United States Army Machine Foreign Language Translation (MFLT) Requirements and Capability

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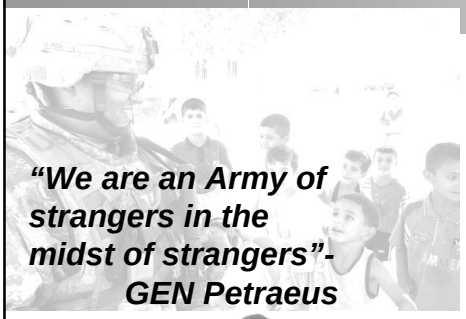
LTC Vaughn Laganosky
Assistant TRADOC Capability Manager-
Ground Sensors

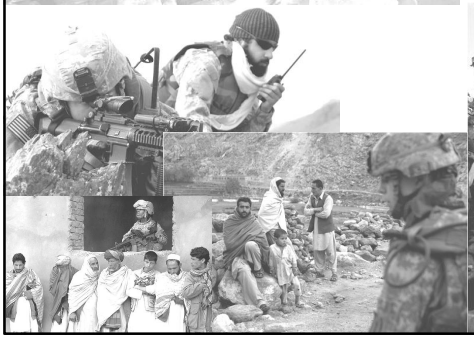
LANGUAGE AND CULTURAL AWARENESS



"We are an Army of strangers in the midst of strangers"- GEN Petraeus

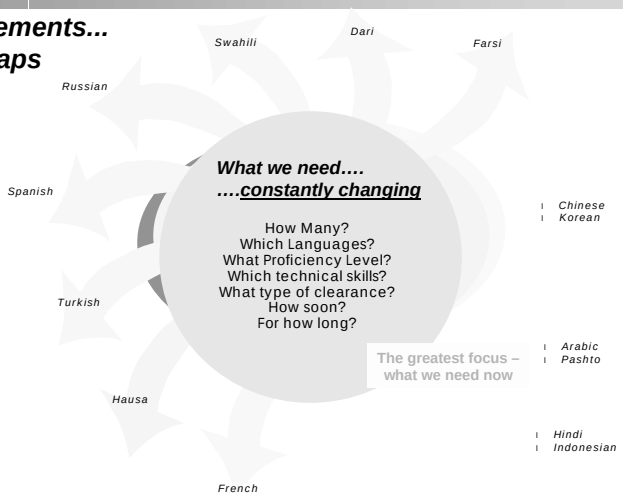
-- The Strategic Soldier
-- Every Soldier is a Sensor
-- Understanding the "big picture"
-- Helping to find the silver needle
-- A force multiplier

"The people are the decisive terrain" –GEN Odierno



The Global Language Challenge – Enabling Foreign Language Translation

Language requirements...
...many gaps



Language solutions...
...no single answer

The Global Language Challenge – Enabling Foreign Language Translation

Human Linguists
- **Interrogators**
- **Signals Intelligence**
- **Interpreters**
- **09Ls**
- **Contract linguists**
- **"Reach" linguists**
- **Local Nationals**
- **EPWs**

Complex language/Ideas
High Investment
Training Time
Cost
Contract linguist issues

DoD Has a Language Challenge:
- ***the right language capability***
- ***in the right place***
- ***at the right time***

When Human Linguists are not available, our current options:
- **Printed materials**
- **Commercial Off-the-shelf MT**
- **Government Off-the-shelf MT**

Limited proficiency
Partial solution,
Limited sustainment

Our Future Option

Development strategy of software modules that are integrated, scalable, tailorable, interoperable, user-friendly, easily deployable, and available at all echelons to reside on existing and future platforms/systems

No replacement for human linguist

History of MFLT and US Army

GALE, TRANSTAC, MADCAT

LANGUAGE AND SPEECH EXPLOITATION RESOURCES

2002-2006

GALE: Global Autonomous Language Exploitation (begin 2005)

TRANSTAC: Spoken Language and Communication Translation System For Tactical Use (begin 2004)

MADCAT: Multilingual Automatic Document Classification, Analysis and Translation (begin 2008)

LASER ACTD: Language and Speech Exploitation Resources (LASER) Advanced Concepts Technology Demonstration (ACTD)

DARPA Programs and LASER ACTD technologies transition to Sequoyah for capability to the Soldier

• Mar 2001 Statement of Need to HQ TRADOC from U.S. Army Pacific Command identifying language translation deficiencies
• Apr 2001 Army designated as Lead Service for Sequoyah (Joint Interest Designation Program)

Quick Reaction Capability Deployment Begins

• Jun 2003 Army Training and Doctrine Command and Joint Forces Command partnered to develop Joint Sequoyah Requirements
• Jan 2005 Defense Language Transformation Roadmap -- 2.J. "Establish a coherent, prioritized, and coordinated DoD multi-language technology research, development and acquisition policy and program."
• Feb 2005 Sequoyah assigned to PEO IEW&S by ASA(ALT), STMO Begins
• Apr 2005 Urgent Need for Language Translation Capability, Multi-National Security Transition Command-Iraq (MNSTC-I)
• 13 Jun 2005 Initial Capability Document approved by US Joint Staff on 13 Jun 2005
• Aug 2006 LASER ACTD Complete; Transition to Sequoyah
• Mar 2008 Sequoyah Program transitions to Army Special Programs Office
• Dec 2008 Sequoyah Capability Development Document approved by US Joint Staff

SEQUOYAH-Foreign Language Translation Program

Machine Foreign Language Translation capability integrated into Army Program of Record standard platforms

SaaS, DCGS-A, FCS, CHARCS, Prophet, IEWTPT

DESCRIPTION

The Sequoyah – Foreign Language Translation Program is to develop, acquire, field and sustain the Warfighter with a basic automated foreign speech and text translation capability into systems of record, to augment and complement limited human linguistic resources. These stand-alone and integrated automated translation capabilities will be applicable across three different system configurations; a hand-held/wearable portable device, a laptop or mobile device, and in a networked system. The software modules provide translation capability for a prioritize listing of languages in a prioritized collection of domains.

CHARACTERISTICS

•Two-way S2S Capability when human linguist is not available (Domain/Mission Sets)
- **Force Protection Operations (examples of checkpoint ops, Base security, convoy ops, …)**
- **Combat Operations (counter-insurgency, psychological ops, special ops, …)**
- **Support Operations (basic combat training, civil affairs, contracting, …)**
- **Intelligence Operations (HUMINT ops, SIGINT Ops, …)**

•Two-way T2T capability for documents and communication

• Speech to text translation support for foreign media monitoring

BENEFITS/CAPABILITIES

•Increase points of presence for foreign language translation capabilities on the battlefield

•Enable communications with foreign speakers when human linguist is not available, enhancing mission success with
- **Host Nation**
- **Coalition partners**
- **Indigenous population**

•Enable rapid translations and triage of documents and media focusing analysts on most important documents/media for exploitation

Machine Foreign Language Translation (MFLT) and Sequoyah Foreign Language Translation (SFLT) Program

Machine Foreign Language Translation

The use of a computer to translate text or speech in one human language to another human language.

Sequoyah Foreign Language Translation

Program of Record that will provide a machine foreign language translation capability that is scalable, tailorable, interoperable, deployable, and available to warfighters at all echelons. Sequoyah will provide foreign language translation services via MFLT applications integrated into portable, mobile, and web-based automation systems.

Relationship between MFLT and SFLT

The Sequoyah program evaluates and leverages existing capabilities, or develops new capabilities to meet existing or emerging military operational MFLT needs.

Concept of Operations

- **Enables novice to intermediate proficiency machine language translation capability within military mission requirements (domains)**
- **Integrated seamlessly into other systems/programs or record as software application**
  - **Provides automated two way speech and text language translation capability through**
    - **Web-enabled services (translation services, language module updates/downloads, foreign media monitoring, coalition support): Provides warfighters ability to update and tailor systems to local mission requirements**
    - **Mobile configurations (DCGS-A, CHARCS, Prophet, IEWTPT)**
    - **Portable configurations (GSS)**
- **Resident from strategic to tactical levels supporting full spectrum operations**
  - **Focused on languages of DoD Strategic Language List (SLL)**
  - **Supports S2S military mission sets (domains) – for "initial capability" focused on force protection**
  - ***Supports applications with priority under "initial capability" to S2S, T2T***
  - **Enhances mission success with coalition partners, host nation, and indigenous populations by enabling communication**

Prioritized Requirements

- **Initial Capability: Provides 3 S2S language and 2 T2T language capabilities through 3 configurations (portable, mobile and web-enabled services) for 2 domains and provides necessary infrastructure and compatibility framework for integration.**

- **Prioritized Follow-On Capability: Provide S2S translation capability for additional 7 priority languages; T2T translation capability for additional 26 languages)**

- **Technology Improvement: Add automatic language and dialect recognition for speech and text for all previously developed languages**
- **Technology Improvement: Provide speech and text translation capability for all 28 designated languages, as well as keyword handwriting recognition**

MFLT Supporting the Soldier

Speech to Speech (S2S)

- **Use of 2 way speech to speech capability**
- **Future integration: Port software capability to Ground Soldier Ensemble**
- **Mobile and portable configuration**

Text to Text (T2T)

- **Triage Support based on Key Words/Phrases**
- **Gist documents providing basic meaning**
- **Support to programs with T2T requirements**
- **Web enabled and mobile configuration**

Ground Soldier Ensemble MFLT Integration

- **Integration Costs: GSE Costs**
  - **Microphone for foreign language speaker**
  - **Speaker for translation output**
- **Software engineering**
  - **Necessary APIs**
  - **Parameters for man-wearable microprocessor (speed, memory, etc.)**
- **Timeline for integration of required capability**
- **Operational Testing**

Summary/Discussion

- **Linguists are a strategic resource to the United States Army and Department of Defense; the demand far exceeds the supply for high priority languages**
- **Machine Foreign Language Translation (MFLT) systems of today provide a limited but militarily useful capability**
- **Future MFLT requirements are focused on a robust, comprehensive capability**

LTC Vaughn Laganosky
Asst TRADOC Capability Manager-
Ground Sensors, US Army
520-533-5775
Vaughn.laganosky@us.army.mil