Multilingual and mixed-lingual TTS applications

LangTech 2003
November 24, 2003

Simona Fina, Manager Linguistics

Real-life texts need mixed-lingual analysis

Agenda

▸ Short presentation of SVOX
▸ Challenges for Text-To-Speech systems
▸ Multilingual TTS
▸ Mixed-lingual TTS
▸ Business cases
▸ SVOX´s architecture and approach
▸ Competitive advantages of SVOX products

We make your products talk.

You have a call from Tim Connors.

▸ SVOX AG is a software company focused on Text-To-Speech

▸ Innovation leader in TTS for automotive and mobile devices

▸ Vision: Leading player in a young but growing market with high potential

Spin-Off Swiss Federal Institute of Technology

SVOX«««
talks to you

Since 1986: 15 years of advanced research

▸ Transfer of know how and human resources

ETH
Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

April 2000

▸ Commercial version of the SVOX Text-To-Speech system

▸ Offices: CH / D / A / USA

▸ Main investor: Siemens Mobile

SVOX Markets

Telecom/Enterprise	Automotive	Mobile	Consumer
Server	**Embedded**		**Cons. Apps**
▶Telecom operators ▶Companies with 100 and more employees	▶Navigation systems ▶Car info-tainment ▶Hands-free car kits	▶Mobile phones ▶Consumer electronics ▶Toys	▶MMS services ▶Voice download services

Case study: Unified Messaging

Swisscom Fixnetbox:

Listen to Email and SMS

Email text (German – English) :

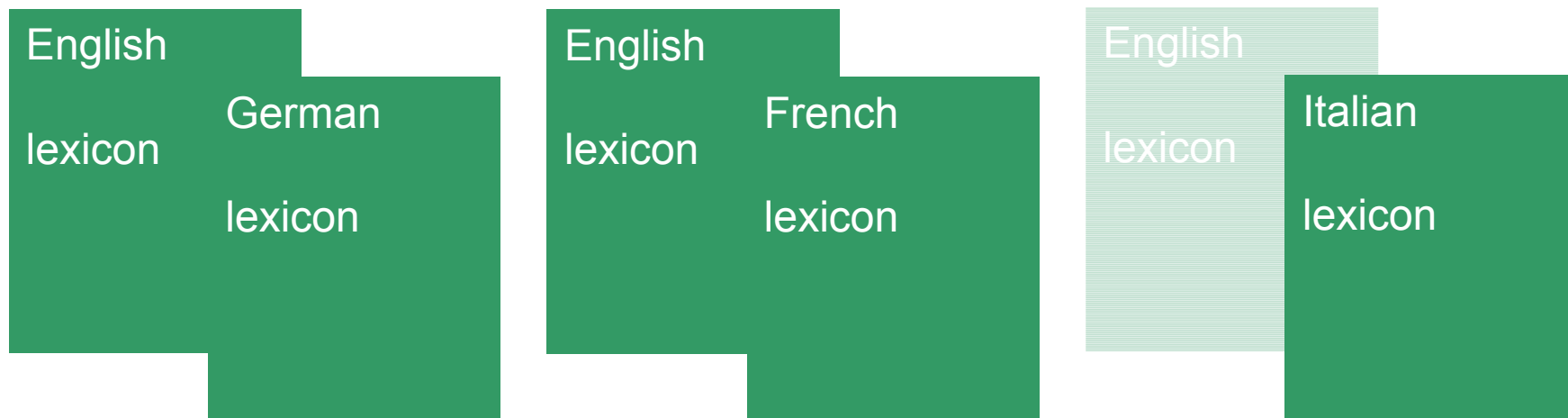"Ich möchte die Audio-Komponente eines gestreamten Quicktime-Films aus dem Internet aufzeichnen."
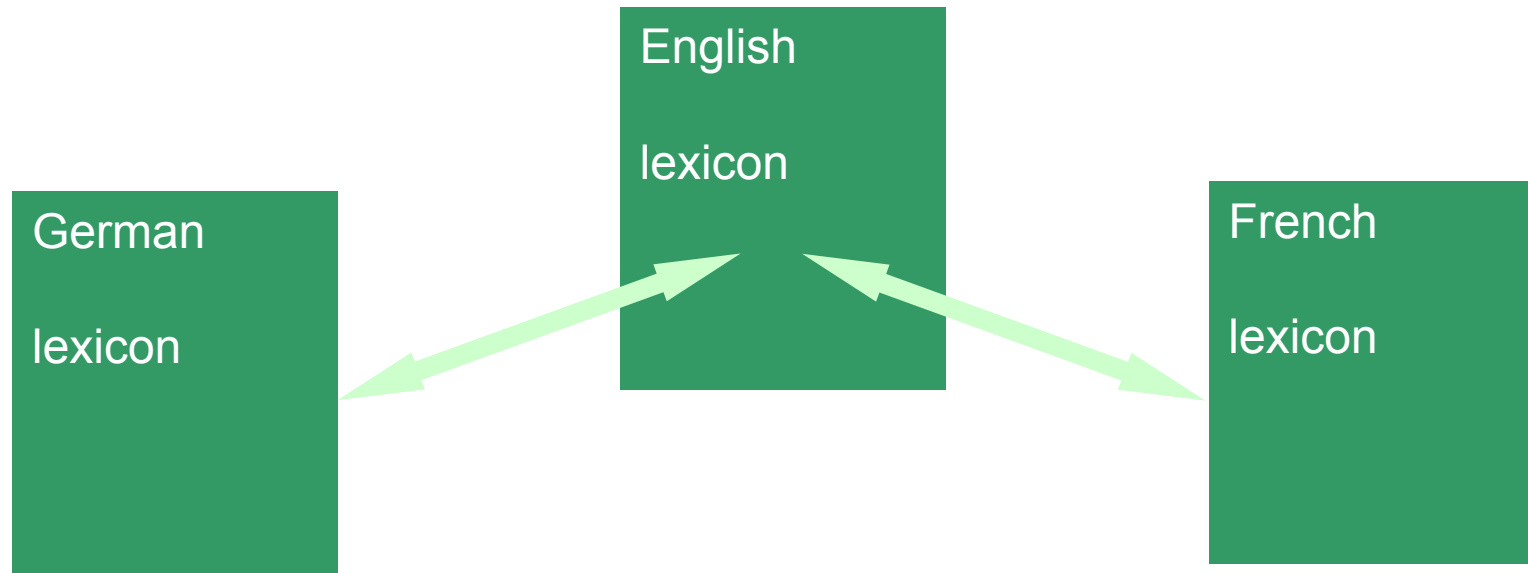
Multilingual

Mixed-lingual

Multilingual Text-To-Speech

▸ **separate sets of language resources**

▸ **redundant lexical information**

▸ **large memory size**

Mixed-lingual Text-To-Speech

English lexicon

German lexicon

French lexicon

▸ **interconnected sets of language resources**

▸ **no redundant lexical information**

▸ **small memory size**

Business Case: Talking MMS

¡Hola! Esta noche me voy a ver **Le Divorce**. Es con **Kate Hudson**. Llámame si quieres venir.

Business Case: Automatic Directory Assistance

Welcome to directory assistance. Please say the name and city of the person you are looking for.

Francois Odermatt Zürich

I understood Francois Odermatt, Zurich. Is this correct?

Yes.

The address you requested is: Francois Odermatt, John F. Kennedy Strasse, 8005 Zurich Phone number 01 3105613

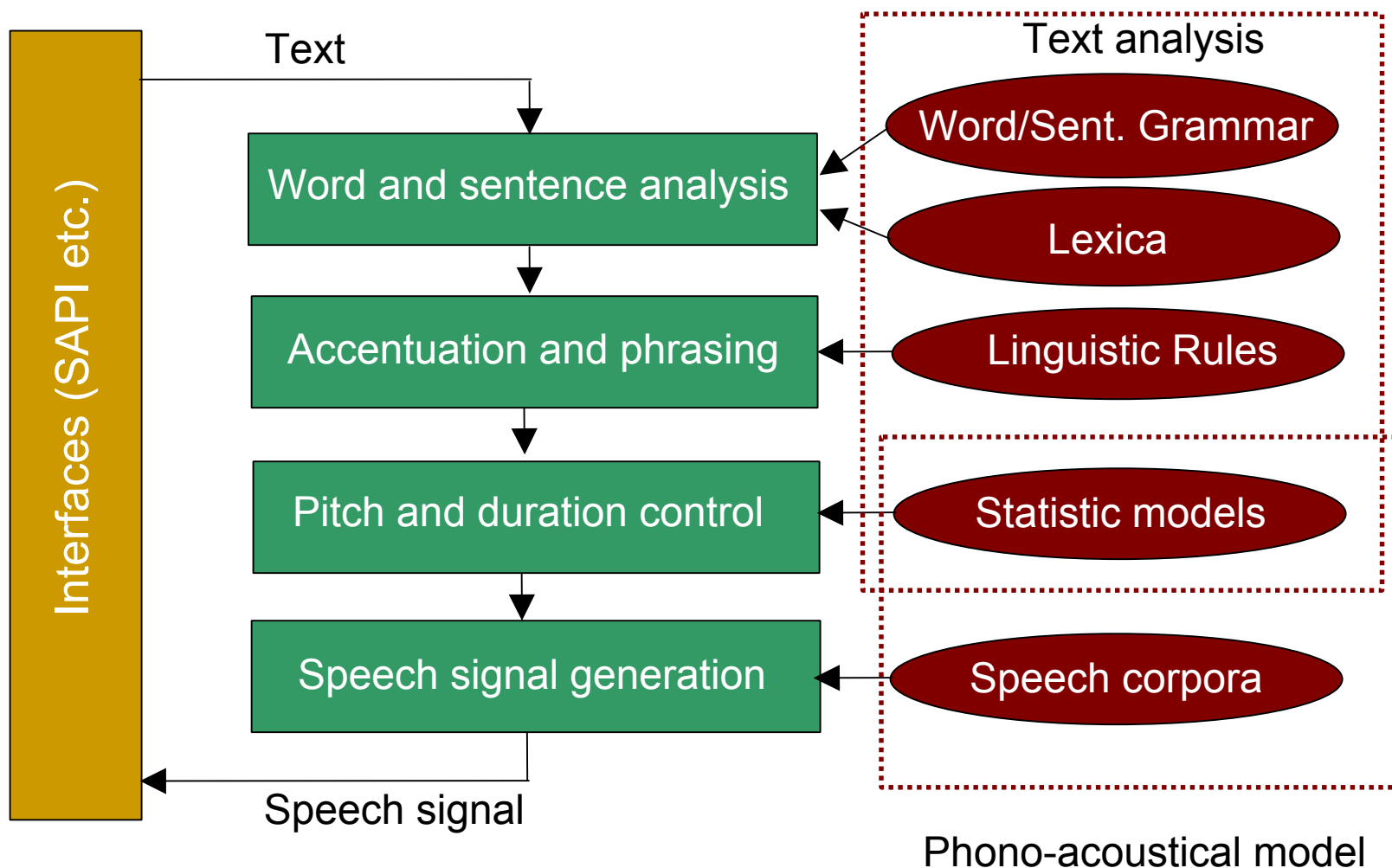# Business Case: Car Navigation

Harman/Becker :
Directions

Directions (English – German) :

"Turn right onto Bahnhofstrasse."

Multilingual   Mixed-lingual

The SVOX System

Text analysis

- Word/Sent. Grammar
- Lexica
- Linguistic Rules

Text
→ Word and sentence analysis
→ Accentuation and phrasing
→ Pitch and duration control
→ Speech signal generation
→ Speech signal

Interfaces (SAPI etc.)

Statistic models

Speech corpora

Phono-acoustical model

Linking between languages

- phone mapping
- mapping of grammatical categories
- mapping of grammatical features

Phone mapping

Email text (German – English – Italian) :

Überprüfen Sie die Checkliste und teilen Sie das Ergebnis umgehend Herrn Taglicci mit.

Italian [L_L] → German [l]

Mapping of grammatical categories

Überprüfen Sie die Checkliste und teilen Sie das Ergebnis umgehend Herrn Taglicci mit.

English Noun → German Noun

Mapping of grammatical features

German   English
Buch (neut,sing,nom) →   (neut,sing)

Italian   German
libro (masc,sing) →   (masc,sing,nom)

Competitive advantages of SVOX products

▶ **Mixed-lingual**

Possibility to mix different languages

▶ **Scalability**

Smallest footprints, first and only concatenative TTS for mobile phones

▶ **Modularity**

Modular architecture saves millions in integration

Summary

▶ Short presentation of SVOX
▶ Challenges for Text-To-Speech systems
▶ Multilingual TTS
▶ Mixed-lingual TTS
▶ Business cases
▶ SVOX´s architecture and approach
▶ Competitive advantages of SVOX products

Thank you.

Let´s talk:

SVOX AG

Baslerstrasse 30
CH-8048 Zürich
Switzerland

Simona Fina

Phone +41 43 544 60 20
fina@svox.com