



Volker Jantzen - SVOX AG

The importance of speech technology
for the fully networked car

Geneva, 5-7 March 2008



- o Hollywood's (= Audi's) **Vision:**
I Robot



- o State-of-the Art **Technology:**
BMW Talks



- o State-of-the Art **Product:**
Volkswagen RNS 510



- **Higher safety**
 - Eyes on the road
 - Hands on the steering wheel
- **More efficient HMI**
 - Faster data input (e.g. destination)
 - More flexible navigation through menus
- **New dimension of interaction**
 - Dynamic voice directions
 - Reading of content (E-mails, SMS, WWW or WAP)

So what's the problem then ... ?

- **Problem 1: People are used to haptic and visual HMI**
 - Changing a habit takes energy and time
 - Talking to a machine may feel awkward
- **Problem 2: People have had bad experiences**
 - Recognition rate was too low
 - People had to memorize voice commands
 - Voice feedback was unpleasant or hard to understand
- **Problem 3: People cannot (yet) buy it**

○ One-shot destination input

	Germany	US Michigan
Cities:	72.000	3.000
Streets:	715.000	329.000

- Recognition of city, street, and house-number in one utterance
- On-the-fly activation of street name vocabulary for selected cities
- Improved recognition by combination of city and street name recognition scores

Zürich, Baslerstrasse 30

Start MÜNCHEN (BAYERN)
MÜNCHEN (GEMFHS, RESEIT, BAYERN)
MÜNCHEN, LEBIGAL-WAARENBRÜCK (BRAND)
MÜNCHEN, BAD BERKA (THÜRINGEN)
MÜNCHEN, HIRSCHBACH (BAYERN, AMBERG)
MÜNCHEN, HILTHERM (BAYERN, PASSAU)
MÜNCHHOF, EGGELTOWEN
MÜNCHINGEN, KORNTAL-MÜNCHINGEN (LLLD)

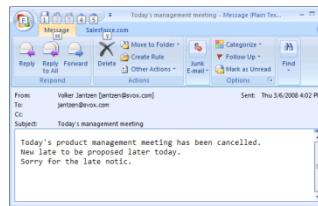
MÜNCHEN (BAYERN) OTTO-HAHN-RING 6
MÜNCHEN (BAYERN) OTTO-HAHN-RING 60
MÜNCHEN (BAYERN) OTTO-HAHN-RING 70
MÜNCHEN (BAYERN) OTTO-HAHN-RING 10
MÜNCHEN (BAYERN) OTTO-HAHN-RING 5
MÜNCHEN (BAYERN) OTTO-HAHN-RING 16
MÜNCHEN (BAYERN) OTTO-HAHN-RING 17
MÜNCHEN (BAYERN) OTTO-HAHN-RING 30
MÜNCHEN (BAYERN) OTTO-HAHN-RING 50
MÜNCHEN (BAYERN) OTTO-HAHN-RING 40
MÜNCHEN (BAYERN) OTTO-HAHN-RING 18
MÜNCHEN (BAYERN) OTTO-HAHN-RING 90
MÜNCHEN (BAYERN) OTTO-HAHN-RING 12

MÜNCHEN (BAYERN) OTTO-HAHN-RING 6
11739 München
Adresse:
Otto-Hahn-Ring 6
81739 München
Routen berechnen: Hierher - Von hier
In der Nähe suchen - Unter "Meine Karten" speichern

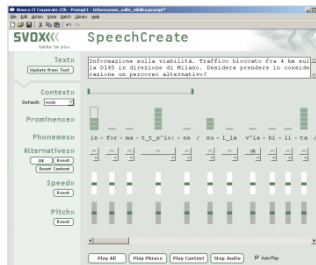
- **Annoying:** Poor Text-to-Speech



- **Better:** High-end Text-to-Speech









































































- **Best:** Well-designed voice instructions and dialog prompts using TTS tools

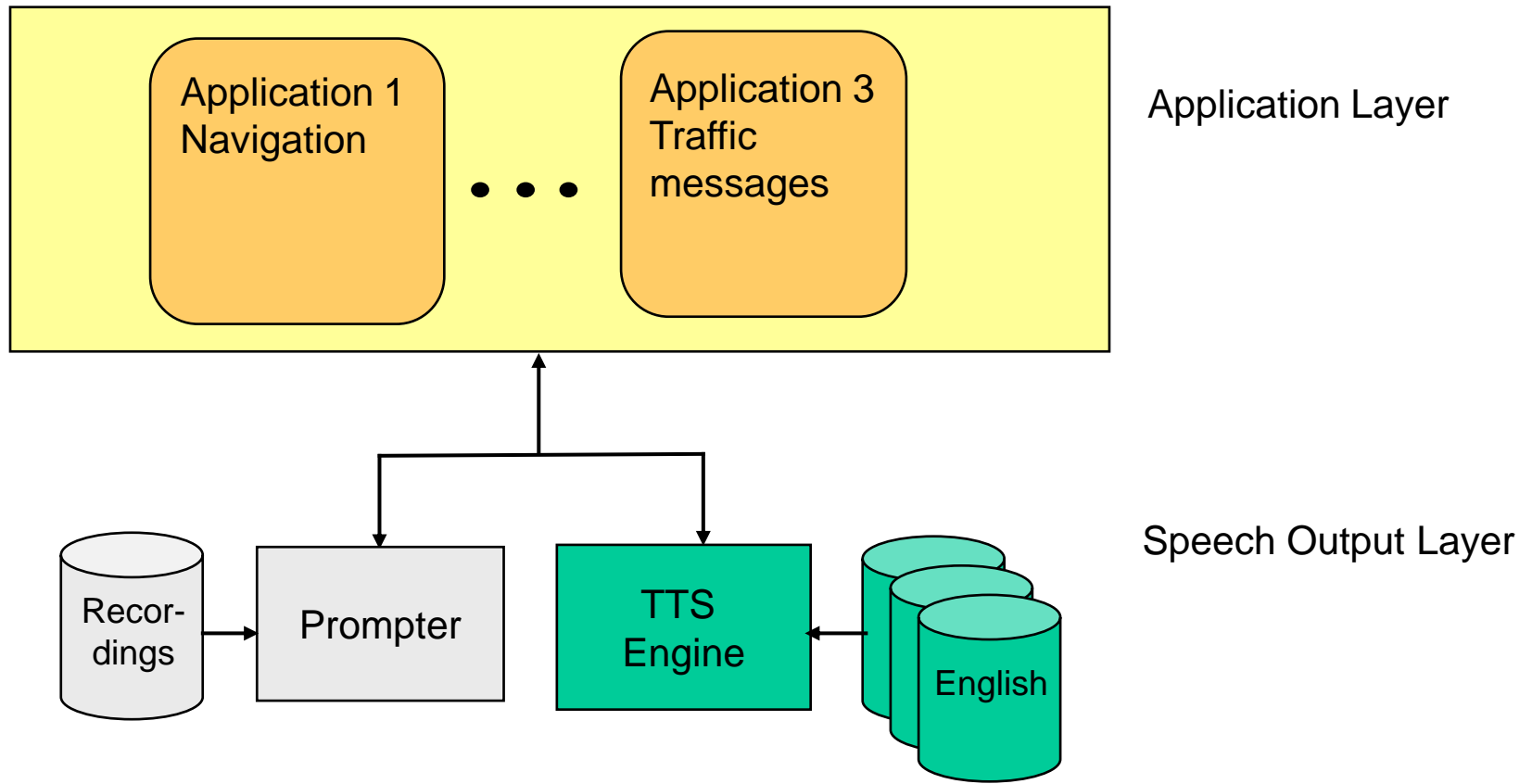


In Europe TTS != TTS

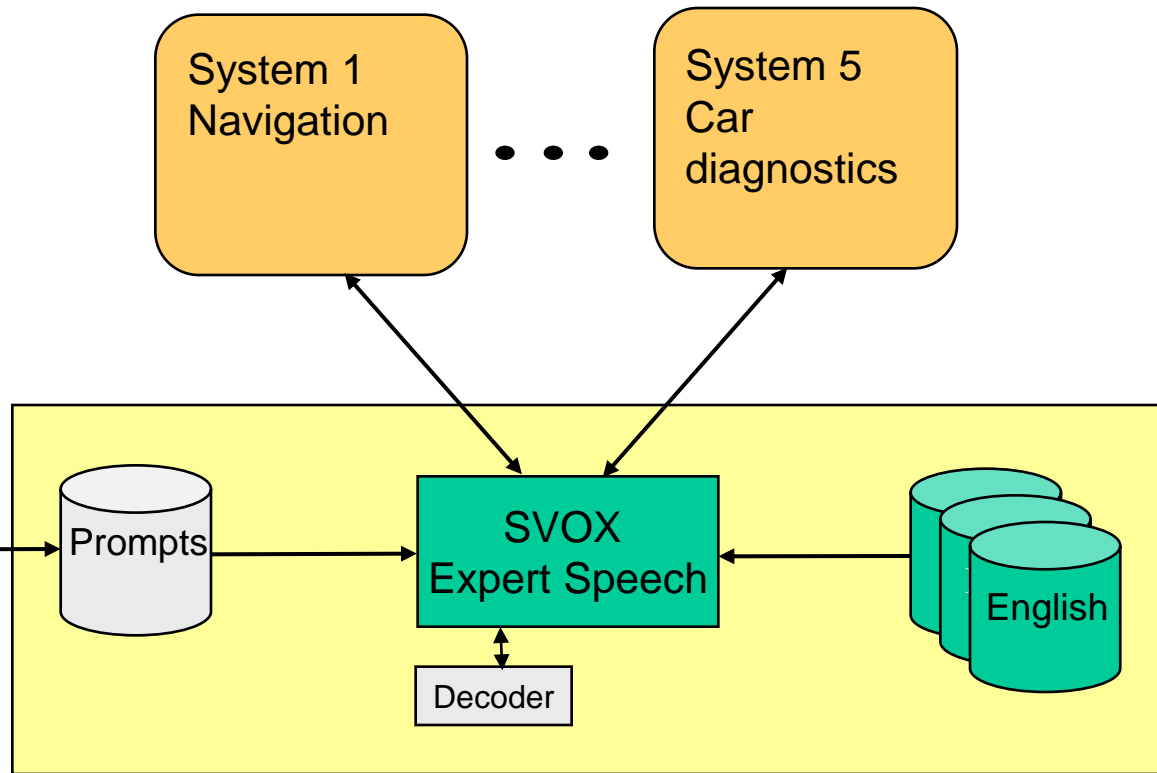
- Pronouncing **cities and street names** right in foreign countries is **not trivial**

	Australia	Belgium	US	France	Germany	Ireland	Italy	Nether-lands	Portugal	Sweden
en-UK										
ru-RU										
de-DE										
es-MX										
ca-FR										
nl-NL										
sv-SE										

From **application-driven** speech output..



... towards **intelligent speech I/O middleware** for connected systems.



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