



Structuring European Biomedical Informatics to Support Individualised Healthcare

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Final report on common platforms and tools for research

WP2 – Dissemination and communication

Deliverable D21

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Authors (affiliation): Juan Antonio De los Cobos (FIMIM), Carlos Díaz (FIMIM),
Nathalie Villahoz (FIMIM)

Lead participant: FIMIM

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Document History

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Carlos Díaz (FIMIM)	25/11/06	v1.4	Final Review

Definitions

- Partners of the INFOBIOMED Consortium and organisations are referred to herein according to the following codes:

FIMIM – Fundació IMIM (Spain) – Co-ordinator

IMIM – Municipal Institute of Health Care (Spain) – Contractor

ISCIH – Institute of Health Carlos III (Spain) – Contractor

UEDIN – University of Edinburgh (UK) – Contractor

CUSTODIX – CUSTODIX nv (Belgium) – Contractor

UPM – Polytechnical University of Madrid (Spain) – Contractor

UAVR – University of Aveiro - IEETA (Portugal) – Contractor

FORTH – Foundation for Research and Technology (Greece) – Contractor

FUNEN – Danish Centre for Health Telematics (Denmark) – Contractor

INFORMA – Informa S.r.l. (Italy) – Contractor

HHUD – Heinrich-Heine-Universität Düsseldorf (Germany) – Contractor

ERASMUS – Department of Medical Informatics, Erasmus University Medical Centre Rotterdam (The Netherlands) – Contractor

HNPCC – The Danish HNPCC-register, Hvidovre Hospital (Denmark) – Contractor

ACTA – Academisch Centrum Tandheelkunde Amsterdam (The Netherlands) – Contractor


AZ – AstraZeneca Research and Development Mölndal (Sweden) – Contractor

ULEICS – University of Leicester (UK) – Contractor


Note:

KI – Karolinska Institute (Sweden) withdrawn as contractor as of 1st of January 2005, and was substituted by **ULEICS**.

- Network:** The INFOBIOMED network as defined by contract IST-507585.
- Work plan:** Schedule of tasks, deliverables, efforts, dates and responsibilities corresponding to the work to be carried out for the INFOBIOMED network, as specified in Annex I to contract IST-507585.

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- **Consortium:** The INFOBIOMED Consortium, conformed by the above-mentioned organisations.
- **BI:** Bioinformatics
- **MI:** Medical Informatics
- **BMI:** Biomedical informatics
- **IT:** Information technologies

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1. Introduction


Activity 2.1 in the INFOBIOMED work plan aims at identifying and developing the common tools and platforms needed to carry out the Joint Programme of Activities, with special emphasis on telematics applications supporting tele-collaboration. The focus is therefore on applications addressed to support the sharing and discussion of data in the broad area of Biomedical Informatics (BMI), as well as in the closely related areas of Medical Informatics (MI) and Bioinformatics (BI).

Knowing that advances in technology and software are continuous, this deliverable offers an update of the tools presented in deliverable *D4 – First Report on Common Platforms and Tools for Research*, and introduces new research tools and platforms for collaboration detected by the Consortium, which could be useful in the framework of BMI.

This complies with one of the tasks resulting from the work done at the beginning of the project within activity 2.1, and which were reflected in D4 as conclusions. A second task was focused on improving the LINK3D application, and this work is reported in section 3 of this document. A further activity referred to improvement of the private zone of the INFOBIOMED website; section 4 explains the progress made. Additionally, section 5 reviews access statistics of the INFOBIOMED website so that its usage can be assessed.

Finally, a new survey has been performed in order to: 1) identify the practices, IT tools and platforms that have been used by involved researchers to collaborate for the carrying out of INFOBIOMED; and 2) to detect IT tools and platforms still needed to improve collaborative research. The results of this survey complement those obtained from the previous one done early on in the project, which aimed at investigating the practices and needs of BMI researchers with regards to tools for collaborative research. The results of that survey were comprehensively reported in deliverable D4. While the population of reference in that case was composed by researchers operating in the BMI, BI and/or MI areas, both internal and external to the network, the new survey carried out focuses solely on researchers having participated in INFOBIOMED. This allows comparison between the declared practices and needs of researchers in general, with the actual usage of tools during the carrying out of the project.

It all serves to assess whether the tasks carried out during the project in the framework of task 2.1 have been adequate and useful so as to ease the consolidation of an integrated BMI environment in Europe.

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2. Collaborative tools

Update of the benchmarking analysis of collaborative tools presented in D4

This section updates the benchmarking analysis carried out on occasion of deliverable D4, firstly reviewing the status of already detected tools, and secondly including tools newly detected since then¹.

- Collaboration platform. <http://www.cittis.org/>

As stated in D4, it's an Open Source messaging tool that could be described as a Jabber-based instant messaging client; it is a very generic tool for both synchronous and asynchronous communication - designed to be able to support any clinical collaboration. It was noticed then that files can be attached but, contrary to other applications, the application itself does not do anything else than transport these files. Visualisation is only achieved through external applications, so it does not have visualization capabilities by itself.

Last year this platform was being tested in a number of projects with clinical collaboration on real patients, nevertheless no modifications are observed in the platform.


- PRIVARIA. <http://eepatents.com/privaria/>

This platform allows to hold secure connections with trusted users through a key exchange protocol. It seems that it is possible to integrate several applications with PRIVARIA in order to transmit secure data, share desktop, etc. (Coccinella, TightVNC).

After one year this tool is not longer available at the same link; however after an engine search it was noticed that PRIVARIA can be downloaded from SourceForge.net (<http://sourceforge.net/projects/tksec/>), a repository of Open Source code and applications available on the Internet.

This platform has been transformed to Open Source, in order to allow collaborations within the Open Source community (developers and end users). These collaborations promote a higher standard of quality, and help to ensure the long-term viability of both data and applications.

¹ Please note that the information described herein is based on the public information displayed in the corresponding web sites, as well as on the tests performed by INFOBIOMED staff, which are not intended to be comprehensive nor conclusive, but to provide some key factual data that can be useful for BMI researchers. As such, the information presented herein can contain unintentional inaccuracies and/or lack completeness. The project has enabled feedback channels on its web site so that any mistakes in the information reported can be flagged and subsequently corrected.

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- Coccinella. <http://hem.fyristorg.com/matben/>

An Open Source, multiplatform (Windows, Mac, Unix, Linux) Jabber (instant messaging tool) client with a “Paint-like” shared board, which is the most significant feature of this collaborative software.

During 2006 an updated version of Coccinella has been released with new features like:

- Support for Macintosh.
- Roster tree component with different styles.
- Main window configurable toolbar/notebook UI.
- Extensive build configuration possible.
- Integrated Jive/Asterisk phone presence status (*).

- TightVNC. <http://www.tightvnc.com/>

Defined as a “free remote control software package”. This is a cross-platform (available for Windows and UNIX), free application using a GPL license, that allows remote access to graphical desktops using the local mouse and keyboard. It basically sends snapshots of the desktop to the clients (although cursor movements seem to be rendered locally for greater smoothness in the interaction).

The last version is TightVNC 1.3.8, released in August 2006. Compared to the previous development version (1.3dev7), TightVNC 1.3.8 fixes the disconnecting on lock/logon/logout in the Win32 version, adds support for multi-monitor configurations (from DemoForge LLC), and includes a number of other enhancements and bugfixes. Other improvements are:

Win32 server


- Add support for DFMirage driver direct screen access mode (from DemoForge LLC). Improved layout and functionality of the Properties dialog.
- More accurate password handling: the server code tries to distinguish between "empty" and "unset" passwords better.
- New -shareall, -shareprimary and -sharearea command-line options, working similarly to the -sharewindow option.
- Problems with restoring desktop wallpaper have been solved.
- Fixed bug with not enabling JPEG compression by default.
- Fixed bug with not setting proper size of the viewer window.
- Uninstaller included, "unstable" labels removing. This version installs itself over installed stable versions by default.

Unix server

- Port numbers are now calculated modulo 65536 with vncviewer's -listen option. That makes it possible to listen on TCP ports under 5900.

Java viewer

- Automatic encoding selection based on measuring current network throughput.

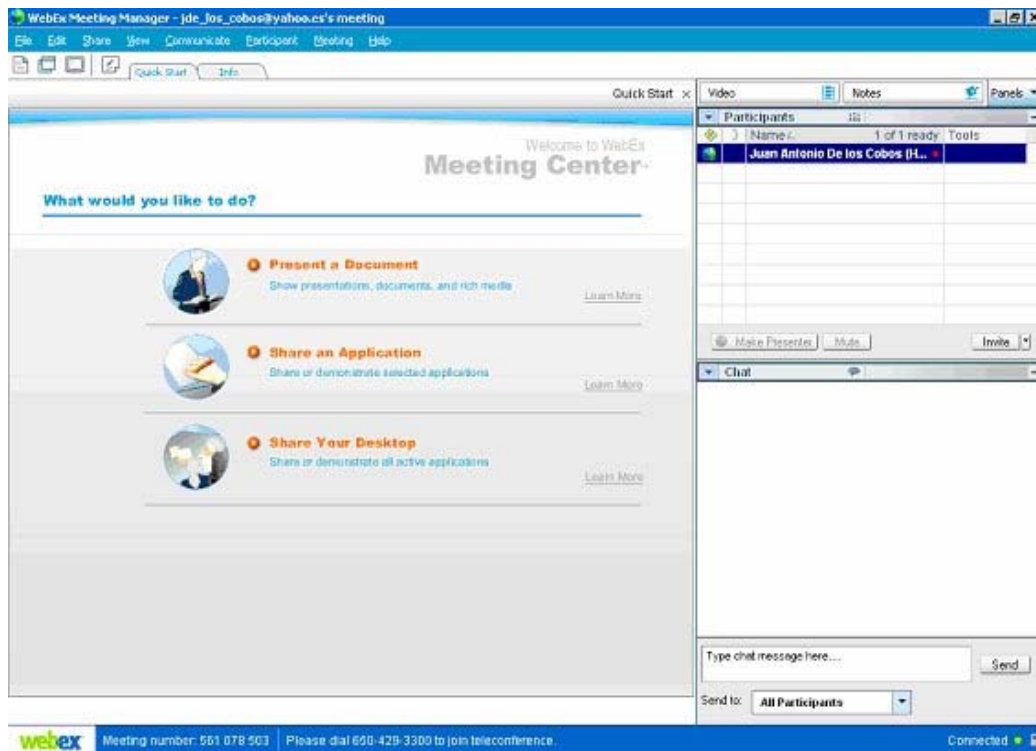
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- WebEx. <http://www.webex.com/>

This tool is web-based and must run through an external server (owned by the WebEx company). As web based, it supports virtually all platforms such as Windows, Mac, Linux and Solaris (the last two were not included in previous versions). It has whiteboard, desktop and application sharing facilities, chat, streaming video and audio, moderation, log reports and many other options. The main problems are confidentiality (as the communication is done by using the WebEx servers and there is no encryption). There are several billing options; the simpler one is to pay by minute / concurrent user.


The latest version has two new features:

- 1) Integration with Outlook: use Microsoft Outlook to schedule, start, and join online meetings.
- 2) One-Click Meeting: allows to send invitations and join meetings without logging into your meeting site or navigating web pages.



This version allows the users to share three types of information:

1. Documents: permits participants to jointly view any document or graphic with high-resolution, multilevel zooming and annotation capabilities.

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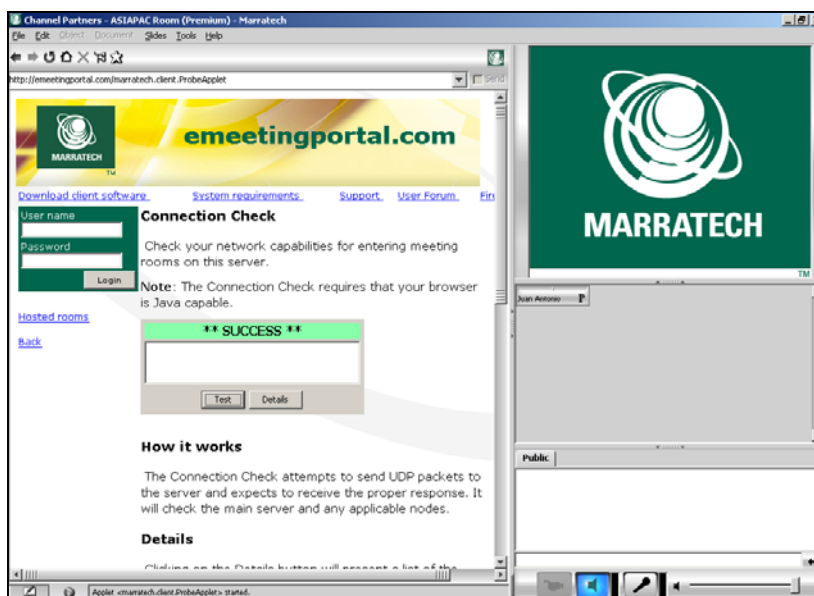
2. Share an application: enables the conference host to demonstrate and share control of any software application with others in an interactive meeting.
3. Share the desktop: presenters can share anything on their PC system, including applications or files.


- Marratech. <http://www.marratech.com/>

It is a commercial, multi-platform secure collaborative environment tool. The Marratech's licensed e-Meeting Portal works on Mac, Linux, Windows and Solaris operating systems. The portal can be installed on either a company network or a hosted Internet server; upgrades and extra licenses are available instantly. The system allows the user to control bandwidth limits, media selection, encryption and network port settings making the Portal adaptable to more complex network scenarios. It encrypts voice, video and documents. Among its features, the possibility for the participants to record and playback the entire meeting, including voice, video and whiteboard, must be remarked. It also allows private 'one-to-one' conversations with any participant, the sharing of applications, documents and images, with the option of using pointers, markers and making annotations with text or graphic tools, and the possibility of calling remote people into the meeting even if they are away from an internet connection.

The most recent version of this software is Marratech 6.0, which includes the following features:

- H.264 Video: gives much better video quality at lower bit rates.
- Full screen video: available on all platforms.
- Moderator role: Unrestricted plus possibility to kick and lock. Ability to upgrade and downgrade other users' roles during a meeting.
- Presenter role: Unrestricted without ability to downgrade / upgrade users.
- Student: Only send public audio, video and chat and use a 'Telepointer' to point.
- Listener: Receive-only client.



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New collaborative tools

Apart from the applications mentioned above, a new benchmarking analysis was performed, and as a result new applications were found which could be potentially useful, standalone or in combination with others, as tools and platforms for research collaboration in BMI. These tools can be classified as:

1. Research Projects
2. Free Collaborative tools
3. Commercial tools


For more details on the specific characteristics of each application, the reader is invited to visit the corresponding web sites.

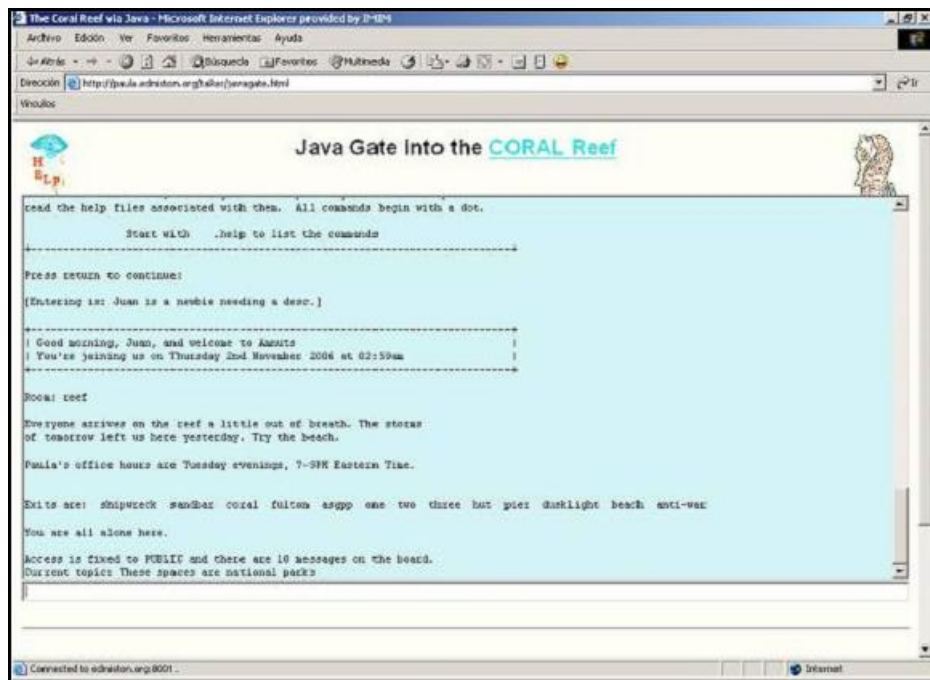
Research projects

- CORAL - Collaborative Online Research and Learning. <http://coral.wcupa.edu/>

CORAL is a multidisciplinary collaborative task force composed by members of different universities who have created and tested a platform for the integration of technology with collaborative teaching and learning. The model developed by the CORAL project uses Internet as a collaborative tool, connecting university-level students from different disciplines and at distant sites. The basic features of this platform are:

- *FileMan*: is a web-based File Manager that allows to upload and share documents with other team members, who can also create new files, edit existing files, download and search for files.
- *CORAL Reef Real-time discussions*: chat rooms that can be accessed using a web browser. Rooms can be set to "private" so that others cannot accidentally wander in, and sessions can be recorded to a file for later review.
- *WebBoard*: used to support communication within a group. Allows to work out schedules, discuss revisions and other project related issues. The project guides use a web-board to coordinate the mentoring process.
- *CORAL Calendar*: An online multi-user calendar; used to track team-specific deadlines and meetings, and a CORAL organizational calendar for posting overall dates such as videoconferences.
- *Video Conferencing*: real-time communication via sound and cameras
- *NetMeeting*: PC-based video conferencing. Optional tool for small scale, individual video conferencing and file sharing.


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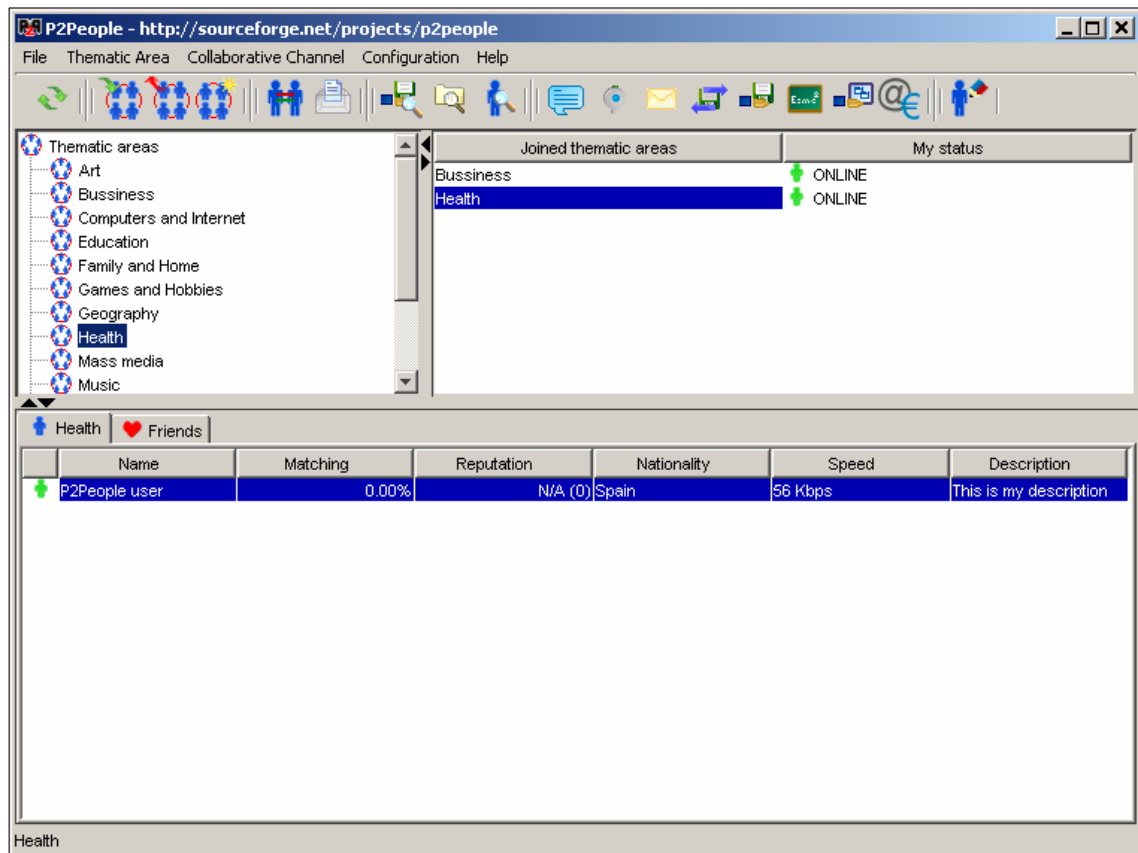


- **P2PEOPLE.** <http://sourceforge.net/projects/p2people>

The objective of the P2PEOPLE project is to develop a peer-2-peer (P2P) collaborative framework and an application to allow users to create virtual communities where they can share common interests and collaborate together. The P2PEOPLE approach is based on the concept of the "common interest group"; a common interest group is a virtual community of users who share common interests, knowledge areas and/or business. Potential users are universities and science groups, professionals, non-profit organizations, big and small corporations, etc. Among its features are:

- *Profile matching service*, allows to publish user interest in the network and find other "compatible" users.
- *Mail service*: allows for synchronous/asynchronous text and multimedia message exchange between users of the P2People platform.
- *File Sharing service*: provides file sharing functionality from one computer to another.
- *Screen Sharing service*: allows users to make visible part of they display to remote users to discuss tasks online in a unique screen.
- *Chat service*: Direct P2P chat allows users to join virtual chat rooms.
- *Voice & video communication service*: allows real-time video transmission and videoconferencing among users in the P2P environment.

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Free collaborative tools

- **Twiki.** <http://twiki.org/>

Twiki is a free collaborative platform and knowledge management system, that works as a Structured Wiki; this means that this tool combines the benefits of a Wiki and a database application. It's normally used to run a project development space, a document management system, a knowledge base or any other groupware tool.

The benefits of this tool are that the structure and text content of the site is open to editing and evolution, and that allows also many links to related content due to its WikiWord nature. The database application allows easy reporting, highly structured data, workflow (but there is a purchase requisite) and access control. Web content can be created collaboratively by using a browser, and users without programming skills can also create web applications. One of the drawbacks of this tool is that everybody can change a topic or add content by just using a browser, therefore the contents may be unstable and unreliable.

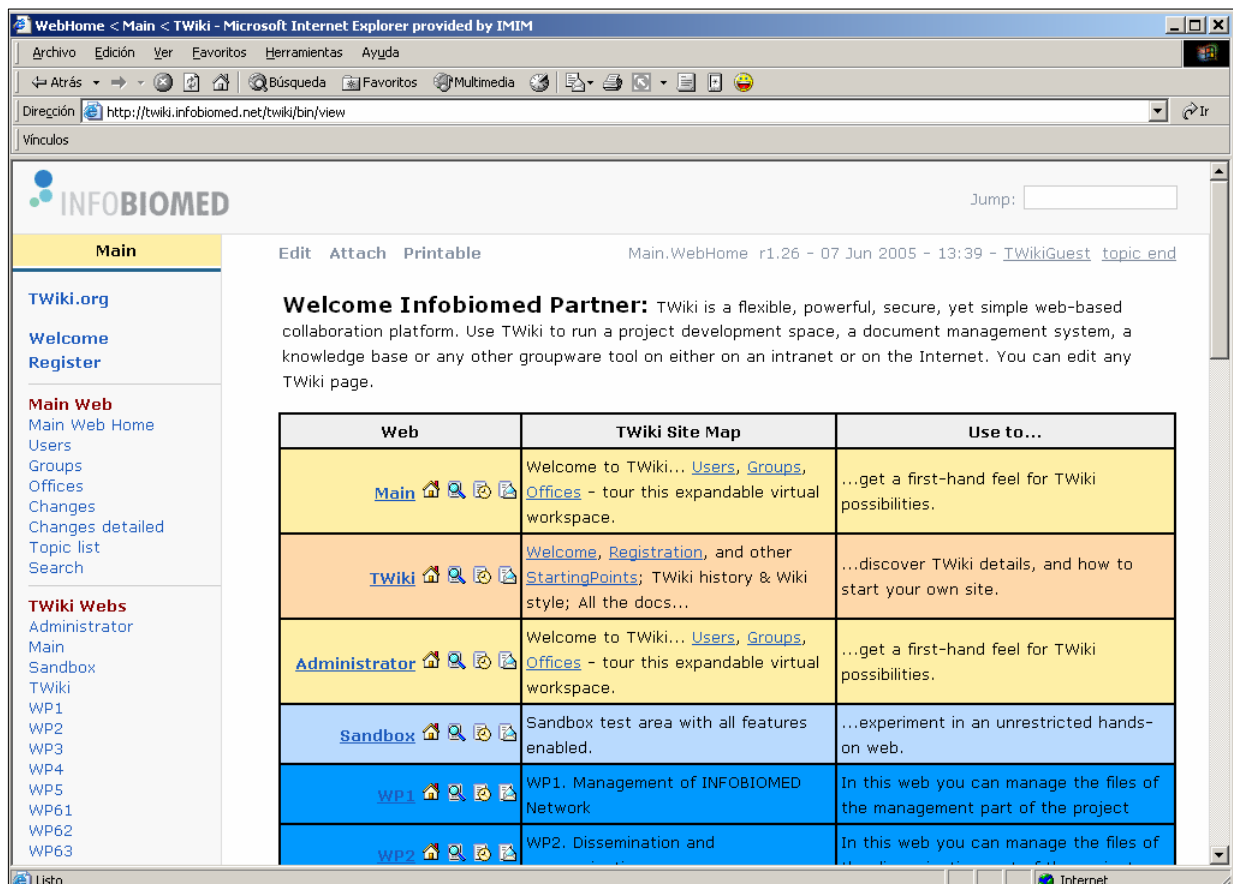
Many companies are deploying TWiki in different ways, due to its flexibility and ability to adapt to different needs. Uses include, for example:

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- To replace a static intranet.
- As a knowledge base and FAQ system.
- To design and document software projects.
- To track issues (i.e. bugs) and features.
- As a document management tool.
- To collaborate on common goals, i.e. the Helsinki Institute of Physics Technology Programme web portal (<https://wiki.hip.fi/twiki/bin/view/Main/WebHome>).
- As a software archive.
- As a corporate internal message board.

This tool lets the user customize the templates and skins of their pages according to his/her preferences. A flexible templating system separates program logic and presentation; and skins overwrite template headers and footers but the page content remains unaffected.

This collaborative platform was chosen by the INFOBIOMED Consortium for implementation into the project's private web zone, so that it could be used to discuss ongoing tasks and share documents in a completely flexible way.



Web	TWiki Site Map	Use to...
Main	Welcome to TWiki... Users , Groups , Offices - tour this expandable virtual workspace.	...get a first-hand feel for TWiki possibilities.
TWiki	Welcome , Registration , and other StartingPoints ; TWiki history & Wiki style; All the docs...	...discover TWiki details, and how to start your own site.
Administrator	Welcome to TWiki... Users , Groups , Offices - tour this expandable virtual workspace.	...get a first-hand feel for TWiki possibilities.
Sandbox	Sandbox test area with all features enabled.	...experiment in an unrestricted hands-on web.
WP1	WP1. Management of INFOBIOMED Network	In this web you can manage the files of the management part of the project
WP2	WP2. Dissemination and	In this web you can manage the files of

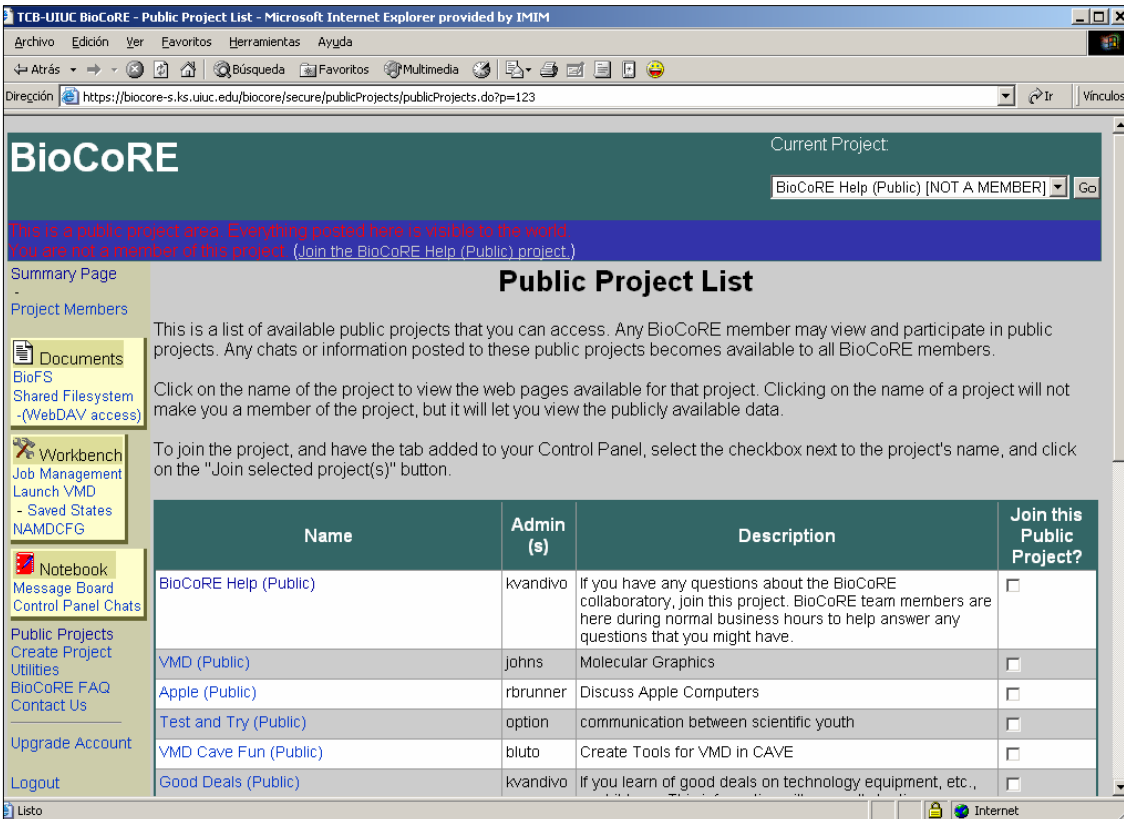
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- BioCoRE - Biological Collaborative Environment. <http://www.ks.uiuc.edu/Research/biocore/>

BioCoRE is a collaborative work environment for biomedical research, research management and training. BioCoRE offers an interface to a broad range of local and remote technologies such as discipline-specific and general tools, data, and visualization solutions.


Contrary to other, more generic tools described herein, BioCoRE specifically aims at research teams, based on the fact that productive research relies on extensive and intensive interactions between scientists across disciplines and at different levels, being equally essential the ability to easily and rapidly exchange both textual and visual information. This is a critical task in the biomedical sciences, where discussions of molecular graphics images and the transfer of extremely large data files are common. BioCoRE offers tools such as a message board, allowing for an easy exchange of textual information. For visual communication, scientists can use JMV and VMD to view, manipulate or store molecular graphics images. Also has a Lab Book to track current progress within the project team, and allows sharing relevant web-based resources with other researchers via a Website Link Library.

One of the advantages of this tool is that BioCoRE allocates each project in its own file space (BioFS), creating a central hub where all project-data, e.g. structure files, simulation data, and analysis results of files can be stored and accessed. BioCoRE also supplies a unified environment in which researchers can manage multiple accounts at multiple computer sites.



The screenshot shows the BioCoRE Public Project List page. The browser title is "TCB-UIUC BioCoRE - Public Project List - Microsoft Internet Explorer provided by IMIM". The address bar shows the URL: <https://biocore-s.ks.uiuc.edu/biocore/secure/publicProjects/publicProjects.do?p=123>. The page content includes a navigation menu on the left, a main heading "Public Project List", and a table of projects.

Name	Admin(s)	Description	Join this Public Project?
BioCoRE Help (Public)	kvandivo	If you have any questions about the BioCoRE collaboratory, join this project. BioCoRE team members are here during normal business hours to help answer any questions that you might have.	<input type="checkbox"/>
VMD (Public)	johns	Molecular Graphics	<input type="checkbox"/>
Apple (Public)	rbrunner	Discuss Apple Computers	<input type="checkbox"/>
Test and Try (Public)	option	communication between scientific youth	<input type="checkbox"/>
VMD Cave Fun (Public)	bluto	Create Tools for VMD in CAVE	<input type="checkbox"/>
Good Deals (Public)	kvandivo	If you learn of good deals on technology equipment, etc.,	<input type="checkbox"/>

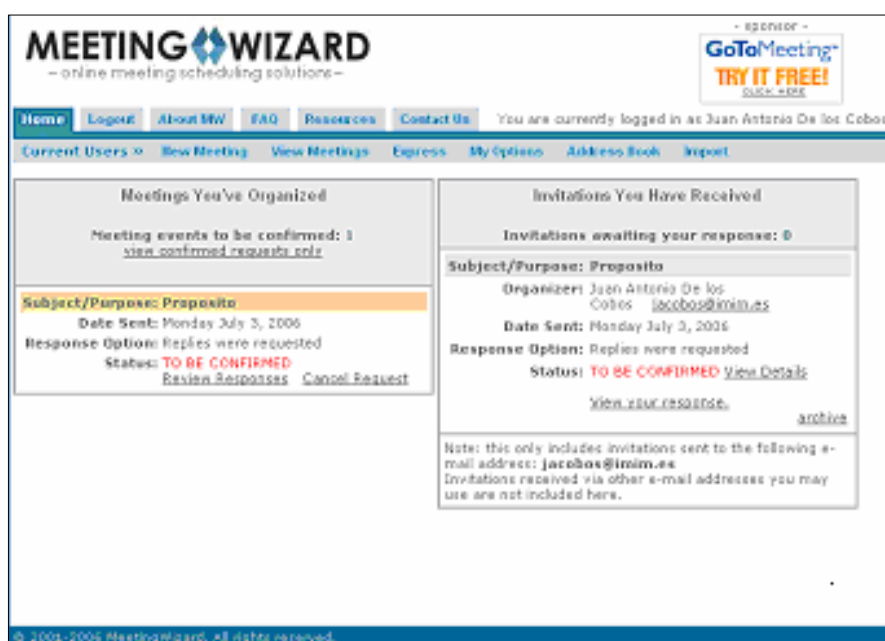
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- MeetingWizard. <http://www.meetingwizard.com>

Free collaborative tool to organize online meetings. MeetingWizard requires only that all participants have access to e-mail and a browser. Once installed, MeetingWizard automatically does the following:

- Sends invitations to participants proposing alternate times.
- Summarizes their responses.
- Updates you on the results.
- Sends confirmations.
- Sends optional reminders prior to meetings.


This tool also provides a space to put all the information related to the meeting.

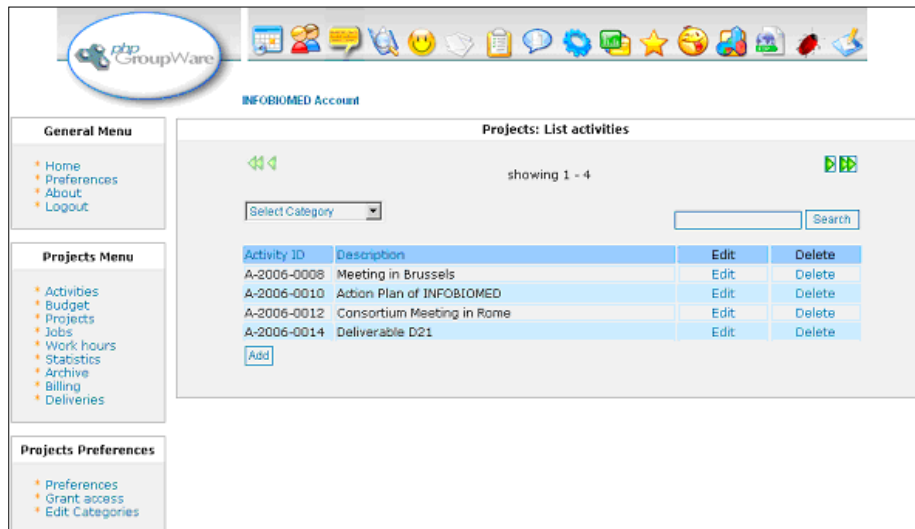


- PhpGroupWare. <http://phpgroupware.org/>

PhpGroupWare is a web-based platform to organize the different activities of a project. This tool has over 50 applications that can be mixed according to the needs of the user. Some of the most relevant features include: contacts management, e-mail, calendar sharing, web content and documents sharing and project management tools.

This software is free/open source software. Another advantage of this tool is that uses an advanced Application Programming Interface (API) that allows to support multiple databases, permissions and access controls, user interface generation and multiple languages (currently over 20).

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- Tikiwiki. <http://tikiwiki.org/tiki-index.php>


Tikiwiki, also known as Tiki CMS/Groupware, is a powerful Wiki-based Content Management System (CMS), Groupware, Blogging System, Image/File Gallery and Bug Tracker. Tikiwiki is a free software powered by PHP, ADOdb and Smarty released as an Open Source under LGPL.

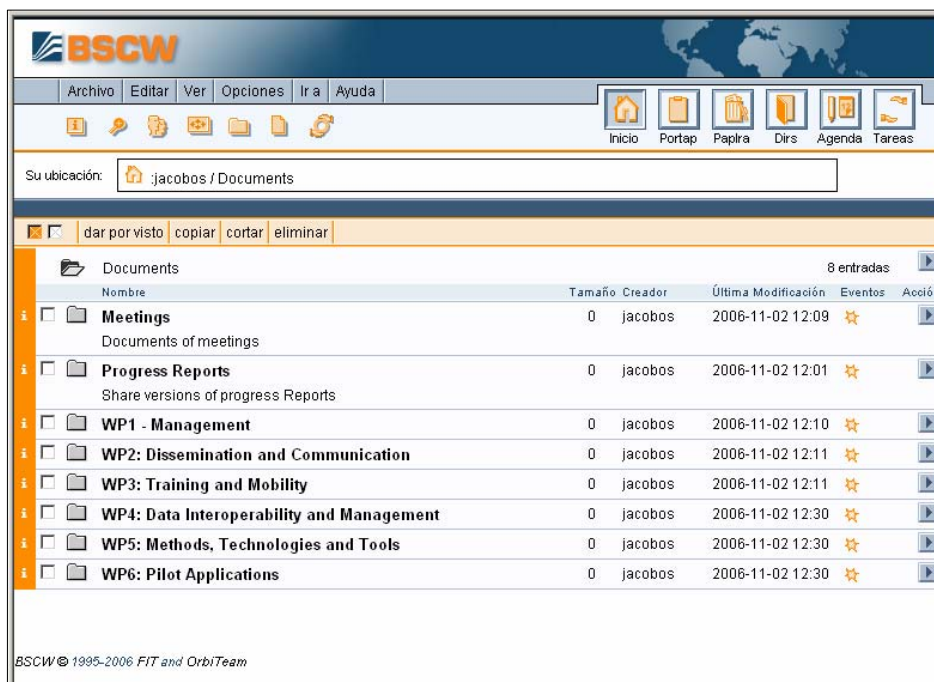
This tool can be used to create all sorts of web applications, sites, portals, intranets and extranets. Also works as a web-based collaboration tool, allowing the user to choose among different options and sections that can be enabled or disabled according to the project preferences.

- BSCW (Basic Support for Cooperative Work). <http://bscw.fit.fraunhofer.de/>

BSCW is a shared workspace system which supports document upload, event notification and group management. The only technical requisite to use this tool is to have a standard web browser. One of the differences of this tool compared with others is that the workspace is protected by username and password and that all the documents uploaded are managed with a system version that allows all the changes on the documents to be identified.

The new version 4.3, released in June 2006, provides several new features and enhancements (some of the features are only available in the advanced or expert node). Version 4.3 allows users to create and manage polls, providing the users with an interface for editing, executing and evaluating polls; and allows also to freeze documents, to mark them as final. These documents cannot be modified anymore until explicitly unfrozen by either the owner or the system administrator. Special interfaces for mobile devices ranging from simple WAP devices to PDAs and SmartPhones with an integrated web browser are included in this version. Among other improvements, editors for browser-based editing of HTML content have been integrated into BSCW, allowing the users to edit web documents and workspace banners.

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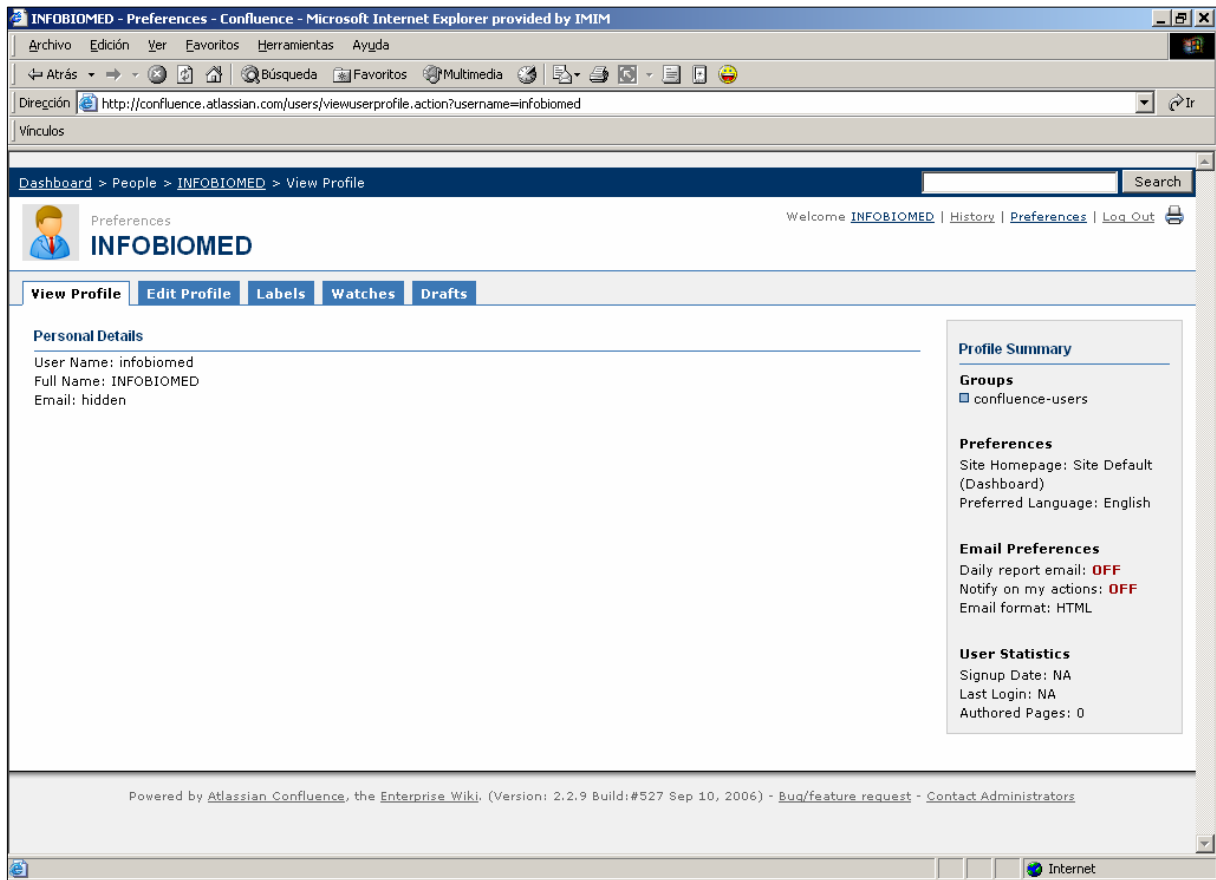
- Confluence. <http://www.atlassian.com/software/confluence/>

Confluence is a knowledge management tool designed to help users to share information with each other and with the world. This tool combines Wiki technology with powerful editing and site management features, all from a single web-based location.

Among its features the following can be mentioned:

- Fine-grained security with space and page level permissions.
- Spaces with multiple linked Wikis.
- Creation of blogs.
- Pages, comments, blogs and attachments are searchable.
- Email integration, PDF exporting.

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Commercial tools

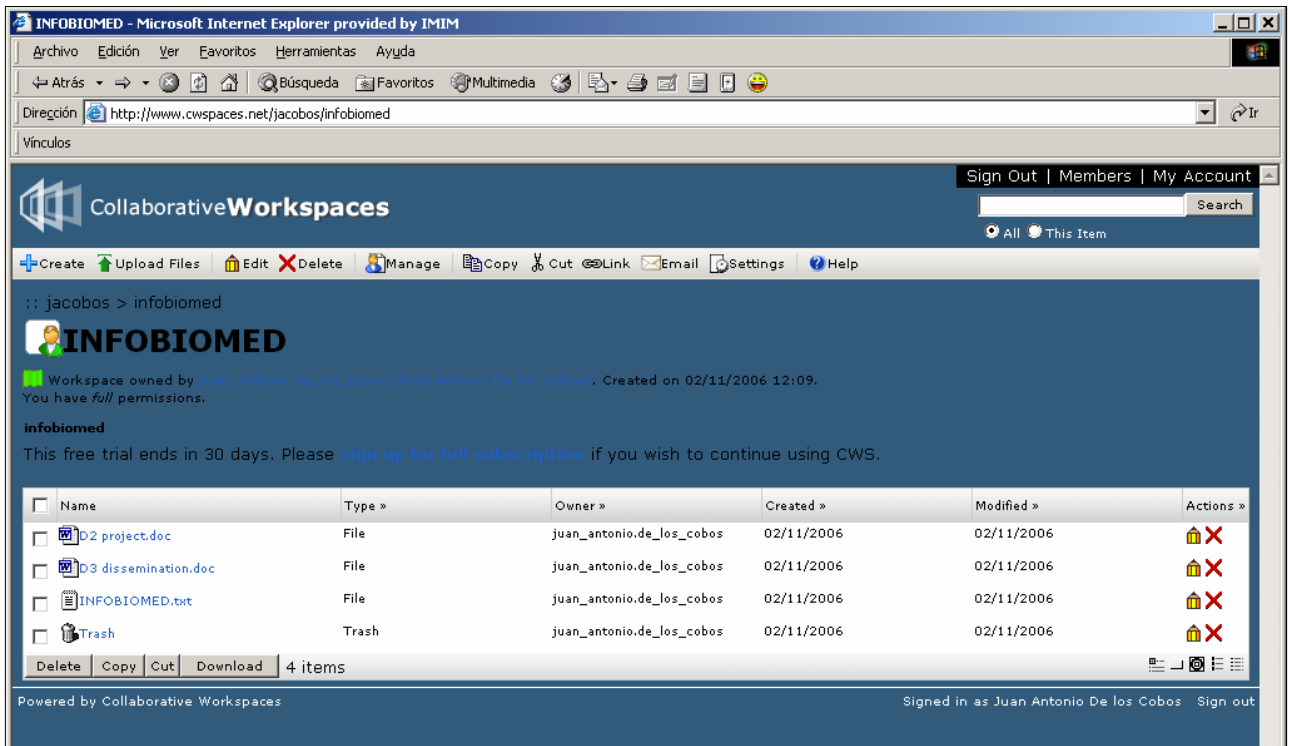
- Collaborative workspaces. <http://www.collaborativeworkspaces.com>

Collaborative Workspaces (CWS) is a web-based service that allows different users to work together as if they were in the same location, at the same time. CWS is a software that requires no additional hardware, software, network changes, or IT admin staff.

Apart from sharing documents and sending e-mails, this tool has a comprehensive and integrated suite of collaborative tools, like workspace manager, database and workflow manager, document manager, group scheduling, team and project blogs, portal manager, RSS and XML channels, newsletter, polls and surveys. This application also allows to see who's online and working at the same time, and includes advanced project management capabilities, features such as Gantt charts reporting, project milestone tracking, defining tasks, and integration with Microsoft Project.

An advantage is that all the workspaces are private and with password protection. Only workspace members can see the workspace and each item in it can have its own unique set of permissions allowing some members to read-only, participate or manage.

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- **GroveSite.** <http://www.grovesite.com>

GroveSite's consists of online collaboration, Wiki-style workspaces with flexible web pages, document libraries, discussion forums, team calendars and contact directories.

This tool allows to brand the workspace with logo and colours, customize by selecting the features needed, label in particular terminology, build online databases for custom data such as customer contacts, manage work orders, bids, or bug tracking.

Among its features, the following can be mentioned:

- Project management: manage project status, milestones, responsibilities and dependencies.
- Issue tracking: allows to add new issues, assign responsibility, track progress and share resolution.
- Document and content management: allows to share documents and create web pages with Wiki-style editing tools.
- Schedule meetings and share team calendars.
- Online discussion forums.
- Publish contact lists with user-maintained profiles.
- Enrol members in private, password-protected sites.
- Prevent unauthorized access to web sites and documents.

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[juan antonio](#) | [Log out](#) | [Org Admin](#)

[Administration](#) | [Turn on edit](#) | [Broadcast](#) | [My info](#) | [My home](#) | [Search](#) | [Help](#)

- Welcome
- Calendar
- Discussion
- Project Plan
- **File Library**
- Issue Tracking
- Members

Reference Info

- Getting Started
- Sample Web Page

File Library

Instructions: Click [\[Add a New File\]](#) to upload a file to the library. To view a file, click on the file name.

Summary View [[Expanded View](#)] [[Add a New File](#)]
[\[Multi-file Delete\]](#) [[Multi-file Download](#)]

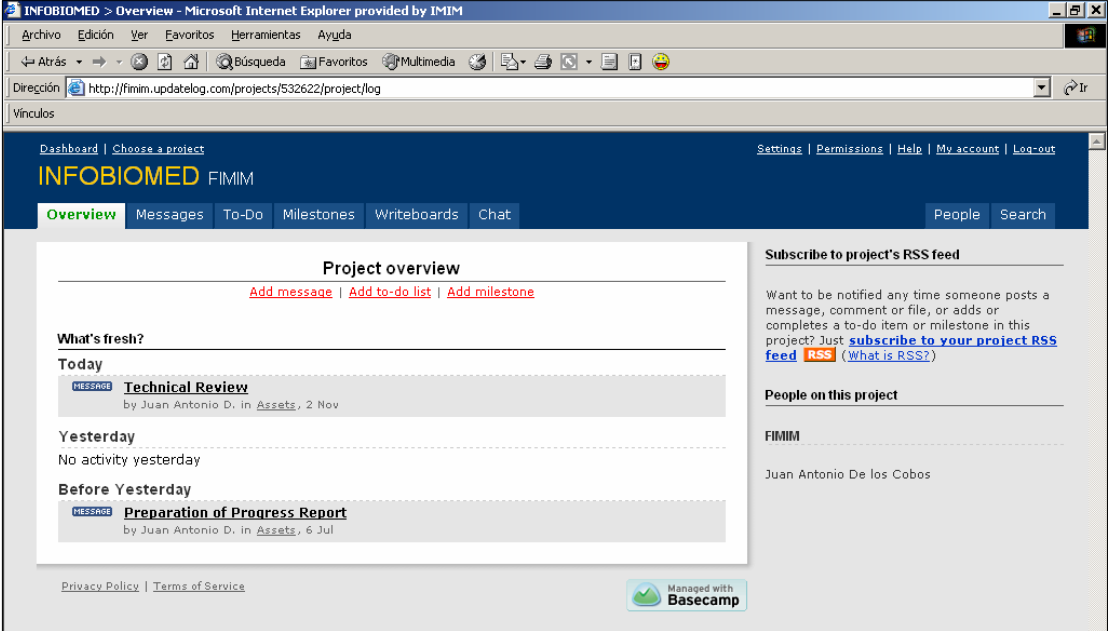
	Category↑	View	Filename	Status	Owner	Uploaded	Size
	Deliverables		D2 project.doc	For Review	juan antonio	06/2/06	32kb
	Deliverables		D3 dissemination.doc	Draft	juan antonio	09/25/06	56kb


Powered by  [Submit Feedback](#)

- BaseCamp. <http://www.basecamphq.com>

BaseCamp is a project collaboration tool, kind of a hosted service where the client can customize its website. This tool is designed around the concept of open, centralized two-way communication. Several tools are included such as message boards, to-do lists, upload, share and store files in its server, categorization of milestones, and time tracking that allows users to keep track of how much time people are spending on their projects.

This tool also gives the option to change the look-and-feel of the workspace according to the users needs, and to include several logos. BaseCamp allows to try the tool for a couple of days for free.

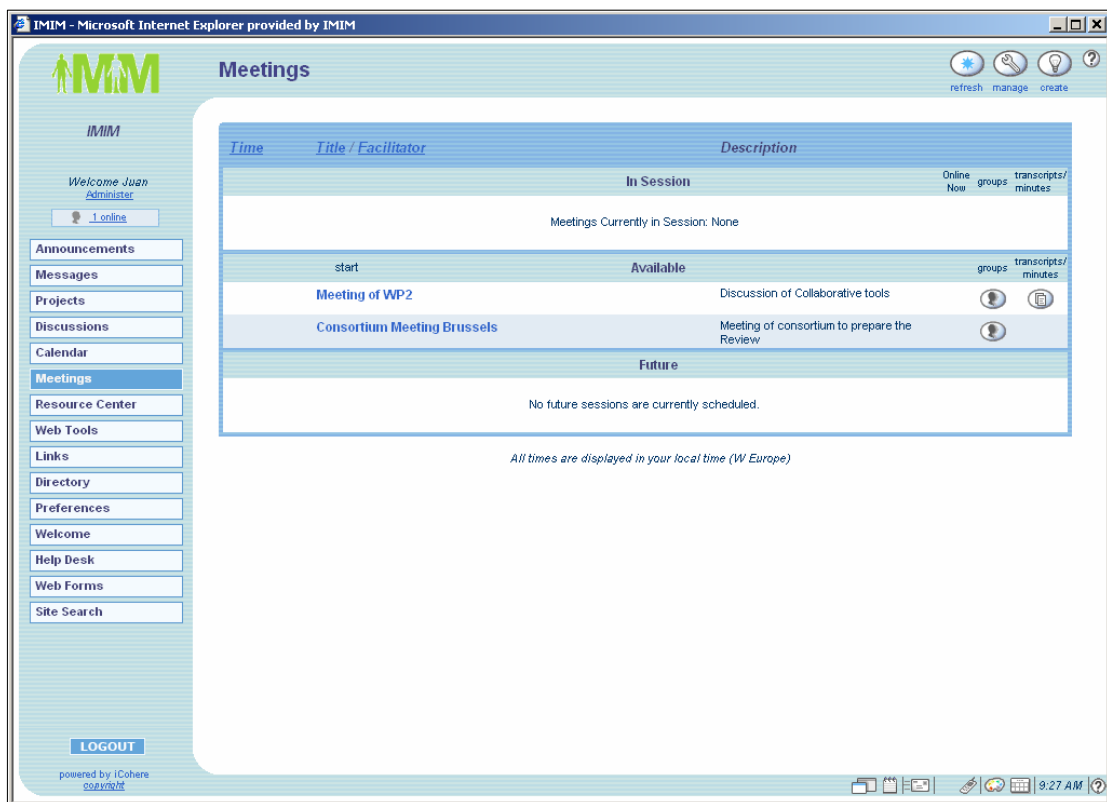


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- ICohere. <http://www.icohere.com/>

iCohere is a workspace that integrates conferencing, document management, instant messaging, and other collaboration tools. The basic objective is to provide a collection of web collaboration software tools for manage a research project, like:


- Private group workspaces and discussion areas.
- Private threads within online discussions.
- Online meetings.
- Project and tasks management tools.
- Document version tracking.



- eRoom.net http://software.emc.com/products/software_az/erom_net.htm


eRoom.net enables enterprise collaboration with partners and suppliers in a secure online environment. eRoom.net is a hosted, web-based workspace capable of being tailored for a specific project, process, or business initiative.

This tool provides managers and stakeholders with visibility into the status of critical projects, programmes and business processes, and claims to promote rapid adoption through an intuitive


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browser interface that is accessible, simple to use and adaptable to the requirements of each project or process.

The following pages offer an overview comparison of the tools included in the analysis as described above, highlighting some of the differences between them.

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	Collaboration	Privaria + Coccinella	Coccinella	Privaria + TightVNC	TightVNC	WebEx	Marratech	LINK3D
Whiteboard	No	Yes	Yes	No	No	Yes	Yes	Yes
Chat support	Yes	Yes	Yes	No	No	Yes	Yes	Yes
Streaming audio	No	No	No	No	No	Yes	Yes	Yes
Streaming video	No	No	No	No	No	Yes	Yes	No
Security*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Data encryption	No	Yes	No	Yes	No	No	Yes	Yes
File transfer	Yes	Yes	Yes	No	No	Yes	Yes	Yes
Price	Free	Free	Free	Free	Free	0,33€/ min / user	Commercial	Free (academia)
Moderation	No	No	No	No	No	Yes	Yes	Yes
Real-time interaction	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firewall	No info	No info	No info	No info	No info	Yes	Yes	Yes
Native representation of Images (jpg, bmp, png,)	No	Yes (through extensions)	Yes (through extensions)	No	No	No	Yes	Yes
Native 3D molecular structures: pdb, SYBYL, mol2, InsightII car...	No	No	No	No	No	No	No	Yes
Native Molecular Interaction Potentials: GRID kont, InsightII grd.	No	No	No	No	No	No	No	Yes
Native 2D molecules structures for series of arbitrary size: SDF files, mol files	No	No	No	No	No	No	No	Yes

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	Collaboration	Privaria + Coccinella	Coccinella	Privaria + TightVNC	TightVNC	WebEx	Marratech	LINK3D
(cont.)								
Medical inf. formats	No	No	No	No	No	No	No	Yes DICOM
P2P	No	Yes	Yes	Yes	Yes	No	Yes	No
Devoted Server	Yes	Yes	Yes	No	No	No	Yes	Yes
Only External server*	Yes	No	No	No	No	Yes	No	No
Share desktop	No	No	No	Yes	Yes	Yes	No	No
Share applications	No	No	No	?	?	Yes	Yes	No
Share URL	No	No	No	?	?	Yes	?	No
Session Logs	Yes	No	No	No	No	Yes	Yes	No
Native 3D visualization	No	No	No	No	No	No	No	Yes
Platform	Win/ Mac/ Linux	Win	Win/ Mac/ Linux/ Unix	Win	Win/Unix	Win/ Linux/ Mac/ Solaris	Win/ Linux/ Mac/ Solaris	Win/ Linux/ IRIX


*Security in the sense that the access is only for registered users.

*Only External server: To use the tools you need to connect to external servers that you don't own.

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	CORAL	P2PEOPLE	Twiki	BioCoRE	MeetingWizard	PhpGroupWare	TikiWiki
Whiteboard	Yes	Yes	No	No	Yes	Yes	Yes
Chat support	Yes	Yes	No	No	Yes	Yes	Yes
Streaming audio	Yes	No	No	No	No	No	No
Streaming video	Yes	No	No	No	No	No	No
Security*	Yes	Yes	No	Yes	Yes	Yes	Yes
Data encryption	No	No	No	No	No	Yes	Yes
File transfer	Yes	Yes	No	No	Yes	Yes	Yes
Price	Free	Free	Free	Free	Free	Free	Free
Moderation	Yes	No	No	No	Yes	Yes	Yes
Real-time interaction	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firewall	No info	No info	No info	No info	No info	No info	No info
Native representation of Images (jpg, bmp, png,)	No	No	No	No	No	No	No
Native 3D molecular structures: pdb, SYBYL, mol2, InsightII car...	No	No	No	No	No	No	No
Native 2D molecules structures for series of arbitrary size: SDF files, mol files	No	No	No	No	No	No	Yes
Medical inf. formats	No	No	No	No	No	No	No

*Security in the sense that the access is only for registered users.

 IST-507585	Final Report on Common Platforms and Tools for Research		
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	Author(s): JA De los Cobos, C Díaz, N. Villahoz		Version: v1.4–Final 26/49


	CORAL	P2PEOPLE	Twiki	BioCoRE	MeetingWizard	PhpGroupWare	TikiWiki
(cont.)							
P2P	No	Yes	No	Yes	No	Yes	No
Devoted Server	Yes	Yes	Yes	No	No	Yes	Yes
Only External server**	Yes	Yes	No	Yes	Yes	Yes	Yes
Share desktop	No	No	Yes	Yes	Yes	No	No
Share applications	No	No	No	No	Yes	Yes	No
Share URL	Yes	No	No	No	Yes	No	No
Session Logs	Yes	No	No	No	Yes	Yes	No
Native 3D visualization	No	No	No	No	No	No	Yes
Platform	Web Interface	Win	Web Interface	Web Interface	Web Interface	Web Interface	Web Interface

** Only External server: To use the tools you need to connect to external servers that you don't own.

 IST-507585	Final Report on Common Platforms and Tools for Research		
	WP2: Dissemination and communication		Security: CONFIDENTIAL
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	BSCW	Confluence	Collaborative workspaces	GroveSite	BaseCamp	iCohere	eRoom
Whiteboard	No	No	No	No	No	No	No
Chat support	No	Yes	Yes	No	No	Yes	Yes
Streaming audio	No	No	No	No	No	Yes	Yes
Streaming video	No	No	No	No	No	No	No
Security*	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Data encryption	No	Yes	No	Yes	Yes	No	Yes
File transfer	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Price	Free	Free	First 3000\$, 500\$ per month/25 users	199 \$ per month/25 users	99\$ per month	Set-up Fee \$250; Base Cost Per Month \$250	No info
Moderation	No	No	No	No	No	Yes	Yes
Real-time interaction	No	Yes	Yes	Yes	Yes	Yes	Yes
Firewall	No info	No info	No info	No info	No info	No info	No info
Native representation of Images (jpg, bmp, png,)	No	No	No	No	No	No	No
Native 3D molecular structures: pdb, SYBYL, mol2, InsightII car...	No	No	No	No	No	No	No
Native Molecular Interaction Potentials: GRID kont, InsightII grd.	No	No	No	No	No	No	No
Medical inf. Formats	No	No	No	No	No	No	No

*Security in the sense that the access is only for registered users.

 IST-507585	Final Report on Common Platforms and Tools for Research		
	WP2: Dissemination and communication		Security: CONFIDENTIAL
	Author(s): JA De los Cobos, C Díaz, N. Villahoz		Version: v1.4–Final 28/49

	BSCW	Confluence	Collaborative workspaces	GroveSite	BaseCamp	iCohere	ERoom
(cont.)							
P2P	No	Yes	Yes	Yes	Yes	No	Yes
Devoted Server	Yes	Yes	Yes	No	Yes	No	Yes
Only External server**	No	Yes	Yes	No	Yes	Yes	Yes
Share desktop	No	No	No	Yes	Yes	Yes	No
Share applications	No	No	No	No	No	No	No
Share URL	No	No	No	Yes	No	Yes	?
Session Logs	Yes	No	No	Yes	No	Yes	Yes
Native 3D visualization	No	No	No	No	No	No	No
Platform	Web Interface	Web Interface	Web Interface	Web Interface	Web Interface	Web Interface	Web Interface

** Only External server: To use the tools you need to connect to external servers that you don't own.

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3. Customization of LINK3D Software

As described in deliverable D4, LINK3D is an application designed to allow drug discovery and development professionals to hold virtual meetings in a secure way. Developed in the framework of a previous IST project (IST-2000-26338), it was spotted as a potentially useful tool for collaborative research in the framework of BMI, since it compared favourably with other existing tools (see benchmarking analysis of deliverable D4), offering for example several native visualization options for files commonly used in the scientific fields of reference.

LINK3D is an interoperable (users of Windows, Linux and IRIX can connect seamlessly), real-time collaborative software that allows users to share files, exchange chat messages and audio and directly interact (point, move, rotate, write, etc.) with a variety of graphical objects dynamically, all of it in a secure way. It supports the most common file formats used in drug discovery and development, including 3D and 2D graphics, text and bitmaps.


After receiving feedback from partners on the suitability of LINK3D for other BMI areas and its potential usefulness, new features were developed and included in an INFOBIOMED-LINK3D version of the software.




The most important improvement is that LINK3D now supports the different formats of medical images defined in the part 3 of the DICOM² standard, and supports the standard predecessor ACR/NEMA. The final objective was obtain a total compatibility with all of the objects defined in the 3 part of the DICOM standard. In its current version, LINK3D use of DICOM images in collaborative sessions or discussions, and users can insert marks or text in the image. At the same time, DICOM images can be exported to other formats.

3.1. Technical modifications

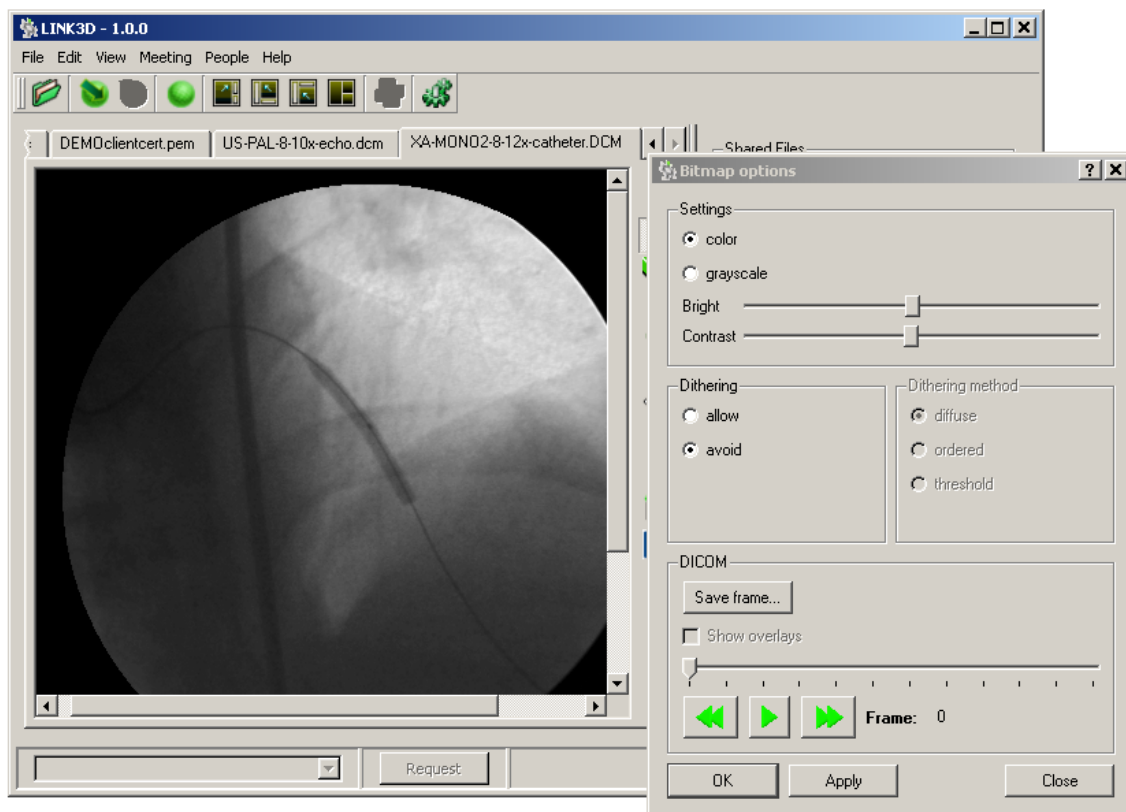
Work centred on adding new DICOM layers for the LINK3D application, resulting in an INFOBIOMED-LINK3D version, beta 2. Adding the DICOM layers to the new LINK3D version offers new features that the old layers did not offer – including modifications of the aspect of the DICOM image. The user can now change the properties of the image, such as the colour, greyscale, and the dithering. A DICOM image can contain one image (frame) or multiple images (frames). If the layer has more than one frame, the user can view the sequence of frames with three navigation buttons:

² Digital Imaging and Communication in Medicine

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Button	Description
	View all the sequence of frames
	View the next frame
	View the previous frame

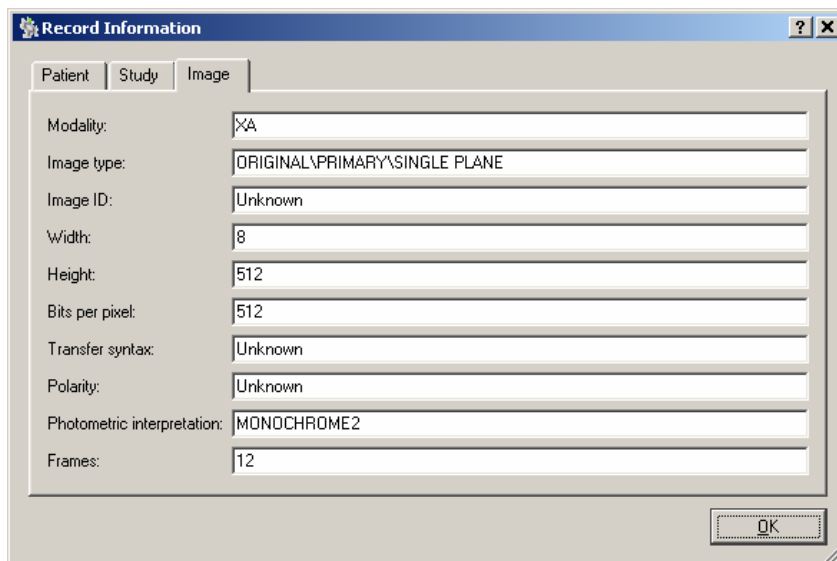
It is possible to save the actual frame as an image, using the Save button, and this image can be subsequently used in LINK3D on the image layer.



The DICOM layer also contains information associated with the image, comprising three kinds of information:

- Patient: Information about the patient to whom the image refers: name, age, sex,...
- Study: Information about the study related with this layer: study ID, date, time, physician, reason for study,...
- Image: Information about the characteristics of the image: modality, image type, width, height,...

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Record Information

Patient | Study | Image

Modality: XA

Image type: ORIGINAL\PRIMARY\SINGLE PLANE

Image ID: Unknown

Width: 8

Height: 512

Bits per pixel: 512

Transfer syntax: Unknown

Polarity: Unknown

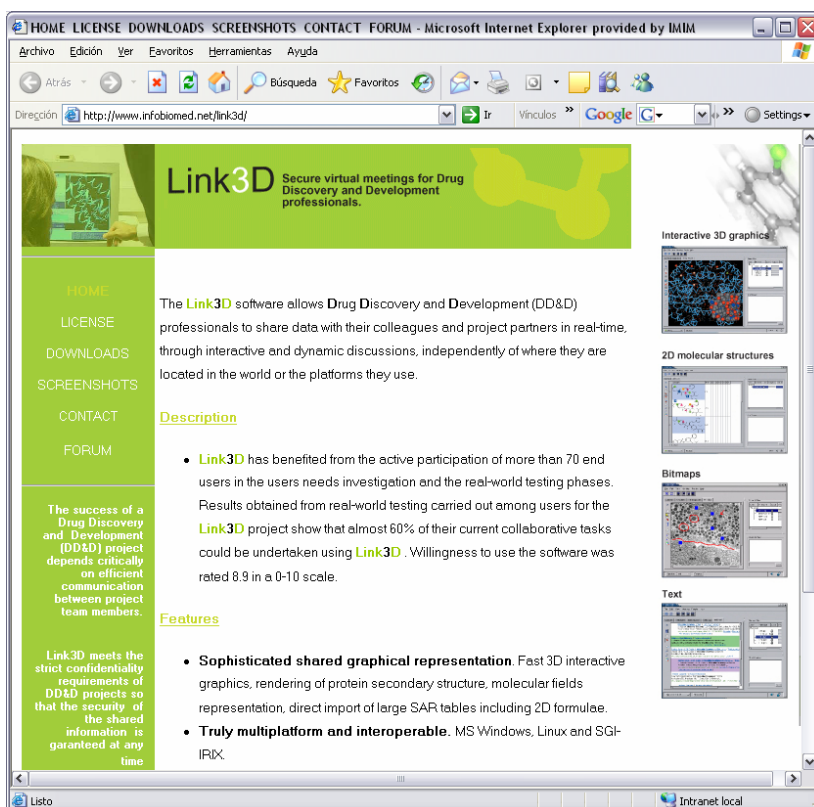
Photometric interpretation: MONOCHROME2

Frames: 12

OK

3.2. Website

During the LINK3D project, the website of LINK3D was accessible at the following URL: www.link3d.net. To maximise visibility among the BMI community, it has now been moved to the INFOBIOMED web server (<http://www.infobiomed.net/link3d>).



HOME LICENSE DOWNLOADS SCREENSHOTS CONTACT FORUM - Microsoft Internet Explorer provided by IMIM

Archivo Edición Ver Favoritos Herramientas Ayuda

Dirección: <http://www.infobiomed.net/link3d/>

Link3D Secure virtual meetings for Drug Discovery and Development professionals.

HOME
LICENSE
DOWNLOADS
SCREENSHOTS
CONTACT
FORUM

The success of a Drug Discovery and Development (DD&D) project depends critically on efficient communication between project team members.

Link3D meets the strict confidentiality requirements of DD&D projects so that the security of the shared information is guaranteed at any time.

The **Link3D** software allows Drug Discovery and Development (DD&D) professionals to share data with their colleagues and project partners in real-time, through interactive and dynamic discussions, independently of where they are located in the world or the platforms they use.

Description


- **Link3D** has benefited from the active participation of more than 70 end users in the users needs investigation and the real-world testing phases. Results obtained from real-world testing carried out among users for the **Link3D** project show that almost 60% of their current collaborative tasks could be undertaken using **Link3D**. Willingness to use the software was rated 8.9 in a 0-10 scale.

Features

- **Sophisticated shared graphical representation.** Fast 3D interactive graphics, rendering of protein secondary structure, molecular fields representation, direct import of large SAR tables including 2D formulae.
- **Truly multiplatform and interoperable.** MS Windows, Linux and SGI-IRIX.

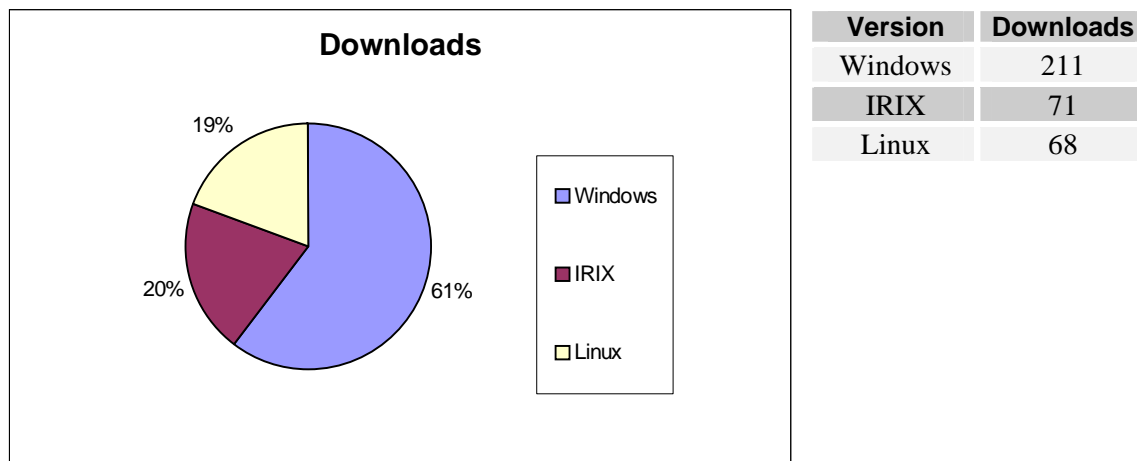
Interactive 3D graphics
2D molecular structures
Bitmaps
Text

Listo Intranet local

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	Author(s): JA De los Cobos, C Díaz, N. Villahoz		Version: v1.4–Final

3.3. Requests of downloads


Although no information about actual usage of LINK3D is available, some statistics about downloads of the application from the website are shown below.



In general, it is noteworthy that LINK3D has not raised much enthusiasm in the community in general. Study of collaborative tools usage among partners (see section 6 of this document) shows that, in general, users seem to be inclined to use more generic tools, or alternatively much more specific tools that precisely target their concrete application fields. This may indicate that a semi-customised approach such as the one intended for LINK3D within INFOBIOMED (i.e. an application for collaborative research in a broad area such as BMI, but not specialised in any of the different, very diverse sub-fields) has two flaws:

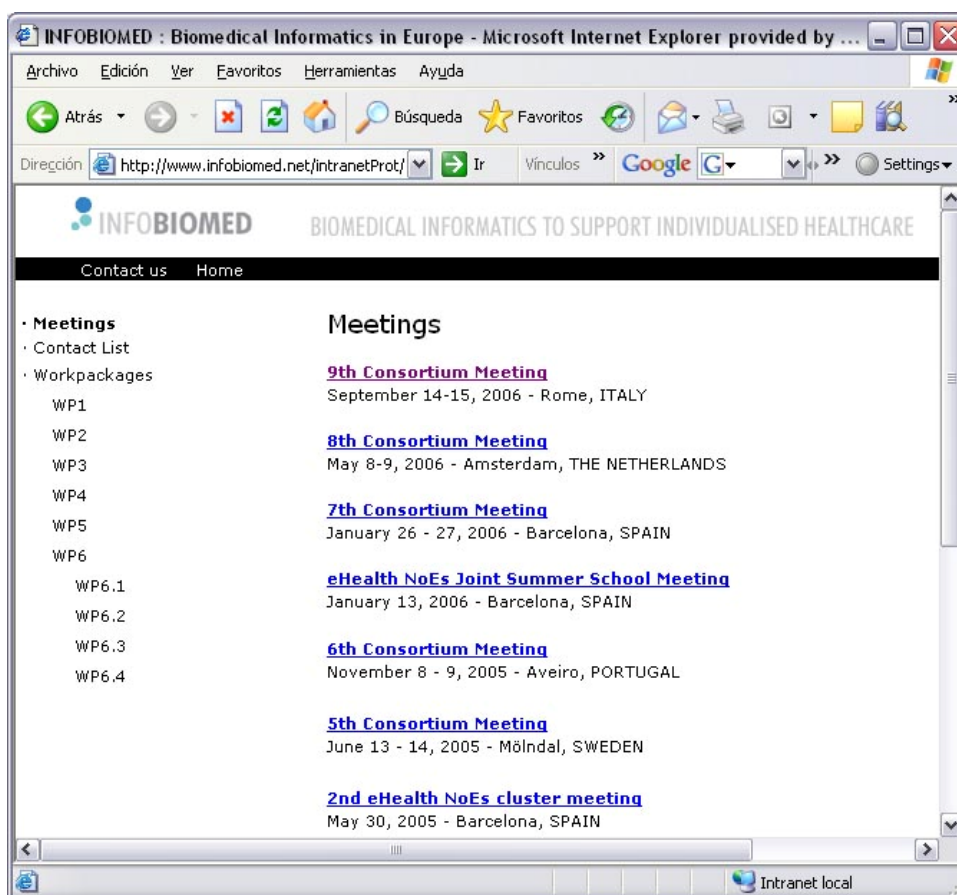
- 1) it does not offer all the features that generic groupware tools tend to include with respect to handy collaborative functions (e.g. video-conference, meeting scheduling, document management with version control, etc.); and
- 2) it is not specific enough for very particular applications (e.g. collaborative work involving hereditary cancer registries).

Consultations with partners during the project showed that it was difficult to overcome these flaws, and this is a reason why not much effort was devoted to include many technical modifications; the focus was somewhat changed to reinforce the other tasks foreseen in activity 2.1: a) to provide the community with information and links to collaborative tools, through the update of the benchmarking analysis; and b) to improve collaboration among partners by enhancing the private zone of the INFOBIOMED website.


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4. Private zone of the INFOBIOMED website

The private zone of the INFOBIOMED website was created as a collaborative tool to be used to spread information among the consortium partners. This intranet houses all the minutes, documents in progress and final versions of reports, as well as relevant announcements. As an asynchronous collaboration tool for partners, there is a constant need of improvement. During the years of life of the project, the INFOBIOMED website has been not only continuously updated but also evolving by incorporating new sections, providing partners with access to documents of interest and space for sharing information. Of special relevance is the Nuclear Receptor Pathway Database elaborated in the framework of pilot 6.1 and the Progress Report Tool, both of them accessible to all partners. In addition, Twiki pages were set up for each WP so that partners could freely collaborate on a shared workspace.



Meetings home page.

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When the intranet was designed, the objective was that all the information were easy to find for all the partners. At first glance the intranet homepage shows the intranet's structure:

- Meetings: containing all the information related to the meetings carried out during the INFOBIOMED project. Each meeting page houses all the presentations done by the partners, agenda and minutes.
- Contact List: details of the people involved in the project, classified per institution. In addition this list is downloadable in MS Outlook format and RTF format. To administrate this contact list an internal page has been created, which is only accessible by the coordinator's Project Management Office (PMO).
- Workpackages.

9th Consortium meeting page.

Partner	Name	Phone	e-mail
ACTA	Crusius J. Bart A.	+31 204448280	b.crusius@vumc.nl
ACTA	Laine Marja L.	+31 204448307	ml.laine@vumc.nl
ACTA	Loos Bruno G.	+31 205188558	b.g.loos@acta.nl
ACTA	Morré Servaas A.	+31 204449375	sa.morre@vumc.nl
ACTA	Peña A. Salvador	+31 204444737	as.pena@vumc.nl
ACTA	Van der Palen Carol	+31 204444132	c.vanderpalen@vumc.nl
ACTA	Van der Velden Ubele	+31 205188299	u.vd.velden@acta.nl
ACTA	Van Winkelhoff Arie-Jan	+31 204448677	aj.vanwinkelhoff@vumc.nl
ASTRAZENECA	Boyer Scott	+46 317762882	scott.boyer@astrazeneca.com
CUSTODIX	Claerhout Brecht	+32 92107897	Brecht@custodix.com

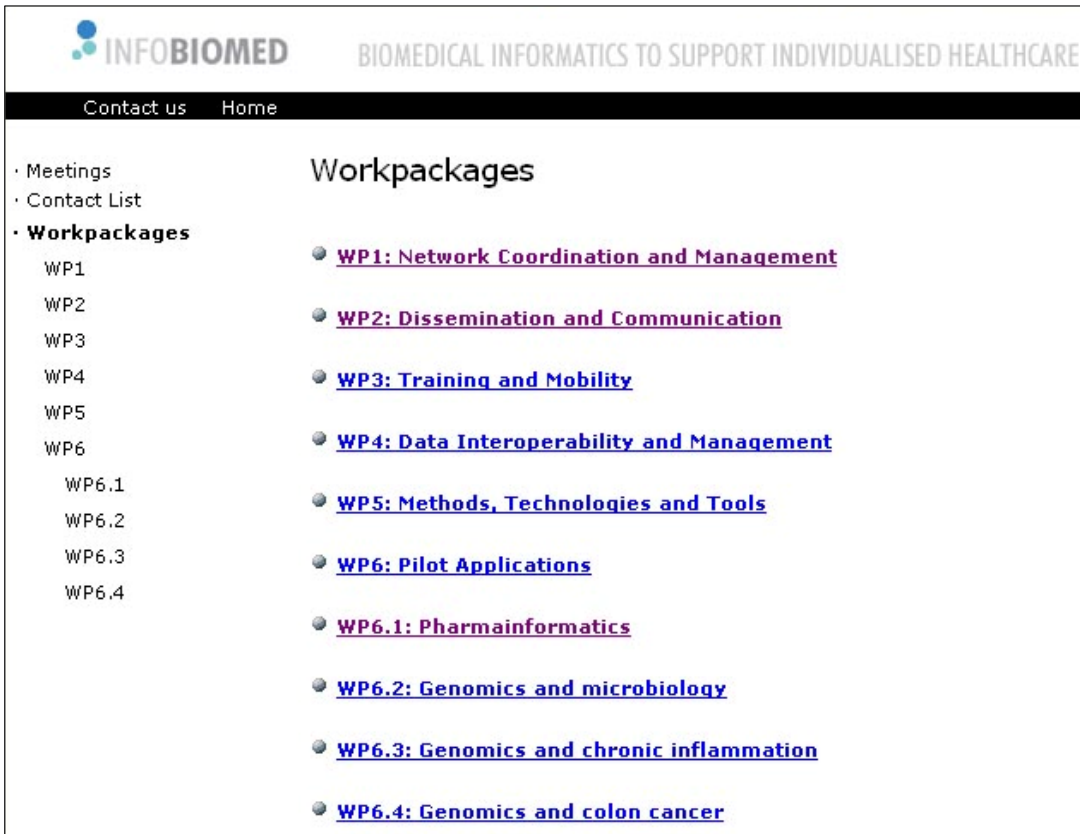
Contact List page.

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Each workpackage has its own webpage, containing relevant information and documents developed in its framework.

WP1: Network Coordination and Management


- **Reviews:** Information related to reviews carried out until now, presentations and official result from the Commission.
- **Reports:** This section is classified by year and contains quarterly management reports, Periodic Activity Reports and Management Activity Reports.
- **Contract, CA:** Legal documents related to the INFOBIOMED project like Contract, including its amendments, and Consortium Agreement.
- **Tools:** This section offers some tools that can help partners to perform their work, most of them associated to management tasks. A progress Report tool has been created in order to collect all the information related to the work carried out by period and by partner. This tool allows the PMO to collect easily efforts estimations and descriptions of work. Consultation is possible by period, WP or partner.



The screenshot shows the INFOBIOMED website interface. At the top, the logo and tagline "BIOMEDICAL INFORMATICS TO SUPPORT INDIVIDUALISED HEALTHCARE" are visible. Below the logo, there are navigation links for "Contact us" and "Home". The main content area is titled "Workpackages" and lists several workpackages, each with a circular icon and a link to its respective page. The list includes:

- WP1: Network Coordination and Management
- WP2: Dissemination and Communication
- WP3: Training and Mobility
- WP4: Data Interoperability and Management
- WP5: Methods, Technologies and Tools
- WP6: Pilot Applications
 - WP6.1: Pharmainformatics
 - WP6.2: Genomics and microbiology
 - WP6.3: Genomics and chronic inflammation
 - WP6.4: Genomics and colon cancer

Workpackage page.

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WP2: Dissemination and Communication

- Deliverables: List of deliverables submitted to the Commission.
- Collaborative research tools: Twiki section, already explained in this deliverable.
- Resources & Reference documents: Communication resources like logo, power point template, word template, brochure and poster template.
- Papers & Presentations: List of dissemination activities carried out by the INFOBIOMED partners. This database is regularly updated by the PMO.

WP3: Training and Mobility

- Deliverables: List of deliverables submitted to the Commission.
- Resources & Reference documents: Mobility funding mechanism and Mobility form.

WP4: Data Interoperability and Management


- Deliverables: List of deliverables submitted to the Commission.
- Polymorphism Markup Language: Reference document

WP5: Methods, Technologies and Tools

- Deliverables: List of deliverables submitted to the Commission.

WP6: Pilot Applications

- Deliverables: List of deliverables submitted to the Commission.
- Working documents: Internal outputs of INFOBIOMED such as state-of-the-art documents or specific reports, but that do not constitute official deliverables in themselves.
- Meetings: Presentations and minutes of pilot's meetings.

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5. INFOBIOMED website statistics

A study of the accesses to the INFOBIOMED website during the period January 2005 - July 2006 was also carried out. The log file of the web server was analysed with a tool named WebLog Expert³. The logs generated by the web maintenance team, and the PMO staff in general, were discarded before data exploitation.

General Statistics of access


Page Views	
Total Page Views	828.106
Average Page Views per Day	1.505
Average Page Views per Visitor	8,75
Visitors	
Total Visitors	94.650
Average Visitors per Day	172
Total Unique IPs	9.249

Most popular pages

Public pages

	Page	Description	Visitors
1	http://www.infobiomed.org/paginas_en/project.htm	Project Description	9.144
2	http://www.infobiomed.org/paginas_en/partners.htm	Partners Description	8.605
3	http://www.infobiomed.net/GatewayDB/gateway_frame.htm	European Biomedical Informatics Gateway	7.346
4	http://www.infobiomed.net/paginas_en/acti_training.htm	WP3: Training and Mobility	6.484
5	http://www.infobiomed.net/paginas_en/dissemination/acti_dissemination.htm	WP2: Dissemination and Communication	5.851
6	http://www.infobiomed.net/paginas_en/acti_pilot.htm	WP6: Pilot Applications	5.617
7	http://www.infobiomed.net/paginas_en/challengues_presentation.htm	Training Challenge Information	5.170


³ <http://www.weblogexpert.com>

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	Page	Description	Visitors
8	http://www.infobiomed.net/paginas_en/acti_methods.htm	WP5: Methods, Technologies and Tools	5.096
9	http://www.infobiomed.net/paginas_en/partners_frame.htm	Partners Information	5.078
10	http://www.infobiomed.org/paginas_en/contact.htm	Contact info	4.636
11	http://www.infobiomed.net/paginas_en/acti_data.htm	WP4: Data Interoperability and Management	4.470
12	http://www.infobiomed.net/paginas_en/training/training_challenge_information.htm	INFOBIOMED Training Challenge documentation	4.138
13	http://www.infobiomed.org/paginas_en/institutions.htm	Information of Institutions of INFOBIOMED	3.474
14	http://www.infobiomed.net/paginas_en/challengues_registration.htm	INFOBIOMED Training Challenge Registration Form	2.467
15	http://www.infobiomed.org/paginas_en/collaborative_tools.htm	First INFOBIOMED Training Challenge diary	1.942

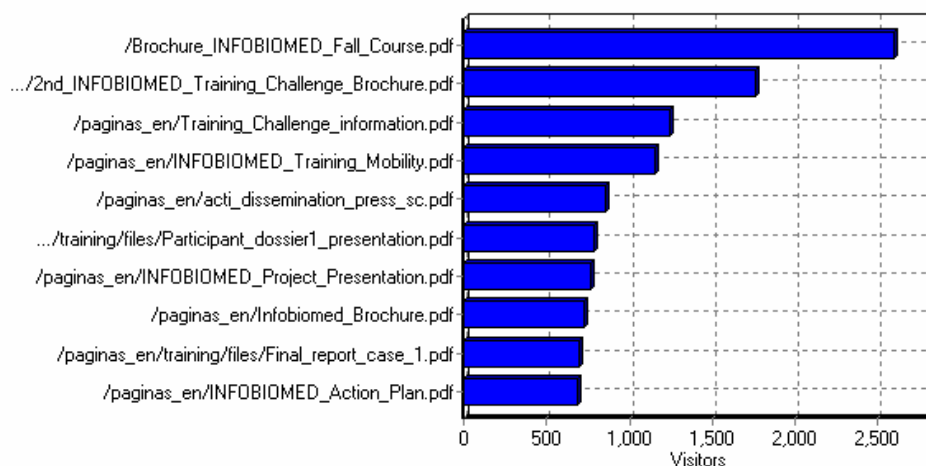
Private zone pages

	Page	Description	Visitors
1	http://www.infobiomed.net/intranetProt/intranet.htm	Home of the Intranet Website	10.346
2	http://www.infobiomed.net/intranetProt/contactsDB.php	Contact List	3.476
3	http://www.infobiomed.net/intranetProt/intranetWP1.htm	Page of Workpackage 1	3.332
4	http://www.infobiomed.net/intranetProt/intranetWP2.htm	Page of Workpackage 2	2.549
5	http://www.infobiomed.net/intranetProt/intranetWP61.htm	Page of Workpackage 6.1	2.155
6	http://www.infobiomed.net/intranetProt/intranetWP.htm	Home of the Workpages	2.059
7	http://www.infobiomed.net/intranetProt/intranetWP4.htm	Page of Workpackage 4	1.842
8	http://www.infobiomed.net/intranetProt/intranetWP3.htm	Page of Workpackage 3	1.793


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Most Downloaded files

Public documents




	File	Description	Hits	Visitors
1	http://www.infobiomed.net/Brochure_INFOBIOMED_Fall_Course.pdf	First INFOBIOMED Training Challenge description	4.773	2.594
2	http://www.infobiomed.net/paginas_en/2nd_INFOBIOMED_Training_Challenge_Brochure.pdf	Second INFOBIOMED Training Challenge description	3.243	1.757
3	http://www.infobiomed.net/paginas_en/Training_Challenge_information.pdf	Fist INFOBIOMED Training Challenge information	1.912	1.242
4	http://www.infobiomed.net/paginas_en/INFOBIOMED_Training_Mobility.pdf	Deliverable 7 "Training and Mobility Action Plan"	2.354	1.152
5	http://www.infobiomed.net/paginas_en/acti_dissemination_press_sc.pdf	Press release to the scientific community	1.248	852
6	http://www.infobiomed.net/paginas_en/training/files/Participant_dossier1_presentation.pdf	Participant dossier of the First INFOBIOMED Training Challenge	1.351	781
7	http://www.infobiomed.net/paginas_en/INFOBIOMED_Project_Presentation.pdf	Deliverable 1 "Project Presentation"	1.274	765
8	http://www.infobiomed.net/paginas_en/Infobiomed_Brochure.pdf	INFOBIOMED Project brochure	1.191	721
9	http://www.infobiomed.net/paginas_en/training/files/Final_report_case_1.pdf	Final Report of first case of the First INFOBIOMED Training Challenge	1.203	698
10	http://www.infobiomed.net/paginas_en/INFOBIOMED_Action_Plan.pdf	Deliverable 5 "Action Plan for Dissemination Activities"	1.056	690
11	http://www.infobiomed.net/paginas_en/training/files/	First INFOBIOMED	840	624

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	File	Description	Hits	Visitors
	satisfaction_results.pdf	Training Challenge results of satisfaction survey		
12	http://www.infobiomed.net/paginas_en/training/files/news_cordis.pdf	Press release of First INFOBIOMED Training Challenge in Cordis website	720	534
13	http://www.infobiomed.net/paginas_en/dissemination/Infobiomed_Neswletter_N0.pdf	INFOBIOMED Newsletter N°0	1320	871
14	http://www.infobiomed.net/paginas_en/training/files/Participant_dossier3_logistics.pdf	Participant dossier of final details about the First INFOBIOMED Training Challenge	650	460
15	http://www.infobiomed.net/paginas_en/training/files/Final_report_case_2.pdf	Final Report of second case of the First INFOBIOMED Training Challenge	764	445
16	http://www.infobiomed.net/paginas_en/training/files/Participant_dossier2a_casestudy1.pdf	Participant dossier of INFOBIOMED Training challenge - first case	624	443
17	http://www.infobiomed.net/paginas_en/dissemination/Infobiomed_Newsletter_N3.pdf	INFOBIOMED Newsletter N°3	822	434
18	http://www.infobiomed.net/paginas_en/training/files/EITemps.pdf	Press release of First INFOBIOMED Training Challenge in EI Temps	699	430
19	http://www.infobiomed.net/paginas_en/training/files/Participant_dossier2b_casestudy2.pdf	Participant dossier of INFOBIOMED Training challenge – second case	538	384
20	http://www.infobiomed.net/paginas_en/INFOBIOMED_D13_final.pdf	State of the Art on Systems for Data Analysis, Information Retrieval and Decision Support	843	381

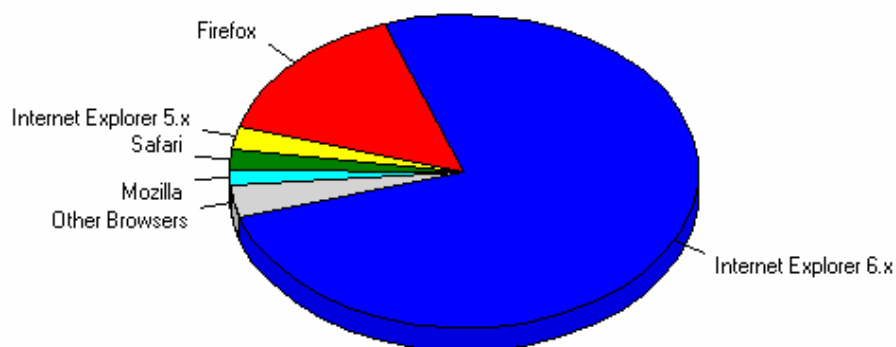
Internal documents


	File	Description	Hits	Visitors
1	http://www.infobiomed.net/intranetProt/presentationsInt/WP5_SOA.zip	State of the Art on Methods, Technologies and Tools in Biomedical Informatics	833	609
2	http://www.infobiomed.net/intranetProt/presentationsInt/Periodic_activity_Report_full_1.2final.pdf	Periodic Activity Report #1	785	506
3	http://www.infobiomed.net/intranetProt/presentationsInt/D6_QMR_1-2final.pdf	Quarterly Management Report #3	582	465
4	http://www.infobiomed.net/intranetProt/presentationsInt/Pathway_Database_Report_WP6_1.zip	The Nuclear Receptor Pathway Database (NRpath)	507	398
5	http://www.infobiomed.net/intranetProt/presentationsInt/D7_1_3pdffinal.zip	Training and Mobility Action Plan	435	316
6	http://www.infobiomed.net/intranetProt/presentationsInt/D3_QMR_1-2final.pdf	Quarterly Management Report #2	317	294
7	http://www.infobiomed.net/intranetProt/presentationsInt/D2_QMR_1-2final.pdf	Quarterly Management Report #1	300	271

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	File	Description	Hits	Visitors
8	http://www.infobiomed.net/intranetProt/presentationsInt/infobiomedcontractcomplete.zip	Contract of the INFOBIOMED Project	316	246
9	http://www.infobiomed.net/intranetProt/presentationsInt/QMR6_1.1final.pdf	Quarterly Management Report #6	302	246
10	http://www.infobiomed.net/intranetProt/presentationsInt/QMR5_1.1final.pdf	Quarterly Management Report #5	279	233
11	http://www.infobiomed.net/intranetProt/presentationsInt/D5_fi nalv1.8.pdf	Action Plan for Dissemination Activities	248	233
12	http://www.infobiomed.net/intranetProt/presentationsInt/Madri d2005/Informa/Infobiomed_Newsletter.pdf	Issue 0 of INFOBIOMED Newsletter	225	218
13	http://www.infobiomed.net/intranetProt/presentationsInt/Infobi omed_Brochure_Definitive.pdf	INFOBIOMED Brochure	273	211
14	http://www.infobiomed.net/intranetProt/presentationsInt/QMR4_1.1final.pdf	Quarterly Management Report #4	198	195
15	http://www.infobiomed.net/intranetProt/presentationsInt/Infobi omed-wp64-hnpcc-brochure.pdf	Brochure of The Danish Pilot: Genomics and Colon Cancer	197	187
16	http://www.infobiomed.net/intranetProt/presentationsInt/Amen dment_to_contract_1.pdf	Amendment of the Contract	203	184
17	http://www.infobiomed.net/intranetProt/presentationsInt/Perio dic_Management_Report_V_1.5.zip	Periodic Management Report #1	217	173
18	http://www.infobiomed.net/intranetProt/presentationsInt/WP4_3_SOA.zip	Privacy Enhancing Techniques SoA document	195	170
19	http://www.infobiomed.net/intranetProt/presentationsInt/INFO BIOMED_CA_V3.1final_az.pdf	INFOBIOMED Consortium Agreement	221	165
20	http://www.infobiomed.net/intranetProt/presentationsInt/Progr ess_WP61_month12final.zip	Progress Report Month 12	204	162

Most used browsers




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	Browser	Visitors	% of Total Visitors
1	Internet Explorer 6.x	71.798	75,83%
2	Firefox	13.916	12,71%
3	Internet Explorer 5.x	2.244	2,05%
4	Safari	2.106	1,92%
5	Mozilla	1.541	1,41%
6	Other Browsers	3.232	2,31%

Analysis

Although it is somewhat difficult to ascertain usage patterns from web statistics, it seems apparent that the public INFOBIOMED site has attracted most users thanks to Training and Mobility activities (especially the INFOBIOMED Training Challenge), and Dissemination Activities (especially the Biomedical Informatics Gateway). These are responsible for much of the project's visibility. On the other hand, and unsurprisingly, partners of the project seem to have gravitated more towards pages and files related to management and scientific tasks, which were the two main aims of the private zone of the website. It is noteworthy that the analysis of browsers used seems to confirm the dominance of Microsoft applications already detected in the survey on collaborative tools performed earlier on in the project's life.

The relatively high number of visits to internal pages seems to indicate a healthy pattern of use of the private zone for collaborative work purposes. In any case, a short survey on actual use of collaborative tools during the project was performed to extract more precise information on this topic, and that is the subject of section 6 hereunder.

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6. Survey on actual use of collaborative tools in INFOBIOMED


A final task within the timeline of activity 2.1 was the design and implementation of a short survey devoted to obtain indicators of actual usage of collaborative tools, to provide a basis for comparison with the needs and practices expressed in that respect in the former survey carried out earlier on at the beginning of activity 2.1 (see D4 for details), and to offer some orientation for further work in the area. Although this final survey was not planned, these were all interesting factors to explore, and it provided a good framework for the completion of the activity.

The survey focused now on staff having worked for INFOBIOMED (instead of BMI researchers in general), so the sample size was somewhat reduced. As opposed to the rather comprehensive previous survey, this survey was designed to be short and easy to complete, thus being based on more open questions addressed to investigate some key topics (see Annex I for details).

The first item considered addressed the change (if any) with respect to the “usual” practice regarding the usage of collaborative tools. This question was related directly to the previous survey, in which the frequency and relative importance of the different kinds of tools was investigated. To facilitate comparison, the main tool categories were maintained in both surveys. Results indicate that, in general, INFOBIOMED has promoted an increased use of face-to-face interaction, general tools (email, etc.) and asynchronous tools. This reinforces the type of tools that were already reported in the previous survey as those more important and frequent. That is, INFOBIOMED has apparently exacerbated the normal trend, resulting in what could be described as “more collaboration”, but not necessarily a change in practice. Real-time collaborative tools, tele-conferencing and phone, fax, etc. have been used, for the most part, as usual. It is important to remember here that, in the previous survey, the “wishes” of researchers (expressed in question 2 of that questionnaire) in order to be more productive pointed towards more real-time tools, more face-to-face, and less generic tools. This ideal situation has only been partially approached therefore.


Item number two investigated which specific tools had been more useful; the fact that the INFOBIOMED web (external and internal) appears twice at the top indicates that the project has actively contributed to the increased use of asynchronous tools. The rest of tools mentioned are either very generic, or too specific and referred to concrete sub-fields or areas of activity, although within these, several of the tools developed in the framework of the project are also mentioned (PDWH, HNPCC pilot, DiseaseCard, etc.).

If we match the expressed “wishes” of the previous survey with the actual practice expressed in the new one, one could imagine that answers to item number three (tools still missed) would mostly point to appropriate real-time collaboration tools or tele-conferencing; somewhat surprisingly, and although very diverse, most answers still

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make instead reference to improved and more sophisticated asynchronous tools⁴. This may be a symptom that the cultural barriers to real-time collaboration as well as other obstacles mentioned in the previous survey are still too big for a change in practice to happen. For distributed projects, people seem to rely on asynchronous tools (wishing they were better or more adapted to their specific fields), and on face-to-face interaction when more dynamic discussion is needed.

⁴ On a side note, some partners mention “wiki” as desirable, whereas this was already enabled in the INFOBIOMED private zone; this probably reflects a lack of sufficient publicity within the Consortium for some of the developments of activity 2.1.

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Annex I – Survey questionnaire

INFOBIOMED – Survey on collaborative tools use

INFOBIOMED description

INFOBIOMED is a EU-funded Network of Excellence that gathers several European institutions, addressed to reinforce European Biomedical Informatics and promote the creation of a strong community in the field, by enabling synergies between Bioinformatics and Medical Informatics.

Objective

Research in the fields addressed is often carried out by several researchers/institutions, in a collaborative framework characterised by geographical dispersion. The objectives of this survey are:

- To identify the practices, IT tools and platforms that have been used by involved researchers to collaborate for the carrying out of INFOBIOMED.
- To detect IT tools and platforms needed to improve collaborative research.

The results of the survey will help INFOBIOMED to assess the usage of tools and platforms during the project and identify further collaborative research tools work needed in the area of Biomedical Informatics.

Sample selection

The population of reference is constituted by researchers carrying out collaborative research in INFOBIOMED.

Sample inclusion criteria: Researchers and technicians having carried out collaborative work in the framework of INFOBIOMED.

Sample recruitment strategy: Every INFOBIOMED partner must recruit a minimum of 2 survey respondents that fulfil the inclusion criteria.

Sample size

The sample size attained has been $n=36$, meaning that the maximum accepted error in the estimation of populational percentages is set to 15%, assuming that the population size is up to 200 individuals and the most unfavourable situation, in which the estimated percentage is 50%.

1. Please indicate if your usage of collaborative research tools has changed during the development of INFOBIOMED (tick as relevant).

	More	Equal	Less
Generic Internet tools (e-mail, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asynchronous telecollaboration tools (web databases, file repositories, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Real-time tele-collaboration tools (LINK3D, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tele-conferencing (video/web conference)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Face-to-face interaction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Phone, fax, etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other collaborative tools, specify.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>


2. Please indicate, sorted by importance, the **main specific tools & platforms** that you have used for the development of your work within INFOBIOMED (e.g. specific shared databases, private repository of the INFOBIOMED web site, LINK3D, etc.).

- 1:
- 2:
- 3:
- 4:
- 5:

3. Please mention any **specific tools that you still miss** in your collaborative work and that would enhance it. The list can comprise non-existing tools, tools that you don't have access to and/or improvements of already existing tools.

- 1:
- 2:
- 3:

THANK YOU FOR YOUR COOPERATION!

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Annex II - Survey results

Descriptive analysis

Total sample size: **36**


- Please indicate if your usage of collaborative research tools has changed during the development of INFOBIOMED (tick as relevant).*

For all questions, [n] is the number of respondents to each question.

	More	Equal	Less
Generic Internet tools (e-mail, etc.)	50%	50%	0% [36]
Asynchronous telecollaboration tools (web databases, file repositories, etc.)	50%	50%	0% [36]
Real-time tele-collaboration tools (LINK3D, etc.)	8,8%	88,2%	3% [34]
Tele-conferencing (video/web conference)	25,7%	74,3%	0% [35]
Face-to-face interaction	63,9%	36,1%	0% [36]
Phone, fax, etc.	22,2%	69,5%	8,3% [36]
Other collaborative tools:	"Wiki", "INFOBIOMED Gateway", "Diseasecard", "MSN"		

- Please indicate, sorted by importance, the main specific tools & platforms that you have used for the development of your work within INFOBIOMED (e.g. specific shared databases, private repository of the INFOBIOMED web site, LINK3D, etc.).*


Main Specific Tools & Platforms	Rank 1	Rank 2	Rank 3 or lower	TOTAL
INFOBIOMED Private Repository (incl. Reporting Tool)	9	4	1	14
E-mail	8	1	1	10
INFOBIOMED website (incl. INFOBIOMED Course Database, European Biomedical Informatics Gateway, Mobility Brokerage Service)	3	1	1	5
Shared databases	2	3		5
Skype		2	3	5
Web Tools	2			2
HGV base (shared internet databases)		2		2
PDWH (Periodontal Dataware House)		2		2
Entrez-Gene	1			1
HNPCC Pilot	1			1

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Main Specific Tools & Platforms	Rank 1	Rank 2	Rank 3 or lower	TOTAL
Internet	1			1
Linux	1			1
NCBI database dbSNP	1			1
Protein Interaction and Network Analysis (PIANA)	1			1
Matlab 7.0.1 R14	1			1
WEKA	1			1
In-house databases		1		1
DiseaseCard		1		1
Microsoft SQL Server 2003		1		1
MySQL		1		1
OMIM		1		1
XML-Standards		1		1
Wiki			1	1
Ensembl Genome Browser			1	1
Expasy			1	1
GRID			1	1
Hugo Gene Nomenclature Committee (HGNC)			1	1
Orphanet			1	1
INB platform (Instituto Nacional de Bioinformática)			1	1
Microsoft Visual Studio 2003			1	1
Microsoft Word 2003			1	1
Phone			1	1
Software development tools: eclipse, Visual studio			1	1
Subversion (Source control)			1	1
EndNote 9.0.1			1	1
VMWare (virtualization)			1	1

3. Please mention any specific tools that you still miss in your collaborative work and that would enhance it. The list can comprise non-existing tools, tools that you don't have access to and/or improvements of already existing tools.

Specific tools that you still miss	Rank 1	Rank 2	TOTAL
Adequate web based project management tools (including human resources, management and financial) with collaborative real time capabilities.	3	1	4
Wiki	3		3
Common graphical viewer of networks that includes interacome, metabolome, etc.	1		1
Databases in different involved departments for direct input to the XML-Tool specially for pedigree.	1		1

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Specific tools that you still miss	Rank 1	Rank 2	TOTAL
Development of DiseaseCard DB for common complex diseases.	1		1
Face to face internet interaction tools.	1		1
Implementation of existing tool (database).	1		1
Laboratory database system for sample tacking and data transfer.	1		1
Something like XGRID	1		1
Microsoft SQL Server 2005.	1		1
Possibility to upload documents directly to website by partners.	1		1
Web conference tools.	1		1
A language used to write script files that automate the actions of the computer and the applications that run on it, ie: i). Batch processing. ii). File conversion and manipulation. iii). Performing tasks at specified times. iv). Transferring information between databases and other applications. v). Create automated workflows by linking the actions of multiple applications to perform a series of related tasks.		1	1
LM Insight Segmentation and Registration Toolkit (ITK).		1	1
Message board.		1	1
Repository online tools to share modifications in documents.		1	1
Unique description of proteins by single code.		1	1