Research at GTL

Y. Berthelot, ME
S. McLaughlin, (ECE) - Director of Research at GTL

Research is **key to the mission** of GTL

- **Within GT:** Faculty issues (RPT)
  Graduate student issues: (GRA support)

- **Outside GT:** Hub for Research and Education
Current Status

- GTL Founded in 1988
- 1998: GTL-CNRS Telecom Lab formed (UMR-6603)
  - UMR CNRS - GTL-Univ. Franche-Comté, Besançon (FEMTO)
    - 20 CNRS staff and doctoral students
    - Optical telecommunications, secure networks
    - Educational programs (joint PhD/Doctorat w/ SUPELEC, UFC)
- 1997-present: ME faculty develop research ties with ENSAM/LPMM/U-Metz - UMR 7454)
  - Mechanics of Materials
  - Joint special problems, co-supervision of MS students (1 sem.)
  - Bi-annual research workshops
- 2005: GT-CNRS Unité Mixte Internationale (UMI-2898)
  - Formal recognition of ECE and ME research activities
Research Opportunities

- US funding agencies for GTL faculty and students? No difference between Atlanta and GTL. GTL is Georgia Tech!
- EU - 6th and 7th Framework. GTL is French!
- CNRS and the importance of UMR/UMI
- Industry (Taxe d’apprentissage; internships; “binômes” fellowships)
- NSF International Programs (2005: GT submitted 2.7 M$ proposal)
- Substantive collaborations with targeted EU partners
Research Vision and Goals

- Establishment of **GT International Research Center**
  - Located at two main hubs
    - Georgia Institute of Technology, Atlanta
    - Georgia Tech Lorraine, Metz, France
  - Funded by US, French, and EU partners
  - Eventually includes other US partner institutions

- Focus of the Center
  - Distributed learning and research
  - Mobility and outreach
  - Research expansion in several disciplines
    - Leverage current strengths
    - Expand in new areas
Distributed Learning and Research

- Enhance GTL as the international educational hub in Europe for the GT and other USA educational institutions.
  - Serve as the model for a truly immersive, international experience in engineering education, research, and culture.

- Develop infrastructure and conduct research as the leading international center in distributed learning and research.
  - Conduct research in a seamless, distributed network of researchers, students and faculty.
Mobility and Outreach

- Increase the mobility of researchers and educators between USA, France and other countries throughout Europe, beyond the one-on-one collaborations that may already exist.
  - Increase the mobility of undergraduate and graduate students between USA and Europe.
  - Increase the mobility of the top students from other continents to France and other countries throughout Europe.

- Engage corporations in international education and research experiences for undergraduate and graduate students.
New Thrust Area: Multifunctional Materials

GT Atlanta
- Mechanics of Materials
  McDowell, Cherkaoui, Lynch, Qu
  Zhou, Neu
- Acoustics/Vibrations/Ultrasonics
  Berthelot, Rogers, Qu
- Lighting, Energy, Photonics
  Ferguson, Kippelen, Citrin, Adibi

Université de Metz, ENSAM, and CNRS
- Physics and Mechanics of Materials
  Cherkaoui, Patoor, Berveiller, Daya,
  Benzineb, Molinari
  LPMM-UMR 7554 (CNRS)
  (also ENIM and INPL)

U Metz
- A Université de Metz,
  Supelec, and CNRS
  Ougazzaden

LMOPS-new UMR (CNRS)
Thrust Area: Secure Networks

GT Atlanta
- Physical layer
  *McLaughlin, Barry, Achtenhagen*
- Network layer
  *Akyildiz, Owen, Zegura*
- Computing
  *McCracken, Foley, DeMillo*

UFC
- FEMTO
  - Physical layer
    *Merolla, Larger, Hanna*

Other UMRs and Institutions
- ULB
- University of Porto
- ENST?
- LORIA?
Lorraine research priorities
Longer Term UMI Model
GTIRC Vision: Research Funding and Partnerships

GT International Research Center

- Research
- Distributed Research and Education
- Mobility and Outreach

- UMI
- EU
- NSF
- Industry

- Smart Materials
- Secure Networks
- Future thrust area
- Future thrust area
- …
Key Challenges

- Constant need to **network** with French/EU authorities to ensure **support and funding** of GTL activities.

- As number of students grows **need more faculty** attached to GTL: *permanent and visiting*
  - One ME hired and one ECE about to be hired
  - Need a workload model that matches Atlanta

- **Infrastructure**
  - **Space** for new faculty and research programs
  - **Video conference**
  - Associated **living arrangements** for visitors