

The Language Translation Interface and automated language translation tools for the Australian Defence Organisation

Dominique Estival and Jennifer Biggs

**Human Systems Integration Group, Command and Control Division
Defence Science and Technology Organisation
PO Box 1500, Edinburgh SA 5111
AUSTRALIA**

Outline

- **Goals of the task: Language translation for the ADO**
 - why – what – who
 - 2 military examples
 - C2, coalition
- **Automated Translation Tools for the ADO**
 - LTI: The Language Translation Interface
 - Integration with AuTM (Automatic Transcriber of Meetings)
- **Conclusion and issues for further research**

Goals of the task (high-level)

“Investigate and report on feasibility of applying language translation and audio mining technologies to operations within the headquarters” (by June 2004)

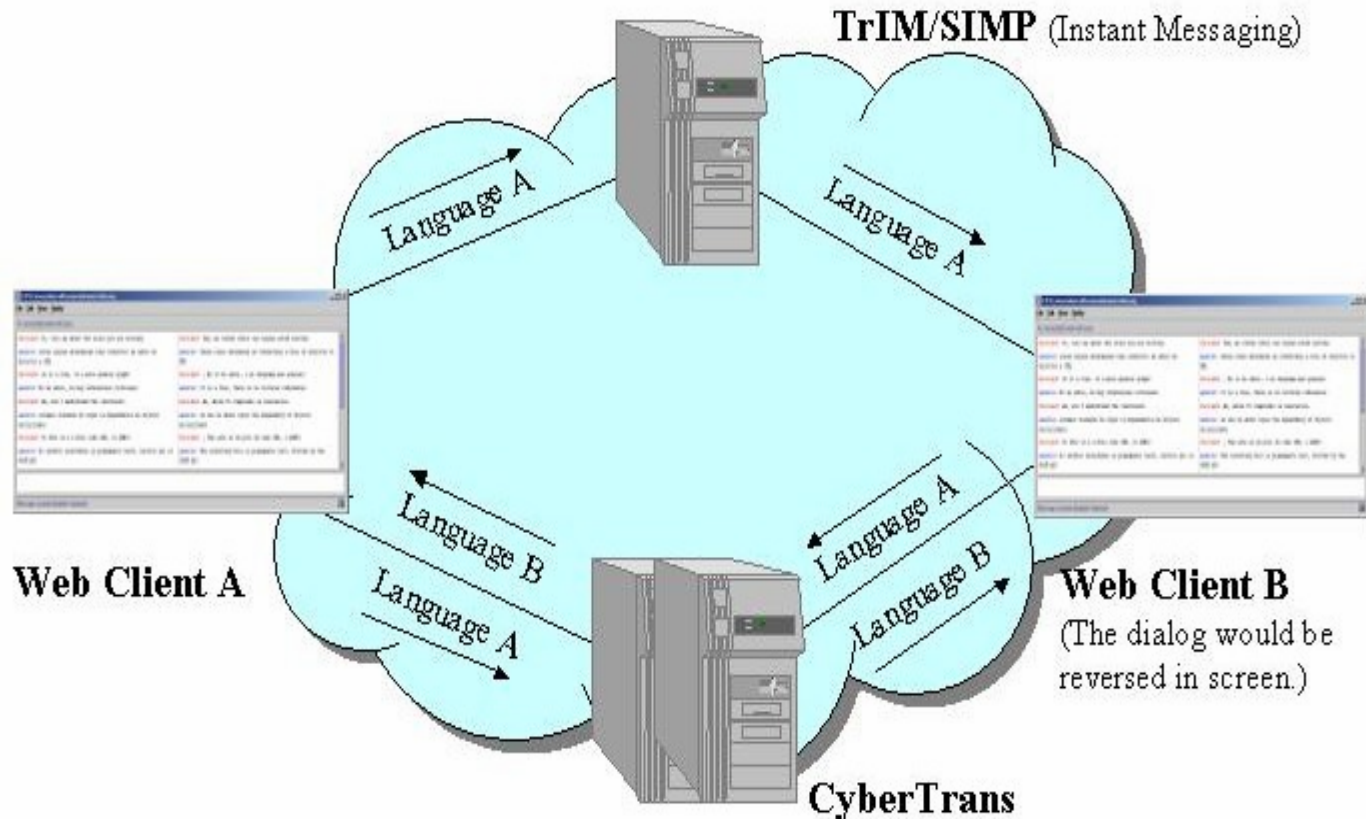
⇒ **How can the ADO deal with foreign languages?**

Language Translation for the ADO

- **Why:** intelligence gathering, information sharing, joint coalition, foreign operations.
- **What:** document translation or screening, interview and meeting interpretation, command and control.
- **Who:** ADF LANGS, Language Sponsors, translators in individual units.

- **Two military examples:**
 - JWID '02 C2IT-13
 - The PTS / Phraselator

TrIM Instant messaging server, C2IT13 JWID'02



Clients are web based; can be anywhere on CFBL.
Flow can also go from Client B to Client A.

The Phraselator (DARPA PTS)



- **Military trial in Afghanistan, 2002**
- **one way translation for now**
- **modules of 1000+ phrases translated into multiple languages**
- **speech recognition or menu selection**
- **pre-recorded speech output**
- **phrase module builder available**
- **Phraselator doubles as a rugged pocket PC**

Automated Translation Tools for the ADO

Goals and constraints

- provide ADO personnel with automated translation tools when there is a need for rapid translation and no human translator is readily available
- must use existing systems (COTS or freely available)
 - ⇒ 1. Provide easy access to existing translation engines:
Language Translation Database (LTDB)
 - 2. Make access transparent to the users:
Language Translation Interface (LTI)

Language Translation Database (LTDB)

- **Product and research system information repository for members of the ADO**
- **Search by parameters of translation task**
 - Language pairs
 - System requirements
- **Currently contains 90 of an estimated 150 machine translation systems.**

LTDB example: the Phraselator

System: **Phraselator** Acronym: **DARPA One-Way Phrase**

Summary

One-way phrase-based voice-to-voice machine translator. Input phrase is matched with a prerecorded output phrase and played through a speaker. Developed under a DARPA SBIR grant. User can provide information, give orders or directions, and ask simple questions in another language. Powerful tool for humanitarian assistance, medical, security, travel and law enforcement. Easy to learn and use, 1000+ phrases translated into multiple languages. Phraselator doubles as a ruggedized pocket PC. Also available: Module Builder Toolkit, Compaq iPAQ and PC Phraselator software. Many specialized phrase modules

Translation type and speed

Batch Translation
Real Time Translation

Translation Speed Per Page

Notes: Phrase translation from prepared modules. Module builder toolkits available.

Machine Translation LanguagePairs

Source	Target
English	Arabic
English	Urdu
English	Dari
English	Pashto

Price US \$ \$2,000.00

Price Notes

Price is for one unit. Module Builder software is available for the PC

Release Date 1/09/2002

Discontinued **Date**


Serial No

Commercial

PC

Macintosh

Pocket PC



Webpage Type **Address**

Homepage

Homepage

Categories **View details ->**

Machine translation

Speech-to-speech

Features **Details ->**

Translation Memory

Text to speech

Speech recognition


Target Users **Details ->**

Military

Law enforcement

Travel industry

Screenshots



Notes

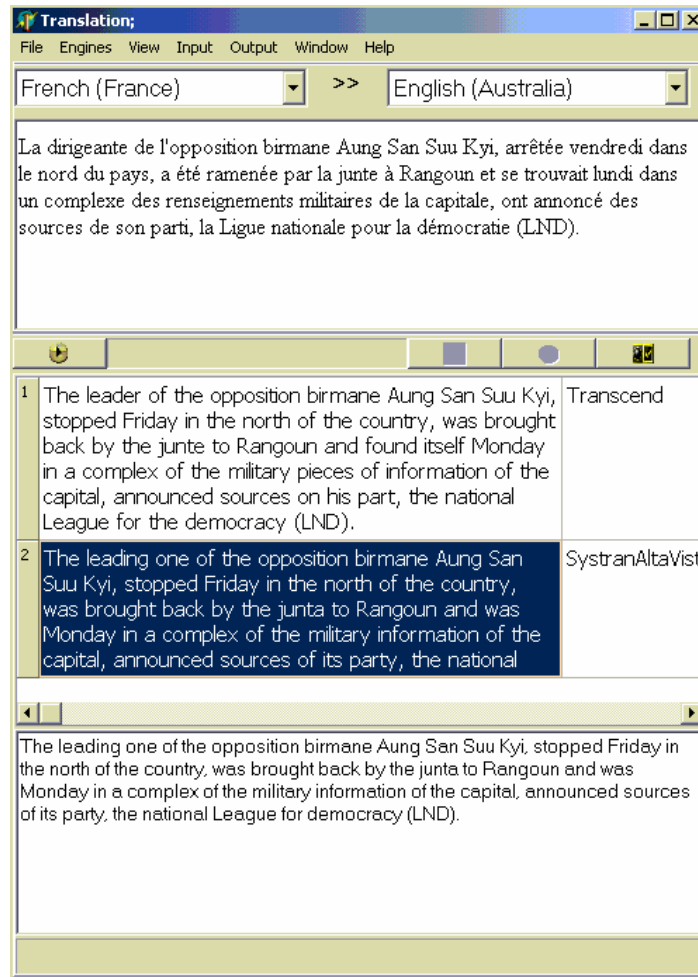
Sgt Lennox, Operation Enduring Freedom, Afghanistan 2002. One of the MPs who guarded the detainees. They will be using the Phraselator for prisoner processing and control. From <http://www.sarich.com/translator/Afghanistan/index.html>

Record: 73 of 86 Record: of 5

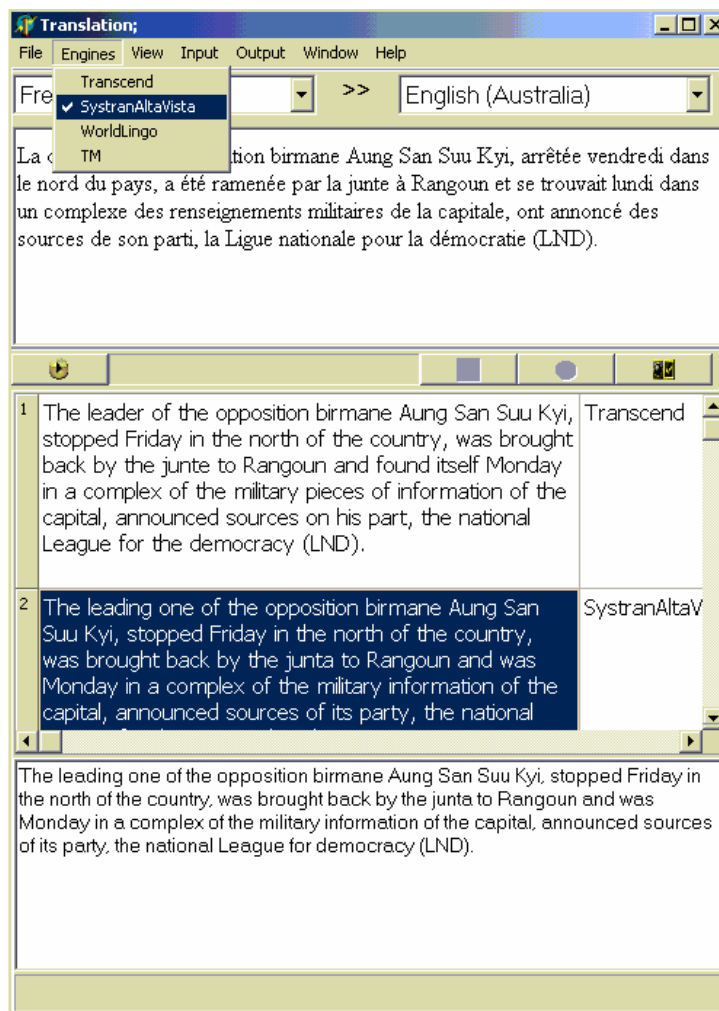
Language Translation Interface (LTI)

- **Single interface for multiple translation engines:**
 - from the Web, from servers or local applications
 - Full MT, MAT, or Translation memories
- **Windows for pre-editing the input and post-editing the output**
- **View a number of translation results:**
 - choose the best one manually
 - default selection available
- **Word or HTML record of translation session**
- **Ability to interface with multiple applications, eg. AuTM**

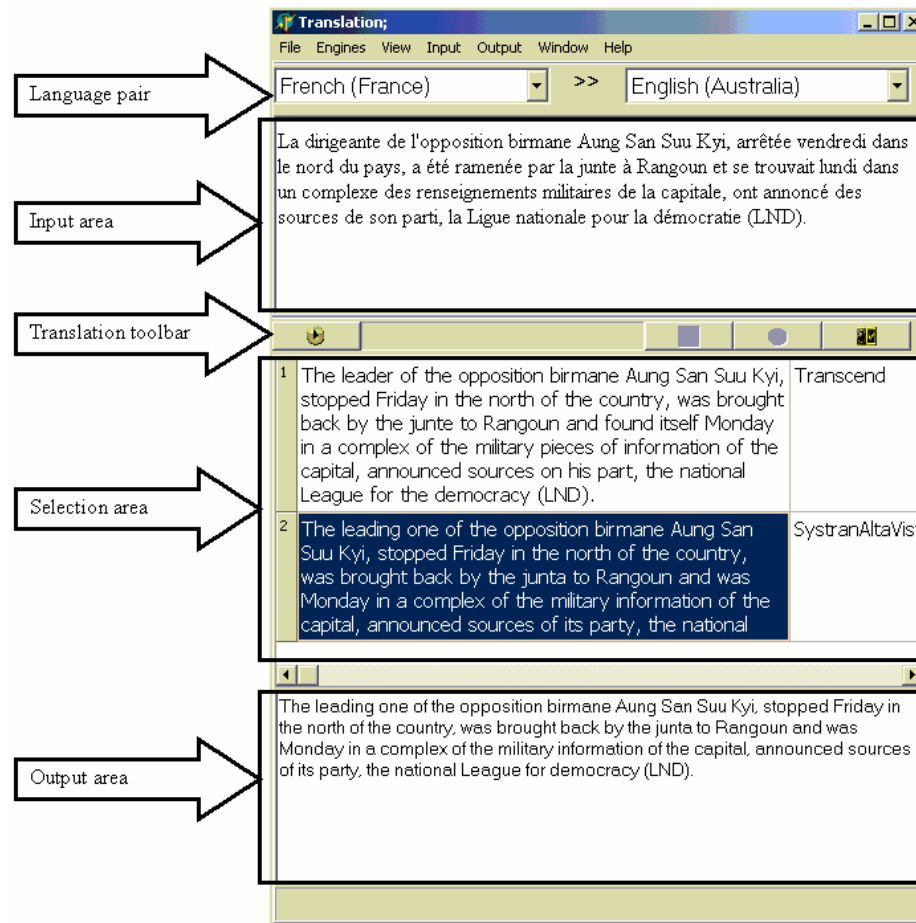
LTI: Main form



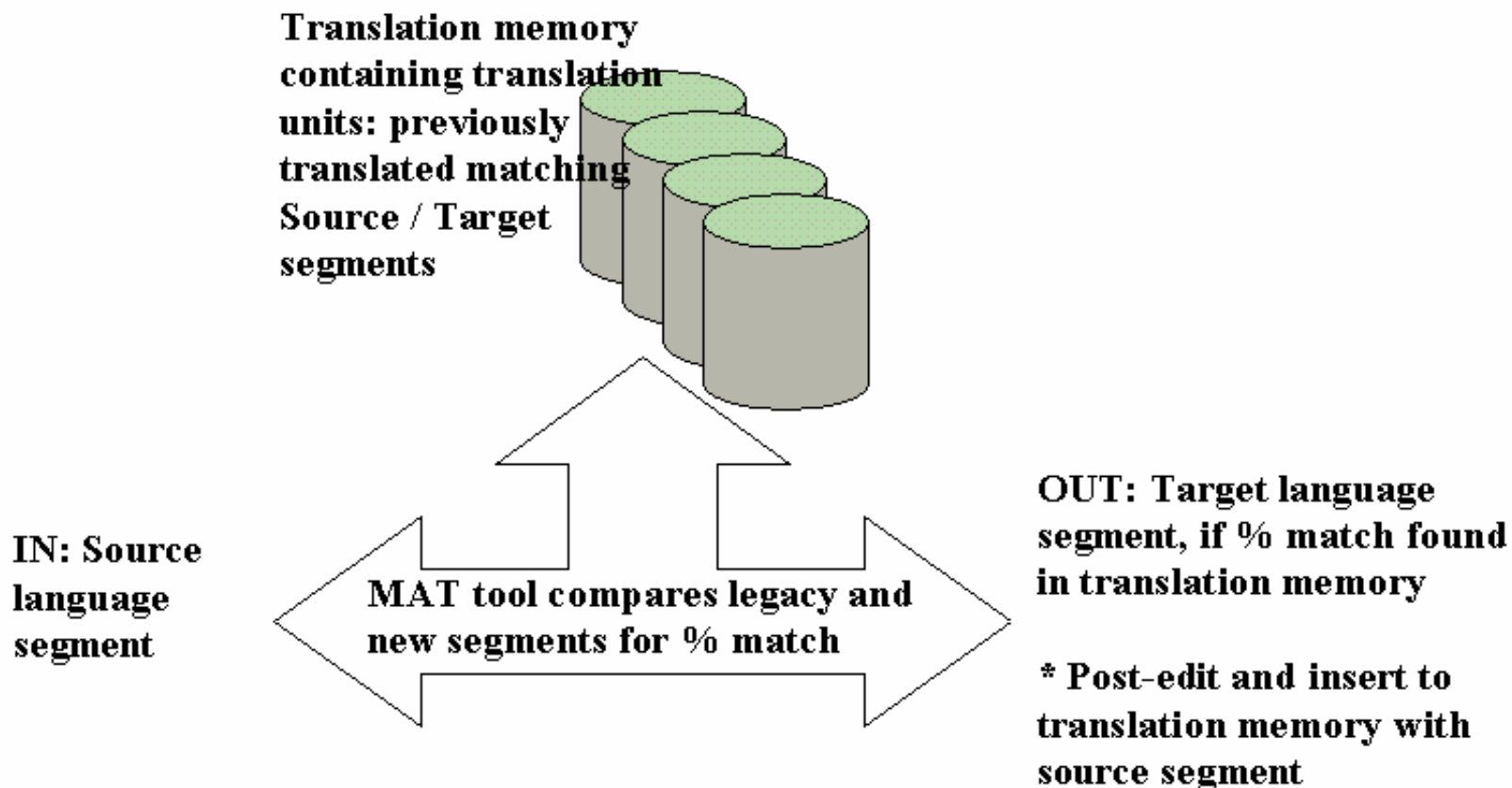
LTI: Main form



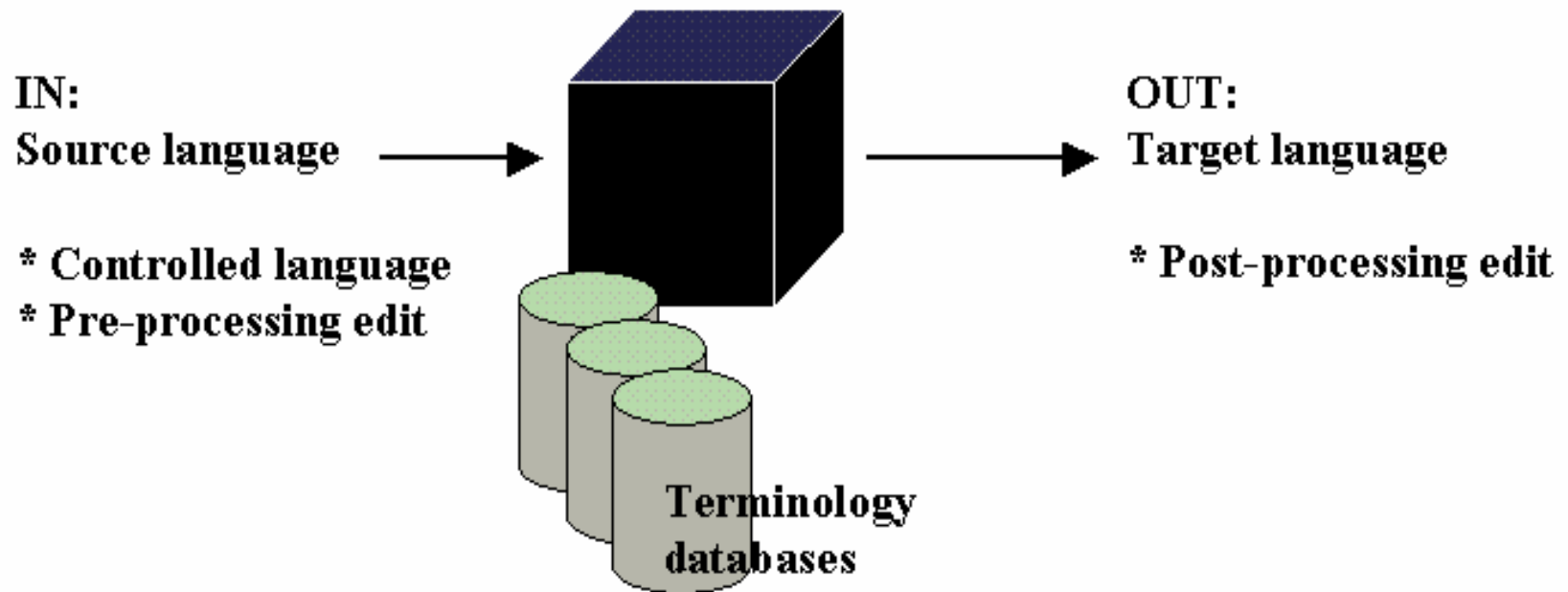
LTI: Main form



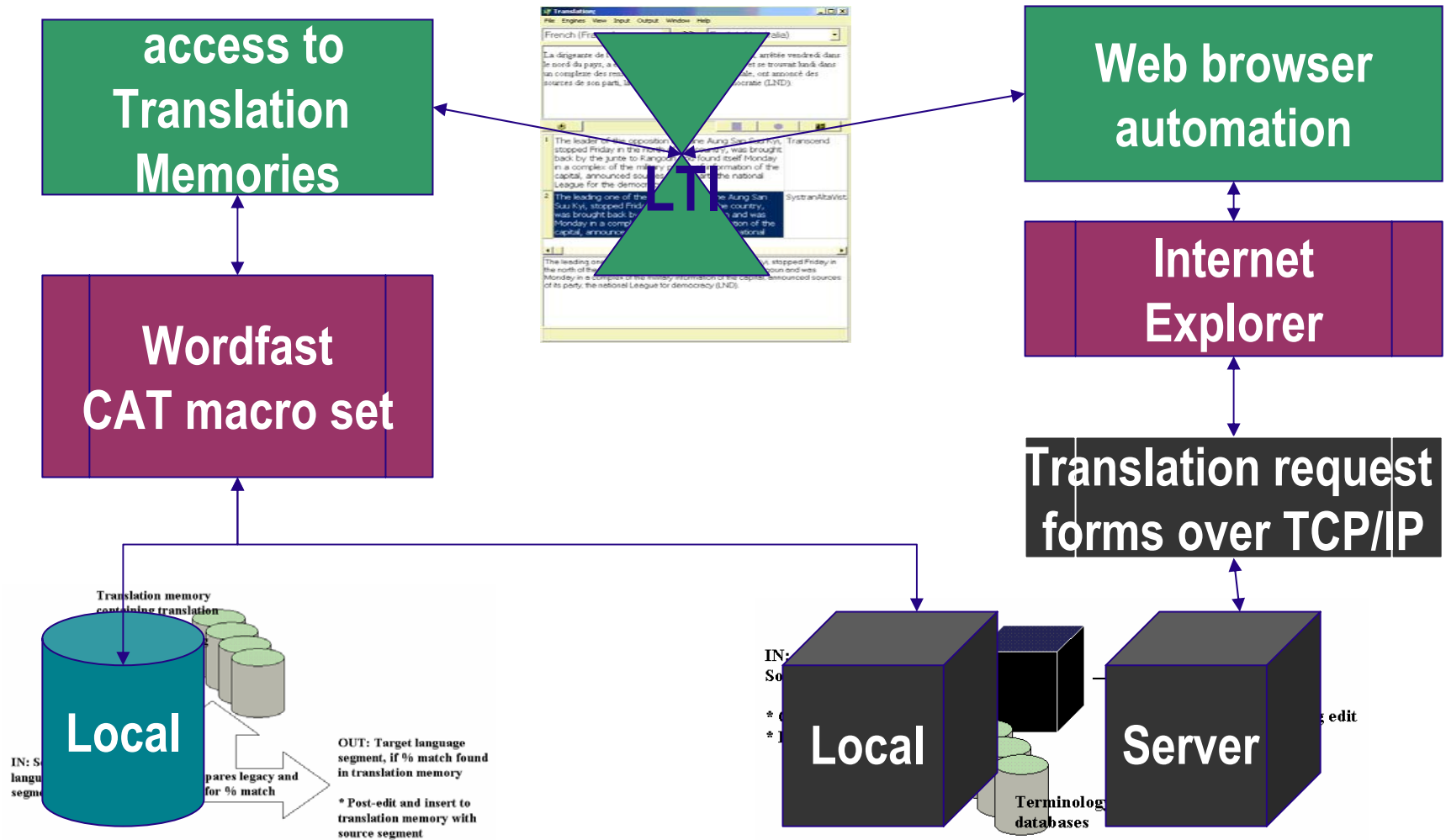
MAT: translation memory



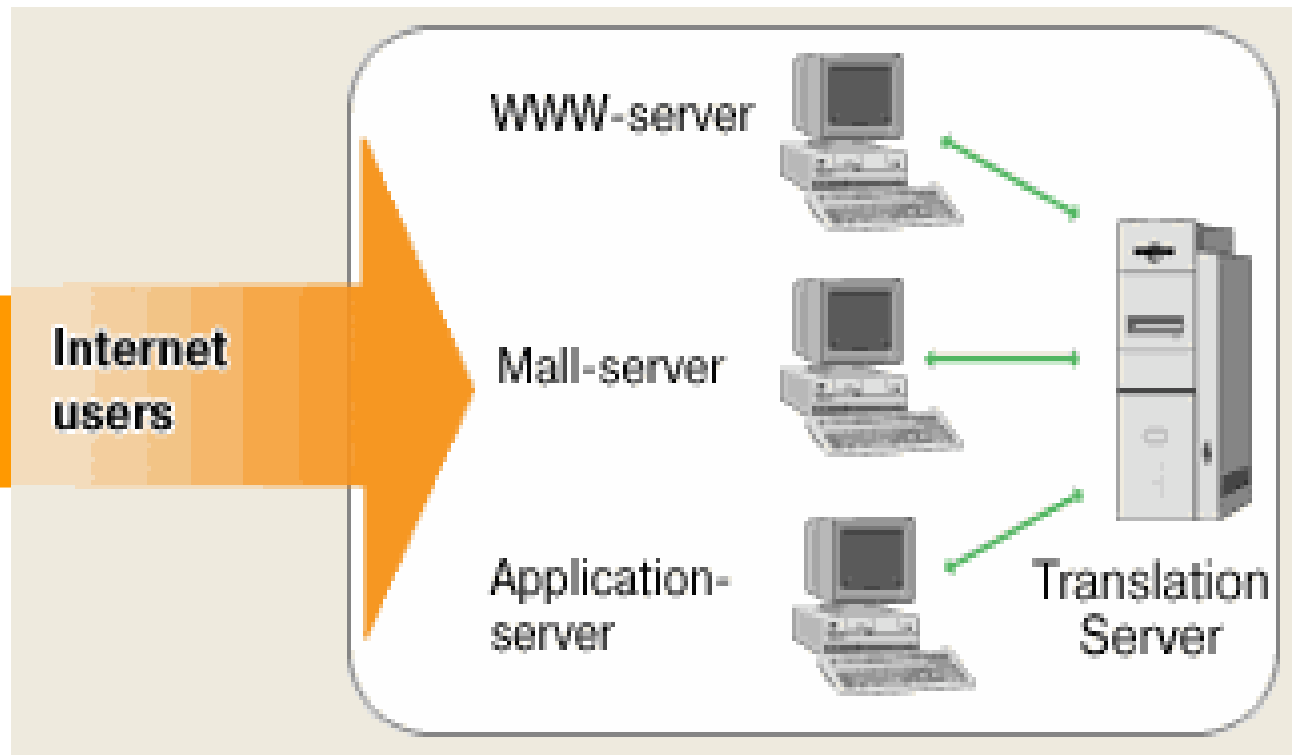
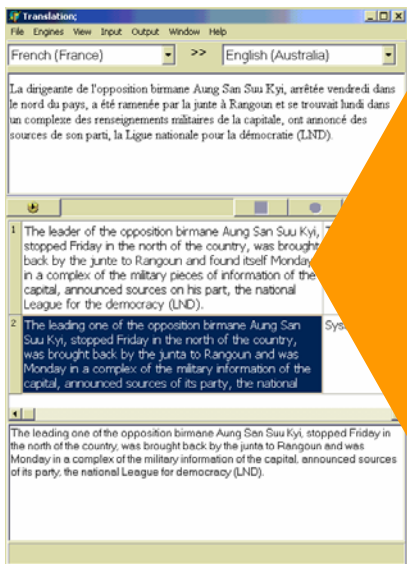
MT: translation processing



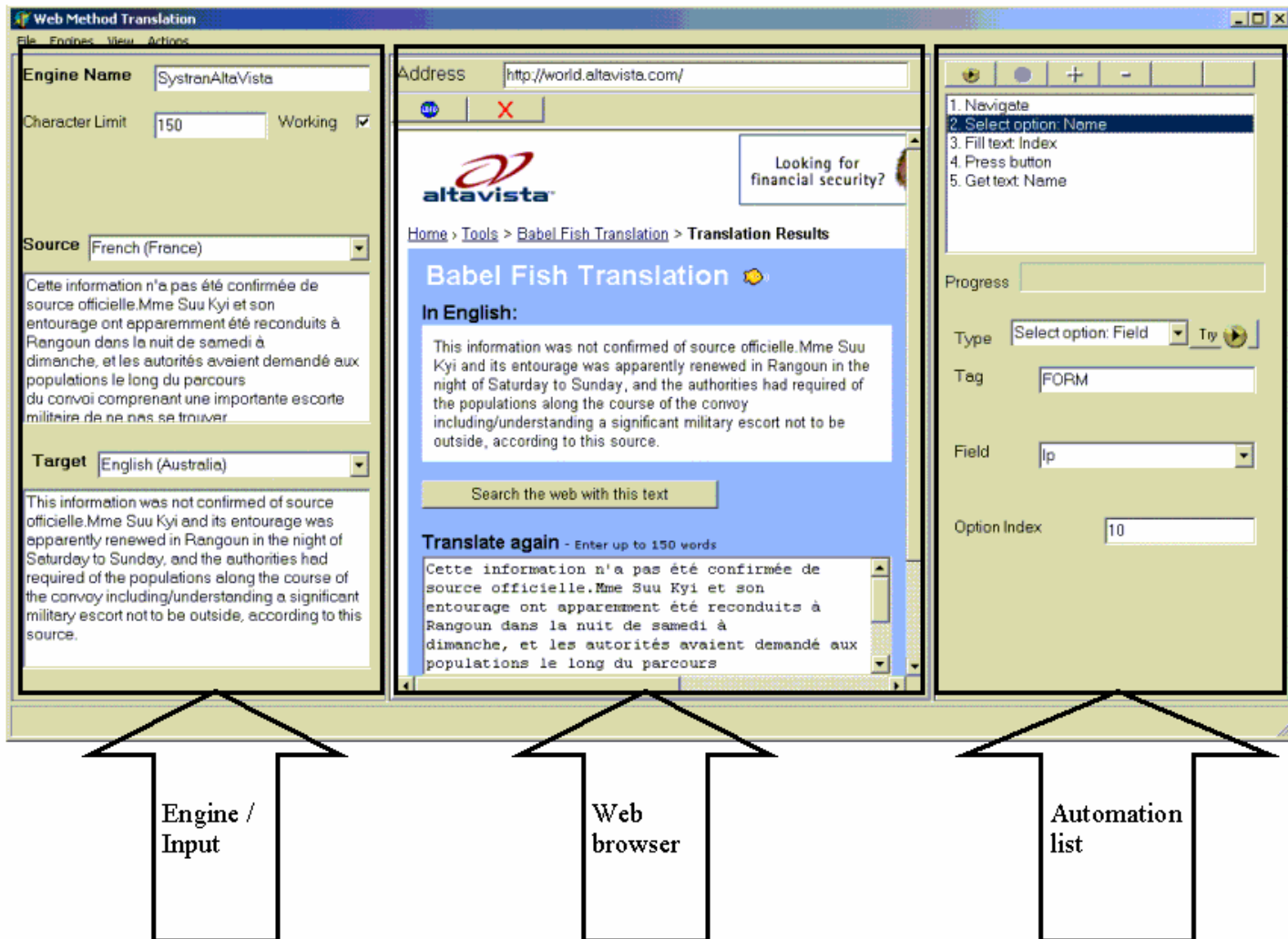
LTI: translation methods



LTI: Web translation engine



LTI: Web translation form



Accepted translations

User	Time	Translator	Text
	10:22:54		."Nous avons vu le convoi entrer dimanche dans la prison d'Insein" (près de Rangoun), a indiqué une source de la LND, "ensuite elle a apparemment été séparée de son entourage et amenée dans un complexe du centre de Rangoun".
		Transcend	" Saw us the convoy to enter Sunday into the insein prison" (close to Rangoun), indicated a source of the LND, "next she apparently was separated of his entourage and brought in a complex of the center of Rangoun".
	10:21:49		Le prix Nobel de la paix avait été placé vendredi "temporairement sous la protection des autorités" dans le nord du pays avec 18 membres de son parti après des affrontements qui avaient fait quatre morts entre ses partisans et des éléments favorables à la junte au pouvoir.
		Transcend	The price Nobel of peace had been placed Friday "temporarily under the protection of the authorities" in the north of the country with 18 members on his part after the clashes that had done four deaths between its supporters and elements in favor of the in power junte.
	10:17:51		La dirigeante de l'opposition birmane Aung San Suu Kyi, arrêtée vendredi dans le nord du pays, a été ramenée par la junte à Rangoun et se trouvait lundi dans un complexe des renseignements militaires de la capitale, ont annoncé des sources de son parti, la Ligue nationale pour la démocratie (LND).
		SystranAltaVista	The leading one of the opposition birmane Aung San Suu Kyi, stopped Friday in the north of the country, was brought back by the junta to Rangoun and was Monday in a complex of the military information of the capital, announced sources of its party, the national League for democracy (LND).

Accepted translations

Language Translation Interface session

Translation session begun at 0310171 June 03 (10:17AM on 3 June 2003)

Translation: French > English

Translation engines:

Engine	Location
Transcend	http://www.freetranslation.com/
SystranAltaVista	http://world.altavista.com/
WorldLingo	http://www.worldlingo.com/products_services/worldlingo_translator.html
TM	C:\FR_EN_political_TM

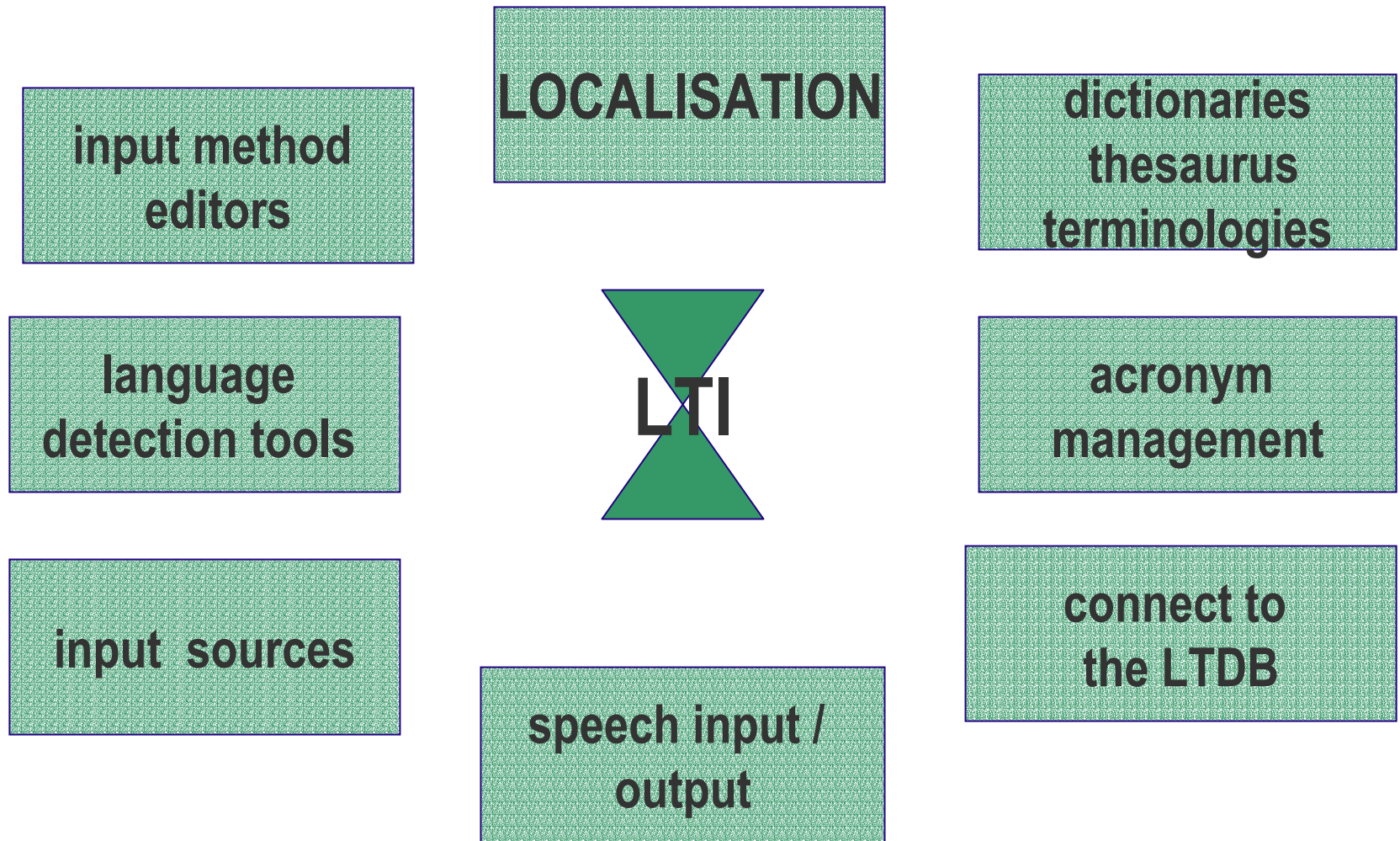


Translations:

Source text: French	Translation: English	Translator	Started	Finished
La dirigeante de l'opposition birmane Aung San Suu Kyi, arrêtée vendredi dans le nord du pays, a été ramenée par la junte à Rangoun et se trouvait lundi dans un complexe des renseignements militaires de la capitale, ont annoncé des sources de son parti, la Ligue nationale pour la démocratie (LND).	The leading one of the opposition birmane Aung San Suu Kyi, stopped Friday in the north of the country, was brought back by the junta to Rangoun and was Monday in a complex of the military information of the capital, announced sources of its party, the national League for democracy (LND).	SystranAltaVista	10:17:51	10:21:27
Le prix Nobel de la paix avait été placé vendredi "temporairement sous la protection des autorités" dans le nord du pays avec 18 membres de son parti après des affrontements qui avaient fait quatre morts entre ses partisans et des éléments favorables à la junte au pouvoir.	The price Nobel of peace had been placed Friday "temporarily under the protection of the authorities" in the north of the country with 18 members on his part after the clashes that had done four deaths between its supporters and elements in favor of the in power junte.	Transcend	10:21:49	10:22:31
"Nous avons vu le convoi entrer dimanche dans la prison d'Insein" (près de Rangoun), a indiqué une source de la LND, "ensuite elle a apparemment été séparée de son entourage et amenée dans un complexe du centre de Rangoun".	" Saw us the convoy to enter Sunday into the insein prison" (close to Rangoun), indicated a source of the LND, "next she apparently was separated of his entourage and brought in a complex of the center of Rangoun".	Transcend	10:22:54	10:27:11
Cette information n'a pas été confirmée de source officielle.Mme Suu Kyi et son entourage ont apparemment été reconduits à Rangoun dans la nuit de samedi à dimanche, et les autorités avaient demandé aux populations le long du parcours du convoi comprenant une importante escorte militaire de ne pas se trouver dehors, selon cette source.	This information was not confirmed source officielle.Mme Suu Kyi and his entourage apparently were renewed to Rangoun in the Saturday night to Sunday, and authorities had asked the populations alongside the traverses convoy understanding an important military escort of not to find itself outsidess, according to this source.	Transcend	10:33:02	10:55:40

Translation session concluded at 0301251 June 03 (1:25AM on 3 June 2003)

LTI: further work



Integrating LTI with other applications

use of the LTI with other applications:

- output translation saved in HTML, Word or TMX
 - ⇒ LTI can be used with standard document production tools by a single translator
- also, e-mail, database interface, etc...
- example of collaborative environment, the *Automatic speech-to-text Transcriber for Meetings and Interviews (AuTM)*

AuTM: Automatic Transcriber of Meetings

collaborative meeting tool developed at DSTO

client-server architecture, up to 8 meeting participants

aim: record and transcribe meetings or interviews

**input: Automatic Speech Recognition (ASR);
one microphone per participant**

**output: session transcript (text with audio files);
time-stamped; Word or HTML**

LTI + AuTM

- **Multilingual meetings are possible**
with or without interpreter
- **Multilingual Transcript**
 - **view by language, or**
 - **view complete transcript with translations**
- **Multilingual Records**
 - **original language input**
 - **names of translators / translation engine**

LTI + AuTM: Issues for further research

- Combining ASR and MT/MAT technologies**
 - ⇒ compound transcription and translation errors**
 - ⇒ need dialogue understanding in addition to speech recognition**

- Language issues:**
 - localization**
 - availability of ASR for more languages**
 - availability of MT systems for more language pairs**
 - language pair path resolution (most MT are English-centric)**

Conclusions: the LTI

- simple easy-to-use translation tool when human translator not available
- single interface for multiple translation engines (full MT, MAT, or Translation Memories) from the Web, from servers, or from local applications on a secure network
- allows users to view a number of translation results and to choose the most appropriate
- input and output editing panels
 - => the same interface can be used by human translators to create manual translations

Conclusions: Translation tools for C2

- automated batch translation of incoming documents (e.g. e-mail msgs) can be used for rapid intelligence gathering and information processing during high tempo operations
- useful way to rapidly access translation tools in those situations
- integrated with a speech transcriber:
 - allow meetings to be conducted in more than one language
 - useful in coalition exercises and operations

Further research

- **Translation Memories: greater implementation of TMX**
- **Optimise MT for specific tasks:**
 - some vendors do it (e.g. Systran for the EC)
 - users can do it themselves
 - in the limit, build bank of specific translation examples for TMs
=> can be classified
 - already “Acronym Manager” available for military acronyms at DSTO
- **Spoken language translation:**
 - Forced phrase recognition (cf. Phraselator)