).

Features:

- Supports HTML5.
- Inline editing using web browser.
- Supports including of discussion and comments.
- Versioning.
- Full-text indexing of Word and PDF documents.
- Supports Wiki.
- Integrated search catalog (all content is indexed).
- Drag & Drop rearrangement of the content.
- Export of the configuration of the website into XML.
- Content is automatically formatted for print.
- Supports RSS feed.

Results from using:

Plone seems to have all needed, but editing of the content appears to be difficult and not intuitive. Then the appearance of the websites is difficult to edit (just change the logo is not much easy).

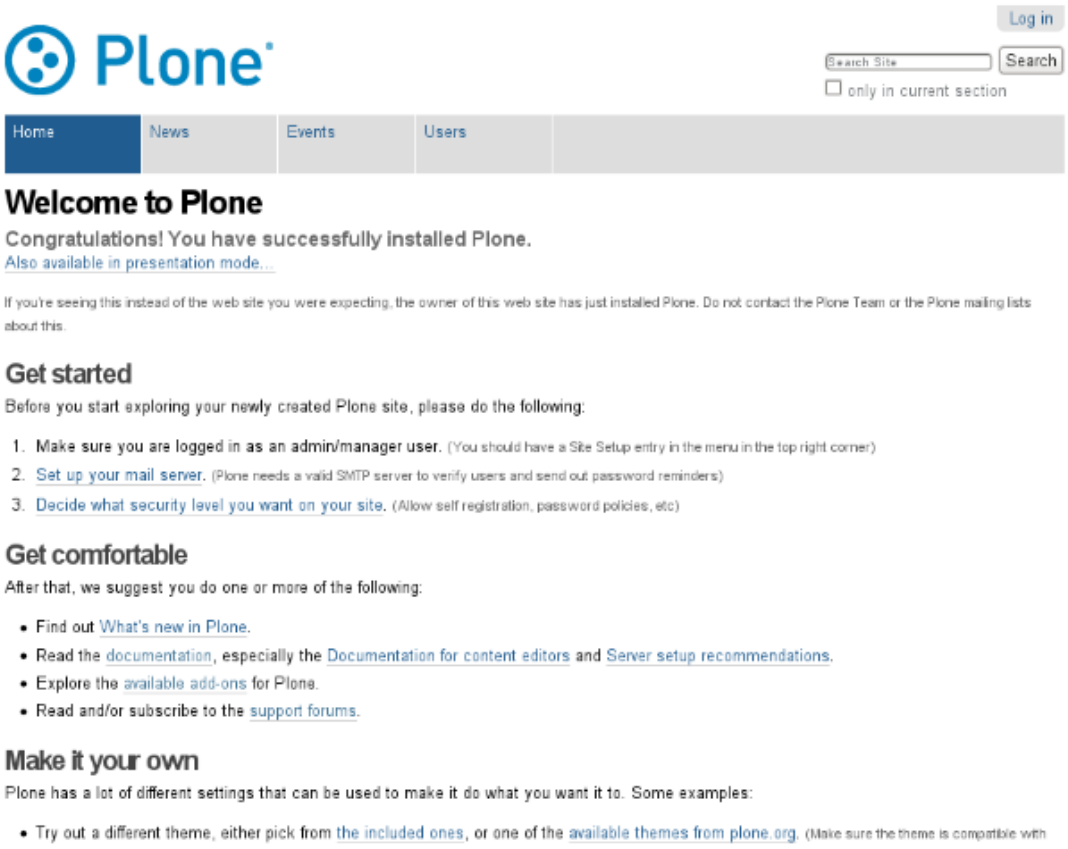


Figure 16: example of the website

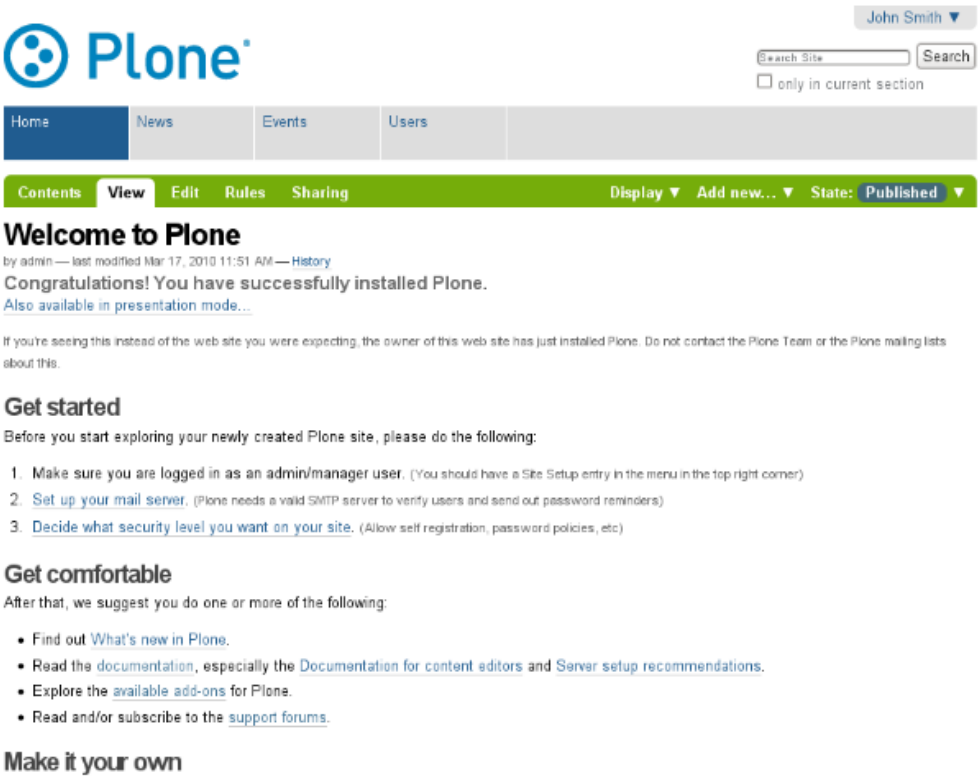


Figure 17: Example of the administrative interface of the website

9.2 WordPress

WordPress is open source project, which began in 2003. It started as a blogging system but today it is used for managing the whole content of websites. WordPress contains a big amount of plugins, widgets and themes.

WordPress is built on PHP and MySQL.

16.7% of internet websites, which were evaluated as top million websites by Alexa Internet company, use WordPress. 22% of all newly created internet websites have used WordPress since August 2011.

Features:

- Possibility of easy instalation of new themes and switching between themes.
- Big amount of plugins (18000 plugins in database).
- Supports widgets, which allows to put additional functionality to websites.
- Built-in registration system of users, which allows users to register and consequently to insert comments. It is possible to close the option to comment for unregistered users.
- Respects standards of XML, XHTML and CSS.

Results from using:

- First, It is necessary to install Instant WordPress on your local machine. It changes windows into WordPress development server. It contains built-in Apache web server, PHP and MySQL intalations, which are automatically launched and stopped. The folder containing Instant WordPress could be copied into flash drive to have WordPress with all the time.
- It is easy to install and launch WordPress on local machine(only one .exe file).
- It contains many themes of appearance with easy editing.
- It contains many plugins.
- It is possible to create whole new theme of appearance.
- It is possible to create new theme in photoshop. Individual layers just have to be specifically named.
- It is possible to close the option to comment posts for unregistered users.
- It is possible to lock some posts with password from the public.

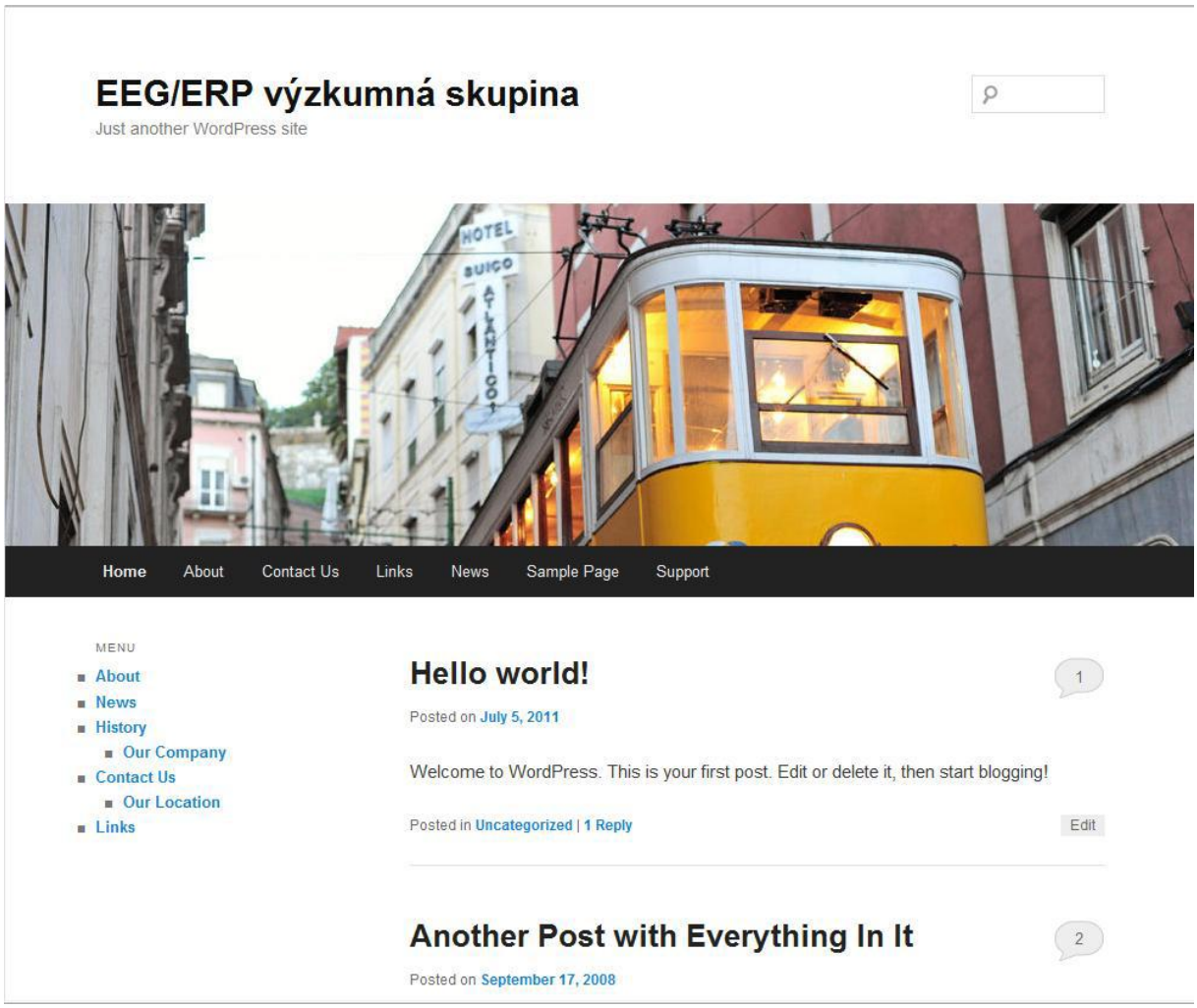


Figure 18: Example of the website

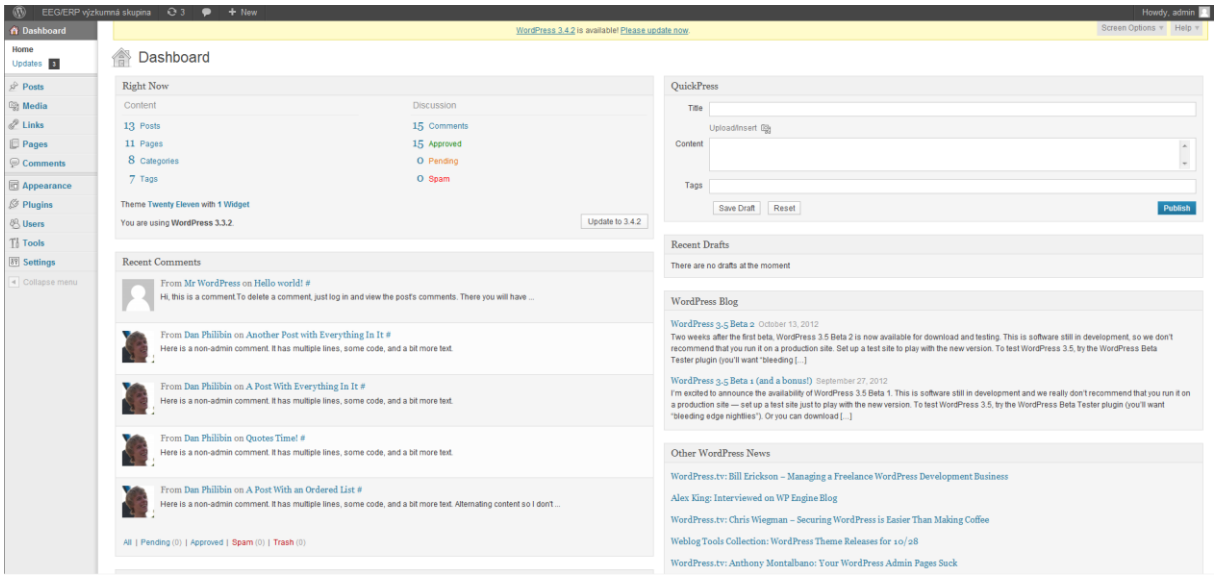


Figure 19: Example of the administrative interface of the website

9.3 Joomla!

It is open source software for managing of the website's content. It is written in PHP and uses MySQL database.

2.8% of all internet websites use content management system Joomla!.

Features:

- Supports indexing of websites.
- Supports RSS feeds.
- Possibility to design printable version of website.
- Creating and displaying news, blogs, discussions, surveys and calendars.
- Implements searching within the webserver.
- Contains registration system, which allows users to configure their personal settings. It is possible to choose one of nine user's groups with various types of access.
- Possibility to set banners on websites by using Banner Manager.
- Contains built-in help section, which assists user to find everything what he needs.

Results from using:

- Firstly, it is necessary to install XAMPP to run Joomla! on the local machine. XAMPP contains Apache server, MySQL database and PHP.
- Then it is necessary to create new database in phpMyAdmin. Consequently this database is used during installation of Joomla!.
- After installation it is needed to launch services Apache and MySQL.

- Editing of the website's content, adding additional functionality and change of appearance is more complicated in comparison with content management system WordPress.
- There are many plugins, which offer additional functionality. But their installation is not so easy as in case of WordPress.
- Whole content of websites is divided into sections. Consequently each section is divided into categories and then each category is divided into items (Section -> Category -> Items).

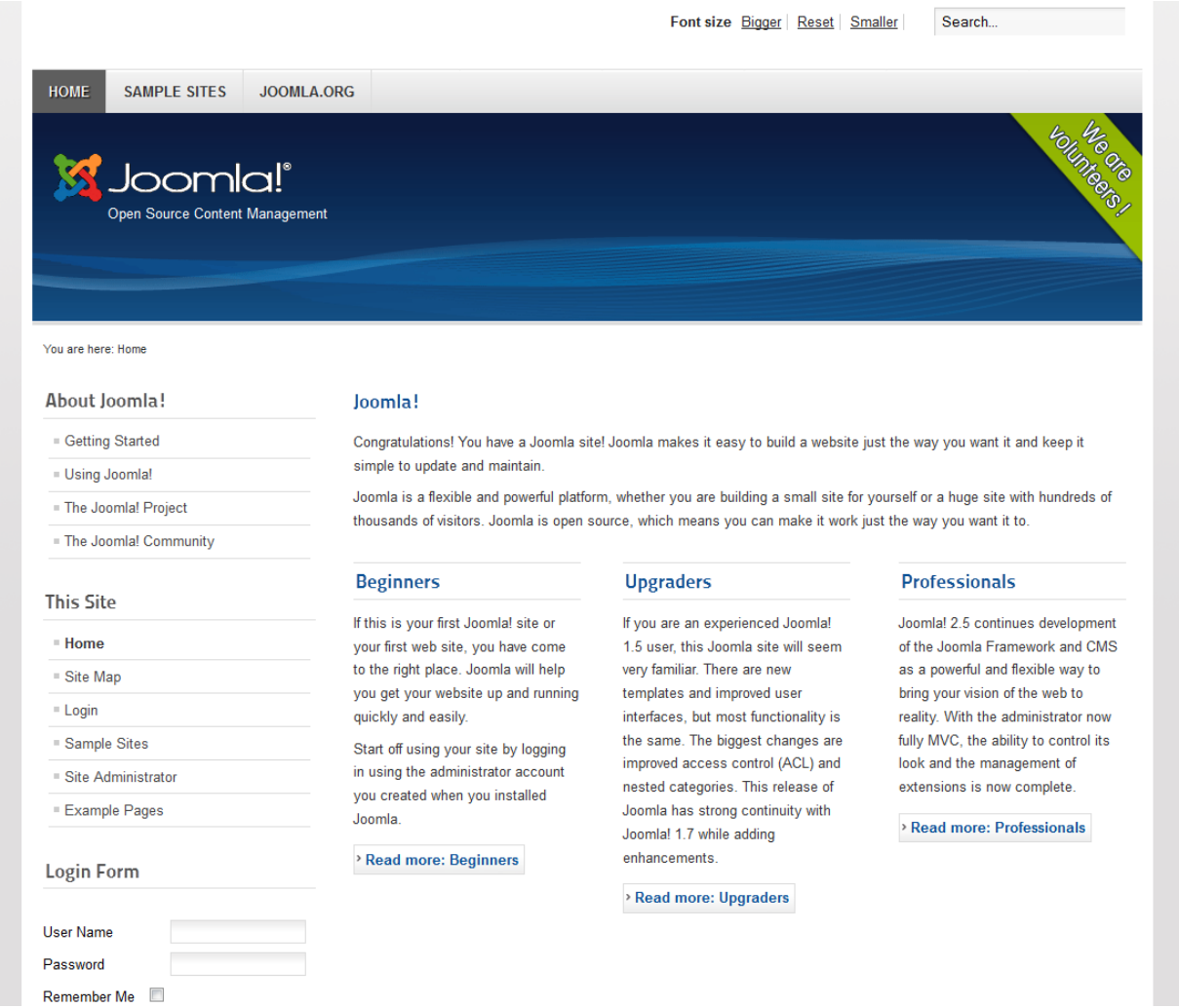


Figure 20: Example of the website

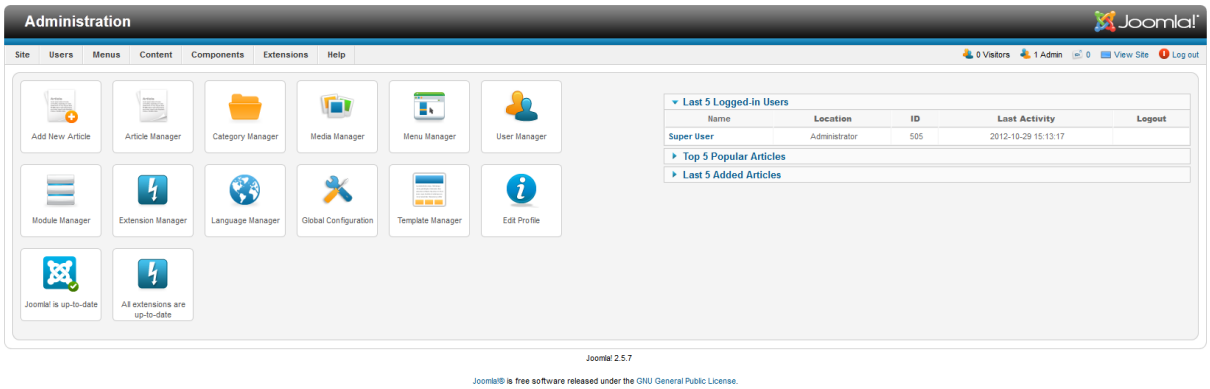


Figure 21: Example of the administrative interface of the website

9.4 Drupal

It is another content management system. It allows to create internet newsletters, blogs, eshops and other complex systems.

It is written in PHP. It supports MySQL and PostgreSQL databases.

More than 2% of all internet websites use content management system Drupal.

Features:

- Supports RSS feeds.
- Contains about 18200 addons, which add new functionality. These addons also customize the behavior and appearance of the websites.
- Allows to create blog, eshop or forum.
- It is built on modular system. It is small kernel and modules. Modules are analogy to plugins in other content management systems.
- Possibility to create own module.

Results from using:

It is possible to edit the whole content and appearance of the website. But editing of the content is more complicated than in WordPress or Plone. On the other hand customizing of appearance is easier in Drupal than in Plone but more complicated than in WordPress. Furthemore, WordPress contains the biggest amount of pre-made templates of appearance, which can be edited by user.

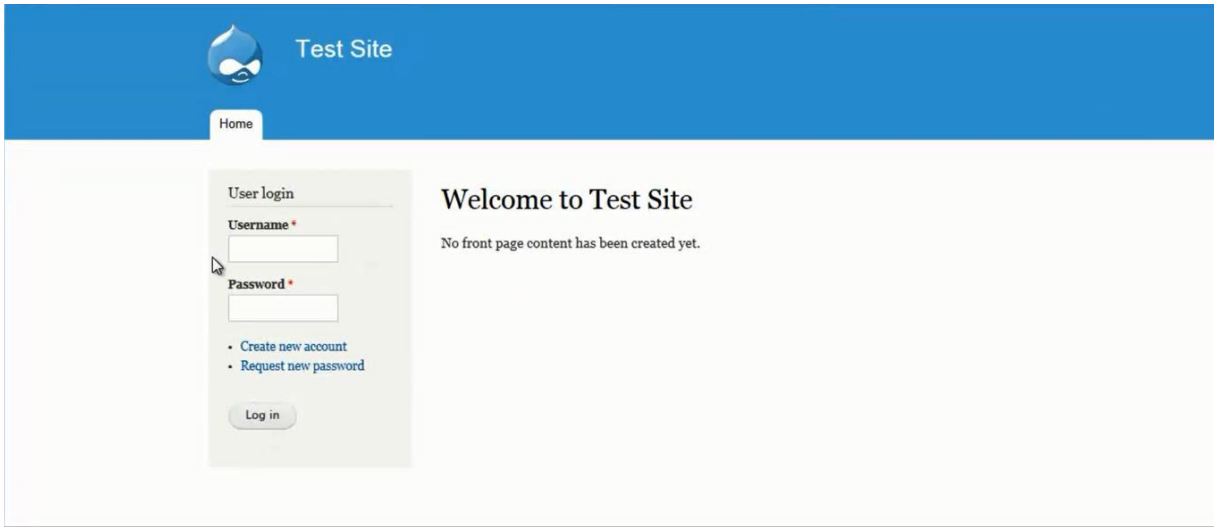


Figure 22: Example of the website

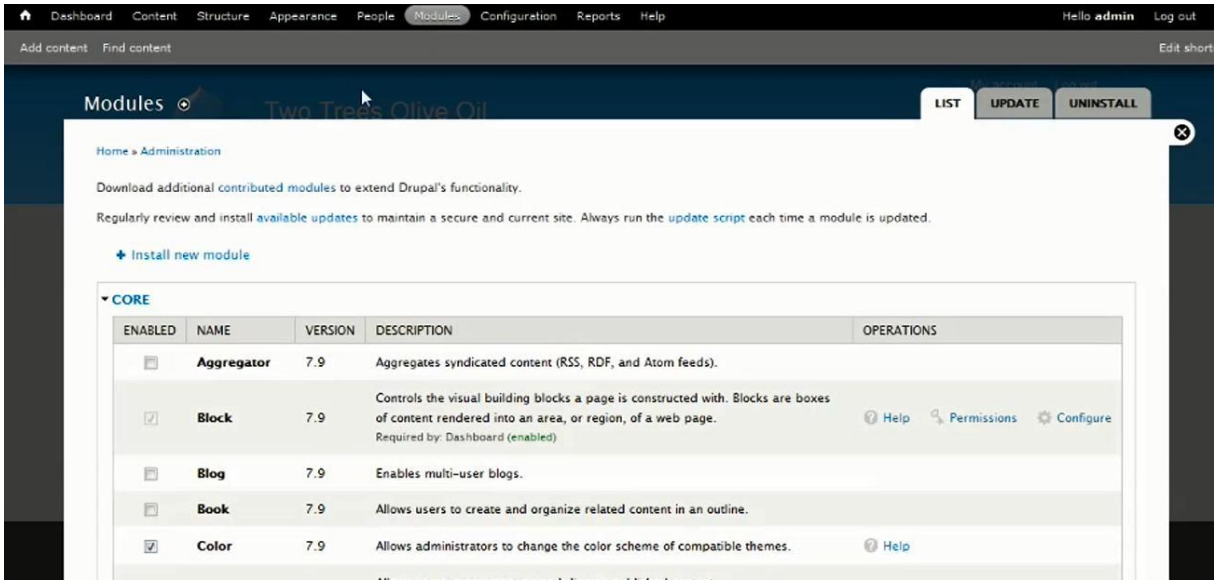
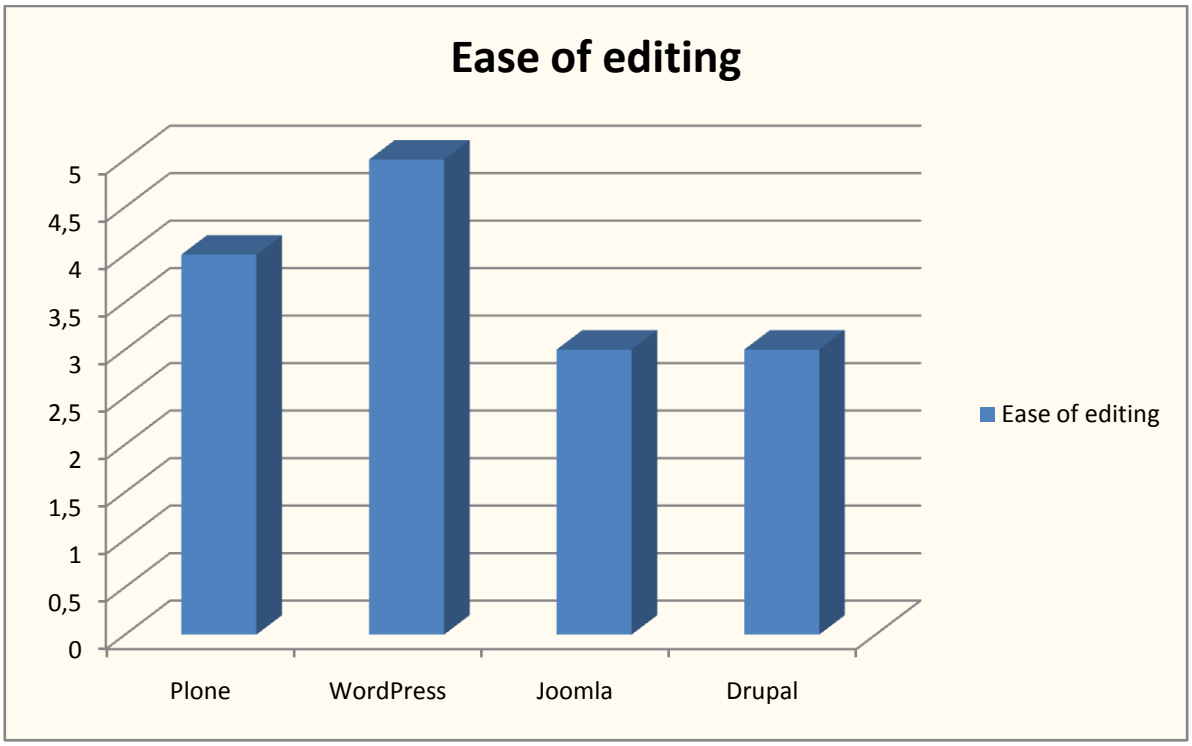
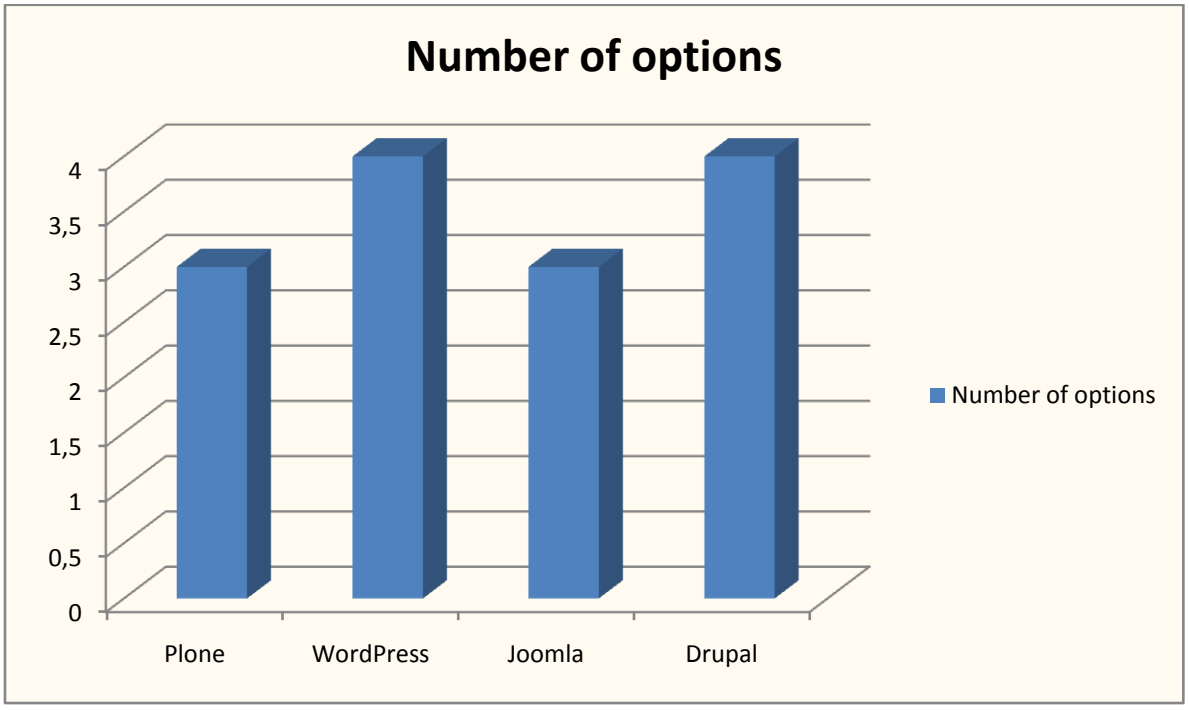
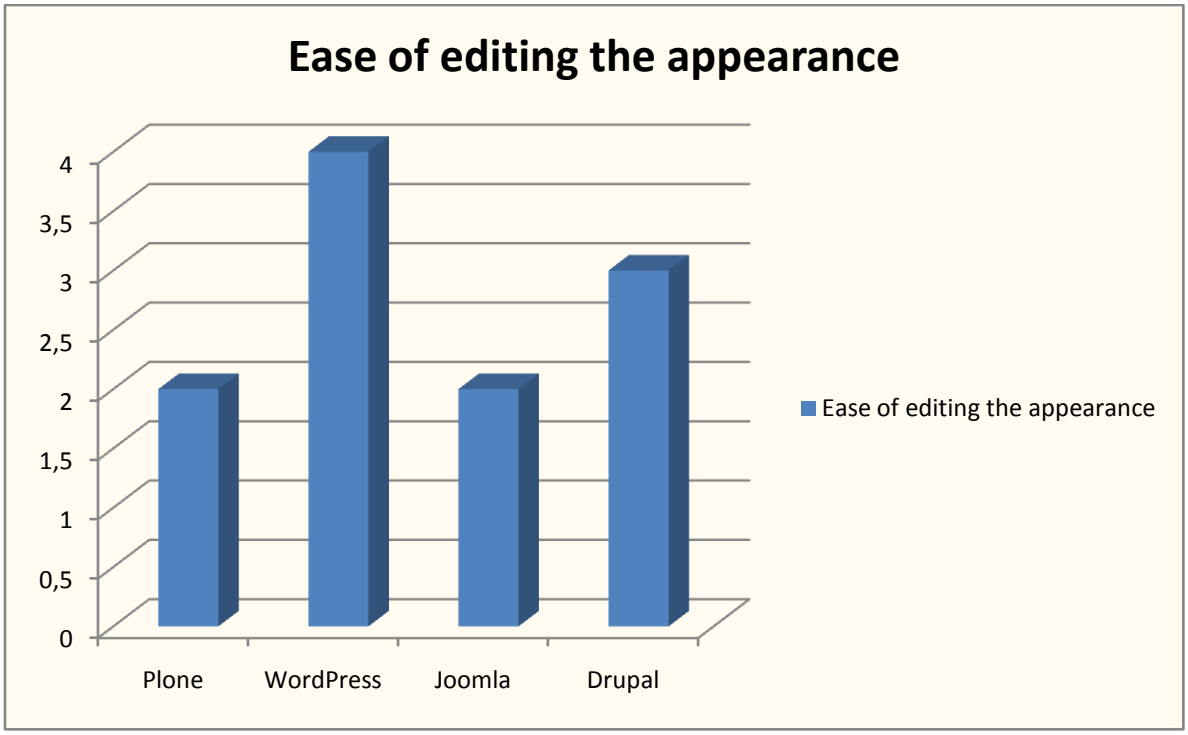


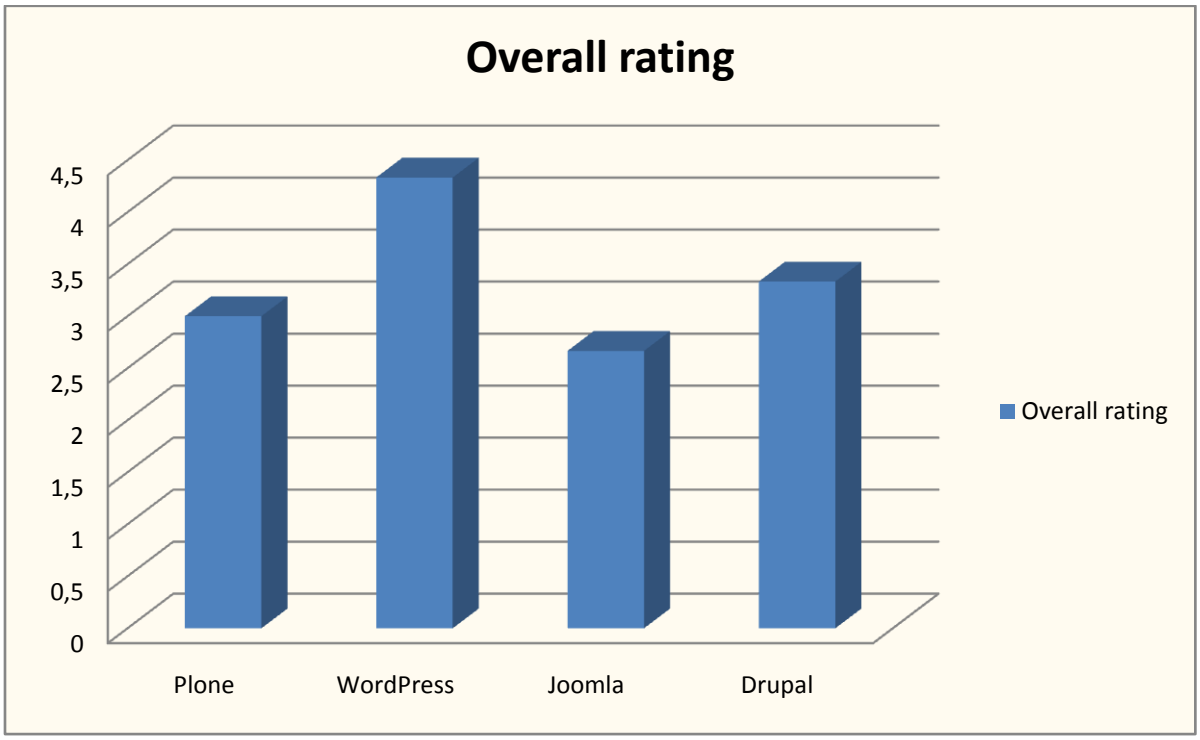
Figure 23: Example of the administrative interface of the website

9.5 Comparison of all content management systems






Ease of editing the appearance
4
3,5
3
2,5
2
1,5
1
0,5
0
Plone
WordPress
Joomla
Drupal
Ease of editing the appearance


Overall rating
4,5
4
3,5
3
2,5
2
1,5
1
0,5
0
Plone
WordPress
Joomla
Drupal
Overall rating