Project acronym: FORGE

Project full title: "Forging Online Education through FIRE"

Grant agreement no: 610889

D6.1. Project Presentation and Project Website

Deliverable Editor: Alexander Mikroyannidis (The Open University)

Other Contributors: Johann M. Marquez Barja (Trinity College Dublin)

Reviewers: Christos Tranoris (University of Patras)

Document Identifier:	D6.1	Due Date:	30/11/2013
Version:	1.0	Submission date:	27/11/2013
State:	Final	Distribution level:	Public

Change Log

Version	Date	Amended by	Changes
0.1	18/11/2013	TCD	Initial version
0.2	25/11/2013	OU	Updated version
1.0	26/11/2013	OU	Updated version incorporating the comments from the internal review

Table of Contents

List of Figures

1   Executive Summary

This deliverable is associated with Work Package 6 on Dissemination. This report describes the project main goals, key issues, technical approach and public information to be shown on the FORGE related websites. Moreover, this report also describes the project website in terms of the technology used to develop it, its structure, content and maintenance.

2   FORGE-related information

2.1   About FORGE

Forging Online Education through FIRE (FORGE) is a project bringing the FIRE and eLearning worlds together. FORGE will align FIRE (Future Internet Research and Experimentation) with the ongoing education revolution. This project will specify development methodologies and best practices for offering FIRE experimentation facilities to learners and to the learning community in general, as shown in Figure 1. FORGE relates to communications and IT, as well as to other disciplines including the physical and social sciences. It will lead to a strong connection between the learning community and existing FIRE platforms and supporting tools.

Figure 1. FORGE role

The eLearning community will benefit from the use of very high performance facilities, provided as reusable learning solutions. Educators, content providers and students will acquire access to world-class facilities and use them to create and execute scientific experiments. The FIRE eLearning tools and services developed by FORGE, as well as the associated learning materials will be made available as Open Educational Resources (OERs), so that they can be reused and repurposed by the eLearning community for a variety of learning contexts. Finally, FIRE will benefit through the addition of an ever-growing set of FIRE-specific learning materials for an increasing number of FIRE-based students, leading to increased awareness and use. The openness and reusability of FIRE will be promoted to the eLearning community, thus leading to the development of new FIRE facilities and the extension of existing ones in order to address specific learning requirements.

Within the FORGE project we will:

- Study and develop new processes and approaches to online learning based on the integration of FIRE facilities and eLearning technologies.
- Inject into the higher education learning sphere the FIRE portfolio of facilities and tools.
- Introduce the learning community to the concepts of Experimentally Driven Research.
- Increase the overall accessibility and usability of FIRE facilities through the layering of how-to-use resources over the FIRE platforms.

2.2   Motivation and Vision

"There really is no limit to what teachers can do if they have the right resources. A decade from now, finding and using the best content and technology will be as natural as opening a book. Tablets and high-speed Internet access will be ubiquitous. Each student will have a learning map that helps chart their interests and learning path inside and outside the classroom. And the concept of the textbook will fade—replaced by easy online access to the best lectures and course materials available."
Bill Gates on Education 2.0 from http://www.thegatesnotes.com/Topics/Education/Education-2

As indicated by Bill Gates above there is a revolution occurring now in higher education. This is largely driven by the availability of high quality online materials, also known as Open Educational Resources (OERs). OERs can be described as "teaching, learning and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use or repurposing by others depending on which Creative Commons license is used" (Atkins et al., 2007). The emergence of OERs has greatly facilitated online education (eLearning) through the use and sharing of open and reusable learning resources on the Web. Learners and educators can now access, download, remix, and republish a wide variety of quality learning materials available through open services provided in the cloud.

The OER initiative has recently culminated in MOOCs (Massive Open Online Courses) delivered via providers such as Udacity[1], Coursera[2] and edX[3]. MOOCs have very quickly attracted large numbers of learners; for example over 400,000 students have registered within four months in edX[4]. Also, in the four years since the Open University started making course materials freely available in Apple's iTunes U, nearly 60 million downloads have been recorded worldwide[5]. More recently, the Open University established FutureLearn[6, 7] as the UK response to the emergence of MOOCs, in collaboration with premier British institutions, such as the British Library and the British Museum.

These initiatives have led to widespread publicity and also strategic dialogue in the education sector. The consensus within education is that after the Internet-induced revolutions in communication, business, entertainment, media, amongst others, it is now the turn of universities. Exactly where this revolution will lead is not yet known but some radical predictions have been made including the end of the need for university campuses[4], while milder future outlooks are discussing 'blended learning' (combination of traditional lectures with new digital interactive activities). The consensus is however that the way higher education students learn is about to change radically.

The Future Internet Research and Experimentation (FIRE[8]) initiative is intended to ensure that the European Internet Industry evolves towards a Future Internet containing European technology, services and values. Through the FIRE initiative and other similar regional and global initiatives a variety of facilities have been established to enable such experimentation.

---

[1] http://www.udacity.com/

[2] https://www.coursera.org/

[3] https://www.edx.org/

[4] http://www.guardian.co.uk/education/2012/nov/11/online-freelearning-end-of-university

[5] http://projects.kmi.open.ac.uk/itunesu/impact/

[6] http://www.futurelearn.com/

[7] http://www.bbc.co.uk/news/education-20697392

[8] http://cordis.europa.eu/fp7/ict/fire/

These facilities cover a plethora of different domains belonging to the Future Internet ecosystem, such as cloud computing platforms, wireless and sensor network testbeds, Software Defined Networking and OpenFlow facilities, infrastructures for High Performance Computing, Long Term Evolution (LTE) testbeds, smart cities and so on. However, the corresponding cost both for the establishment and operation of these infrastructures is not to be neglected. Hence optimal usage of the facilities is desired by its owners, a goal which in general is not yet achieved today. To increase the usage, several steps can be taken.

One approach is to raise the awareness of the facilities within communities that are less familiar with the FIRE initiative. Another is to use the infrastructure not only for research and development, but also for other activities such as teaching through a constructivist approach. This means that students would be enabled to take certain initiatives in their learning, by setting up and conducting scientific experiments based on FIRE. In this way, using FIRE facilities for teaching computer science topics or other scientific domains would not only increase the usage of the facilities, it would also raise FIRE awareness in the long term since the students/experimenters of today are the researchers of tomorrow. And if educational materials were available that actually enable new types/areas of experimentation through FIRE, this would further lower the threshold for experimenters to explore new facilities and technologies

2.3   Objectives

The overall objective of FORGE is to introduce the FIRE experimental facilities into the eLearning community, in order to promote the concept of experimentally driven research in education by using experiments as an interactive learning and training channel for both students and professionals by raising the accessibility and usability of FIRE facilities. The goal is to create an open FORGE community and ecosystem where educational resources, collaborative tools and proposed experiments are offered and contributed for free.
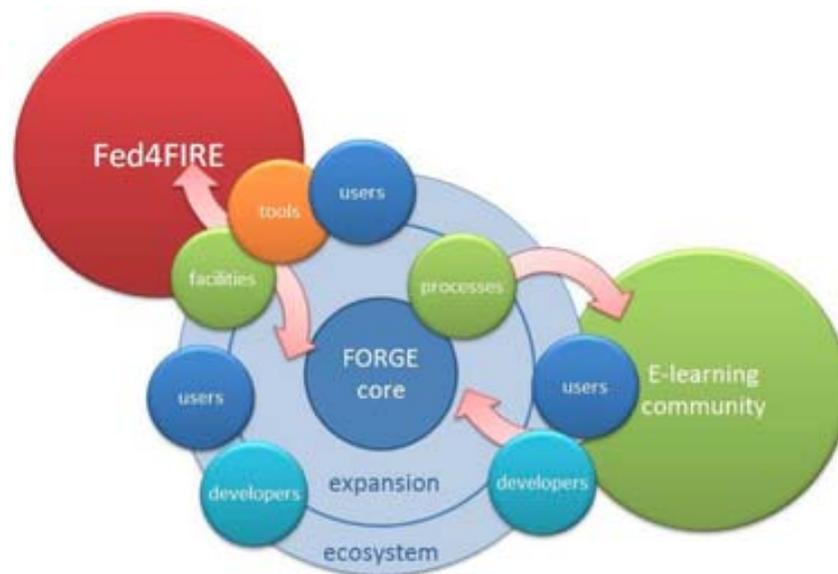
Figure 2. FORGE approach

FORGE follows the approach outlined in the Figure 2 to introduce the eLearning community to the FIRE experimental facilities and bridge the gap between these two areas. FORGE expects to create an environment for introducing the eLearning community to the experimentally driven research but also to act as a training facility for FIRE in general. For this, the FORGE core, which consists of the FORGE project partners, will initiate the process of developing a number of

prototype courses of which the final attainment level will also target skills related to the basic and advanced usage of FIRE facilities for creating experiments (next to content specific learning goals of the course such as e.g. understanding a certain communication protocol). The creation of these courses provides insight in new requirements that will be imposed on FIRE facilities on one hand and on the eLearning community on the other. Additionally, these prototype lab courses, which will be created within the FORGE project, will (a) serve as exemplars for the educational community (so they can have a look at how these example courses are made when creating their own course) and (b) also enhance the access of educationalists to the FIRE facilities (as the example courses explain how to use FIRE facilities). FORGE will act as a conduit facilitating the passing of lessons learned to the FIRE facility owners enabling them to enhance their offerings to provide support for educational courses.
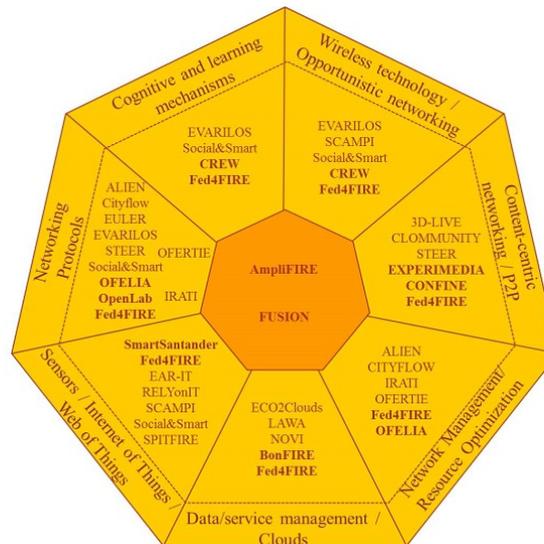
Figure 3. The FIRE projects portfolio

FIRE has invested significantly in the last few years in creating its federation. FIRE strives for a harmonization of tools and APIs to facilitate experimentation and the integration of heterogeneous resources around a single experiment under a single account and by using any experimentation tool that the end user wants. All this effort is currently led by FIRE's flagship project, Fed4FIRE (Integrated project, number 318389, funded by the European Commission through the 7th ICT-Framework Programme, 1 Oct. 2012 - 30 Sep. 2016). FORGE will build upon Fed4FIRE's leadership using the project as our main channel to the FIRE facilities (see Figure 3). FORGE will thus adopt Fed4FIRE's tools and proposed mechanisms to aid in our role as an intermediary between the learning community and the FIRE facilities and tools. More specifically, we will adopt the Authentication Authorization Identification mechanisms and the tooling and additionally the APIs targeting experimenters and facilities. FORGE will investigate if these mechanisms can be applied 'as is' or suggest extensions to our Fed4FIRE colleagues (as it is within Fed4FIRE's scope to collect requirements from the FIRE community). In some cases FORGE will also implement wrappers around Fed4FIRE's processes and mechanism in order to ease access to the learning community. For example there might be some fine-grained scheduling needs in FORGE that Fed4FIRE mechanisms do not take into account (e.g. limited time for a group of students to jointly complete a certain task). In such cases FORGE will develop the required mechanisms.

The FORGE core will create a set of processes, tools and widgets to facilitate the development of lab courses. The pilot prototype lab courses will generate requirements for learning tools along a number of dimensions including overall functionality and interaction qualities. Especially, during the integration phase with the Learning Management System (LMS) of Lab Course creators, a validation of the development tools will be carried out. Followed by the execution of the Lab Courses where the final validation of the whole FORGE process will be finalized.

As explained above, the FORGE core, driven by the requirements of the pilot prototype lab courses, will deliver a set of processes and tools to the learning community. To broaden the scope and the usage of the FORGE utilities, an expansion phase is planned by opening up the platform when starting the second half of the project by issuing an open call which will last for the rest of the project duration. We expect volunteers from the learning community and elsewhere, who want to exploit FIRE facilities for educational purposes, to contribute to the FORGE ecosystem. The project consortium will support these community-driven courses by implementing requested widgets, tools and APIs, to the best of its ability, considering its limited budget and resources.

3   The FORGE website

In the following sections, we will describe the technology used, the main content and features of the current FORGE website. Since the dissemination task of the project started from the 1st day of the project calendar, we quickly set the domain and website making known the project to be reachable for the general and specialized audience. Nevertheless, the website continuously will be developed and improved to offer new information throughout the duration of the project.

3.1   Domain and hosting

Following the trend of FIRE we have set the domain:

<div align="center">

www.ict-forge.eu

</div>

The hosting services are hired from a third-party service provider in Ireland. However, such provider is well known around Europe, having different offices and support in several cities within Europe.

3.2   Technical specifications

The website it is based on WordPress (http://wordpress.org), which is a popular open source Content Management System (CMS), used for building blogs and other web sites.

The hosting provider allows the website to be reached by IPv4 and IPv6 based networks, thus expanding the outreach of the website.

3.3   Structure and content

The website has a home page (also known as landing page) where the latest project news and highlighted content is shown (see Figure 4). Additionally, the home page provides a live feed of the latest tweets about the project and offers means to connect to our social network accounts on Twitter and LinkedIn.

The website offers public and private areas. At the private area, the members of the project can login to add/modify different content.

At the public information area, the webpage offers information about:

- Overview
    - Motivation and Vision
    - Objectives

    This section offers information related to the FORGE aims and goals.

- Consortium

    Every member (institutions) of the consortium is described at this section. Offering a link to their official websites.

- Documents

    The public domain documents, such as public deliverables, whitepapers, and technical reports, will be available in this section.

- Press

    A collection of press releases is displayed at this section.

- Contact

    This page offers a contact form that will submit an email to the main email account of the project: info@ict-forge.eu

- FIRE

    This section links to the FIRE website (http://www.ict-fire.eu/).

Figure 4. The home page of the FORGE website

3.4   Maintenance

As mentioned before, the website will be on continuous development throughout the project's duration, in order to improve the quality of information and to keep up to date any news related to FORGE and FIRE. The TCD partner is in charge of the website. However, any consortium member is allowed to contribute to the website by logging in with their account in the private area.