

Usability Issues for Commercial SLT

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Commercially successful applications for SLT?

- Yes! But...
- Spoken Translation, Inc (Mark Seligman, CEO)
 - Focus on *integration and ergonomics* of SLT systems
 - **Optimizing components**
 - “Temporary” solutions
 - *Please put us out of business!*
 - **User modelling + user knowledge**
 - Use-case scenario: Healthcare
 - Nurses, aides, clerks, doctors <> patients, family
 - Admissions, Pharmacy, PT, OB-GYN, ...
 - Emergency, Ambulance, First responders, ...
 - Spanish <> English, but...

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Commercially successful applications for SLT? 2

- Target Users
 - Technologists
 - Educated bilinguals
 - Educated monolinguals
 - Uneducated monolinguals
- } Commercial success
- Target physical settings: very varied
 - Standing at pharmacy counter
 - With glass partition
 - Face-down on massage table
 - Demonstrating exercises
 - In traction
 - In ambulance



Optimizing Speech Input

- Issues
 - Varied physical settings: noise, barriers, movement
 - Sick, elderly, illiterate patients: indistinct pronunciation
 - ASR is hardware sensitive
 - Error rate
- “Temporary” solutions
 - Lower error rate
 - Dictation-class ASR (Dragon Naturally Speaking)
 - Advantages: better accuracy, more careful speech, **auto-adapting user profile**
 - Disadvantages: training time, form factor, *accuracy
 - Minimize speech input
 - Translation Shortcuts®
 - Seamless auto-complete function
 - Navigate: browse by category/role, search
 - **Accumulate user preferences: personal shortcuts**
 - Handwriting input



ASR/MT coupling

- Issues
 - Input error rate, consequences for MT
- “Temporary” solutions
 - Make the coupling *interactive*
 - Visual monitoring and correction of input
 - Display ASR or handwriting input
 - Spell checking for typed input
 - Important!
 - Advantages: much better input accuracy
 - Disadvantages: interaction time, *literacy requirements



interactive MT

- Issues
 - Coverage, multiple domains
 - Word sense disambiguation in MT analysis
- “Temporary” solutions
 - Visual monitoring and correction of *Word Senses*
 - **1. Display [semantically controlled] Back-translation**
 - Difficult to control with any MT system
 - Reuse parse + WSD from forward translation
 - » approximates interlingua-based checking
 - **MT with marked-up input**



interactive MT 2

- **2. Meaning Cues®**
 - Synonyms, definitions, etc. in SELECT
 - **Accumulate users' word-sense preferences**
- Use rule-based MT
 - **Coverage (~300K wds/language), accuracy, control, interactivity**
- Advantages: mission-critical MT accuracy, user confidence
- Disadvantages: interaction time, *literacy requirements



Commercial SLT: Converser®

- **Hands-free operation**
 - Bilingual multimodal interface
 - Next: automatic turn taking
 - Next: eyes-free operation
- **Multiple input modes**
 - Speech, handwriting, touchscreen, typing
 - Seamless mixing/changing of modes
- **Translation options**
 - Seamless transition between Translation Shortcuts and MT
- **Complex user modelling**
 - Speech profile, word meanings, translation shortcuts, gender, input preferences, usage transcripts
- **Tablet PC for handwriting and touchscreen**
 - Monitoring other hardware options



Next steps

- **Put us out of business!**
- Assume uneducated, illiterate, monolingual users -- corpus?
- Robust noise cancellation
 - Less sensitivity to microphones
- Dictation-class ASR
 - More accuracy, self-correcting
 - With little or no training time
 - **Dynamic adaptation to users**
 - Better mobility, eg, on a PDA (cf. IBM's MASTOR)
- “Controllable” SMT
 - With interactive correction
- More expressive TTS
 - E.g., issues with Question intonation



Questions?

- REBECCA: [and it] happened on BART,
... and it's almost a carbon copy of [2your case2].
- RICKIE: [2Well I've2] made two,
... one a year from,
... almost a year from the,
... uh police report.
- REBECCA: I saw that in your report.
I haven't seen the other re[port].
- RICKIE: [Yeah],
I made that one through=,
(H) matter of fact it was just .. over the phone,
and they never called me back or anything,
and a year later it happened again,
- REBECCA: [Okay].
- RICKIE: [(H) a]=nd,
then that's when they made the report,
and said they were gonna do something about it (Hx).
- REBECCA: .. Okay.

