

# Audio Hot Spotting

Qian Hu

781-271-2959 • [qian@mitre.org](mailto:qian@mitre.org)

MITRE Sponsored Research



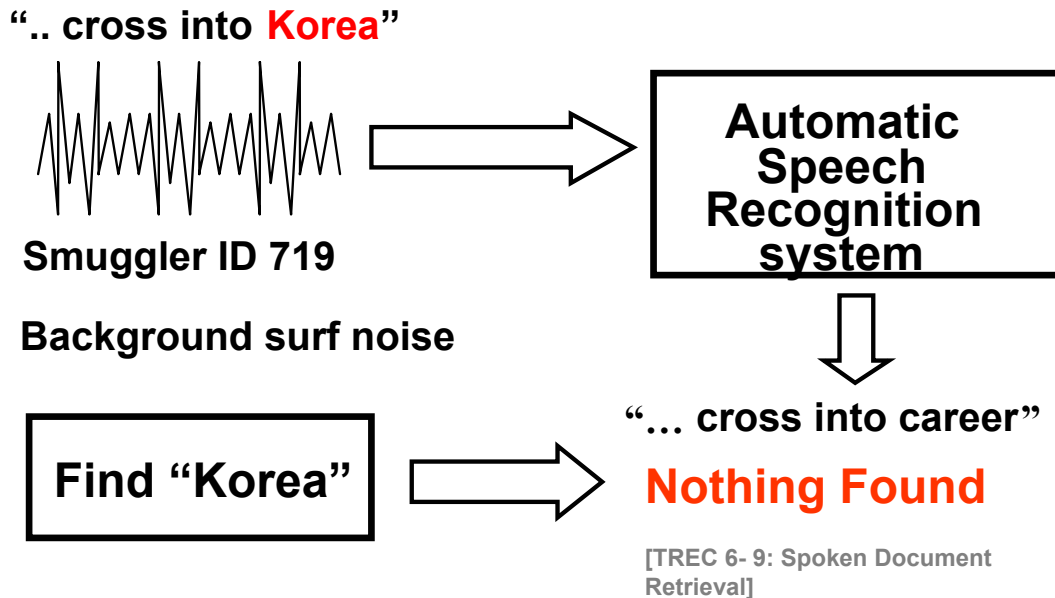
**MITRE**  
Technology  
Program

# Problem

- Large volumes of audio data require a rapid audio hot spotting system to quickly and automatically identify and retrieve the “**hot spots**.” The current approach to audio information retrieval of simply combining text-based information retrieval with automatic speech recognition does not meet user needs in real applications.

# Background

## Current Approach: ASR + IR Doesn't Meet the Needs of Critical Applications



# Objective

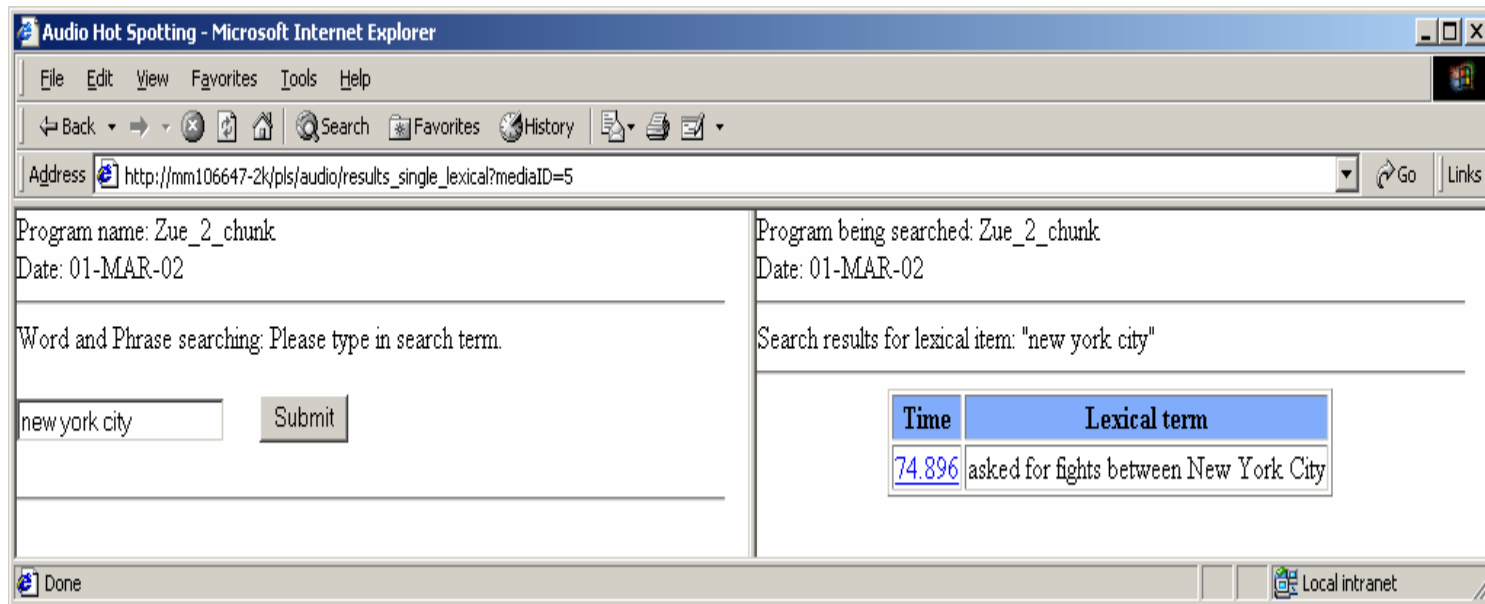
- **Provide prototype Hot-Spotting capability to enable efficient audio filtering and retrieval.**
  - **Determine limitations of existing algorithms**
  - **Adapt and extend best technologies to work on the Hot-Spotting problem**
  - **Research and develop audio-specific query algorithms making use of multiple types of audio information**

# Activities

- **Speech Recognition:** Evaluation with real application data; language model experimentation
- **Media Indexing and Retrieval:** standard methods for measuring performance using COTS products; advised vendors on key functions
- **Speaker/Language Identification:** extended GOTS algorithms to different acoustic channel

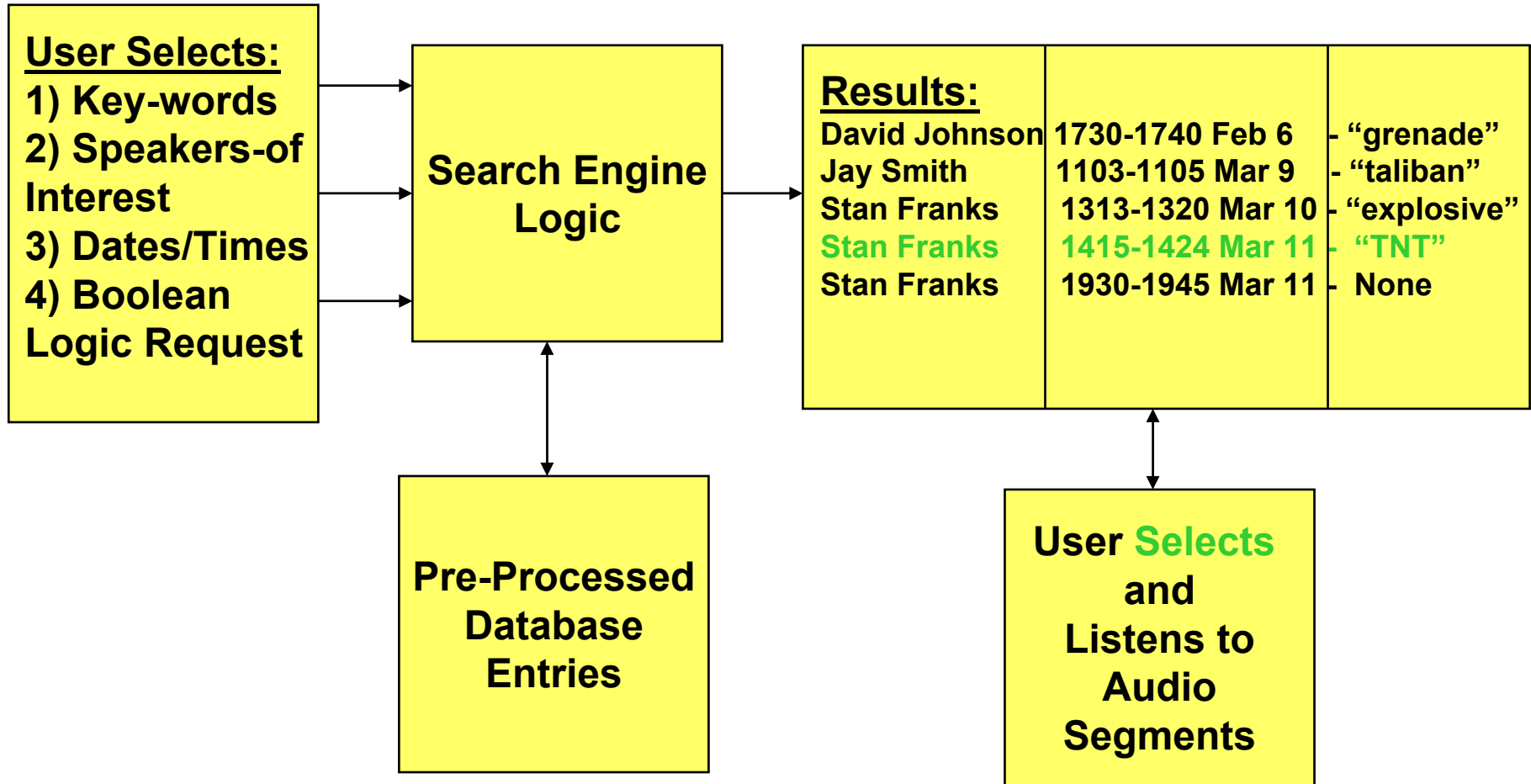
# Highlight

- Built Audio Hot Spotting prototype to query and retrieve speakers and key words/phrases



- Collaborated with CI&T to bring multimedia indexing capability to MITRE Intranet (MII). Prototyping beta capability through indexing existing media data and live events

# Demonstration



# Impacts

- **Address needs of MITRE sponsors who have large volumes of audio data by providing efficient filtering and retrieval solutions.**
- **Extend text-based informal retrieval concepts to multimedia information retrieval.**
- **Advise vendor community on features and functions most critical for audio information retrieval.**

# Future Plans

