

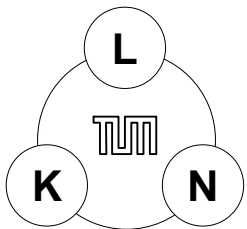
Web Enabled Telecommunication Service Control Using VoxML

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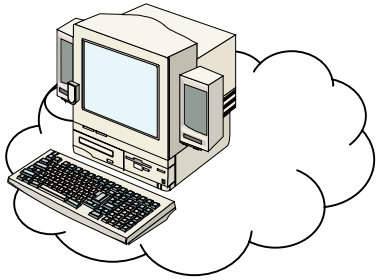
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SIEMENS

Motivation



WWW

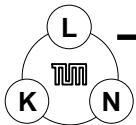
- Enormous attractiveness of web based services
- Simple web programming
- Access limited to complex, PC based clients

PSTN

- Highly reliable voice based services
- Simple terminals
- Proprietary and complex provisioning of value added services



A combination of both worlds is highly desirable



VoxML

Voice Markup Languages support speech applications
to voice based terminals

Example: **VoxML**

- Developed by Motorola
- Inspired from HTML
 - Text / Speech Synthesis
 - Recorded Voice / Images
 - Input Controls
 - Navigational Controls
- XML based
 - Use of DTD (Document Type Definition)
- Based on Dialogs

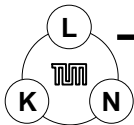
```
<?xml version=1.0?>

<DIALOG>
  <STEP NAME="init">
    <PROMPT>
      Welcome to ...
    </PROMPT>
    <INPUT TYPE="none"
      NEXT="#main_menu"/>
  </STEP>

  <STEP NAME = "main_menu">
    <PROMPT> Please ...
  </PROMPT>

  ...
```

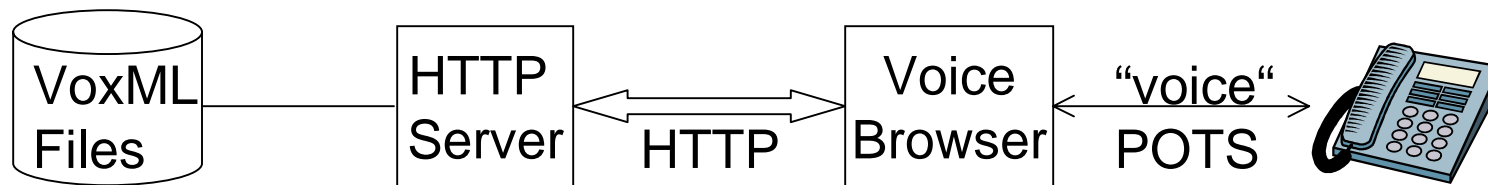
➔ No language constructs to support call control



Voice Browsers

Voice Browsers

- support speech applications (information retrieval, voice surfing,...)
- allow web access from simple, voice based terminals (phones)
- Voice Markup Languages enable html like programming



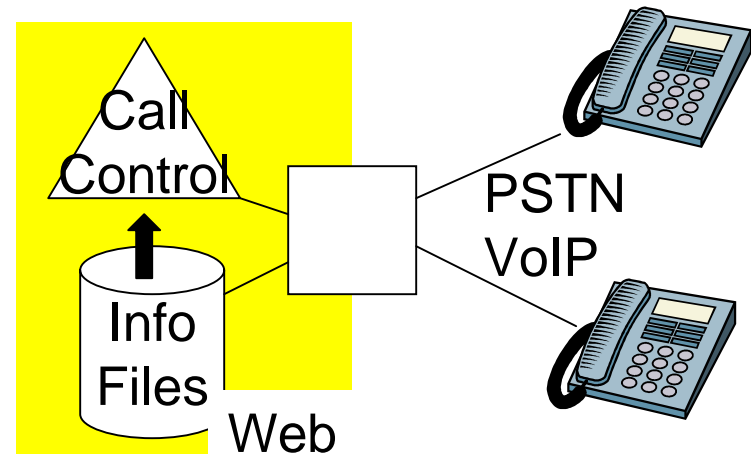
➔ No possibility to control telecommunication service features with current solutions

to support

- call establishment to other subscribers
- call centers

Concept

Web enabled telecommunication services



- Combination of web information services with telecommunication service control
 - Simple web-based programming
 - Extension of VoxML to control telecommunication services
 - Prototype based on existing systems (voice browsers, tel. API)
- ➔ Service description independent of underlying technology

Extension of VoxML

Definition of new tags

Call Control

- TRANSFER

establish a phone call to another subscriber

```
<INPUT TYPE ="TRANSFER"
```

```
NAME=" name"
```

- CONFERENCE

establish a conference call

```
DEST=" phone_number"
```

```
[NEXT=" value" ]>
```

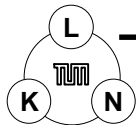
- MCALLS

distribute call to multiple addresses

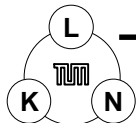
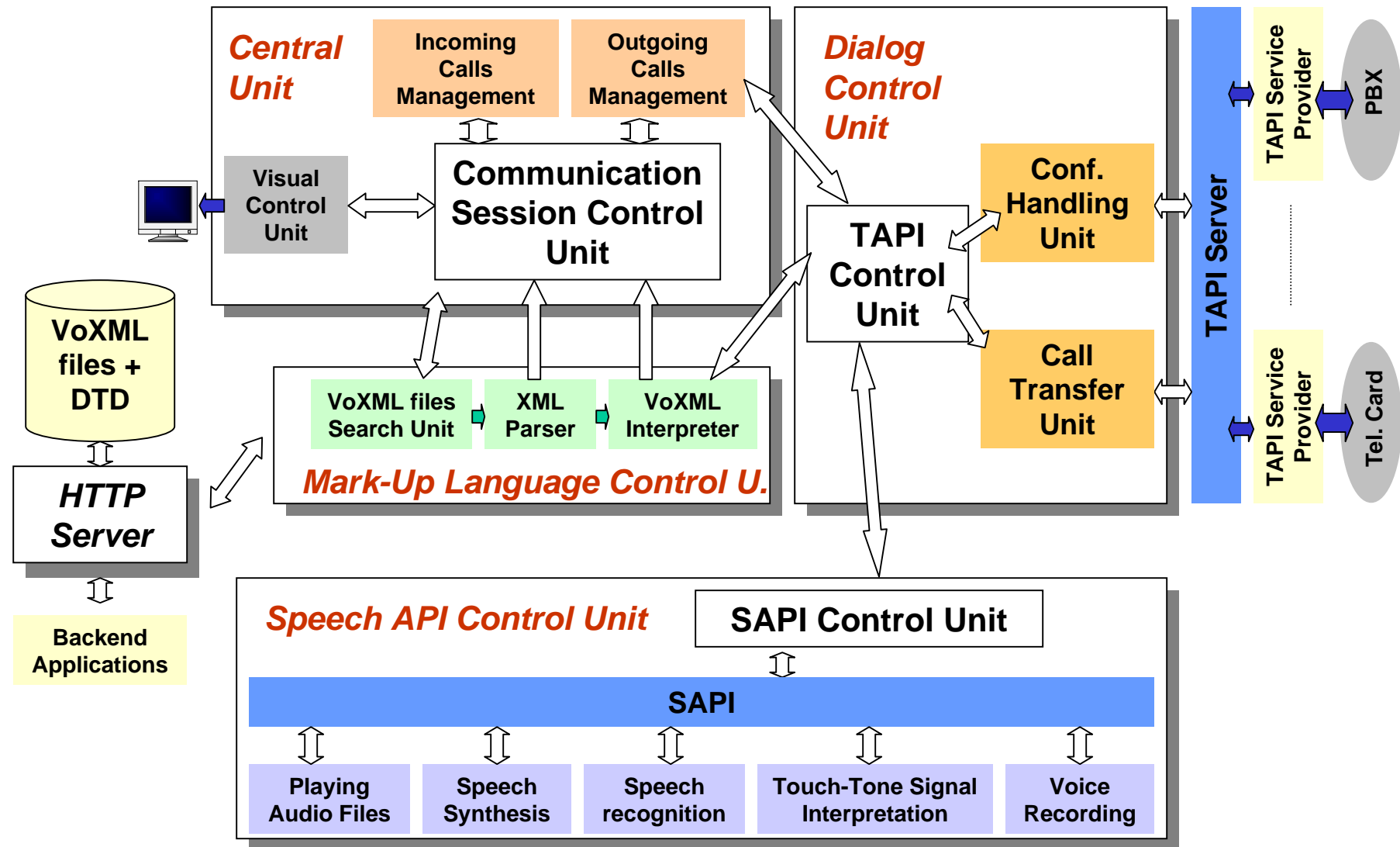
Database Access

- SEARCH

address book search; retrieve phone numbers,...



Architecture for VoXML based Telecommunication Services

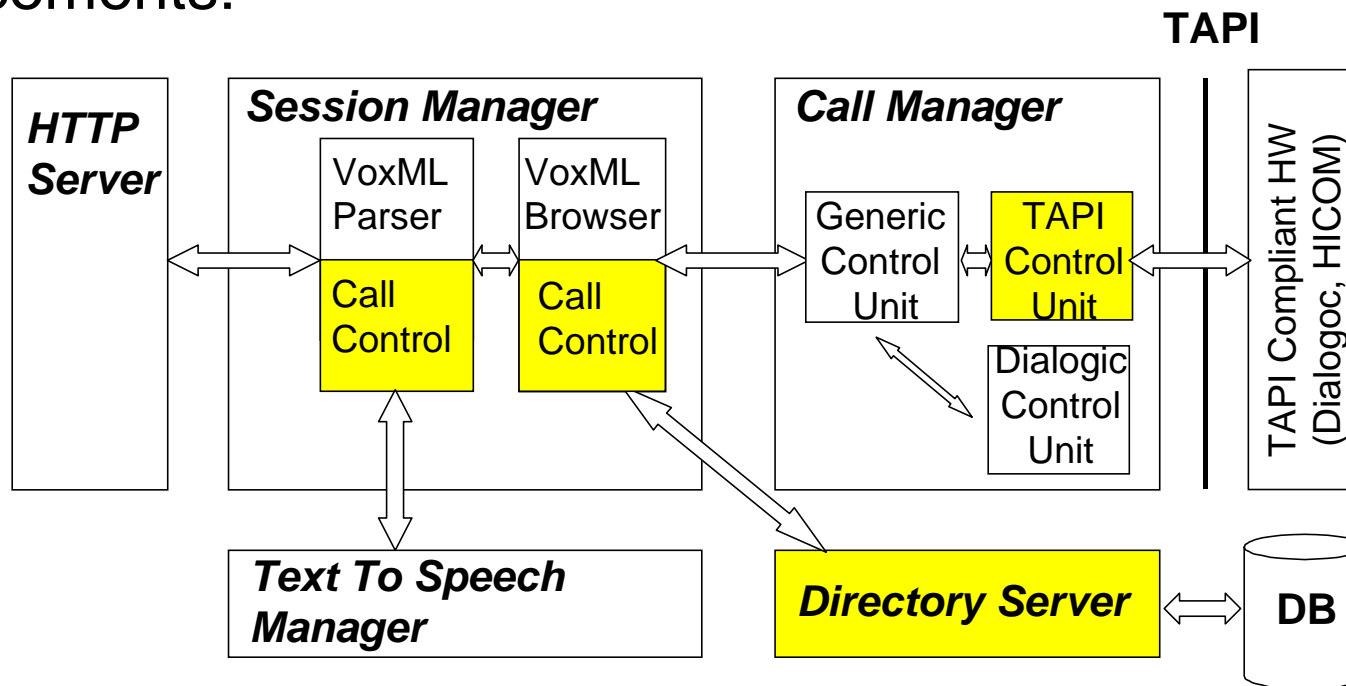


Prototype Realization

VoxPortal, Siemens Information & Communication

- Enhanced voice browser based on VoxML
- Bridges voice and internet content
- Accessible through PSTN and VoIP

Enhancements:



XML Based Service Definition

General results for future service creation:

advantages of XML based service definition

- Representation of structured data (e.g. service logic trees)
- Simple definition of tags / extensible
- Readable by humans as well as by machines
- Verification against a Document Type Definition
- Platform independent: Portability

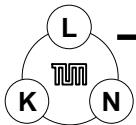
Example:

IETF SIP

Call Processing Language

Problems:

- Complexity / script size
- Standardization effort
- Performance
- Data processing



Conclusions

- Service Creation with VoxML
- Voice Browsers allow web access for voice based terminals
- Extension of VoxML to support telecommunication features
- Definition of new tags for call control as a minimal extension
- Prototype
- General benefits of XML based service creation

