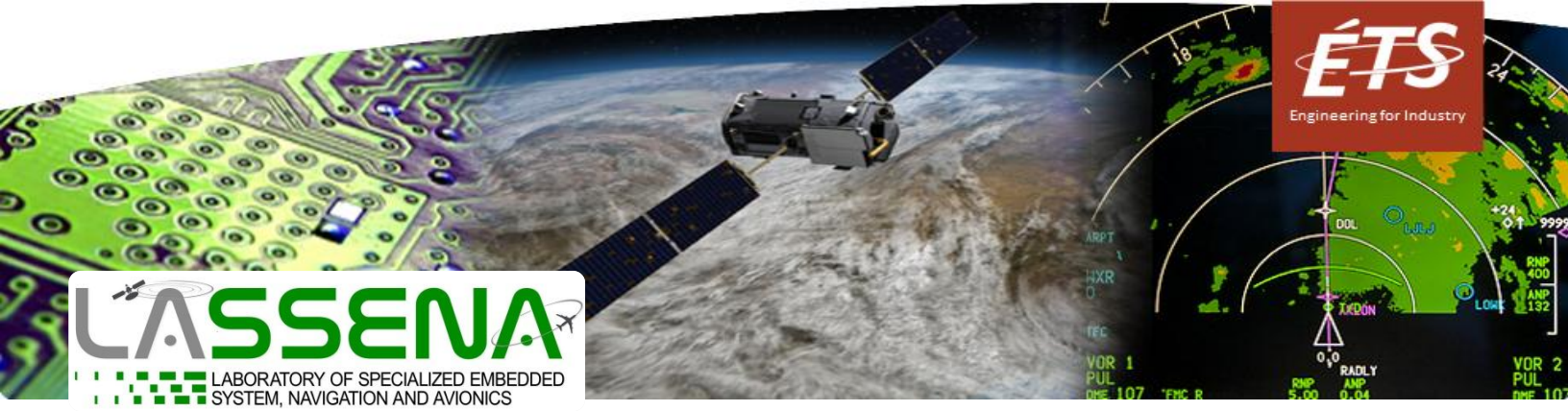
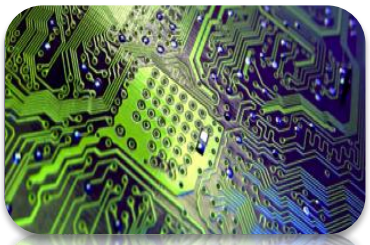


Origin and mission statement

The LASSENA is an evolution of the research group in navigation and avionics, the GRNA, started in 1999 by Professor Landry. Thus, LASSENA has over 13 years of research experience in the areas of navigation, avionics and embedded systems a global basis (team of students and researchers, publications, software and hardware infrastructure, dynamic website, etc.)..
The development comes under the banner LASSENA reinforce the notion of embedded systems to provide a clear and unique identity in order to meet the growing needs in this field. Note for example, the explosion of embedded systems in the various spheres of the community, including the potential of M2M (Machine-to-Machine), which attracts new customers and students of many companies in its areas of application. The research centers in navigation and avionics research activities are targeted, including embedded systems operating in the transport sector.
The vision of the LASSENA is first to promote its three main basic research through the training of highly qualified personnel, to advance scientific knowledge, develop integration projects with industry and foster a collaborative approach and multidisciplinary projects.

Research focus

Embedded system research



Part of the research issues related to embedded systems affects the following aspects:

- Complexity of parallel architectures
- Power calculation versus complexity of the algorithms
- Reduction of audit time (new methods)
- Optimization of test methods such as "Hardware-in-the-loop"
- Improve the efficient use of material resources
- Exploring the synergy between hardware and software architectures
- Reliability architectures

Navigation research

For its part, the research issues related to navigation technologies affect the following aspects:

- Algorithms sensitivity GPS receivers
- Integration Architectures for GNSS signals multistandard receivers
- Problem of positioning inside buildings
- Management of the frequency spectrum, interference in the radio band navigation
- Technologies of resistance to jamming and anti-jamming
- Inertial navigation sensors with low cost (low end)
- Data Fusion integration of GNSS and SBAS aid
- High Precision Navigation (RTK, multi-RTK, etc.).
- Treatment of GNSS signals wide band
- Etc.

Avionic research

Part of the research issues related to technology avionics affect the following aspects:

- Reduction Techniques "SWAP" (Space Weight and Power)
- Integration of components "Commercial-off-the-shelf" (COTS) systems
- Changing architectures: hardware redundancy to software redundancy
- Design methods of critical systems
- Accessibility / Data Management "glass-cockpit" Universal (flight test engineering)
- Management of human factors in modern cockpits
- Issues related to aerial surveillance systems (NextGen)
- Modeling and Simulation of Avionics Systems

Projects in progress examples

- Software radios for highly integrated system architecture (AVIO-505):
  The project plans to integrate multiple navigation and communication systems in a single hardware element.
- Vehicle Tracking and Accident Diagnostic System (VTADS:2012-2016):
  This project will help reduce the environmental footprint of motor vehicles in addition to having a significant positive impact on overall vehicle safety.
- Ultra Precise and Robust Attitude Target Determination (2012-2016):
  The principal objective of this project is to establish robust and precise attitude estimation using medium to high grade MEMS inertial sensor in an outdoor environment.
- Cognitive multi-antennas Receiver Architectures and Methods for Indoor-Denied Navigation:
  The principal objective is to overcome technologic limits related to Indoor-denied navigation independently and without extern architecture (Wifi, GSM, RFID etc.)
- Exploration of Integrated Modular Avionic Architecture of Avionics Systems (AVIO-509):
  The principal objective of this project is to explore methodologies of the design of IMA systems and to evaluate the impact of architectural design decisions.
- Attenuation of Satellite Communication RF Interference (AVIO-601) :
  The project aims to detect and mitigate interference from satellite communications.
- Indoor and Body Navigation (ibNav) :
  The objective of this project is to enable two types of navigation: body (capture the movements) and indoor navigation.
- Universal Glass Cockpit (UGC Project):
  The project aims to exploit the iPaD to develop a software based control panel for aircraft navigation.

Team

- Professor René Jr Landry
  Professor Landry is very active in the fields of signal processing applied to the design of digital receivers, design of electronic devices connected to satellite navigation and control non-destructive nuclear (EPRI). Professor Landry is also a commercial pilot with any class qualifications multi, IFR and seaplane.
- Professor Jean-François Boland
  Professor Boland is Director of the Master's program in Electrical Engineering. His areas of expertise are functional verification of digital systems, computer architecture, electronic design at the system level (ESL), Integrated Modular Avionics (IMA) and design methodologies.
- As well as many students and practical work-term students :
  17 Masters, 7 Practical Work-term Students, 2 researches professionals and 11 PhD.

Our partners

Contact

Prof. René Jr Landry

Director of LASSENA
Department of Electrical Engineering

1100 Rue Notre Dame West
Montréal, Québec, Canada, H3C 1K3
Office : (514) 396-8506
Fax : (514) 396-8684
Local : A-2645
E-mail : ReneJr.Landry@etsmtl.ca

Follow us on :

http://www.linkedin.com/company/laboratoire-de- recherche-lassena

http://twitter.com/lassenaets

Engineering for Industry