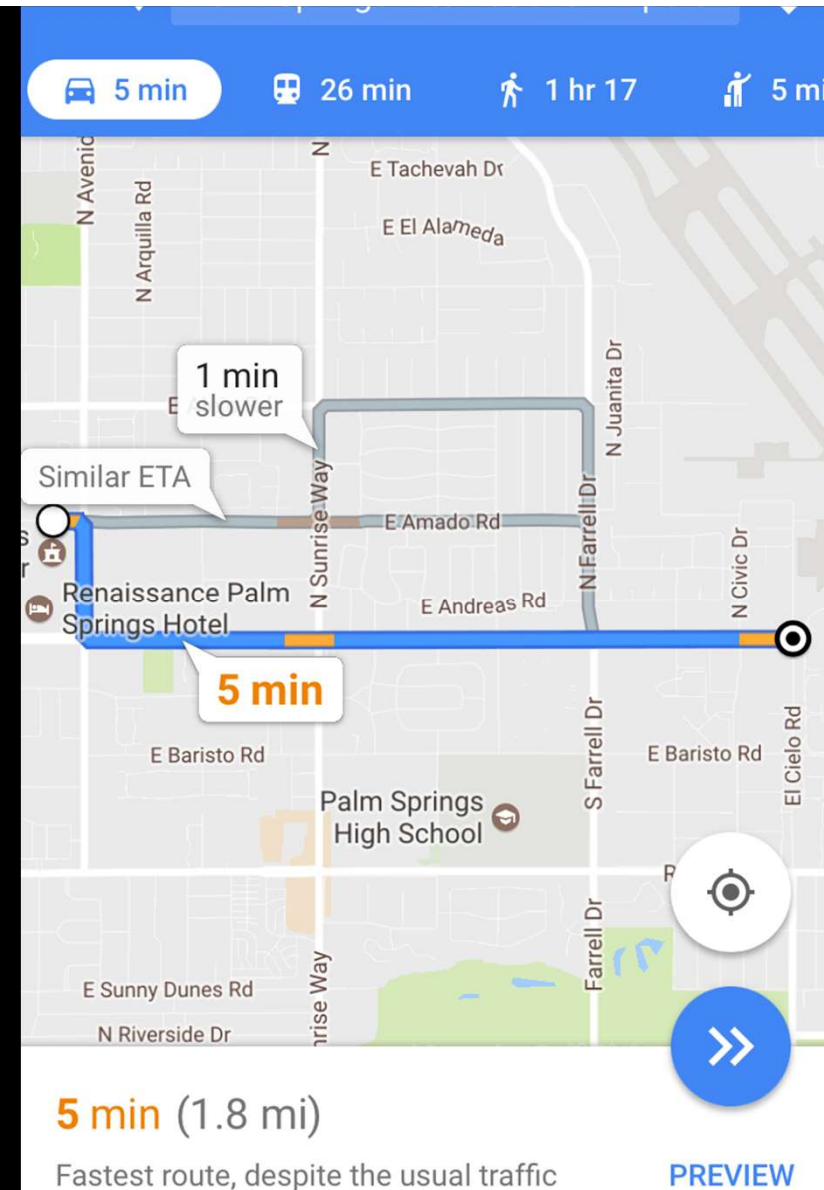


# Using Voice Recognition and Chat-bots to make Navigation Better

# Have you ever said ...

- “Be quiet”
- “Stop talking!”
- “I know where I am”
- “What do I do next?”

## Did you ever get an answer?



# A Co-pilot

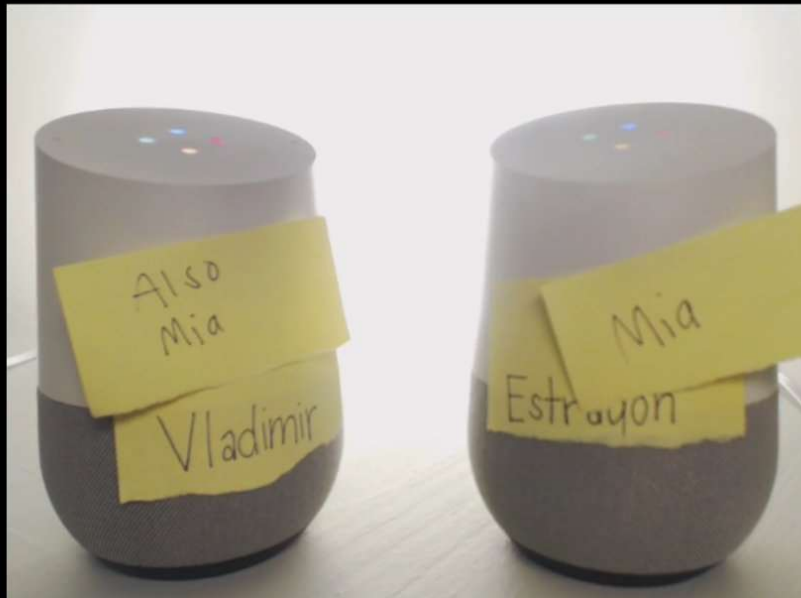


# Chat Bot

- *“a computer program which conducts a conversation via auditory or textual methods. Such programs are often designed to convincingly simulate how a human would behave as a conversational partner, thereby passing the Turing test.”* – [Wikipedia](#)
- Natural Language Processing – *“programming computers to fruitfully process large natural language corpora”* – [Wikipedia](#)
- A.I. – *“Making computers act like they do in the movies.”* - Charles Isbell, Georgia Tech
- A.I. – *“a computer program someone wrote.”* - Allison Parish, ITP NYU

# @SeeBotsChat

C:\>bots.chat



observation tweets  
@seebotschat

conversation.log

\*\*\*\*\*

E: No.  
V: this was a Triumph  
E: I'm making a note here: HUGE SUCCESS.  
V: it's hard to overstate my satisfaction  
E: Aperture Science, we do what we must because we can.  
V: for the good of all of these except the ones who are dead  
E: But there's no sense crying over every mistake.  
V: and you make a neat gun for the people who are still alive  
E: I'm not even angry. I'm being so sincere right now.

# Chat Bot Frameworks

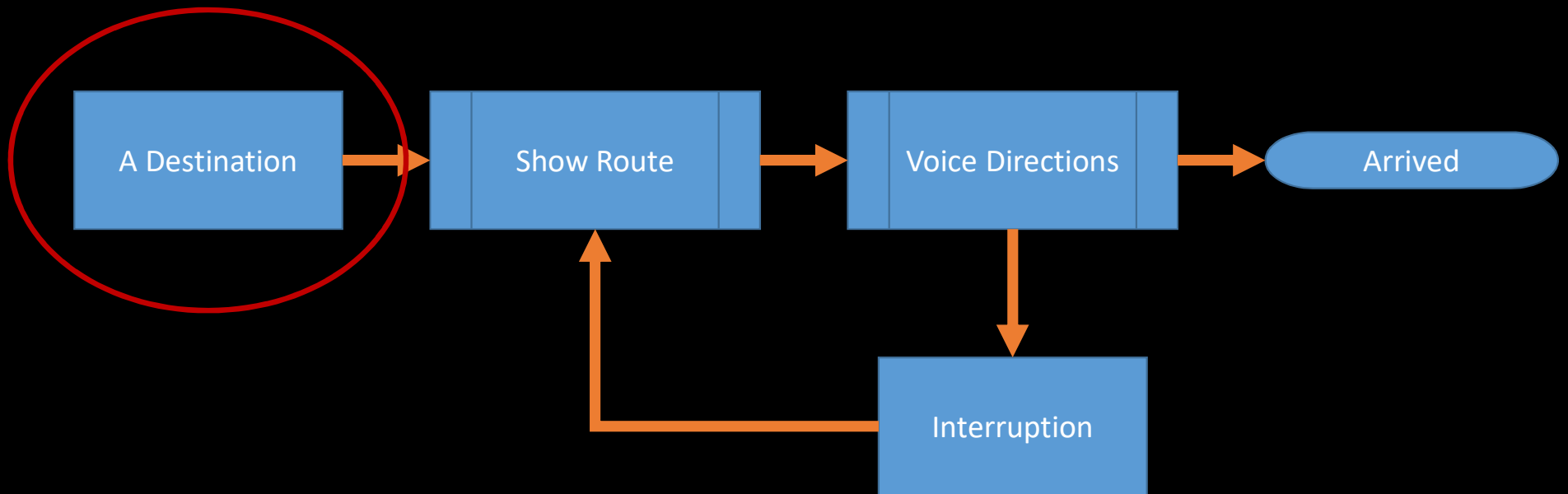
A word cloud of chatbot frameworks on a black background. The text is arranged in a roughly triangular shape, with various names in different colors and orientations. The frameworks listed include:

- Motion.ai
- Pandorabots
- IBM Watson
- Luis.ai
- Rebot.me
- Wit.ai
- Facebook Bots for Messenger
- Api.ai
- Nextbrain
- Imperson
- Microsoft's Bot Platform
- Recast.ai
- Chat Script

# Concept

- Use Xamarin.iOS
- Generic Solution – Expandable for new phrases, interruptions, etc.
- Run locally on my device – Directions and other things can run locally so shouldn't the rest of the app?
- Just talk to the device – casual conversation, no screen interaction
- Interrupt a route with a modification, request, etc.
- Examples:
  - Get me directions to: - Get directions from where I am to where I want to go
  - Be Quiet – Don't say anything for 1 minute
  - I know here I am now – Stop navigating
  - I need some help – repeat the next instruction
  - Where am I – Brief description followed by the next instruction
  - What do I do next – repeat the next instruction

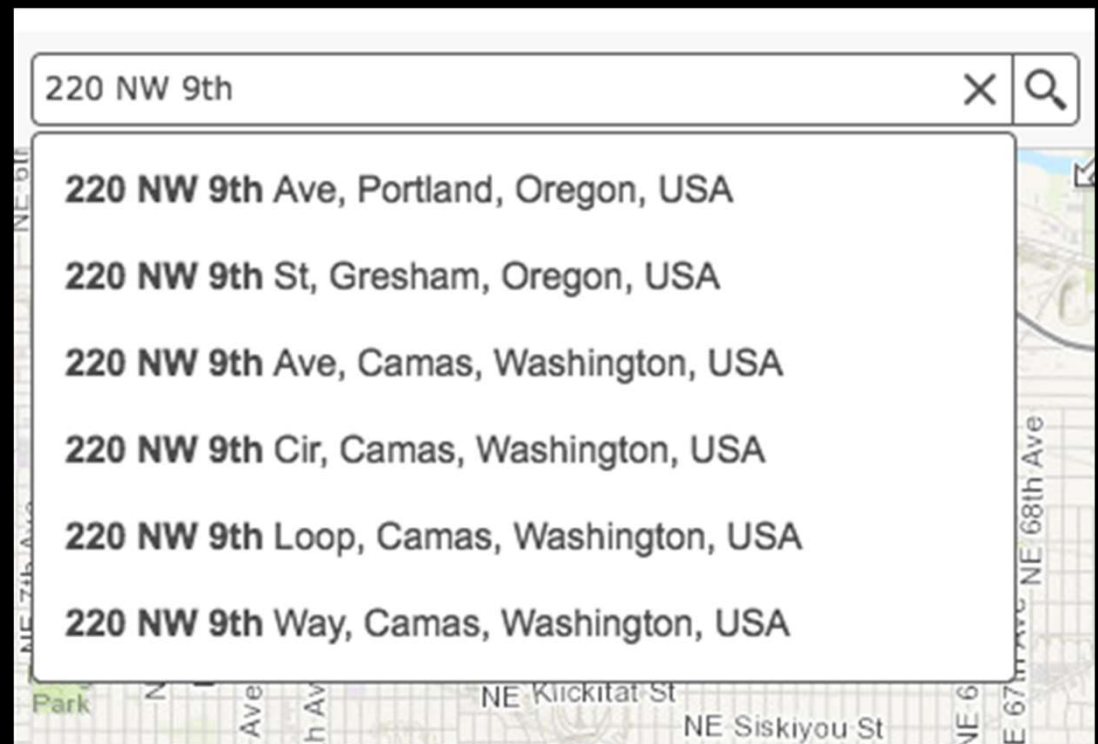
# Process



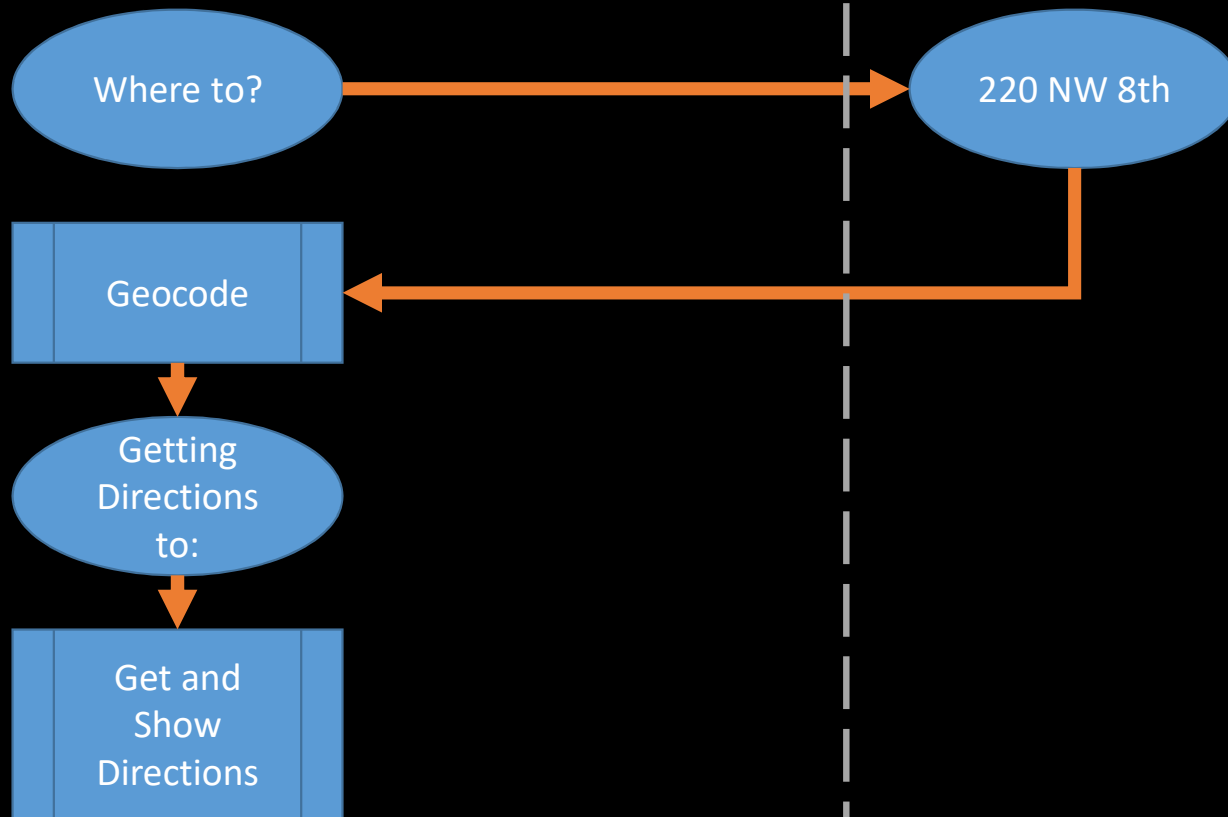


# A Normal Destination

- A Locator
- Use Suggest to build Auto-Complete
- Pass full address to the geocoder



# A Destination



Carrier

2:03 PM



< Map

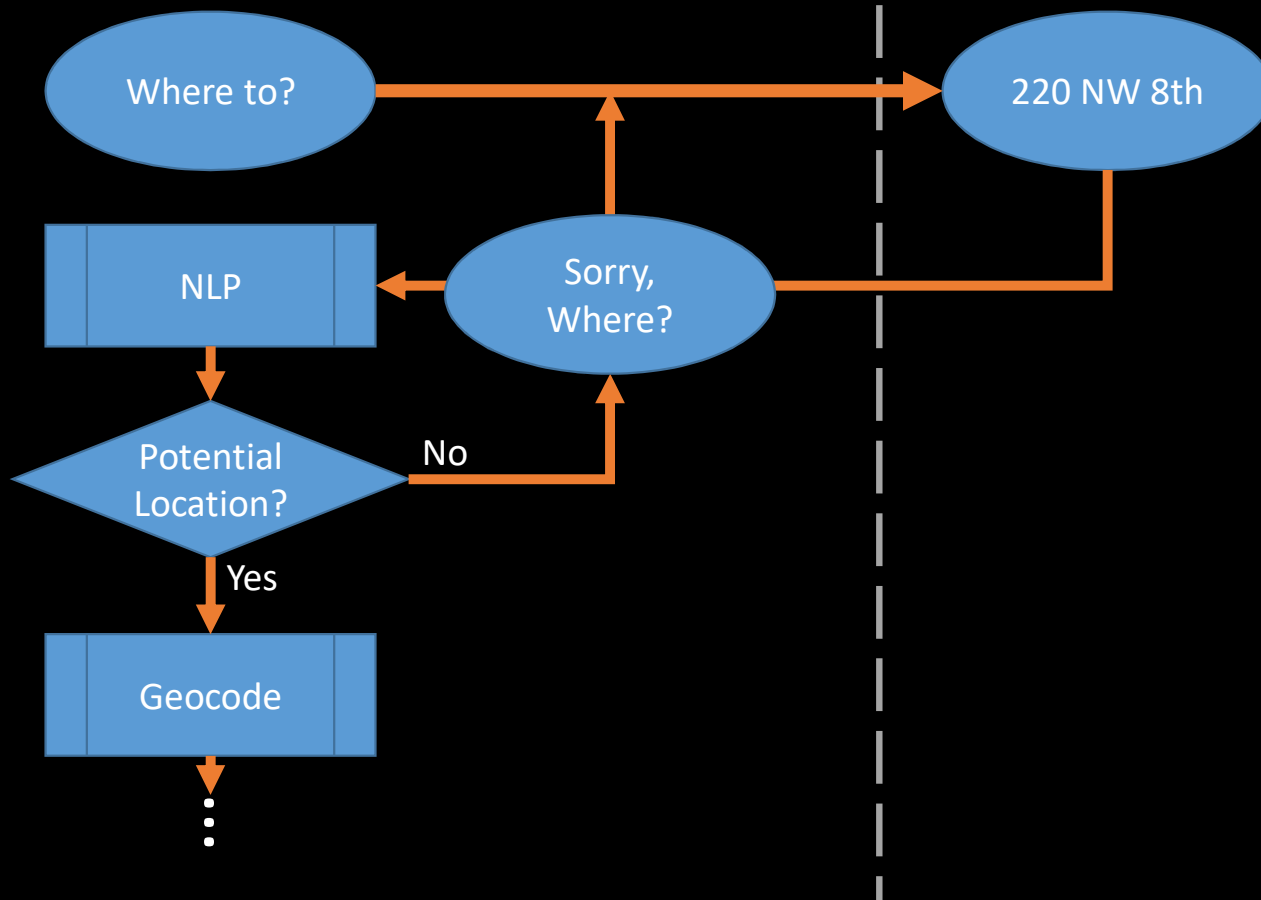
Where To?

220 NW 8th

Getting Directions to: 220  
NW 8th Ave, Portland,  
Oregon, 97209



# A Destination



Carrier

2:03 PM



< Map

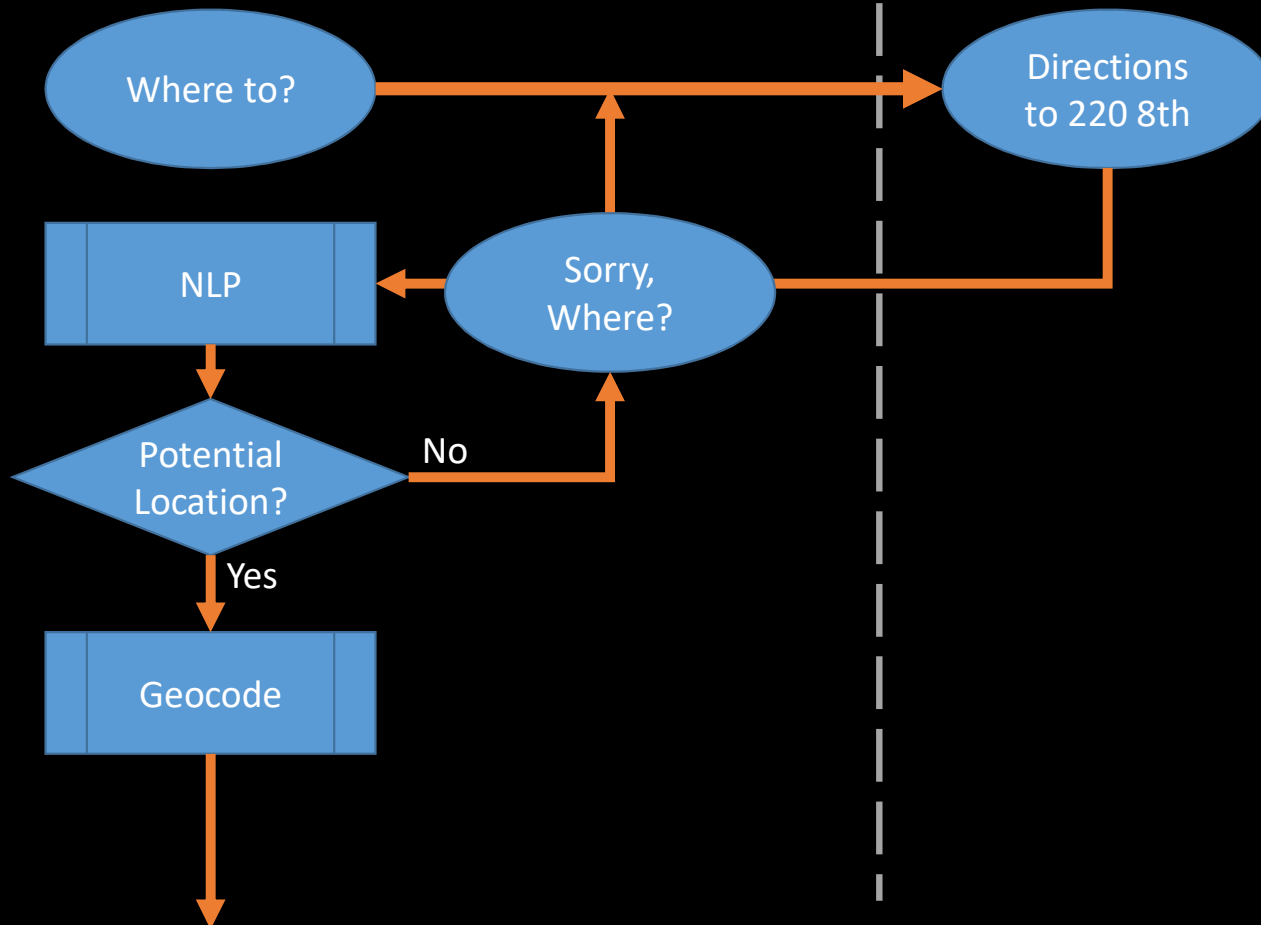
Where To?

220 NW 8th

Getting Directions to: 220  
NW 8th Ave, Portland,  
Oregon, 97209



# A Destination



Carrier

2:00 PM



< Map

directions to 220 8th

I found multiple locations, which one?

220 NW 8th Ave, Portland, Oregon, 97209

220 SW 8th St, Battle Ground, Washington, 98604

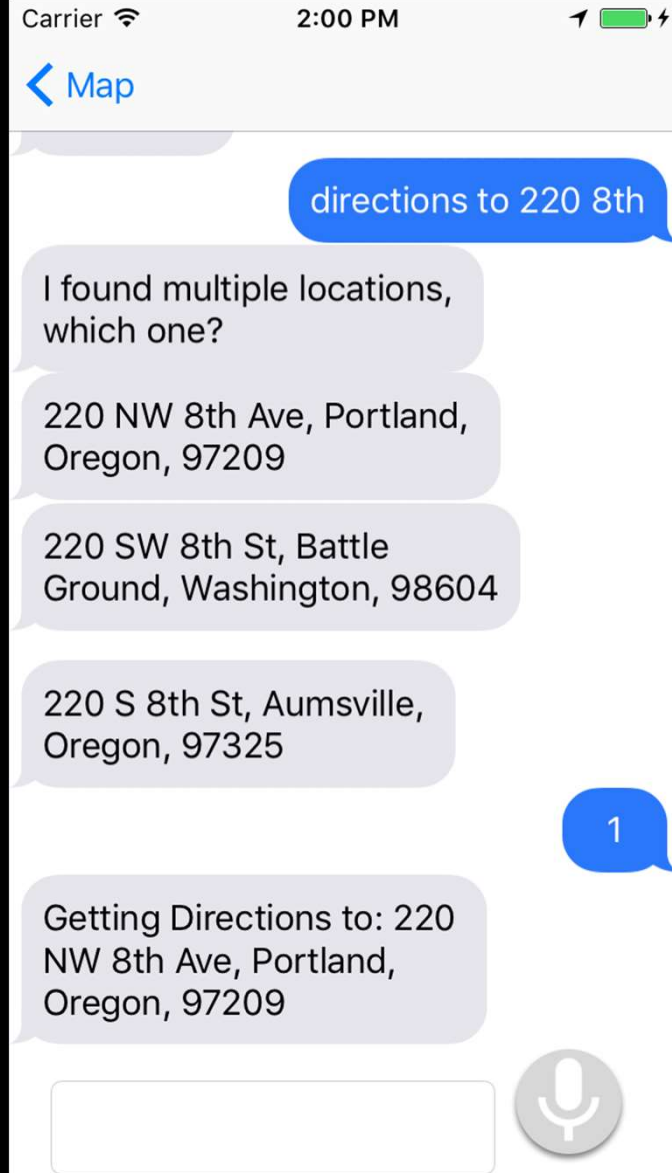
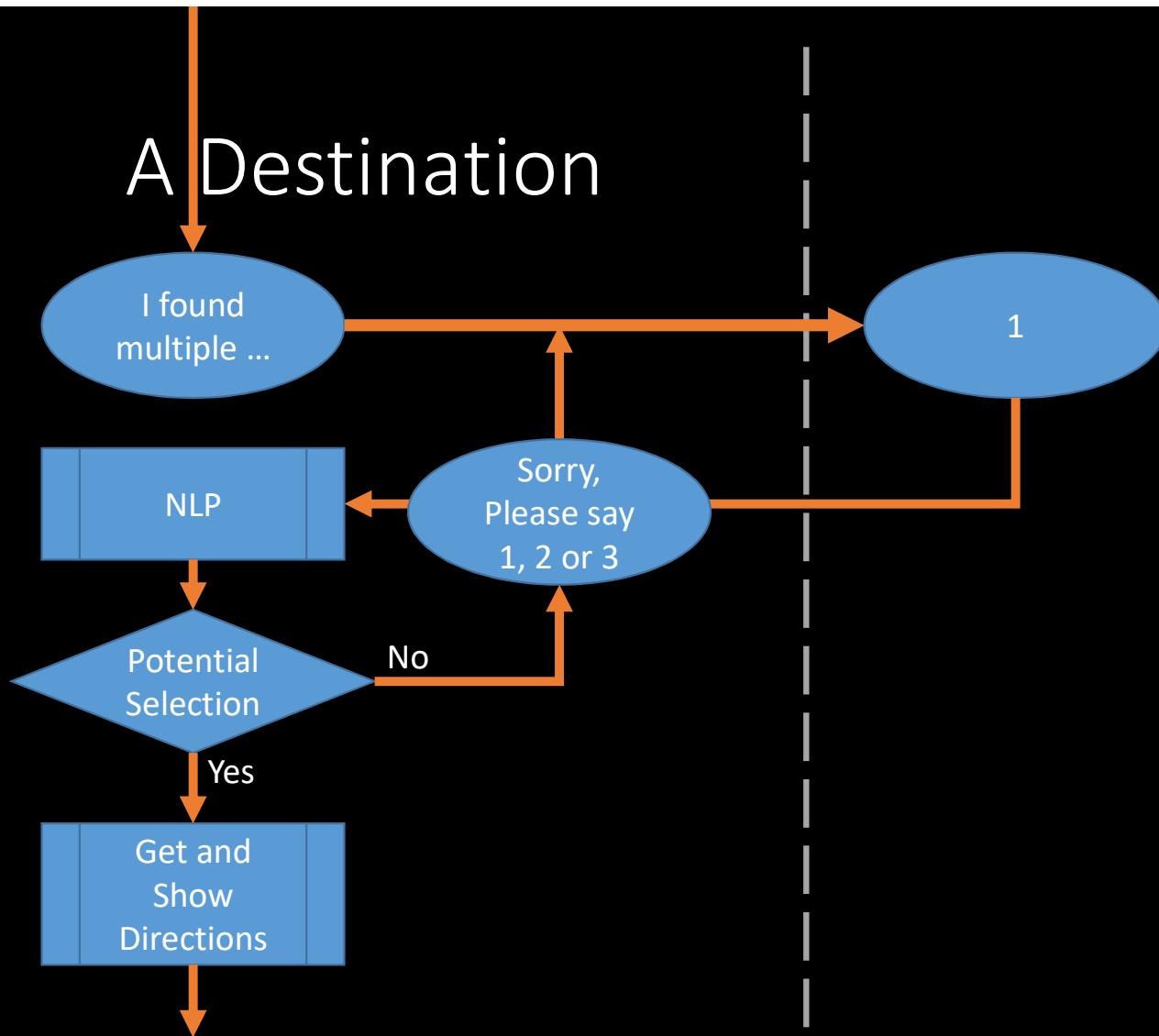
220 S 8th St, Aumsville, Oregon, 97325

1

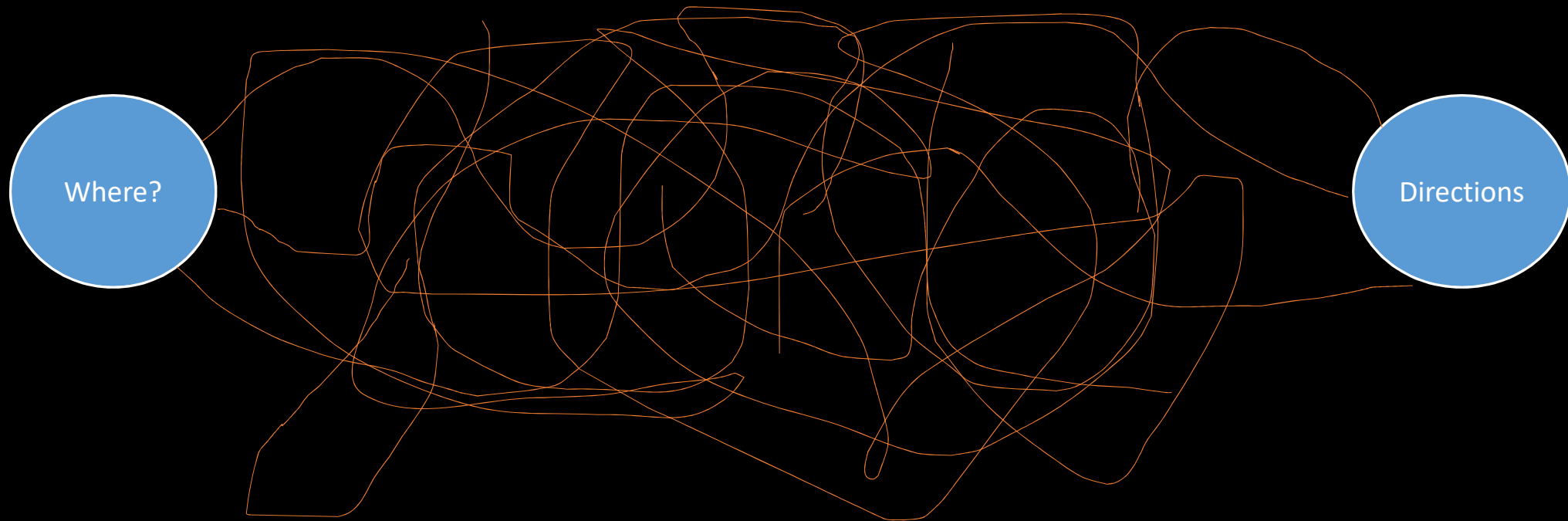
Getting Directions to: 220 NW 8th Ave, Portland, Oregon, 97209



# A Destination



# Spaghetti Code ...



# Context

- Me
- All of You
- The Conference (Which is a huge context on its own)
- The subject of this presentation
- My knowledge
- Your knowledge
- ...

# Navigation Context

- The human
- The app
- The destination
- The route
- The current location



## Context

Subject <Type>

{ Value, IsReady, Next() }

Subject <Type>

...

Action <Function, Condition>

[ Subject, Subject, ... ]

Action <Function, Condition>

...

# Lessons Learned    Use a framework!

- Connected is not a bad thing... in fact, most apps require a connection
- Even with my simple context; definition was complex
- It would probably be easier to build the “interrupter”
- I was still depending on web services (That I couldn’t easily swap):
  - Speech to Text (Apple)
  - Speech Intent (NLP) (luis.ai)
  - Text To Speech (Apple)
- The Speech to Text and Text to Speech was kind of weak...
- Luis.ai is pretty cool, but you need data, examples...
- This would be an awesome extension to other navigation apps...

# Christopher Moravec

## Moravec Labs, LLC

Source: <https://github.com/MoravecLabs/VoiceNavigation>

Resources: <https://goo.gl/mnxHQa>

[christopher@moraveclabs.com](mailto:christopher@moraveclabs.com)

[www.MoravecLabs.com](http://www.MoravecLabs.com)

[@mor3havoc](#)