Project Results

MOOC TAB

Tablet-based platform dedicated to lifelong learning

EXECUTIVE SUMMARY
The ITEA project MOOC TAB set out to develop the tools that could help boost the opportunities afforded by MOOC technology for lifelong learning at all levels of education and post-education. To ensure these tools would be equipped for the new generation eLearning landscape, the MOOC TAB project focused on two specific aspects: management and security.

PROJECT ORIGINS
As e-education systems expand worldwide (global market of USD 267 billion in 2017), a key component in this growth is the fast-emerging offer of MOOCs (Massive Open Online Courses) in the corporate HR and higher education segment. The success of MOOC is expected to change the structure of the higher and corporate education industry within 10 years as it opens up avenues for study and learning to potential students from all over the world. The tablet, as a tool for having content whenever you want, complements the online Web MOOC Platform. Nevertheless, such massive deployment within education pinpoints the need for both tablet fleet management and content management security.

The challenge undertaken by the ITEA MOOC TAB project, therefore, was to develop simple and effective identity management and security features, thereby realising twin goals: to facilitate access and ensure security of this access to the eLearning platform. First of all, the requirements had to be defined and analysed, taking account of the application scenarios, the detailed State of the Art, the interactions and the business models. The subsequent technology focus comprised three work packages that examined 1) the Cloud service platform technologies and the associated tablet firmware and applications, 2) the various content, assessment and community tools, and 3) security solutions, content protection and user authentication and privacy. Finally, the realisation phase concentrated on the MOOC TAB use cases – their definition and implementation, field trials specifications, demonstration and integration.

TECHNOLOGY APPLIED
The development of an on-demand MOOC platform is based on existing open source MOOC platforms. Data is stored on a local secured cloud and tablets with an intuitive interface and a secured connection are used. An open platform also means that other use cases can be added retrospectively.

With security and identity as the key challenges of the project, MOOC TAB generated several innovative technology results, including the first EAL7 evaluated NFC Student ID card that is compliant with the European eIDAS regulation and associated ANSSI standard. This ID card not only provides convenient and efficient access to MOOC applications via a single card but also allows new applications, in areas such as healthcare and payment, to be added to existing electronic ID cards after they are already deployed in the field. Furthermore, epub3 DRM (ebook file format) combined with an eIDAS authentication, protects highly confidential documents and courses when they are downloaded. Integration with NFC tablets along with a Trusted Execution Environment (TEE) for Android-based tablets on a single silicon boosts efficiency and reduces the number of components needed (bill-of-material). Two demonstrations, one home-based and one in the examination room, showed the effectiveness of this integrated solution whereby a wearable bracelet containing the ID data of the wearer and the MOOCBox, the NFC secure reader hardware prototype developed specifically to demonstrate the MOOC tablet application, match and thus allow access to the Cloud-stored data in a secured ID access transaction.

MOOC TAB business value chain
ITEA is a transnational and industry-driven R&D&I programme in the domain of software innovation. ITEA is a EUREKA Cluster programme, enabling a global and knowledgeable community of large industry, SMEs, start-ups, academia and customer organisations, to collaborate in funded projects that turn innovative ideas into new businesses, jobs, economic growth and benefits for society.

https://itea3.org

MAJOR PROJECT OUTCOMES

Dissemination
- More than 10 publications targeting standard bodies (e.g. IDPF, W3C, ECMA, NFC forum, AFNOR, ANSSI)
- Two main presentations of the MOOCTAB platform in a French and in a Turkish university

Exploitation (so far)
- NFC Controller to establish a contactless communication and Embedded Secure Element to encrypt/decrypt data
- Content creation tool: generic module for course content creation/editing and enrichment with adaptability of popular learning management systems and education standards
- SPOC Pro: Learning Management System with enhanced experience for professionals
- eID OS for secure documents: eID application enabling electronic Identification and Digital Signature compliant with the latest version of international standards with Match-On-Card application enabling biometric finger print verification
- OpenEdX database synchroniser: synchronisation of databases between a central OpenEdX server and a local OpenEdX server
- TopicQuiz: automatic MCQ (Multiple Choice Question) generator
- Trusted Execution Environment (TEE) activation: ensures integrity of trusted applications along with confidentiality of their assets
- Virtual Lab: a virtual machine packaged with software needed for practical works during courses
- Studio: video transcription, workflow for usage of Google Drive as a Digital Assets Management for courses contributors, PDF to LMS converter
- VideoSecure: light Digital Right Management on video streaming for content protection
- Offline courses: the platform delivers the courses as Epub files for a complete mobile learning experience

ITEA is a transnational and industry-driven R&D&I programme in the domain of software innovation. ITEA is a EUREKA Cluster programme, enabling a global and knowledgeable community of large industry, SMEs, start-ups, academia and customer organisations, to collaborate in funded projects that turn innovative ideas into new businesses, jobs, economic growth and benefits for society.

https://itea3.org