

aloe-project.de

White Paper



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This white paper describes functionalities, use cases and technical background information of the **ALOE** system.

1 What is ALOE?

ALOE is a system for collaborative sharing and annotation of arbitrary multimedia resources such as text documents, audio and video files, or web pages:

- users can upload resources (using ALOE as a repository),
- existing, heterogeneous and distributed resources e.g., from the www or an
 intranet can be integrated (using ALOE as a referatory),
- resources can be found by using various filter criteria and search modes,
- users can tag, rate, and comment resources, initiate and join groups, organize contact lists, send messages to each other, etc.

Where and how can ALOE be used?

ALOE is a generic platform suitable to realize systems such as

- social (intranet) portals
- sharing and communication platforms
- administration and organization of arbitrary digital contents

ALOE can be used

- as a stand-alone system, but also as a backbone to integrate social media paradigms in existing environments;
- as an open system in the World Wide Web, but also in closed environments without any connections to the outside (access to resources outside only depends on existing security policies of the according organization).

To ensure privacy and security, encrypted communication is used, and information (resources and their associated descriptions such as tags) can be published in different modes:

- private: the information is only visible for the publishing user
- **group**: the information is only visible for members of a selected group
- **public**: the information is visible for all users

In the same way, each resource owner can decide who is allowed to edit information.

Due to its open architecture, **ALOE** allows for the usage of formal and static metadata about resources as well as for Web2.0-like information created by end users in different applications and contexts.

2 ALOE – USPs

Several platforms exist that aim at integrating different kinds of digital resources, and that offer social media functionalities. Some of them also allow to introduce them in existing environments. Yet, they are limited in terms of the following characteristics:

Generic support: Mostly, only isolated use cases with solutions that focus on selected scenarios (e.g., support only for specific resource types such as images or videos) and domains are focused.

Creation of instances: Most Web-based platforms (e.g., Delicious) can not be instantiated at all, which not only means that it is not possible to adapt them in any way but also that an integration into existing environments is only possible to a small extent, if at all.

Adaptability: Most platforms cannot be adapted to the specific needs of a scenario, or they only offer very limited possibilities that usually only concern few aspects regarding the look and feel of the user interface.

Integrability: Frontend and backend technologies are mostly not separated in a way that allows to also use and integrate them as a social backbone in existing environments. If APIs are offered, they most of the time only include a small extent of the available functionalities. Furthermore, the incorporation of existing information is usually very complex or not even possible at all.

Access control: The ability to make use of different visibility levels and thus to allow a controlled sharing of information is often missing. If at all, most systems only offer a distinction between private and public contributions.

Unlike existing approaches, **ALOE** is a comprehensive approach and framework allowing to exploit the potentials of social media also in existing environments with support for potentially arbitrary kinds of contributions.

3 ALOE - Main Features

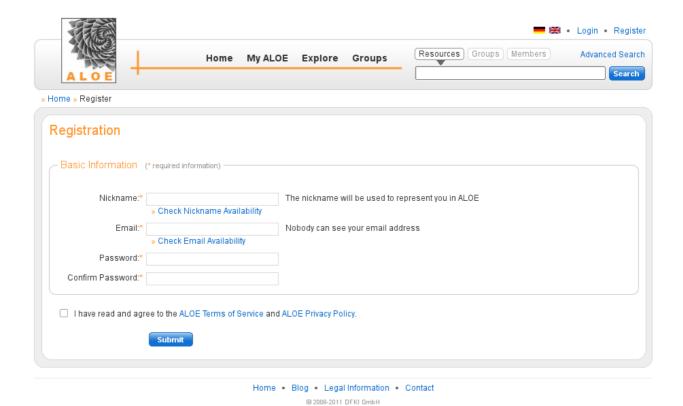
In the following an overview of **ALOE** main features is provided.

3.1 User management

All content that was added with visibility "public" in **ALOE** can be accessed without registration – yet, registration is mandatory for adding any kind of information to the system.

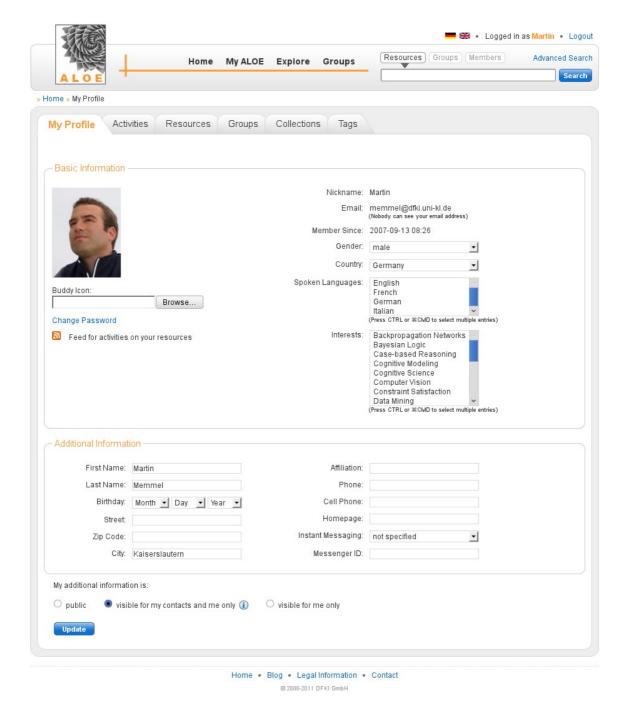
ALOE offers a complete user management, comprising the following features (among others):

- Registration with/without need to confirm via email (configurable)
- Ajax-based availability tests for nickname / email
- "Forgot your password?" functionality
- Stay logged in (optional, using cookies)



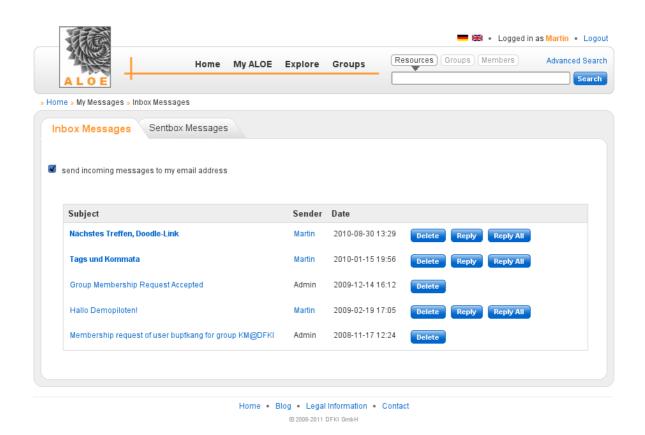
Registration page in ALOE

- User profiles with adaptable visibility for other users. The entries comprise, among others:
 - address
 - buddy icon
 - social network contact information (e.g., LinkedIn, XING)
 - affiliation (configurable: free text or using a predefined set of entries)
 - interests (configurable: free text or using a predefined set of entries)



Profile page in ALOE

- Social networking functionalities
 - contact management
 - messaging with optional message forwarding to the provided email account

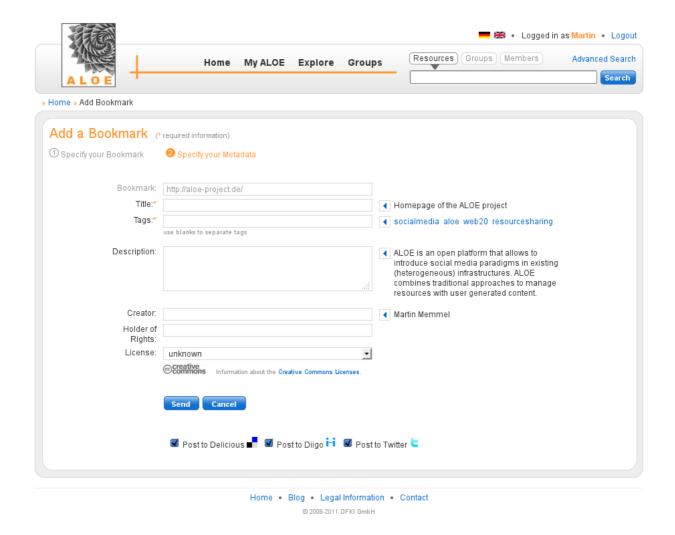


Message management in ALOE

3.2 Contribution of resources

ALOE supports arbitrary multimedia contents (bookmarks, text documents, audio, video, etc) by offering the following features:

- automatic metadata generation (based on Tika¹)
- tag recommendations (type-ahead-find)
- generation of preview images for all common multimedia formats
- Embedded player for various resource types (e.g., flash, mp3)

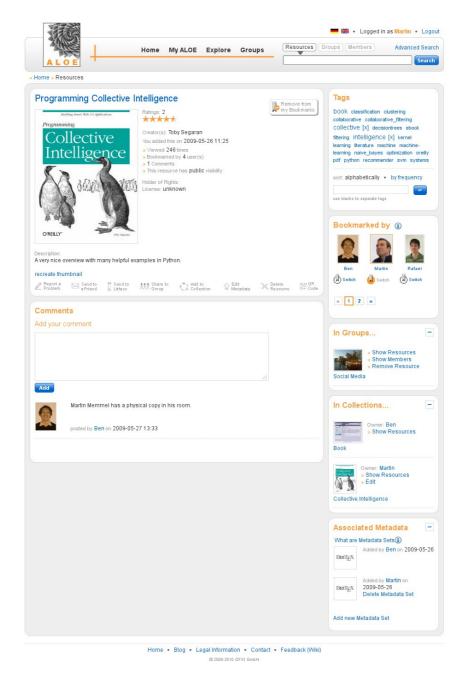


Sample contribution page for adding a web page to ALOE. On the right side, automatically extracted metadata is offered. At the bottom, other platforms that can be joined with ALOE are offered to allow for synchronously publishing the information on the respective systems.

¹ http://tika.apache.org/

For each content contributed in **ALOE**, a respective detail page with a variety of information and interaction means is offered.

- Display of static (e.g., title, description) and dynamic (e.g., number of views)
 metadata
- · Metadata editing
- Assigning the content to portfolios, groups, and collections
- Tagging, commenting, and rating
- Report a problem, send to a friend



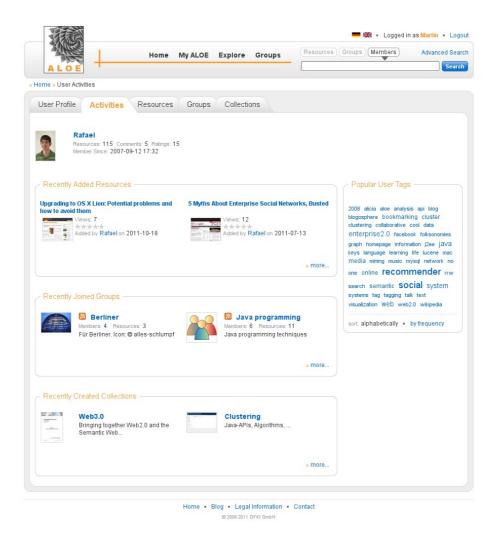
Detail page of a resource in ALOE

3.3 Managing and organizing contents

ALOE offers a variety of means to organize and manage contents.

- Logged in users have a personal portfolio with all contents they have gathered
- Each content can be added to a favorites list
- Collections offer an additional way of organizing contents
- Groups (later explained in more detail) allow for assigning contents to different topics or users
- Tags allow for adding freely chosen keywords to contents

These organization types also allow for so called "social browsing" functionalities, i.e., the direct and intuitive navigation to related contents.

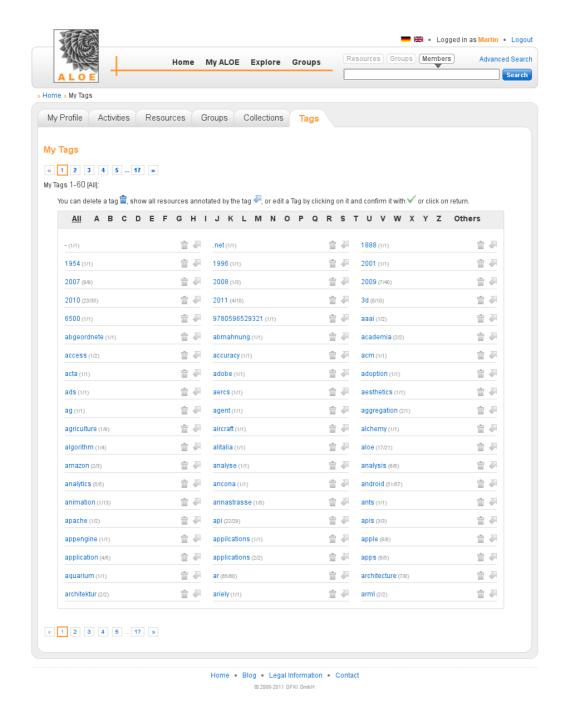


ALOE offers various means to manage and organize contents

3.4 Tag management

ALOE offers comfortable tag management:

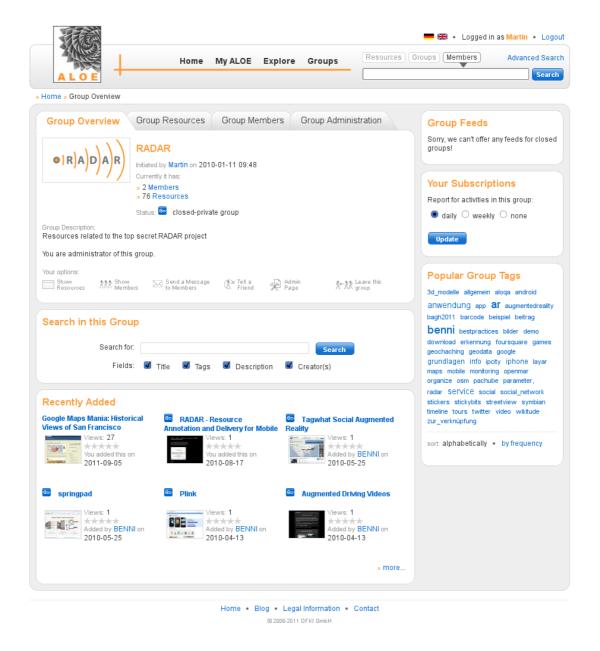
- tag renaming
- · tag removal
- access to tagged contents



Tag management in ALOE

3.5 Groups

Groups in **ALOE** can be used to aggregate users as well as contents. Group messages can be sent, group contents can be searched, and users can subscribe to group-specific activity reports. Group overview pages allow for immediate access to all group related information.



A group overview page in ALOE

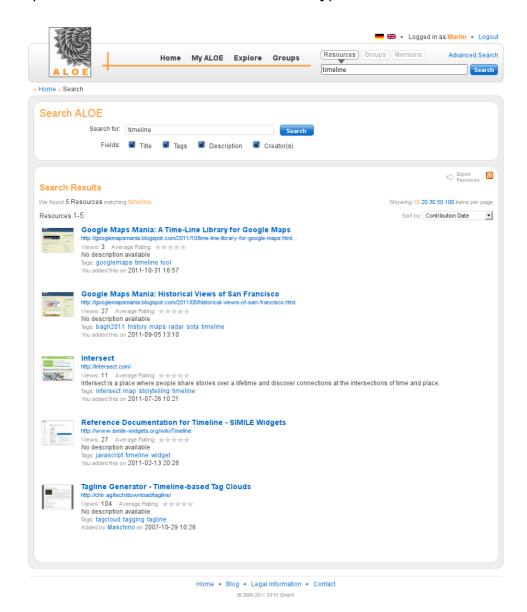
ALOE offers the following types of groups:

- *open groups*: Every member of the system can join an open group without the permission of a group administrator. Group members, group resources, and group activities are accessible for all (also anonymous) users.
- *closed, public groups*: Group members, group resources, and group activities are accessible for all (also anonymous) users. Joining and thus having the possibility to share resources to such a group requires the permission of a group administrator.
- *closed, private groups*: All group activities are only visible for group members, resources can be contributed with group visibility, and joining the group requires the permission of a group administrator.

3.6 Search

ALOE offers different search and ranking options for the objects existing in the system.

- Resource search
 - Search in selected metadata fields (title, description, tags, ...) and in the full text content of resources
 - Search in selected groups
 - Various ranking options (most relevant, most viewed, best rated, most recent, most bookmarked ...)
 - expert search with different filters (mime type, license, date, ...)



Example of a search result page in ALOE

- Group search
 - Search within title and description
 - Various ranking options (number of members, number of contents, ...)
- Member search
 - Depending on the users' privacy settings

3.7 QR codes

ALOE offers the generation of so called QR (Quick Response) codes for all contents in the system.



A QR code generated in ALOE

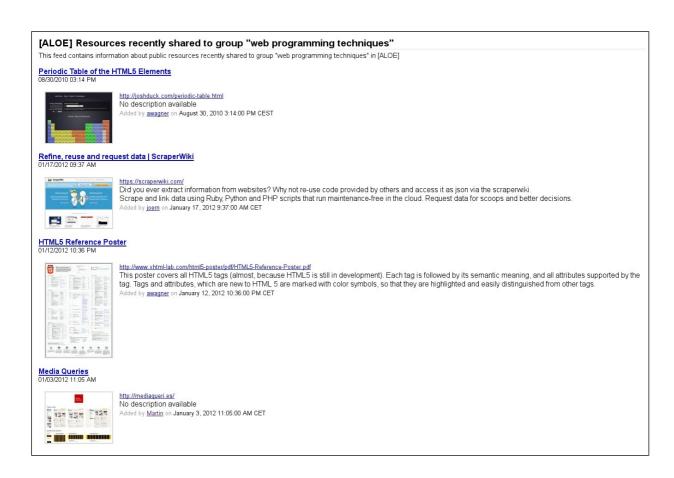
QR codes in **ALOE** are generated by using the Zebra Crossing library².

² http://code.google.com/p/zxing/

3.8 Push services

ALOE offers several means to automatically get updates about new activities in the system.

- Feeds (Atom):
 - all activities in the system
 - activities in selected, public groups
 - activities on resource in the own portfolio
 - activities on selected resources
 - all new resources in the system
 - new resources in selected, public groups
 - new resources contributed by selected users
 - new resources matching arbitrary searches



Extract of a sample ALOE resource feed

- Email reports:
 - $_{\circ}$ all activities in the system
 - activities in selected groups
 - activities on selected resources

3.9 Data exchange

ALOE was intentionally designed to allow for an easy use of data in other contexts. This comprises

- optional "parallel upload" to simultaneously contribute information to other platforms (e.g., Delicious, Diigo, Twitter), among others based on OAuth
- export of own contents, search results and group contents as a Netscape
 Bookmark File (importable in all common browsers and bookmarking platforms)
- embedded metadata (microformats, RDFa)

3.10 Integration with other platforms

- functionalities are also offered as Services (REST Web Service API)
- widgets to embed Information about contents in ALOE
- integration means for arbitrary metadata associated with contents



Two examples for the integration of information from ALOE instances by means of widgets

3.11 Localization

ALOE offers full UTF-8 support and other localization means for all **ALOE** components (already existing: DE/EN). This concerns all kinds of system messages, labels (also regarding interaction elements), icons, etc.

4 ALOE – System Architecture

The **ALOE** system architecture has particularly been designed with regard to user-friendliness, reliability, extensibility and to support an easy integration into existing infrastructures and applications. That way a sustainable deployment of the system can be guaranteed.

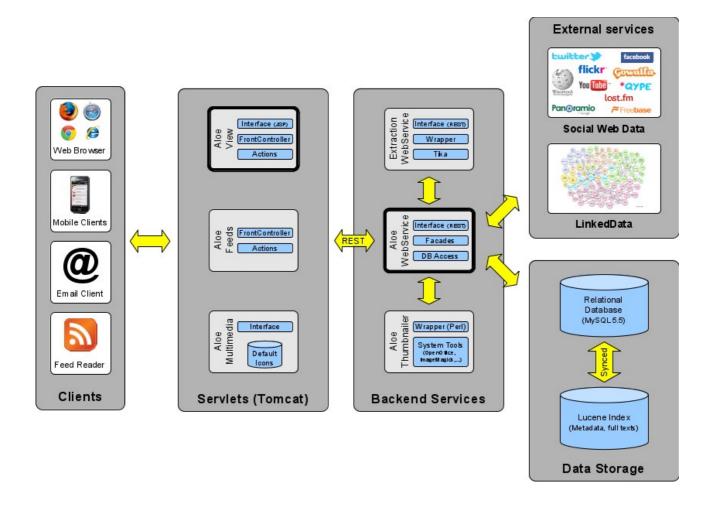
Due to its generic architecture, **ALOE** facilitates the individual creation of solutions adopted to the specific needs of the usage scenario. This concerns on the one hand the skin of the system and on the other hand metadata extensions as well as specific functionalities which are needed for a concrete scenario.

4.1 Utilized technologies

The **ALOE** system is entirely implemented in Java (version 1.6). It is deployed in the servlet container Apache Tomcat (version 6) of the Apache Software Foundation.

- **Graphical user interface:** The graphical user interface is realized with JSP by making use of established J2EE design patterns.
- **Web service interface:** The functionalities of the system are accessible via a REST API. That way the provided functionalities as well as the data stored in the system are at disposal for authorized clients via the Internet or intranet thus allowing an easy integration of **ALOE** into existing applications.
- Storage and access of resources: The resources are stored in a MySQL data base (version 5.0) and may be accessed by authorized clients over the network via a multimedia servlet or via the SOAP/REST API described above.
- **Storage of metadata:** The metadata describing the resources is also stored in the MySQL data base (version 5.5). This makes the generation of different views on the content in the system possible and enables the aggregation of the data in **ALOE** to realize appropriate visualizations.
- Lucene-Integration: All metadata as well as the automatically extracted full texts (when existing) can also be accessed in a synchronized Lucene index. This allows, e.g., for a fast and relevance-based keyword search.

4.2 System design



Deisgn and components of the ALOE system architecture

5 ALOE – Sample Scenarios

As **ALOE** is a generic infrastructure that can easily be adapted to the needs of specific scenarios, it can be used in a variety of contexts. Here are some examples for **ALOE** instances and their use in different scenarios and projects.

5.1 ALOE-Public

URL: http://aloe-project.de/AloeView

ALOE-public is an **ALOE** instance that is publicly available since 2008. It is used in real application scenarios (e.g., by the Institut Henri Tudor), but also as a simple playground.

This is a plain **ALOE** that comes without any adaptations.

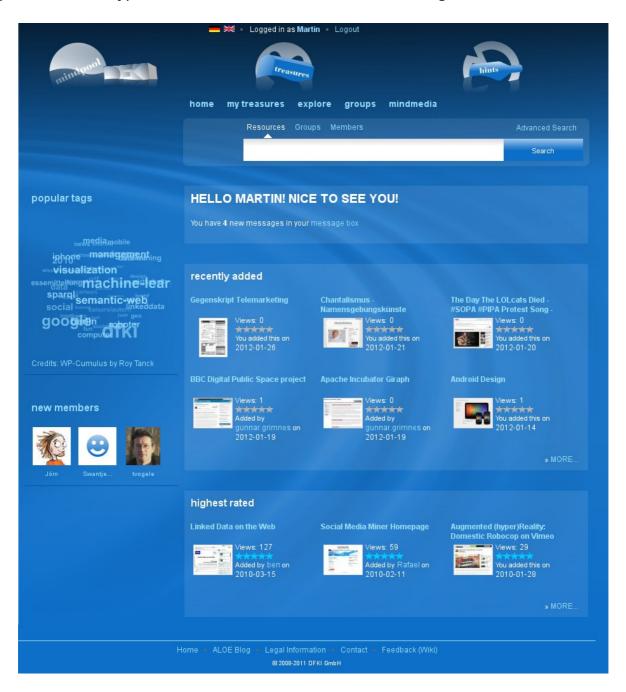
Welcome page on ALOE-public

5.2 Mindpool

URL: http://mindpool.dfki.de

Mindpool is DFKI's internal social media suite for all DFKI employees (in Berlin, Bremen, Kaiserslautern and Saarbrücken). Mindpool consists of two components: "mindpool hints" is a microblogging tool based on the Open Source microblogging service status.net, and "mindpool treasures" is a social resource sharing platform based on **ALOE**.

For *Mindpool*, a specific **ALOE** instance was set up with a different design and support for special resource types such as media assets, visits, and media galleries.



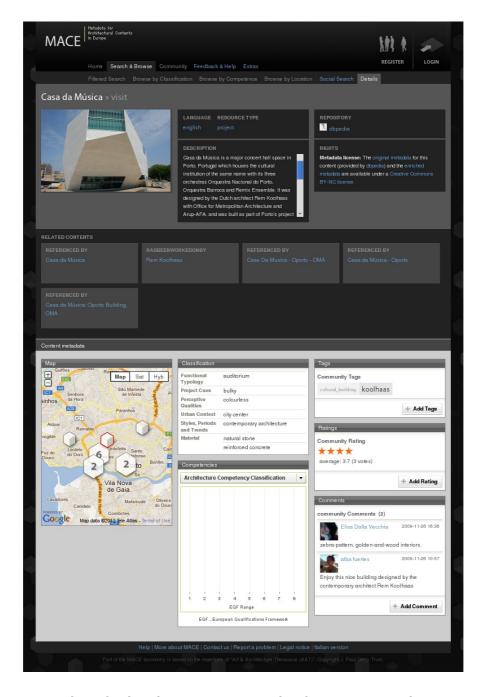
Screenshot of the ALOE welcome page in Mindpool

5.3 MACE

URL: http://www.mace-project.eu

The objective of the European Project MACE (Metadata for Architectural Contents in Europe) is to create a common infrastructure for enriching and retrieving educational contents about architecture in Europe. It was co-funded by the EU eContentPlus program from 09/2006 until 10/2009. All community features in MACE are realized using **ALOE** as a *social backbone*.

In MACE, only the **ALOE** Web Service was used to provide Web2.0 interaction means (user profiles, personal portfolios, tagging, commenting, rating, etc.) within the existing infrastructure.



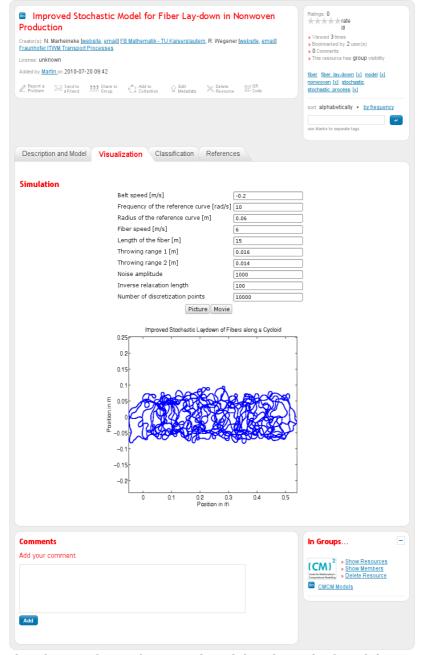
Screenshot of a detail page in MACE, with information stored in ALOE

5.4 The Web of Models

URL: http://webofmodels.org

Within the Cluster of Excellency "Center for Mathematical and Computational Modelling"³ (CMCM), **ALOE** is used as a basis for the *Web of Models*. CMCM started in 2008 and is funded by the Government of Rhineland-Palatinate.

To support mathematical models, the **ALOE** instance used in this scenario offers specific metadata for mathematical models, as well as specific detail pages for model visualization. Furthermore, objects can formally be classified in mathematical taxonomies.



A detail page of a mathematical model in the Web of Models system

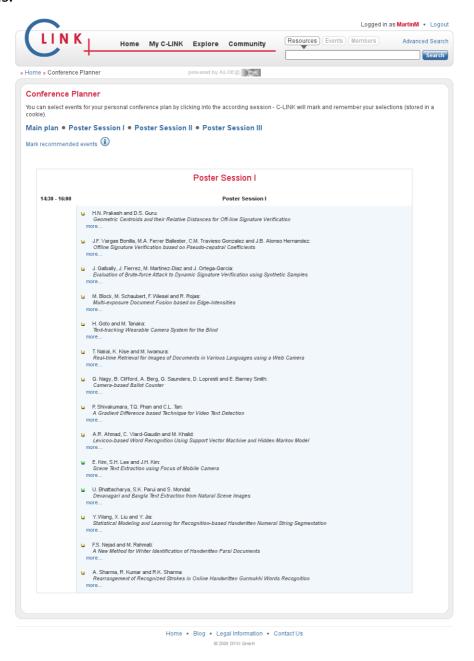
³ http://cmcm.uni-kl.de

5.5 C-LINK

URL: http://icdar09.dfki.uni-kl.de

The aim of C-LINK (Conference Link) was the development of a web based tool to support conference attendees. With C-LINK, users can share papers and presentations, generate individual conference schedules, get personalized recommendations to find interesting events and attendees, etc. C-LINK is based on **ALOE** and was used during the KI 2008 (the Annual German Conference on Artificial Intelligence) in Kaiserslautern and the ICDAR 2009 (the International Conference on Document Analysis and Recognition) in Barcelona.

C-LINK supports an event-specific provision of interests on user profile pages and can provide recommendations for conference events based on the user's profile and contributions.



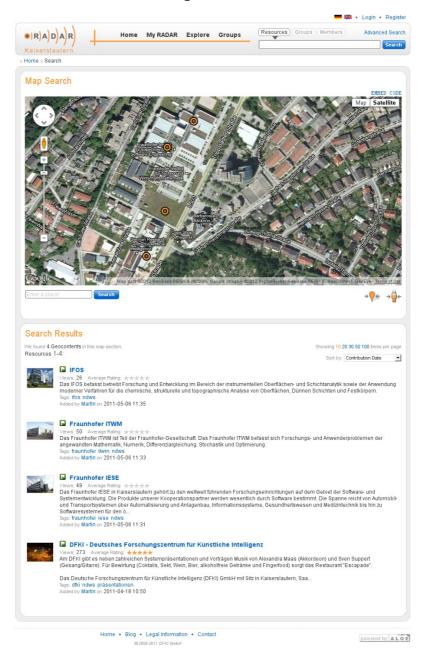
Recommendations for conference events in C-LINK

5.6 RADAR

URL: http://radar-project.de

The aim of the project RADAR (Resource Annotation and Delivery for Mobile Augmented Reality Services) was the development of an **ALOE**-based infrastructure to contribute, organize, and annotate multimedia resources that can be used within mobile augmented reality services. Besides adapters for existing services like Layar or Wikitude, a new personalized and location-based mobile augmented reality service has also been developed. RADAR was sponsored by the Stiftung Rheinland-Pfalz für Innovation from 03/2010 until 02/2011.

For RADAR, **ALOE** was enhanced to also process geoinformation such as coordinates, to provide means to contribute and search geocontents, etc.



Map search in RADAR