



This is an archive website with information on CERN openlab's fourth and fifth three-year phases (2012-2017)

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## **ESR 3 Position: High Speed Networking** <sup>[1]</sup>

### **Do you want to work on next-generation networks at CERN and at Intel?**

ICE-DIP <sup>[2]</sup> is the Intel-CERN European Doctorate Industrial Program, a Marie Curie Actions project within the European Union's 7th Framework Programme. For its newly opened research posts, ICE-DIP <sup>[2]</sup> is seeking excellent candidates in the areas of engineering and computer science to undertake doctoral training.

### **The Challenge**

CERN is the European Organization for Nuclear Research ? a world-wide particle physics laboratory in Geneva, Switzerland and home to the largest machine ever built by man, the Large Hadron Collider (LHC). Every year, the four LHC experiments collect over 25 petabytes of data. These collaborations are now planning upgrades, in particular to their data acquisition systems, which will increase data rates by up to two orders of magnitude within several years ? but computing facilities able to handle such amounts of data do not exist yet.

### **How can you help?**

If you're an enthusiastic and talented student or young professional thinking of a doctorate, you can make a difference. If successful, you will be offered a CERN Fellowship contract with a maximum duration of 3 years.

In this project you will work in the area of high speed networking for the data acquisition systems of the LHC experiments. The expected result is a working model of the network(s) which should adapt to bursty traffic without losing packets. You should analyse new

technologies and protocols, which are aimed at very fast, but reliable transport even in congested conditions, e.g. ?Data Centre Bridging (DCB)?, as well as higher level protocols, e.g., variants of TCP. Based on this research you will use simulations to study the requirements of the four LHC experiments and design solutions. Subsequently you will implement and test these solutions on real hardware in the labs and in the experimental environment.

You will be registered on the structured PhD programme at the National University of Ireland Maynooth, with fees covered for the first three years. Your academic supervisor will oversee the academic aspects of your work necessary for you to obtain your PhD degree.

## Further information and requirements

You need not have graduated yet, but if you have, your graduation should have occurred after September 1st 2009. All our posts offer a competitive remuneration package and are open to EU and non-EU nationals alike.

Scientific and technical skills required:

- Master?s-level background in computing/telecommunication
- Good knowledge of:
  - modern PC platform architecture
  - networking protocols and stacks
  - network management/configuration systems/software
  - networking hardware
  - tools to generate and analyse high speed traffic
- Strong programming skills in Linux
- Modelling and optimization skills and experience with data acquisition systems are welcome

The behavioural competencies you will need to demonstrate for this post are:

- Open mind with a hunger for science and a desire to enter a doctoral program.
- Demonstrating Flexibility: Demonstrating a willingness to accept changing circumstances; supporting initiatives for change.
- Learning and Sharing Knowledge: Keeping up-to-date with developments in own field of expertise and readily absorbing new information.
- Working in Teams: Working well in groups and readily fitting into a team; participating fully and taking an active role in team activities.
- Achieving Results: Having a structured and organised approach towards work; being able to set priorities and plan tasks with results in mind.
- Managing Self: Working well autonomously; taking on activities and tasks without prompting.
- Willingness to travel ? mobility is a key part of the Marie Curie Actions and you will spend approximately 50% of your appointment away from CERN. You will stay at CERN, in Ireland and in Poland over the course of the project, and are expected to participate in international conferences.

The language competencies required are:

- Good knowledge of English - both oral and written - is mandatory. Applicants whose first language is not English will be required to provide evidence of competency at IELTS 6.5 or equivalent (e.g. CAE, CPE).

Go to [www.cern.ch/jobs](http://www.cern.ch/jobs) [3] to apply - make sure to specify your priorities in the application if you apply for multiple postings. Should you have questions, please send them by e-mail to [icedip.jobs@cern.ch](mailto:icedip.jobs@cern.ch) (inquiries only - emailed job applications will be discarded). Deadline to apply: 31 May 2013.

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[2] <http://test-static-05.web.cern.ch/ice-dip>

[3] [https://ert.cern.ch/browse\\_www/wd\\_portal.show\\_job?p\\_web\\_site\\_id=1&p\\_web\\_page\\_id=10773](https://ert.cern.ch/browse_www/wd_portal.show_job?p_web_site_id=1&p_web_page_id=10773)