University of West Bohemia

Faculty of Applied Sciences

Department of Computer Science and Engineering

Master Thesis

Presentation of research group

Pilsen, 2013

David Gorschenek

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Statement

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

Pilsen, ...

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David Gorschenek

Abstract

Presentation of research group

Presenatation of the research and presentation of the research group itself is very important in these days. Every research group, who wants to be known all around the world and who wants to get people interested in their field of research, needs to present their research.

The purpose of my study is to analyse how research groups in International Neuroinformatics Coordinating Facility, in the Department of Computer Science and Engineering and other research groups at world known universities present their research. This analysis is used during the process of designing of the presentation websites of the research group. Then there is an analysis of the content management systems because the presentation websites are created by using one of the analysed content management systems.

Another purpose of my study is to analyse how the members of the research group can manage their project and share things, which are private. There is analysed some software tools, which are used for project management.

Finally, I suggested and realised solution for the presentation of the research group and for the project management according to the given requirements of the members of the research group.

Table of contents

1 Introduction

Presentation of the research gives an important opportunity to share the findings with other researchers all around the world. Project management is also important for the researchers because it allows them to have some documents only private and share them only among each other. They can also have any other types of files, which are private for the research group and they can present their public research by using created presentation websites.

The purpose of my study is to realised solution for the presentation of the research group and for the project management according to the given requirements of the members of the research group.

In the first section of the document you can find some basic information about the research group in general.

Then in the second section about project management you can find basic information about software tools for project management, which I found out by using these tools. Then in this section you can find the realization of the project management of the research group in the chosen software tool according to the given requirements of the members of the research group.

In the third section about presentation of the research you can find some information about current situation of the presentation of research of the research group. Then you can find a part of the text with the analysis of presentations. It is divided into presentation of the research in the Department of Computer Science and Engineering and other research groups at world known universities. After analysis you can find my design of the presentation websites according to the accomplished analysis of presentation. In this section you can also find a part about the most used content management systems. It contains their main features and my results from using each content management system. At the end of this section you can find the realization of the solution for the presentation of the research group in the chosen content management system according to the given requirements of the members of the research group.

2 About the research group

The following text is based on [1].

The research group focuses on these research directions:

- They measure and evaluate electrical activity of human brain and examine human behavior in stressful and stereotype situations. Methods of electroencephalography (EEG) and event-related potentials (ERP) are used for the measurement. They collaborate with some partners (Czech Technical University in Prague, University Hospital in Pilsen, Škoda Auto, Inc., Pilsen brewery,...). They are responsible for technical and scientific issues, e.g. EEG/ERP laboratory operation, design and implementation of new experiments, development of advanced software tools for EEG/ERP research, and analysis and proposal of signal processing methods. Currently the members of the research group are working on the following projects:
    - EEG/ERP portal including EEG/ERP experimental database
    - Methods of EEG/ERP analysis
    - Research of driver's attention
    - Research of beer drinkability
    - ERP analysis in children with developmental coordination disorder
- They focus on the medical examinations where Computer Tomography (CT) is used. They create maps showing the extent of irreversible necrotic tissue throughout the brain after a stroke. Resulting maps are used in determining the initial treatment of the patient (operation or thrombolytic therapy).
- In clinical phoniatry they participate in the development of modern diagnostic procedures and classification tools for assessing the quality of the glottis closure (processing and evaluation of data from high-speed camera, videokymography, multidimensional voice analysis and examination of the voice).

3 Project management

3.1 Introduction

You can find in this chapter some basic information about software tools for project management, which I found out by using these tools. The software tools are Kerio Samepage, IBM DeveloperWorks and IBM Connections 4.0. I studied IBM DeveloperWorks only marginally because IBM DeveloperWorks is predecessor of the IBM Connections, which has more features.

After all I chose the IBM Connections 4.0 for the project management because I found out that during this summer semester in 2013 it should be running in the Department of Computer Science and Engineering and that is why there is no need to be worry about cancellation of the project. This software tool also fulfil all requirements of the research group so it seems to be suitable software tool for the project management of the research group.

I did not engage in the managing of the software project, which includes GitHub, SourceForge etc. because it was not my field of study in this thesis.

3.2 Software tools

3.2.1Kerio Samepage

Kerio Samepage is a cloud service for social collaboration. It makes easier the sharing and collaboration on documents, files, notes, discussions and multimedia content. It is possible to add various types of content to pages (files, images, links, task lists, calendar events, videos and text notes).

Kerio Samepage is available in two packages:

1. **Starter Plan** - It is free. There is unlimited number of users and it has 10 GB of shared storage space. At signup there is only 2 GB of shared storage space available, but it adds 500 MB for each invited user. Max file size of uploaded files is 250 MB.
2. **Premium Plan** - It costs 10 USD for 1 user per month. With each new bought user the shared storage space will get another 10 GB of new storage space. It is possible to buy an extra storage space for the shared storage space for 5 USD per month for every extra 10 GB of new storage space.

Figure 3.2.1-1: Homepage of the created group in Kerio Samepage

- **File Sharing**

User can add files on a page, which contains comments, tasks or another type of content so the file is inserted directly into the context of discussion.

User can also insert a link to the file so the collaborators have always a link to the up-to-date version of this file.

It is possible to edit an uploaded file online and then just save this file and its up-to-date file is online.

The whole team can synchronize the file library to their computers (see Figure 3.2.1-2). Then when anybody makes some changes on his computer, it automatically updates the others. For using this function the samepage client needs to be installed on the computer. The samepage client is free.

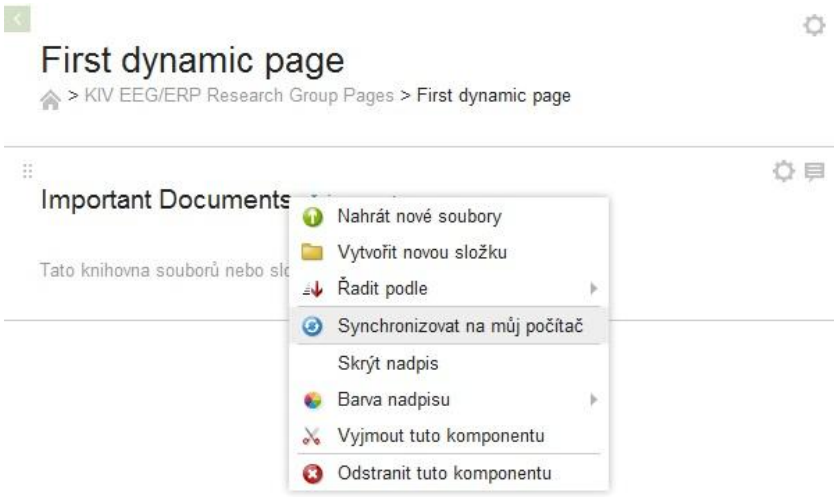


Figure 3.2.1-2: Synchronizing of the file library to the computer

- **Discussion drilldowns**

The uploaded files can be inserted to any created page and there can be discussions or comments on the same page. It is also possible to show discussions from multiple pages in one place and then user can click on any comment to visit the page it came from for more context.

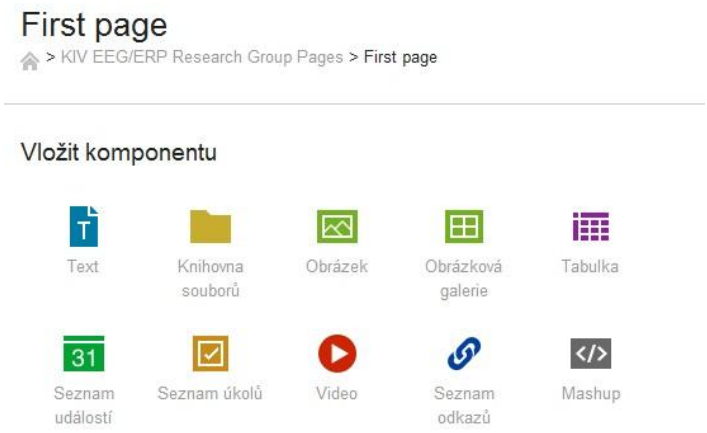


Figure 3.2.1-3: Inserting components to the page

- **Sharing and organizing**

Admin can set permission for invited users to view, edit, or control content on pages (see Figure 3.2.1-4). Any page can be also opened for public access with or without edit rights.

The structure of pages can be organized by using spaces to group some pages together.

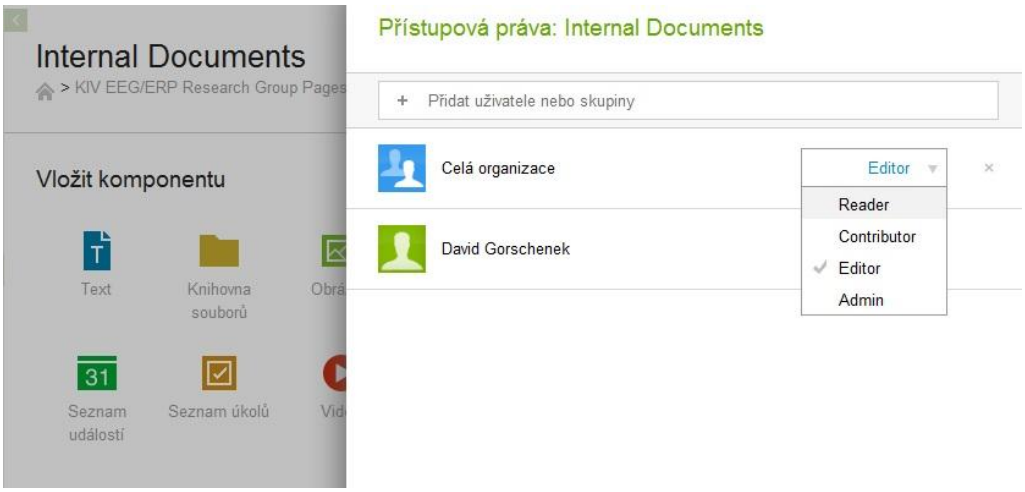


Figure 3.2.1-4: Setting of the sharing rights for the Internal Documents page

3.2.2IBM 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 3.2.2-1).

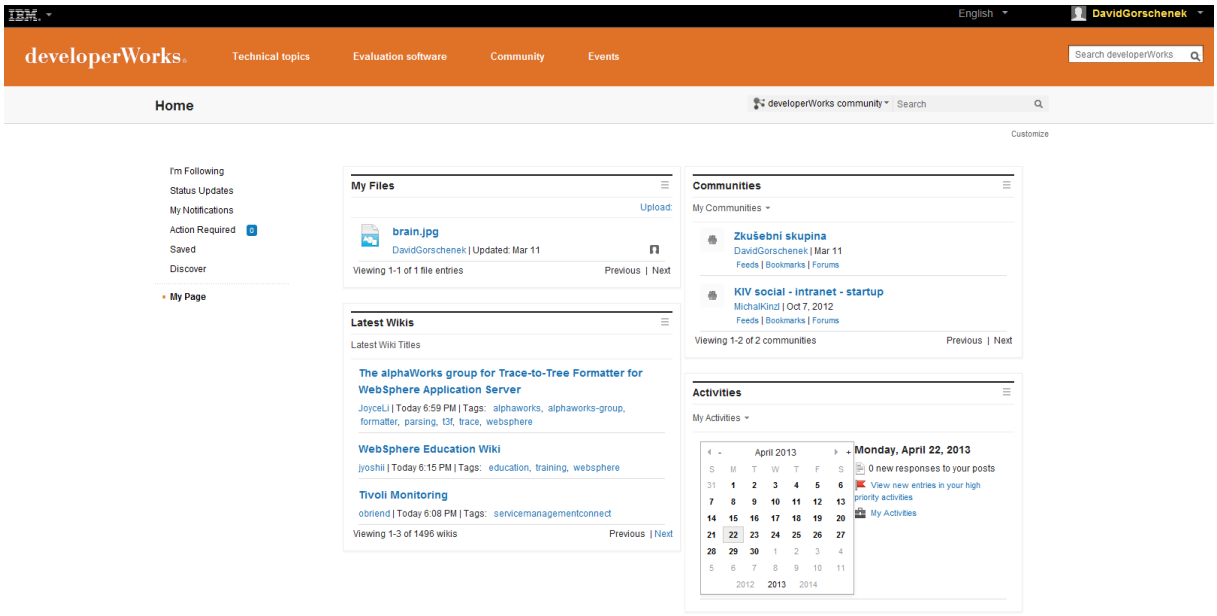


Figure 3.2.2-1: Main page of the user's profile

- **Communities**

You can get to the communities by starting a community or by becoming a member of an existing community. Then in My Communities menu item you can switch to the communities.

<u>On the left side you can see main menu, which contains:</u>

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 community:

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.

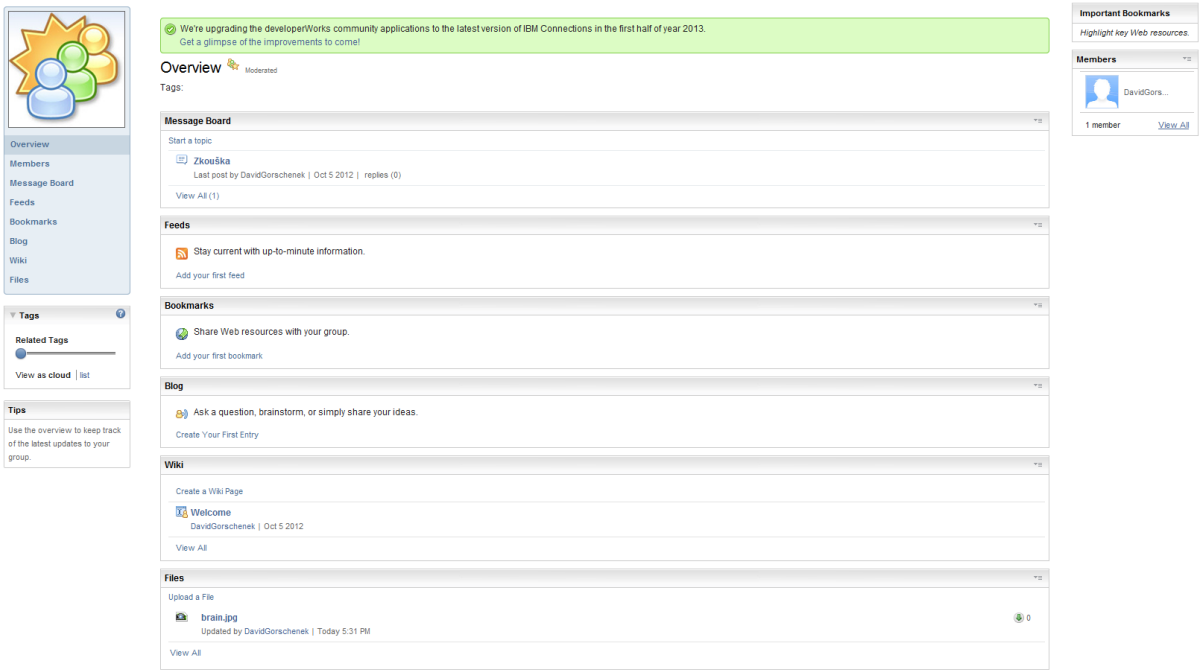


Figure 3.2.2-2: Main window of the community

3.2.3IBM Connections 4.0

IBM Connections is a social software for business use. It allows users to develop and support the network of collaborators and to discuss about new ideas with the comunity of collaborators.

- **Homepage**

User has anything he needs in his homepage. In My Page user can have widgets with anything he is interested in (his activities, public activities, etc.). User can also change the layout of the widgets in his My Page.

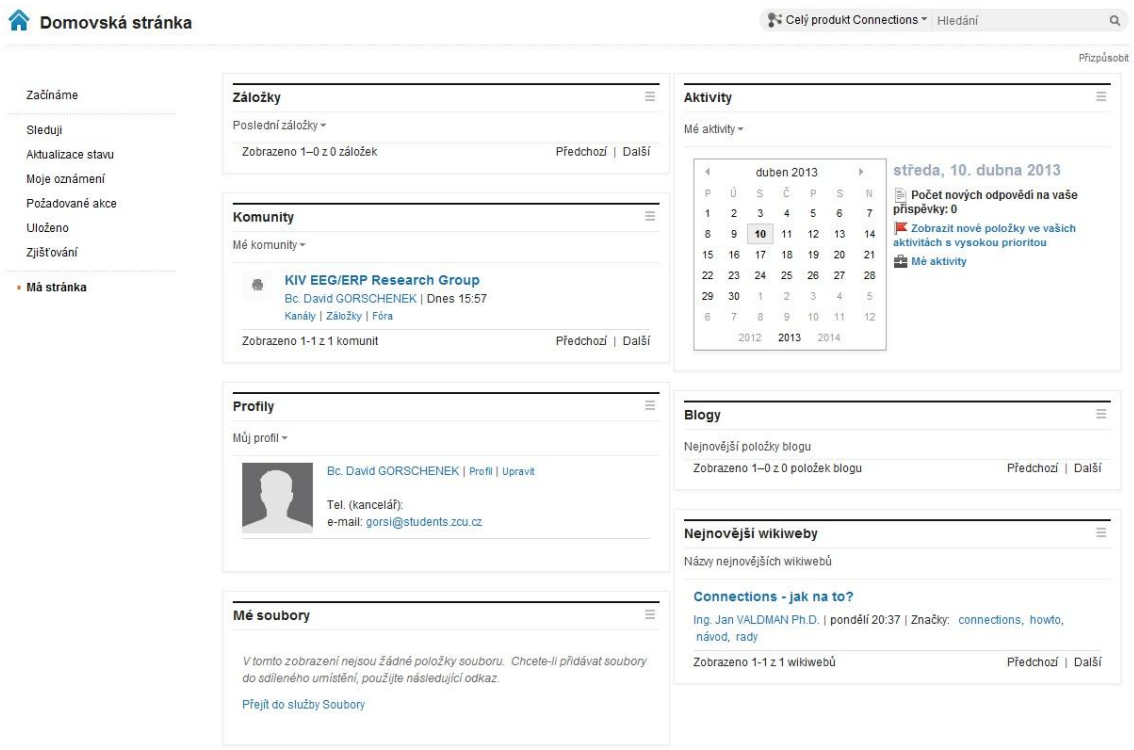


Figure 3.2.3-1: My Page with widgets in user's homepage

- **Activities**

Activities allow the project team to organize their work according to the tasks of the project. The collaborators can share working documents and information by creating an activity. The activity allows collaborators to assign and monitor the tasks in the activity. It also allows to publish information about the community and their meeting. Collaborators can add new members to the activity, which allows collaborators to gather all needed resources for the project. It is also possible to set the priority of each task in the activity.

Usage of the application Activities:

In the Activities application all activities of the user are shown in the My Activities. There are both user activities and community activities, which the user is member in. The community activity is specified with the proper label in its name. There is also the To Do List across the all activities, which contains the opened to do items, which should be done in the activity. It is possible to change priorities of the activities (High, Medium, Normal[default], tuned out).

While creating of the activity user has to insert the members of the activity. It could be person, community or group. The inserted person, community or group can be author, owner or reader of

the activity. The author can read the content and add items. The owner can add, modify and delete members of the activity, its content or the activity itself. And the reader can only read the content.

After creating of the activity the owner or author can add entry to the activity to share some ideas and information. They can also add to do item, which can be assigned to everyone or to a specific person. The activity can be organized by adding some sections, which each can contain specific entries and to do items to individual sections.

- **Blogs**

Blogs are internet diaries for sharing information with other collaborators in the community. It allows collaborators to dynamically share news and ideas with other collaborators. They can inform each other about news in the research in their field of interest or they can just provide their knowledge in their field of interest.

Usage of the application Blogs:

User can create a blog with his selected theme of appearance. After creating of the blog the user can add new entry in the created blog. It consists of the title with rich textbox for the text of the entry, where pictures or video can be inserted too and then the user can add comments to the entries of the blog, which will be shown in the blog under the proper entry.

The owner of the blog can also add users to the blog. The new user of the blog could be author, owner or draft. Author can manage the entries but can not manage the settings of the blog. The owner can manage entries and settings by creating permissions to others. The draft can only save drafts of the entries.

- **Bookmarks**

Bookmarks allows users to save, organize and share their bookmarks. User can share all bookmarks or just some of them and user can define, which user can see which bookmarks. User can also browse the collection of bookmarks of other users and based on this he can connect with people with similar interests. IBM Connections allows user to install a button "Add Bookmark Button" to his internet browser. It is also possible to import existing bookmarks into the IBM Connections.

Usage of the application Bookmarks:

User can notify others with his found bookmark by automatically sending email with the link to the bookmark. User can also add a bookmark to the activity, community or to the blog, which provides an easy way of sharing bookmarks among the collaborators.

It is also possible to install the Add Bookmark Button to user's internet browser toolbar. Then user can create a bookmark in four steps:

1. Open the web page the user wants to bookmark.
2. Press Add Bookmark Button.
3. Put title, tags and description of the bookmark.
4. Save bookmark, which can be public or private.

- **Communities**

Community is a group of people with similar field of interest. The community provides the way of connecting the members to the research team and the community allows members to discuss and share information. The community can be public or private and the owner of the community can control, who can browse the content of the community and join the community. There can be created blogs, wikiwebs, activities, forums or bookmarks in the community, which are connected only with the community.

Usage of the application Communities:

Every user of the IBM Connections can find a public community of his interest in the organization. Each community page contains the community description and the community can also contain its blogs, forums, bookmarks, files, wikis and activities for the specific community to provide collaboration in the community among its members. In the homepage of the community are also widgets, which can be organized, added or deleted. The widgets show information about the community. The widgets are Forums, Bookmarks, Upcoming Events, Members, Files, Wiki and Related communities. Member of the community can create a community event, which will be displayed in the Upcoming Events widget. The events can be shown in the calendar too.

In the process of starting new community(see Figure 16 in Attachment A) it is need to set the access. The comunity can be public, moderated or restricted. The public community can be joined by anyone. In the moderated community people must request to join and in the restricted community people must be invited to join this community. Then it is need to add people to the community by selecting a role and adding people to that role. User can be a member of the community or the owner of the community. The owner can edit and delete the community itself.

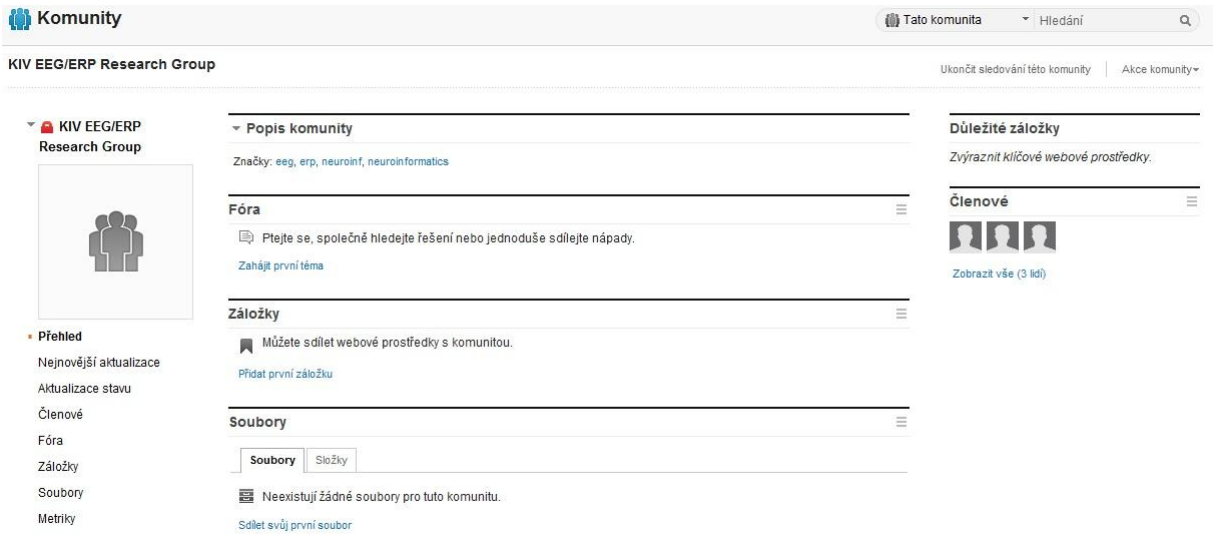


Figure 3.2.3-2: Community homepage

- **Files**

The Files application allows users to share and save files in the central storage. It is possible to share files with only selected users, which provides the collaboration without need to send files by email. Users can mark files as favorite and comment them. The uploaded files can be organized in folders and users can track the versions of uploaded files.

Usage of the application Files:

In the application Files the user can see his own files, shared with him files, shared by him files, community files or public files.

In the process of uploading file it is need to be picked the sharing option. The file can be shared with no one (visible to the owner only), shared with people or communities, or the file can be public (visible to everyone). The people or communities, the file is shared with, can be readers or editors of the file. The readers can see, share and download the file. The editors can download, edit or upload a new version of the file.

The files can be organized in the folders. In the process of creating folder it is need to be picked the sharing option too. The folder can be shared with no one (visible to the owner only), shared with people, groups or communities, or the file can be public (visible to everyone). The people, groups or communities can be readers, contributors or owners. The reader can only read and download files in the folder. The contributor can add files into the folder, delete them (only the files, which the user

added into the folder in the past) and show information about files in the folder. The owner can delete all files from the folder or delete the folder.

- **Forums**

Forum is online discussion, which is focused on the specific topic. It is mostly used for looking for the new solutions in the research team and for obtaining the opinions of the members of the research team. Forum is also the place, where the members can share their ideas with other collaborators and where they can discuss about common topics.

Usage of the application Forums:

The created forum can be standalone, which is always public, or associated with a community. In the forum, which is associated with a community, the user has to be a member in the community to be able to contribute to the forum. User can keep track with the forum he is interested in by following it. Then the user will be notified whenever the forum is updated.

After starting a forum the user can start a topic in the forum. If the user want to ask a question in a forum then he has to check the checkbox *mark this topic as a question* during the process of starting a topic in the forum. If the topic is complete then the owner of the forum can lock this topic for not making further contributions to the forum.

- **Profiles**

Profiles is a directory of the members of the organization. It allows user to find eligible users and to connect with them. User can look up another user according to the contact information, professional information or according to his knowledge. The base is to fill own profile, where the user inform other users about himself.

Usage of the application Profiles:

By looking through the profiles the user can see what the people have in common with him (files, communities, activities). Then the user can follow updates of the person or invite the person to his network of contacts.

Every user can add information about him in the About me section. This information should describe user's field of interest and his expertise. If the user has some followers then they are automatically notified after updating user's status. This can be an easy way of informing collaborators what each user is doing at the moment.

- **Wikiwebs**

Wikiweb is a collection of the web pages to the specific topic, which provides collaborators with the central place for dynamic sharing of the information and developing of their ideas. It also supports the collaboration in the research team. The collaborators and members of the wikiweb can add their own web pages or edit and comment the existing web pages, which ensures that the information is always up-to-date.

Usage of the application Wikiwebs:

In the process of starting a wiki the the user can add a members of the wiki. The new member can be owner, editor or reader of the wiki. The owner can read, edit, create, insert tags, recommend and delete pages, insert comments to pages, insert tags to wikiweb and edit the descriprion of the wikiweb. The editor can read, edit, create, insert tags, recommend the pages and insert comments to them. The reader can read, recommend the pages and insert comments to them. Then it is need to be picked the read access of the wiki and the edit access of the wiki. The read access can be for all users including not logged in users or for the wiki members only. The edit access can be for all logged in users or just for the wiki editors and owners.

The content of the wiki can be added by using one of the page actions, which can be create child of the current page or create peer of the current page. The page can be also printed or downloaded as an HTML file. The user with proper rights can also move the page or move it to the trash. User can also see comments, versions and attachments of the wiki pages.

3.3 Realization

I chose the IBM Connections 4.0 for the project management because I found out it should be running in the Department of Computer Science and Engineering. This software tool also fulfils all requirements of the research group. IBM Connections 4.0 was being run in the department during my realization and that is why I could realize the solution of project management in IBM Connections 4.0 running in the Department of Computer Science and Engineering.

The members of the research group had some main requirements, which I had to fulfil by using this software tool for project management.

3.3.1Privacy

The first requirement of the research group was that everything in the community has to be private.

I accomplished this requirement by creating the community as restricted (users have to be invited to join the community). It means that anybody, who is not invited to the community, do not have access to the community and can not browse the content of the community.

3.3.2File management

The second requirement of the research group was that they need to store here some files, which are not public and they are just for the need of the research group.

The uploaded files can be sorted in named directories. The maximum file size of uploaded file is 500MB. User can send file to his profile by pressing Send File button and then he can select with whom he wants to share the uploaded file. The members of the community select the community and then type the name of their community (KIV EEG/ERP Research group). Each user can also create a folder, which can be shared with the selected community too. This is the simplest way of sharing files among researchers in the community.

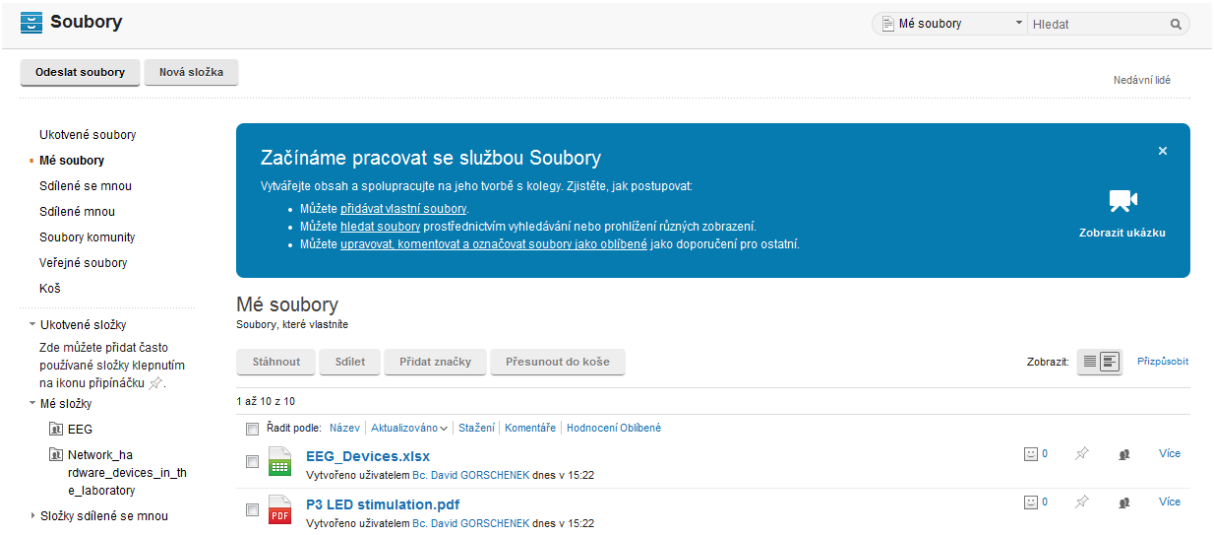


Figure 3.3.2-1: Uploaded files, which are consequently sorted to the folders

Then in the community researchers can see automatically updated shared files and folders by the members of the community (see Figure 3.3.2-2).

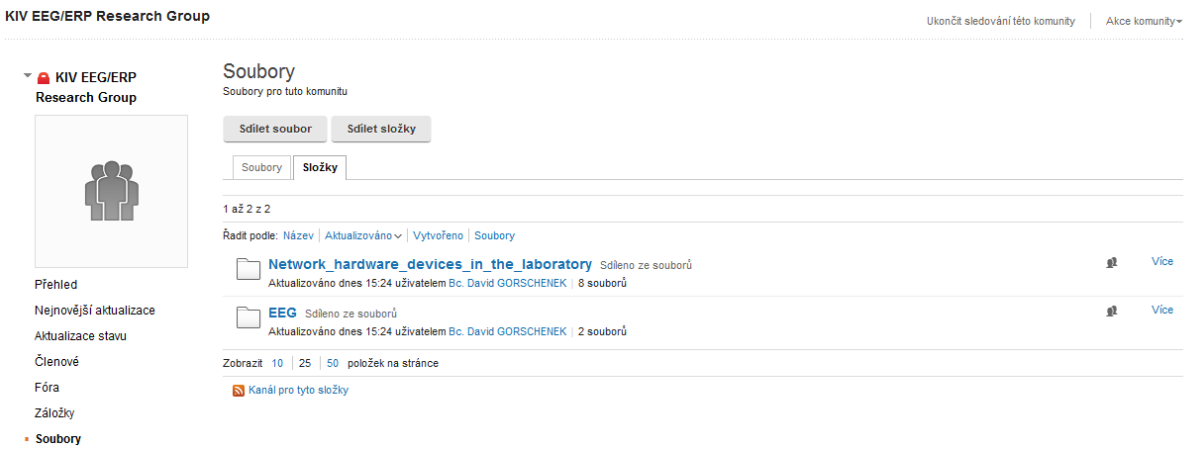


Figure 3.3.2-2: Shared files and folders in the community by the members of the community

3.3.3EEG laboratory management

The next requirement was to manage the EEG laboratory. The researchers want to know, when the EEG laboratory is free and when there is some measurement conducted. They also need to know who is conducting the measurement.

I accomplished this requirement by creating a google account and a public google calendar in this account. Every member of the research group has access to this google account and every member can add reservations of the EEG laboratory to the google calendar. The calendar is shown in the community in IBM connections 4.0 by using widget channels. I added a channel for the created public google calendar (see Figure 3.3.3-1).

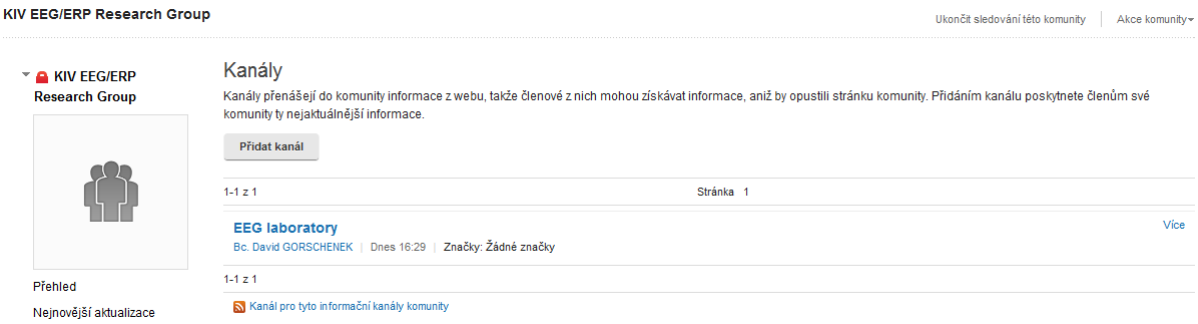


Figure 3.3.3-1: channel for the public google calendar

After clicking on the link of the google calendar the events are shown with the date of creation of the events. After clicking on the event the description of the event is shown (see Figure 3.3.3-2).

Figure 3.3.3-2: google calendar event

There is no need to log in with a public google calendar, but the calendar is public and anyone can browse it. It seems to be no problem, because the data in the calendar is not secret and to be able to make changes in the calendar the user needs to be logged in so there is no need to be worry about someone creating an unnecessary events in the calendar.

3.3.4Experiment management

The next requirement was to manage the tutorials with information about how to conduct all types of measurements and to store the methods of processing the electrical activity of human brain in individual measurements.

I accomplished this requirement by creating a folder called Tutorials, in which the researchers can upload the suitable files. I also uploaded a private video of measurement in the media gallery of the community, where is recorded the process of measurement (see Figure 3.3.4-1). The researchers can use the media gallery in the future for uploading their own videos of measurements.

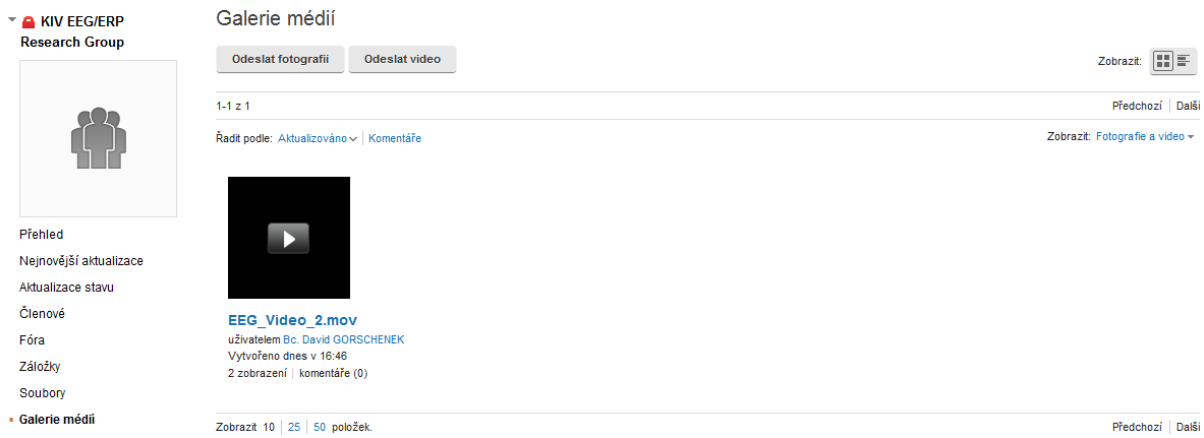


Figure 3.3.4-1: uploaded video of the process of measurement

3.4 Conclusion

I accomplished all requirements of the research group by using suitable software tool for the project management of the research group. Only one obstacle appeared during accomplishing of this task. It took the department a lot of time to be able to run the IBM Connections 4.0 in the Department of Computer Sciences and Engineering. It took them a lot of time to integrate it with the university authentication system using LDAP to be able to log in by using university orion login. IBM Connections 4.0 has been running in the department since the 6th of April 2013.

4 Presentation of the research

4.1 Introduction

You can find in this chapter the description of the current situation of the presentation of the Czech neuroinformatics node and the current situation of the presentation of the EEG/ERP research group in the Department of Computer Sciences and Engineering, especially presentation of their software.

Then I analysed presentation of research groups in the Department of Computer Sciences and Engineering, presentation of INCF neuroinformatics nodes and presentation of research groups with similar field of research at other world known universities. I designed the structure of presentation websites from the acquired knowledge from the process of analysis.

I also needed to analyse and try the most used content management systems, in which the presentation websites are created. As a most suitable content management system, which met all requirements of the research group, appeared WordPress.

You can find the description of accomplishment the requirements of the research group by designing presentation websites for the Czech neuroinformatics node.

4.2 Current situation

4.2.1Czech neuroinformatics node

Czech neuroinformatics node has a presentation website on INCF. There is only short description of the Czech neuroinformatics node with contacts to the head of the node Václav Matoušek and to the

node representative Roman Mouček. INCF is the place, where the link to the new designed presentation websites will be put because it is the right place, where people can find national neuroinformatics nodes and other national neuroinformatics nodes have links to their national neuroinformatics presentation websites on the INCF too.

There is already a link to the current Czech neuroinformatics node presentation websites on INCF (http://www.cnnn.cz/). But these presentation websites are not maintained and the information on these websites is deprecated. These websites was created in the content management system Plone, which is described below in this section.

Structure of the current presentation websites:

There is some short description of the Czech neuroinformatics node in the homepage.

CNNN - There is a longer description of the Czech neuroinformatics node with introduced chairman profesor Mirko Novák (CTU FTS Prague). Then there is described projects and the field of interest of the national neuroinformatics node.

Congress 2009 - There is only date and place, where the congress took place. Then there are links to websites with more information about this congress.

Partners - There is a list with partners and universities, which participates in the node. There are only their names with links to their own websites.

People - There is a list of people with the place, where they work and their email addresses. The names of people are not links to the sites with description of the person.

Activities - There are only named the fields of activities, which are publications, interesting articles, reports, photos and videos. Again, the names are not links to sites with description of the activity.

Neuroinformatics - There are no information at all.

Links - There are links to the International Neuroinformatics Coordinating Facility (http://www.incf.org/), Neuroinformatics 2009 – Pilsen (http://www.neuroinformatics2009.org) and to the Neural Network World (http://www.uivt.cas.cz/nnw). Neuroinformatics 2009 - Pilsen contains some information about the 2nd INCF Congress of Neuroinformatics, which took place in Pilsen in September 2009. The Neural network World is an international journal on non-standard computing and artifical intelligence.

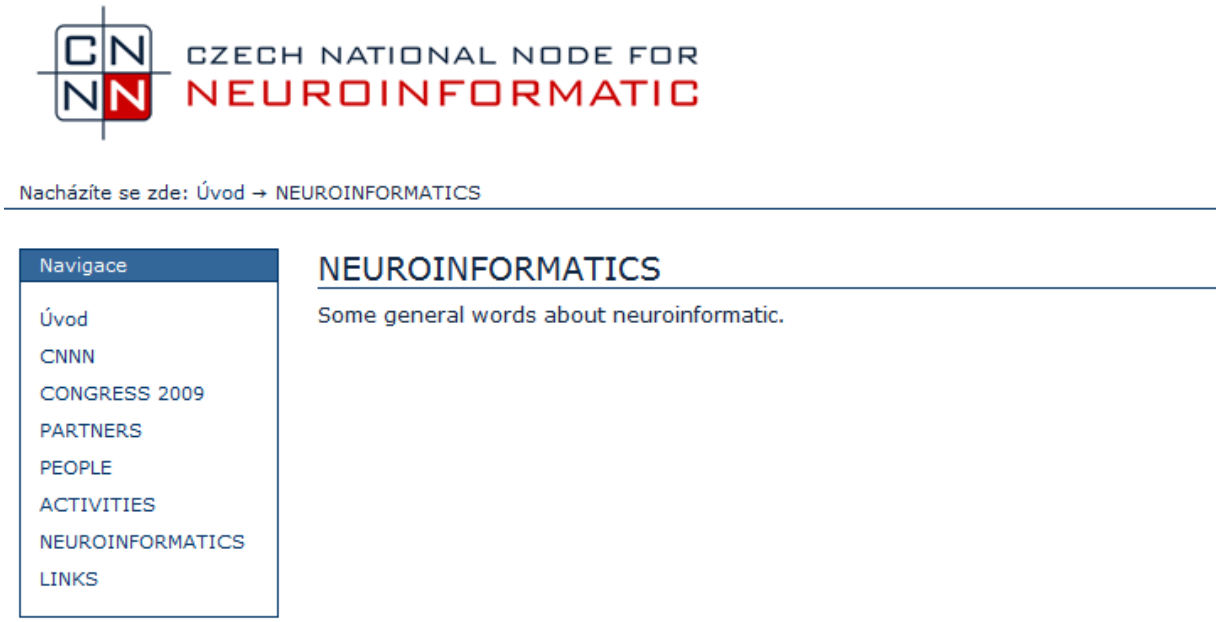


Figure 4.2.1-1: illustration of the deprecated information on the Czech national node for neuroinformatic presentation websies

4.2.2INCF

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).

4.2.2.1 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 (see Figure 17, 18 in Attachment A):

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)

4.2.2.1.1 EEG/ERP Portal software

The structure of websites:

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.

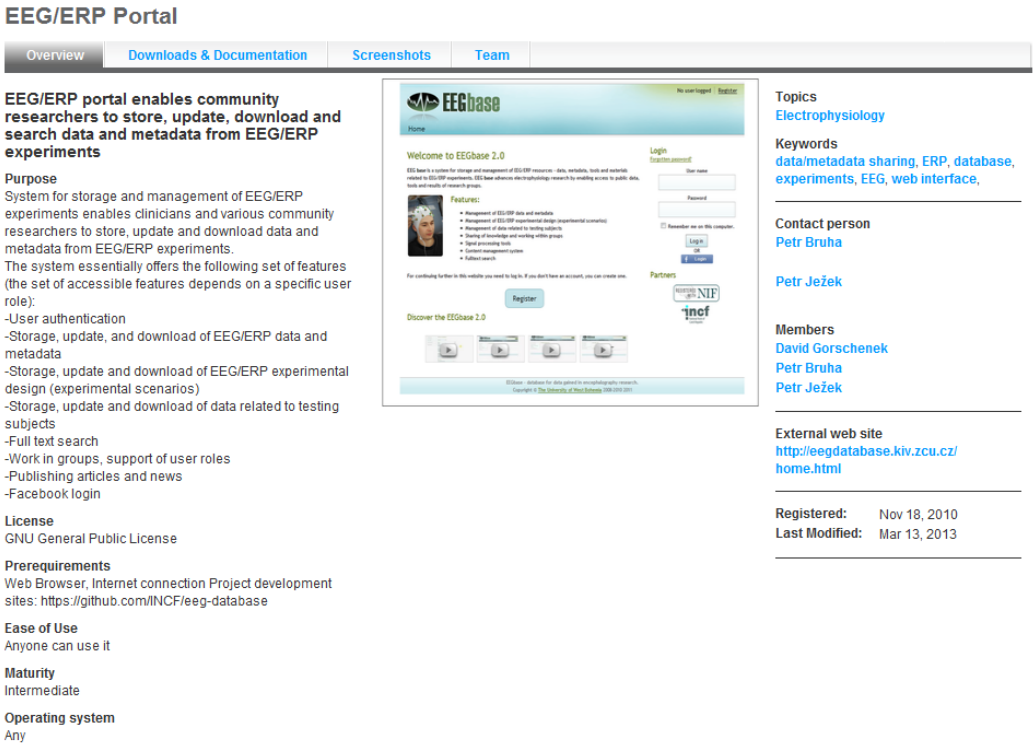


Figure 4.2.2-1: EEG/ERP Portal software homepage on INCF Software Center

4.2.2.1.2 Other softwares

It is Waxholm Space Atlas software and Pandora software, which have more information on INCF Software Center sites in comparison with the EEG/ERP Portal software.

The structure of websites:

The *Overview, Downloads & Documentation, Screenshots* and *Team* menu items have similar content to EEG/ERP Portal software, but these softwares containg three extra menu items.

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.

4.2.2.2 INCF Dataspace

INCF Dataspace is one of the ways of presentation of the research results. It is mentioned here only for completeness of the INCF products.

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.

For the process of registration on INCF Dataspace see Figure 19 in Attachment A.

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.

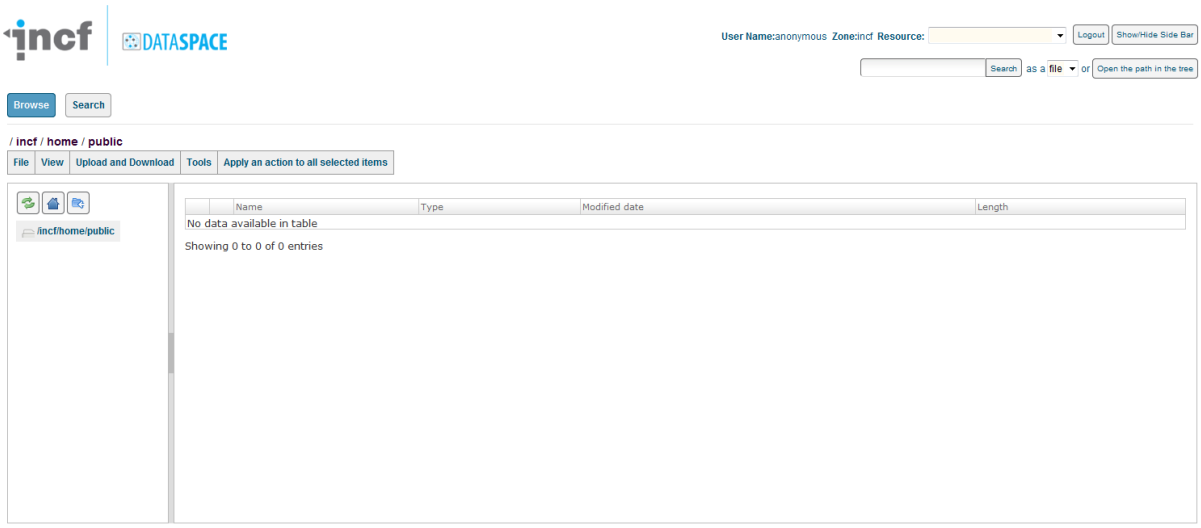


Figure 4.2.2-2: Homepage of user's INCF Dataspace

4.2.3EEG base

EEG base is an existing system for storing and managing EEG/ERP resources (data, metadata and tools). It is running in the Department of Computer Sciences and Engineering.

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

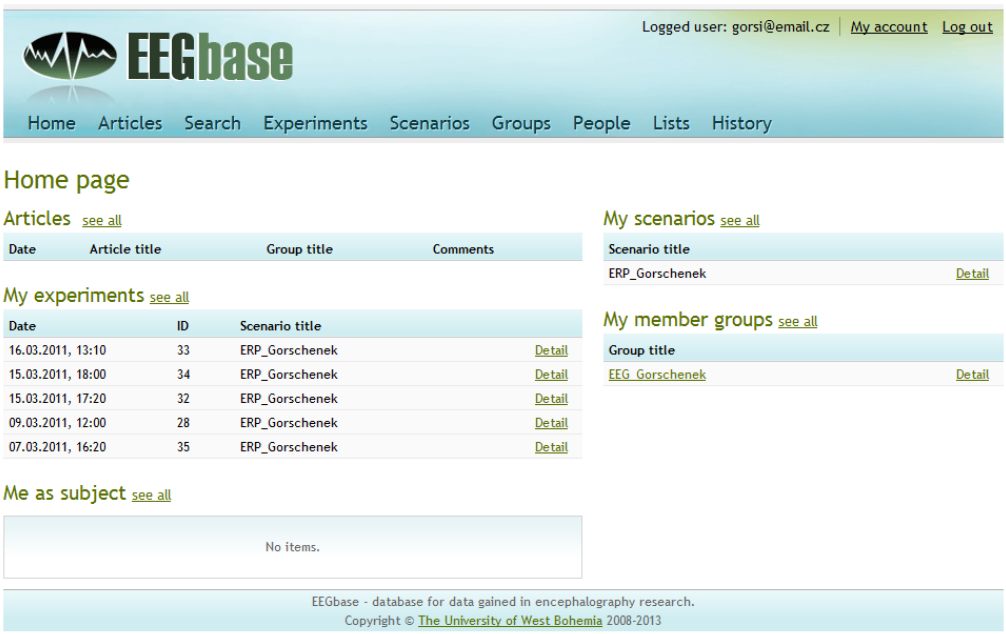


Figure 4.2.3-1: EEG base's home page

4.3 Analysis of presentations

4.3.1KIV

4.3.1.1 KIV Research software

It is one of the ways of presenting software of the research group. The EEG/ERP research group at University of West Bohemia has presentation websites of the EEG/ERP Portal software on INCF Software Center.

4.3.1.1.1 Registration of the new 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.

4.3.1.2 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)

4.3.1.2.1 Centre of Computer Graphics and Visualization

Centre of Computer Graphics and Visualization focuses its research on algorithms and mathematical foundations of computer graphics, data and information visualization, human computer interaction and applications of computational geometry.

Structure of their websites:

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.

4.3.1.2.2 Text-Mining Research Group

Text-Mining Research Group focuses on knowledge mining from texts.

Structure of their websites:

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.

4.3.1.2.3 Laboratory of Intelligent Communication Systems

Laboratory of Intelligent Communication Systems focuses on acquiring both applied and theoretical results in the areas of intelligent processing of text data and pictures. They primarily focuse on the task of improving web searching by using semantic information, and using semantic information in language modelling.

Structure of their websites:

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.

4.3.1.2.4 Medical Information System Research Group

The Medical Information System Research Group is a part of the Medical Applications Research Group at the Department of Computer Science and Engineering at the University of West Bohemia in the Czech Republic. Medical Information System Research Group focuses on design and development of the Medical Research and Education Information System.

Structure of their websites:

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.

4.3.1.2.5 Embedded Systems, Specialized Hardware and Computer Networks

This research group focuses on process automation networks, sensor networks, computer-aided design of embedded systems, reconfigurable/programmable embedded systems, design of low-power systems, architectural and compiler techniques for embedded systems, and Internet-based embedded systems.

Structure of their websites:

Home - There is some general information about the group and about the embedded systems in general.

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

Publications - There is a list of publications, which is 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 and there are also some files about particular research to download.

Links - There is nothing in this menu item.

4.3.1.2.6 Distributed Systems, Simulations, Software Engineering

This research group focuses on exchanging information that concerns research topics in the given areas of Computer Science.

Structure of their websites:

Home:

- *Members* - There is a list of members of the research group, which is divided according to the graduation level.

Seminars - There is a list of meetings to improve cooperation among the group members and to share knowledge acquired in individual projects. The seminars are divided into planned seminars and older seminars.

Research:

- *Projects* - There is a list of projects, which is divided into currently active projects and past projects.

- *Publications* - There is a list of the most important publications of the research group and it is divided into categories of software components and discrete simulation and dependability.

- *Components* - There is some basic information about current work on the software components by the researchers.

Resources:

- *Conferences* - There is a table, which lists conferences of interest to this research group.

- *Links* - There are some links with sources of interesting information for the researchers.

- *Software* - There is possibility to download software produced as part of their research. There is for example C-Sim, which is a tool designed for discrete-time simulations. Its equivalent in Java programming language is J-Sim, which can be downloaded too.

Internal:

- *Acknowledgements* - There is a list of acknowledgements that are proper for research work supported by one of their current (or past) projects and grants.

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

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

4.3.2INCF neuroinformatics nodes

More research groups described in detail with screenshots.

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.

4.3.3 Foreign universities

In the following chapters I describe presentation websites of the research groups of four major universities all over the world. It is Oxford University, University of Cambridge, Massachusetts Institute of Technology (MIT) and Harward University. I focus on the research groups and departments at the universities with similar field of interest to the neuroscience group at the University of West Bohemia.

4.3.3.1 Oxford University

Oxford university is one of the oldest universities all around the world. Oxford university was established at the beggining of the 11th century. The research of the university is divided into four divisions - humanistic, physical-mathematical-natural, medical and social sciences.

4.3.3.1.1 Nuffield Department of Clinical Neurosciences

The Nuffield Department of Clinical Neurosciences was established in 2010. It was created by putting together the Department of Clinical Neurology, the Nuffield Laboratory of Ophthalmology, the Nuffield Department of Anaesthetics and the Oxford Centre for Functional Magnetic Resonance Imaging of the Brain (FMRIB).

Structure of their webistes:

About - Introduction of the group and their collaborators.

News - Information about upcoming events.

Events - There is a list of all events divided according to months.

Courses - There is a list of announced courses with their overview, organisers, course fee and course location.

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

Publications - There is a list of recent publications but you can find an old publication too by using search field in the right side of the website. after clicking on particular publication, description, year of publication, volume and number of pages are shown in the popup window.

Study with us - There are shown some information on research group's involvement with teaching medical students. Then there are some study opportunities for clinical and non-clinical postgraduates and they also offer a range of courses to clinicians and other healthcare professionals seeking to develop their skills.

Our team - 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).

Structures of the research group's websites at the Oxford University are very similar. There are overview of the group, list of members, links to posts with upcoming events and news about researchs and results of the researchs of the group on each group's website.

4.3.3.2 University of Cambridge

University of Cambridge was established at the beggining of the 13th century. This university is well known thanks to the greatest scientists, such as Isaac Newton, Charles Darwin, Ernest Rutherford, Alan Turing or James Clerk Maxwell.

4.3.3.2.1 Cambridge Neuroscience

The neuroscience at Cambridge has a long history and they achieved many goals in their history. But the Cambridge Neuroscience research group itself was established and launched in 2007.

Structure of their webistes:

About - Introduction of the group and its field of research. Then there is information about history of the neuroscience at Cambridge.

Research and Collaboration - There are links to any of the five core themes of the neuroscience at Cambridge. Then there is a list of some research fields, in which the neuroscience group at Cambridge collaborates with companies, such as GlaxoSmithKline, Microsoft or Toshiba.

Directory - It is possible to find any researcher at Cambridge according to the department, institute or keywords. There is also a list of all members and a list of principal investigators. The list of people contains 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.

News, events and seminars - Here are some lectures, seminars, talks or some vacancies that may be of interest. Then there is an archive with latest news of the neuroscience at Cambridge and an archive with all news what so ever, which is divided according to years of published. Then there is also an archive with events and a list of upcoming events.

Information for... - There is some information for people, who want to apply for a job, then some information for students, researchers and media.

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

4.3.3.3 Massachusetts Institute of Technology

Massachusetts Institute of Technology (MIT) is a private university, which is supported by the state. It is one of the most prestigious universities of the world, especially for its research in the technology field.

4.3.3.3.1 Department of Brain and Cognitive Sciences

The Department of Brain and Cognitive Sciences at MIT was established in 1964. The department puts together the neuroscience, biology and psychology. They put together these disciplines so they could study specific aspects of the brain and mind together.

Structure of their webistes:

About - Introduction of the group and its field of research. Then there is information about history of the Department of Brain and Cognitive Sciences.

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.

Academics - There are some learning opportunities for undergraduate, graduate and postdoctoral students.

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

News and events - There is video archive, information about upcoming events and actualities about whole department. 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.

Diversity and outreach - here the Department of Brain and Cognitive Sciences offers a number of science outreach programs in collaboration with the Department of Biology. These programs offer practical activities for high school science teachers and their students, summer workshops for high school students, laboratory training and summer research opportunities for high school science teachers and summer research internships for undergraduate students from other universities.

Giving - There is some information about faculty and department and people can donate money here.

4.3.3.4 Harvard University

Harvard University was established in 1636. It is the oldest institution of higher education in the United States. It is also one of the biggest university all around the world with more than 360 000 alumni around the world.

4.3.3.4.1 Center for Biomedical Informatics

The Harvard Medical School (HMS) Center for Biomedical Informatics (CBMI) is a research center within the Harvard Medical School, which supports collaboration in biomedical informatics among the researchers.

CBMI was established in 2005 and the CBMI conducts research on biomedicine and the computer and information sciences.

Structure of their websites:

Home - There are some links to the research of the center, education and training, resources and about the CBMI research center. At the bottom of the page there are a short list of news and events of the center.

About CBMI - There is a description of the mission of this research center. Then there is a description of the research center itself.

Research - There are described three diverse and interconnected areas of investigation: Bioinformatics, Clinical Informatics and Translational Science.

News and Events - There are short descriptions of news and events with links to the detailed information about them. News and Events are not sorrted according to the years or months but after clicking on the events I found out that the newest event is in the first place in the list but the newest event does not have to be the most actual event.

Education and Training - The CBMI research center trains students in several programs (Biomedical Informatics Research Training program, Bioinformatics and Integrative Genomics program).

Resources - There is a table with resource name and corresponding resource comments. The resources are some tools, charts, records or databases.

4.3.3.5 Boston University

Boston University is one of the largest private universities in the United States. It is mainly a research university and it is located in Boston, Massachusetts. Boston University was established in the 19th century. Boston University has over 33 000 undergraduate and graduate students from more than 140 countries, 10 000 faculty and staff, 16 schools and colleges, and 250 fields of study.

4.3.3.5.1 Center for Neuroscience

The Center for Neuroscience was established in 2007. The center is interested in experimental and theoretical-computational approaches, which include molecular, cellular, systems, behavioral, and cognitive levels of analysis. The aim of the center is to expand our knowledge of fundamental mechanisms of brain function and use it in the practical applications such as treatment of neurologic and psychiatric disorders and development of new directions in educational practice.

Structure of their websites:

Homepage - There is a description of the Center for Neuroscience with its history and description of the field of research.

Executives - There is a Founding Director of the Center and Chair of the Executive Committee of the Center for Neuroscience and then there are Founding Executive Committee Members. All members are links to their homepages.

Current Center Supported Research - There is always the name of the research (e.g. Addiction) and its appropriate working group (e.g. Addiction Working Group) with the description of the research.

Contact - There is some information of the Center for Neuroscience to contact them.

4.3.4Conclusion - structure of the presentation 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.

4.4 Content Management Systems

Content Management Systems (CMS) are used to present information on the websites. It allows publishing and editing content of the websites. I chose four well-known and the most used free content management systems to compare their functionality and ease of use and to pick one of them for creating a presentation websites of the neuroscience research group at the University of West Bohemia.

4.4.1PLONE

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).

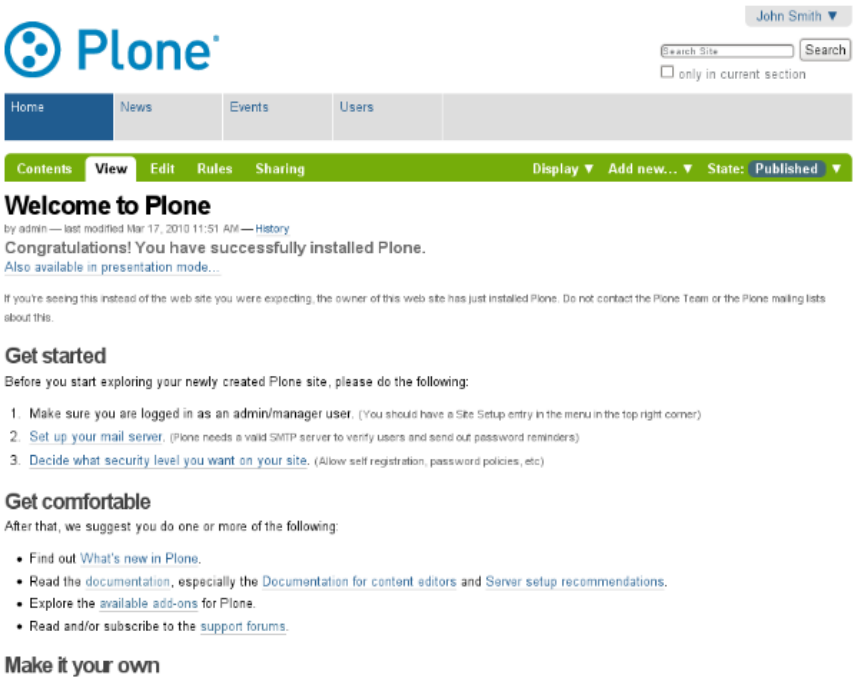


Figure 4.4.1-1: Example of the administrative interface of the website

4.4.2WordPress

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.

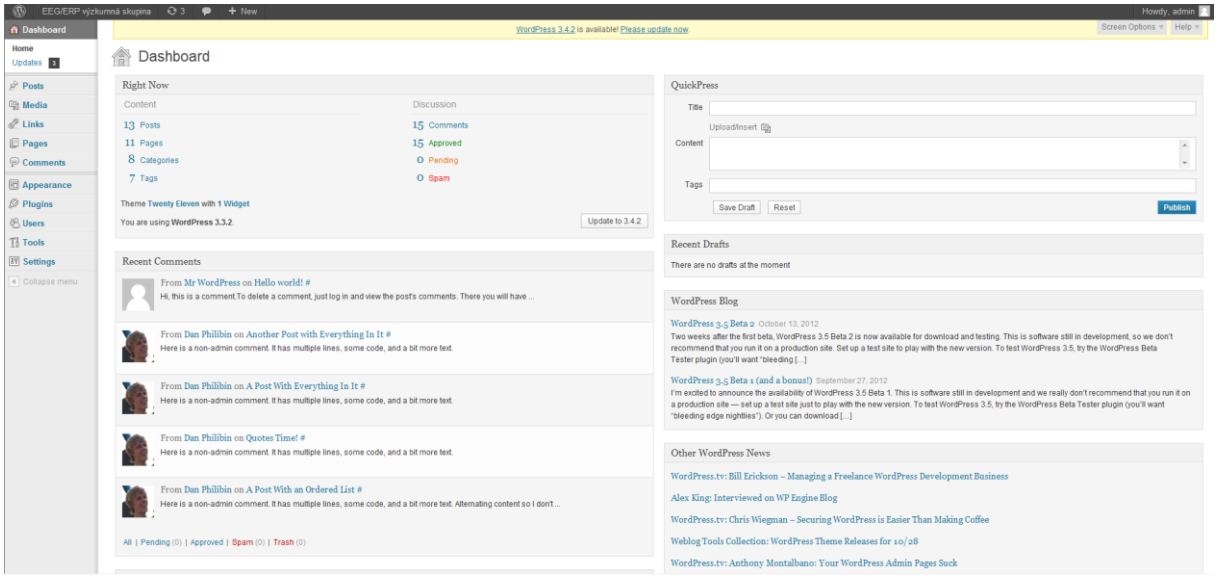


Figure 4.4.2-1: Example of the administrative interface of the website

4.4.3Joomla!

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).

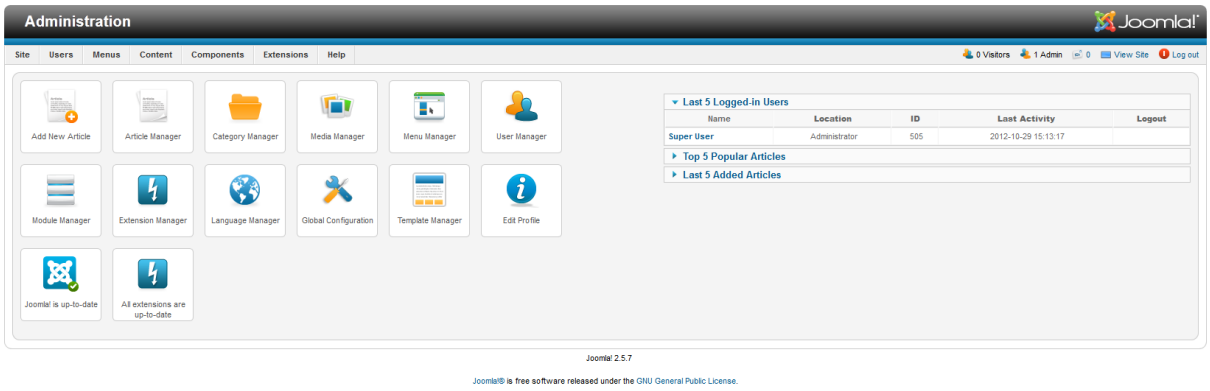


Figure 4.4.3-1: Example of the administrative interface of the website

4.4.4Drupal

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.

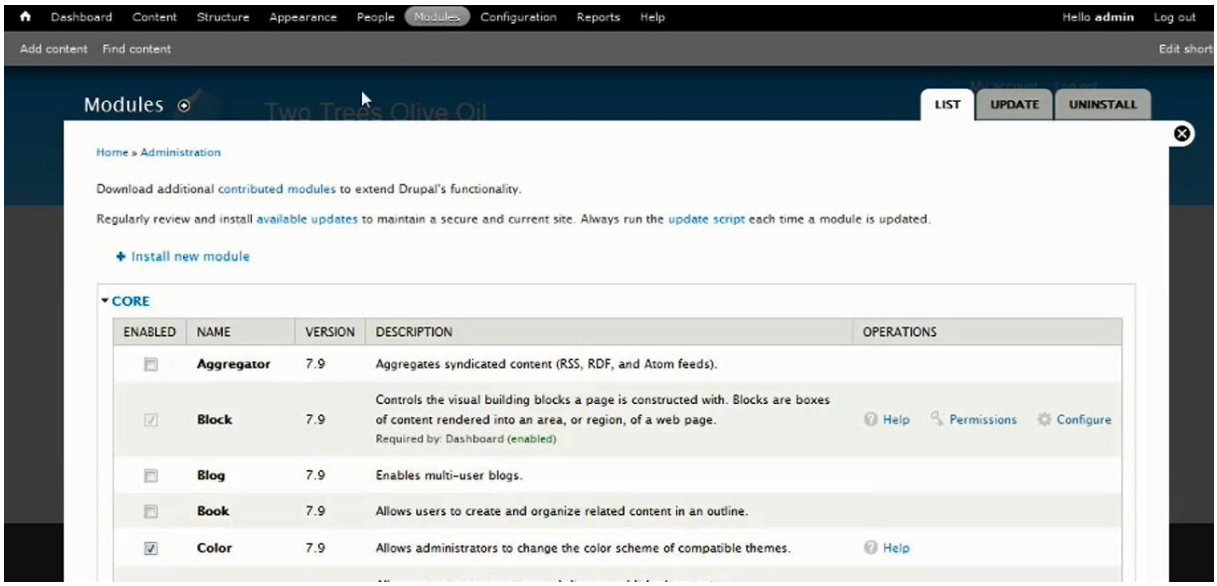
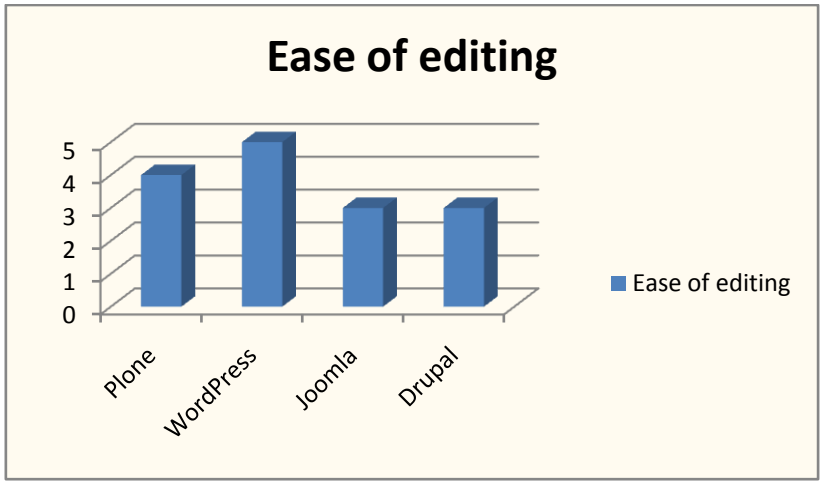
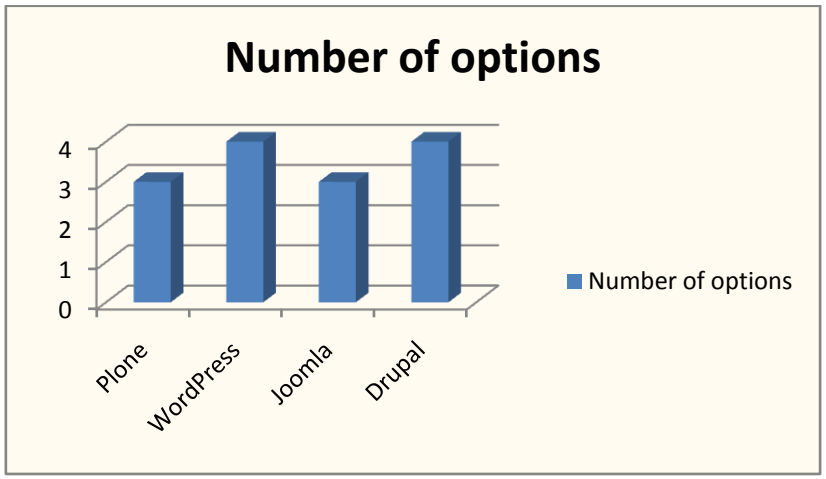
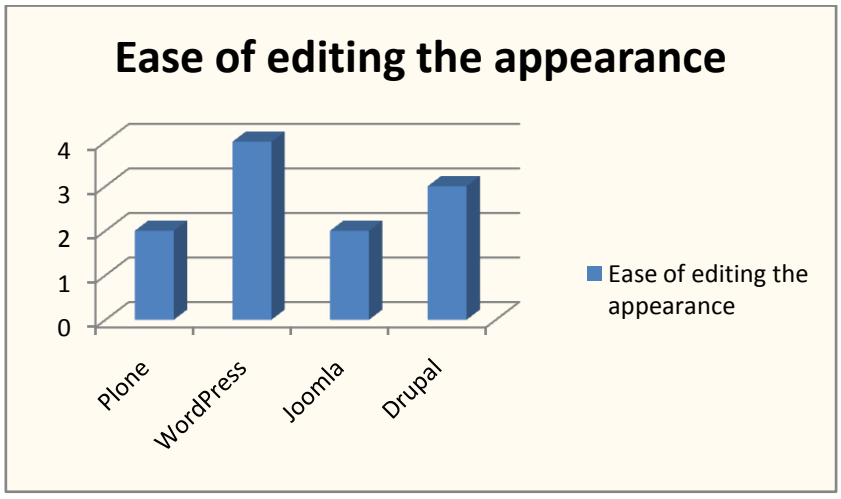


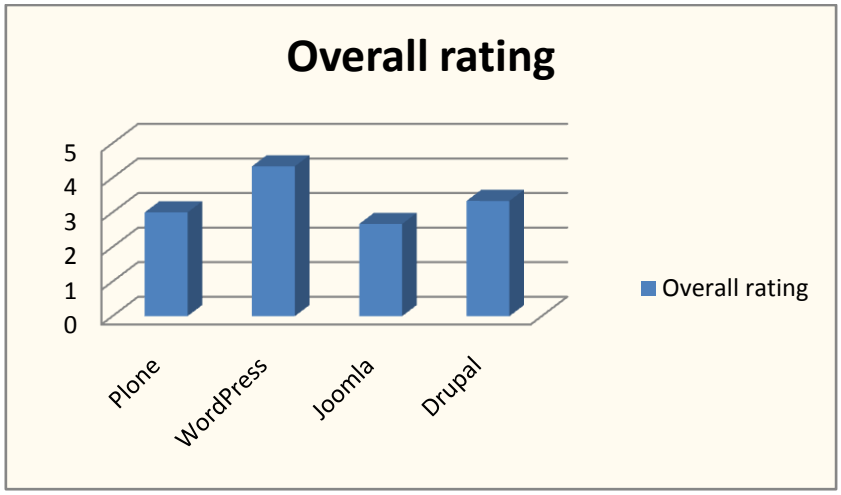
Figure 4.4.4-1: Example of the administrative interface of the website

4.4.5Comparison of all content management systems


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


Number of options
4
3
2
1
0
Plone
WordPress
Joomla
Drupal
Number of options


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



4.5 Creation of the website

4.6 Conclusion

5 Conclusion

List of abbreviation

Bibliography

[1] Medical Applications research group

[Online, visited on 22.4.2013] http://www.kiv.zcu.cz/en/research/groups/medical-applications/

Attachment A -

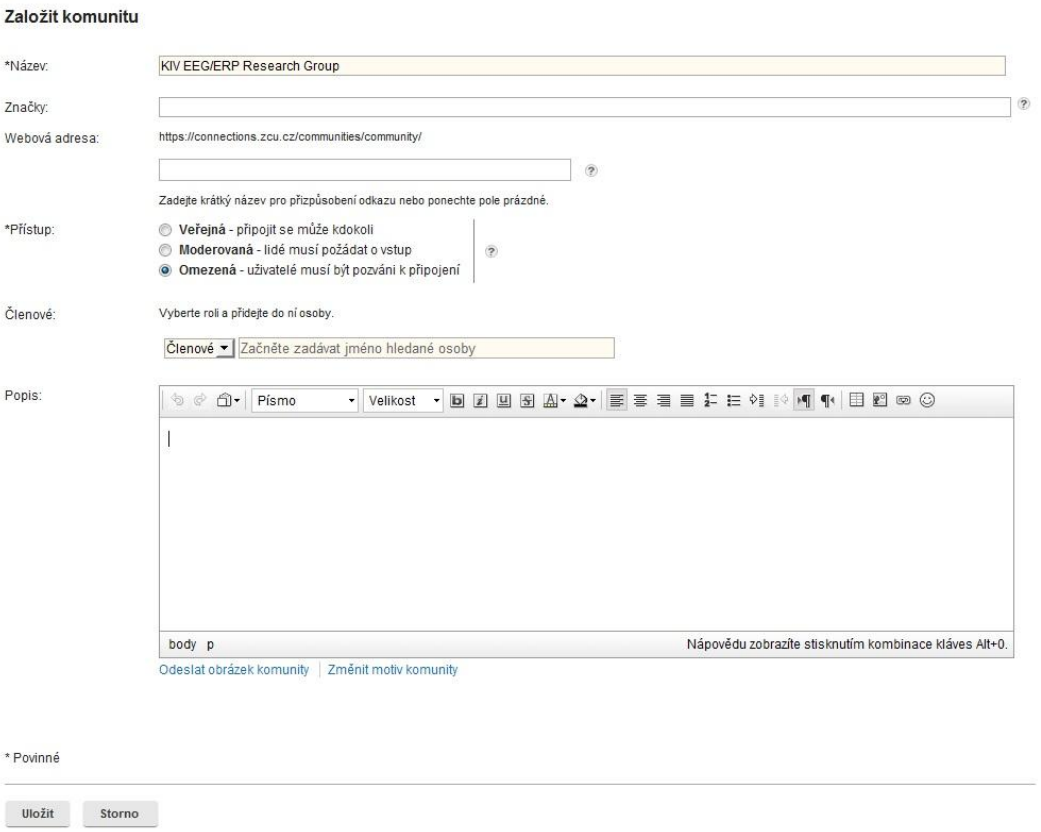


Figure 4.4.5-1: Process of creating new community in IBM Connections 4.0

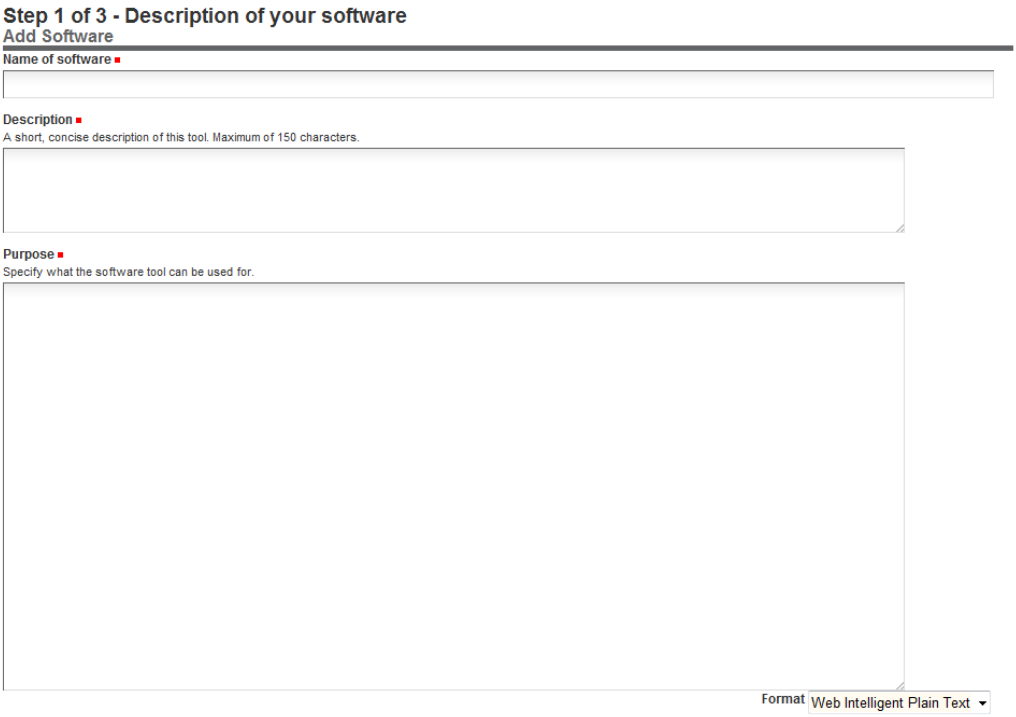


Figure 4.4.5-2: Process of registering new software on INCF (1/2)

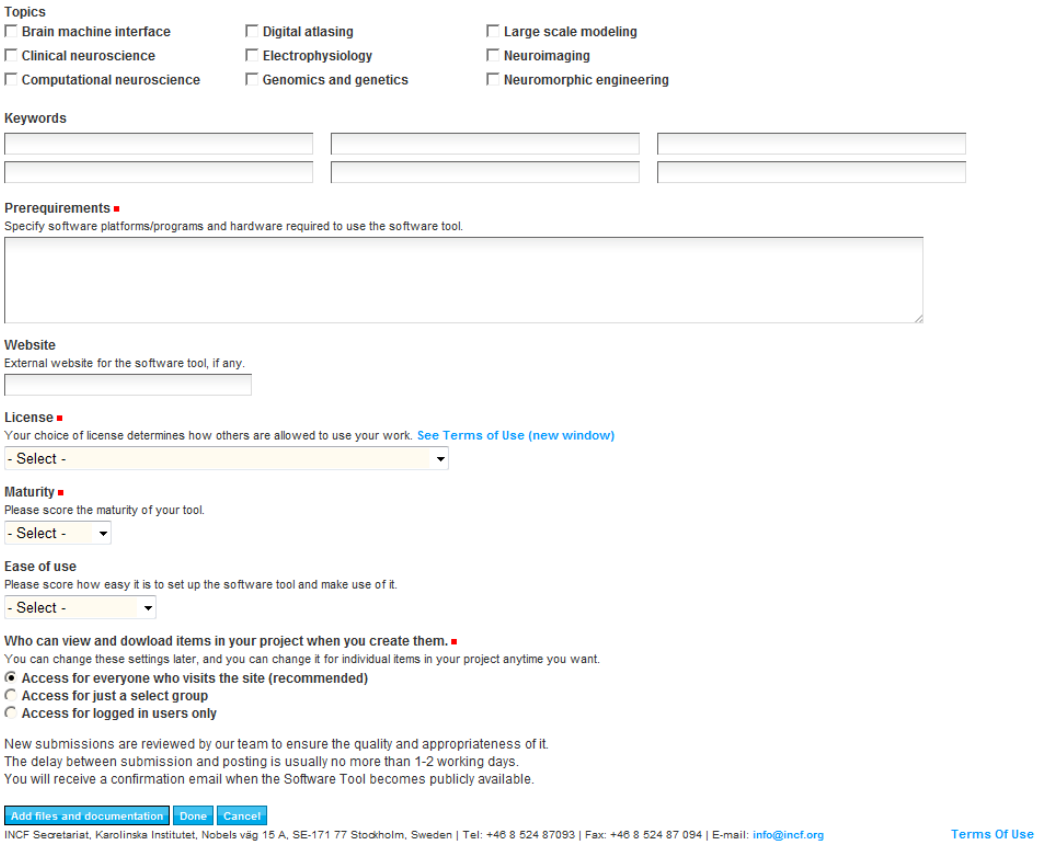


Figure 4.4.5-3: Process of registering new software on INCF (2/2)

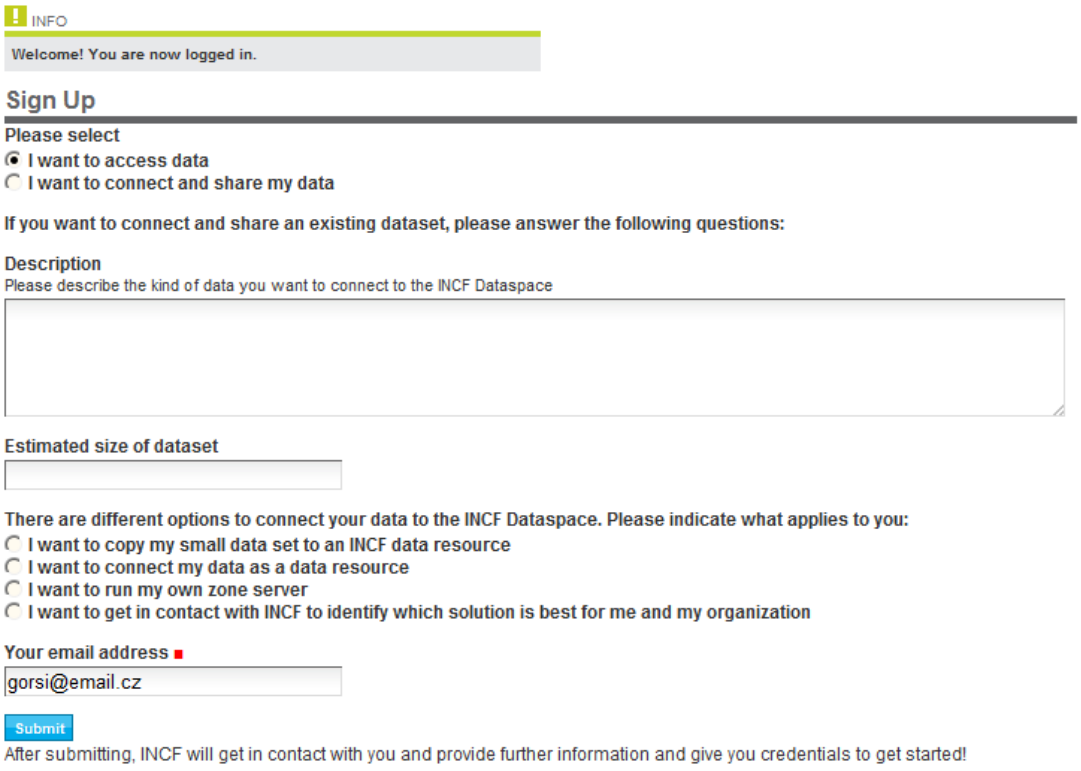


Figure 4.4.5-4: Process of registering on INCF Dataspace

Attachment B - CMS's sites

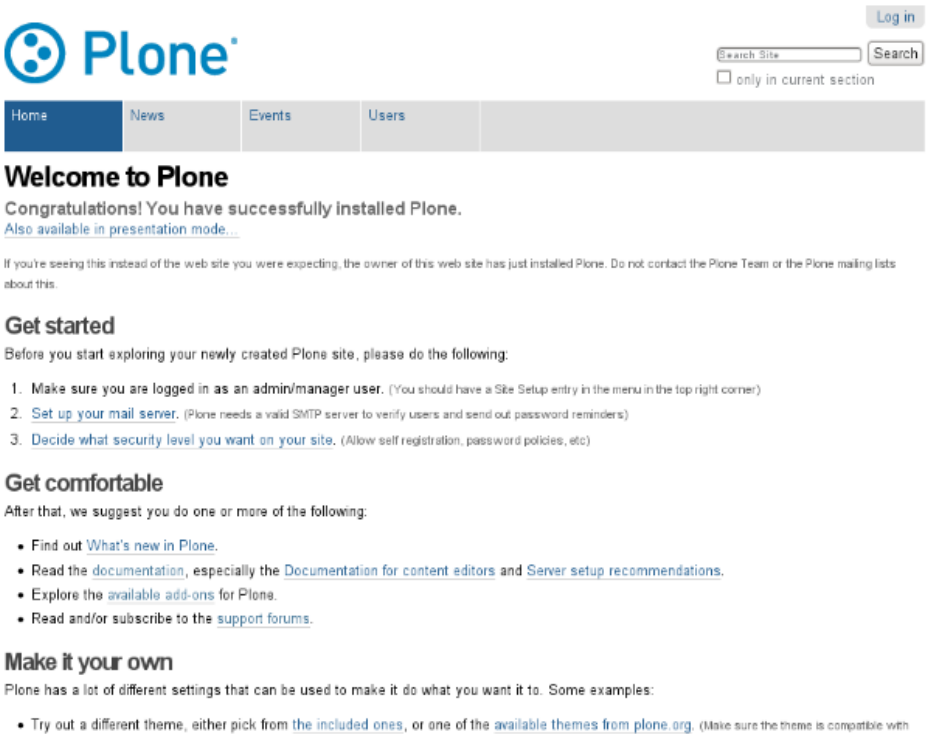


Figure 4.4.5-1: example of the Plone website

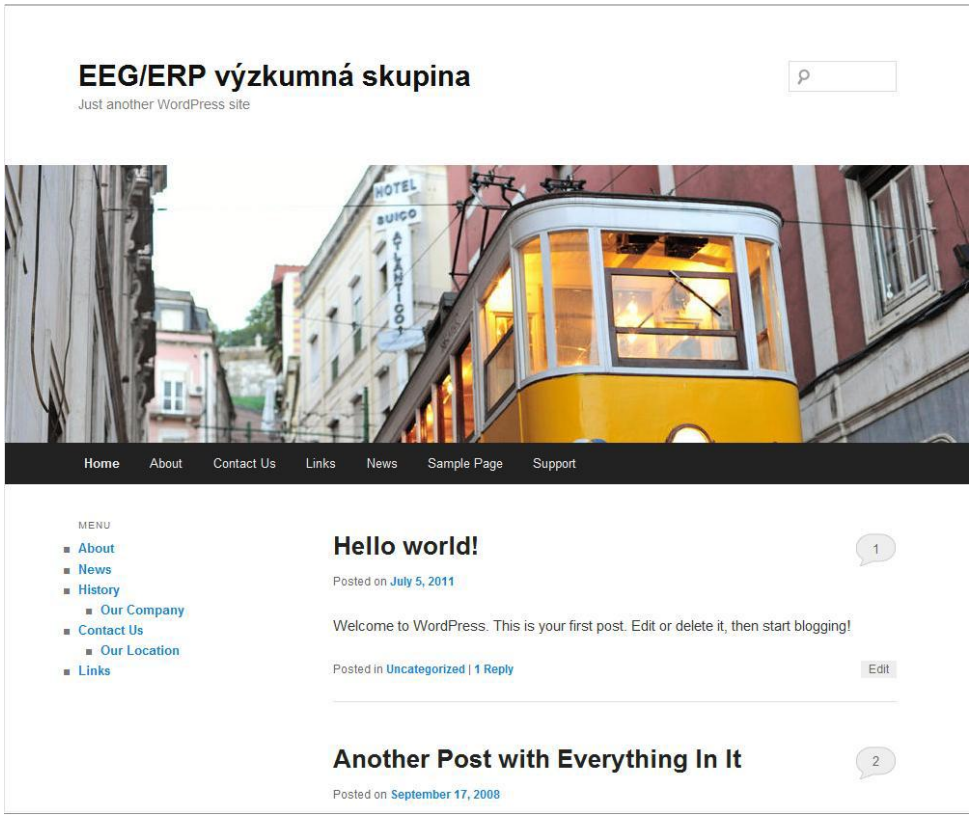


Figure 4.4.5-2: Example of the WordPress website

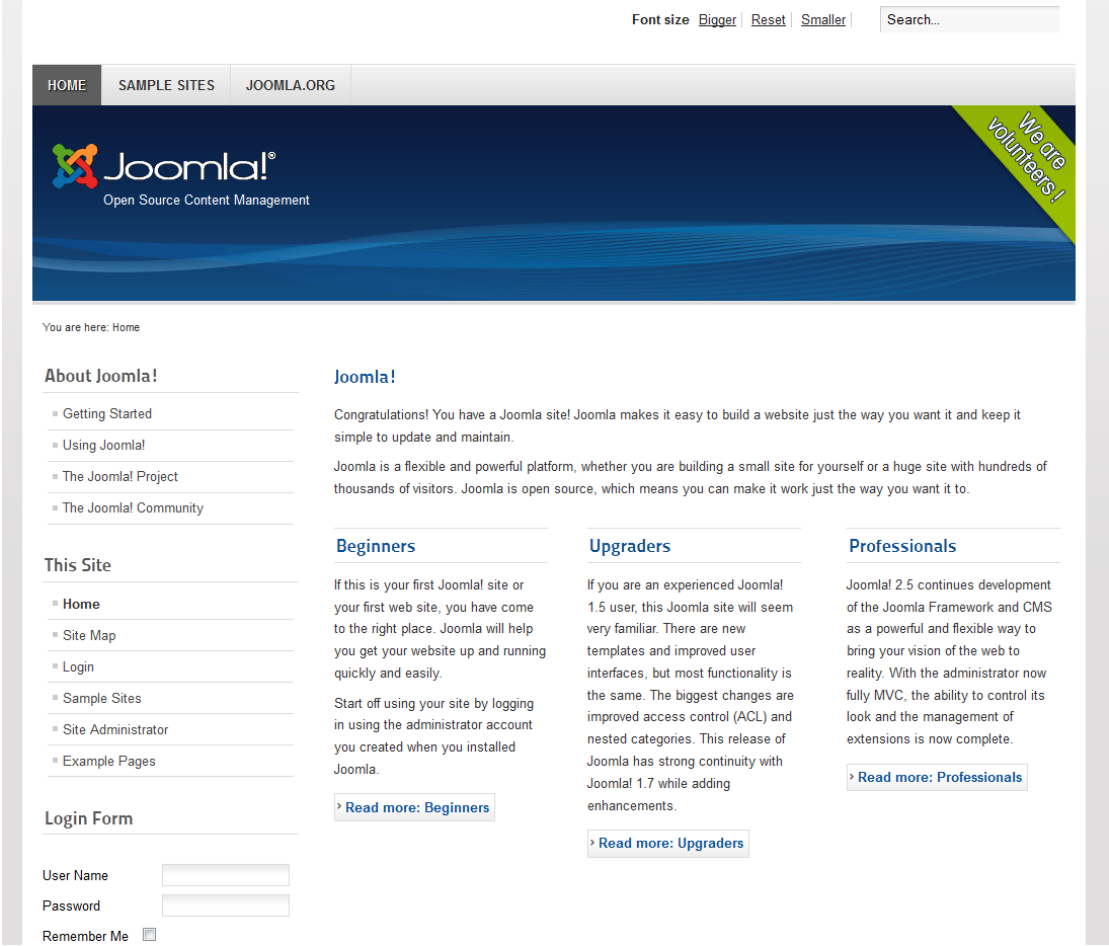


Figure 4.4.5-3: Example of the Joomla! website

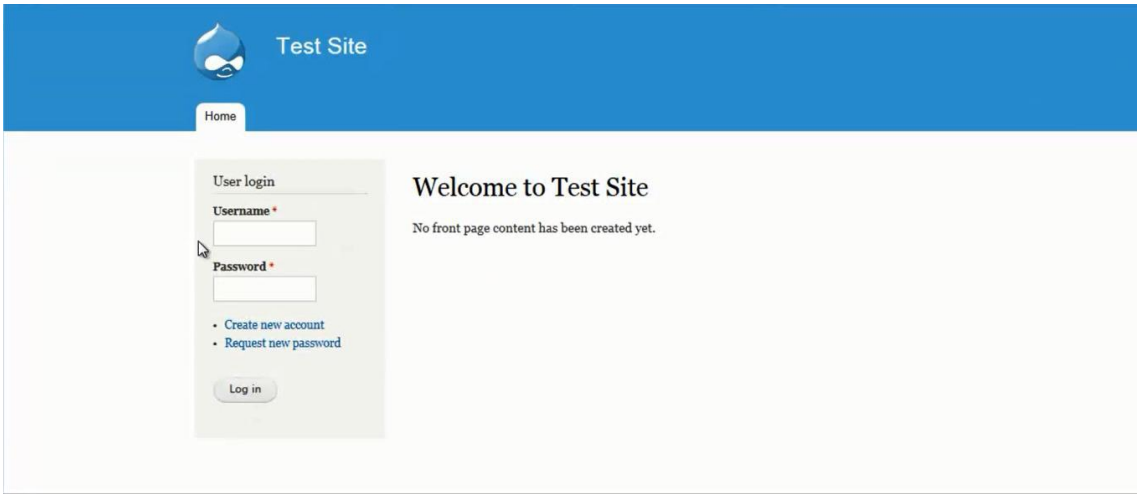


Figure 4.4.5-4: Example of the Drupal website