

How is dialogue structured?

TASKS (Q&A)	SUB-TASKS	EXCHANGE UNITS	NOTES ON ROLE OF UTTERANCE	UTTERANCES
			Opening	Welcome to Coffee 411.
	Provide instructions			You can say "text SMS" to submit a verbal text SMS. Say "back up" if you hear a mistake. You can also say "text mode" to switch to text at any time.
Task - Find Coffee	Sub-task - Get location	Turn / Contribution / Adjacency Pair	Presentation	What City and State, please?
			Acceptance	Cumberland, Maryland
			Provides evidence of understanding.	Cumberland, Maryland.
	Sub-task - Get route information			Would you like to search along a route?
				Yes.
				Please say the highway number and direction please.
				I68 West.
	Display response			I68 West.
			There is implicit understanding by the user if (s)he does not say something like "back up" or "repeat"	1) Queen's City Creamery in Cumberland; 2) Two Starbucks in Cumberland; 3) Wild Mountain Cafe in Frostburg.

Task - Presentation	Provide instructions			If you want directions to one of these please say or press the number. You can also say "text message" or "map it"
				Or say "continue" for more choices along your route.
				If you want to narrow your search criteria, you can say keywords such as "wifi", "Borders", or time such as "tomorrow 6AM".
	Keyword		The scope of this request pertains to the search result from the previous task	Wifi.
			Evidence of Understanding	Wifi.
	Display response			1) Two Starbucks in Cumberland; 2) Starbucks in Morgantown, WV
	Provide instructions			You can remove search filters at any time by saying "remove filters". Or you can add more keywords by saying "filter" plus one or more keywords. Say "help" for more options.
			User takes initiative and changes mode	Text message
	Repeat response		The system continues the conversation above by re-iterating the last response.	Cumberland, MD 1) 2 Starbucks Morgantown WV (75 miles): 2) 4 Starbucks more, map all, filter by keyword, sort popular, show tags Type number plus: directions, call, details, map
		Options - map		
	System displays list on map			

What is accommodation?

Example:

User: cumberland maryland sort popular filter fireplace

In a question-answer system such as this, the system “accommodates” the information above by filling in answer slots in available plans. “cumberland maryland” pertains to get LOCATION sub-task. “sort popular”, “filter fireplace” pertain to slots in a PRESENTATION PLAN.

What are plans?

Plans are recipes. They describe the actions needed to achieve a goal. Generally, there are rules that also describe the operations that may be performed, as well as constraints, knowledge, and contexts that affect state changes. But here are some simple examples of high level plans for a systems such as COFF-411. All three plans, or sub-plans, require gathering information from a user. A * indicates that the element is optional.

```
find -> LOC ROUTE*
LOC -> get CITY STATE
ROUTE -> get ROUTE
```

```
get ROUTE -> HIGHWAY DIRECTION DESTINATION
get HIGHWAY
get DIRECTION
```

```
present coffee -> MORE* FILTER* TIME SORT OPTIONS*
get MORE - MORE
get FILTERS - FILTERS
get TIME - TIME
get SORT - DISTANCE(default) POPULAR* FAVORITES*
get OPTIONS - map*, directions*, call*, detail*, tags*
```

What kinds of contexts are we interested in?

Among other things, we are interested in personal information about the user -- his or her wireless carrier, device and preferences. We are also interested in more dynamic information such as friends, tags, bookmarks, comments, reviews, etc. This is a kind of *social context*. Social context - including content tagging - helps to make search more relevant to the user. *Situational context* refers to context relevant in an on-going dialogue. Primarily, location, time, and route information. With this sort of context, there is a sort of information decay to be expected. For example, a route should not persist infinitely. Nor should any particular search query since it depends on situational context. Dialogue context is typically maintained by a *dialogue manager*. It is not necessary for us to have a dialogue manager -- logic can be hand-coded in a state machine or graph model. However, there is an efficiency in development gained by using a dialogue manager. It handles error repair, task management, semantic accommodation, etc. Dialogue recipes, or plans, help drive the conversation forward. We use a small amount of natural language processing for resolving some kinds of expressions such as time expressions.



Social Context
(Favorites,
Friends)

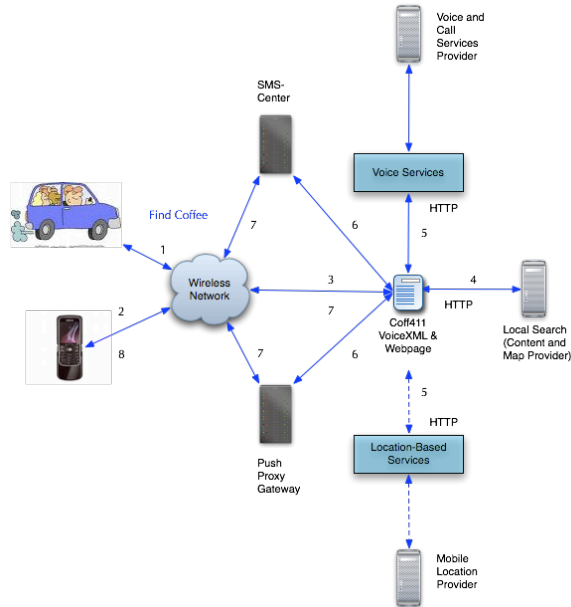


Dialogue Context
(last utterance,
last speaker,
current plan,
previous move,
next move)



Situational Context
(Location,
Route, Time)

What kind of architecture do we imagine?



COFF-411 is a simple service; it is a webpage search service that can communicate via:

- Web interface
- VoiceXML interface
- Voice SMS interface
- Text SMS

It relies upon an array of services to do this: commercial voice services for call management and voice application architecture; content and data providers; services for geocoding, directories, routing, mapping; and an SMS routing service. Currently, our very small, hard-coded demo is enabled by <http://jott.com>. Jott provides for speech recognition and passes results to a custom php page with a small bit of logic. This is how we are able to demonstrate the concept of "voice sms."

Other Examples:

Multimedia Message - details

Queen's City Creamery

Respond with: 108 W Harrison St
Cumberland, MD 21502
(301) 777-0011
queencitycreamery.com



other photos (2)



User: directions

After visit:

Queen's City Creamery What did you think?

"tag" plus keyword, "digg", comment, add photo, review at <http://coff411.com/kjfss>



Clarification sub-dialogue

currently not possible with VoiceXML

User: Coffee cumberland maryland route Philippi west virginia

System: What highway in maryland are you on?

User: I68