

Building User Interfaces

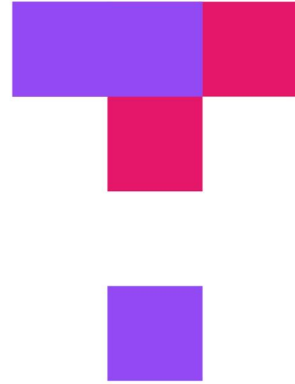
# Experience Prototyping

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# What we will learn today?

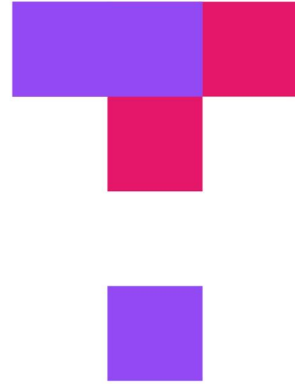
- >> Introduction to Module 3
- >> Experience Prototyping
- >> In-Class Activity

# TopHat Attendance



**TOP HAT**

# TopHat Questions



**TOP HAT**

# Introduction to Module 3

# Module 3 Focus

**Primary focus:** Voice interfaces

**Secondary foci:** Building agents and characters, dialogue-based interaction, connecting services, holistic user experience

# What will we learn?

## Design:

- >> Experience prototyping
- >> Platform-specific design: voice
- >> Designing agents and personalities
- >> Usability testing

→ Today

→ Next week

} Later

## Build:

- >> DialogFlow

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# Intro to Dialogflow

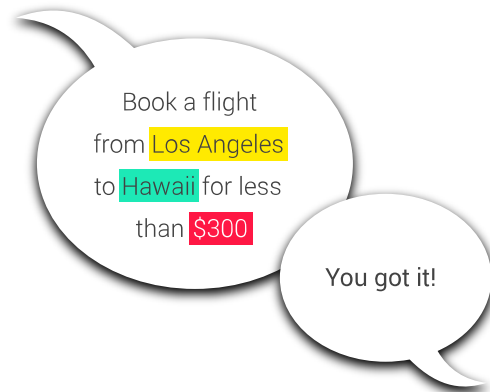
<sup>1</sup>Video source



# What is DialogFlow?<sup>2</sup>

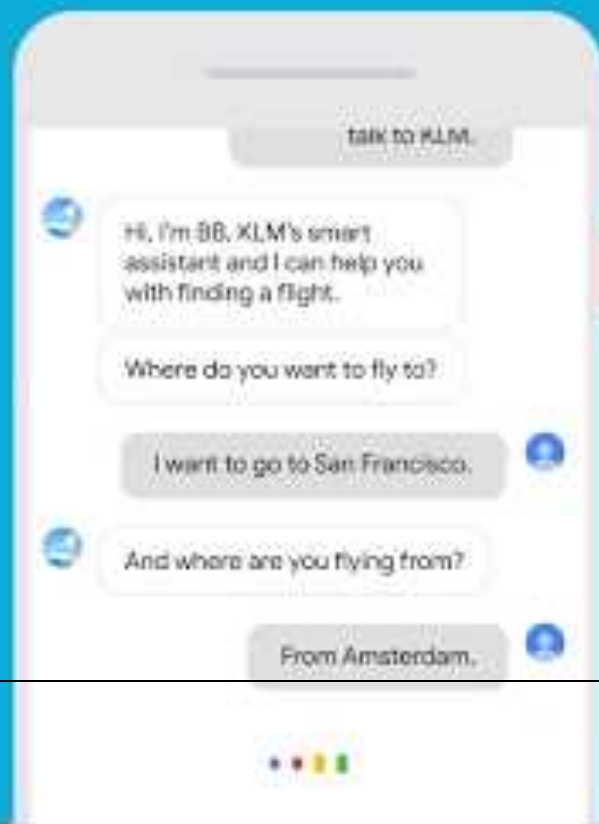
A development suite for conversational interfaces for websites, mobile applications, and IoT devices (e.g., smart speakers)

*Users use natural language to interact with the system*



```
"geo-state-us": "Hawaii", "price": {"amount": 300, "currency": "USD"}, "geo-city": "Hawaii"
```

<sup>2</sup> [Image source](#)



Flight scheduler/  
assistant

*\* service design \**

# Experience Prototyping

*Addresses a problem  
in design: hard to use  
previous methods to  
design these types of  
services*

# The Problem<sup>4</sup>

Conventional prototyping methods provide limited support for *conversational* interfaces.



<sup>4</sup> [Image Source](#)

# Conversational Interfaces

**Definition:** User interfaces that use human dialogue as the primary mode of human-computer interaction.

But why is it hard to prototype human dialogue?

# Human Dialogue

Social interactions are driven by tacit knowledge:<sup>5</sup>

...we can know more than we can tell...

A evolutionarily encoded and culturally situated rules, patterns, and practices for effective interpersonal communication.

How do we design interfaces that follow these rules, patterns, and practices?

design & coding in conventional ways may result in awkward interactions

Lots of behaviors / mannerisms / language

<sup>5</sup>Michael Polanyi, 1958, *Personal Knowledge*

# The Solution: Experience Prototyping

**Definition:** Prototyping the holistic experience of interacting with a product.

how is this used?

A related definition:<sup>6</sup>


*An experience prototype is any kind of representation, in any medium, that is designed to understand, explore or communicate what it might be like to engage with the product, space or system we are designing.*

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<sup>6</sup>Buchenau & Fulton Suri, 2000, *Experience Prototyping*

# Wait, what?<sup>7</sup>

How does experience prototyping solve the problem of designing interfaces to follow human norms of interaction?

We have tacit knowledge about how conversational interactions work. By *acting out* an interaction, we apply our knowledge to a scenario.  *acting/ performing/etc.*

*What I hear I forget. What I see, I remember. What I **do**, I understand!*<sup>8</sup>

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<sup>7</sup> Chinese proverb

<sup>8</sup> [Image source](#)



We use ourselves as  
*decoders* for the norms  
encoded in us!<sup>8</sup>

*behaviors are more likely  
to arise naturally*



<sup>8</sup> [Image source](#)

# When do we do experience prototyping?

Three key uses:

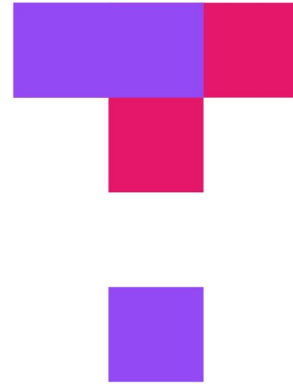
1. Understanding existing user experiences and context
2. Exploring and evaluating design ideas ← our use (mostly)
3. Communicating ideas to an audience

# What is it that we prototype?

1. System behavior → what is it people normally do  
→ what are the capabilities of the agent  
I am representing
2. User behavior → what will users say / do (e.g. corner cases)
3. Interactions with context → physical or social
  - crowded / sparse
  - loud / quiet

How do we do experience  
prototyping?

# TopHat Quiz



**TOP HAT**

## Step 1: Define context<sup>9</sup>

What is the context of the interaction?

E.g., passengers using entertainment system on a bus, travelers packing their luggage.

*design team*



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<sup>9</sup> [Image source](#)

## Step 2: Develop Scenarios<sup>10</sup>

What are concrete interaction scenarios do we want to support?

E.g., buying a ticket, users packing, cooking a meal.



assistant  
robot

scenario: cooking

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<sup>10</sup>Image source

### Step 3: Identify Design Goals<sup>11</sup>

What role does my design play in these scenarios? How does it support the user in the target activity? What capabilities will it offer?

E.g., find, filter, and purchase flights; help the user set and follow personal goals through daily reminders.



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<sup>11</sup>[Image source](#)



## Step 4: Set up the Environment<sup>12</sup>

set up the physical space

How can I represent the context of the interaction?

E.g., creating props to represent devices, environmental constraints.



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<sup>12</sup>[Image source](#)

## Step 5: Act out Interaction<sup>13</sup>

How will the interaction unfold?  
How will the user behave? How  
should the system behave?

*generative step  
usually recorded  
so you can  
go back and  
process results*



<sup>13</sup>Image source

# Bodystorming<sup>14</sup>

**Definition:** *Bodystorming* is a creativity method that involves physically experiencing a situation to develop new ideas and insights.

\* narrower than experience prototyping



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<sup>14</sup>Image source

## Step 6: Develop Insight<sup>15</sup>

What did you learn about system behavior, user behavior, and interactions with context?

*go back and analyze the results from notes/ video/ audio*



<sup>15</sup>Image source

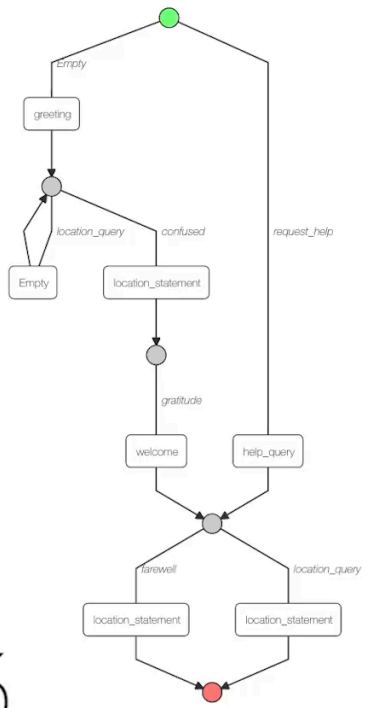
*Pro Tip:* Experience prototyping is *very* awkward. Get the awkwardness out of your system so that you can focus on using the method for design.

# Example Use of Bodystorming<sup>16</sup>

Supporting design teams in ideating and acting out human-robot interactions using a system called Synthé.

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<sup>16</sup>Porfirio et al., 2019, *Bodystorming Human-Robot Interactions*



watch video

Synthé

Bodysessions

on/off	bodysession information	Length	Sat.
<input checked="" type="checkbox"/>	0. Session4	Length: 2	Sat.: 100%
<input checked="" type="checkbox"/>	1. Session8	Length: 5	Sat.: 100%

Connection Status: ✓✓

Parameters

Maximum number of states

0 5 10

View Options

Visualization

Model  Traces

Font Size: 12

Display nonverbal behaviors:

# Additional resources

- >> Seminar paper on experience prototyping
- >> Case studies in bodystorming
- >> "Universal Methods of Design": sections on *experience prototyping* and *bodystorming*



# In-class Activity

# Module 3 Deliverable

We will design and build a voice-based interface for a retail website for clothes.

# Experience Prototyping Activity

We will perform an initial experience prototype of a *shopping assistant*:

- » Work in pairs
- » Experience prototype a shopping assistant
- » Report back to class

# Steps

1. Define context (user interaction with a clothing retail website)
2. Develop scenarios (e.g., find products, read reviews)
3. Identify design goals (how should the user be supported?)
4. Set up environment (very minimal in this design problem)
5. Act out interaction (assign roles, bodystorm)
6. Develop insight (take notes on what you learned)

# What did we learn today?

- >> Introduction to Module 3
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