

# OpenAdap.net : a dynamic Middleware for Knowledge Production and Distribution

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- The richness circulating in the Cyberspace is poorly exploited because of technical **difficulties to share the know-how**. Public entities as well as business companies usually provide software based on **tailored needs** and platforms **too narrowly designed**.
- A **delay** appears until newly developed methods of information processing become available within a specific field or discipline.
- Even worse, this delay applies for application across fields of competence, i.e. **transdisciplinary applications**: knowledge is not disseminated and remain undiscovered due to the absence of software accessible to **users specialized in fields of competence other than that of the original author**.
- The existence of **barriers** in the flow of information processing **increase the overall cost** of knowledge production and distribution and **restrict its availability to developing countries**.

- Our project is aimed at breaking the aforementioned barriers, thus bringing a contribution to **bridge the digital divide** in the Knowledge Society.
- The key is the development of a project that is **independent of a specific data type**: **OpenAdap.net** is an **Open Source software platform** that provides flexible tools for knowledge production and distribution committed to the holistic view proposed by the **Networked European Software and Services Initiative (NESSI)**.
- **Community** members who provide new knowledge become able to **share** their contribution and members who have information to be processed can **access** these services.
- To **avoid the "re-invention"** of existing software and **save time and expenses** by the whole society and prevent incorrect applications.

- To provide **Internet Communities** the possibility to **transparently compose meta-resources** based on the resources available in their own Community, as well as in Communities with **semantically related interest**, by means of a **network-centric operating system** driven by the activity of **intelligent adaptable brokers**.

	Data treatment distribution	Hardware resource allocation	Hidden execution hosts	Applications sharing	Published application interfaced	Data sharing	Highly dynamic system	Transparent connections users ↔ resources
Grid	X	X	X					
Web Services			X	X	X	X		
P2P						X	X	X
openAdap.Net	X	X	X	X	X	X	X	X

- To develop a new **OpenAdap.net** protocol (**oan://**) for field instrumentation and wireless communication over Internet **easing ubiquitous knowledge sharing and access**.

## COMMUNITIES



People who share a **knowledge representation** (common data format) driven by common interests.

**CONTRIBUTOR** : people who would like to **share their knowledge** with the Community. They maintain the authorship and keep **control and responsibility** over their contribution.



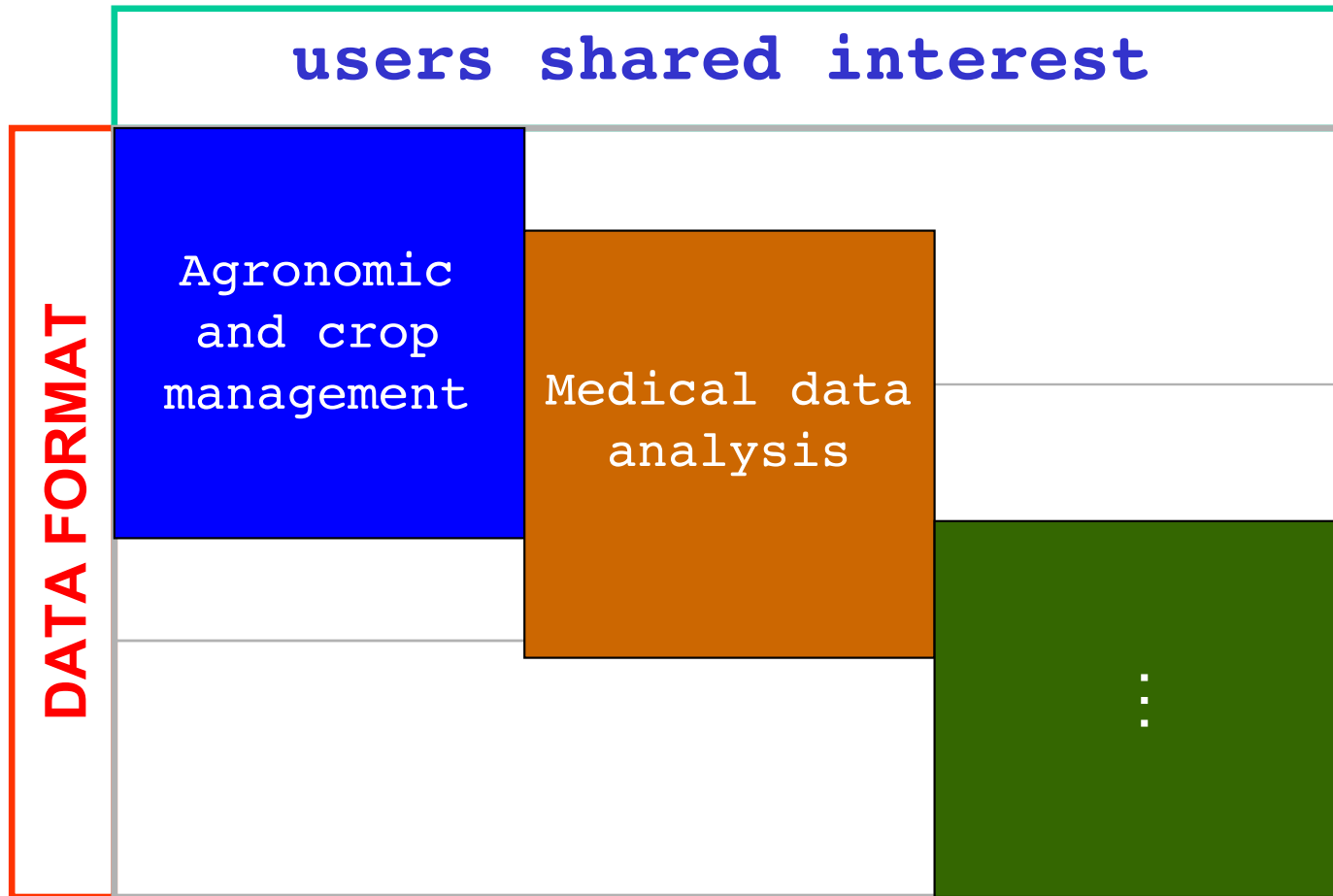
**USER** : people interested to **process their own information** or **access knowledge stored elsewhere** (e.g., in a public database) and **extract the results of their processing**. They exploit Contributors' applications in a trusted way.

[OpenAdap.net](http://OpenAdap.net)

## CONTRIBUTORS



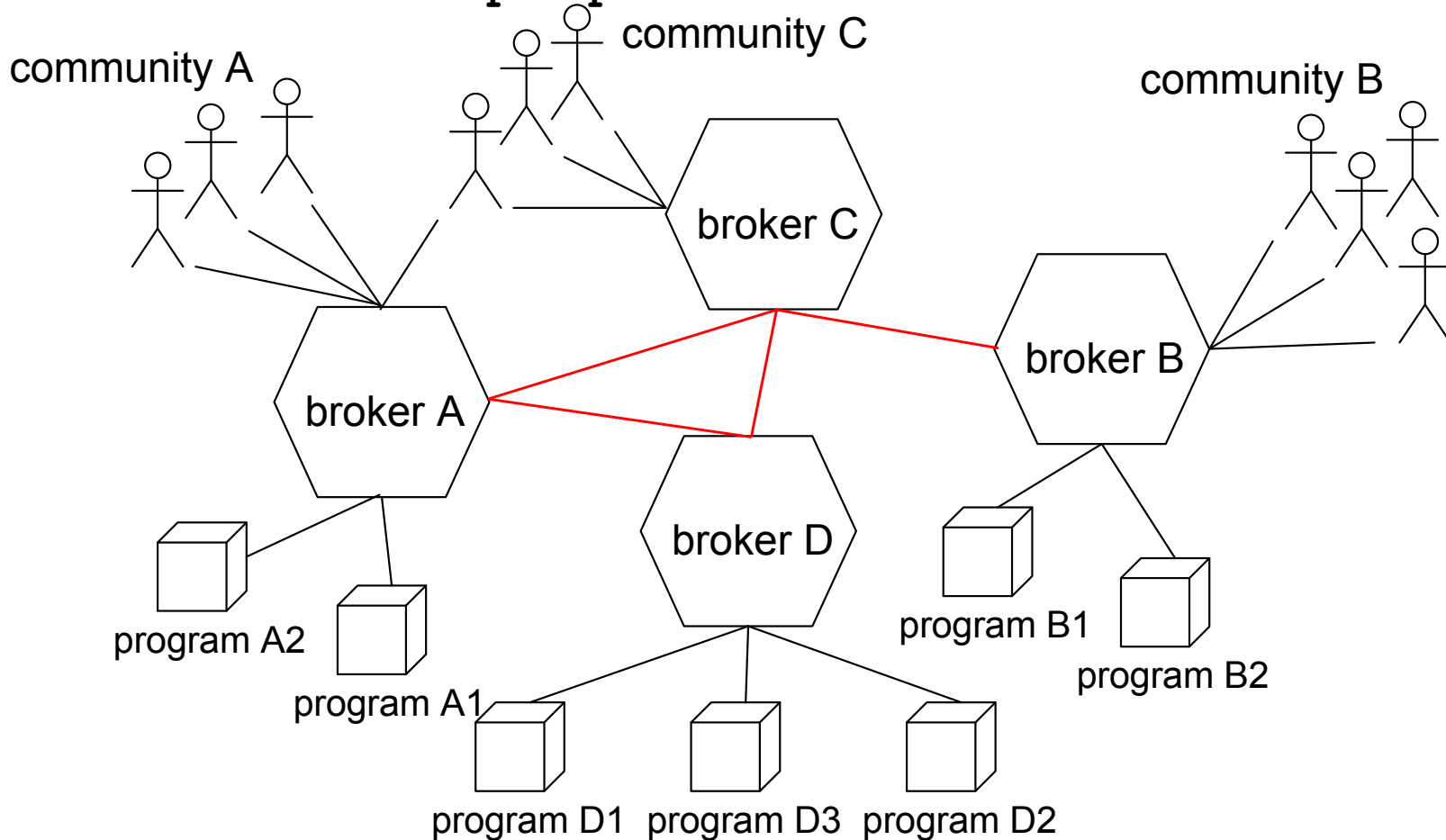
## USERS



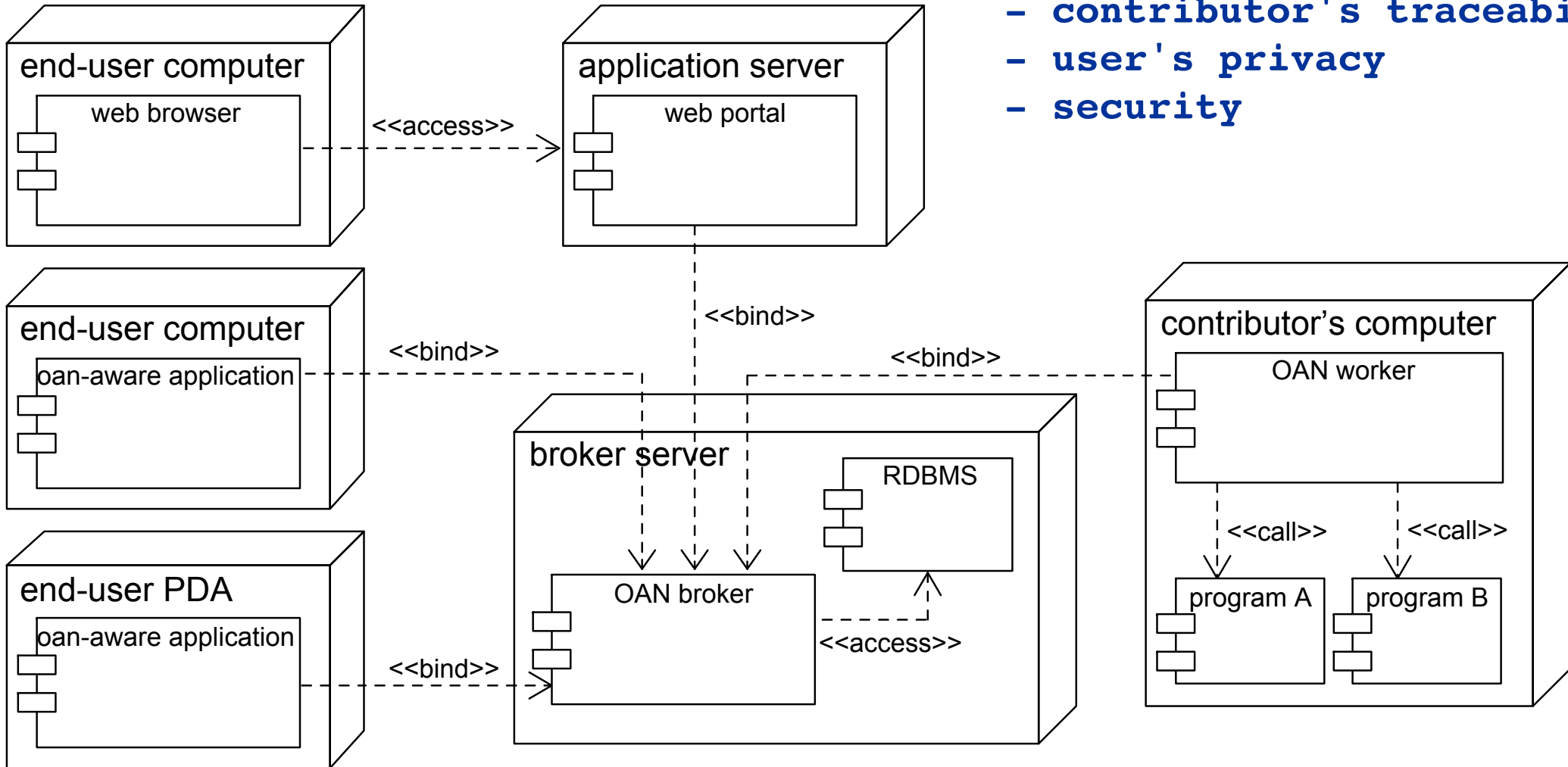
Third Parties from all over the world, **SMEs** in particular, can develop

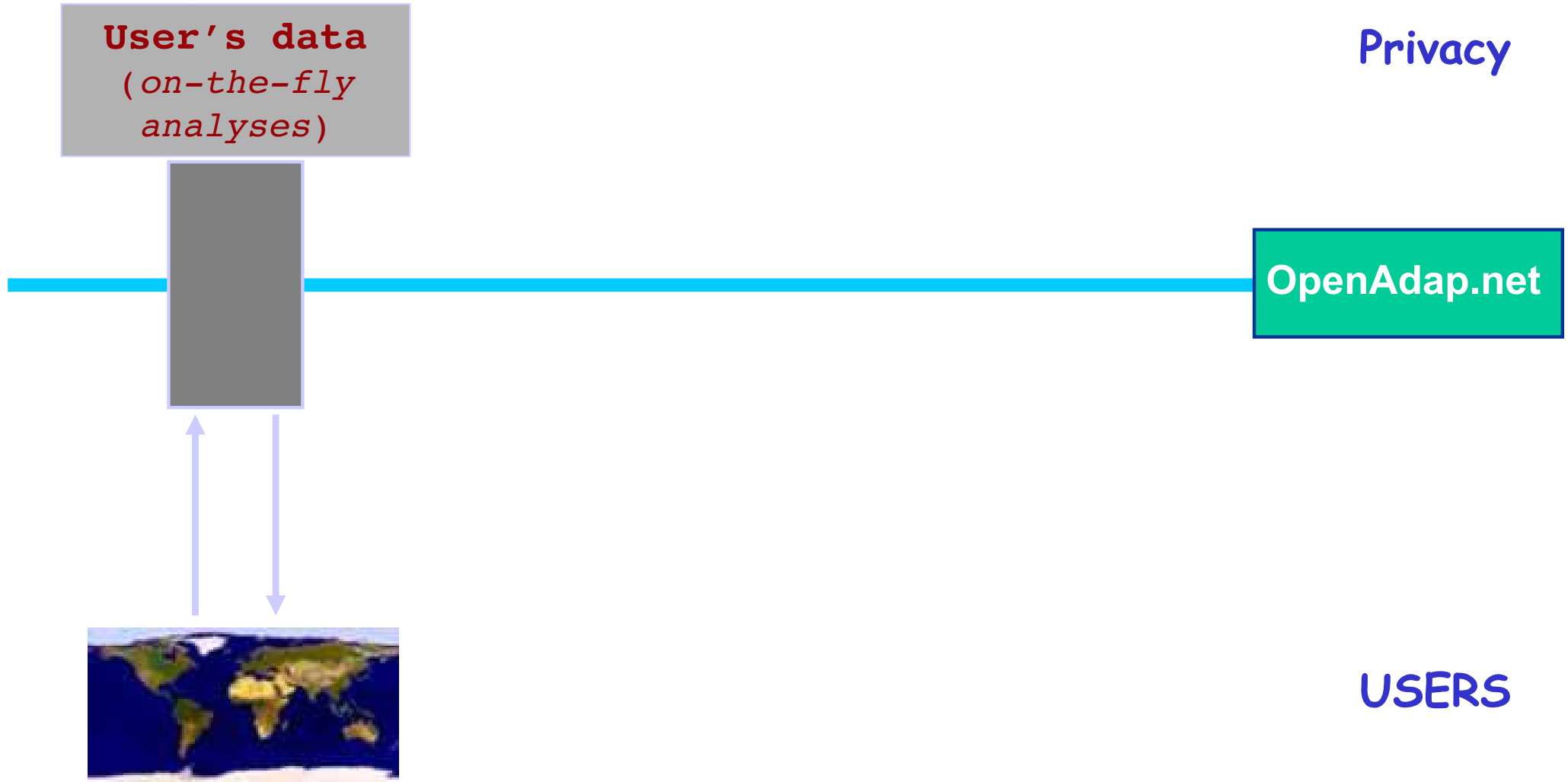
**added value services** (*educational, commercial, governmental,*

**Resources are semantically organized and appear as a single entity able to orchestrate unlimited, heterogeneous and dynamic resources distributed across multiple platforms.**



- contributor's traceability
- user's privacy
- security





**JOBS FOR ANONYMOUS @ IISLAP02.UNIL.CH**

The task manager is used to control the status of the different tasks that have been launched by the user in the current session. Using the first column checkboxes, you can select the lines on which you would like to apply the actions triggered when pushing the buttons laying on the right of the table.

ID	Resource	Submitted	Status	Actions
<input type="checkbox"/> job-00323	Inter-Spike Interval Histograms	Oct 5, 2006 4:34:08 PM	⚠	🔍 📄 🗑
<input type="checkbox"/> job-00356	Inter-Spike Interval Histograms	Oct 6, 2006 4:18:09 PM	✅	🔍 📄 🗑
<input type="checkbox"/> job-00357	Inter-Spike Interval Histograms	Oct 6, 2006 4:19:36 PM	✅	🔍 📄 🗑
<input type="checkbox"/> job-00358	Inter-Spike Interval Histograms	Oct 12, 2006 5:25:11 PM	✅	🔍 📄 🗑
<input type="checkbox"/> job-00359	Inter-Spike Interval Histograms	Oct 12, 2006 6:08:44 PM	✅	🔍 📄 🗑
<input type="checkbox"/> job-00360	Inter-Spike Interval Histograms	Oct 13, 2006 7:09:36 PM		🗑

Refresh

Generated in 27ms by  
Oct 18, 2006 11:17:27 AM

Neuroheuristic Research Group :: OpenAdap.net Portal - Mozilla Firefox

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http://oan.nhrg.org/jobs/details.xhtml?jobid=job-00356

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Status  
Credits

**USER ANONYMOUS**  
Register new user  
Log in





**JOBS**  
Manage  
Launch  
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**DETAILS FOR JOB JOB-00356**

**Abstract.**

**History**  
Job job-00356 was launched by USERNAME from CLIENT at TIME and submitted to BROKER. It was handled by BROKERS from FROM to TO, ..., and PROVIDERS from FROM to TO, ...

**Outputs**

Name	Size	MIME type	Actions
graphics.xyvz	98 kb	application/x-nhrg-xyviewer-document	 
stderr.txt	0 b	text/plain	
stdout.txt	124 b	text/plain	

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Oct 18, 2006 11:18:04 AM

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**NHRG XY-Viewer 0.4.0 (0.4.0)**  
File Style Browse Help

3 x 3 All figures

ARD (reg) [1,1] corr-demo.data  
T=101.5, R=0.93, F=0.96, C=1.00

ARD (reg) [1,2] corr-demo.data  
T=101.5, R=2.09, F=1.99, C=1.14

ARD (reg) [1,3] corr-demo.data  
T=101.5, R=2.60, F=1.36, C=1.14

ARD (reg) [1,4] corr-demo.data  
T=101.5, R=2.20, F=1.18, C=1.17

ARD (reg) [1,5] corr-demo.data  
T=101.5, R=3.25, F=1.65, C=1.21

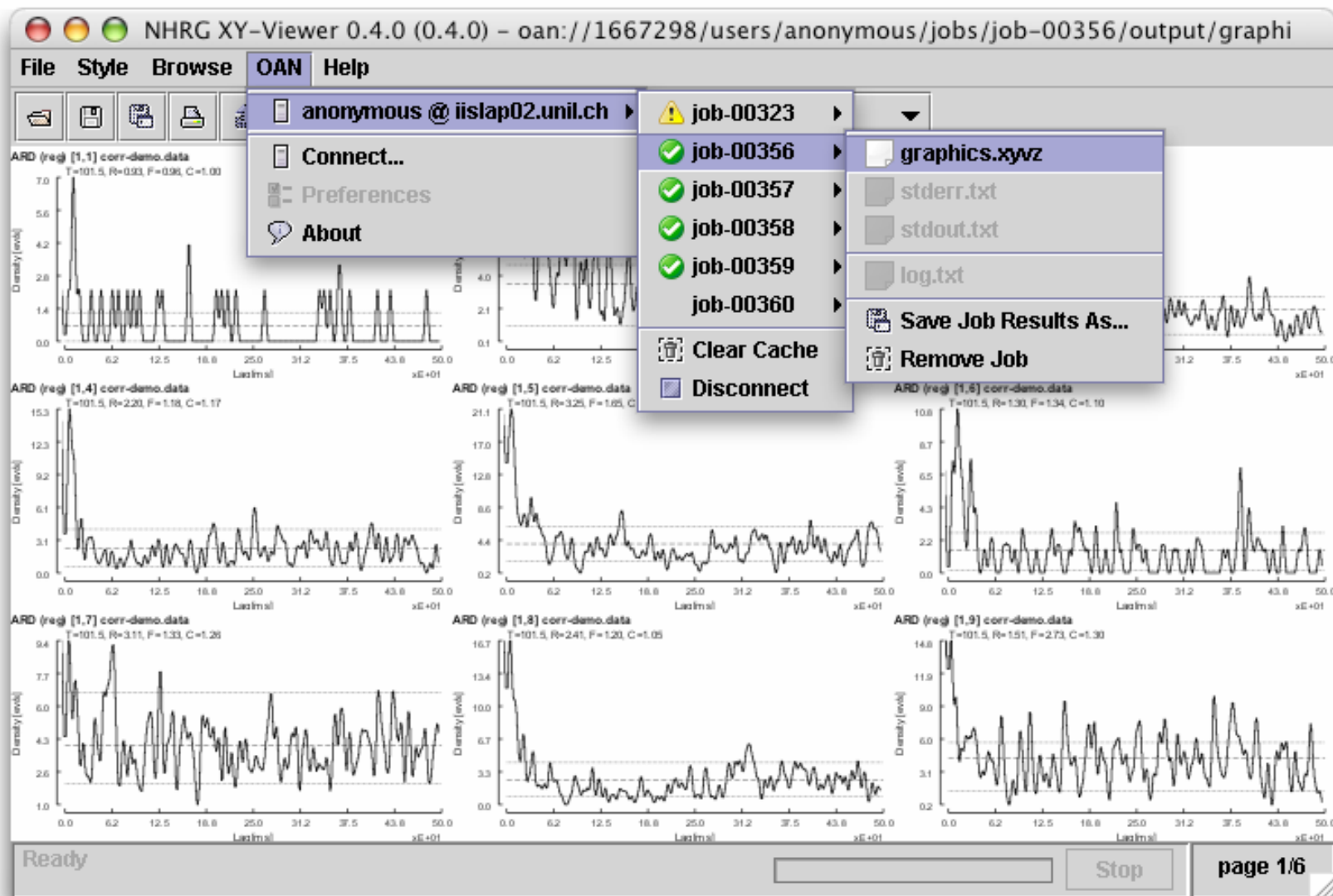
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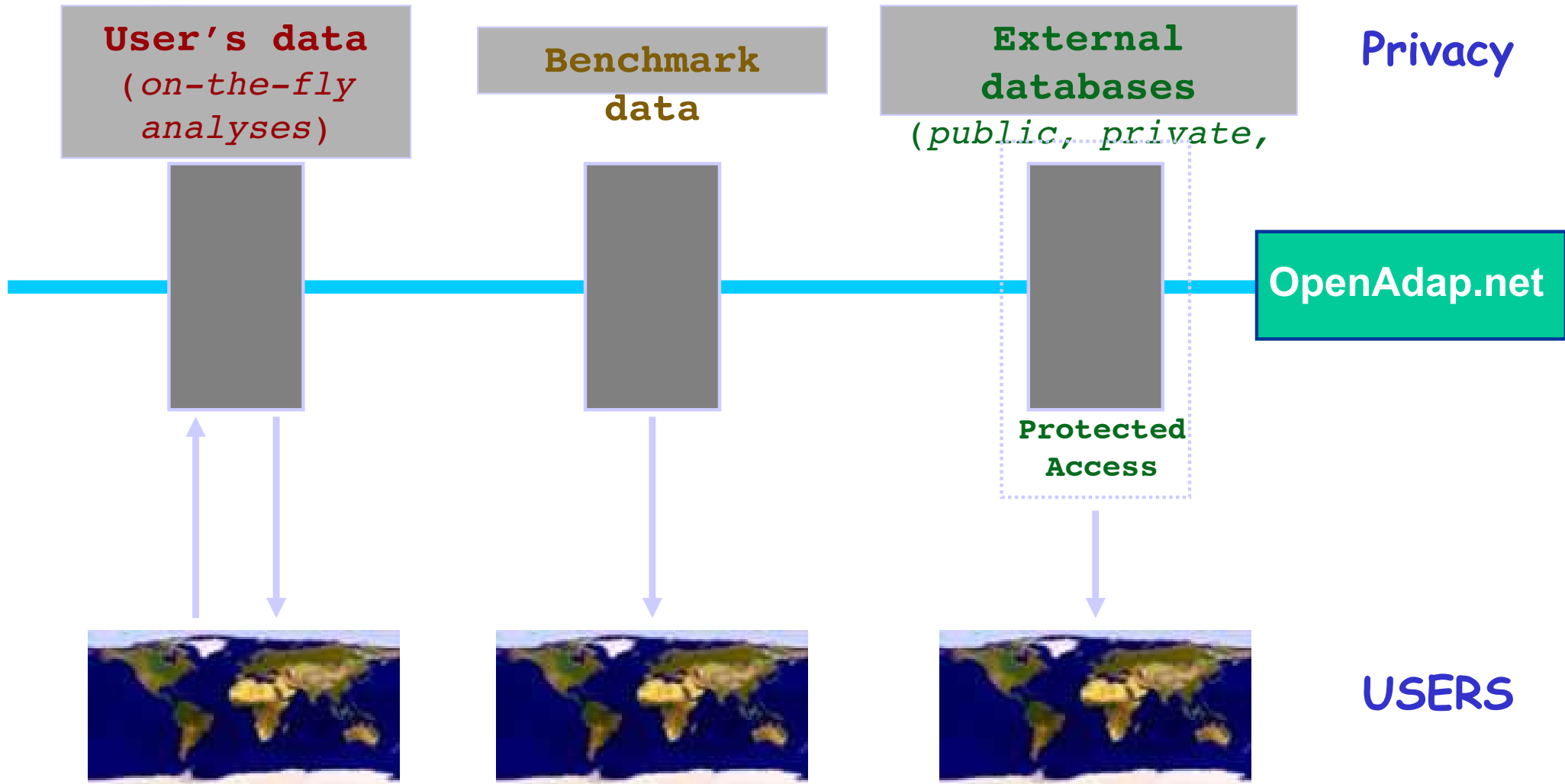
ARD (reg) [1,7] corr-demo.data  
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ARD (reg) [1,8] corr-demo.data  
T=101.5, R=2.41, F=1.20, C=1.05

ARD (reg) [1,9] corr-demo.data  
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Ready Stop page 1/6



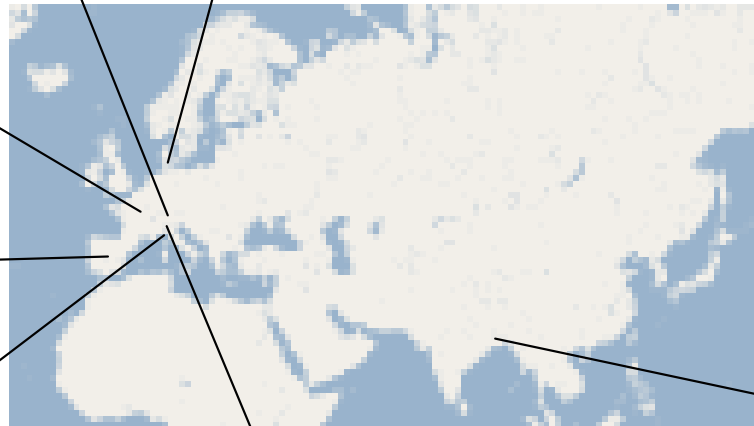


- **Concept proof** and **feasability** have been validated.
- An **OpenAdap.net testbed** is active and used on a daily basis by a Community interested in multivariate time series analyses sharing a suitable format originally developed in physics and successfully applied in financial forecasting and modeling of stock market, analysis of origin of glacial cycles, music, and biological data.
- A key element in the next stage of development consists in making the **brokers adaptive and dynamically interconnected** (like a neuronal network). The information will be processed and dispatched among all components following a set of "**learning**" rules, for example taking into account the computing load generated by specific tasks, the number of accesses, etc.
- The rules themselves will **evolve and optimize** in an unsupervised fashion, thus allowing the emergence of **dynamic links** among the adaptive brokers. Emergence of **nonlinear dynamics** will make **OpenAdap.net** closer to the **complexity of a living organism**.

The service and software architecture deployed in **OpenAdap.net** are not bound to a specific Community. They constitute a **global virtualisation tool** offering new opportunities to **European focused SMEs** to improve their **efficiency** and strengthen their **competitiveness** independently from their domain.



Telefónica I+D



A Consortium submitted a **FP7 proposal** [ICT-2007-1] (FP7-216525)



Towards a Knowledge Society: Is Knowledge a Public Good?  
Dynamics of Knowledge Production and Distribution

