MULTIMODAL VIRTUAL ASSISTANTS FOR CONSUMER AND ENTERPRISE

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VIRTUAL ASSISTANTS: CONSUMER

- Calling
- Messaging
- Calendar
- Alarms
- Local Search
- Web Search
- Reminders
VIRTUAL ASSISTANT: ENTERPRISE

Communications Provider

Sales
“can I upgrade to iPhone 6?”

Smart Home
“set the thermostat in the living room to 65”

Billing
“when is my payment due?”

TV Control
“comedy movies on HBO tonight?”

Account
“I’m locked out of my account can I reset my password”

Appointments
“I need to reschedule my service appointment”

Technical Support
“my wifi is not working”
MULTIMODAL VIRTUAL ASSISTANT (INTERACT)

**Restaurants**
- “sushi restaurants near madison wisconsin”
- “what about pizza”
- “I’d like to reserve a table”

**TV / Media**
- “Comedy shows on HBO tonight”
- “what about showtime”
- “reviews for this show”

**Business search**
- “hotels” [circle area]
- “gas stations” [draw route]

**Map / Geo**
- “show portland oregon”
- “zoom to the west village”

**Events**
- “country music shows near dallas texas next weekend”
- “what about punk rock”

**Weather / General**
- “weather forecast for las vegas for tomorrow”
- “web search alternate side parking”
INTERACTIONS WATSON: MULTIMODAL VIRTUAL ASSISTANT

Intelligent interactive applications empowered by natural modalities to make it effortless for users to access information and execute tasks

NATURAL INPUT AND OUTPUT
- Speech recognition and synthesis
- Motivation:
  - Vast range of commands through single point of entry
  - Natural language
  - Key for mobile, hands free

MULTIMODAL
- Gesture / Visual displays
- Multimodal integration
- Motivation:
  - Input/output by most effective means
  - Maps and other visual displays
  - Adapt to environment: physical/social

CONTEXTUAL
- Interpret user input with respect to flow of conversation
- Motivation:
  - Natural, concise interaction

CONVERSATIONAL
- Multi-step cooperative dialog
- Motivation:
  - Enable fulfillment of complex intents through multi-step interaction

ADAPTIVE
- Machine learning technology applied throughout
- Motivation:
  - Learns from experience
  - Performance improves with use

PERSONALIZED
- Knows who you are
- Motivation:
  - Speaker verification/id
  - Proactive adaptation to user
  - Effortless, Retain user

MOBILE DEVICES  CONNECTED CAR  DIGITAL HOME  CONSUMER  ENTERPRISE
MULTIMODAL VA: INTERACT

- Interactions Watson Multimodal VA Platform
  - Incremental interaction
  - Natural language
  - Contextual
  - Cooperative conversational dialog
  - Multimodality
  - Personalized and adaptive
MULTIMODALITY

ACCESS TO INFORMATION, CONTENT, SERVICES, AND CARE IS RAPIDLY EVOLVING TO MULTIMODAL

SPEECH ENABLES SINGLE-POINT-OF-ENTRY AND CONVERSATIONAL INTERACTION

- … but not the best for everything
- “Certain tasks and functions cry out for particular modalities” (Rudnicky and Hauptmann 1992)
- Ability to switch modes

MULTIMODAL IN VIRTUAL ASSISTANT

- Parallel presentation of complementary info
- Automation of more complex intents
- Fusion of multiple modalities
MULTIMODAL EXAMPLE: SALES / DATA USAGE

- Dynamic presentation combining synthetic speech with graphical displays
- Deeply personalized
- Seamless connecting capabilities
MULTIMODAL EXAMPLE: APPOINTMENT SCHEDULE

• Spoken dialog interspersed with graphical interaction
• Enables automated fulfillment of complex intents
CROSS-PLATFORM VIRTUAL ASSISTANTS FOR ENTERPRISE

Synergy within particular hardware or software ecosystem

Unified customer experience needed for enterprise VA
"We just want to relax tonight"
VIRTUAL AMBASSADORS TO THE INTERNET OF THINGS

- Users will expect a consistent *interface of things* across devices.

  “What is the temperature in the bedroom?”

  “Make it 65 degrees”

  “Movies on Showtime tonight?”

  “What about HBO?”
We make speech and multi-modal technologies universally accessible to all devices and industries through a wide ecosystem of partners.
CONCLUSION

• Enterprise virtual assistants provide customers with a single-point-of-entry to a broad array of information and services
• Cross-platform solutions are critical for enterprise applications, even more with emergence of IoT
• **Interactions Watson Virtual Assistant Platform:**
  – Multimodal interaction
  – Adaptive understanding (human-in-the-loop)
  – Natural context sensitive language understanding
  – Cooperative conversational dialog

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