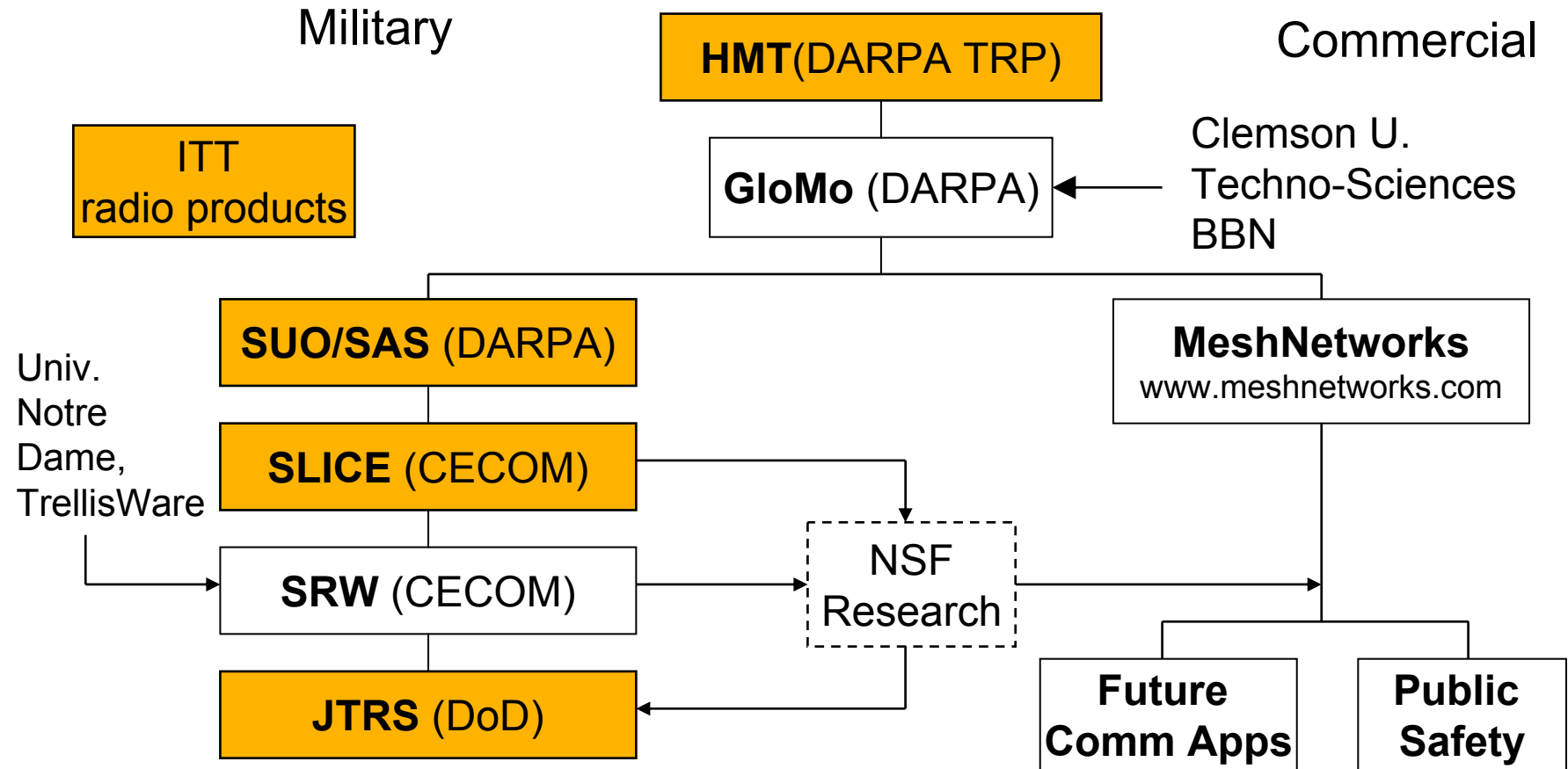


ITT Industries Research on Programmable Wireless Networking

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Dr. John H. Gass
ITT Industries Aerospace/Communications Division
260-451-6037
john.gass@itt.com

ITT Research Background



ITT Industries has a proven record of working with universities and commercial businesses to develop military and commercial wireless networks.

Research Interests

- Network and protocol architectures
 - High spectral efficiency
 - Low power consumption
 - Adaptability in dynamic environment
- Network control and management
 - Robust performance
 - Low overhead
 - Efficient multicast capability
 - Efficient management of large network
- Network extensibility
 - Multimedia traffic
 - Compatibility with other networks
 - Large-scale networks

Current Progress and Capabilities

- Research on software radios
 - DS Rake modems
 - LPI/LPD
 - Interference excision
 - Hierarchical routing
 - Geolocation without GPS
 - Software radio demonstrated under SUO/SAS program
 - JTRS SCA 2.2 compliant SLICE radio
- Extensive test facilities
 - Communication Verification Lab in Fort Wayne, IN (ITT/CECOM)
 - Battlefield Communications Lab in Clifton, NJ (ITT/CECOM)
 - Mobility Assessment Test & Integration Center (MATIC)
 - 70 miles west of Albuquerque, NM
 - Joint RDEC/Laguna Industries/ITT Test Facility

Collaboration with Universities

- Clemson U.--Adaptive transmission protocols
 - Link adaptation maximizes throughput on each link
 - Routing adaptation customizes network performance for different criteria
- U. Notre Dame--Spectrally efficient waveforms
 - QAM provides high throughput in limited bandwidth
 - Turbo-coded BICM provides simple, powerful error control
- Virginia Tech--Channel characterization
- U. Texas-Pan American--Antenna design
- New Jersey Institute of Technology--QoS protocols
- Stevens Institute of Technology--Secure LAN

Future Needs

- Large sensor networks which can operate autonomously with minimal protocol overhead
- Networks containing several thousand nodes in multiple subnets which are spectrally efficient and have significant geographic reuse
- Bandwidth-efficient protocols to provide Fault, Configuration, Performance, and Security management
- Techniques to reliably and efficiently integrate datagrams which require differing QoS levels (especially reliable data in the presence of latency-intolerant voice transmissions)

Conclusion

ITT Industries is pursuing

- Research to meet future wireless networking needs
 - Military
 - Commercial
- Opportunities for technology transfer
 - University research
 - Small business