How cooperative research is shaping the future internet

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The EU FELIX (Federated Test-Beds for Large-Scale Infrastructure Experiments) project was launched in April 2013 with the aim of helping universities and research centres in the EU and Japan to test new network technologies. This will be achieved through the establishment of joint experimental platforms, which users in both regions of the world can request, monitor and manage.

FELIX aims to give future internet researchers the means to demonstrate new network technologies on a world-scale test-bed, and in April 2015 published a White Paper outlining the key opportunities that this offers. The project team is now working on creating an easily accessible experimental framework to satisfy the needs of both European and Japanese research communities, and to enable greater collaboration.

FELIX is one of six current EU-Japan research partnership projects focused on ensuring that networks are adequately equipped to deal with the global explosion in internet usage. A huge rise in the use of mobile devices and content, server virtualisation and the advent of cloud services are just some of the trends driving networking industries and governments to re-examine traditional network architecture.

The key problem is that big data is growing faster than networks' capacity to carry it. The internet now performs thousands of tasks – from online banking to tsunami monitoring – with 1.7 million billion bytes of data generated globally every minute. While data traffic volumes doubled between early 2012 and early 2013, they are expected to grow 12-fold by 2018.

This is why both the EU and Japan are working to adapt their internet architectures in order to increase network efficiency, and Europe has to date invested hundreds of millions of euros in researching the future internet.

The point of FELIX is to enable new network architecture to be trialled and tested at scale. FELIX began by investigating emerging technologies and Software Defined Networking (SDN) control frameworks in order to assess the practical applicability of the project. SDN is a dynamic, manageable and cost-effective approach to computer networking that decouples network control and forwarding functions.

This means that network control becomes directly programmable and the underlying infrastructure can be abstracted from applications and network services. Some SDN frameworks include Open Grid Forum's NSI and OFELIA OCF.

Through building a framework based on SDN, the FELIX project will establish future internet experimental platforms in both Europe and

Japan interconnected by high speed dynamic research networks. Project developments will then be demonstrated at influential international events in Europe and Japan, helping to promote the unique capabilities of this new framework and stimulate greater use of this experimental facility in both regions.

It is expected that the project, due for completion in March 2016, will also enable and encourage closer and more extensive bilateral cooperation in future research, and help to strengthen the participation of both EU and Japanese communities in increasingly important global collaborations. The ever growing demand for network capacity means that such research is more urgent than ever.

More information: For further information please visit FELIX: www.ict-felix.eu/

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