

# CETIC

Centre of Excellence in Information  
and Communication Technologies  
Your Connection to ICT Research

As an applied research centre in the field of ICT, CETIC's mission is to support economic development by transferring the results of the most innovative research in ICT to companies, particularly SMEs. CETIC helps companies integrate these technological breakthroughs into their products, processes and services, enabling them to innovate faster, save time and money and develop new markets. CETIC develops its expertise in key technologies, including Big Data, Cloud Computing, the Internet of Things, software quality, and trust and security of IT systems. These innovations are applied in domains of primary importance to society, such as health, smart mobility, energy and industry. This expertise is continuously supplemented through CETIC's active involvement in European and regional projects. CETIC is located on the Aeropole of Charleroi, in the Walloon region, Belgium.

## 2013 AT A GLANCE

**C**hange was a major keyword of 2013 for CETIC, with a change of director which saw Simon Alexandre handing on the baton after successfully leading the development of CETIC over the last 5 years. A new president of the board of directors was also appointed at the end of the year: Bruno Schröder is already well known in the Walloon ICT ecosystem. As Technology Officer for Microsoft, he brings a strong worldwide vision on the future of ICT.

2013 was also the year in which two technology trends have reached the masses: Big Data and the Internet of Things. Beyond the buzz, what matters is the value these technologies will bring to end users and businesses, and CETIC has worked hard in collaboration with numerous actors in order to make things concrete and identify the opportunities these trends will present for local ICT companies. The first results were made visible in December with a Big Data summit (Assises du Big Data) co-organised with the competitiveness clusters, INFOPOLE Cluster TIC and AWT.

CETIC is a major Walloon actor in the European research landscape, which is highly competitive, especially in ICT. CETIC was very successful in the last FP7 calls with 2 new projects starting in 2013: ASCETIC, in the field of GreenIT, and POLCA, on efficient use of computing systems, and two more starting in 2014.

A new European framework program for research is being launched – H2020 – and our goal is to further develop the role of CETIC as a bridge between the R&D activities of major European players and local companies.

Establishing fruitful collaborations is more than ever at the root of our actions. Throughout the year, CETIC's experts have participated in numerous events (competitiveness clusters, FeWeb, BetaGroup, CCI, Coworking spaces, etc), leveraging their innovation perspectives and the daily practice of the business actors. New approaches and methods for applied innovation are also being developed, and via Creative Wallonia CETIC is establishing the first Living Labs of Wallonia.

Throughout 2014, the pace of change will certainly be kept up and all CETIC employees are deeply committed to embrace these changes, their motivation being to always serve our industrial partners better.

**Damien Hubaux**  
General Manager



For a convenient reading, this report is divided in 3 sections:  
the Facts and Figures, CETIC Expertise and our Project Portfolio.

## BOARD OF ADMINISTRATORS



- Mr Bernard Bolle, M-team
- Mr Giacomo Bonsignore, NRB
- Mr Serge Boucher, UMONS
- Mr Patrick Donnay, Haulogy
- Mr Jean-Luc Hainaut, UNAMUR
- Mr Benoît Hucq, Océ Software Laboratories Namur - **Vice-President**
- Mr Jean-Didier Legat, UCL
- Mr Benoît Macq, UCL
- Mr Roger Malchair, Evadix
- Mr Pierre Manneback, UMONS - **Treasurer and Secretary**
- Mr Manuel Pallage, NSI
- Mr Lucyan Papiernik, IGRETEC
- Mr Bruno Schröder, Microsoft - **President**
- Mr Philippe Toint, UNAMUR - **Vice-President**
- Mr Olivier Verbeke, idealy
- Mr Christian Verdonck, BizzDev
- Mr Pierre Villers, DGO6, is the observing member appointed from Wallonia on the Board of Administrators and in the General Assembly.
- Mr Damien Hubaux is the General Manager, appointed by the Board of Administrators.

## MEMBERS AND ORGANISATIONS

CETIC is a non-profit organisation (ASBL under Belgian law). Its General Assembly is composed as follows:

Five corporate bodies:

- Université catholique de Louvain (UCL), represented by Mr Benoît Macq,
- University of Namur (UNAMUR), represented by Mr Philippe Toint,
- University of Mons (UMONS), represented by Mr Serge Boucher,
- IGRETEC, represented by Mr Marc Debois,
- Agoria, the Federation for the Belgian Technology Industry, represented by Mr Thierry Castagne.

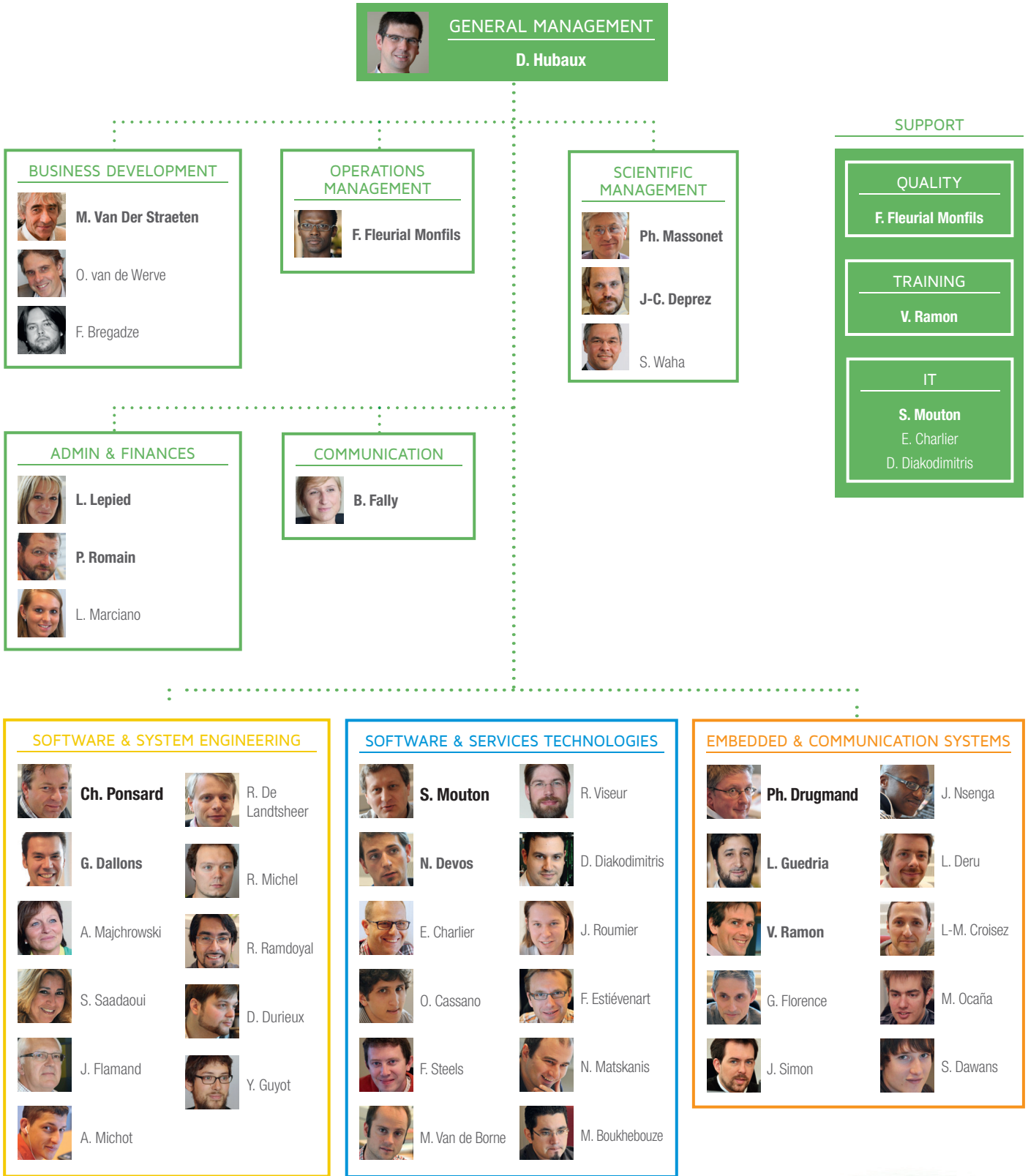
Fourteen individuals:

- Mr Simon Alexandre, The Factory
- Mr Bernard Bolle, M-team
- Mr Jean-Christophe Chapelle, UNAMUR
- Mr Patrick Donnay, Haulogy
- Mr Benoît Hucq, Océ Software Laboratories Namur
- Mr Jean-Didier Legat, Professor, UCL
- Mr Roger Malchair, Evadix
- Mr Philippe Fortemps, Professor, UMONS
- Mr Najj Habra, Professor, UNAMUR
- Mr Jean-Luc Hainaut, Professor, UNAMUR
- Mr Pierre Manneback, Professor, UMONS
- Mr Manuel Pallage, NSI
- Mr Daniel Tuytens, UMONS
- Mr Christian Verdonck, BizzDev

## TECHNICAL COMMITTEE

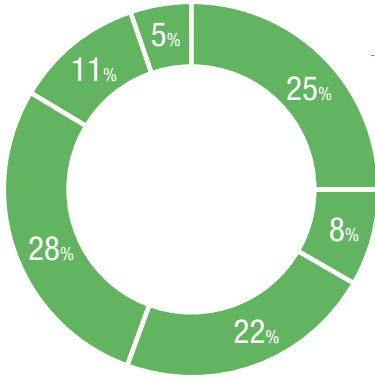
- Mr Thierry Bingen, Haulogy
- Mr Jean-Louis Bolsée, Thales Alenia Space
- Mr Patrick Crasson, BeNovate
- Mr Laurent Cuvelier, Thales Alenia Space
- Mr Michaël Demeyere, AGC
- Mr Jean-Christophe Deprez, Scientific Coordinator, CETIC
- Pascal Devincenzo, Open Engineering
- Mr Denis Flandre, UCL
- Mr Najj Habra, UNAMUR
- Mr Jean-Luc Hainaut, UNAMUR
- Mr Patrick Heymans, UNAMUR
- Mr Damien Hubaux, General Manager, CETIC
- Mr Benoît Hucq, Océ Software Laboratories
- Mr Christian Huvelle, Atos IT Solutions and Services
- Igor Klapka, FN Herstal
- Mr Pierre Leclercq, Microsoft Innovation Center
- Mr Jean-Didier Legat, UCL - **President**
- Mr Alain Leroy, Pentacle
- Mr Benoît Macq, UCL
- Mr Pierre Manneback, UMONS
- Mr Philippe Massonet, Scientific Coordinator, CETIC
- Mr Kim Mens, UCL
- Mr Yves Moulart, ST Microelectronics
- Mr Dominique Orban, REVER
- Mr Emmanuel Ottevaere, BizzDev
- Mr Frederic Peters, Thelis
- Mr Etienne Pourbaix, Skywin
- Mr Frédéric Robert, ULB
- Mr Bruno Schröder, Microsoft
- Mr Daniel Tuytens, UMONS
- Mr Luc Vandendorpe, UCL
- Mr Christian Vanhuffel, Agoria
- Mr Christian Verdonck, BizzDev
- Mr Axel van Lamsweerde, UCL

# HUMAN RESOURCES



## KEY FIGURES

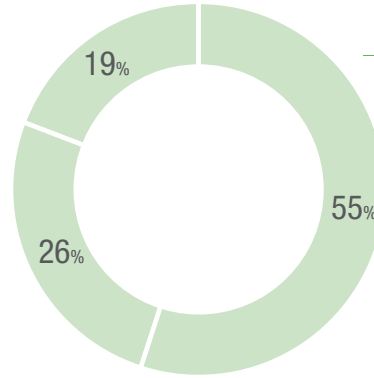
### SOURCE OF REVENUE



#### Source of revenue

- 25% Technology transfer
- 8% European framework programs
- 22% Convergence ERDF
- 28% Wallonia
- 11% Federal
- 5% Other

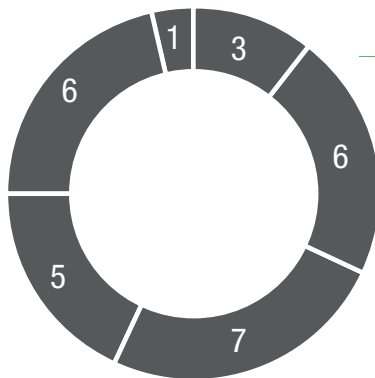
### TECHNOLOGY TRANSFER



#### Technology transfer

- 55% SME
- 26% GE
- 19% Public / Non-profit

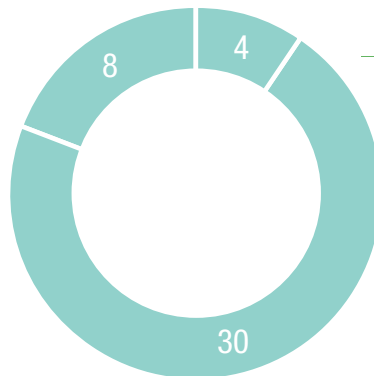
### R&D PROJECTS



#### Source of funding

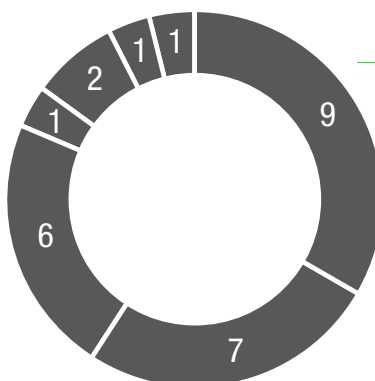
- 3 Convergence ERDF
- 6 Competitiveness clusters
- 7 DG06 Regional programs
- 5 DG06 International programs
- 6 European Framework programs
- 1 Other

### HUMAN RESOURCES



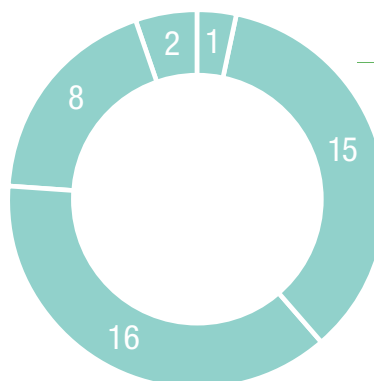
#### Education

- 4 Bachelor
- 30 Master/ Engineers
- 8 PhD



#### Primary application domain

- 9 ICT
- 7 Health
- 6 Transport
- 1 Energy
- 2 Industry
- 1 Aerospace
- 1 Telecommunications



#### Age

- 1 <25
- 15 25-34
- 16 35-44
- 8 45-54
- 2 >=55

« ICT » means methods, languages, generic technologies and software components, etc; other entries identify the use of ICT innovations in various sectors taking their specificities into account.

## DISSEMINATION



**600**  
FOLLOWERS

Twitter – more than 600 followers  
[twitter.com/cetic](https://twitter.com/cetic) (French)  
and [twitter.com/cetic\\_be](https://twitter.com/cetic_be) (English)



**580**  
FOLLOWERS

LinkedIn – 580 followers  
[linkedin.com/company/cetic](https://linkedin.com/company/cetic)



**21**  
BLOG ARTICLES

[www.cetic.be/blog](http://www.cetic.be/blog)



**3**  
NEWSLETTERS

CETIC published 3 newsletters  
(March 28, July 2, December 19)



**3**  
TECHNICAL WORKSHOPS

CETIC organised three technical workshops  
targeted to local SMEs, covering:

- Software Product Lines
- DevOps
- eHealth technological developments

[www.cetic.be/agenda?type=119](http://www.cetic.be/agenda?type=119)



**66**  
CONFERENCES,  
FAIRS AND EVENTS

CETIC's experts made contributions  
to 66 conferences, fairs and events  
in Belgium and throughout Europe  
[www.cetic.be/agenda](http://www.cetic.be/agenda)

## SCIENTIFIC PUBLICATIONS

- Annick Majchrowski, Christophe Ponsard, Mathieu Ocaña, Confrontation d'un modèle d'échange de données dosimétriques avec l'état des pratiques franco-belges, *Journal d'Ingénierie des Systèmes d'Information*, Hermès, Décembre 2013
- Nicolas Devos, Dimitri Durieux, Christophe Ponsard, Technical debt KPI for driving software quality evolution Feedback from an industrial survey, *BENEVOL 2013* (12th edition), Mons (Belgium), December 16-17, 2013
- Christophe PONSARD, Nicolas DEVOS, Dimitri DURIEUX, Félix BREGADZE, Managing technical debt in IT start-ups – an industrial survey, in *Proc. 25th International Conference on Software and System Engineering and their Applications (ICSSSEA)*, Telecom Paris-Tech, Paris, November 4-6, 2013
- C. Ponsard, J.C. Deprez, R. De Landtsheer, Manager Guidelines for the Industrial Deployment of Formal Methods, 18th International Workshop on Formal Methods for Industrial Critical Systems, Madrid, Spain, September 23-24, 2013
- Laurent Deru, Sebastien Dawans, Mathieu Ocaña, Bruno Quoitin and Olivier Bonaventure, "Redundant Border Routers for Mission-Critical 6LoWPAN Networks", in *Proceedings of the Seventh Workshop on Real-World Wireless Sensor Networks*, 2013
- Christophe Ponsard, Pascal Beaujeant, Jean Vanderdonck, Augmenting Accessibility Guidelines with User Ability Rationales, *IFIP Conference on Human-Computer Interaction (INTERACT)*, September 2013
- Ravi Ramdoyal, Christophe Ponsard, Myriam-Amina Derbali, Gabriel Schwanen, Isabelle Linden and Jean-Marie Jacquet, A Generic Workflow Metamodel to Support Resource-Aware Decision Making, 15th International Conference on Enterprise Information Systems, Angers (France), July 4-7, 2013
- Isabelle Linden, MyriamDerbali, Gabriel Schwanen, Jean-MarieJacquet, Ravi Ramdoyal, and Christophe Ponsard, Supporting unexpected situations in business process management using the BEM framework, *EWG-DSS Thessaloniki-2013 Workshop*, Greece, May 29-31, 2013
- Christophe Ponsard, Mathieu Ocaña, Annick Majchrowski, Confrontation d'un modèle d'échange de données dosimétriques avec l'état des pratiques franco-belges, *INFORSID 2013*, Paris, May 29-31, 2013
- Jean-Christophe Deprez, Christophe Ponsard, Renaud De Landtsheer, Evidence-based Assistance for the Adoption of Formal Methods in the Industry, book chapter of "Industrial deployment of system engineering methods providing high dependability and productivity", A. Romanovsky, M. Thomas (Eds), Springer, April 2013
- Renaud De Landtsheer, Christophe Ponsard, Oskar.cbls: an open source framework for constraint-based local search, 27th ORBEL Annual Meeting, Kortrijk, February 7-8, 2013

# PARTNERSHIPS AND STRUCTURED COLLABORATIONS

Collaborative work exchanges with key partners are at the heart of CETIC's activities. CETIC constantly aims to ensure that these exchanges are conducted in a sustainable manner in order to ensure that the expertise of all concerned will be mutually enriching and broadly shared through joint projects.



**Structured Collaborations**

CETIC has established numerous structured collaborations in order to better support the development of businesses. CETIC is able to leverage the impact of applied research by referring to specialised actors, and to identify partners for companies via several networks of enterprises. CETIC collaborates with local and international partners aiming at developing knowledge and competences in the field of ICT.



### Wal-Tech

Accord-Wallonie is changing its name to become Wal-Tech. This association incorporates Wallonia's 22 accredited research centres, including CETIC. Its role is to support technological innovation amongst Walloon enterprises, providing them with easy access to all the competencies of the Wal-Tech members.

<http://www.wal-tech.be/>

### Technology Guidance

To accelerate Wallonia's economic growth, Walloon SMEs in all sectors should integrate the latest Information and Communication Technologies into their products/services/operations whenever possible, as these technologies are key to competitiveness and productivity. These companies can be helped in the adoption process by Wallonia's ICT applied research centre. At CETIC, Technology Guidance consists in raising the awareness of companies, finding the best path toward the solution, and transferring knowledge and technology.

### Walloon Competitiveness Clusters

The Competitiveness Cluster groups together companies, training centres and public or private research units in leading sectors of the Walloon economy. ICT being cross-disciplinary, CETIC actively collaborates with all the Walloon Competitiveness Clusters in order to align its R&D directions with the industry needs.

<http://clusters.wallonie.be>

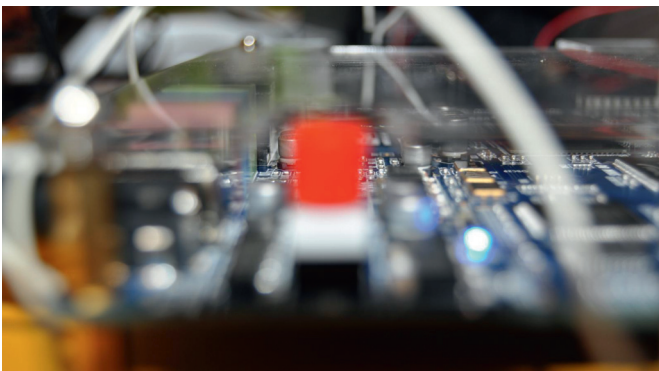


## ICT EQUIPMENT

To be effective, methodological research must be supported by state-of-the-art tools. CETIC provides access to these tools, and to the associated support services as well.

CETIC's ICT Equipment includes:

- a **Software engineering laboratory:**
  - Walloon SMEs active in IT development will have access to state-of-the-art tools and guidance on advanced tools for code analysis – targeting specific properties such as maintainability, security and reliability – as well as requirements engineering, business modelling, testing and effort estimation tools.



- a **Wireless laboratory** and a **Wireless Sensors Network testbed;**
  - The Wireless laboratory is equipped with software and hardware tools to support the prototyping and test of embedded wireless systems, encompassing the emerging technologies, especially those related to new standards introduced to increase throughput and range, reduce power consumption and optimise performance trade-offs that make the choice of an appropriate solution so difficult.
  - CETIC deployed a Wireless Sensor Network (WSN) testbed consisting of 25 modules deployed over a 500m2 office space, aiming at testing and debugging. The modules are using instances of CETIC's 6LBR project, which will allow to design a full scale Internet of Things solution from the Cloud to the sensor.
- a **Private Cloud,**
  - CETIC operates an advanced IT infrastructure designed for experimenting with Cloud Computing and other distributed software applications and middleware. The cluster is used for research projects and is also available for experimentation conducted by its partners and other enterprises.

# QUALITY POLICY

## ISO 9001 Certification



CETIC is ISO 9001 certified. The certified activities are the technology transfer activities, as well as the set-up and the implementation of R&D projects.

ISO 9001, an internationally recognised quality standard, details the principal compliance requirements for a company's quality management system (QMS). Meeting these requirements ensure the enforcement of the quality procedures set up by that company, constituting a proof of trust.

## CETIC Quality Policy

CETIC's mission is to improve the efficiency and competitiveness of Walloon companies by helping them integrate Information and Communication Technologies (ICT) into their products and services quickly and effectively.

From this perspective, and in order to ensure the satisfaction of all its partners (companies, universities and public authorities), CETIC is committed to:

- Developing cutting-edge expertise in ICT;
- Delivering innovative results with high added value for companies through continuous improvement of the technological innovation process;
- Ensuring objectivity and quality results, thanks to its independent position, international recognition, and strict adherence to ethical and scientific protocols;
- Ensuring the quality of its competencies and technical capabilities by conducting on-going training and appropriate recruitment;
- Promoting the development and satisfaction of its employees by promoting a healthy environment, which is conducive to creativity, professional achievement and teamwork.

CETIC also invests in the definition of quality norms related to ICT, such as ISO/IEC29110 (Systems and Software Life Cycle Profiles and Guidelines for Very Small Entities); and participates in related standardisation working groups such as ISO JTC1/SC7 (Software & System Engineering Standards).

# CETIC VALUES

## Customer

CETIC is the trusted third party when partnering with companies, helping them integrate the latest technologies designed to innovate and address new markets. CETIC employees are approachable and forthright, and regard the quality of their relationship with their partners as a point of honour. They take the time to understand the needs of their clients, and provide them with the solutions that best meet those needs.

## Excellence

CETIC applies its expertise to achieving the highest level of software quality to yield maximum benefit for both companies and partners. Thanks to the close ties among its research teams, CETIC maintains control of all phases of a project.

## Transfer

CETIC actively contributes to the development of Wallonia by supporting and stimulating innovation in the local economy, particularly its SMEs.

## Innovation

CETIC teams demonstrate initiative, creativity and curiosity in the research topics they select, using their complementary skills to ensure an innovative, high-quality result. Strong links with industry (including those maintained by the Technical Committee) ensure the relevance of the research projects they select.

## Collaboration

Thanks to its status as a private, non-profit organisation, CETIC is able to collaborate with industry and the public sector in total independence, within a framework of trust and in a spirit of cooperation without competition.

**“CETIC's values match its commitment to operational excellence, and enable this Centre of Excellence to achieve a high level of partner and customer satisfaction.”**