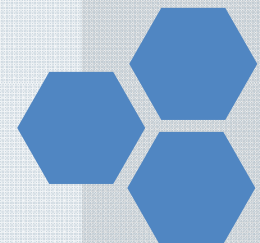


Learning Resource Exchange



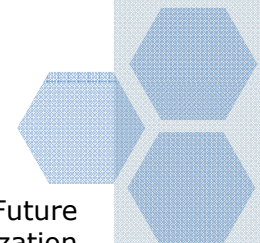
David Massart, PhD
Senior Software Architect, EUN
Nov 5, 2007 - Hiroshima, Japan





Outline

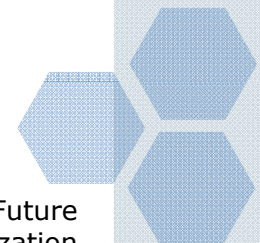
- 1 Learning Resource Exchange
- 2 Technical Infrastructure
- 3 Open Source, Content & Standards
- 4 Conclusion





European Schoolnet

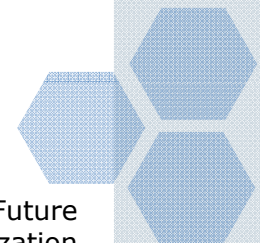
- ❖ **International partnership of 28 European Ministries of Education** developing learning for schools, teachers and pupils across Europe
- ❖ **Aims at**
 - Promoting European dimension in education
 - Supporting new technologies in education
 - Encouraging collaborative learning
- ❖ **3 strands of work**
 - School networking and service (e.g., etwinning)
 - Insight into policies and practice
 - Interoperability and standards (e.g., LRE)





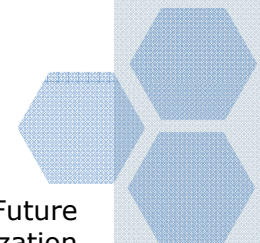
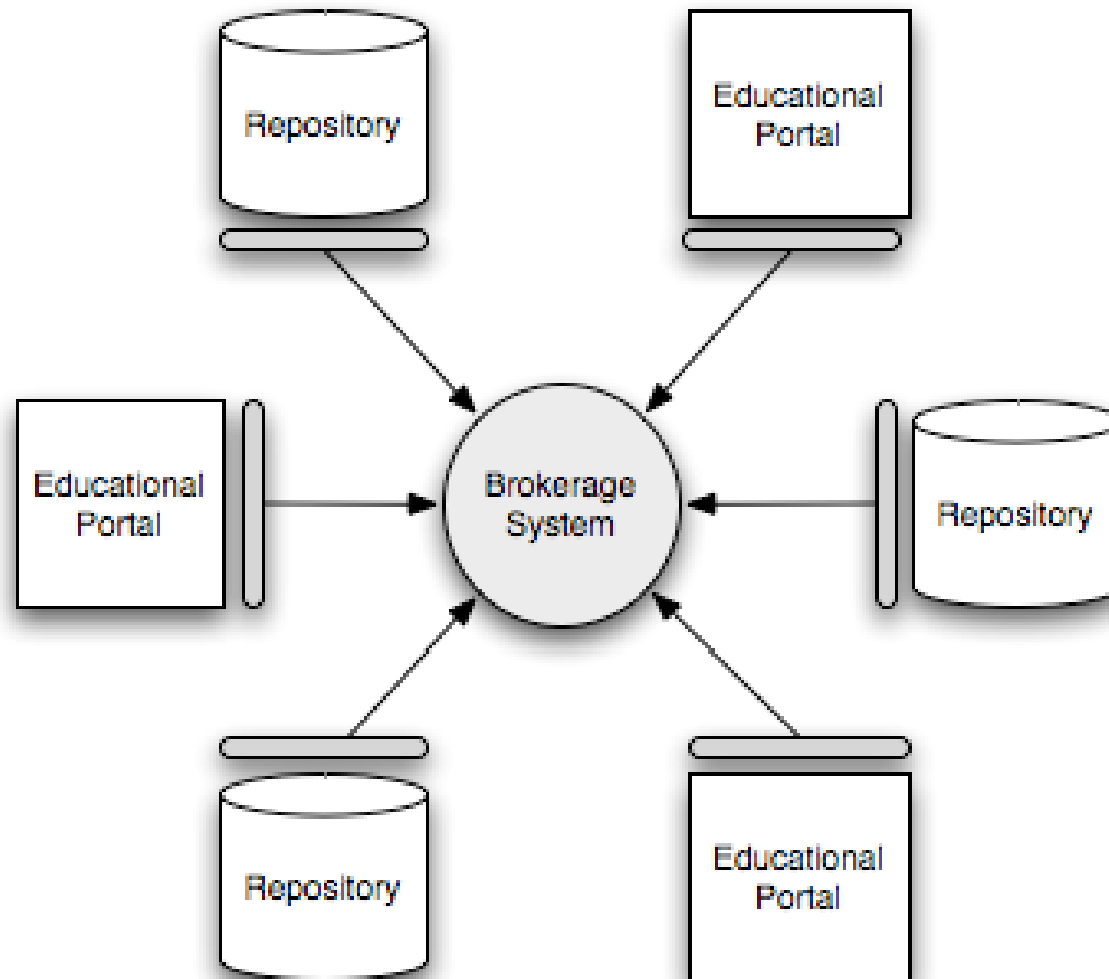
Learning Resource Exchange (LRE)

- ❖ New service that will enable schools to find educational content from many different countries and providers
- ❖ Initially includes content from Ministries of Education (MoE) and other partners that are working with European Schoolnet (EUN) in the EC-funded CALIBRATE and MELT projects
- ❖ Approximately 40,000 learning resources and over 100,000 learning assets will be available when the full service is launched at the start of 2008
- ❖ Additional resources from LRE Associate Partners will also be included in the LRE and the amount of content that schools can access will grow rapidly



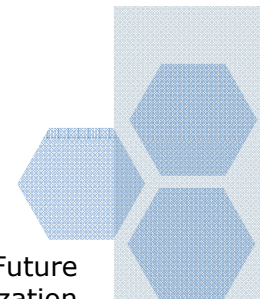
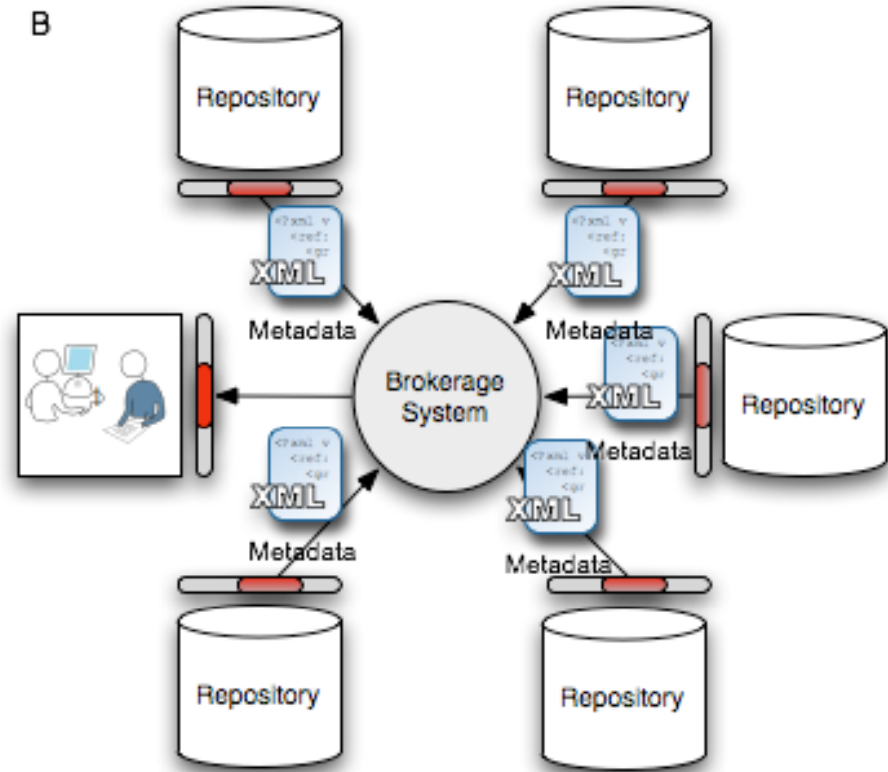
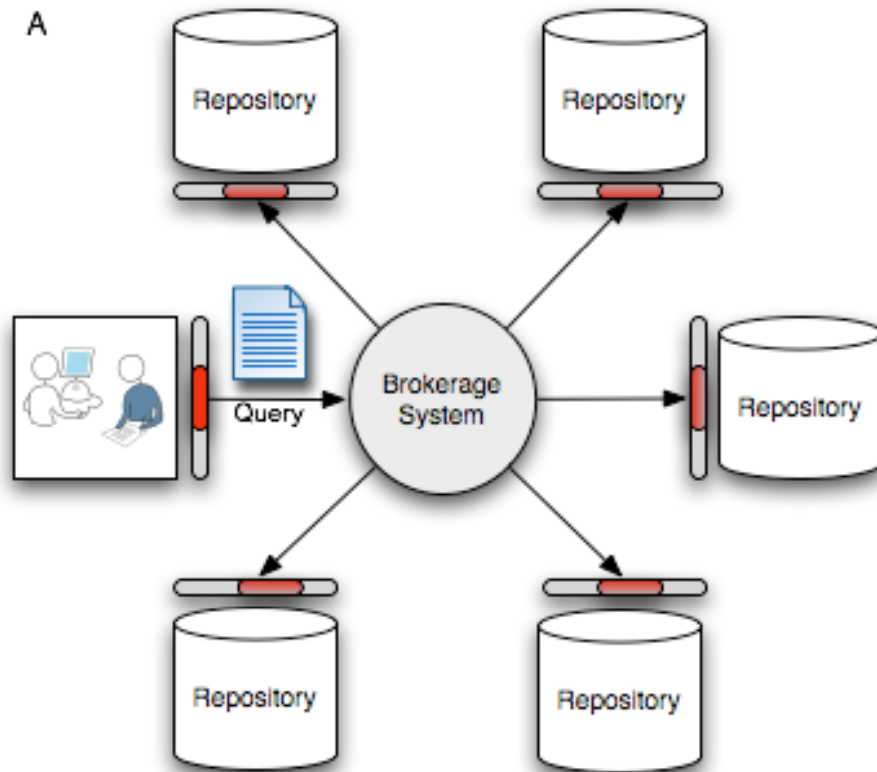


Technical Infrastructure



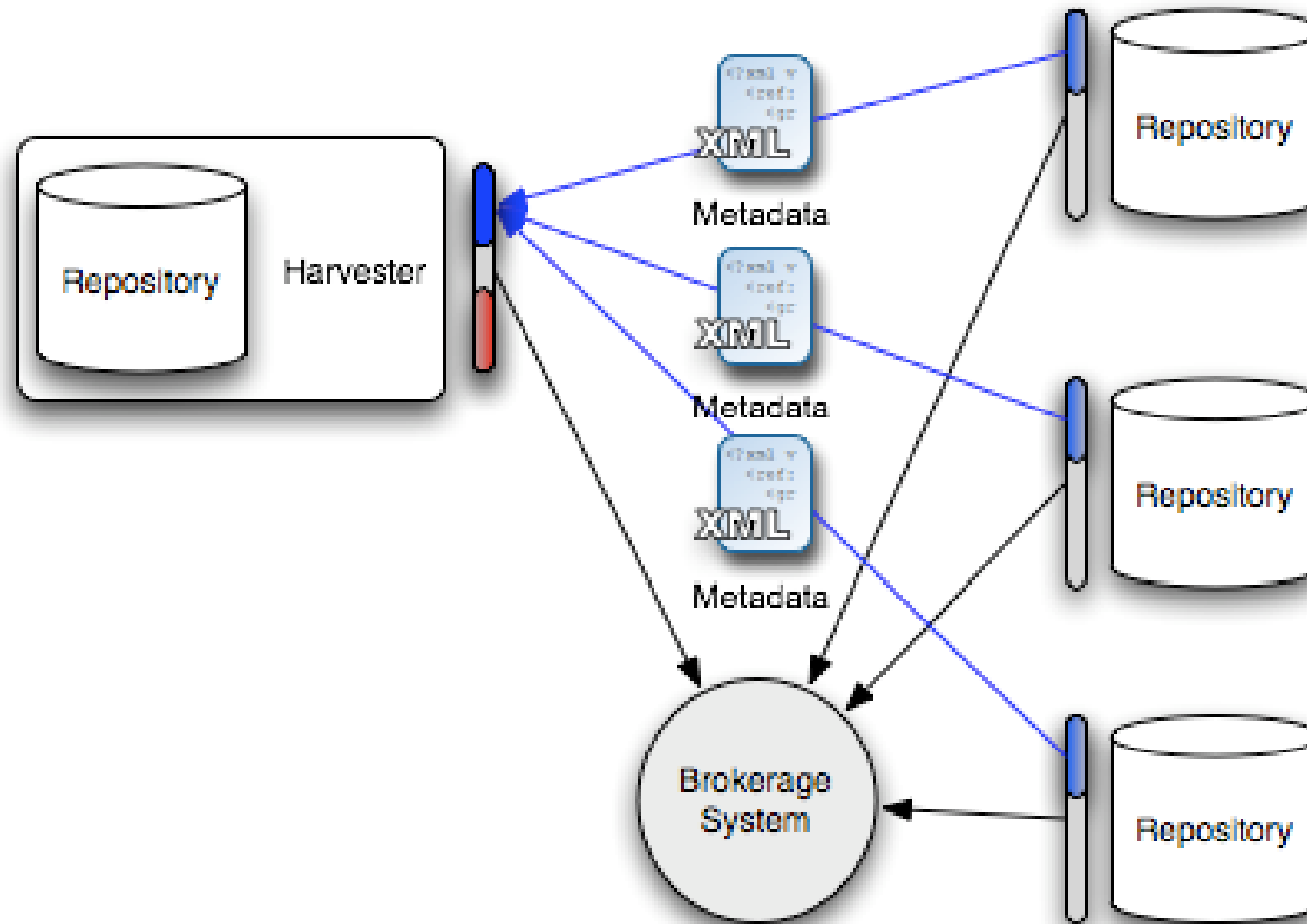


Federated Searching



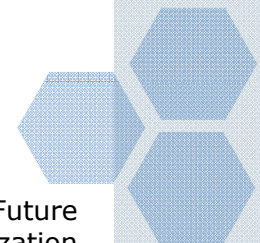
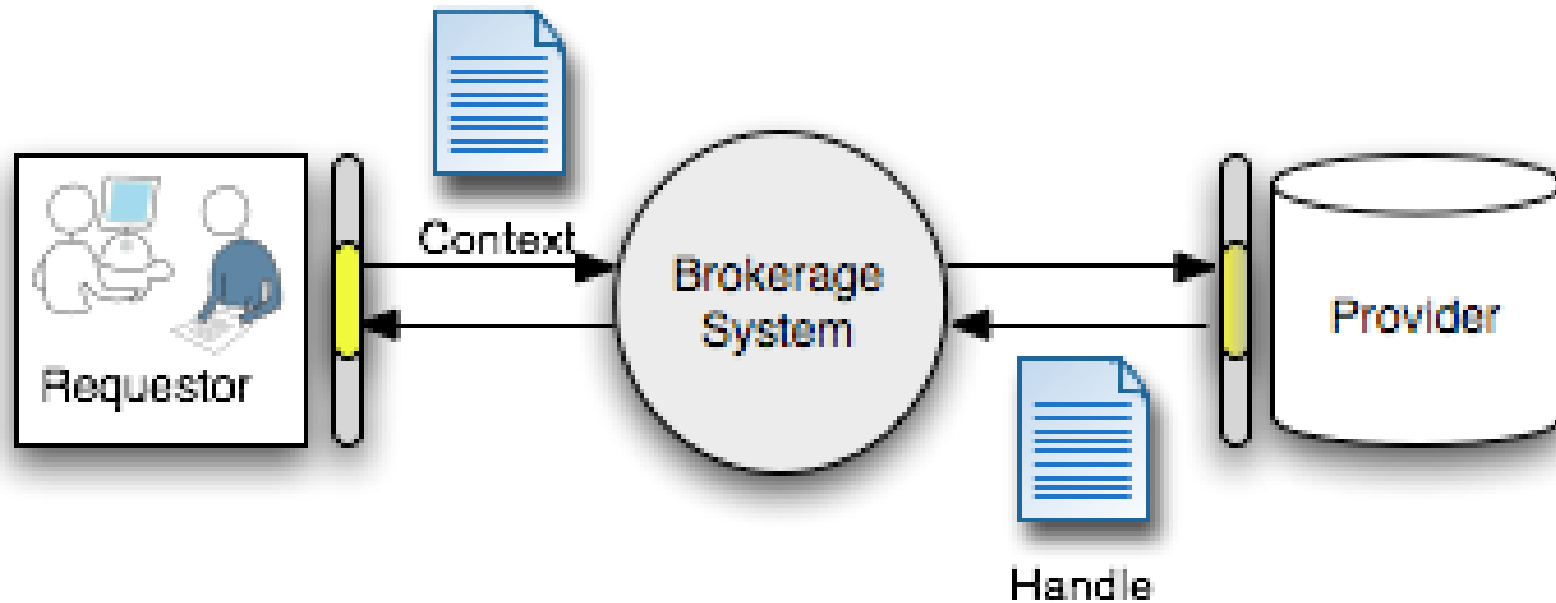


Harvesting





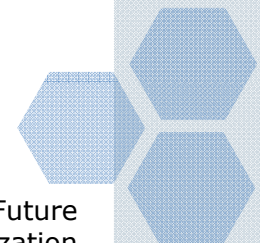
Digital Rights Management





Back To 2002: CELEBRATE

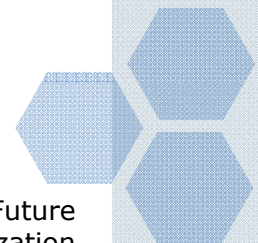
- ❖ ***Strategic, large-scale, demonstration project (€7M Information Society Technologies – IST)***
- ❖ ***Ran from June 2002 to November 2004***
- ❖ ***Developed and successfully demonstrated a federated learning object brokerage system architecture***
- ❖ ***Made available to over 319 schools in six countries approximately 1350 learning objects produced by both public and private sector content developers.***
- ❖ ***...***





... BUT!

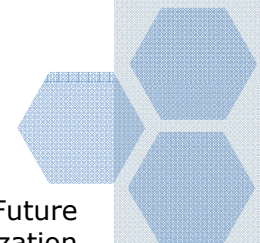
- ❖ **Adoption was problematic**
- ❖ **No one joined the federation after the end of the project**





1. Lack of Content

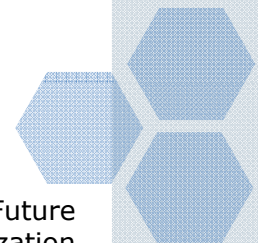
- ❖ **CELEBRATE targeted commercial content providers (DRM)**
- ❖ **Commercial content providers were not ready and/or did not yet have a business model for providing content through a federation**
- ❖ **Chicken and egg situation: Not enough users to draw content providers' attention and not enough content to keep users**





LRE Open Content

- ❖ Currently comes in all different sizes, shapes and languages
- ❖ Includes both larger or more complex learning resources as well as smaller learning assets
- ❖ Covers virtually every curriculum subject
- ❖ Includes resources directly produced by or for MoEs and other public bodies, as well as resources developed by teachers themselves
- ❖ Some private sector organisations are also contributing content that can be freely used in schools
- ❖ Is offered freely and openly for anyone to use and in some cases can also be adapted and redistributed



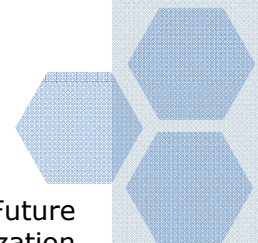


2. Lack of Appropriate Standards

❖ **The CALIBRATE brokerage system was monolithic and based on ad hoc solution**

- LOM (but no bindings)
- ODRL
- No appropriate query language
- No appropriate query interface
- ...

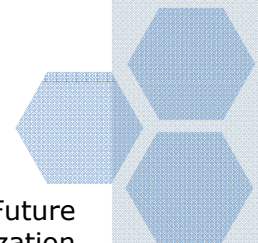
❖ **All Or Nothing**





LRE Standard Services

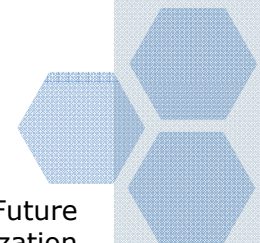
- ❖ **LIMBS is organized as a set of independent services**
- ❖ **Services can be arbitrarily combined**
- ❖ **At the client side, each service corresponds to a pluggable module with a simplified (and, when possible, standard) interface and standard data**





3. The CALIBRATE Broker

- ❖ **Was developed by EUN and Sun Microsystems**
- ❖ **Code was not publicly available**





Releasing LIMBS under LGPL

❖ Foster adoption

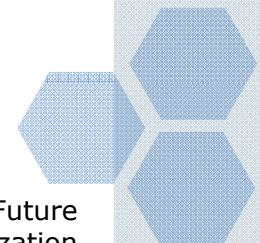
- Provides a guarantee to the members of the federation that their integration efforts will not be lost
- Gives them the possibility to influence the solution that they adopt and enough control over it to ensure its continuation

❖ Foster development

- Faster debugging
- Provides new services

❖ Promote the LRE model

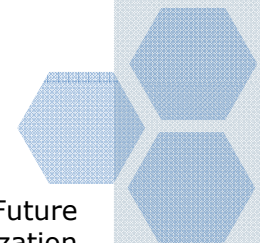
- Sweden
- Canada





Conclusion

- ❖ **Developing an open source solution**
- ❖ **Based on open standards**
- ❖ **To exchange open content**
- ❖ **Has permitted to reach the critical masses in terms of:**
 - Developers,
 - Repositories, and
 - Content
- ❖ **Necessary to make a Pan-European Learning Resource Exchange possible**





Some Pointers

❖ **European Schoolnet (EUN)**

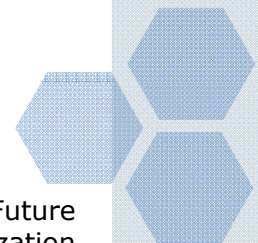
- <http://www.eun.org>
- <http://www.europeanschoolnet.org>

❖ **Learning Resource Exchange (LRE)**

- <http://lre.eun.org>
- <http://fire.eun.org>

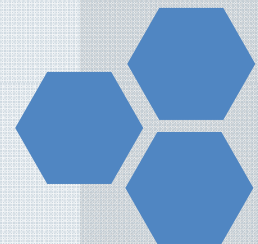
❖ **LIMBS Is My Brokerage System**

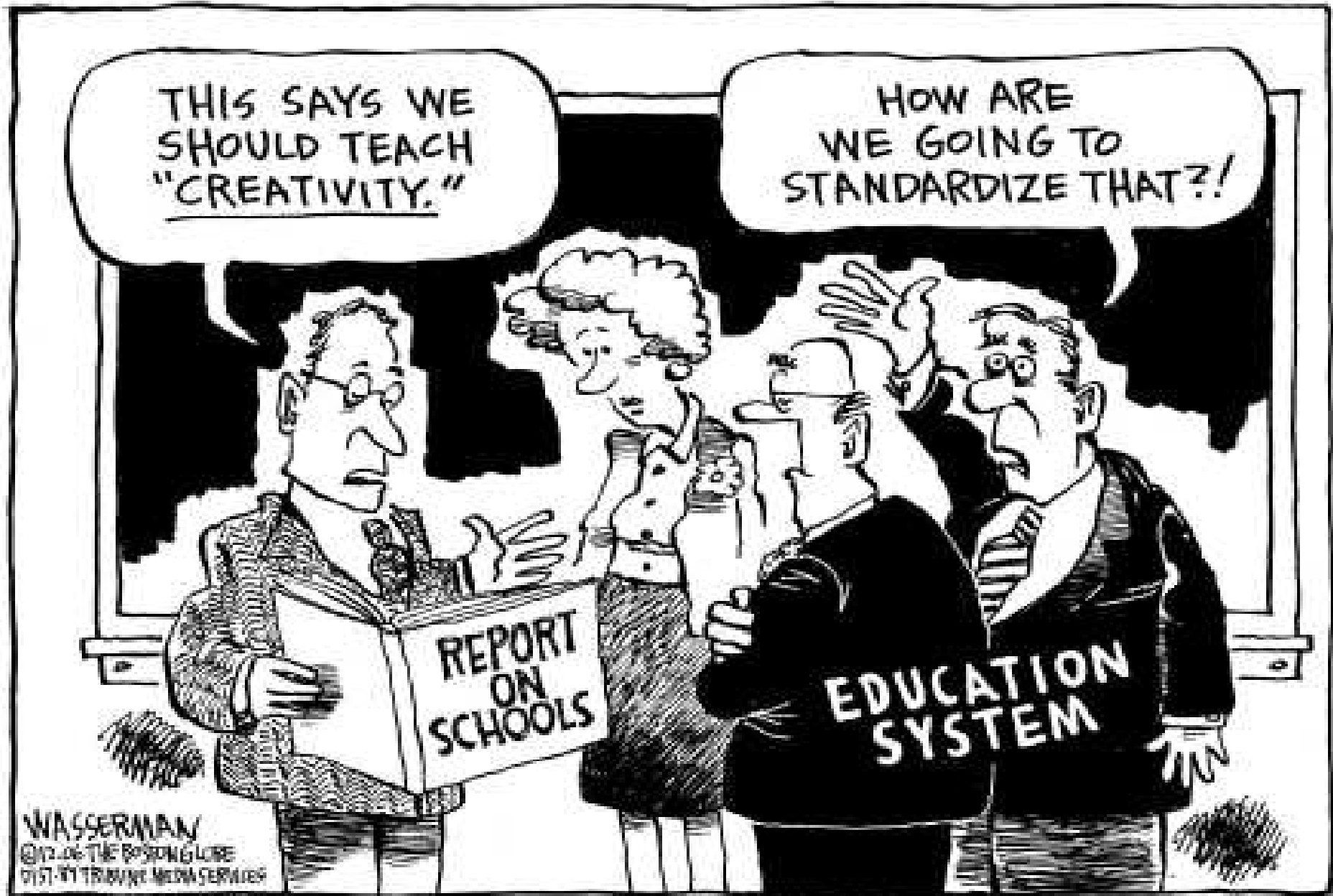
- <http://limbs.sourceforge.net>





Thank You!





November 5, 2007

ICCE 2007 Workshop on The Trends and the Future of Open Source, Open Content and Standardization

