As early as June 2003, the United States Army partnered with United States Joint Forces Command to review language requirements within the Army, and, to a lesser extent, the other United States Military Services. After review of missions that require language translation, in 2005 the Army completed an Analysis of Alternatives document, which served as an independent assessment of potential language translation alternatives: options and numerical assessments based on each option’s ability to address language translation requirements.

Of the four identified alternatives (printed materials, government off the shelf, commercial off the shelf, and overarching program), incremental development of two-way speech and text translation software modules proved to be the most mission and cost effective.

That same year, United States Department of Defense published the Defense Language Transformation Roadmap listing a requirement for a coherent, prioritized, and coordinated multi-language technology research, development and acquisition policy and program. Since 2005, the Army and the Joint Staff have validated requirements for machine foreign language translation capability. In the effort to develop a comprehensive machine foreign translation capability, the Army not only needs to enable software to handle one of the most complex systems that humans deal with, but we need to develop the architecture and processes to routinely produce and maintain this capability.

The Army has made the initial effort, funding a machine foreign language translation program known as the Machine Foreign Language Translation System (MFLTS) Program. It is intended to be the overarching Army Program with Department of Defense interest to provide machine foreign language translation capabilities that meet language translation gaps. MFLTS will provide a basic communications and triage capability for speech and text translations and improve those capabilities as the technology advances.

Capabilities are intended to be delivered through three configurations: over established networks (web based), in mobile (or desktop) configurations and on portable platforms (or man wearable microprocessors and/or handhelds). MFLTS software, as a mission enabler ported on other platforms and systems, will provide Joint, Allied/Coalition units and personnel with language translation capability within the full range of military operations. Most recently, the Army convened a Machine Foreign Language Translation System (MFLTS) General Office Steering Group (GOSG) in March 2012 and validated follow-on language, domain and technology required capabilities for the Army MFLTS Program beyond the initial capability scheduled for 2014.
U.S. Army
Machine Foreign Language Translation System
(MFLTS)

October 2012

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Outline

- United States Army Machine Foreign Language Translation System (MFLTS) – Who We Are
- A view of our Capability
- Types of Development
United States Army Machine Foreign Language Translation System (MFLTS) – Who We Are

Mission: Develop, field, and sustain a basic automated foreign speech and text translation capability into Army tactical systems in order to augment and complement limited human linguistic resources across all echelons in all environments.
Description
MFLTS is a software-only program that will develop, acquire, field, and sustain a basic automated foreign speech and text translation capability into U.S. Army systems. The language development design allows for technical insertion of software language modules performing translation as required by the U.S. Army.

Capabilities

**Initial Capability:**

<table>
<thead>
<tr>
<th>Speech</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>2WS2S translation</td>
<td>2WT2T translation</td>
</tr>
<tr>
<td>3 languages (Pashto, Iraqi Arabic, &amp; MSA)</td>
<td>2 languages (Dari &amp; MSA)</td>
</tr>
<tr>
<td>portable &amp; mobile configurations</td>
<td>mobile &amp; web-enabled configurations</td>
</tr>
<tr>
<td>2 domains (checkpoint operations &amp; base security)</td>
<td>2 domains (checkpoint operations &amp; base security)</td>
</tr>
</tbody>
</table>

**Follow-on Capability:** modules for additional languages, dialects (for already developed languages), OCR for handwriting, and technological upgrades.

Characteristics

- Portable (wearable or handheld), mobile (laptop), and web-enabled configurations
- Interoperable with commercial-off-the-shelf (COTS), or government-off-the-shelf (GOTS) automation equipment
- Plug-n-play language modules - a unit that translates between specific languages
- Rapid development and deployment of new language modules to meet warfighter operational needs
- Capable of deploying on multiple operating systems (e.g. Windows, Linux, Solaris)

Benefits

- Greatly increases points of presence for foreign language translation capabilities on the battlefield
- Enables communications with foreign speakers when human linguists are not available, enhancing mission success with:
  - Host Nations
  - Coalition partners
  - Indigenous peoples
- Enables rapid translations and triage of documents and media focusing analysts on the most important documents/media for exploitation

Vision: To be a high performance and learning organization that delivers world class products to the Warfighter and takes care of people.

President Obama “… in the 21st century, military strength will be measured not only by weapons our troops carry, but by the languages they speak and the cultures that they understand”
Speech-to-Speech (S2S)

You: Hello how are you doing

He: مرحبا شلونك

Sleep
In Jeddah began a meeting of foreign ministers of the Organization of Islamic cooperation, such as the launching of Mecca summit expected tomorrow of the leaders of the Islamic world, which is expected to focus on the situation in Syria, and on "problems that impede the process of Islamic work", according to Abdul Aziz bin Abdullah, Deputy Saudi foreign minister.

In his speech, he said the secretary-general of the Organization Ekmeleddin Ihsanoglu, the organization of cooperation, "stresses the need to preserve the unity of Syria and stop violence against civilians immediately."

Cakmakoglu added that the seriousness of what is happening on the level of the Islamic world, "requires the consolidation of efforts."

The Secretary-General renewed condemnation of the Organization to Rohingya Muslim minority in Myanmar of robbery and the violation of rights and freedoms sacrilegious, referring in this regard to deprive them of their fundamental rights in nationality, where it considers the Myanmar authorities "refugees" from Bangladesh.

The number of Ihsanoglu a number of the steps taken by
Open Issues

 Metrics

 Automated Testing

 Determines State of the Art

  - MT
  - ASR
  - OCR

  BLEU
  WER
  WER

 Limited Operational Data

 Soldier Task Completion Using Device
 (small scale, man in the loop)

 SUT

  OT

 Test Activities

  DT

  +

  SUE

  TRR

  OT

  Manual Scoring Protocol
  (Developed)

  1. ILR* \approx ILR + (Definition of Applicability of Machine Translation)

     - Soldier knows how to do job
     - Soldier knows how to use machine

  3. Automated Metric Which Correlates to ILR
     … Poor Correlation
Open Issues (continue)

- Data Collection
  - Expensive
  - Time Consuming
  - Need Industry / Academia / S&T / Community Collaboration

- Domain Development
  - Expensive
  - Time Consuming
  - Need Industry / Academia / S&T / Community Collaboration
Conclusions

- **Initial Capability**
  - On schedule, within budget and performance parameters
  - Need Industry / Academia / S&T / Community Collaboration with Open Issue:
    - Metrics

- **Follow-on Capability**
  - Need Industry / Academia / S&T / Community Collaboration with Open Issues:
    - Metrics
    - Data Collection
    - Domain Development