

Mobile Multimedia Monitoring System (M⁴S)

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The Raytheon BBN Technologies Mobile Multimedia Monitoring System (M⁴S) creates a searchable archive of foreign language broadcast television, FM or satellite radio, and audio/video files on a laptop. With this system, English-speaking users in the field can cross the language barrier and discover content in local broadcasts or captured media in real-time, with or without the aid of human linguist.

M⁴S combines a state-of-the-art speech to text engine (from BBN) and automatic machine translation (from SDL Language Weaver), along with a web based user interface with a 24/7 audio/video recorder all in a ruggedized laptop form factor. This combination of features was previously only available in rack based server solutions such as the BBN Broadcast Monitoring System. The M⁴S system operates in a pipeline streaming mode, making the synchronized audio/video, rich transcription and machine translation of content recorded available to end users of the system in real time, storing the content permanently in a local database so end users can search for and browse the content at a later date.

The transcripts produced by BBN's state-of-the-art automatic speech recognition engine are enriched with visualization cues, including separation of speakers, display of sentence boundaries, and highlighting of names of people, places, and organizations. Every word in the transcript is indexed to its location in the audio file. The output of the system is structured XML that can be easily used by downstream applications.

Users can export snapshots and media segments for collaboration, presentation, and reports. Rich media (integrated media/transcript/translation) with visualization cues can be exported for playback in a browser. The system's onboard Clip Editor supports editing of the machine transcript and translation of any segment of a broadcast or file recording, allowing users with language skills to correct any errors present in the processed content.

M⁴S can process content in Arabic, Mandarin or Cantonese Chinese, Pashto, Dari, Farsi, Spanish, Russian, Urdu, Hindi, French, and English. Media may come from an off-board tuner such as an FM radio, or terrestrial television or satellite receiver, or via files from DVDs or in a wide variety of common encoding formats. M⁴S runs on a Panasonic Toughbook, and is pre-configured to run out of the box with as little as 15 minutes of setup. The system is delivered with a wideband radio receiver for capturing FM radio signals and includes tools for automatically checking signal quality.

During this demonstration, we will show how M⁴S operates, and how its capabilities can be applied to tasks such as media analysis, open source intelligence, and civil/public affairs. M⁴S has been operationally deployed in Afghanistan, providing soldiers with real-time access to non-English broadcast media.