

# A Social Networking Research Environment for Scientific Data Sharing: The D4Science Offering

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Digital Libraries (DLs) are nowadays called to support enhanced forms of scientific communication:

- based on publication of comprehensive scientific theories;
- including the data and algorithms they are based on;

to make it possible for others to identify errors, to

support, reject or refine theories and to reuse data for further understanding and knowledge.

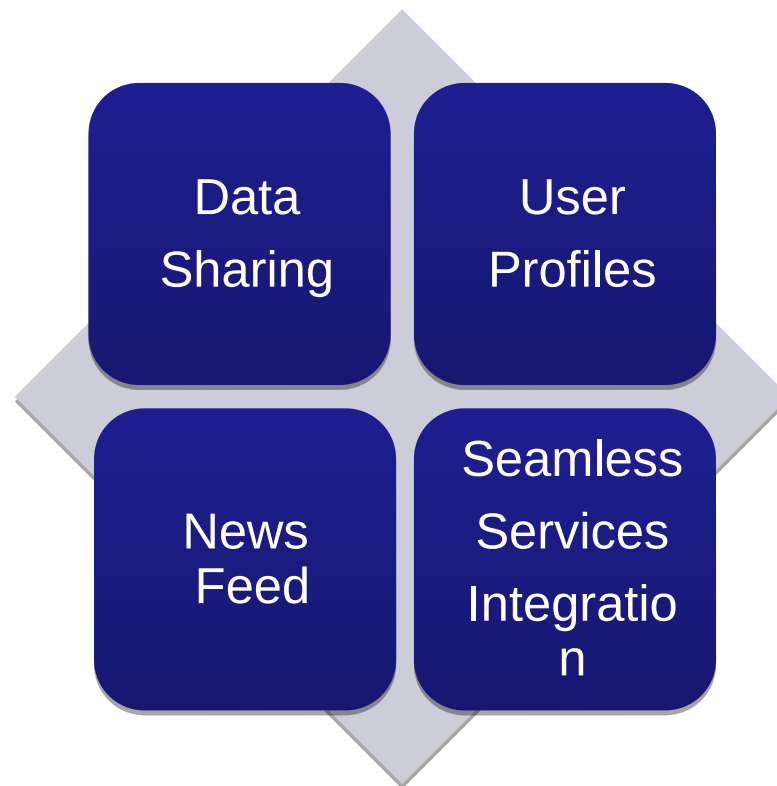
Boulton, G.; Campbell, P.; Collins, B.; Elias, P.; Hall, D. W.; Laune, G.; O'Neill, O.; Rawlins, M.; Thornton, D. J.; Vallance, P. & Walport, M. Science as an Open Enterprise. The Royal Society, 2012

## DLs are actually **Virtual Research Environments**\* requested to:

- **manage in a seamless** way a large amount of data ranging from traditional research outputs, mainly papers and experimental data, to living reports, executable research papers, and scientific workflows;
- promote collaboration among coworkers by realizing innovative research paths and strategies. To make this more challenging, data to be managed often fall into the “big data” domain.

\* L. Candela, D. Castelli, P. Pagano (2013) Virtual Research Environments: An Overview and a Research Agenda. Data Science Journal, Vol. 12, p. GRDI75-GRDI81  
<http://dx.doi.org/10.2481/dsj.GRDI-013>

We present an innovative environment conceived to satisfy the above requirements via social networking research facilities offered by the D4Science Infrastructure.







These facilities are conceptually close to the common facilities promoted by social networks:

- yet adapted to promote large scale collaboration and cooperation on comprehensive scientific projects.

### News feed

All Updates ▣ My Favorites ▣ Only Me



AquaMaps Species View SpeciesDistribution map "Thunnus obesus" is now available



#### Thunnus obesus - Continental Asia View

The Thunnus alalu AquaMaps exploits distributed service:

Reply - Favorite - go App [Aqua]



StatisticalManager The operator Xmeans has been added: Clustering with XMeans Algorithm: X-Means is K-Means extended by an Improve-Structure part In this part of the algorithm the centers are attempted to be split in its region.

Reply - Favorite - go App [devVRE] January 16, 6:00 PM ★ 1

A continuously updated list of events / news produced by users and applications

Share News

Application-shared News

User-shared News

**Share updates**


Share an update or paste a link, use "@" to mention someone

Privacy level: My VREs Share


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**News feed**


All Updates | My Favorites | Only Me



**AquaMaps Species View** SpeciesDistribution map "Thunnus albacares" is now available  
 Reply - Favorite - go App [EcologicalModelling] October 24, 2:15 PM




Leonardo Candela shared a link.




**Predicting species distributions for conservation decisions - Guisan - 2013 - Ecology Letters - Wiley Online Library - onlinelibrary.wiley.com**  
<http://onlinelibrary.wiley.com/doi/10.1111/ele.12189/full>  
 Predicting species distributions for conservation decisions - Guisan - 2013 - Ecology Letters - Wiley Online Library Skip to Main Content Our site uses cookies to improve your experience. You can find out more about our use of cookies in About Cookies, inc...


Reply - Favorite - Message October 24, 10:07 AM



Leonardo Candela NOW 37 million records in OBIS (+1,500,000 records; +244 datasets; +1,000 marine species). <http://www.iobis.org/node/441>  
 Reply - Favorite - Message October 10, 9:53 AM ★ 5



Gianpaolo Coro I'm sorry because this is in Italian, essentially it says that Italy is going to stress on aquaculture...




**Seguito audizione del ministro De Girolamo sulla riforma della Politica comune della pesca | Agricoltura Italiana Online - aiol.it**  
<http://www.aiol.it/contenuti/attualita/attivita%3C3%A0-ministro/seguito-...>  
 Seguito audizione del ministro De Girolamo sulla riforma della Politica comune della pesca | Agricoltura Italiana Online ENGLISH ITALIANO Newsletter Link Meteo Agenda Glossario FAQ Mappa Ministero delle Politiche Agricole Alimentari e Forestali Rivista tel...

**My Virtual Research Environments** SHOW LIST


BiodiversityResearchEnv

Public




DocumentsWorkflow

Public




ENVRI




EcologicalModelling

Public




InfraScience




ScalableDataMining

Public




TimeSeries


Public



VesselActivitiesAnalyze



iSearch



7

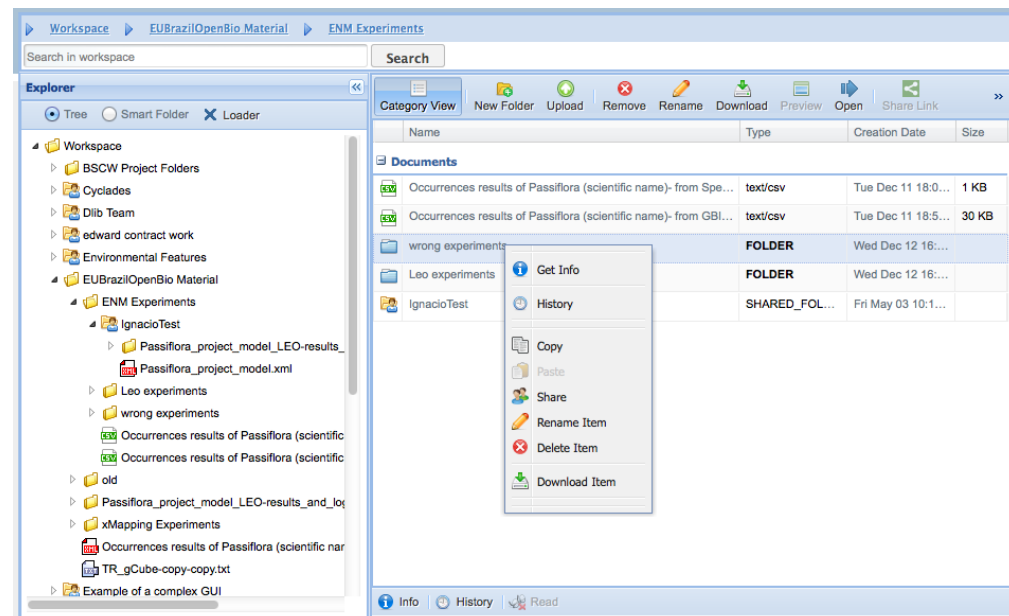
A Social Networking Research Environment for Scientific Data Sharing: The D4Science Offering

[www.d4science.org](http://www.d4science.org)

## A folder-based file system allowing to manage complex information objects in a seamless way

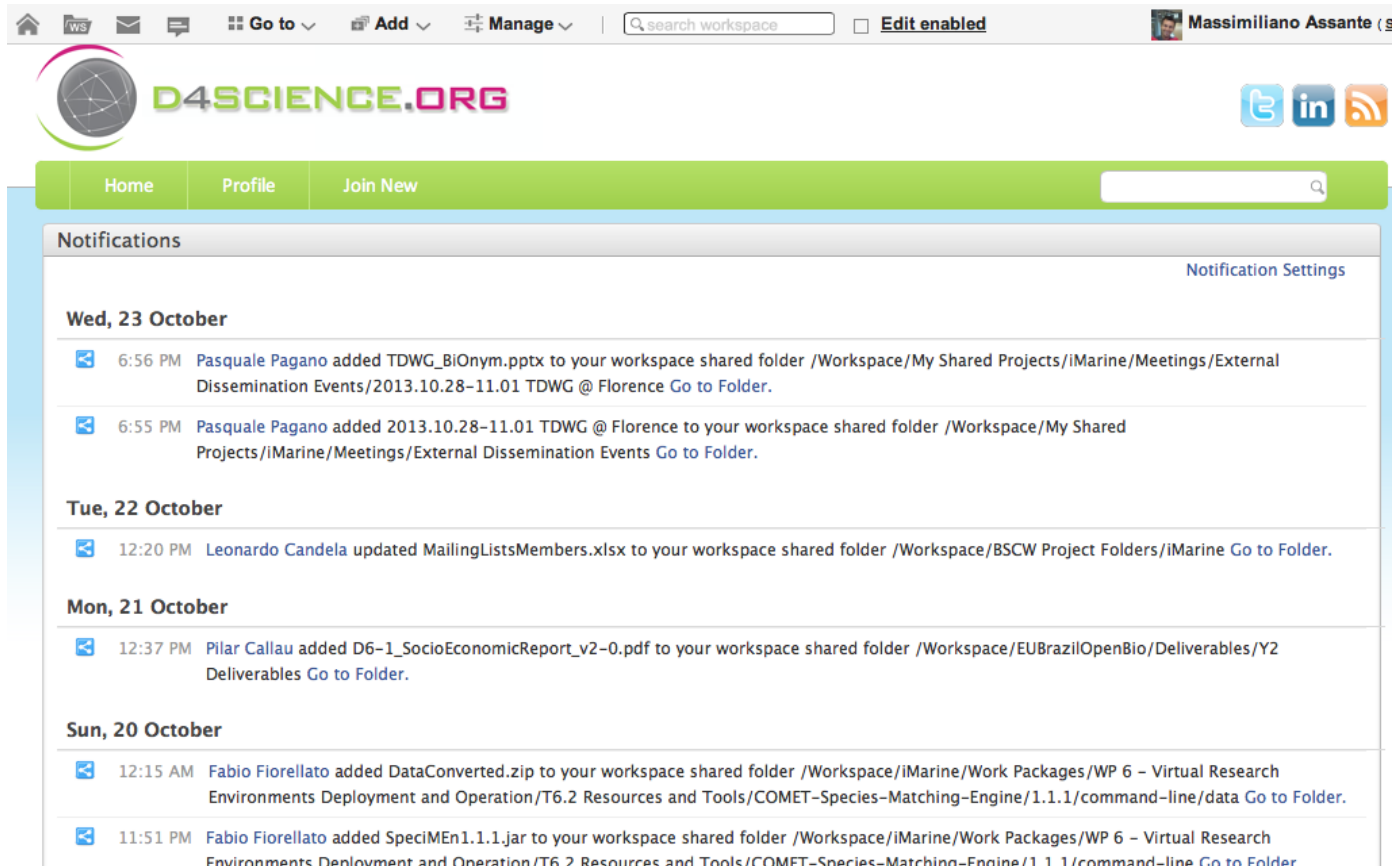
Information objects can be

- files, dataset, workflows, experiments, etc.
- organized into folders and shared
- disseminated via URIs
- accessed via WebDAV





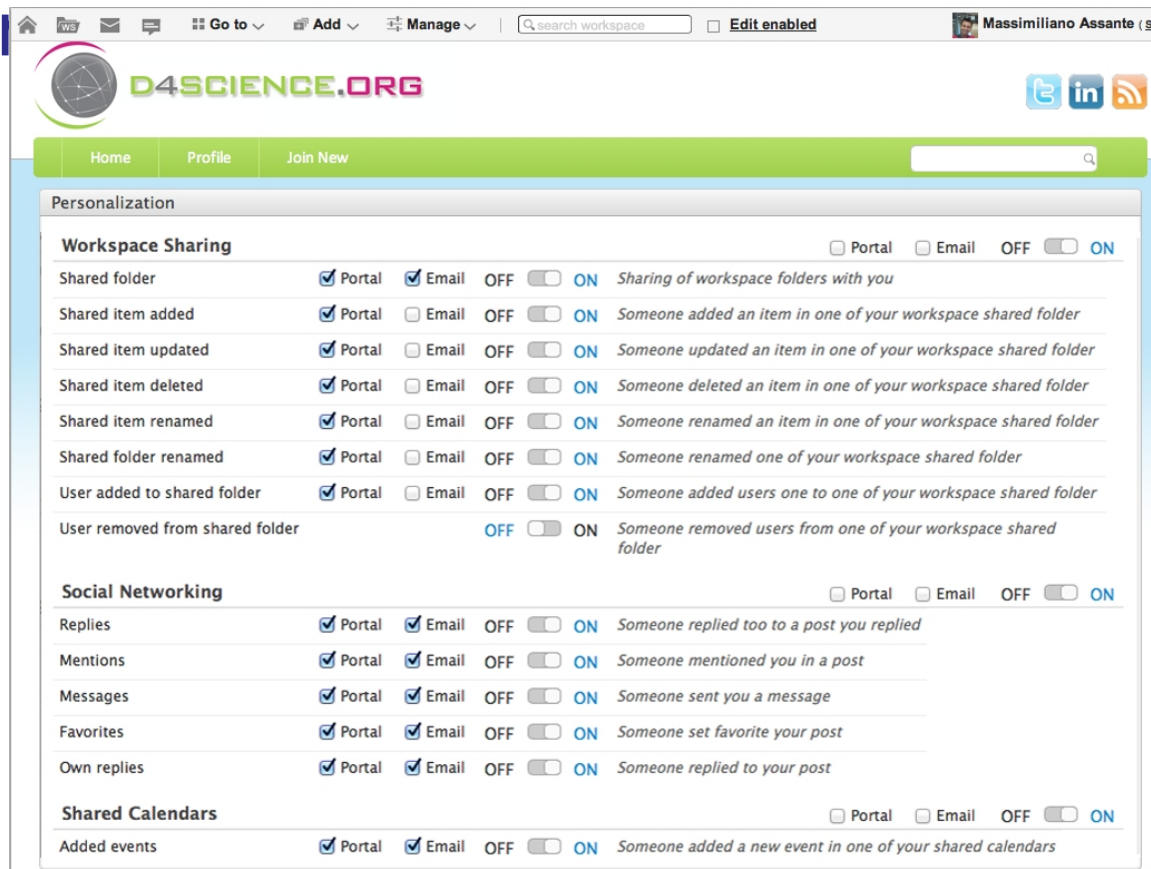
A list of happenings organized by date, e.g. publication of a research product, comments on a research product, etc..



The screenshot shows the D4Science web interface. At the top, there is a navigation bar with icons for home, workspace, mail, chat, and a search bar. The user's name, Massimiliano Assante, is visible in the top right. Below the navigation bar is the D4Science logo and social media icons for Twitter, LinkedIn, and RSS. A green navigation bar contains links for Home, Profile, and Join New, along with a search box. The main content area is titled "Notifications" and includes a "Notification Settings" link. The notifications are organized by date:

- Wed, 23 October**
  - 6:56 PM Pasquale Pagano added TDWG\_BiOnym.pptx to your workspace shared folder /Workspace/My Shared Projects/iMarine/Meetings/External Dissemination Events/2013.10.28-11.01 TDWG @ Florence [Go to Folder](#).
  - 6:55 PM Pasquale Pagano added 2013.10.28-11.01 TDWG @ Florence to your workspace shared folder /Workspace/My Shared Projects/iMarine/Meetings/External Dissemination Events [Go to Folder](#).
- Tue, 22 October**
  - 12:20 PM Leonardo Candela updated MailingListsMembers.xlsx to your workspace shared folder /Workspace/BSCW Project Folders/iMarine [Go to Folder](#).
- Mon, 21 October**
  - 12:37 PM Pilar Callau added D6-1\_SocioEconomicReport\_v2-0.pdf to your workspace shared folder /Workspace/EUBrazilOpenBio/Deliverables/Y2 Deliverables [Go to Folder](#).
- Sun, 20 October**
  - 12:15 AM Fabio Fiorellato added DataConverted.zip to your workspace shared folder /Workspace/iMarine/Work Packages/WP 6 - Virtual Research Environments Deployment and Operation/T6.2 Resources and Tools/COMET-Species-Matching-Engine/1.1.1/command-line/data [Go to Folder](#).
  - 11:51 PM Fabio Fiorellato added SpecIMEn1.1.1.jar to your workspace shared folder /Workspace/iMarine/Work Packages/WP 6 - Virtual Research Environments Deployment and Operation/T6.2 Resources and Tools/COMET-Species-Matching-Engine/1.1.1/command-line [Go to Folder](#).

A settings area where the user can configure diverse aspects characterizing the system behavior including his/her data and notification preferences



The screenshot shows the 'Personalization' settings page in the D4Science application. The page is titled 'Personalization' and is divided into three main sections: 'Workspace Sharing', 'Social Networking', and 'Shared Calendars'. Each section contains a list of notification events with checkboxes for 'Portal' and 'Email', and a toggle switch for 'ON' or 'OFF'. The 'Workspace Sharing' section includes events like 'Shared folder', 'Shared item added', 'Shared item updated', 'Shared item deleted', 'Shared item renamed', 'Shared folder renamed', 'User added to shared folder', and 'User removed from shared folder'. The 'Social Networking' section includes 'Replies', 'Mentions', 'Messages', 'Favorites', and 'Own replies'. The 'Shared Calendars' section includes 'Added events'. The user's name 'Massimiliano Assante' is visible in the top right corner of the browser window.

Section	Event	Portal	Email	OFF	ON	Description
Workspace Sharing	Shared folder	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sharing of workspace folders with you
	Shared item added	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Someone added an item in one of your workspace shared folder
	Shared item updated	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Someone updated an item in one of your workspace shared folder
	Shared item deleted	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Someone deleted an item in one of your workspace shared folder
	Shared item renamed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Someone renamed an item in one of your workspace shared folder
	Shared folder renamed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Someone renamed one of your workspace shared folder
	User added to shared folder	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Someone added users one to one of your workspace shared folder
	User removed from shared folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Someone removed users from one of your workspace shared folder
Social Networking	Replies	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Someone replied too to a post you replied
	Mentions	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Someone mentioned you in a post
	Messages	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Someone sent you a message
	Favorites	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Someone set favorite your post
	Own replies	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Someone replied to your post
Shared Calendars	Added events	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Someone added a new event in one of your shared calendars

The D4Science social networking facilities represent an innovative approach that nicely complement the DL offering and boost cooperation and collaboration. These facilities are:

- conceptually borrowed from social networks yet adapted to deal with the scientific data practices.
- exploit an Hybrid Data Infrastructure, providing users with the capability to effectively share “big data” or scientific products.
- suitable for heterogeneous contexts ranging from cultural heritage to biodiversity communities of

D4Science Infrastructure

[www.d4science.org](http://www.d4science.org)

gCube: the enabling technology

[www.gcube-system.org](http://www.gcube-system.org)