

FORGE NEWS

Forge Project Newsletter

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About FORGE

The FIRE (Future Internet Research and Experimentation) initiative is an European endeavor that promotes the creation of wide-scale federations of high-performance testbed and experimentation facilities for internet and network-related research. These facilities include wireless and sensor networks, SDNs, high performance computing,

"Welcome to our FORGE Newsletter!"

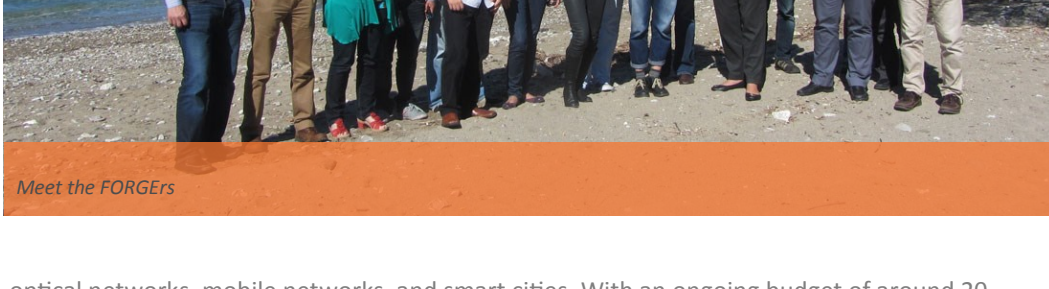
It is hard to believe that only a year has passed since our project started given all of the events that we've participated in and the extent of our results.

As you will read FORGE has the ambitious aim to transform FIRE into a learning resource – making world class experimental facilities available to students within eBooks. We have already developed a first interactive eBook available from our website and also components, described below, to enable developers to create their own FORGE-based educational resources.

Looking back over the year for me personally the highlight was the Future Internet Assembly in Athens where we led on the session Beyond MOOCs: the Future of Learning in the Future Internet and where the project won the Best Poster prize.

Several FIRE projects, National Research and Education Networks (such as BREN) and large companies (such as Cisco) have already expressed keen interest in our results. If you are at all excited by what you see below then I would urge you to please join us through our Open Call.

- Prof John Domingue



Meet the FORGEs

optical networks, mobile networks, and smart cities. With an ongoing budget of around 20 million Euros, a number of projects are funded to sustain the FIRE facilities and conduct large-scale internet research through them.

Forging Online Education through FIRE (FORGE) is a project bringing together the worlds of online education and FIRE. FORGE aligns FIRE with the ongoing education revolution for mutual benefit. In particular, this project is concerned with specifying development methodologies and best practices for offering FIRE experimentation facilities to learners, related both to communications and IT but also to other science, technology, engineering and mathematics (STEM) disciplines, leading to a strong connection between the learning community and existing FIRE platforms and supporting tools.

Moreover, FORGE is producing educational material reinforced with hands-on experimentation, enhanced by multimedia resources. The courses are free available in different formats, such as HTML, epub3 and Apple eBooks. Now it is easy to experiment on a real high-performance testbed from your laptop or tablet from any location in the world.

FORGEBox

FORGEBox is the platform that hosts all the necessary artifacts to enable a FIRE interactive course. It is an aggregation of services able to support all FORGE concepts and requirements, learning widgets, FIRE adapters and solve most of FIRE enabled courses identified challenges. FORGEBox is delivered as a middleware solution, deployed into institutions executing courses or into a Cloud infrastructure, bridging the interfaces between learning means and FIRE tools and facilities.

FORGEBox includes tools and services that target both Learners and Lab Course Designers. Learners can easily access FIRE facilities and perform small experiments through the web enabled interface of widgets. On the other hand lab course designers have a collection of tools to create the course content, but also easily prepare and configure the target FIRE testbed that supports the interactive course.

FORGE eBook

The FORGE eBook introduces a range of networking topics using FIRE testbeds. The materials provided in this book include course text and interactive multimedia, real equipment labs, remote access testbeds, as well as different types of learning activities.

The eBook features a collection of widgets that establish live connections to a variety of FIRE testbeds. These widgets enable learners to experiment with real network infrastructures without leaving the eBook. The widgets are presented to learners in the context of interactive exercises, thus offering reflection and self-assessment opportunities throughout the

FORGESTore

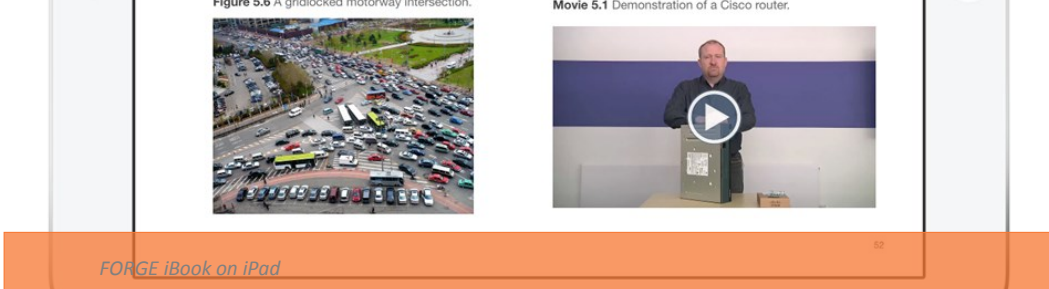
FORGESTore is the central repository that hosts any shared published artifacts such as Lab Courses, widgets and FIRE adapters to be used by the learning community and by other organizations hosting a FORGEBox instantiation. FORGEBox connects to the FORGESTore, so Lab course designers can share their courses, or upload widgets and FIRE adapters.



iBook. The eBook also offers various instructional videos demonstrating the use of network equipment. The following image shows a screenshot from the iPad, featuring an instructional video with a demonstration of a Cisco network router.

⇒ [Download](#) the eBook for the iPad and Mac OS 10.9 or later (size: 350MB).

⇒ [Watch](#) the teaser video.



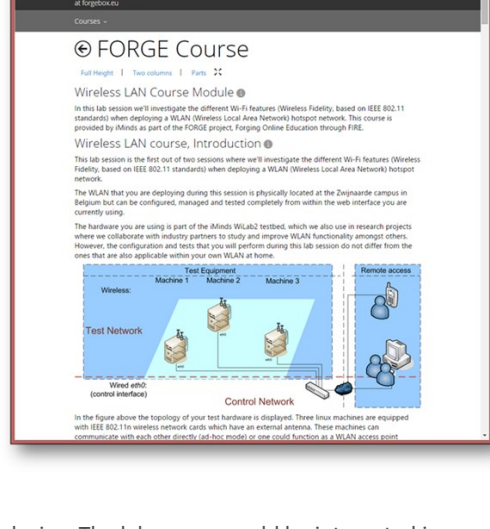
FORGE eBook on iPad

Wireless LAN Course

Description

The aim of this lab course is for students to better understand what is affecting the data throughput on a Wireless Local Area Network (WLAN) network, using Wi-Fi technology. By changing parameters in an easy-to-use interface (Learning Management System (LMS), eBook or web page) they can see the resulting throughput in a graph, based on the measurements that are being collected from a real live experiment at the FIRE facilities of iMinds.

The targeted students of this interactive lab course are undergraduate students studying for a Master degree in Computer Science Engineering. The course can firstly be used in the lab sessions within the course "Mobile & Broadband Access Networks" (link: <http://eotiegdms.ugent.be/2014/EN/studiefiches/ED12320.pdf>) at the Faculty of Engineering and Architecture at Ghent University (Belgium), as these widgets are (1) a more user friendly enhancement and (2) an advanced port to FIRE facilities of practical lab sessions that were taught earlier within this course. Secondly, these practical sessions were also copied to the "Wireless networks and communications systems" (link: <https://www.tcd.ie/Engineering/undergraduate/maiyear5/modules/5C2.pdf>) course at the Electrical and Electronic Engineering School at Trinity College Dublin (Ireland) where this course can be used as well. These two use cases however are not exclusive. The lab course could be integrated in any other wireless networking course. Students should have initial competences in communication networks and the underlying basic network protocols.



A few implementation details

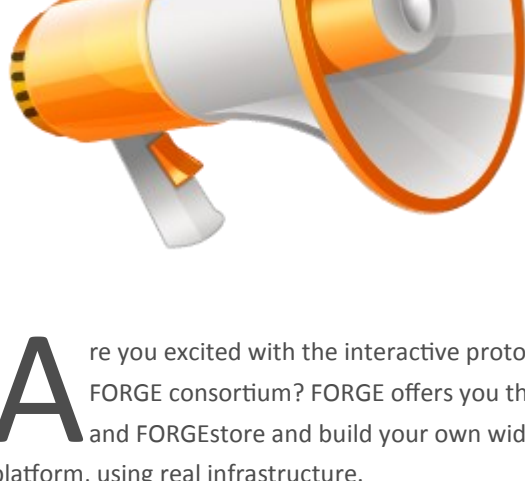
This iMinds prototype course is targeted at two testbeds of the iMinds' iLab.t facilities (link: <http://ilabt.iminds.be/>): the Virtual Wall and the w-iLab.t

testbed. The Virtual Wall consists of 300 multi-core servers and the w-iLab.t testbed has amongst others 60 wireless nodes at fixed locations and 15 mobile nodes. When running the iMinds prototype course, one of the servers at the Virtual Wall is dynamically selected and configured, via the Sliced-based Federation Architecture (SFA), to serve as a web server. This web server commands the three actual wireless experimentation nodes via the cControl and Management Framework (OMF). These wireless nodes reside within the w-iLab.t testbed and are also dynamically configured.

While this course is optimized for the iMinds' iLab.t facilities, the architecture and its implementation are developed in such a way that the course can (relatively) easily be ported to another FIRE facility with wireless nodes and with another wireless technology. The scripts and procedures that are facility dependent are separated from the general logic whenever possible.

Availability

The latest version of this course is available as a responsive website (link: <http://forge.test.iminds.be/wlan/>) for laptops, tablets, smartphones etc. It can also be accessed as an online course via [forgebox.eu](http://www.forgebox.eu/fb/preview_course.php?course_id=11) (link: http://www.forgebox.eu/fb/preview_course.php?course_id=11) as an eBook in the ePub3 format (link: http://www.forgebox.eu/fb/epub_projects.kmi.open.ac.uk/forge/download/FORGE.iBooks) and as a dedicated chapter in the FORGE eBook (link: http://www.forgebox.eu/fb/epub_projects.kmi.open.ac.uk/forge/download/FORGE.iBooks). It is furthermore also being implemented in the LMS of Ghent University (called 'Minerva', a Dokeos based system).



Open Call

Opening the FORGE platform - Build your own interactive course for free!

Are you excited with the interactive prototype courses that have been developed by the FORGE consortium? FORGE offers you the opportunity to experiment with FORGEBox and FORGESTore and build your own widgets and interactive courses over the project's platform, using real infrastructure.

To that end, we will soon release an open call for anyone interested to contribute or use the FORGE methodologies and tools together with FIRE facilities and world class computing resources. Within the call, FORGE will solicit proposals for the development of experiment-driven courses providing also opportunities for educational institutions to include these innovative courses to their curricula. All FORGE tools, processes and the platform will be open and available to the community, potential users and contributors. FORGE will act as a conduit facilitating the passing of lessons learnt to the FIRE facility owners, so that both the educational and FIRE communities will be engaged and benefit from the initiative.

By participating, you will be entitled to free access to the FORGE tools and processes and guaranteed support by the FORGE consortium covering guided training and technical assistance. Moreover, cloud infrastructure to build your courses is offered for free by GRNET, the Greek Research and Education Network.