

The OpenMOOC project. Platform based on free software for an open education

Authors:

Lorenzo Gil Sanchez, Yaco Sistemas. 5th Rioja 41001 Seville, Spain E-mail: lgs@yaco.es

Sixto Martin Garcia, Yaco Sistemas. 5th Rioja 41001 Seville, Spain E-mail: smartin@yaco.es

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Abstract:

This presentation is focused on the OpenMOOC project. This project aims to create an open access platform based on free source components to build a connectivist environment. Its highlights are: video-based lessons combined with the use of smart discussion system and progressive learning where information is divided in a set of knowledge pills that the student can learn and consolidate step by step. The collaboration between instructors and students is the most important part and thus there is much emphasis on the usage of technologies and ideas that promote it.

Nowadays online and open learning are clear trends. We are also experiencing the phenomenon of MOOC (Massive Open Online Courses). Many institutions and educators have seen that high quality online courses can attract thousands of students. This has changed the perception of the learning process as something individual and isolated to something much more social and dynamic which is alive, promote generative thinking, create useful artifacts and makes meaningful human connections. Coursera, Udacity, OpenStudy, CodeAcademy, TEDed, OpenCourseWare, P2PU, edX are examples of successful MOOC-type projects that offer open education.

OpenMOOC analyzes the different platforms used on the examples above and also other projects like Class2go, Course Builder and learnata trying to get the best out of them and integrate them as different components into a new platform.

To solve the issue of identity and access management, the different components are enhanced to support the SAML protocol. The system integrates four components. An identity provider server (SimpleSAMLphp) for SSO and easy integration with existing organizations' Identity Access Management (IAM) systems. The MOOC engine itself (based on Django), that uses the latest web technologies to offer a rich experience, and integrates video classes, homework and exams. A Q/A system (Askbot) to promote debate and discussion about the topics of the courses. And a wiki (MoinMoin) where teachers and students can collaborate in creating the course's material.

One of the problems in this kind of platform is the scalability. Many students mean many data and much memory and CPU consumption. In OpenMOOC, to

mitigate the negative effects of the massification, we have made a series of design decisions: the exponential student data growth is stored in a non relational database (MongoDB), many actions are performed by Javascript on the browser (modern Javascript tools like jQuery, Backbone.js, Mediaelement.js have been used) which reduces the load on the server, the video hosting is decoupled from the platform (currently it uses Youtube but can be easily adapted to use other systems) and the different components can be deployed clustered in high availability.

OpenMOOC platform currently is being used by the largest distance learning oriented University of Spain, UNED, who is specialized in online education. The specific project is called UNED COMA, <https://unedcoma.es/> and after 2 months, and with only 2 available courses (one related with e-commerce and other related with open data), has more than 10,000 students.

An interesting component to integrate in the future will be a tool that handle with all the data that is stored on the different components. The data mining and the data analytics can help us to improve educational methodologies, learning information for insights regarding student performance and learning approaches. Rather than rely on periodic test performance, instructors can analyze what students know and what techniques are most effective for each pupil. By focusing on data analytics, teachers can study learning in far more nuanced ways. Online tools enable evaluation of a much wider range of student actions, such as how long they devote to readings, where they get electronic resources, and how quickly they master key concepts. The open source software that has been evaluated to be used on OpenMOOC to handle the "big data" is gorql, which consists of two components: a editor that helps creating SPARQL queries over a defined set of data and a viewer that shows the results of a SPARQL query in a rich way, with tabular data and interactive graphics that can be embedded in any webpage

The project is hosted at github. We invite everyone to contribute.

More info of the project can be founded at the blog of the project: <http://openmooc.org/>

Vitae:

Lorenzo Gil Sanchez is the project manager of OpenMOOC. He has extensive experience in projects related to open sources software. He has been working on Identity Federation systems for more than 3 years. He led the development and deployment of the CONFIA federation in the south of Spain. He also worked in the PEER project from its inception to its current state as the main developer and Yaco's coordinator. He has experience with the federation software SimpleSAMLphp, SAMLmetaJS and pysaml2 and has contributed to all of them. He also has developed additional libraries like.djangosaml2 and moinmoin-saml2 oriented towards specific systems. Know more about him at <http://lorenzogil.com/>

Sixto Martin Garcia is one of the main programmers of OpenMOOC, focused on the identity federation and in the integration between the different components. In the last years he has been working in projects focused on build platforms based on open source software components. Currently is the main operator of the CONFIA federation in the south of Spain. He has experience with the federation software SimpleSAMLphp and Janus. Has developed several SAML plugins which have been contributed to the community