INSTITUTE
OF INFORMATICS
AND TELEMATICS

Presentation of activities

The Institute of Informatics and Telematics is part of the National Research Council and is based **in the CNR research area of Pisa**. It also has a secondary branch located on the campus of **the University of Calabria in Rende** (CS).

Pisa was the cradle of computer science studies in Italy: the first department of Computer Science and the first Italian electronic calculator were born here. From the site of CNUCE, the CNR institute from which the IIT was born, **Italy was connected to the Internet for the first time on April 30, 1986**.

Our mission today derives from this recent history: **to achieve excellence** in scientific research and technological innovation **in all areas of study concerning the Internet and its social and technological evolutions**, from **mobile** (5G) and **pervasive networks** to the **Internet of Things**, from **social network analysis** to **cybersecurity**, from **algorithmics** applied to the Internet to intelligent systems and emerging technologies related to **artificial intelligence** and **quantum computing**.

The Institute carries out activities of innovation and technological development, dedicated to the Internet and its applications and **manages the .it Registry, the registry of Italian domain names**.

The Institute participates, also with a coordinating role, in numerous regional, national and international research projects. It is part of two National Centers of Expertise on Industry 4.0, **Artes 4.0** and **Start 4.0**, and is the promoter of the **National Committee for Cybersecurity Research**, of the Tuscan Center of Excellence on Cybersecurity (C3T) and on Artificial Intelligence and Big Data.
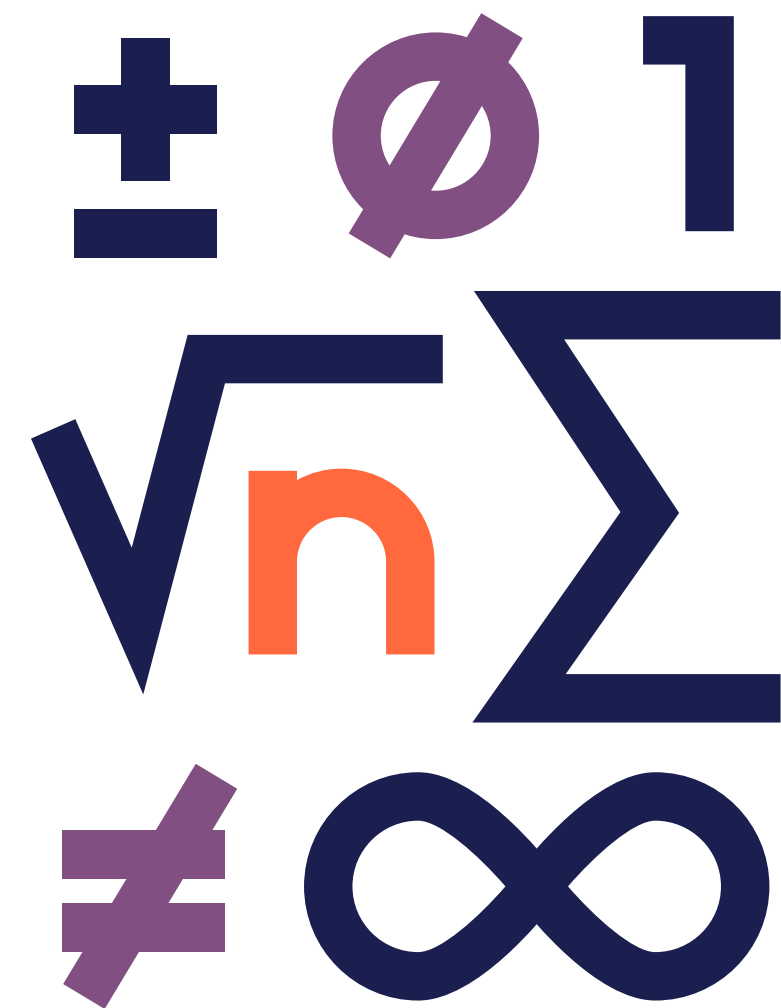
Since February 2022, IIT-CNR has also been part of the **IBM Quantum Network**.
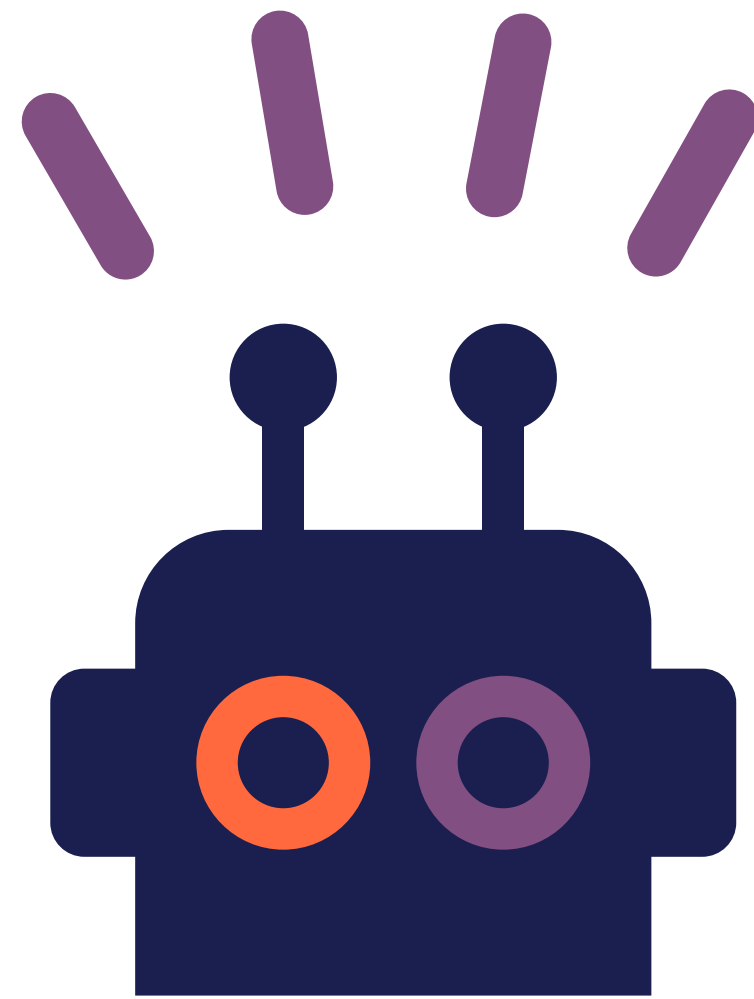
RESEARCH UNITS

ALGORITHMS AND COMPUTATIONAL MATHEMATICS

We define complex models and develops efficient algorithms for their resolution in three main areas: **computational biology**, **smart mobility** and **algorithmics for wireless networks**.

These lines of research, more related to application aspects, are accompanied by a line of basic research in the field of numerical linear algebra and by scientific dissemination activities.

CYBER INTELLIGENCE

We use **Big Data technologies** to develop innovative Web and Social Network data collection and analysis systems and we study **new machine learning models** (machine/deep learning) useful for combating crime and **improving the security of society**.

Our research activities embrace various application contexts relating to social media, including the **identification of botnets**, **fake news** and deep fake text, the analysis of content for **hate speech detection**, the identification of accounts of potentially dangerous subjects and the analysis of the polarization and manipulation of public debates.
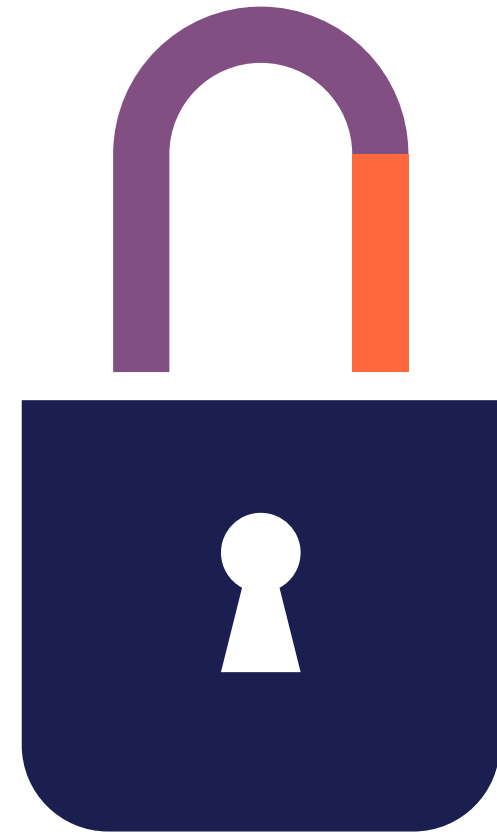
KNOWLEDGE ORGANIZATION SYSTEMS

Our activity is dedicated to **the management of the knowledge of information**. This includes the construction and development of **taxonomies**, **thesauri** and **classification systems** for indexing digital documents and the development of innovative methods for coding data.

The group is also the Italian reference point of **LOINC**® – Logical Observation Identifiers Names and Codes.

TRUST, SECURITY AND PRIVACY

We are a leading international research group, made up of about 25 people, divided into researchers, PhD students and developers.

The research unit's activity is focused on **the definition of models, methodologies and tools for the security of information and communications** in several application scenarios such as distributed systems, Cloud, mobile devices, Internet of Things, Automotive, Critical infrastructures, Social media and E-health.

UBIQUITOUS INTERNET

We develop new paradigms, algorithms and protocols for the **Next-Generation Internet**, dealing with the aspects that will make the Internet an "Internet of People" (IoP): an increasingly **pervasive network**, centered on users and their personal devices, seen as fundamental elements of its functioning.

The fields in which the research unit applies these solutions are manifold, from **smart cities** to **intelligent mobility systems**, and from **e-health** to **industry 4.0**.

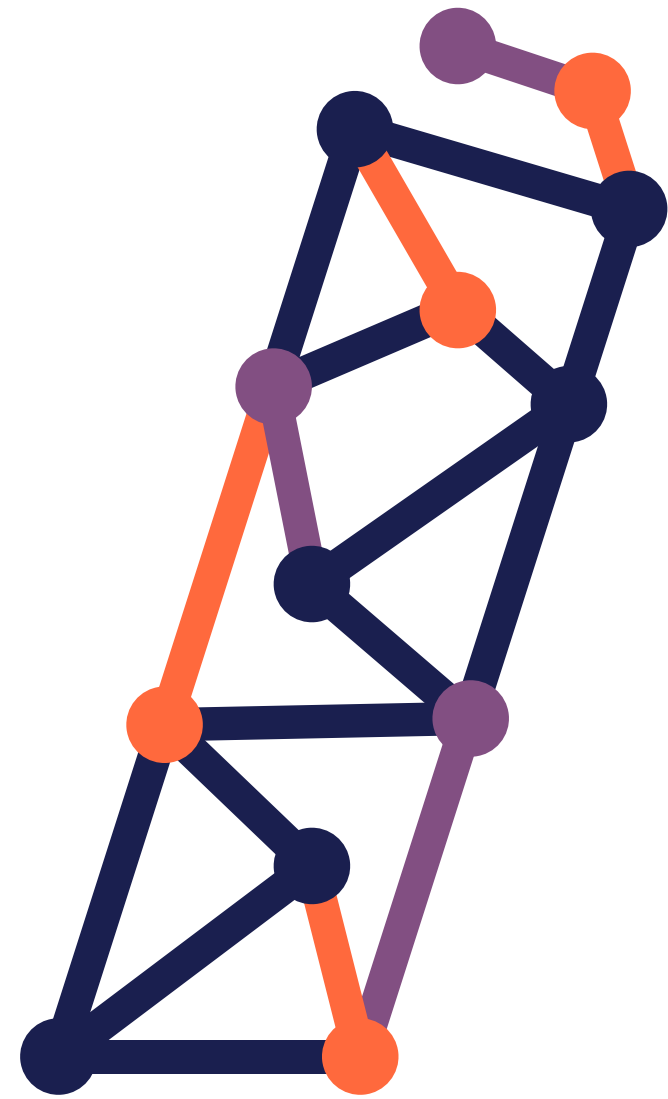# TECHNOLOGICAL
UNITS

INSTITUTE of INFORMATICS and TELEMATICS

HUMAN-CENTERED TECHNOLOGIES

We study, plan, develop and test innovative information systems designed according to the needs and behaviors of the people who interact with them.

The multidisciplinary expertise of the group origins from research in the field of **Human-Centered Computing** and focuses above all on **web technologies**. The unit includes also the Internet Governance studies and cooperation group.

COMPUTER AND COMMUNICATION NETWORKS

We deal with the management of the telematic and telephone infrastructure of the Pisa Research Area, the largest CNR research area in Italy, and we participate in numerous national projects carrying out research and technology transfer activities, in collaboration with the scientific community and Public Administration.

The personnel of the group collaborates with the Department of Information Engineering of the University of Pisa within the context of educational activities regarding **networking** and **cybersecurity issues**.
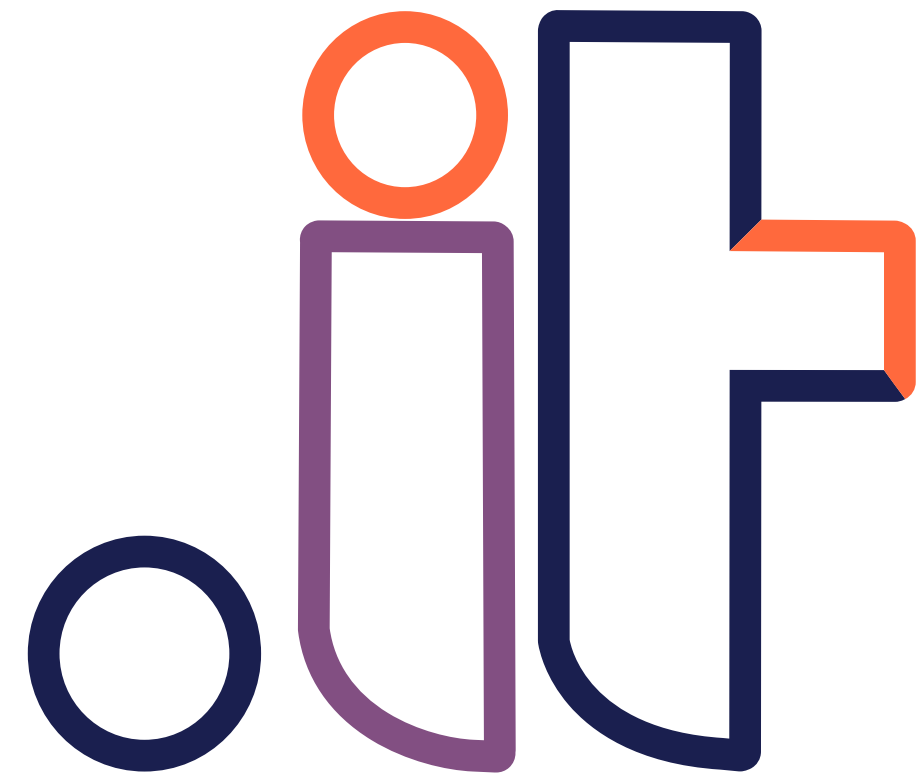
DIGITAL INNOVATION

We design and develop **innovative telematic applications** for the IIT-CNR, for the .it Registry and, more generally, for CNR users, Public Administration and private individuals: e-mail, the Domain Name System – DNS, content management, backup, electronic archiving and document flow management systems.

We also deal with the **technology transfer and training activities** for CNR personnel and Internet Service Providers and the promotion of **applied research projects** for the information society.

REGISTRO .IT

The .it Registry is responsible for **the management of Internet domains with the .it suffix**, for maintaining the database of registered domain names and for managing the primary .it nameserver. The Registry has operated within the IIT-CNR since December 1987, with the creation of **cnuce.cnr.it** (the first domain of the Italian network). This is by virtue of the delegation assigned to IIT by IANA (now ICANN).

The Head of the .it Registry is **Marco Conti**, director of IIT-CNR.

MASTERS

CYBERSECURITY MASTER 1st LEVEL MASTER DEGREE

Organized by IIT-CNR and Dipartimento di Ingegneria
dell'Informazione – Università degli Studi di Pisa

**INTERNET ECOSYSTEM: GOVERNANCE E DIRITTI
2nd LEVEL MASTER DEGREE**

Organized by IIT-CNR and Dipartimento di Giurisprudenza – Università degli Studi di Pisa

BIG DATA ANALYTICS & SOCIAL MINING 2nd LEVEL MASTER DEGREE

Organized by ISTI-CNR, IIT-CNR and Università di Pisa

PHD PROGRAMS

ARTIFICIAL INTELLIGENCE PHD PROGRAM

Organized by CNR, Università di Pisa, Politecnico di Torino, Università Campus Bio-Medico, Università di Napoli Federico II, Sapienza Università di Roma

SMART COMPUTING PHD PROGRAM

Organized by Università di Firenze, Università di Pisa, Università di Siena, CNR, Fondazione Bruno Kessler

INGEGNERIA DELL'INFORMAZIONE PHD PROGRAM

Organized by Università di Pisa

COMPUTER SCIENCE PHD PROGRAM

Organized by Università di Pisa

INSTITUTE of INFORMATICS and TELEMATICS

Thank you.