



Speech Solution Overview



Taihsuan Ho
Cyberon Corporation
Mail: tai@cyberon.com.tw

Outline

- **Introduction to Cyberon's Speech Solutions**
- **Machine Learning in Cyberon's Technologies**
 - Automatic Speech Recognition
 - Text-to-Speech
 - Natural Language Understanding and Dialog
- **Demo**
 - Embedded ASR+NLU in Mitsubishi Lancer 2018
 - Cloud ASR+NLU in VoiceGO!

Cyberon Corporation 賽微科技

- **The leading speech technologies provider**
 - Founded in 2000, based in Taipei, 50+ employee
 - Devoting to speech technologies and software development
 - From embedded IC to server-based solutions
 - From single command recognition to dialog system
 - Global languages: support voice-command recognition of 34 languages
- **More than 60M mobile devices, 600K cars, 10M home appliances, and 60M ICs adopting Cyberon's solutions or apps shipped worldwide.**

References – Mobile Phones



References – Mobile Phones



HTC ONE M9, M9+... HTC 10...
20+ languages worldwide



Acer Liquid X1, Jade series, Z series...
20+ languages worldwide



Sony: all Android phones
(in Taiwan)



Coolpad ivvi 小i
(in China)



Lava Iris 550, 750, A1, A2...
(in Thailand for AIS)

References - Automotives



MPV/M7



SUV/U7



U6



S5



S3



U5



TOYOTA



Camry
(Taiwan)



Corolla Altis
(Taiwan, Indonesia
& Pakistan)



RAV4
(Taiwan)



Innova
(Indonesia)



Sienta
(Taiwan)



Yaris
(Taiwan/Indonesia)



Vios
(Taiwan/Indonesia)



Hilux
(Indonesia)



HONDA



CRV
(Taiwan)



FIT
(Taiwan)



CIVIC
(Taiwan/Pakistan)



CITY
(Taiwan)



X-Trail
(Mexico,
South Africa)



Juke/ Juke2
(Mexico, Indonesia
& Thai)



NP300
(Malaysia,
South Africa)



HYUNDAI



Elantra
(Turkey)



**众泰汽车
ZOTYE AUTO**



T600
(China)



Grand Lancer
(Taiwan)



Outlander
(Taiwan)

References - Others



Cloud ASR for STB control



Smart Home



Smart Hamlet



Smart Toy



TTS in leading TV brands

Supported Languages

American Region

Northern American English
Brazilian Portuguese
Southern American Spanish

Asian Region

Traditional Chinese
Simplified Chinese
(Chinese Accent English)
Cantonese *Korean*
Japanese *Hindi*
Thai *Vietnam*
Arabic *Bahasa*

European Region

UK English *Polish*
German *Czech*
French *Danish*
Italian *Turkish*
Spanish *Finnish*
Portuguese *Norwegian*
Russian *Swedish*
Dutch *Greek*
 Slovak
 Hungarian
 Ukrainian

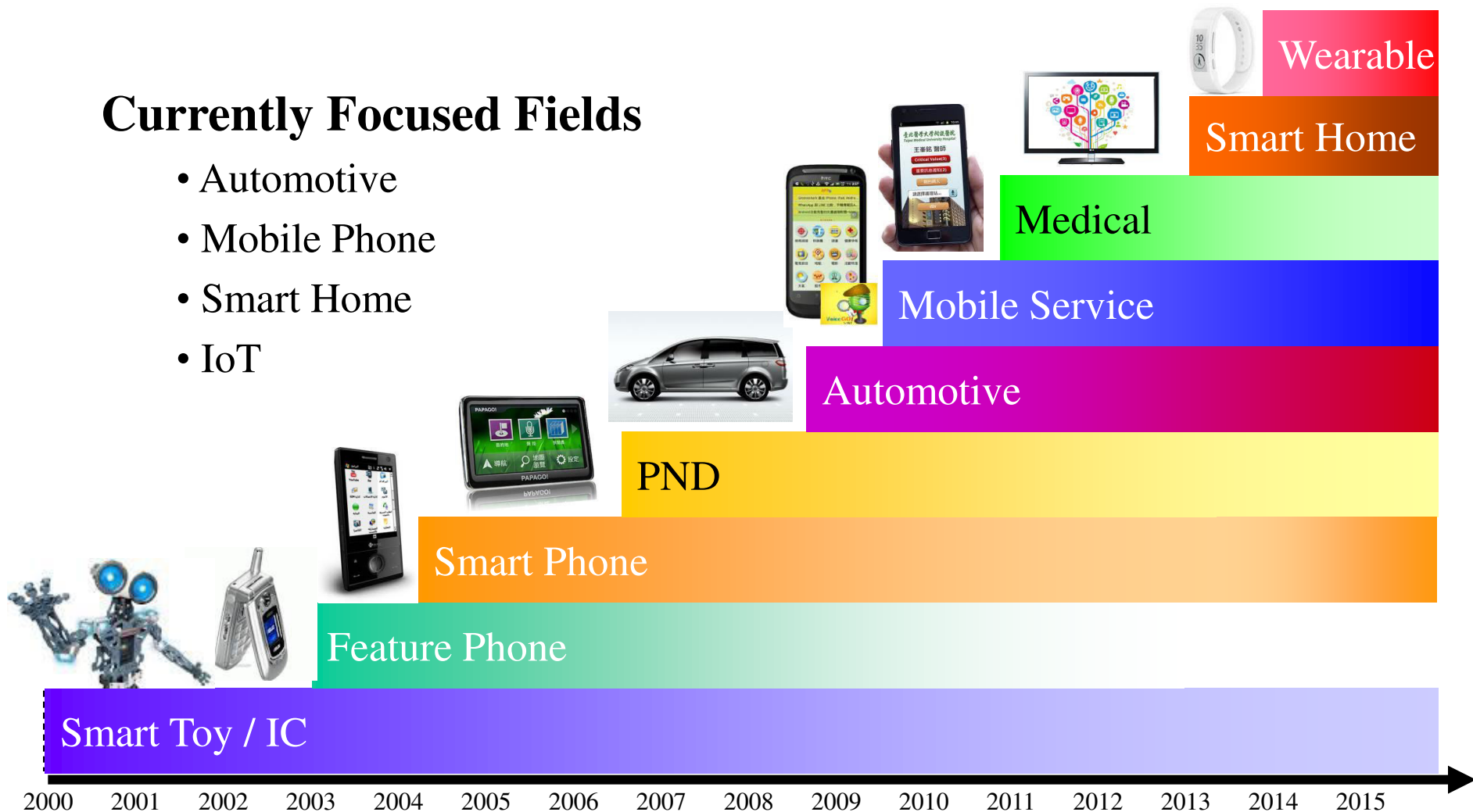
Australian Region

Australian English

Cyberon's Roadmap

Currently Focused Fields

- Automotive
- Mobile Phone
- Smart Home
- IoT



SDK Licenses and Design Services

- CReader – TTS (Text-To-Speech) SDK
- CListener(VStar) – Command-based VR SDK
- CNav Pro/Plus – POI/Address speech input SDK
- CSpotter – Keyword Spotting SDK (always listening)
- CClever – Local free speech ASR and NLP SDK

CClever SDK



CNav Pro/Plus SDK



CReader SDK



Cloud Services

- **TTS web services**

- More than 20 languages of high-quality synthesized voices.
- Support customized voices. [\(demo\)](#)



- **CElf web services**

- ASR(STT)
- NLU
- Dialog
- Chatbot

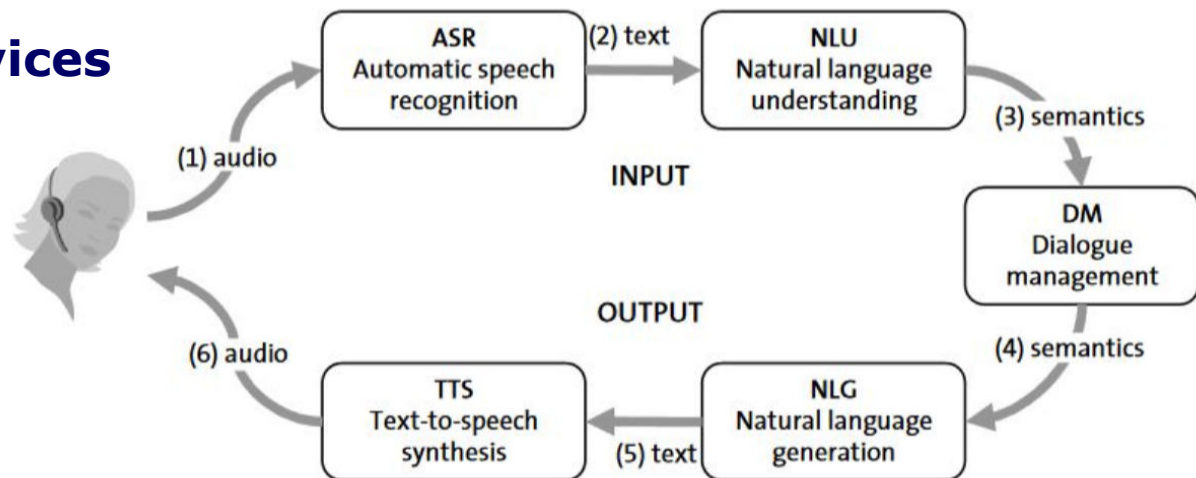
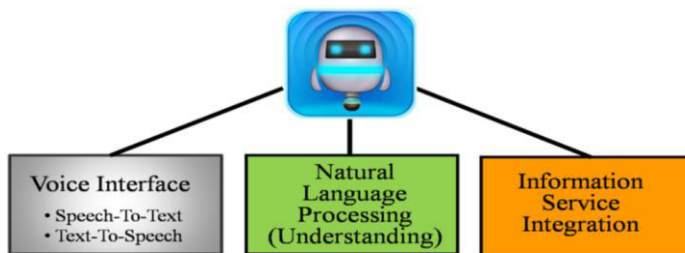


Image from Gabriel Skantze, <https://www.speech.kth.se/~gabriel/thesis.html>

Applications

- **VoiceGO!** 生活行小幫手
 - More than 3M downloads, DAU: 130K, MAU: 800K
 - Using CElf service, understand spoken queries for 12 domains.



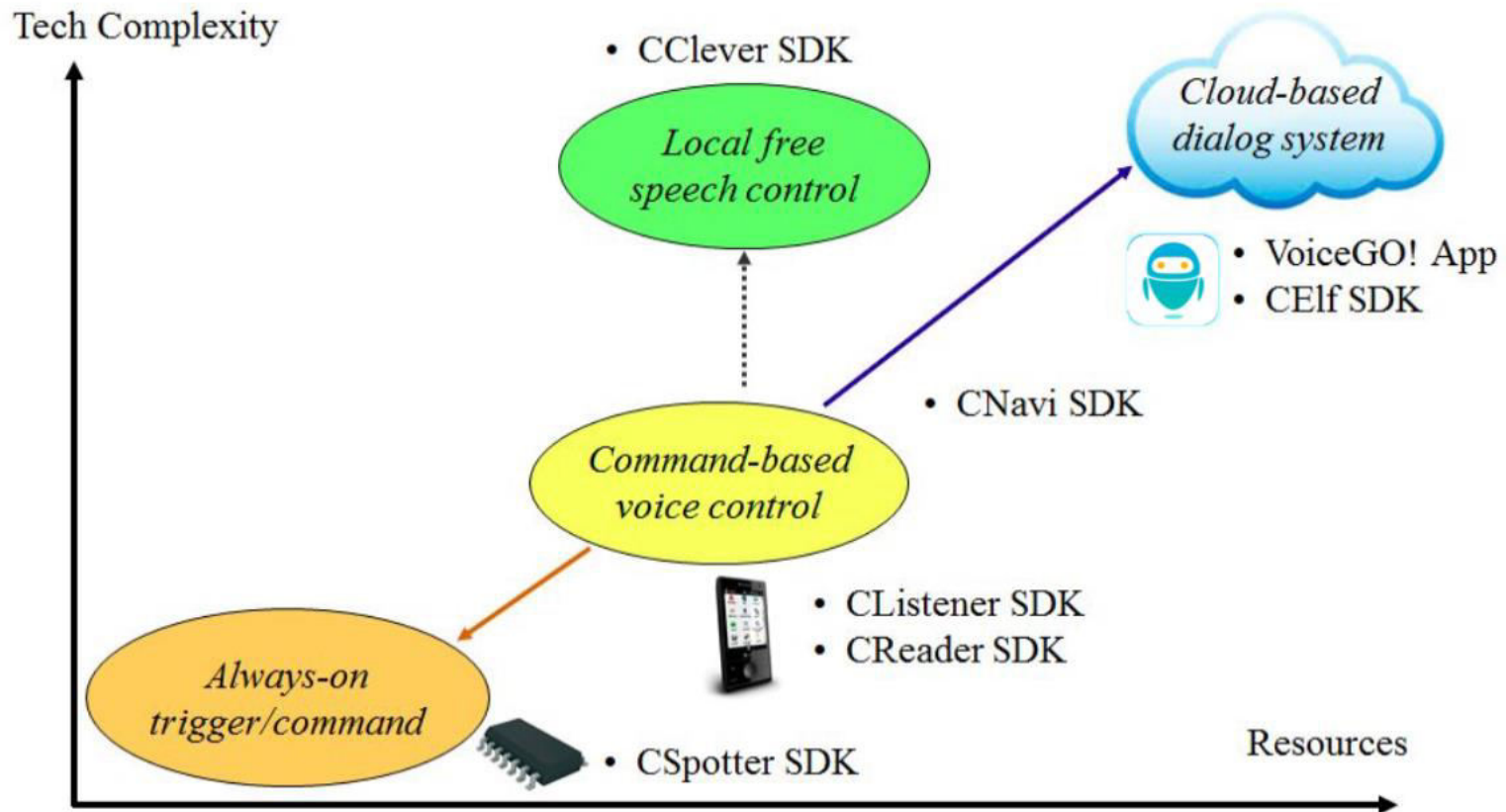
iOS



Android



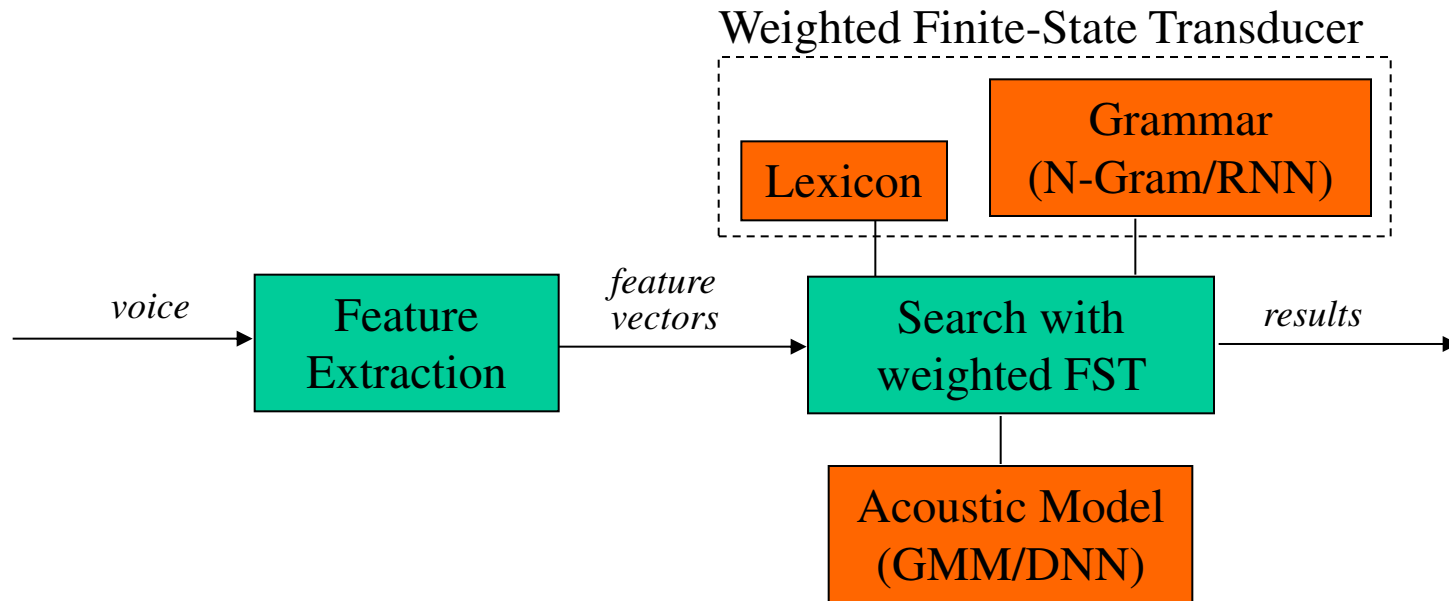
Full Product Line



Outline

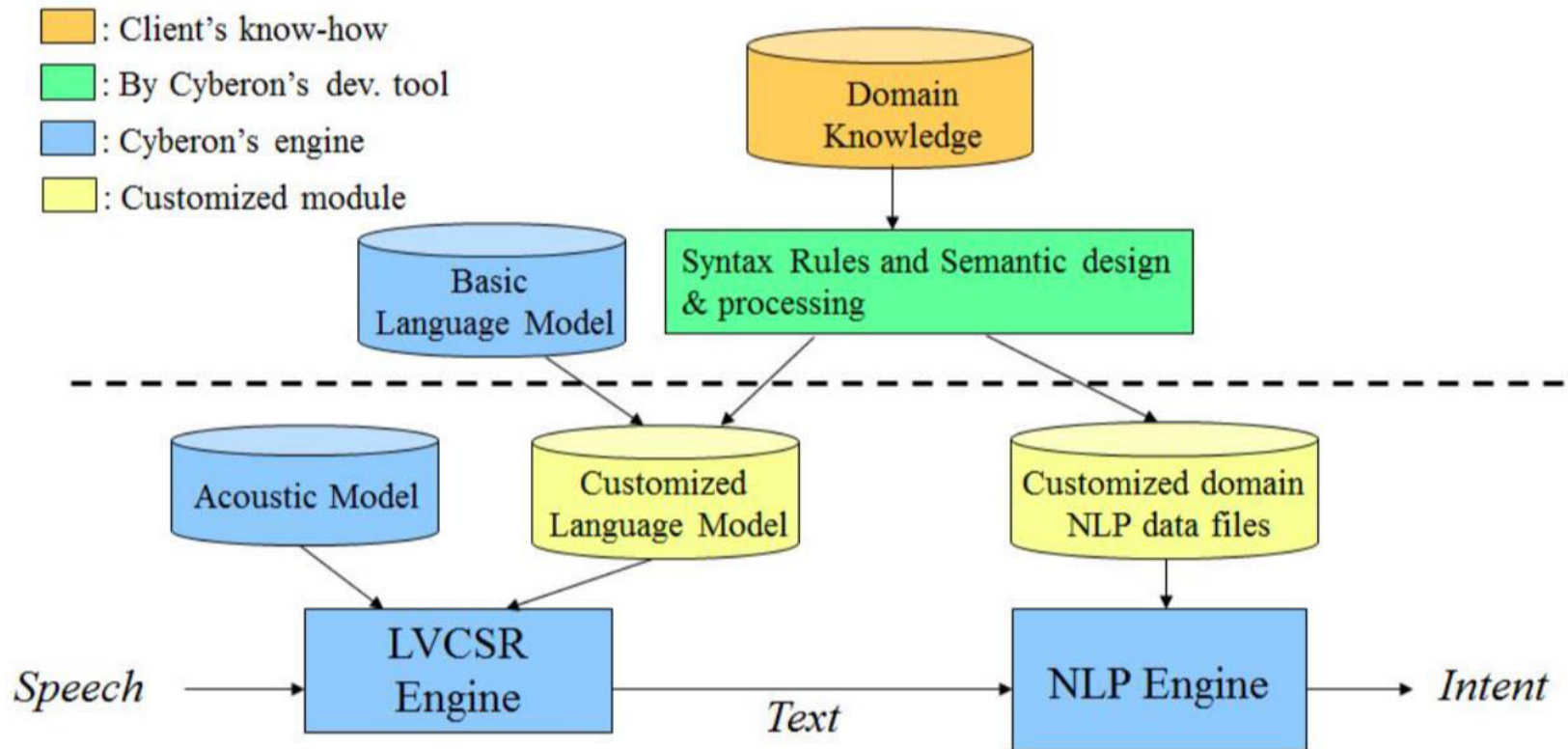
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Automatic Speech Recognition

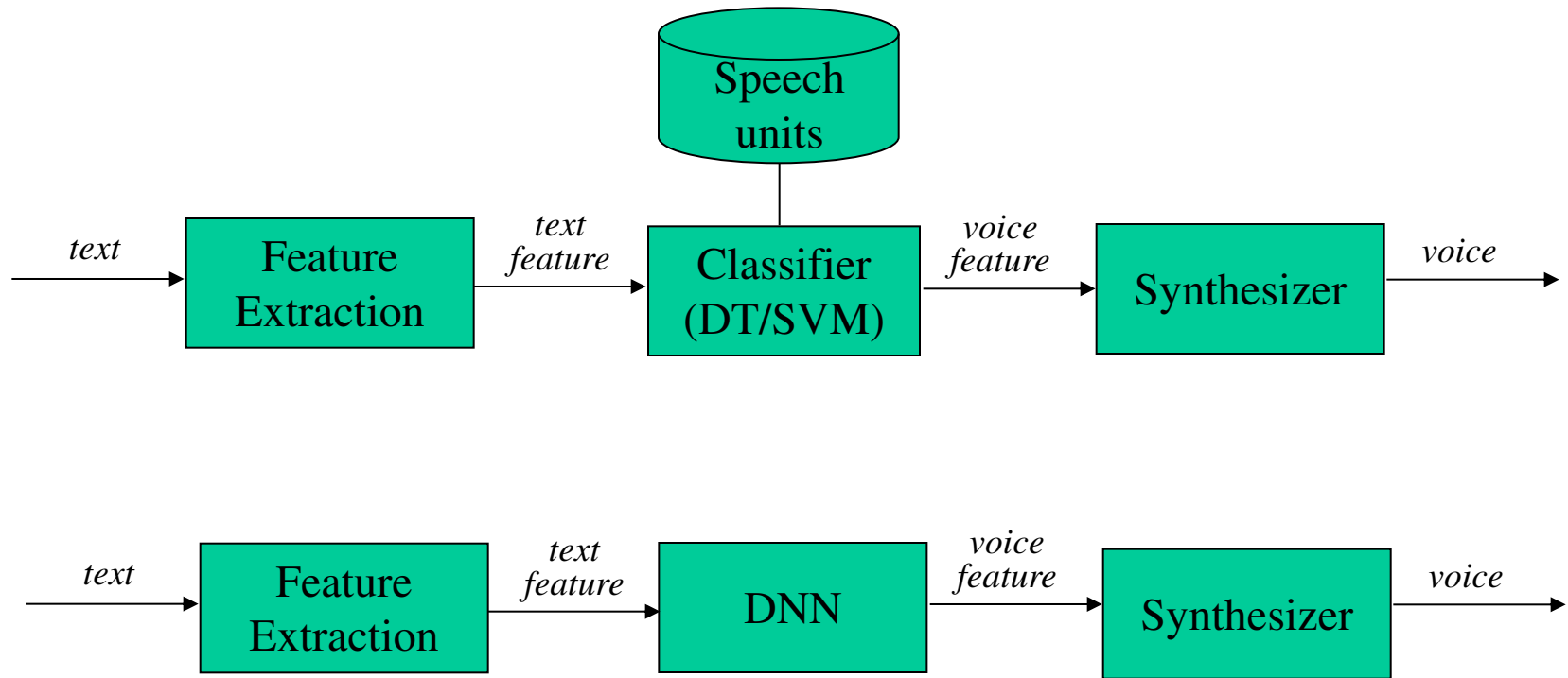


- Kaldi to train DNN acoustic models.
- SRILM toolkit to train RNN language models.

ASR+NLU for Specific Domain



Conventional TTS

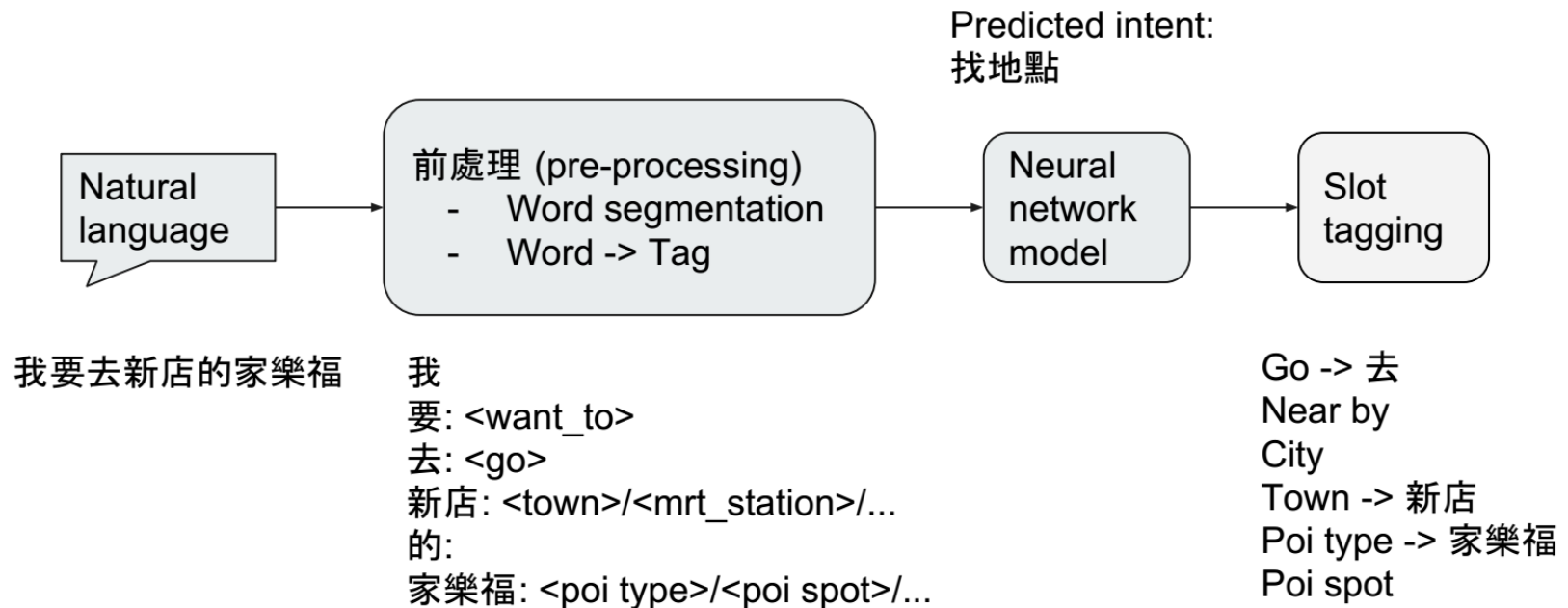


End-to-end TTS

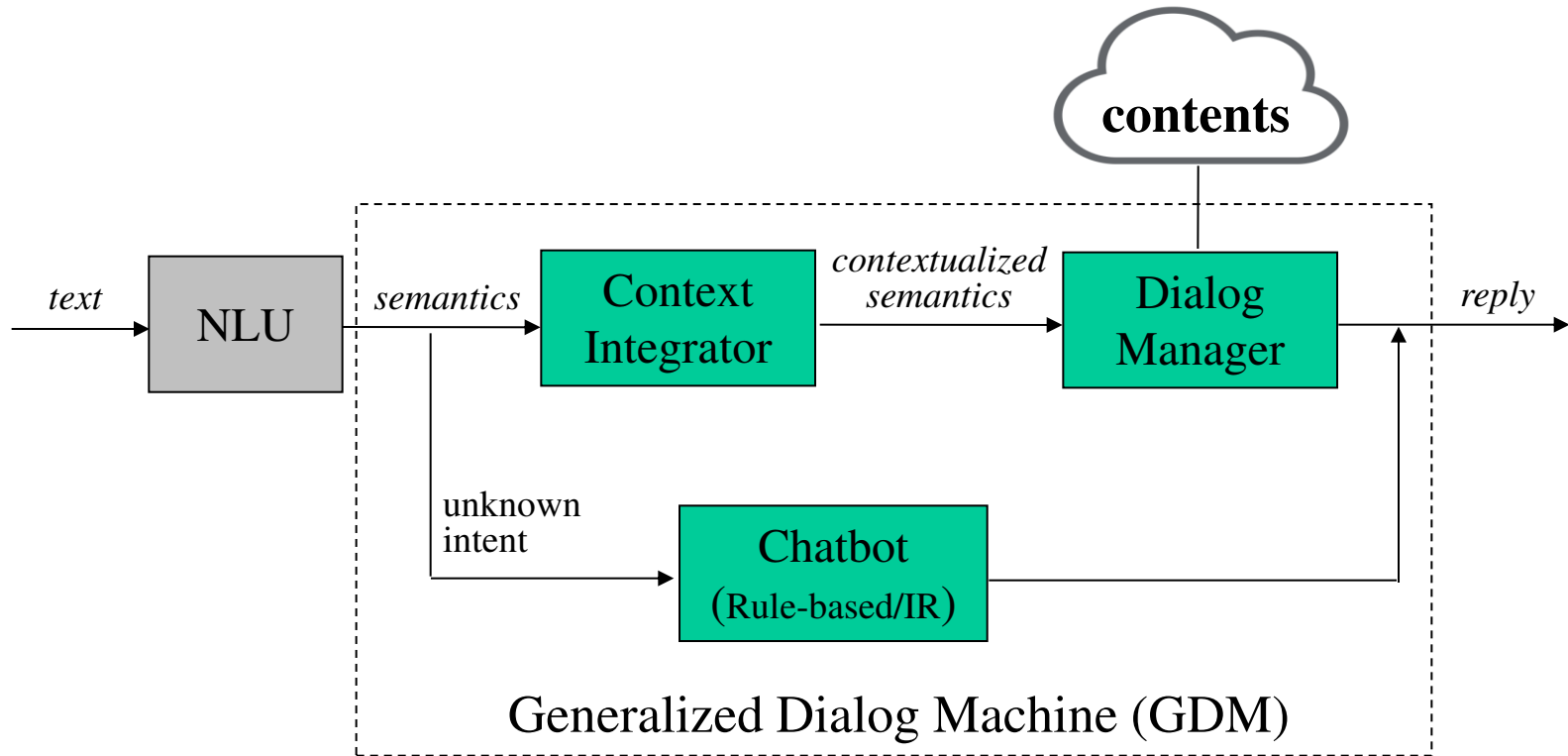


- Minimal human annotation for the training data
- **Tacotron 2** indistinguishable from humans
<https://www.xda-developers.com/alphabet-tactron-2-speech-indistinguishable-from-humans/>

Natural Language Understanding



Cyberon's Dialog Manager



- Web-based tool for developer to design and improve dialog flow.

Demo



<https://www.youtube.com/watch?v=PRYXo8JMwdc&feature=youtu.be>



<https://www.youtube.com/watch?v=PFoAe14rm1k&feature=youtu.be>