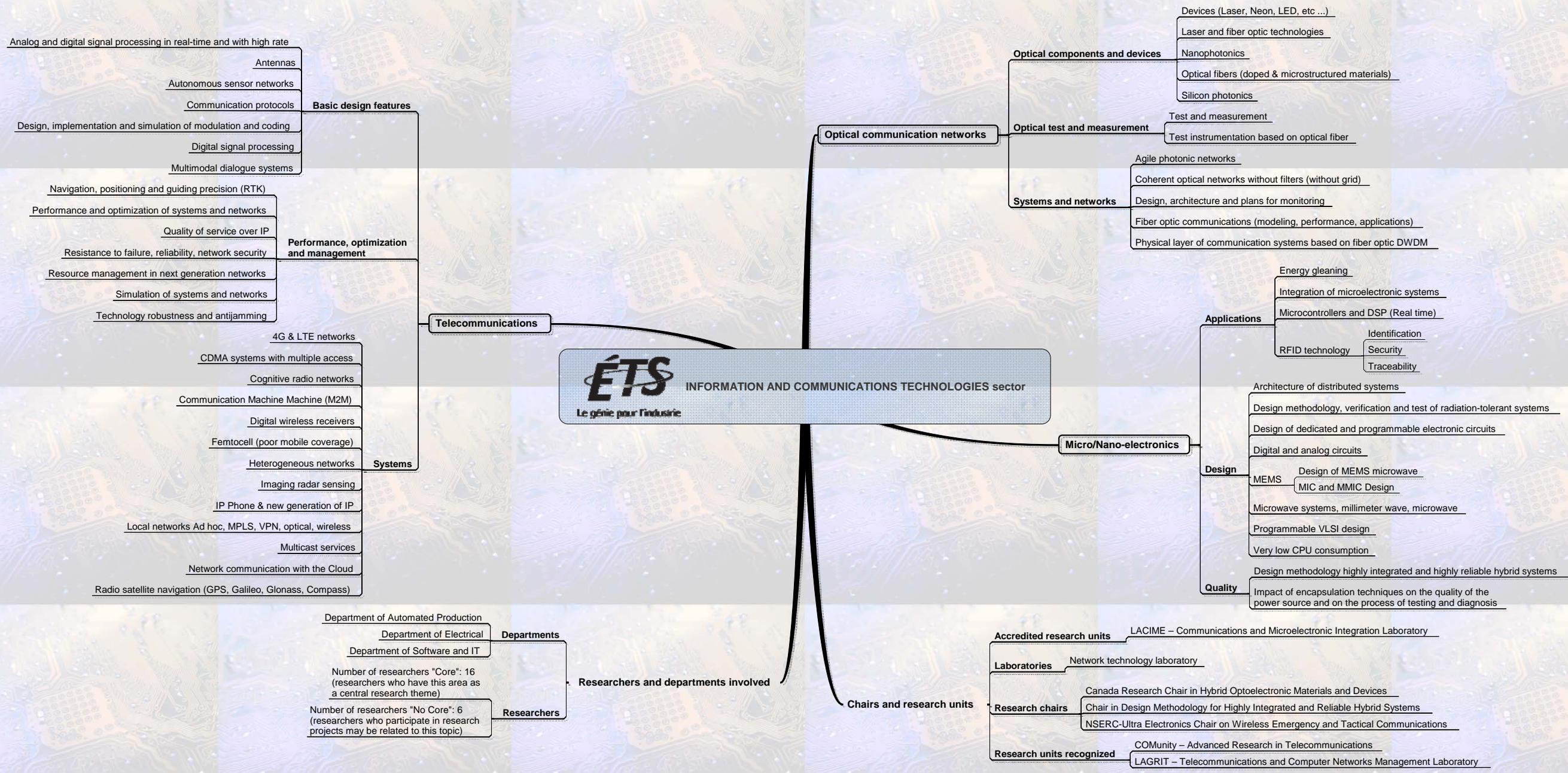
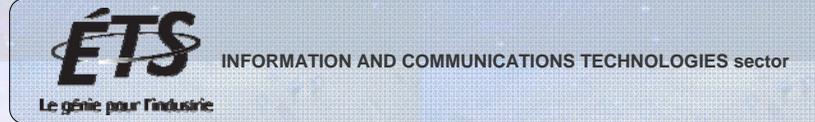


Research at ETS for Communication Technologies

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- Basic design features**
- Analog and digital signal processing in real-time and with high rate
 - Antennas
 - Autonomous sensor networks
 - Communication protocols
 - Design, implementation and simulation of modulation and coding
 - Digital signal processing
 - Multimodal dialogue systems
- Performance, optimization and management**
- Navigation, positioning and guiding precision (RTK)
 - Performance and optimization of systems and networks
 - Quality of service over IP
 - Resistance to failure, reliability, network security
 - Resource management in next generation networks
 - Simulation of systems and networks
 - Technology robustness and antijamming
- Systems**
- 4G & LTE networks
 - CDMA systems with multiple access
 - Cognitive radio networks
 - Communication Machine Machine (M2M)
 - Digital wireless receivers
 - Femtocell (poor mobile coverage)
 - Heterogeneous networks
 - Imaging radar sensing
 - IP Phone & new generation of IP
 - Local networks Ad hoc, MPLS, VPN, optical, wireless
 - Multicast services
 - Network communication with the Cloud
 - Radio satellite navigation (GPS, Galileo, Glonass, Compass)

- Optical components and devices**
- Devices (Laser, Neon, LED, etc ...)
 - Laser and fiber optic technologies
 - Nanophotonics
 - Optical fibers (doped & microstructured materials)
 - Silicon photonics
- Optical test and measurement**
- Test and measurement
 - Test instrumentation based on optical fiber
- Systems and networks**
- Agile photonic networks
 - Coherent optical networks without filters (without grid)
 - Design, architecture and plans for monitoring
 - Fiber optic communications (modeling, performance, applications)
 - Physical layer of communication systems based on fiber optic DWDM

- Applications**
- Energy cleaning
 - Integration of microelectronic systems
 - Microcontrollers and DSP (Real time)
 - RFID technology
 - Identification
 - Security
 - Traceability
- Design**
- Architecture of distributed systems
 - Design methodology, verification and test of radiation-tolerant systems
 - Design of dedicated and programmable electronic circuits
 - Digital and analog circuits
 - MEMS
 - Design of MEMS microwave
 - MIC and MMIC Design
 - Microwave systems, millimeter wave, microwave
 - Programmable VLSI design
 - Very low CPU consumption
- Quality**
- Design methodology highly integrated and highly reliable hybrid systems
 - Impact of encapsulation techniques on the quality of the power source and on the process of testing and diagnosis

- Departments**
- Department of Automated Production
 - Department of Electrical
 - Department of Software and IT
- Researchers and departments involved**
- Number of researchers "Core": 16 (researchers who have this area as a central research theme)
 - Number of researchers "No Core": 6 (researchers who participate in research projects may be related to this topic)

- Accredited research units**
- LACIME – Communications and Microelectronic Integration Laboratory
- Laboratories**
- Network technology laboratory
- Research chairs**
- Canada Research Chair in Hybrid Optoelectronic Materials and Devices
 - Chair in Design Methodology for Highly Integrated and Reliable Hybrid Systems
 - NSERC-Ultra Electronics Chair on Wireless Emergency and Tactical Communications
- Research units recognized**
- COMunity – Advanced Research in Telecommunications
 - LAGRIT – Telecommunications and Computer Networks Management Laboratory