The Hybrid Public Safety Microphone ("Turtle Mike")
- Aligning the Legacy Radio Systems with the Broadband Environment

The Issue Faced by Public Safety Agencies
First responders use narrowband land mobile radios (LMR) for critical voice communication. Today, first responders are beginning to augment these communications with smartphones that leverage commercial cellular broadband networks. Commercial cellular networks can serve as a valuable resource for first responders despite the fact that they don’t provide the same critical elements as first responders have on legacy systems (e.g., push-to-talk, radio-to-radio, one-to-many, etc.). Furthermore, first responders are using these smart devices for enhanced information exchange capabilities (e.g., imagery, video, and geography). The Hybrid Public Safety Microphone, also known as the “Turtle Mike”, is a bridging solution that enhances legacy radio system capabilities by allowing the use of commercial broadband networks for improved communication interoperability. These capabilities include added resilience, redundancy (e.g., back-up systems), and expanded coverage. Since commercial broadband networks cannot currently provide the same elements as their legacy radio systems, first responders will likely continue to use their legacy radios for the foreseeable future. However, these types of bridging solutions allow agencies to continue to leverage their existing investments while taking advantage of commercial cellular networks.

How Does it Work?
The Turtle Mike solution consists of both hardware and software components, that can function independently, providing first responders with the ability to communicate on either LMR or commercial broadband networks. The Turtle Mike solution can be added to any existing LMR system, providing access to cellular networks which can prove beneficial to off-load voice communication traffic.

Benefits of Turtle Mike
- Provides a broadband conference function for unlimited one-to-many and many-to-many voice conferencing via commercial broadband
- Provides unlimited broadband conference capacity unrestricted by Federal Communications Commission frequency distribution limitations present in LMR
- Connects legacy radio channels to internet voice broadband conferences via cellular or Wi-Fi
- Increases and enhances coverage, redundancy, and resiliency by providing the end-user with the ability to leverage both LMR and commercial broadband networks
- Enhances “talk around” functionality, or unit-to-unit communication without infrastructure
- Provides public safety recording and instant playback function

Next Steps
For the next phase of this project, DHS S&T has partnered with DHS Customs and Border Protection to conduct further R&D to address (1) mission critical voice over broadband, (2) remote management, (3) video and data to tactical users, and (4) network integration (e.g., LMR, commercial broadband).

To learn more about the Hybrid Public Safety Microphone, contact SandTFRG@hq.dhs.gov.