

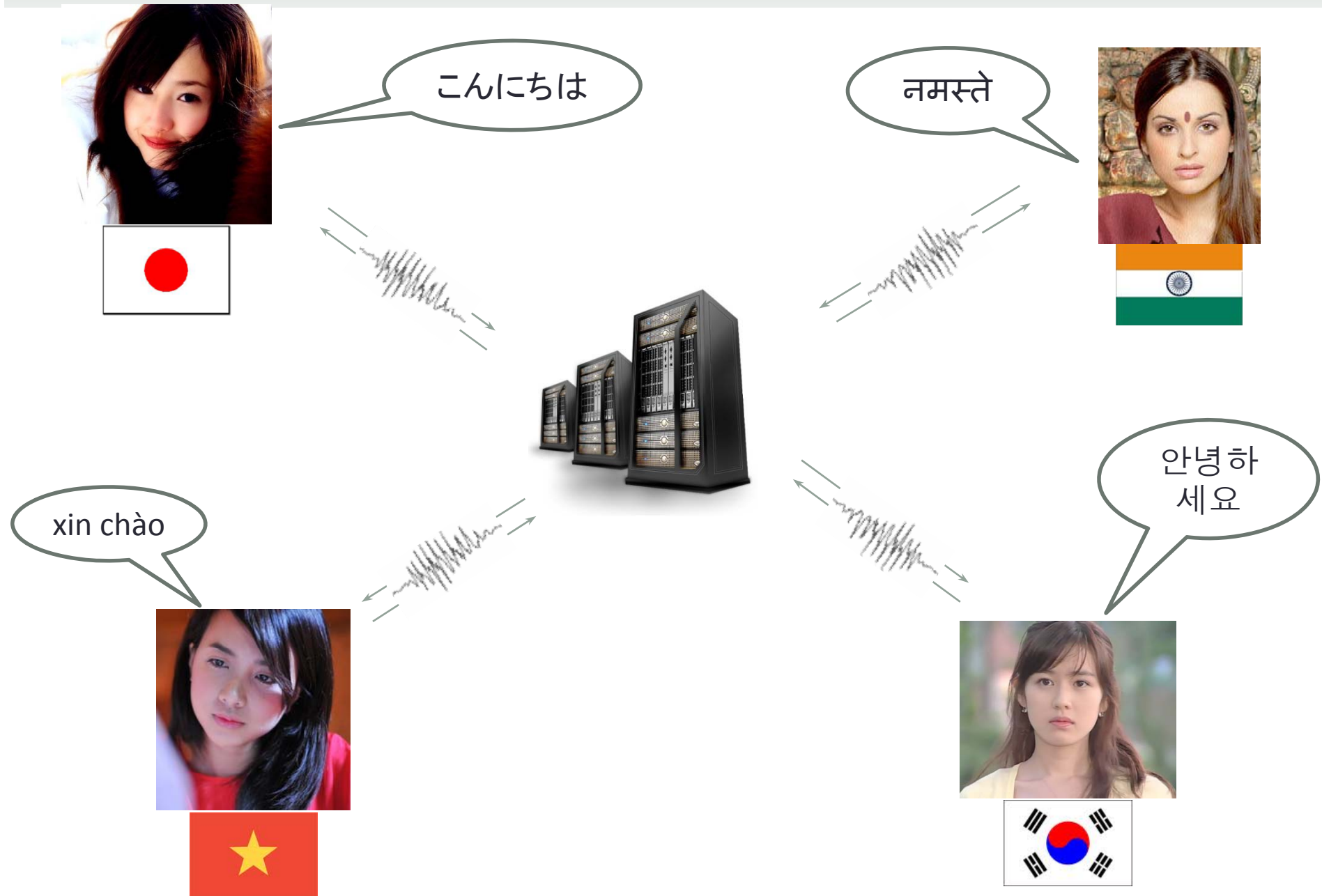


SPOKEN LANGUAGE PROCESSING: APPLICABLE TECHNOLOGIES TO YOUTH AND FARMERS IN YMC

Quan Vu

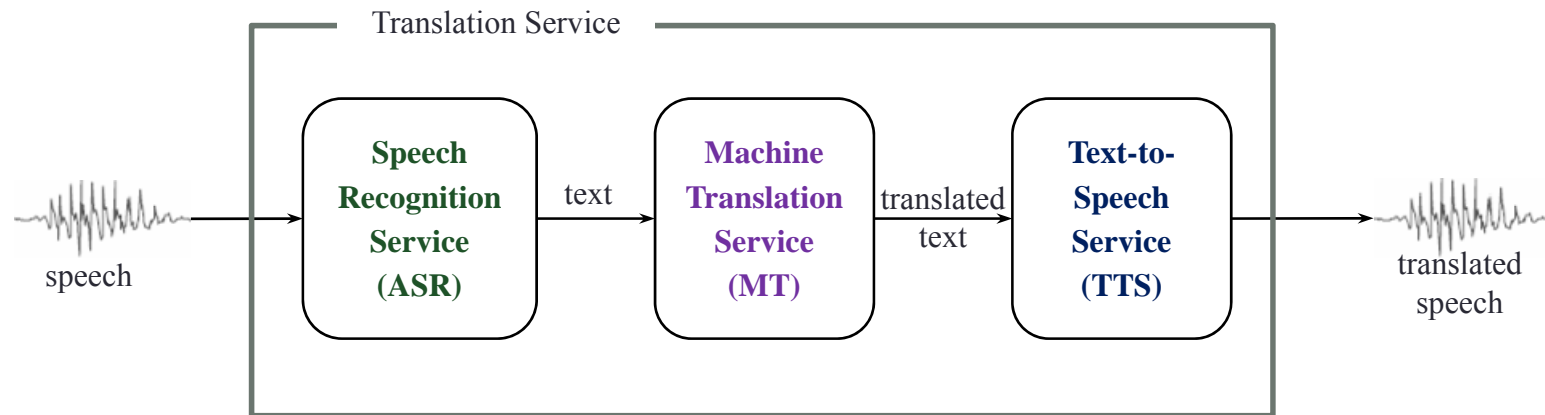
Artificial Intelligence Laboratory, University of Science

Speech-to-Speech Translation



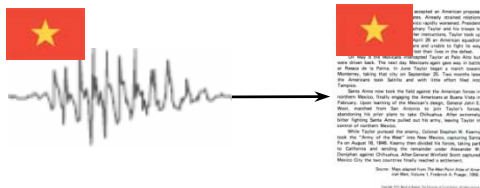
Speech-to-Speech Translation

Design concept



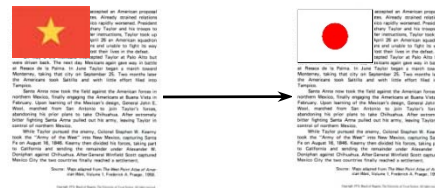
Speech Recognition

– Speech-to-Text Conversion



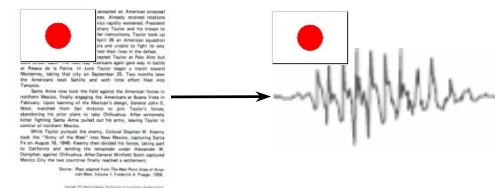
Machine Translation

– Language Translation

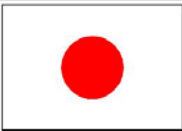

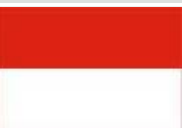




Text-to-Speech

– Text-to-Speech Conversion



Speech-to-Speech Translation

		ASR	TTS	MT
NICT		Japanese English Chinese Indonesian -	Japanese English Chinese Indonesian Malay	Combinations
ETRI		Korean	Korean	Korean-English
NECTEC		Thai	Thai	Thai-English
BPPT		-	-	Indonesian-English
CDAC		-	Hindi	Hindi-English
AILab		Vietnamese	Vietnamese	Vietnamese-English
I2R		Malay	Malay	Malay-English

Vietnamese SLP



Northern Dialects

- **Provinces:** Hanoi, Haiphong, Haiduong, Ninhbinh...
- **Population:** ~32m
- **SLP researches:** IOIT

Central Dialects

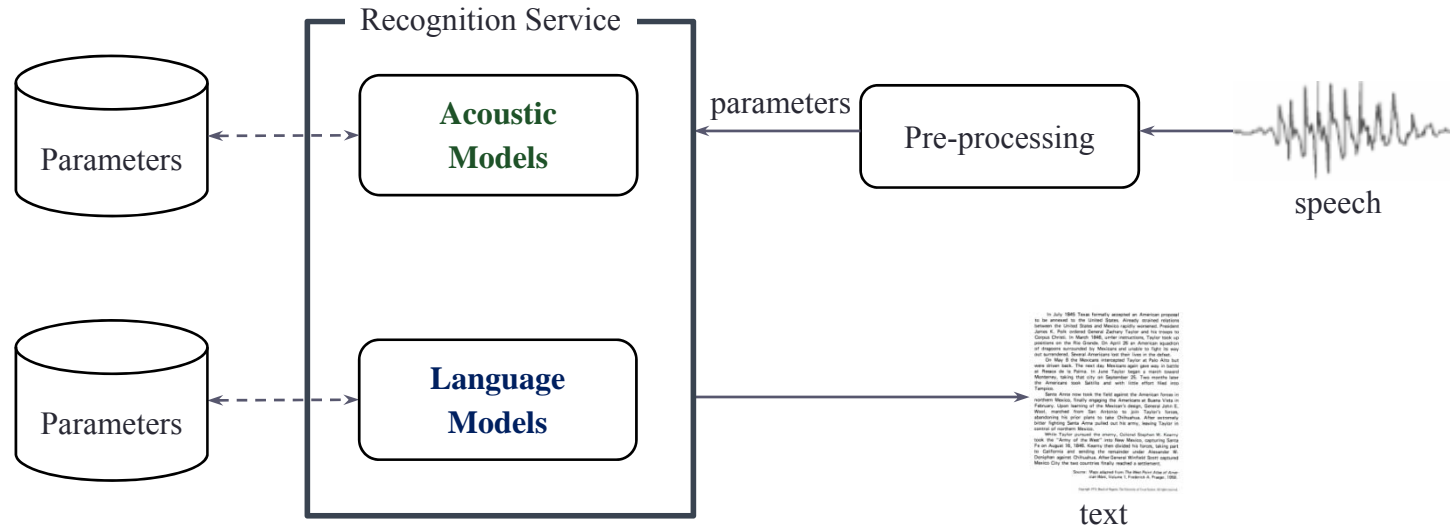
- **Provinces:** Hue, Danang, Hoian, Nghean, Hatinh...
- **Population:** ~20m
- **SLP researches:** none

Southern Dialects

- **Provinces:** Saigon, Phanthiet, Nhatrang, Dongthap, Vinhlong...
- **Population:** ~34m
- **SLP researches:** AILab

Automatic Speech Recognition

Design concept



Broadcast news

- Lexicon size: 7K entries
- Training Material: 28h
- Speakers: ~ 10
- Performance: ~ 90%

Soccer Videos

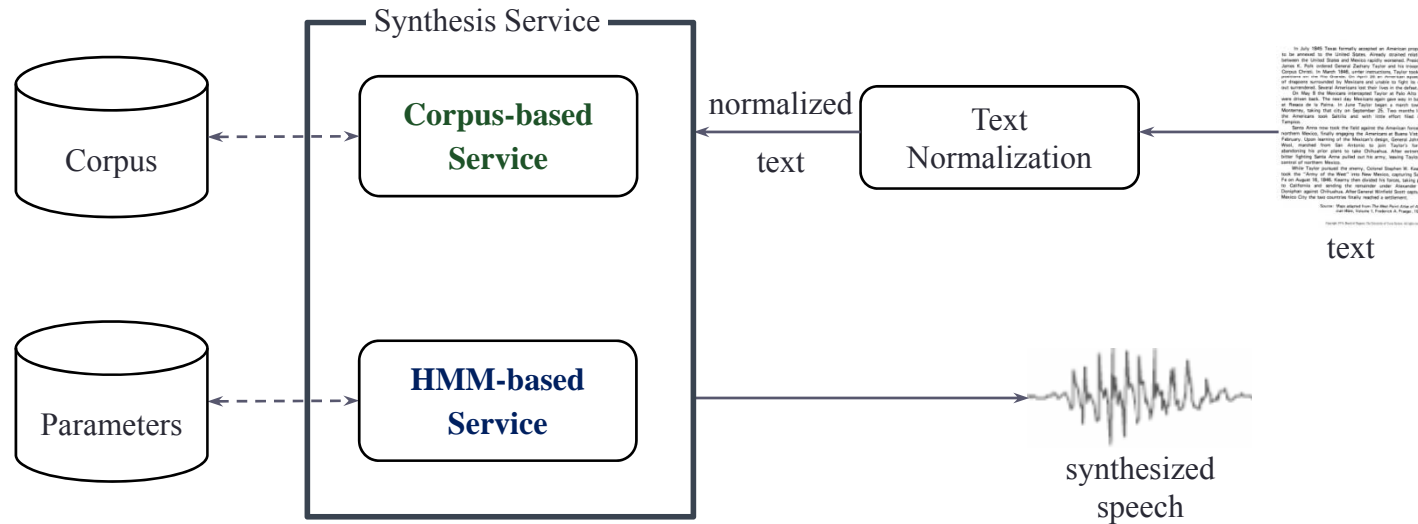
- Lexicon size: 3K entries
- Training Material: 16h
- Speakers: ~ 3
- Performance: ~ 63%

Voice Search

- Lexicon Size: 1K entries
- Training Material: 20h
- Speakers: ~ 100
- Performance: ~ 87%

Text-to-Speech

Design concept



Corpus-based service

– Supported voice:



– Supported domain: News

– Corpus: 41 hours of broadcasted news

– Ongoing: more voices

HMM-based service

– Supported voice:



– Supported domain: News, Stories, Common Conversations

– Training material: 4h per voice

– Ongoing: voice quality

SLP Applications

Speech-based video event retrieval



(a) Scoring



(b) Corner Kick



(c) Foul

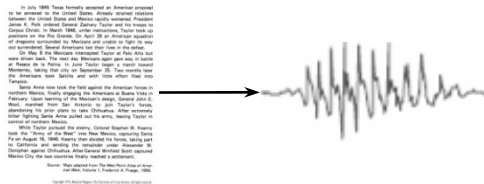


(d) Yellow Card

(demo)

<http://service.ailab.hcmus.edu.vn:8080/kc01/en/video/>

Voice of Southern Vietnam



- **Award:** NTDV 2009

<http://www.ailab.hcmus.edu.vn/slp/vos/default.aspx>

- Registered on the Language Grid

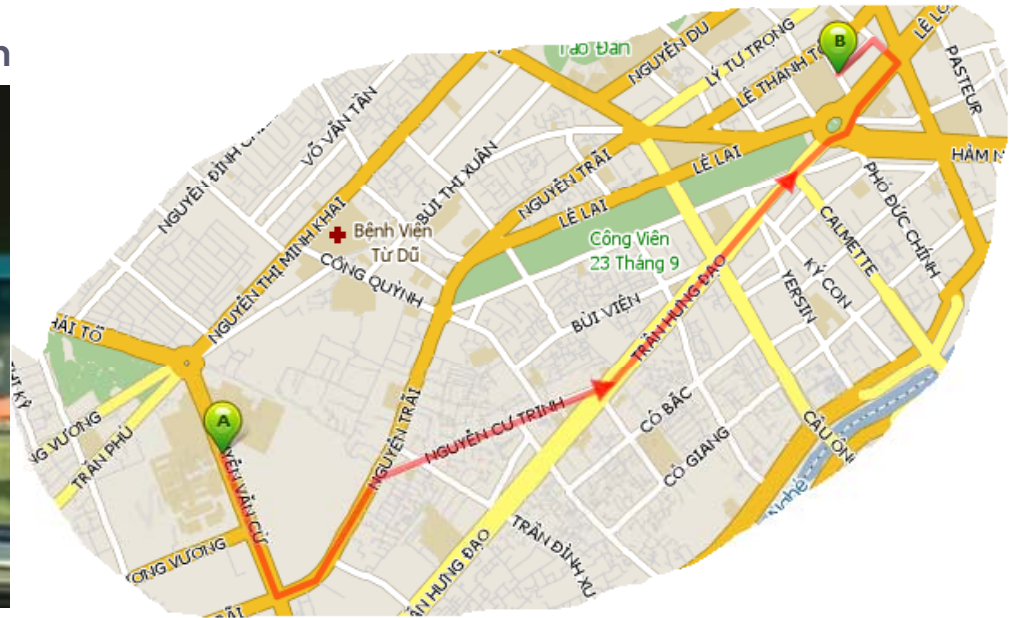
<http://langrid-tool.nict.go.jp/toolbox-stab/>

Call Center for Farmers



SLP Field-Applications

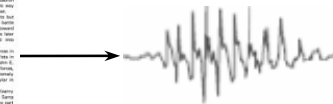
Integrated TTS for Driver Assistance System



In collaboration with Vietbando – <http://www.vietbando.com/maps/>

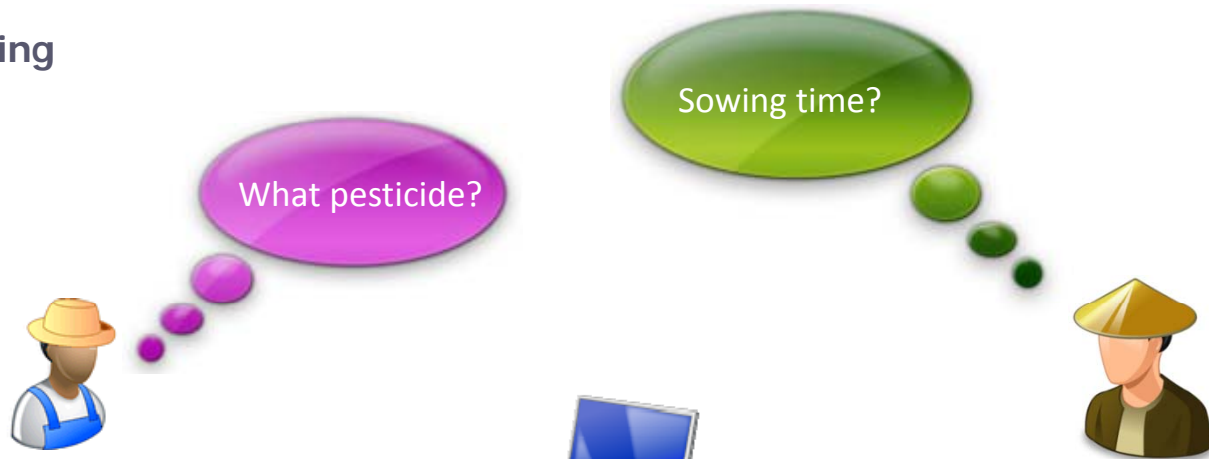
Integrated TTS for Kimtudian

- Built-in Vietnamese TTS for “Smart Dictionaries”
- Kid-friendly interfaces
- In collaboration with Kimtudien – <http://www.kimtudien.vn/>

[illegible]

Call Center for Farmers

Wondering



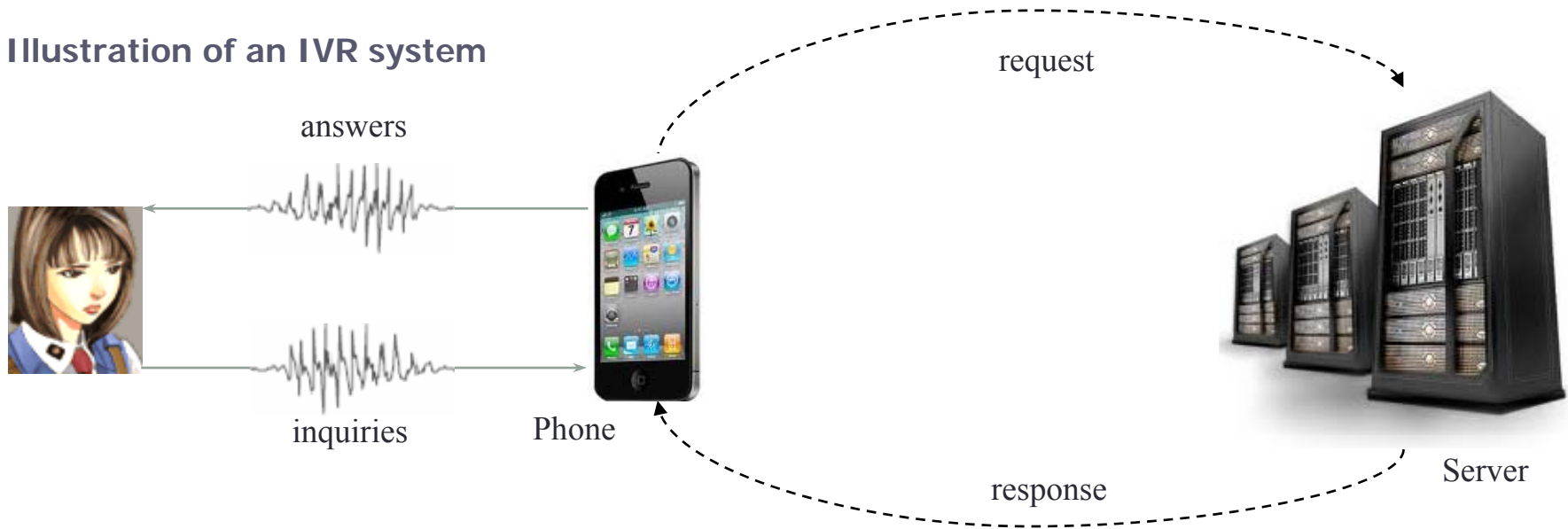
Sources of Information



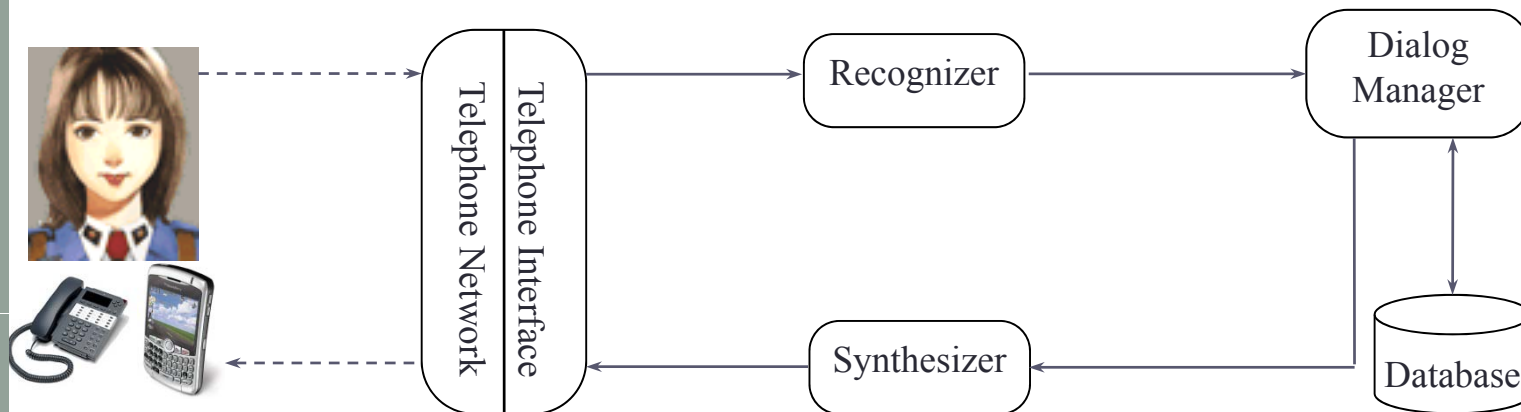
Interactive Voice Response System

Interactive Voice Response System

Illustration of an IVR system

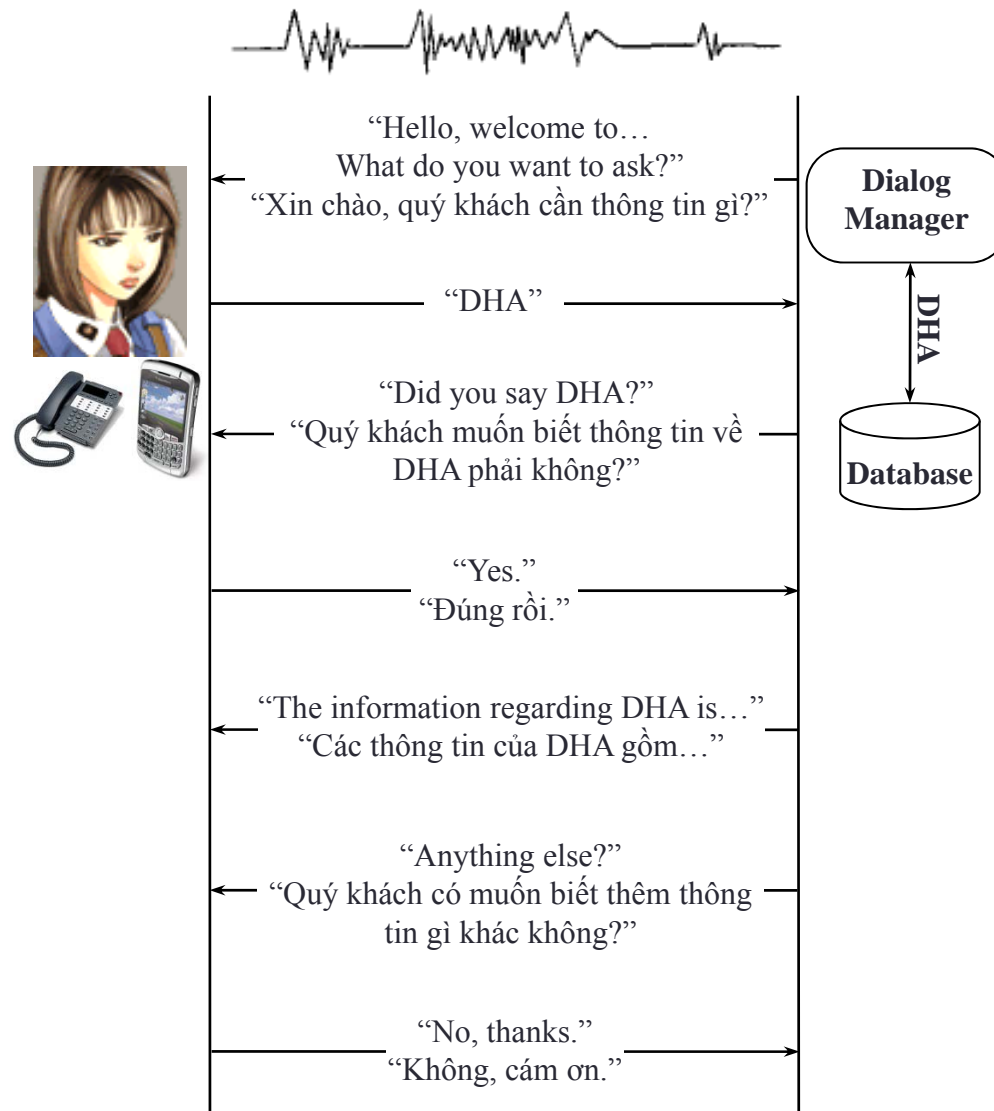


Design concept

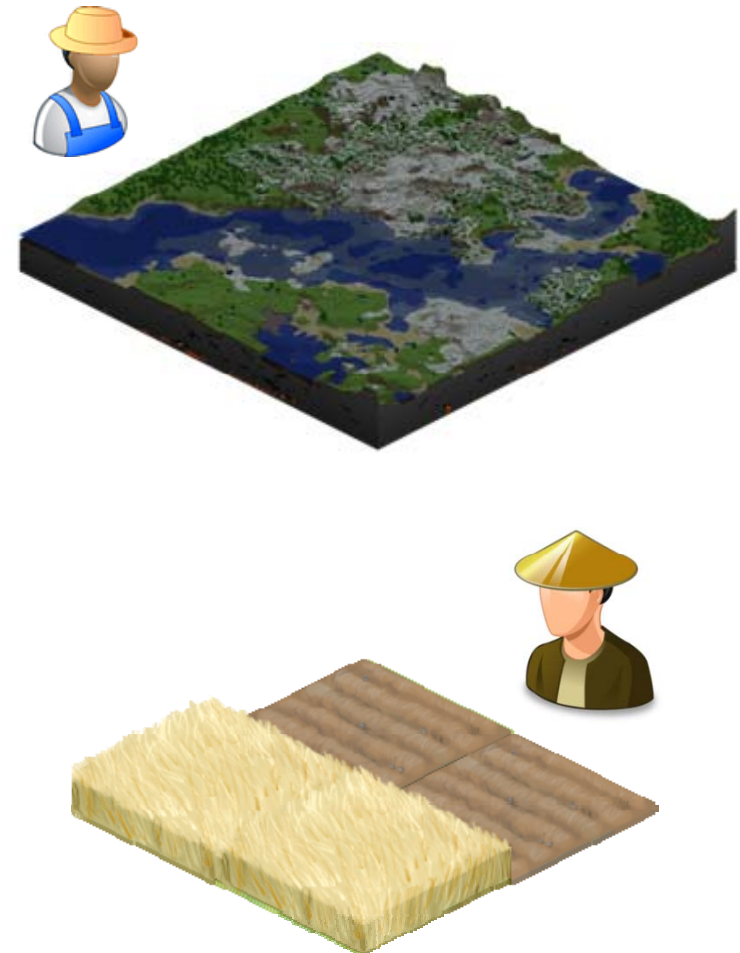


Interactive Voice Response System

An inquiring session



Targets



Youth Interactive SLP



TTS for Children

- Colloquial text, mistyping
- Dis-fluent language
- Lots of slang, symbols, spelling and grammar errors
- Solutions: auto correction, sentence reparsing...



ASR for Children

- Lots of filler words (e.g., ah, uh, oh)
- Dis-fluent language
- Mispronunciation, false starts
- Solutions: children models, LM & AM adaptations, ASR dictionary for kids...

