

An institutional Web 2.0 platform for academic purposes: Case study

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The website of the *ETSIIIT* (ETS de Ingenierías de Informática y de Telecomunicaciones) of the University of Granada has been built following the *web 2.0* principles. This work shows its main features, services and technical specifications making visible the high level of interaction offered to the users.

This website has been evolving for all this time to incorporate the new standards and technologies that have been appearing among the last 12 years. Continuously, new services have been added to the platform and the existing ones have been improved or remade. This platform is an experimental environment to develop and deploy new ideas or technologies. This continuous research generates an important *know-how* that has been applied in several projects for other websites of the University of Granada.

Keywords web 2.0; content management systems; framework

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1. Introduction: Applying web 2.0 tendencies

Since 1996, from its first revision, the *ETSIIIT* website has been offering not just static information, but also a set of interactive services to the users (students, professors, services staff and other visitors). This website has been evolving for all this time from the very basic concept of HTML to new ways of presenting the information including the more advanced technologies and standards in web development. Continuously, new services have been added to the platform and the existing ones have been improved or remade [1].

In his article, "What is Web 2.0" [2] O'Reilly shows some ways of incorporating this tendencies in websites, both in the user level as on the interfaces, but many years before the *Web 2.0* boom, and in order to enrich the web content, the web team of the *ETSIIIT* realised about the importance of collaborative efforts. Therefore these ideas are used in all of their applications since the first time [1,3-7].

The use of this 2.0 tendencies in an academic platform enhance its functionality beyond presenting information, encouraging users to interact each other generating a virtual knowledge-exchange space that is just what an University is.

2. The platform: An all-in-one solution

Nowadays the *ETSIIIT* website (etsiit.ugr.es) is packed on a stable framework. This framework provides a set of primitives, classes and procedures allowing agile development of new web applications. In the current revision, the *ETSIIIT* website has the following tools:

- Content Management System (CMS)
- User Management System (UMS)
- Access Control Lists (ACL)
- Downloads manager
- Multimedia interactive resources
- News board with RSS (input and output) support
- Discussion groups and forums
- Instant messaging
- Virtual briefcase: it allows users sharing their files
- Blogs manager
- Meta-search engine
- People search engine
- FAQ Wiki
- Lab front-end for accessing lab computers
- Degrees and courses manager
- Official exam announcements manager

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All of these tools and services have been implemented from scratch keeping a high integration between them. All the applications have the ability to share information between them using common interfaces.



Fig. 1. Home page of the ETSIIT website.

In this platform, professors are who maintain their own courses information, publish news in the news board or announce exam dates. In etsiit.ugr.es the students are the ones who maintain part of the information using a public wiki or update relevant information using discussion boards. This boards have a great impact in press/media and have been mentioned several times in newspapers and websites like meneame.net (Spanish version of digg) or barrapunto.org (Spanish version of slashdot). Suffice is to say that etsiit.ugr.es is one of the main responsible of the total web traffic generated in the University of Granada, despite of being just a small center when compared with other faculties and schools. A great part of the responsibility lies on a robust and flexible system for managing users (UMS) and permissions (ACL), what allows to create profiles and different credentials to administrate the different web applications.

It is important to emphasize some *Web 2.0* features of this platform:

- On-line management of content and services
- Administrative tools integrated in the web platform
- RSS and web services are used to communicate applications
- W3C standards and WAI recommendations are followed
- FAQ Wiki with contributions from all the users
- Continuous evolving state with many improvements and updates
- Tags and votes techniques to sort and control the information published
- Content and services customization for each user.

Forums: Incorporating the community

Forums are the main online meeting point for students and professors of ETSIIT. The developer team has dealt with the problems related to the public character of this communication method for years. Comments moderation is the only option to avoid the wrong usage of this tool, but its proximity to censorship results in a problem in the context of a University where freedom of speech is a basic principle.

Over the years different approaches have been tested. The first attempt was just a group of designated people moderating all the threads. This solution was maintained for several years but with the growth of our school more and more people were needed to moderate comments until we reach a situation impossible to maintain. After that we considered the option of allowing users to moderate themselves. This solution was not feasible because users weren't able to maintain impartiality and also they weren't aware of some sorts of sensitive comments. So the final solution we adopted was a combination of both. We allow users to alert a group of moderators when they think there is an inappropriate comment and then one of the moderators check the comment to see if it's really inappropriate.

4. Study plans: Collaborative management of official information

Information about study plans, courses and their agendas, methods of evaluation... is a massive set of data that should be updated each academic year. Furthermore, to avoid problems of synchronization between the agendas of the current course and the next, updating the content must be done within a very short and fixed period of time.

Thus, a web application was implemented to update the study plans on-line, which are maintained by their own professors. This application opens each year for a limited period of time for each professor to update their courses. The application is based on a hierarchical administration system: the administrator of the application can manage all data, the department manager can modify all the content relating to a department and the manager of the course can only alter the data on his course.

This application has an ad-hoc CMS that facilitates the insertion of data in a uniform way, allowing direct export to be printed in the students guide with a standardized format. Also, through web services, the course structure can be imported from other platforms, thus avoiding duplication of the data.

This application also reflects the educational planning and allows, among other things, that professor responsible for the course publish calls for exams directly on the website of the school. This functionality has been used on a massive scale for years.

5. Exams marks: when students do what professors don't

A classic problem in the ETSIIT is related to the publication of the exams results and the date for revision in case of disagreement with the received mark. According to the normative, the marks can't be published on internet unless they are protected by password and only accessible by the graded student.

Due to administration problems, the central system that the UGR has developed is not valid for this, since marks appear there too late and the students can't then ask for revision.

On the other hand, even if different solutions have been proposed, there are many problems related to them: First of all, professors are not always prepared or willing to publish the marks online. Besides, there are so many different platforms (every professor uses one of them or install a new one) that the task of checking if new marks has been published is tedious.

The solution developed in our website has found the compromise between normative compliance and students facilities. The application allows the students to add the notice themselves in the website. Usually the first student finding the marks creates the notice, including information regarding the course, the place where the marks can be found (it can be another webpage or a physical place, depending to the professor decision) and the date and time for the exam revision with the professor.

Other students can find this notices easily, even using a RSS reader that automatically notifies them every time a new mark has been published.

This is an example of how a problem that involves several entities in the University can be solved applying the principles of web 2.0 by developing a very simple application and incorporating the community in the solution.

6. A framework for free cost development

The developer team of the ETSIIT is mainly formed by students and supported by their altruistic collaboration. Such collaboration usually lasts between a few months and two years, and its altruistic nature means no possible exigence to the members of the team, which usually implies just a few work hours every month.

Managing and building a web site like ETSIIT's should take a lot of time. As we've shown the management problem has been solved by incorporating the community, from students to professors, in this tasks.

On the other side, the development tasks have to been done by qualified people, which is not as common in the community.

Two different approaches has been used to solve this problem. The first of all is the use of the Master Projects (which are done at the end of the master degree). In this approach the students do their master project in a topic related to the website needs. In this context results can be demanded and the collaboration is not altruistic any more.

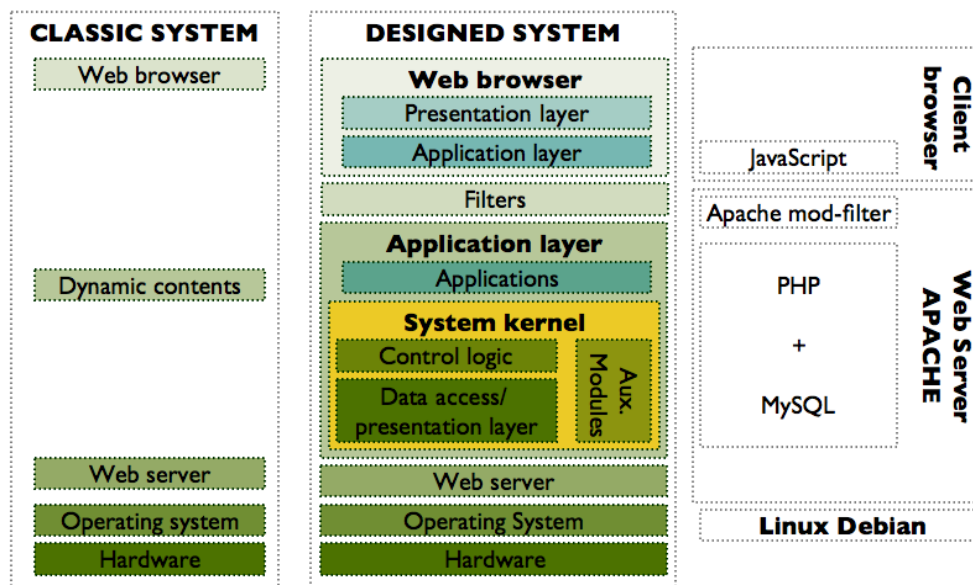


Fig. 2. Architecture of the designed system: Comparison with a classic system.

The second approach is possible just when complex works has been developed in the context of the first approach. We have developed a complete framework that allows the programmers to develop new applications in a very fast way. This framework has been specifically designed to have such a learning curve that guarantees the prompt start of works when a new member joins the team and to allow this team to develop new applications in a very fast way. They don't have to deal with common problems any more: they have direct access to data bases, automatic representation of the results in the web site (according to its general image), standard mechanisms to process the user input (e. g. texts that the user wants to display in the web site) and to guarantee the mandatory compliance with the standards (e. g. W3C XHTML standard) [8,9].

The result is that the developers just have to deal with the data flow, analysis and manipulation done by the application they're developing, which has dramatically reduced the development time.

7. Conclusions and future work

In a environment where big inversions aren't an option, the Web 2.0 offers the solution to keep working a website with several services to the community. The idea of Web 2.0 is to create and offer tools to the community to share with them the effort of managing the information in the website. This includes not just the students but also the professors, yet sometimes students has to compensate for the lack of collaboration in the teaching team.

Besides, the creation of a framework that allows collaborators to develop new applications in a fast, efficient way is another requisite to achieve the goal of having a very useful, updated website.

The further work should be done to incorporate professors to the active community. There are several approaches for this task: from giving formation to those professors that don't know how to use the website to developing new useful tools and let the students and general tendency to force them to use those tools.

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