Creating natural dialogs with VoiceObjects

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Multiple Phone Channels

- Interactive Voice Response
- Interactive DTMF Response
- Interactive Video Response
- Interactive Mobile Web Response
- Interactive Text Response
Multiple Phone Channels

Interactive Voice Response

Interactive Text Response

Interactive Video Response

Interactive Mobile Web Response

Interactive Web Response

Voice

DTMF

Text

Video

Mobile Web

Restaurant Search
Phone Application Server

VoiceObjects - Phone Application Server

Voice, Video Device

ASR, TTS, Call Control
VoiceXML Browser

VoiceObjects Desktop IDE

VoiceObjects Phone Application Server

Media Platform Driver

Statistics

Apps

VoiceObjects Analyzer Reporting

Back-End Systems

Service Creation Environment

Service Execution Environment

Service Analysis Environment
Service Creation
Model and Parameterize the Call Flow

- Easy-to-use object library, No manual coding
- Consistent, extensible and maintainable call flow definition

Dialog components:
Best practice user interface design patterns

Resource management:
Back-end abstraction, Audios, Grammars, ...

Presentation logic:
Variables, Expressions, call flow control elements

Actions:
Caller navigation and call transfers
Service Creation
Development Productivity

- **Personalization Engine (Layer Concept)**
  - Create *dynamic, personalized dialogs* …
  - across multiple channels and languages …
  - for different customer categories, customer values, preferences, transaction history, …

- **Modularization, Shared Libraries**
  - Reusability *increases productivity*
  - … and *simplifies maintenance*

- **Object Inheritance**
  - Definition of generic dialog functionalities like *navigation and event handling* in a single place
  - Helps build a *Consistent user interface.*
Natural Dialog Management

- Ensure **human-like, natural interaction** with caller – let them control the dialog, adapting to their speaking style

- Core features
  - Barge-in
  - Global commands
  - Random Prompting
  - Multilinguality
  - N-Best result handling
  - All Grammar types supported: *Closed, Statistical, Robust Parsing, Garbage models, …*

- Advanced features
  - Mixed-initiative dialogs, Implicit correction
  - Natural pronunciation
  - Adapt-to-caller
VoiceObjects Grammar IDE

- Scope
  - Create and analyze grammars
  - Control the grammar coverage
  - Build and manage grammar test cases

- Advantages
  - Quicker grammar development
  - Better grammar quality control
  - Seamless integration with Desktop for Eclipse
  - Exports to grammar formats for multiple platforms
http://developers.voiceobjects.com

Developers get free access to:
- VoiceObjects Developer Edition
  - Desktop for Eclipse (5 ports, standalone mode)
- Information and resources
- Getting Started Guide
- Tutorials
- Recommended IVRs
- FAQs

Monthly Jam Sessions
Free Email Support
Thank You!

Questions
Phone Channels in Self Service

- Speech + DTMF
- USSD (Text)
- Video
- Mobile Web
Background: USSD Browsing

- A **USSD-Dialog** is started by typing in a Service code, e.g. *123#

- A dialog consists of
  - Menus
  - Simple text input
Which content, which UI for the mobile Web?

- Web site
Which content, which UI for the mobile Web?

- IVR Call Flow
The customer perspective
A Consistent User Interface

- Menu-driven Navigation

<table>
<thead>
<tr>
<th>Mobile Web</th>
<th>IVR (Voice/DTMF)</th>
<th>Text (USSD)</th>
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...What do you want to do – change your basic rate, order new add-ons, or change add-ons?
The customer perspective
A Consistent User Interface

- Form-Filling: Input of digits, currency values, ...

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... Now, please say or type-in your PIN!
The customer perspective
A Consistent User Interface

- Form-Filling: Selection

Mobile Web  IVR (Voice/DTMF)  Text (USSD)

...and what is the new Credit Card – Visa, MasterCard, or American Express?
Natural Dialog Management
Natural Dialog Management

- Ensure human-like, natural interaction with caller – let them control the dialog, adapting to their speaking style

Basic features
- Barge-in
- Global commands
- Random Prompting
- Multilinguality
- N-Best result handling

Advanced features
- Mixed-initiative dialogs
- Implicit correction
- Natural pronunciation
- Adapt-to-caller
Natural Dialog Management
 Implicit Correction

- Allow the caller to correct the system without explicit confirmation steps

“What’s your credit card?”

“It’s an AmEx Card.”

“And what’s the number of your MasterCard?”

“No, it’s AmEx!”

“Sorry, AmEx. And what’s the number?”

“3469 - …”
Natural Dialog Management
Mixed-initiative Dialogs

- Allow the caller to steer the dialog freely

“Service Plan, Customer Data, Billing Questions, or Support?”

“I have a Billing question.”

“Ok, Billing. Your invoice number, please?”

“Oh, I rather want to update the expiration date of my Visa card!”

“Sure. So, what’s the new expiration date of your Visa card?”
Natural Dialog Management
Adapt-to-Caller

- Adapt to caller’s speaking style: **Synonyms**

“What’s your credit card?”

“**It’s an AmEx Card.**”

“And what’s the number of your AmEx Card?”

“**It’s 3469 - …**”

“What’s your credit card?”

“**American Express**”

“And what’s the number of your American Express Card?”

“**It’s 3469 - …**”
Natural Dialog Management
Adapt-to-Caller

- Adapt to caller’s speaking style: Number Patterns

“Your phone number, please?”
“one two three, six nine zero zero”
“Ok, one two three, six nine zero zero. Correct?”
“Correct.”

“Your phone number, please?”
“one two three, sixty-nine hundred”
“Ok, one two three, sixty-nine hundred. Correct?”
“Yes, that’s right.”
The VoiceObjects “Formatting Bus”
- Natural pronunciation of dynamic content
- Best-practice standard formats provided
  - Date, Time, Digits, Number, Currency, Credit Card, …
- Custom formatting can be added
- Multi-channel support

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