

## ***Junior Researcher – Design of Next Generation Broadband Networks***

### **Function description**

- You are conducting research on modern and future network technologies (IP, optical networks, carrier-grade Ethernet, possibly linked with wireless users) in the framework of European-level and national research projects.
- You are analysing the current network technologies thoroughly and you are developing new network algorithms and concepts, e.g. on recovery mechanisms, QoS guarantees, Future Internet architectures to support future services and user types.
- You are building up hands-on experience by implementing these network concepts and by evaluating through emulation on a large testbed or through detailed simulations.
- Depending on your own interests and motivation, this research can lead to a PhD.

### **Profile**

- You have a Master's degree in Computer Science, Informatics or Electronics. You are acquainted with the Java or C++ programming language. Experience and a strong interest in existing or new network technologies are a plus.
- You are able to plan and carry out your tasks in an independent way. You have strong analytical skills to interpret the obtained research results.
- You are a responsible, communicative and flexible person.
- You are a team player.
- You respect the predetermined milestones in research projects.
- Your English is fluent, both speaking and writing.

## ***INTEC Broadband Communication Networks (IBCN) research group***

The **INTEC Broadband Communication Networks** research group ([www.ibcn.intec.ugent.be](http://www.ibcn.intec.ugent.be)) is a leading communication networks and software research group based in Ghent, Belgium, belonging both to the Ghent University (UGent) and IBBT.

**Ghent University**, abbreviated to UGent ([www.ugent.be](http://www.ugent.be)), is one of the major universities in the Dutch-speaking region of Belgium, and was founded in 1817. Over 130 faculty departments, divided over 11 faculties, offer high-quality courses in every one of their scientific disciplines, each inspired by innovative research. Today Ghent University attracts over 30,000 students, with a foreign student population of over 1,100 EU citizens and some 1,000 students from non-EU countries. At the 2007 academic ranking of top 500 World Universities UGent scores 125th place, and 39th in the European ranking, as first of the Belgian Universities<sup>1</sup>. According to the Scientist UGent scores 6th best place to work in Academia outside US in 2007<sup>2</sup>. The INTEC Broadband Communication Networks research group (IBCN) belongs to the Department of Information Technology (INTEC) in the Engineering faculty of UGent.

**IBBT**, the Interdisciplinary institute for BroadBand Technology ([www.ibbt.be](http://www.ibbt.be)), is an internationally recognized multidisciplinary ICT research centre (looking at technological, legal, business and sociological aspects) and enables accelerated development and exploitation of new ICT products and services in strategic sectors in Flanders, the Dutch-speaking part of Belgium. It has over 500 researchers and staff.

**IBCN** was established in 1992 and currently counts around 100 members, including 10 professors and 9 post-docs. IBCN's current research scope extends from networks to applications, and covers complex

<sup>1</sup> [ed.sjtu.edu.cn/rank/2007/ARWU2007TOP500list.htm](http://ed.sjtu.edu.cn/rank/2007/ARWU2007TOP500list.htm)

<sup>2</sup> [www.the-scientist.com/2007/11/1/61/1/](http://www.the-scientist.com/2007/11/1/61/1/)

network architectures and protocols; emerging mobile and wireless networks; and innovative service delivery architectures & software applications. In this range of research domains IBCN combines theoretical top-down research and development with validation, experimentation and proof-of-concept. The group has participated in numerous European Research Projects in the ACTS and IST-framework and is currently involved in several ICT FP7 projects. IBCN is frequently partnering with local ICT industry on a wide range of research and development topics. The IBCN group also takes part in national and Flemish long term research programs. The research has resulted in 35 PhDs and more than 550 publications in international journals and conference proceedings. Research also resulted in 3 spin-off companies.

The IBCN group is largely responsible for the education in networking and software engineering in the Faculty of Engineering of the Ghent University.

### ***IBBT-IBCN infrastructure and test facilities***

The IBCN research group is heavily involved in **iLab.t Technology Center** (Figure 1), the technical part of the experimental infrastructure of IBBT. iLab.t is used for support in terms of validation, experimentation and proof-of-concept of the research activities within our projects.



iLab.t has equipment and infrastructure covering access and aggregation, file-based production facilities, video testing, grid computing, cable access, and physical layer facilities, as well as an operational GRID network.

Another facility includes the **Virtual Wall** (Figure 2), which is a generic test environment for advanced network and service evaluation. It has more than 100 nodes (PC based, 4x1 Gb/s interfaces) interconnected via Gb/s VLAN Ethernet switches and a display wall (e.g. 20 monitors for experiment visualization). The nodes can have several functionalities, like terminal, server, network node, impairment node. They can be connected to test boxes for wireless terminals, generic test equipment,

simulation nodes (for combined emulation/simulation), ... The Virtual Wall features FAI (Full Automatic Install) for fast context switching (e.g. 1 week experiments), remote access, ...



iLab.t contains an extensive set of user devices, network technologies, and advanced testing and measurement equipment, as well as adequate connectivity. The floor space covers around 500m<sup>2</sup>, with approx. 80 racks, or 3300 units. There are 550+ Linux nodes, and various technologies like IP, Ethernet and DSL are used. The iLab.t Technology Center can be accessed externally through remote login facilities and this under policy conditions.

## **Contact**

IBCN web: [www.ibcn.intec.UGent.be](http://www.ibcn.intec.UGent.be)

IBBT web: [www.ibbt.be](http://www.ibbt.be)

Interested ? Please send your solicitation letter and C.V. to [Martine.Buysse@intec.UGent.be](mailto:Martine.Buysse@intec.UGent.be).