Public Annual Report 2010

Grant Agreement number: 250467

Project acronym: ATLAS

Project title: Applied Technology for Language-Aided CMS

Project type: □ Pilot A ■Pilot B □ TN □ BPN

Period covered: 1.03.2010 - 30.11.2010

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Introduction

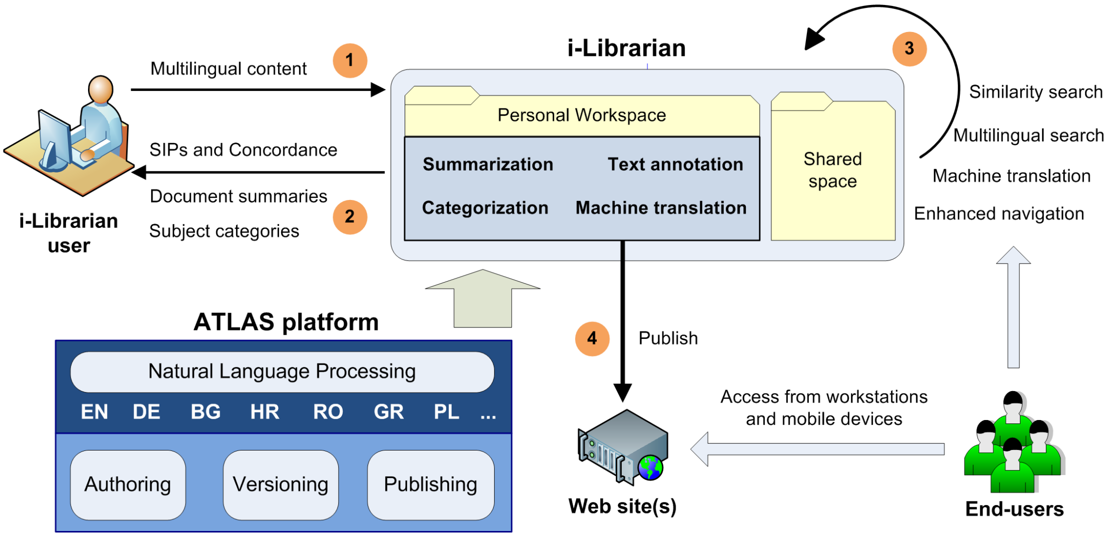
The advent of the Web revolutionized the way in which content is manipulated and delivered. As a result, digital content in various languages has become widely available on the Internet and its sheer volume and language diversity have presented an opportunity for embracing new methods and tools for content creation and distribution. Although significant improvements have been made lately in the field of web content management, there is still a growing demand for online content services that incorporate language-based technology. Mechanisms such as automatic annotation of important words, phrases and names, text summarization and categorization, and computer-aided translation could facilitate the process of manipulating heterogeneous multilingual content as well as enhance end-user experience by allowing for better content navigation. This project unifies such mechanisms in a common software platform called ATLAS and builds three separate solutions around this platform.

The project solutions

i-Librarian – the intelligent content assistant service

The first solution, i Librarian, is a web-based content assistant service, which allows users not only to store, organize and publish their personal works but also to locate similar documents in different languages and to obtain easily the most essential texts from large collections of unfamiliar documents or search engine results.

i Librarian is a web-based content assistant service, which encourages visitors to register and get a personal workspace where they can store, share and publish various types of documents and have them automatically categorized into appropriate subject categories, summarized and annotated with important words, phrases and names. Advanced language-based technology is implemented to help users easily navigate between and access both their personal works and unfamiliar documents. After processing a large collection of unfamiliar texts i Librarian displays short summaries and extracted concepts that enable users to easily decide which documents are worth reading and which could be discarded. Furthermore, i Librarian interlinks all user documents based on the extracted phrases, words and names, and thus improves significantly content navigation. Finally, the service helps users with no previous experience to publish their own content using the power of a modern content management system but without struggling with the inherent complexity of such systems. The features of i Librarian will be initially available in seven languages – English, German, Bulgarian, Croatian, Greek, Polish and Romanian. However, as more languages could be easily integrated in the service, the consortium will explore several options to secure the necessary funding after the end of the project for supporting all other major European languages.

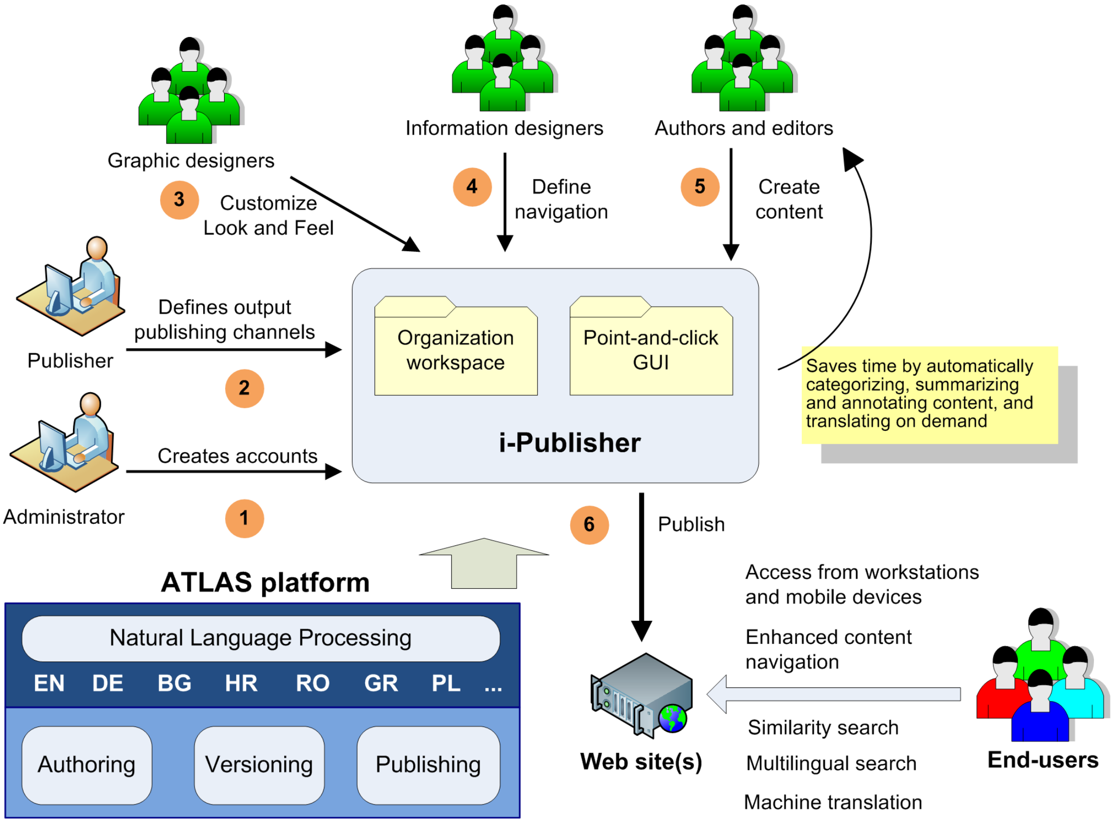


Some of the main characteristics of i Librarian are summarized below:

- i Librarian offers multilingual full-text search inside personal or shared documents.
- i Librarian provides multilingual similarity search, which enables users to easily locate both personal and shared similar documents in different languages.
- i Librarian implements powerful instruments for computer-aided translation, automatic content categorization, summarization, and annotation of important words, phrases and names.
- Users can rate the quality of automatic translations and improve them, which would help the consortium to build better translation models for future use.
- Users can publish heterogeneous multilingual content on a personal web site hosted by i Librarian or on existing web sites and portals.
- Users can freely annotate documents in their personal workspace and search through the annotations (possibly in different languages) shared by other users in order to find documents of interest.
- i Librarian is accessible from a browser or mobile devices such as iPhone.
- i Librarian includes a mechanism for reporting and removing of materials that violate copyright laws.

i-Publisher – the online web content management solution

i Publisher is a novel software-as-a-service solution for web content management, which allows both small and large organizations to deploy and manage multilingual web sites without spending time and efforts for installing and maintaining a content management system. This service assists organizations in retrieving, unifying, and packaging heterogeneous pieces of content, and dynamically rendering them on multiple web sites. i Publisher fosters collaboration in content creation by enabling authors, editors, and other contributors to work together. It also facilitates the process by automatically categorizing, summarizing, and tagging the newly created content. Furthermore, web sites may be built with i Publisher with a point-and-click graphical user interface by people with different expertise but no programming experience – publishers, information designers and graphic designers. The service leverages the full benefits of the ATLAS platform and becomes an ideal choice for promoting any type of organization on the Web. i Publisher will be available free of cost for non-commercial use in order to promote web standards and encourage language diversity in content creation. Different subscription plans will be available to those who desire more storage space and customer support, or who would like to use i Publisher for commercial purposes.



i Publisher characteristics :

- i Publisher is well-suited to both small and large organizations as it is designed with scalability in mind, i.e. if an organization needs to handle more content and users, additional servers will help address these needs and provide the desired results in terms of performance.
- i Publisher improves content navigation by dynamically interlinking content items based on extracted important words, phrases and names.
- i Publisher utilizes a flexible user access rights system comparable to that of a modern server operating system – security policies may be set for groups and specific users as well as for specific content items or even content item properties.
- i Publisher implements an industrial strength versioning system, which supports the versioning of structured content rather than the simple text-based versioning found in most existing solutions.
- i Publisher allows content to be mass exported to or imported from file systems, databases or file servers.
- Web sites created with i Publisher offer to end-users multilingual full-text and similarity search as well as clustered, summarized and annotated content.

Summary description of project objectives

The consortium will adjust and integrate several existing software components, assembling a platform for multilingual web content management called ATLAS, and a visualization layer called i-Publisher, which adds to the platform a powerful web-based point-and-click tool for building, reusing and managing multilingual content-driven web sites. An instance of i-Publisher will be made publicly available as an online service. i-Publisher will also be used to build two thematic content-driven web sites – i-Librarian and EUDocLib.

The ATLAS project aims to meet the following objectives:

- Software platform and services, demonstrating the latest achievements in the field of multilingual web content management and addressing the needs of individuals and organizations for easier web site building and content publishing.

- Liaison with the Europeana and EuroMatrix Plus initiatives in order to foster language diversity in content creation and distribution

- Interoperability by conforming to a number of widely recognized web, natural language processing, and content management standards

- Sustainable management format to ensure the progress of the project

- Mechanisms and procedures that enable and simplify the addition of new languages to the ATLAS platform, thus targeting all major European languages after the successful completion of the project.

Description of work performed since the beginning of the project and main results so far

With regard to the management objectives set for the first period the following tasks have been completed:

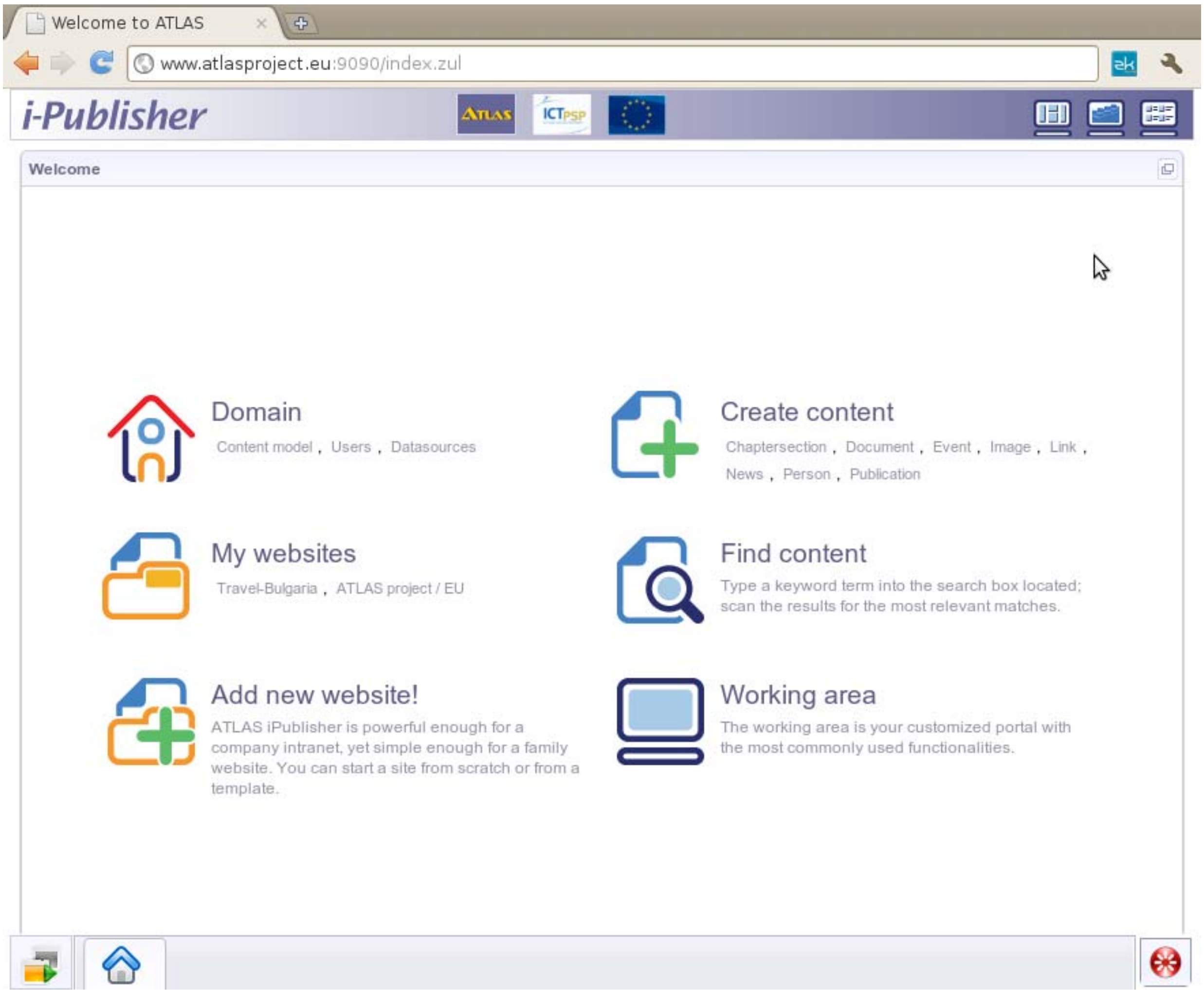
- A management and coordination framework was established to ensure the smooth progress of the project.
- The consortium agreed on a process through which to monitor the allocation and distribution of project resources, as well as to control the quality and timely delivery of project deliverables.
- The first three project meetings were organized (the kick-off and two WP meetings.) A common understanding of the project goals was gradually achieved on these meetings. Furthermore, the consortium was able to smoothly define the next steps needed in order to achieve the objectives for the next period.
- Channels ensuring the good management and technical communication were established.
- The first periodic report covering month one through month six of the project was prepared and submitted to the EC.

The work done in terms of the technical objectives set for the period includes the following:

- A set of use cases to be used by user groups to evaluate the ATLAS platform and the online services was prepared.
- The existing software requirements were revised and updated in order to meet the objectives set for this project. The work on the software requirements and design specification documents also started.
- A specification of the linguistic framework for the language tools to be integrated into the ATLAS platform was drafted, agreed upon and finalized.

- The development of the i-Publisher visualization layer has begun

The entry page and a preview of a newly created page are shown below:



Domain
Content model , Users , Datasources

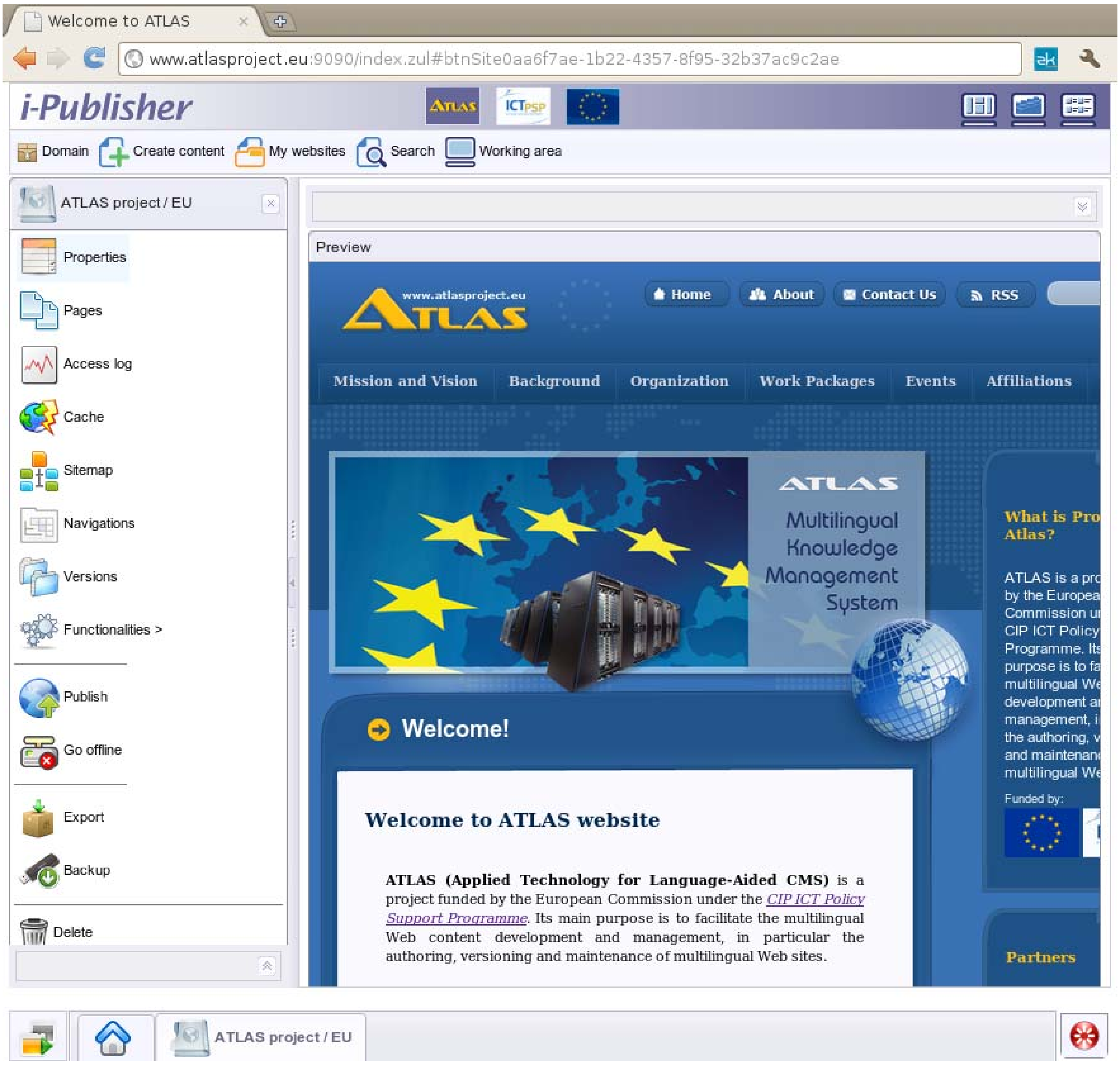
Create content
Chaptersection , Document , Event , Image , Link , News , Person , Publication

My websites
Travel-Bulgaria , ATLAS project / EU

Find content
Type a keyword term into the search box located; scan the results for the most relevant matches.

Add new website!
ATLAS iPublisher is powerful enough for a company intranet, yet simple enough for a family website. You can start a site from scratch or from a template.

Working area
The working area is your customized portal with the most commonly used functionalities.



Welcome to ATLAS website

ATLAS (Applied Technology for Language-Aided CMS) is a project funded by the European Commission under the *CIP ICT Policy Support Programme*. Its main purpose is to facilitate the multilingual Web content development and management, in particular the authoring, versioning and maintenance of multilingual Web sites.

ATLAS is a pro by the Europea Commission un CIP ICT Policy Programme. Its purpose is to fa multilingual We development an management, i the authoring, v and maintenanc multilingual We

- A prototype of a categorization tool in English was implemented.

- A system (based on a standardized framework) that allows the seamless integration of various types of language tools was prepared.

- Tasks on the adaptation of existing tools and the building of language processing chains for text annotation (a separate processing chain is implemented for each target language) started.

- Improvement of existing translation models needed for the addition of machine translation of text excerpts to the ATLAS platform and the online services has begun as well as the preparation of text corpora for summarization, categorization, and machine translation.

Work carried out on dissemination for this period includes:

- Project information was disseminated through various channels – project web site, newsletters, and distribution of printed materials (brochures.)
- The project was presented on several national and international forums.

Event name	Place	Type	Audience	Type of activity
KIS Partnering Forum 2010	Rome, Italy	Partnering forum	Business experts, IT experts	Initial presentation of the project. Distribution of EN flyer.
Joint event of the Europe INNOVA Annual Partnering Event and EPISIS INNO-Net	Copenhagen, Denmark	Partnering event	Business experts, IT experts	80 EN flyers were distributed. ATLANTIS made a presentation about the project and several bilateral meetings were held.
MOBIP 2010 and Investment in Mobile and IT Services	Valencia, Spain	International business and investment event	Stake holders and experts from the financing, business consulting, IT, etc. sectors	Distribute project material and exchange ideas about exploitation prospects.
Discussion on the development and annotation of RuN - parallel corpus of many languages developing at the University of Oslo and parallel corpora needed for the ATLAS project	University of Oslo		Researchers	Working meeting with coordinator of the project Assoc. Prof. Atle Gronn and Assoc. Prof. K. Ra Hauge and distribution of the ATLAS brochure Number of participants/recipients/users involved etc. 4

Event name	Place	Type	Audience	Type of activity
Presentation of research projects (ATLAS focused) of the Department of computational linguistics ant the IBL - BAS, given by Svetla Koeva	University of Oslo		Researchers at Norsk Ordbok 2014	Presentation and distribution of the ATLAS brochure Number of participants/recipients/users involved etc.: 21
LREC 2010	Valetta, Malta	Conference	Linguists	Initial presentation of the project
Presentation of the project at ICS PAS	Warsaw, Poland	Employee meeting	IT scientists, linguists	Presentation of the brochure
NEKST project meeting	Warsaw, Poland	Project meeting	IT scientists, computational linguists	Exchange of ideas on categorization methods for Polish
D-Spin project meeting	Giessen, Germany	Project meeting	Computational linguists	Distribution of project leaflets, exchange of ideas
Digital Humanities 2010	London, UK	Conference	IT scientists, linguists, representatives of humanities	Distribution of project leaflets
IceTAL 2010: 7th International Conference on Natural Language Processing	Reykjavik, Iceland	Conference	IT scientists, linguists, representatives of humanities	Distribution of project leaflets

Event name	Place	Type	Audience	Type of activity
COLING 2010	Beijing, China	Conference	IT scientists, linguists, representatives of humanities	Distribution of project leaflets
Workshop on "Digital Humanities"	University Kölln, Germany	Workshop		Presentation of the ATLAS project
LREC 2010 Malta Workshop on "Exploitation of multilingual ressources and tools for central and (sout-) Eastern European languages	Malta	Workshop		Presentation of the ATLAS project
Computing Center of the University of Hamburg	Hamburg			Presentation of the ATLAS project

Expected final results

The primary goal of the ATLAS project is to facilitate organizations and individuals who manage and publish multilingual content. Thus, the project solutions will not merely meet the needs of modern multilingual content management, but also create value for all users.

Main expected final results:

- The software solutions built during the project reveal the true value, capabilities and power of several existing tools for web content management, multilingual versioning, and natural language processing by combining them in an innovative manner and offering the end results to the general public at no cost.
- With i-Librarian and i-Publisher users can easily create, manage and publish multilingual content without installing and maintaining a standalone system. Nevertheless, they retain full control over their content regardless of whether it is in

their private workspace, shared or published. EUDocLib provides easy and intuitive access to a vast collection of EU law documents.

- The ATLAS platform is designed with extensibility in mind, which allows for easy addition of tools for currently unsupported languages as well as new tools for already supported languages.

- Furthermore, ATLAS significantly reduces the time and efforts for content authoring and editing because it automatically categorizes, summarizes, annotates and translates documents regardless of their language and format. The software platform enables i-Librarian users to find the most essential texts from large document collections by displaying text summaries and extracted important phrases, words and names.

- Finally, ATLAS improves content navigation by interlinking content items based on text annotations and by automatically placing the content items in appropriate subject categories.

Potential impact

The project brings together advanced technologies for multilingual web content management and text mining (such as automated annotation, mark-up and translation) in a united platform. The intended software-as-a-service architecture of the envisaged solutions, which demonstrate the capabilities of the ATLAS platform, and the open-source license, will facilitate the spread of the project output.

Main expected impacts:

- Technological
    - Integration of text mining tools into content management systems
    - Integration of text mining services
    - Stable and more efficient Machine Translation modules for the project languages. The language pairs considered in ATLAS are covered by Google Translation but with very low quality. On the other hand these language pairs have strong relevance for the Central- and East-European commercial space.

  - Contribution to the development of text processing chains for languages, which lack resources at present
  - Adherence to and promotion of existing and future web standards
  - Practical and economically viable solutions for nearly-automatic provision of multilingual online content and services for some EU languages

- Social
  - Facilitate exchange of information and knowledge
  - Simplify authoring, management and exploitation of heterogeneous multilingual content
  - Address the needs of a large number of people belonging to different target user groups – individuals and organizations
  - Cross the language barrier
  - Facilitate culture exchange
  - Liaise with Europeana and EuroMatrix Plus – The liaison with EuroMatrix Plus will be established at the beginning of the project. Europeana will be approached by the end of the first year, when the consortium will be able to demonstrate the potential value of ATLAS to the European digital library.

Use

The ATLAS platform as a whole and also some of its standalone components are beneficial to different groups of users. Thus the consortium has distributed the potential users of each major software component into several target groups while paying special attention to the needs and requirements of each group. The table below summarizes this distribution:

Target groups

Component	Target group
ATLAS (includes KMS Content Management System, Text Mining engine, Search engine, Machine Translation engine) + **i-Publisher** (ATLAS web-based graphical user interface for building interactive, content-driven web sites)	Web design companies – faster prototyping, web design and site building
	Hosting companies – as part of hosting packages
	Education, Media, Publishing, Non-profit, Government
Text Mining engine	Online bookstores
	Digital libraries/repositories
	News agencies/websites
i-Publisher (as online public service)	Small enterprises
	Non-profit organizations
i-Librarian (thematic content-driven web site built with i-Publisher)	Students, Researchers
	Readers
EUDocLib (thematic content-driven web site built with i-Publisher)	The general public

Table 1: Target groups

More information including project details, news, and contact information can be found at:

www.atlasproject.eu