

Knowledge Sharing by means of OpenAdap.net

Alessandro E.P. Villa, Javier Iglesias

Neuroheuristic Research Group^{1,2}

¹*HEC, Faculty of Business and Economics*

University of Lausanne, Switzerland

²*Grenoble Institute of Neuroscience, Inserm U836-Eq7*

Université Joseph Fourier Grenoble 1, France

Knowledge sharing: social obstacles

CONTRIBUTOR



OBSTACLES TO KNOWLEDGE DISSEMINATION



The richness circulating in the Cyberspace is poorly exploited because of **difficulties to share the know-how. Delays** appear until newly developed methods of information processing become available even within a specific field or discipline.

CONTRIBUTOR



"INVENTION"

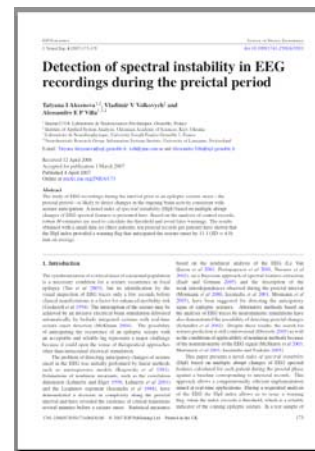
$$N_c^{(r)} = Q(a, c, \Omega) \cdot \tilde{N}_c^{(r)}$$

$$\tilde{N}_c^{(r)} = K \sum_{S_c \in \mathcal{E}_c} e^{-m(S_c)/K} \cdot \frac{1}{r!} \left[\frac{m(S_c)}{K} \right]^r$$

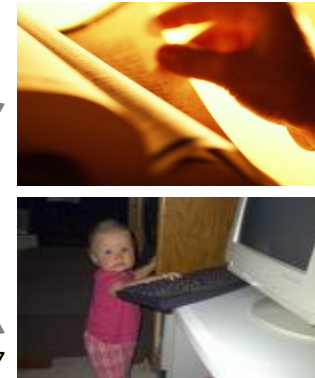
$$Q(a, c, \Omega) = F(c - a, a) \cdot \frac{\Omega!}{(\Omega - a)! a!}$$

$$K = \frac{(w/\Delta)^{c-1}}{(c-1)!} \equiv \frac{w^{c-1}}{f_\Delta(c-1)!}$$

DISSEMINATION



ACCESS



- Transdisciplinarity: technical obstacles**

The software is generally based on **tailored needs** and platforms **too narrowly designed**. Due to lack of a transdisciplinary vision **knowledge remains undiscovered** to users specialized in fields of competence other than that of the original author.

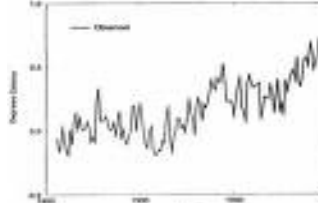
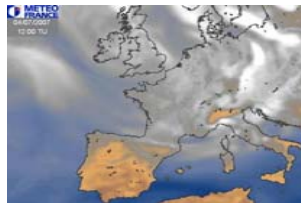
LIFE AND CLINICAL SCIENCES



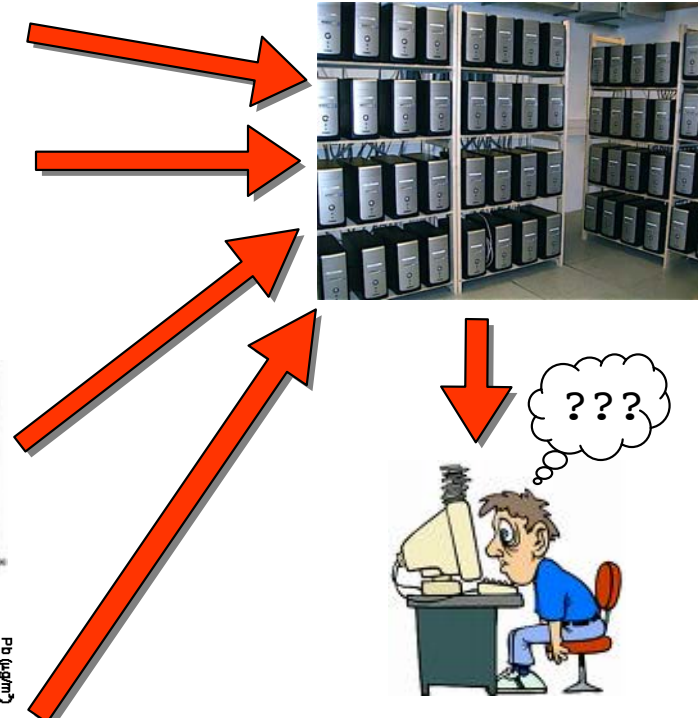
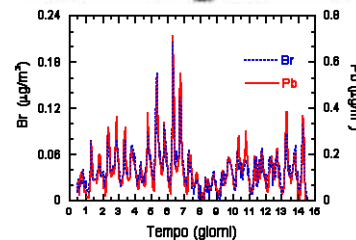
ECONOMY AND FINANCE



CLIMATE AND METEOROLOGICAL SCIENCES



TRAFFIC JAM AND POLLUTION FORECAST

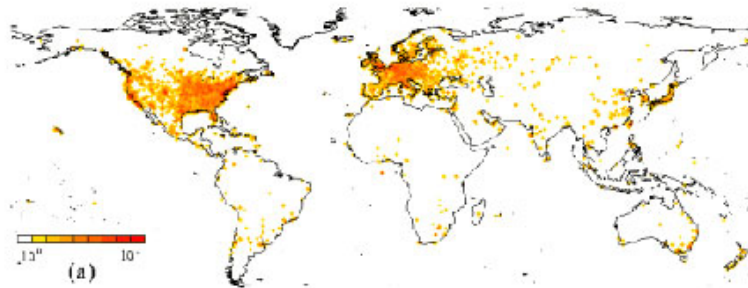


- Digital divide**

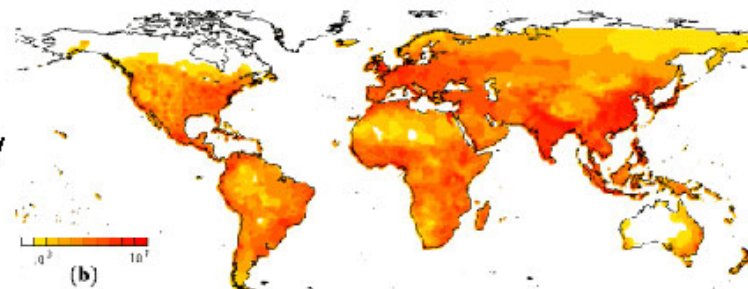


The existence of **barriers** in the flow of information processing **increase the overall cost** of knowledge production and distribution and **restrict its availability to developing countries** as well as among **social classes of developed countries**.

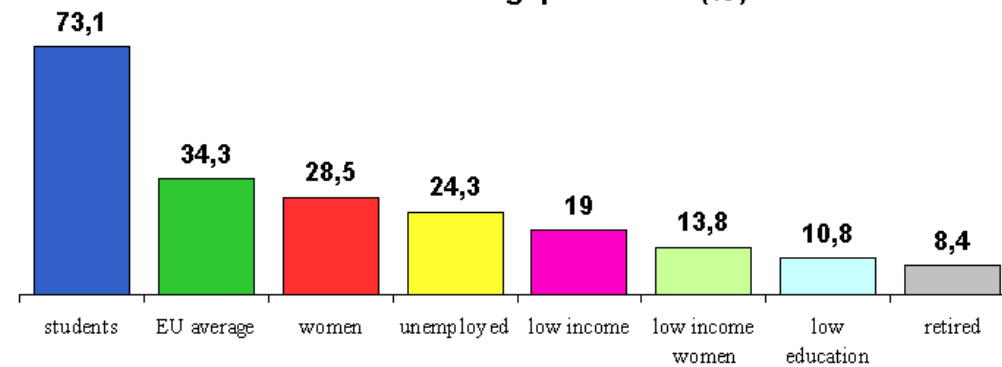
Router density



Population density



internet access gap in the EU (%)

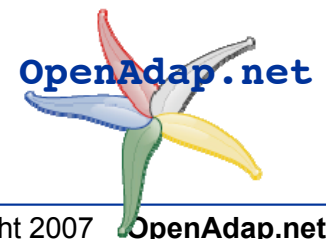
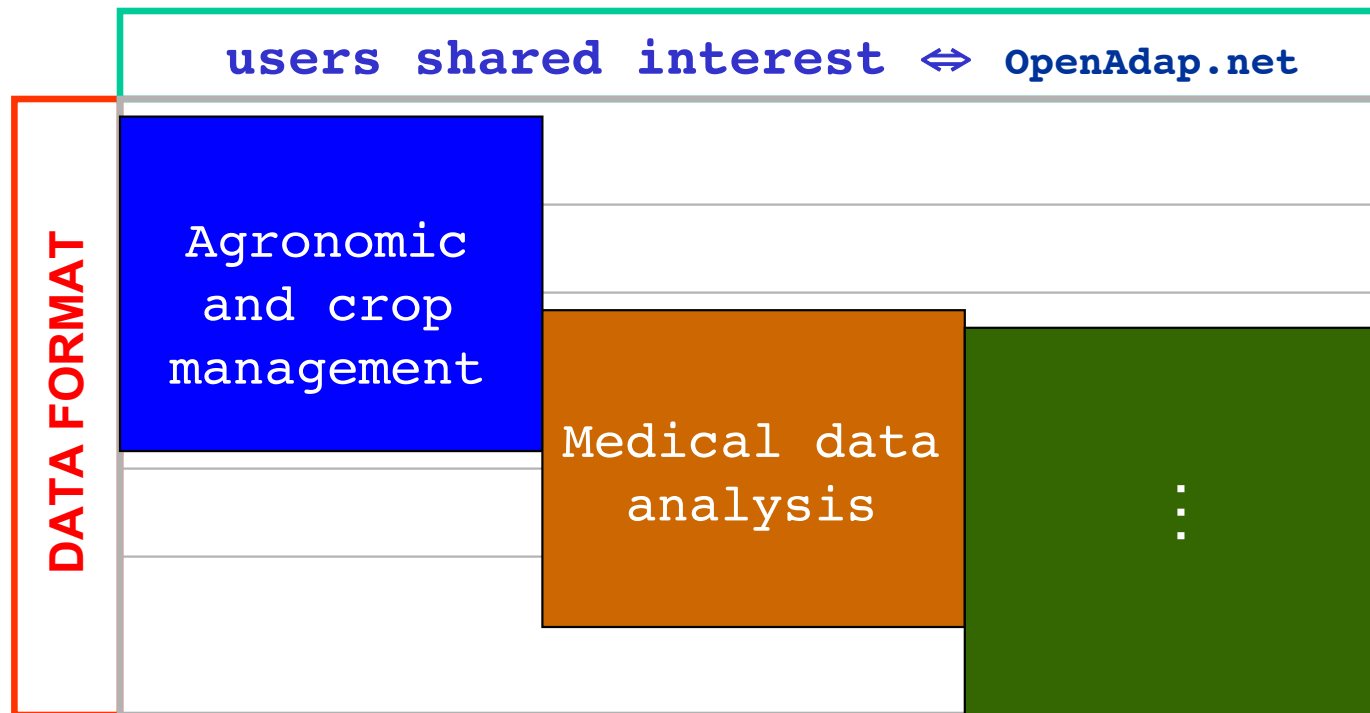


- The target audience

COMMUNITIES

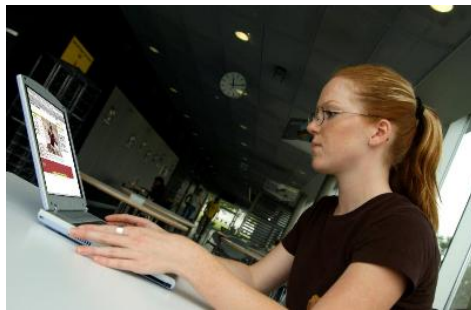
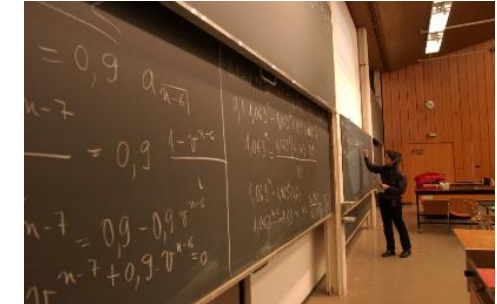


People who share a **knowledge representation** (common data format) driven by common interests.



- The target audience

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.

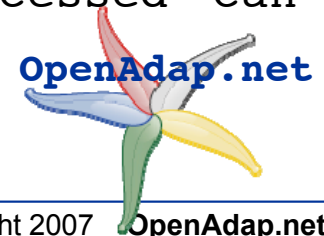
OpenAdap.net

CONTRIBUTORS

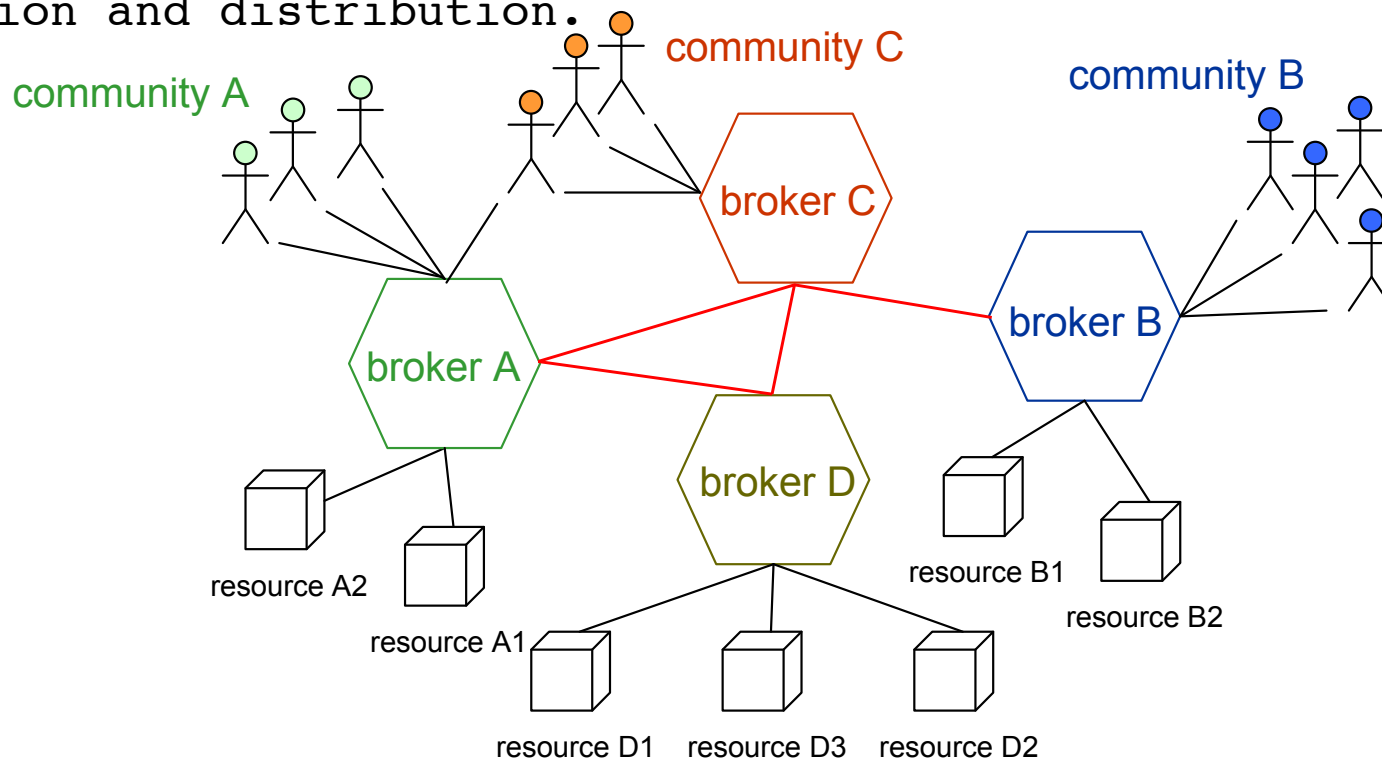


USERS

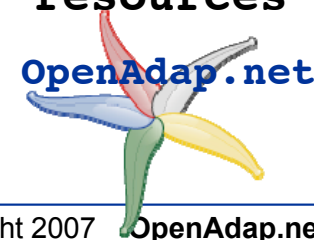
Community members who provide new knowledge become able to **share** their contribution and members who have information to be processed can **access** these services.



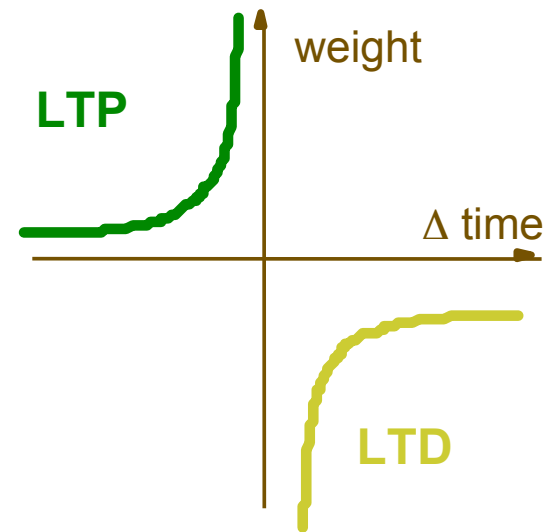
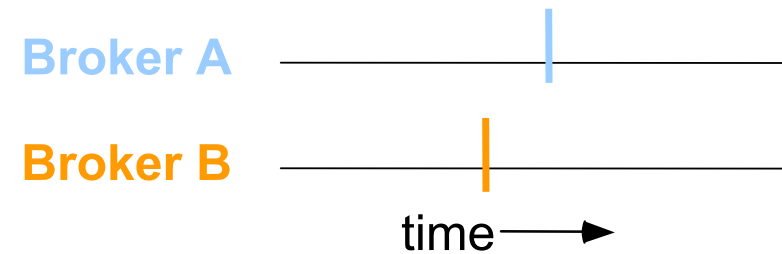
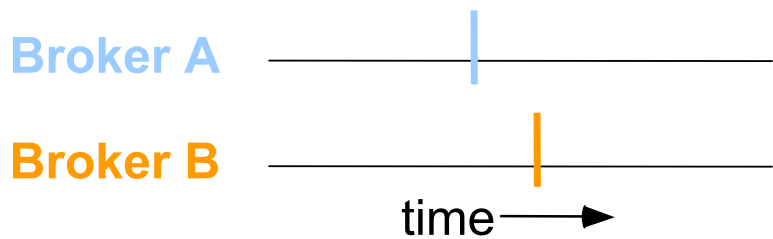
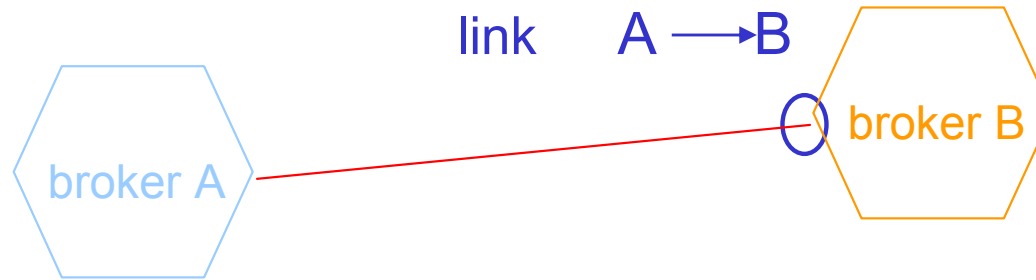
The key is the development of a new original project called **OpenAdap.net** (**OAN**, pronounce as "one") that is **independent of a specific data type**. The project is aimed to enable a middleware that is an **Open Source software platform** providing flexible tools for knowledge production and distribution.



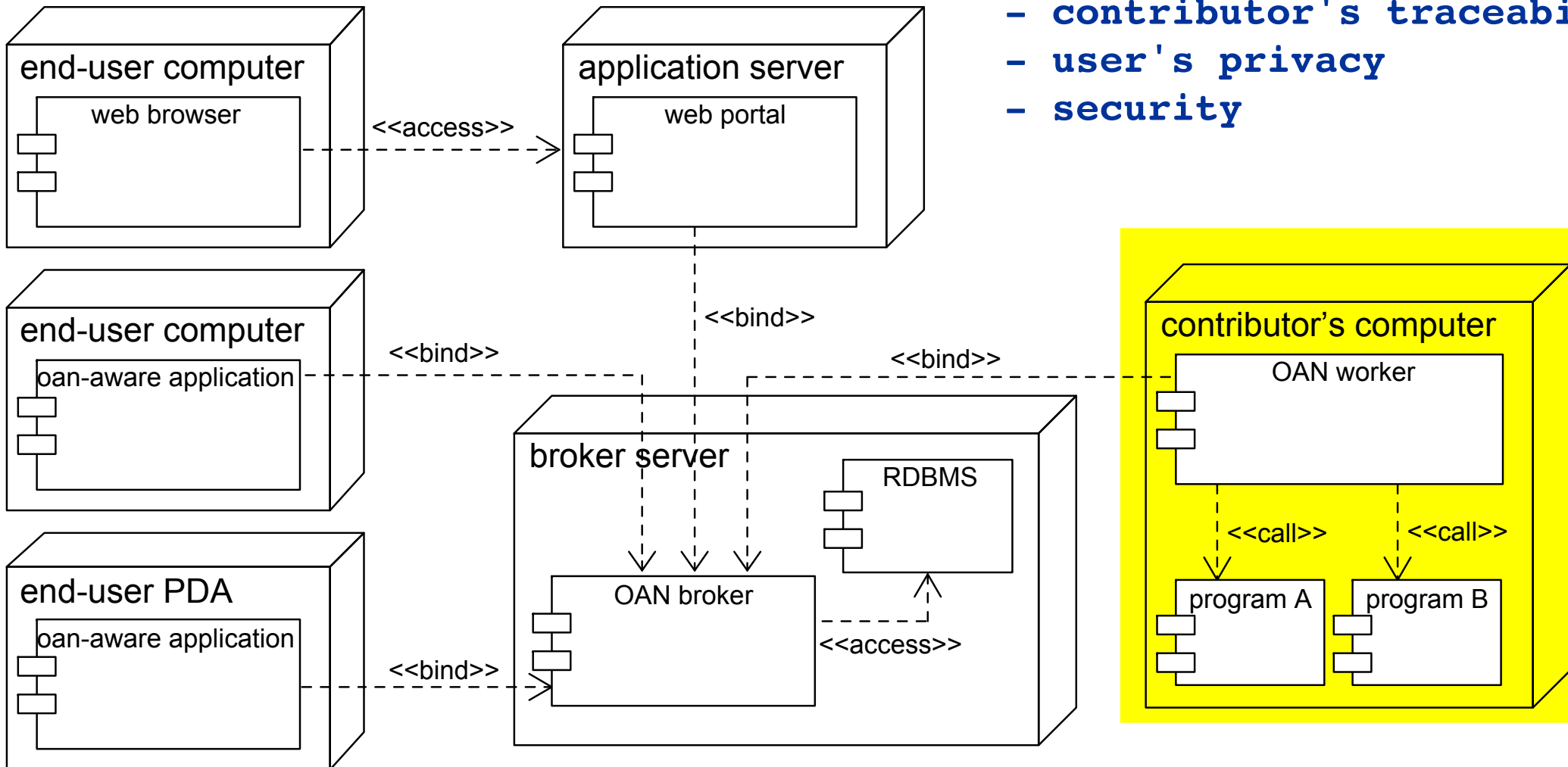
Resources are semantically organized and appear as a single entity able to orchestrate **unlimited, heterogeneous and dynamic resources distributed across multiple platforms**.



Brain inspired evolvable connectivity



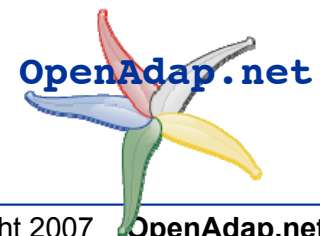
- contributor's traceability
- user's privacy
- security



UML DEPLOYMENT SCHEME

- To **avoid the "re-invention"** and **"re-discovery"** of existing knowledge so to **save time and expenses** by the whole society and prevent incorrect applications.
- To promote the development of **Communities with semantically related interests**.
- To provide Communities the possibility to **transparently compose meta-resources**, based on the available resources, by means of a **network-centric operating system** driven by the activity of **intelligent adaptable brokers**.
- To develop a new **OpenAdap.net** protocol (**oan://**) for field instrumentation and wireless communication over Internet aimed at **easy ubiquitous knowledge sharing and access**.
- To develop new business opportunities for Third Parties from all over the world, **SMEs** in particular, aimed at **added value services** (*educational, commercial, governmental, ...*).

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.



- An **OpenAdap.net** testbed is active and used on a daily basis by early adopter Communities.
- 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 broker activity dependent parameters.
- 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**.

Visit **OpenAdap.net** booth at the Exhibition (#44)

LOSERS GUIDE TO ONLINE TRADING



