## Project Topic:

## Security Issues in Public Safety Communication Networks

### Motivation:

The current security mechanisms in public safety communication networks will need to be either adopted or improved when the existing public safety communication networks transition from the P25 standard to the next generation system – FirstNet. The existing security in the voice only public safety communication network is based on P25 AES encryption. FirstNet will be modified from existing 4G Long Term Evolution (LTE) commercial network in order to provide first responders with mission critical voice as well as data transfer capabilities. Similar to the Open Systems Interconnection (OSI) model, there are many layers to FirstNet. These include the core network, transport backhaul, radio access network, public safety devices, and applications running on devices.

### Objective:

The objective of this project is to determine vulnerable areas and explore solutions for each FirstNet layer with respect to security.

### Proposed Research:

The proposed research in a packet-switched Internet Protocol environment is to focus on application level security measures. The proposed solution should be based on a hybrid mission and commercially available and accepted security practices.

### Working and Evaluation Plan:

The working plan is to determine which commercially applications may be adopted for use in a public safety network such as FirstNet. After determining which commercially available applications satisfy the system requirements of FirstNet, we will research current security practices by evaluating community development and integration contributions and concerns. Applications with significant community contributions may be considered ‘hardened’, but those in earlier development and testing phases may require more focus.

The evaluation plan will be to track the overall progress of the project by implementing pause points. At each pause point, we will assess whether we have fully addressed the security concerns at each layer. Once we have achieved satisfactory coverage at each lower level (starting with the application level), we will then parlay into how it will integrate at a higher and more universal level.