Toward interoperable conversational applications:
New standards activities in conversational interaction

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The landscape of conversational interaction platforms is large and growing.

- Alexa Skills Kit
- Microsoft LUIS
- Nuance Mix
- Google Assistant
- Samsung Bixby
- IBM Watson
- Apple SiriKit
- Mycroft
- Rasa
- Alexa Skills Kit
- Nuance Mix
These tools are the basis of thousands of voice applications
The goal of each toolkit is the same

Take a user’s unstructured natural language request

Structure it so a computer can do something with it
But…
Each platform has its own format and vocabulary

• Entities, slots, concepts
• Intents
• Scores and confidence
• Alternative results (nbest)
Offering applications on multiple platforms is difficult because the platforms do not share standards.

Developers are tired of
• rework when changing vendors
• the ongoing cost of maintaining the same application on multiple platforms

Components developed for one platform should be usable with others.
Many components of these toolkits could benefit from standards

This doesn’t stifle innovation
In recognition of the need for interoperability, a number of activities are getting underway
What could be standardized?
Generic Intelligent Agent

Speech recognition → ASR results → Natural language understanding → NL results → Dialog manager → Dialog results → Application

Speech output → Natural language generation → Models → Dialog script → Application format
Intelligent Agent Ecosystem

Local Intelligent Agent

Inter-Agent Communication Manager

Specialized Intelligent Agents
Current efforts

• World Wide Web Consortium (W3C) Community Groups
• ACL/ISO Interoperable Semantic Annotation
• Open Voice Network (https://openvoicenetwork.org/)
  • Working on artificial intelligence-enabled voice (AI-voice) search, communication, and commerce that is open, standards-based, interoperable, and data-protected.
  • Developing voice services that can work seamlessly with others while protecting the privacy and security of customers
Interoperable Semantic Annotation

• Sixteenth Joint ACL - ISO Workshop on Interoperable Semantic Annotation

• Looking at ways to represent general semantic concepts like time and location

• Marseille, France
  12 May 2020

• https://www.softconf.com/lrec2020/ISA16/?
World Wide Web Consortium (W3C) Groups

• Voice Interaction Community group
  https://www.w3.org/community/voiceinteraction/

• Conversational Interfaces Community Group
  https://www.w3.org/community/conv/

• Voice Assistant Standardization Community group
  https://www.w3.org/community/voice-assistant/

• Accessible Platform Architectures Working Group
Voice Interaction Community Group

• JSON Representation of Semantic Information
  • https://w3c.github.io/voiceinteraction/voice%20interaction%20drafts/emmaJSON.htm

• Intelligent Personal Assistant Architecture
  • https://w3c.github.io/voiceinteraction/voice%20interaction%20drafts/paArchitecture.htm
Intelligent Personal Assistant Architecture
Enable web developers to collaborate and share conversational experiences for a variety of domains

- **Dialogue Manager Programming Language (DMPL)**
- [https://github.com/w3c/dmpl](https://github.com/w3c/dmpl)
- **Dialog Manager Script (DMS)**
- [https://github.com/w3c/dms](https://github.com/w3c/dms)
Next steps

• Join W3C community groups (free!)
• Comment on drafts
• Contribute to email discussion
• Prepare draft proposals
• Participate in standards discussions at SpeechTEK 2020
  • Standardization of Intelligent Personal Assistants (Tuesday, April 28)
  • Town Hall on Interoperable Intelligent Agents (Wednesday, April 29)