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# ANIMATE

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## D3.1 Technical Specification

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# Glossary

| Acronym | Meaning |
|---|---|
| AR | Augmented Reality |
| CMS | Content Management System |
| CSS | Cascading Style Sheets |
| Gmail | Google mail |
| HTML | HyperText Markup Language |
| PostgreSQL | Postgre Search and Query Language |

# References

1. **ANIMATE Consortium.** *Functionalities and Interface Design.*

2. *—. D2.3 User Requirements Report.*

# 1.   Introduction

This deliverable defines the initial architecture design of the ANIMATE platform in terms of the modules that it supports based on the functional, non-functional and end-users' requirements. Not only the functionalities of the modules are described but also the technologies used and the interfaces among them; in summary the overview of ANIMATE architecture.

Deliverable D3.1 is the first deliverable of the WP3- Architecture and core modules, and provides the initial steps and the basis to build the ANIMATE platform. Next deliverables of this WP3 and WP4 will describe, specify and develop the different modules identified in this document. The final output will be the iterative ANIMATE prototypes that will be built along WP4 and tested in real environments in WP5.

# 2.   Architecture Overview

Based on the concept and objectives established, as the core of the project, different modules were identified during the proposal phase. The design and development of these modules have been translated into different tasks along WP3 and WP4.

This deliverable covers the identification of the modules based on the requirements identified in WP2 which are crucial for the architecture definition.

## 2.1.   Architecture

In this section, an initial overview of the system architecture is provided starting from the modules initially identified and the results of D2.3 User Requirements Report and D2.4 Functionalities and Interfaces Design. This preliminary architecture design is shown in the figure below:
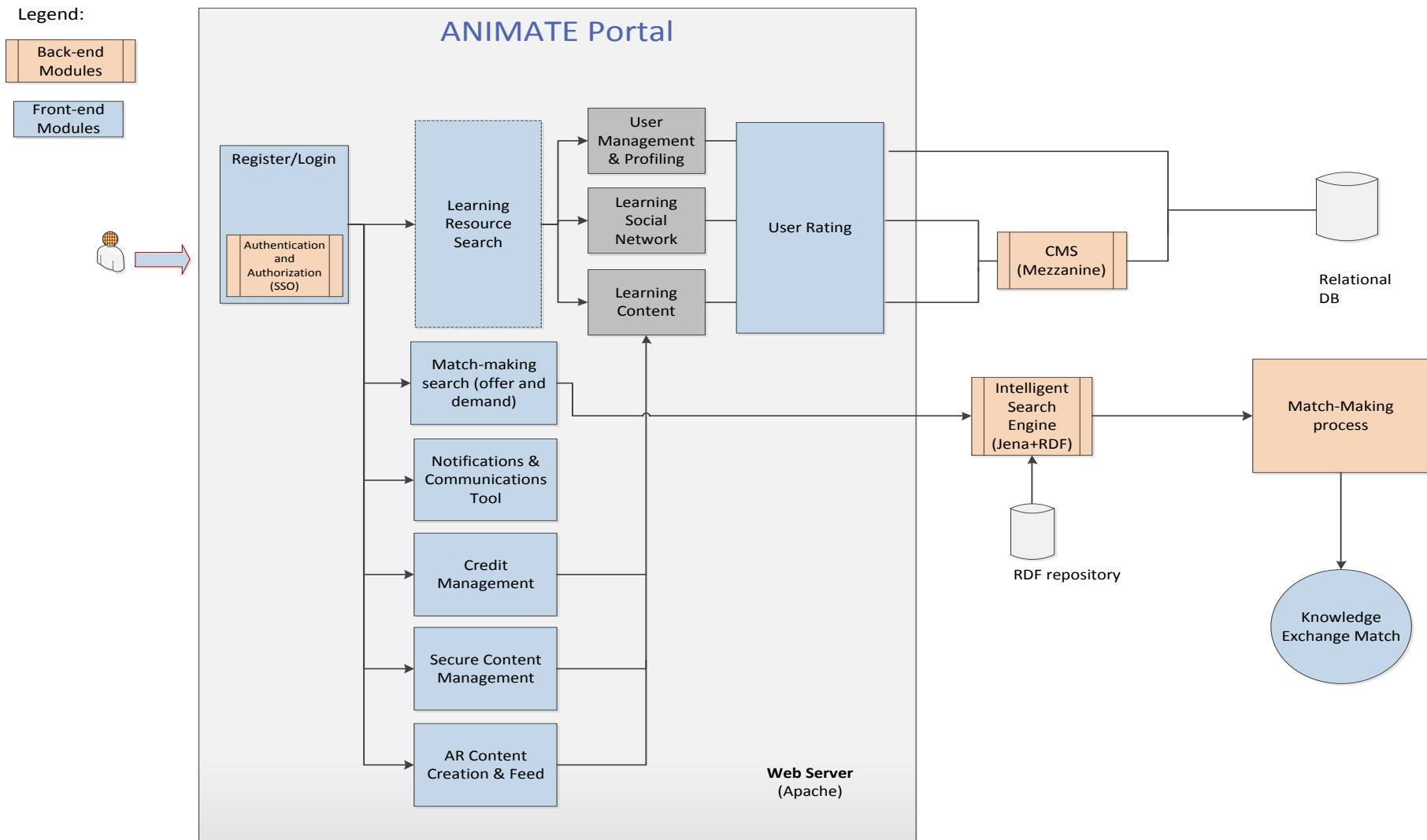
**Figure 1 Initial architecture design overview**

This early identification of back-end and front-end modules represents a general and preliminary description of the architecture, so changes and modifications may occur as consequence of the adjustments and corrections derived from the incremental prototyping development on the basis of the experience gained during the project evolution.

In order to get a first idea of the modules and sections that will compose the architecture of ANIMATE and its functionalities, a brief description of each of them has been carried out below.

- **Web user interface.** Through the web interface, interactions between users and ANIMATE occur. It has to be intuitive, easy to use and tailored specifically to cover with the more general problems faced by older adults when using a computer interface. To achieve this, the ideas of ANIMATE users have been collected in D2.4 Functionalities and Interface design. It will be suitable for multiple devices, such as PCs, smartphones and tablets.

- **User Management and Profiling module.** This module will be in charge of registering all users who want to be part of ANIMATE or allowing adequate access to those who have been already registered. Once confirmed the identity of the user through the **Authentication and Authorization module**, users will be able to set up their profile, including some personal settings to better adapt the interfaces to them; provide them an easier and comfortable navigation and adding all information they deem important to promote and advertise themselves within the ANIMATE platform (for instance, the CV for companies training, areas of expertise, areas of interests, endorsement and location of the business or residence).Through this module, users will be also able to modify other settings like their notification, privacy and shared content preferences. This module will be different for companies and users, since different types of information will be managed in both cases.

- **Learning Resource Search.** It is the module in charge of searching in ANIMATE platform based on a set of keywords provided by users. It will search in the content management database, in the user profile skills and in the learning social network keywords.

- **Learning Social Network.** This refers to the web interface specifically designed to allow users interact with other users: access to groups of interests and the exchange of messages between them (asynchronous chats) and content, creating some kind of network of users with similar concerns, skills and knowledge. The interface will also allow seeing all information related to the group, such as the number of members, the rating and the level of experience on the content of the group. This will also serve as an access point for the Learning Resource Search. This is demonstrated within the Wireframe (1).

- **Learning Content.** This is the place where all user-generated learning material managed in ANIMATE will be stored and then shared between elders, carers, companies and young workers. This module provides via its interface different possibilities to be added to the content (such as the level of expertise, privacy settings or key words specifying the content) as well as different options of uploading. Optionally, it will include the **AR Content Creation and Feed**, as an interface for Augmented Reality

devices. The Learning Content module will be based on the **CMS** (Content Management System), which works as a central repository for creating, deploying, managing and storing content. Once there, users can edit videos and add them a new audio.

- **Match-making Framework.** Two types of searches are possible: searches triggered by the users and searches triggered in an autonomous way by ANIMATE. In the first one, the users/companies must fill in a form for indicating which resources are looking for and which resources are willing to offer. This form is provided by the **match-making search** interface. Upon completing the form, the **intelligent search engine module** implements an algorithm that weights the form and users profile semantic information as well as other aspects such as the work area of the candidates and the distance from the origin company, and it carries out a search to offer recommendations to the user/company. In the second one, the **match-making process module** carries out an autonomous search looking for possible suggestions of people and resources based on user profile and other aspects without being triggered by the user. After recommendations are provided, either by user request or autonomously, the **knowledge exchange match** allows interacting with the recommended user to know his experience, availability and the way in which the interaction will be carried out.

- **User Rating module.** This module is the responsible for ANIMATE resource valuation. It allows companies and individuals rating, as well as rating of contents and groups. Rating will consist on: endorsements of users, usefulness of contents and groups, appropriateness of the shared content related to security aspects (contents will include an alarm button so abused could be reported) and like/dislike options. Comments included per content by users will be also available.

- **Credit Management module.** This module is in charge of managing credits for the visualization of content. Its main function is the earning of credits when a service has been offered and the loss of credits when a service is demanded. The quantity of credits will determine the permissions to access or not to certain content. Content will have a fixed value depending on the type.

- **Notifications and Communication Tool module.** This module is in charge of providing notifications to users, asynchronous text through chats in groups and video communications that will be only available for learning purposes.

- **Secure Content Management module.** This module will avoid that inappropriate content is populated in the network. This action will be, at the first, conducted manually by a dedicated moderator and later, automatic content moderation at the upload time will be used.

After identifying the different modules composing the architecture design, next step is deciding the main technologies behind ANIMATE. As agreed by the technical partners, Django framework will be the base for the development of the ANIMATE front-end and many of the modules involved. Other technologies involved will be Jena + RDF for the Semantic framework development and PostgreSQL for the development of the relational database. More details can be found in section 3 of this document.

## 2.2.    Functional Requirements Vs. Architecture Modules

The objective of this section is to ensure that the functional and end-users' requirements identified along D2.3(2) and D2.4(1)are compliant with the architecture defined in this deliverable.

| Functional Requirements | Architecture modules | Comments |
|---|---|---|
| User profile creation/editing/deletion etc. | User Management and Profiling module | This module will allow the user creation and its management |
| Personal notification settings(in web and/or email) | User Management and Profiling module and Notifications &Communication Tool | This module will allow notifying actions in other modules to the users, in different ways according to the defined in "notification settings" within the User Profile |
| Sharing multimedia content (text, videos, photos) | Learning Resource Search + CMS + Learning Content | All these modules will work together to share the multimedia content among the portal users |
| Manual content/user search (multiple criteria) | Learning Resource Search + CMS or CMS+ Match-making Search + Intelligent Search Engine | Content search will allow multiple criteria filtering. |
| Privacy settings for shared content (private, limited access, public) | CMS + Learning Content | Privacy settings could be added for each content or established by default in the profile |
| Automatic content/user match (multiple criteria) | User Management and Profiling module + CMS + Match-making process module | |
| User/content endorsement (expertise level, appropriateness, usefulness) | Rating module | Rating of content (after consuming it) or other users (after using their services) |
| Online communications between users | Notifications & Communication Tool + Learning Social Network | Asynchronous messaging (chats) |
| Real-time video-conference communication | Notifications & Communication tool | Private video call only with learning purposes |
| Interface for Augmented-Reality devices | AR Content Creation & Feed Module + Learning Content | Optional |

**Table 1 Functional requirements vs Architecture modules**

## 3.   Modules: Functionality, Technology and Interfaces

Based on the functional requirements already identified together with the feedback regarding the first ANIMATE mock-up(1), the following list of modules, leader partner and functionality to be covered have been identified in order to achieve ANIMATE goal:

| Module | Functional requirement | Partner |
|---|---|---|
| Authorization and authentication module | User profile creation/editing/deletion etc. Privacy settings for shared content (private, limited access, public) | UniGe |
| Web user interface:<br>• Login<br>• User profile<br>• Home<br>• Content view<br>• Content creation<br>• Rating | Generating of the user-facing HTML & CSS by the method of Django Templates and Django 'Views' | ELS |
| Database Design | Management of the information generated by the platform | HIB |
| User Management and Profiling | Creation/edition of users' preferences Adaptation of services to their specific needs/assets | HIB |
| Content Management database | Management of the content generated within the platform | HIB |
| Learning Social Network (Groups) | Generating of the user-facing HTML & CSS by the method of DjangoTemplates and Django 'Views' | ELS |
| Notifications & Communication tool (email, chat, video-call) | Personal notification settings(in web and/or email) Online communications between users Real-time video-conference communication | UniGe |
| Manual search (match-making process + content search) | Manually match the user's needs and assets to others | HIB |
| Automatic search (match-making process + content search) | Automatically match the user's needs and assets to others | HIB |
| AR content creation and feed | Creating the Java application to run on android | ELS |

| | wearables | |
|---|---|---|
| Credits management | Generating of the user-facing HTML & CSS by the method of Django Templates and Django 'Views' Designing the credit management systems in order to test ideas for the best way to manage credits | ELS |
| Secure content management (accurate, trustworthy content) | Advanced Option for Sharing multimedia content (text, videos, photos) | UniGe |

**Table 2 Module, functional requirements and partner**

# 4.  Prototypes

The following table sums up the modules and functionalities that will be included in each of the 3 prototypes that will be built during the project's life, according to the agreements met in the last General Assembly meeting in Geneva.

| INITIAL PROTOTYPE (Nov. 2015) | SECOND PROTOTYPE (April 2016) | FINAL PROTOTYPE (Nov 2016) |
|---|---|---|
| - Web Interface<br>  - Login<br>  - User Profile<br>  - Home<br>  - Content (users)<br>- Authentication/Authorization<br>- Relational DB definition(all)<br>- Content DB<br>- 30 sec video at cover page<br>  - Animate concept<br>  - Translation to French<br>  - Translation to Spanish | - Notification<br>- Basic manual search<br>- Improved web interface (all)<br>- Content creation<br>- Rating (all)<br>- Groups (Social Network)<br>- Credit roles proposal | - Automatic search<br>- AR content<br>- Credits<br>- Secure content (appropriateness)<br>- COMPANIES<br>- Tutorial "how to" (credit/do)<br>- Histories (people talking about their experiences) |

**Table 3 Prototypes**

Each of the colours represents who will develop each module or functionality.

| | | | | |
|---|---|---|---|---|
| 🟩 | TCO | | 🟪 | IRBLL |
| 🟦 | HIB | | 🟥 | ELS |
| 🟧 | UniGe | | | |
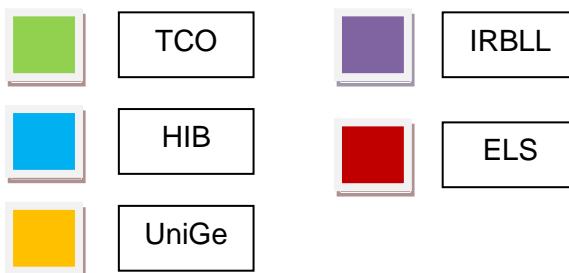
In order to unify the development of ANIMATE architecture, despite the fact that each partner will implement its own modules and functionalities, a common repository based on GIT will be used to store and share the code development.

The first prototype will be focused only in individual users (not companies). It will include the basic functionalities and modules of the ANIMATE platform:

- The web interface for the login, user profile, home and content.
- The authentication/authorization module.
- The definition and implementation of the ANIMATE relational database.
- The content database in the CMS.
- A 30 sec tutorial in where the concept of ANIMATE will be explained and that will be translated to English, French and Spanish.

The second prototype will include more advanced features and modules like:

- The notification to be sent to the users.
- A match-making framework which will realize manual searches.
- An improved web-interface.
- Capacity of content creation.
- Rating module.
- The groups that will compose the learning social network.
- The different roles for credit assignment.

The main feature that will differentiate the final prototype of the two previous prototypes is the inclusion of companies. However, other extra-functionalities/modules will be included like:

- The capacity of the match-making framework to realize automatic search based on user/companies profile and preferences.
- Capacity to add and manage Augmented-Reality content.
- Secure content management module (to determine the appropriateness and accuracy of the content).
- Tutorial "how to" (credit/do).
- Histories gathering people experiences.

The objective is being able of meeting all ANIMATE functionalities through an iterative design process in which end-user opinions and desires are continually taken into account.