

## TELplus: Aimed at Strengthening, Extending and Improving The European Library Service

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**Abstract.** The objectives of the TELplus project, which is aimed at strengthening, extending and improving The European Library service, are outlined together with some relevant results obtained in the first part of the project. In particular some results obtained in the work package 5, devoted to User personalization services – log file analysis and use of annotations – are reported.

### 1 Introduction

TELplus<sup>1</sup> is a project funded by the European Commission under the *eContentplus* Programme, within the domain of *Digital Libraries*. The project is supported by CENL, the Conference of European National Librarians<sup>2</sup>, and is coordinated by the National Library of Estonia.

The overall goal of TELplus is to strengthen, expand and improve The European Library<sup>3</sup>. Managed by CENL, The European Library is an on-line service providing access to the electronic resources of the National Libraries of Europe. During the past years, The European Library has gradually expanded to offer access to the resources of 48 national libraries of Europe in 35 languages. Resources can be both digital – e.g. books, posters, maps, sound recordings, videos – and bibliographical. Quality and reliability are guaranteed by the 48 collaborating national libraries of Europe, where a national library is a library specifically established by a country to store its information database; national libraries usually host the legal deposit and the bibliographic control centre of a nation.

The European Library has been officially acknowledged by the European Commission<sup>4</sup> as the organisational structure for the creation of Europeana<sup>5</sup>, the European digital library, museum and archive. Funded under the *eContentplus* Programme, Europeana is developing a prototype website providing access to some two million digital objects, including film material, photos, paintings, sounds, maps, manuscripts, books, newspapers and archival papers. Within this context, the results of

<sup>1</sup> <http://www.theeuropeanlibrary.org/telplus/>

<sup>2</sup> <http://www.cenl.org/>

<sup>3</sup> <http://www.theeuropeanlibrary.org/>

<sup>4</sup> <http://ec.europa.eu/>

<sup>5</sup> <http://www.europeana.eu/>

TELplus will make a valuable contribution to the further development of Europeana. The project started in October 2007 and it ends in December 2009.

## 2 Objectives and Target Users

The main objectives of the TELplus project are:

- To enhance the service offered by The European Library by improving and facilitating access and use of the materials in national libraries in all Member States in a multilingual context and improving standard-based interoperability.
- To strengthen, extend and improve The European Library service by adding digital cultural and scientific/scholarly content and improving access to it in the following ways:
  - Adding and improving content of The European Library by:
    - OCRing more than 20 million pages of important multi-lingual content now available only as images according to current best practice;
    - Making the data that national libraries currently hold in proprietary databases (only searchable via the z39:50 protocol) OAI compliant and therefore harvestable for far greater usability;
    - Adding the National Libraries of Bulgaria and Romania as full members of The European Library.
  - Improving access and usability by:
    - Improving full text indexing and investigating automatic vocabulary mappings;
    - Learning from users through The European Library user group;
    - Creating a modular service infrastructure that enables users to integrate services with the European Library portal and adding a number of new services;
    - Work on user personalization to provide directions towards new services for users;
    - Providing translations of collection descriptions in 26 languages.

Since TELplus is closely related to The European Library, the project's target final user groups which are reached indirectly through TEL coincide with those identified for The European Library service itself. These are:

- Academic research community: facilitators and users of institutions of interest to academic community, university students, schools, educational establishments;
- Professional researchers: librarians and information professionals;
- Creative industry and cultural sector: publishing houses, market research agencies, knowledge and training centres of multinationals, museums, archives;
- Non-professional researchers: "the informed citizens".

For direct dissemination through its own website and its other dissemination tools the TELplus project is mainly reaching out to professionals and academics interested in the technical development of The European Library and of digital libraries in the wider sense.

The issue of the analysis of user requirements is specifically addressed by the Work Package 5 (WP5) of the project, aimed to develop specifications for the design of innovative personalized services for the final users of Europeana. The work undertaken in WP5 by the University of Padua team so far has been mainly focused on the HTTP log data analysis and the use of annotations as shortly reported in the following.

## 2 User personalisation services

The work on user personalization is necessary to direct the designers of advanced information services giving insights and directions towards new services of interest for the users. The findings serve to guide the design of software components for new added-value services of interest to the final users of digital libraries management systems.

### Log File Analysis

The analysis of HTTP log data has been conducted over a period of time of eighteen months which goes from January 2007 to June 2008. The time span of the HTTP log data available, that is eighteen months, represents an exception on present literature and work conducted at international level, because most of the other studies, that have made public, are based on data of shorter time intervals. The availability of an HTTP log data set over such a long period of time is giving us the opportunity of deriving information that can also inform on the tendency of the use of the portal by final users, giving the opportunity of using these results as an aid in the planning of services and use of the portal.

Table 1: Synthetic Descriptive Statistics

	Total	Daily average	Per visit
No. of visitors	475,333	868.98	Not applicable
No. of visits	709,922	1,297.85	1.49 (per visitor)
Hits	58,053,293	106,130.3	81.77
No. of accessed pages	19,047,263	34,821.32	26.83
Bandwidth	1,059.51 GB	1.94 GB	1.53 MB
“Not viewed” hits	14,229,379	106,130.3	20.04
“Not viewed” bandwidth	2,876.63 GB	5.26 GB	4.15 MB

The work of knowledge extraction from the log data available is under way, by now some synthetic descriptive statistics are available and are reported in Table 1 where it is shown that in the analyzed period of time the number of unique visitors was more than 475 thousands, with an average of 870 visitors per day. More than 700 thousands visits

where recorded with a daily average of about 1,300; these visits produced around 58 millions of hits (HTTP requests to the Web server) which corresponds to a daily average of 106 thousands of contacts. The number of Web pages requested were more than 19 millions, which corresponds to almost 35 thousands of pages per day. “Not viewed” traffic, both hits and bandwidth, includes traffic generated by robots, worms, or replies with special HTTP status codes.

### Use of Annotations

The work undertaken in the area of annotation sharing has designed and built a demonstrator where users can construct over time an useful hypertext, which relates pieces of information of personal interest - inserted by the final user - to the digital objects which are managed by the Digital Library System (DLS). In fact, the user annotations allow the creation of new relationships among existing digital objects by means of links that connect annotations together with existing objects. In addition, the hypertext between annotations and annotated objects can be exploited not only for providing alternative navigation and browsing capabilities, but also for offering advanced search functionalities, able to retrieve more and better ranked objects in response to a user query by also exploiting the annotations linked to them.

Therefore, annotations can turn out to be an effective way of associating this kind of hypertext to a DLS to enable the active and dynamic use of information resources. In addition, this hypertext can span and cross the boundaries of the single DLS, if users need to interact with the information resources managed by diverse DLS, as it is the case of The European Library where 48 national libraries cooperate in the service also with their internal implementations. This latter possibility is quite innovative, because it offers the means for interconnecting various DLS in a personalized and meaningful way for the end-user, and this is a big challenge for DLS of the next generation, as it is sketched in Figure 1.

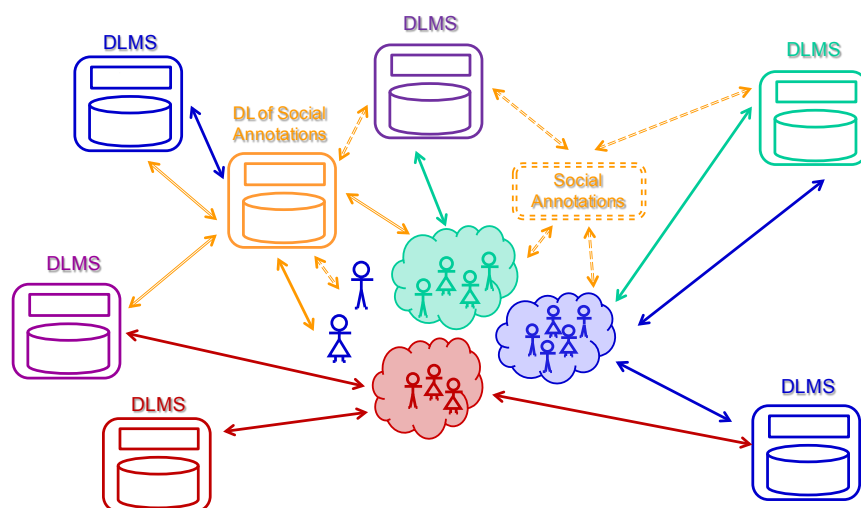


Figure 1