

FEB + OBAA: Cataloging and retrieving Learning Objects effectively

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Abstract. *Technology has increasingly permeated the educational context. This has made the use of learning objects (LOs) very popular. An efficient cataloguing and retrieval system is vital in order to allow LO reuse. Traditional text-only search engines do not provide an adequate amount of granularity for the search, while existing LO repositories force the user to search on each repository individually. In this paper we present FEB, a federated LO retrieval system, that solves the mentioned problems. FEB collects metadata of LO repositories and provides a unified search interface. It also allows a hierarchical organization of repositories, by allowing institutions to run their own FEB servers, and an OBAA-ready repository,*

Resumo. *Cada vez mais a tecnologia tem permeado o contexto educacional. Isso tem tornado crescente a popularidade dos objetos de aprendizagem (OAs). Um sistema eficiente de catalogação e recuperação é vital para permitir o reuso desses OAs. As ferramentas de busca tradicionais não possibilitam uma busca mais refinada, além disso, com o formato existente dos repositórios, é necessário que um usuário faça a busca individualmente em cada um. Nesse artigo é apresentada a FEB, um sistema de busca de OAs federado, que resolve os problemas mencionados. A FEB coleta os metadados dos repositórios de OAs e disponibiliza um sistema de busca centralizado. Além disso, permite uma organização hierárquica dos repositórios. Também relatamos brevemente um repositório de OAs pronto para o padrão OBAA.*

1. Introduction

In this paper we describe an innovative retrieval system for Learning Objects, a federation of repositories of learning objects. By learning object we mean any kind of resource that can be used in an educational context. Many groups in Brazil develop digital Learning Objects, but it is hard for a user (e.g., a school teacher) to find relevant material, because the LOs are scattered through multiple separate repositories. There is no single point-of-access. FEB provides a single point-of-access for as many individual repositories as possible, in the form of a web portal with search capability. To accomplish this goal we use a federated architecture, where we have a hierarchical structure of federations of federations (called a confederation). Each federation may have as children other federations or standalone repositories, and each federation is

responsible for its own administration, i.e., ensuring LOs quality standard, deciding which repositories to include, specify metadata conversion, etc. This results in a very scalable administration process.



Figure1. Main window of FEB

One of the basic demands of LO technology is to provide efficient means of cataloging diverse pedagogical resources in a way that allows their reuse, even in different scopes than originally planned. A new project that contributes to this goal is the OBAA initiative (learning objects supported by agents) [Vicari et al 2010]. Its main purpose consists in establishing and specifying technical and functional requirements for LOs. OBAA provides a comprehensive metadata format and encourages content interoperability among web platforms, mobile devices and Digital TV, therefore supporting easy and widespread accessibility. FEB leverages OBAA technology wherever possible, but is also backwards compatible with other widespread metadata formats such as Dublin Core [DCMI 2012] and LOM [LTSC IEE 2002]. To stimulate further adoption of the OBAA standard, we also developed an OBAA repository, which is fully compatible with FEB and is described in session 3.

2. FEB

The tree-based structure shown in Fig. 1 depicts the overall federates structure envisioned in the project, which consists of several repository federations united by a central node in the top of the hierarchy. This root node is called the confederation. Each one of these federations represents a specific geographical or an institutional region that contains the belonging digital repositories.

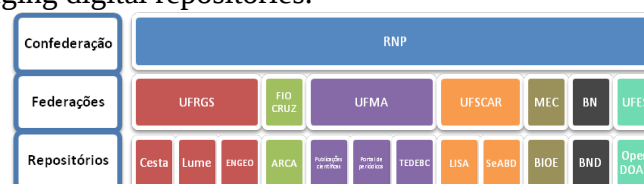


Figure2. Federated Architecture

Currently there are 9 institutions supporting this project, mostly universities. The federated architecture is quite interesting for the institutions, because it allows them to provide a single point-of-access for their repositories, in their own web site and with corresponding branding. Besides that, being a part of the FEB confederation hosted by RNP greatly improves the visibility of LOs created by affiliated institutions.

FEB allows users to search for documents based on keywords or an advanced search, and allows administrators to perform all necessary functions in a simple web interface. A very important functionality for the administrator is the ability to define *mappings* between metadata formats, as many repositories don't quite follow it's metadata standard to the letter. It also gives an administrator the flexibility of indexing a repository that uses a novel metadata standard without changing source code. A full description of our implementation and architecture can be found in [Rossi et al 2012]



Figure3. AdministrationInterface

FEB also provides many statistics, such as most often searched terms, relative sizes of repositories, most accessed LOs, etc.

The FEB software is production-quality and is provided free of charge. In order to be a part of the FEB confederation hosted by RNP the interested party should contact us at feb@rnp.br. The system can be tested at the following URL: <http://feb.ufrgs.br/feb>

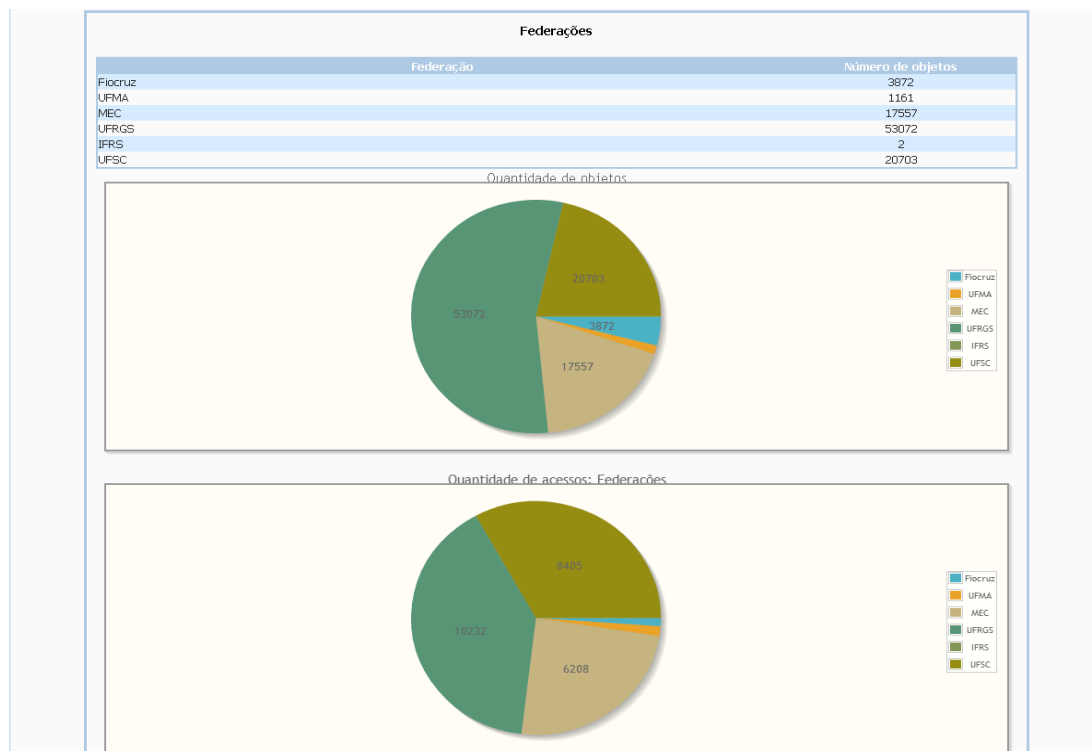


Figure4. Statistics View of FEB

3. OBAA Repository

The efficiency and precision of any retrieval system for LOs is bounded by the quality and granularity of its metadata. For example, in order to find LOs suitable for teenagers, age-range information has to be available. While FEB does not *require* LO metadata in OBAA format, it does support it fully, and will be able to provide a much improved retrieval experience for LOs with OBAA metadata.

To ease adoption of the OBAA standard by repositories, we created Repositorio OBAA, a LO repository built from the ground up with OBAA metadata in mind. Repositorio OBAA simplifies the process of cataloging LOs with OBAA metadata by inferring information wherever possible, providing an intuitive wizard for the process, and providing context sensitive help.

Repositorio is currently in beta stage and under constant development, but is already deployed in two installations. It will be provided with a free software license in <http://www.cognitivabrasil.com.br/repositorio/>.

Educacional

Tipo de Interatividade
 -- Nenhum --

Público Alvo
 -- Nenhum --

+ Público Alvo

Tipo de Recurso
 -- Nenhum --

+ Tipo de Recurso

Nível de Interatividade

Densidade Semântica

Nível de Dificuldade

Intervalo de Idade Típico

Figure5. RepositorioOBAAscreen

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