GAME CHANGERS

Intelligent Interfaces: The Future is Easy

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May 21, 2019

Biographies

Rick Omanson
Vice President, User Experience

- Over 40 years of experience in both client-side and consulting businesses involving user research, UI design, AI development, an UX consulting.
- Experienced with providing research support for agile design and development projects
- Adjunct faculty for DePaul University's Human-Computer Interaction (HCI) master's program.

Dan Delaney
Senior Research Director, User Experience

- Expertise in identifying and improving what matters most in the user experience for industries including tech, finance and media.
- Broad experience in methods that inform early stage discovery, in subjects ranging from accessibility to artificial intelligence.

Our Experience

We are a user experience research and design practice

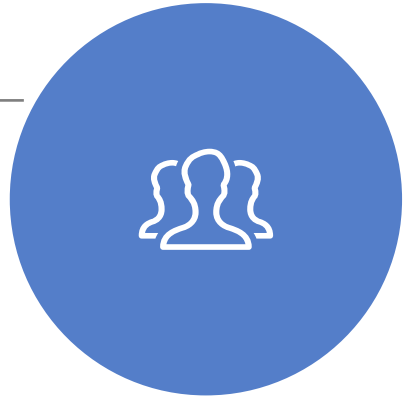
Intelligent Products

Chatbots
Smart speakers
Cooking advisors
Auto infotainment systems

User Research

Ethnography
Observations
Interviews

Expectations
User habits
Personas



Usability Research

Usability tests
Expert evaluations
Interviews

Pain points
Sources of confusion
Missed expectations

Agenda

- Goal for today
- The rise of CUIs
- The UX of Chatbots
- The UX of Voice

Goal for Today

To understand what **intelligent interfaces** are and how to anticipate and address usability challenges they present

What is User Experience (UX) ?

And what does it have to do with intelligent interfaces?

Put simply, user experience is the discipline that assesses how well people can interact with a technology in a given context.

It helps shape that technology to be more usable, useful and enjoyable.

UX can give us a lens to help guide the design and use of this new generation of interfaces.

How should we think of “intelligence” in terms of an interface?

Intelligence:

The ability to acquire and apply knowledge and skills

The Oxford Dictionary

Today let’s think of intelligence as the ability to have a conversation.

aka the Turing Test

01.

The rise of CUIs

What is a conversational user interface (CUI)?

Many types of CUIs are in development. Today we'll focus on the two most common:

A chatbot is a digital tool that does tasks in response to triggers.

- They respond in a set way to certain key words or phrases.
- Good ones can draw on a personalized context, like past conversations and customer records.

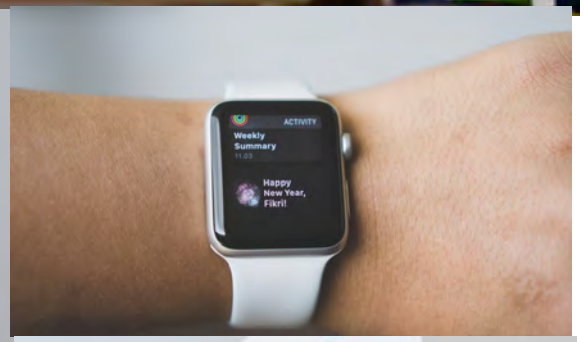
Voice assistants are guides to interconnected services.

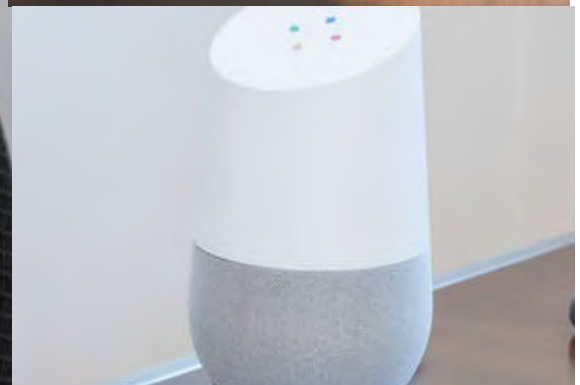
- A voice assistant is a combination of services that responds to verbal natural language commands.
- They are technically bots, but more…. they can perform work on the user's behalf— order Ubers, guide us through recipes, create shopping lists, activate mood lighting and soon converse with us.

A chatbot tends to be limited in scope.

A voice assistant connects to a web of services and technologies accessed through a natural language interface.

Both are evolving quickly.





The Rise of CUIs

CUIs are everywhere

Conversational interfaces (CUIs) are becoming widespread. They are most commonly accessed via smart speakers and smartphones.

41%

US consumers who have a voice-activated speaker *Tech Crunch*

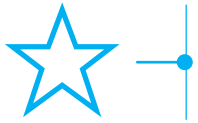
85%

Estimate of customer interactions powered by bots by 2020. Gartner

Promise of CUIs

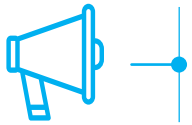
Don’t have to learn how to use

The closer we get to a natural human interface, the more comfortable we will be solving problems.



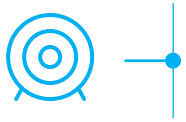
Less friction and GUI bloat

CUIs have the potential of simplifying complex interfaces and systems by responding directly to a user’s needs.



Common interface across devices

In the next 3-5 years we’ll be seeing a world of integrated interfaces and ecosystems where conversation / voice plays an increasing role.



Better identification with product

CUIs have the potential to consistently touch users across multiple channels and provide the feeling of engagement at each point of their journeys.

A one-time command is not a conversation

SINGLE-TURN RESPONSES

- Single-turn responses are command-and-control interactions.
- Making a phone call, playing a song, responding to a query.
- These are mainly information retrieval and simple transactions.

MULTI-TURN RESPONSES

- Advances in AI are driving CUIs to be true dialogue.
- Based on remembering previous interactions.
- Considers what comes next.

Let's focus on where the puck is going

"Over the past year, **Alexa has learned how to carry over context from one query to the next**, and to register follow-up questions without having to repeat the wake word. You can ask Alexa to do more than one thing in the same request, and summon a skill—Alexa's version of apps—without having to know its exact name."

https://www.wired.com/story/amazon-alexa-2018-machine-learning/

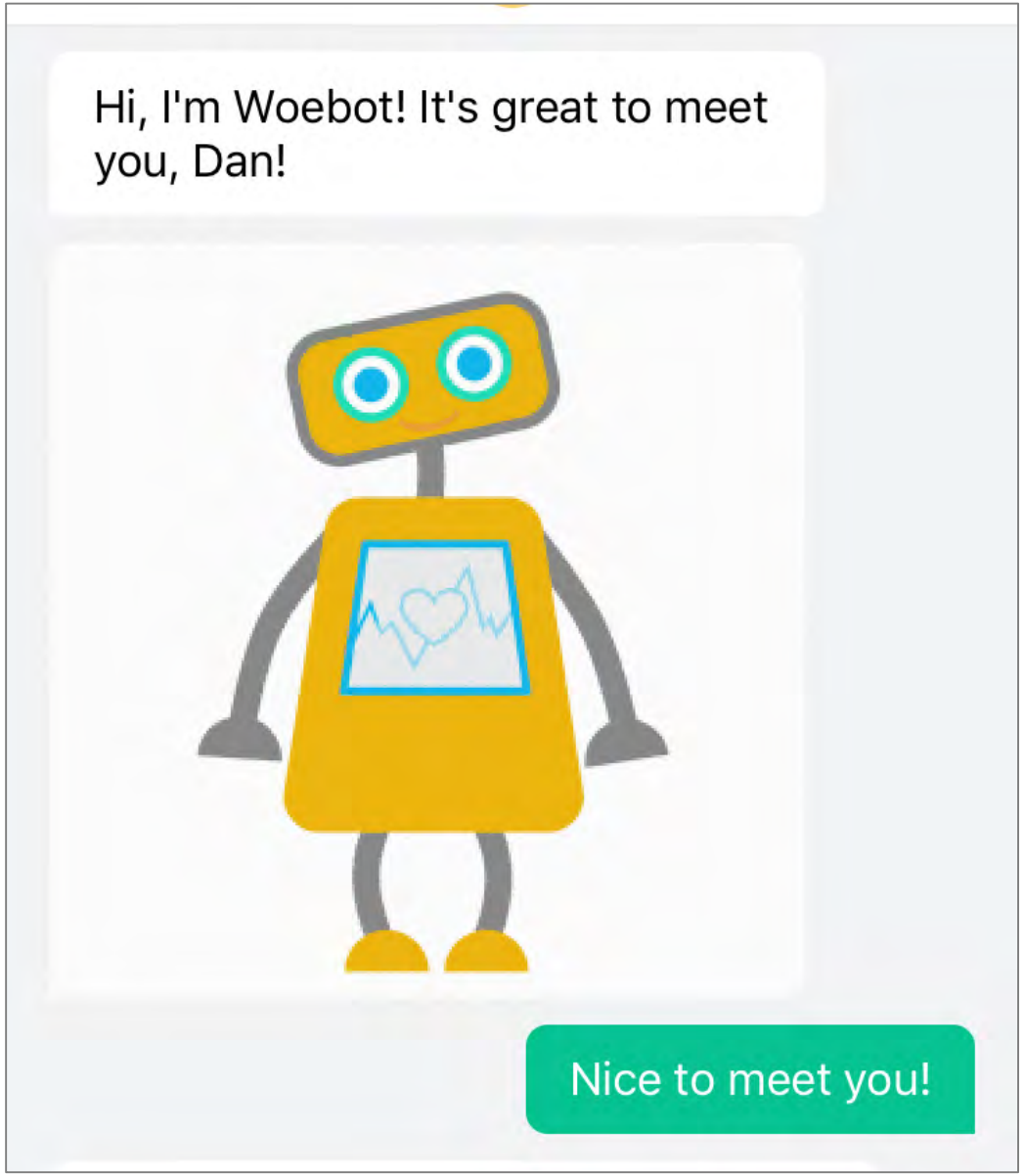
The University of California Davis "Gunrock" team was the winner of the 2018 Alexa Prize, a competition for university students dedicated to advancing the field of conversational artificial intelligence.

Their socialbot achieved an average conversation duration of 9 minutes and 59 seconds.

Alexa Blog

We’re building the bridge towards conversational interfaces as we’re driving across it.

Today we want to share what we’re seeing and learning on the drive

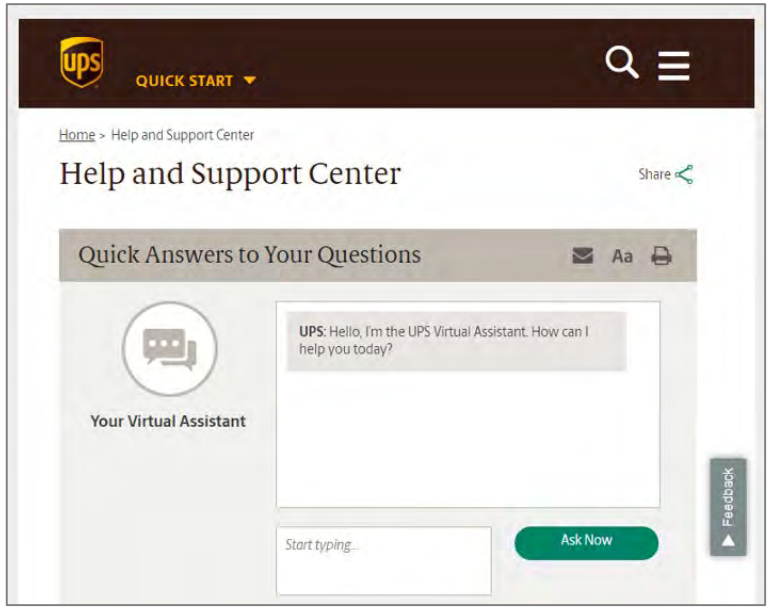


02.

The UX of Chatbots

Anticipating and addressing chatbot usability challenges

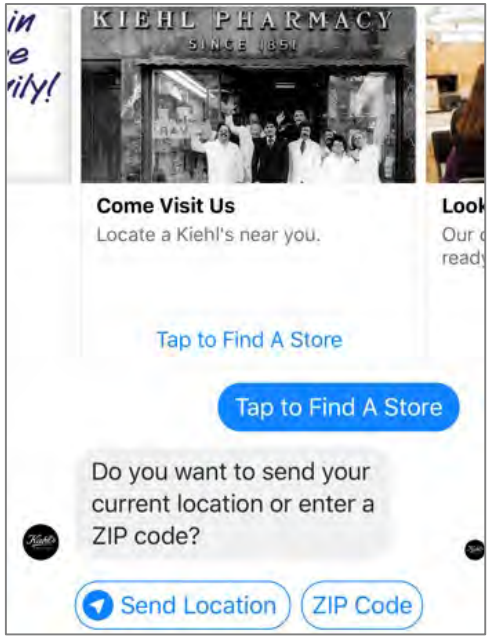
There are many ways to categorize chatbots, today we'll use two



Customer-service bots

These bots take some of the burden off of human interaction between companies and their customers by assisting in Help and Support.
They tend to be text-based

Think of them as "Top- Down."



Transaction bots

These bots provide users with more complex levels of interaction, like ordering a pizza and getting an auto insurance quote.
They are accessible via platforms like Facebook Messenger, via an app, or via text messaging.
Their user interface combines text and graphic elements.

Think of them as "Bottom-Up"

https://www.nngroup.com/articles/chatbots/

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Transaction chatbots: User likes and dislikes

Predetermined links & buttons

- Save time over typing.
- Users liked them displayed in carousels with images.

Flexible text entry

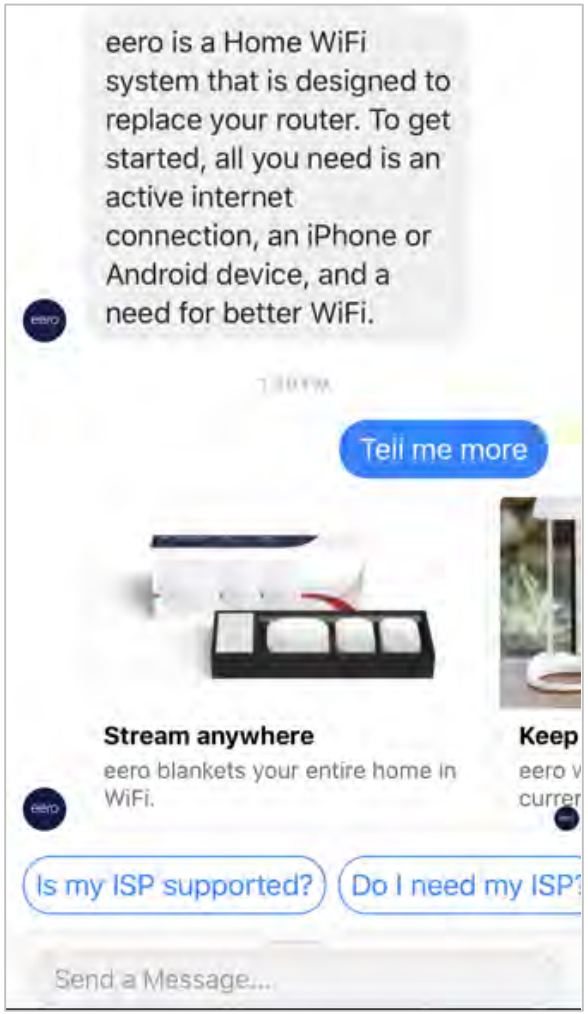
- Provide freedom from an over-strict chatbot script & allow more forgiveness in structuring questions.

Too much typing

- Users expected options to be prepopulated and became annoyed when they were not.

Link & button imposters

- Users had a tendency to click any non-text element, expecting a response.



Transaction bots are based on linear flow

Transactional chatbots guide the user through a small number of tasks. These tasks are essentially **linear flows.** The bot asks a question and correct answers advance the user along the branches.

When answers are in-line with the script

- If the user follows the proper sequence and uses the right words, she follows the flow and achieves her goal.

When answers deviate from the script

- Entering *townhouse* rather than *house* or *apartment* could cause the bot to signal a problem has occurred.

When context is not transferred from one query to the next

- A credit card company's bot continued to ask a user with two credit cards to clarify which account each query referred to throughout a single session.

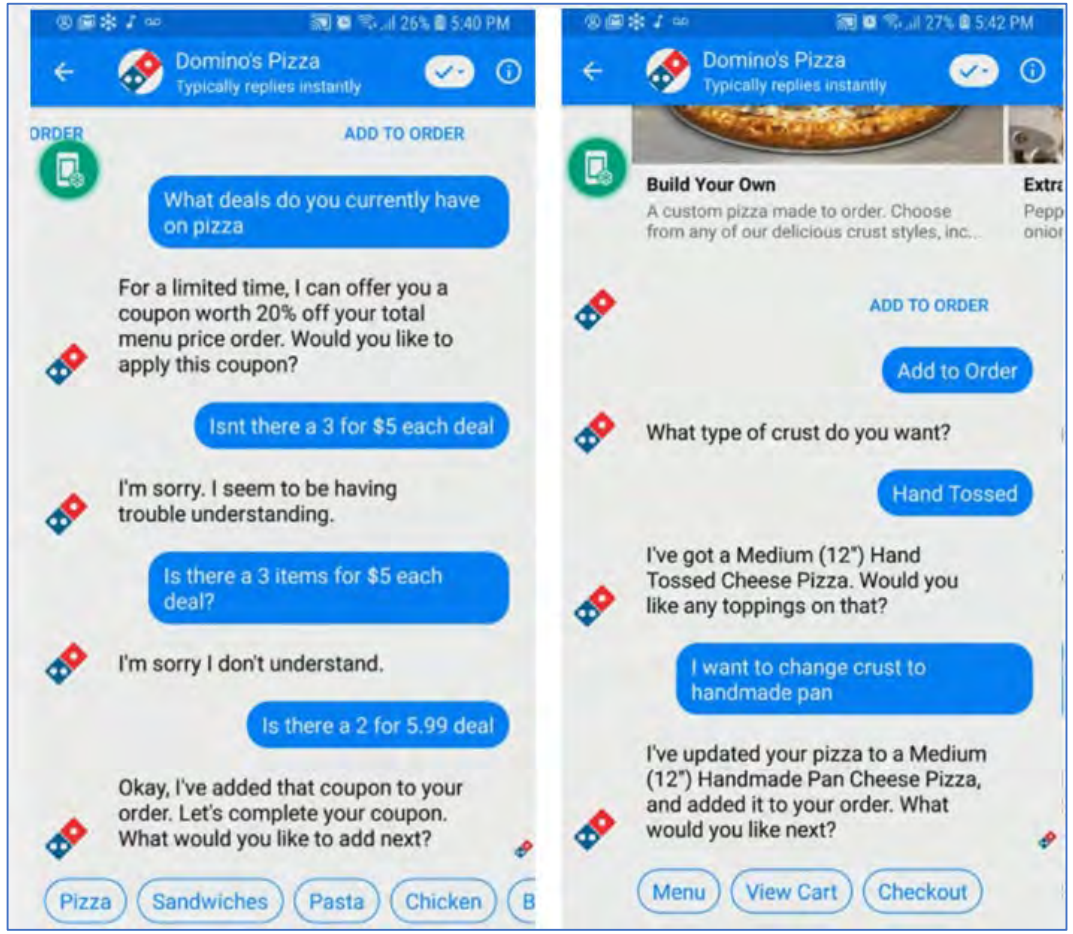
Users like when they're in sync with the linear flow

When bots understand deviations from the script

- A user who was aware of a new promotion was able to have it applied to his cart. Also, late in the flow, the user was also able to change the crust of the pizzas he had already ordered.

When bots can't draw upon info entered previously to a new task

- For example, when a user learned that a pizza could not be delivered to his address, he began again to request a store pick-up instead of delivery. The bot asked to enter his address a second time.



Chatbots

Communicating with bots

The language used with customer-service bots can be fairly complex — The user's focus is on their problem and their attempts to describe it.

People will tend to use simple language with transaction bots. These interactions are usually task-focused, with the linear flow leading to options.

Getting the same answer to different questions is frustrating. This could be a signal the user's context is not being understood.

A bot should accept its limitations and point the way to help. Users respond favorably when bots provide alternate steps (phone number or a live agent)

UX Guidelines for creating Chatbots

Be honest

- Simply explain what tasks the chatbot can do. Don’t create false expectations.
- Be upfront that this is a chatbot and not a human.
- Be straightforward and helpful when the chatbot does not understanding the user. Provide options like a live person, a phone number, or a link to another resource.

Be pragmatic

- Don’t be overly ambitious: create chatbots for simple tasks. Recognize that the chatbot interface is limited.

Allow for flexibility in user inputting

- Design expecting typos and ambiguous input
- Let users interact via both text input and selections of links.

Remember the user’s conversational context

- Save information from one task to the next.
- Program some flexibility into the bot: infer context and let people to jump forward and backward in the linear flow.

03.

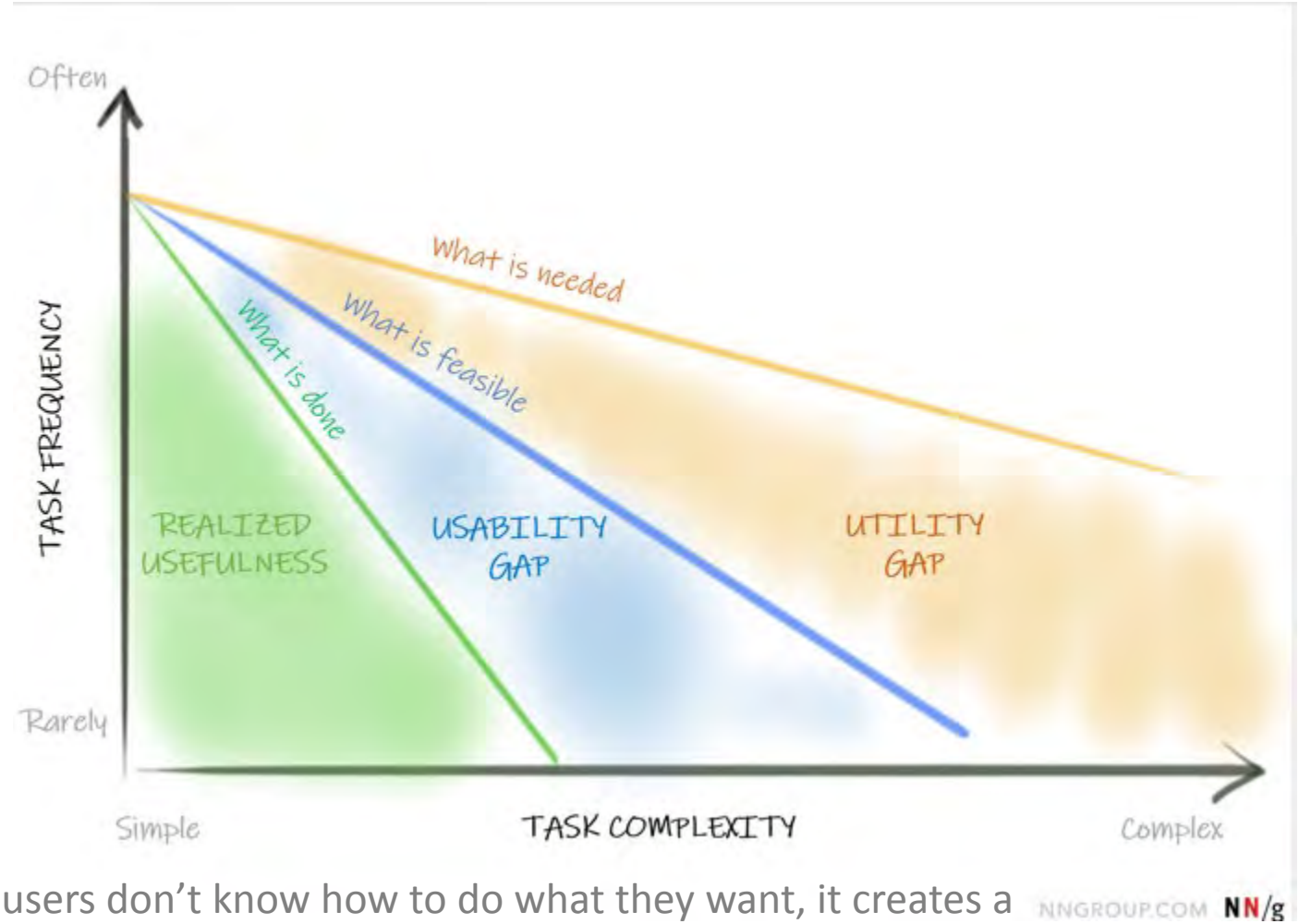
The UX of Voice

While chatbot are visual, many voice user interfaces are not.

When there is nothing to look at, users aren't presented with the clear indications that graphical user interfaces provide to show what the interface can do or what options the user has.

This is changing….but we have to help it.

The UX of Voice: The Gulf of Execution



If users don't know how to do what they want, it creates a gulf between the user and interface. Norman (1988, The Gulf of Execution)

In 1988, Don Norman introduced the concept **The Gulf of Execution.**

In 2018, his group did a study exploring what people thought the perfect assistant could do for them:

- Current use was low (Realized Usefulness - green)
- The Usability Gap (blue) refers to current features that exist and meet stated needs, but aren't being used.
- The Utility Gap (orange) describes stated needs that are not yet met with features.

The Usability Gap points to a lack of awareness and problems with usability.

What We've Learned About the UX of CUIs: Highlights

- **Understanding capabilities is critical to user acceptance but so far, difficult to achieve.**
  - What can it do?
  - How do I navigate it? How do I get there?
  - How do I do it?
  - What keywords do the tasks I want to do require?

- **To be truly conversational, a system must both guide and remember.**
  - A command interface is not conversational.
  - A true CUI should be able to guide the user towards what is possible and remember what the user has shared.

Voice Behaviors We've Observed

- Users can't "see" what's possible and remain "stuck" on the most common uses – shopping lists, weather, music, recipes.
- "3 strikes and you're out" – without affordances to help when users get stuck, they abandon.
- Users can lose their way in a voice interaction, get frustrated, and abandon.
- As with chatbots, users can get frustrated when information they provided is not 'remembered' later in the interaction.

Observations to address in developing best practices for Voice UX

Auditory interfaces put more demands on memory than visual displays.

- Minimize the need for recall by providing assistance via prompts in responses.
- But also be careful to avoid unnecessary prompts and confirmations.

Successful conversations have two levels of context.

- Topic context: Clarify what the user is doing.
- Conversational context: Take advantage of advances being made in session memory and long term memory to ‘remember’ what has been already mentioned.

Users often discover things by chance.

- Explore common phrases that would elicit relevant responses in a normal conversation. These can trigger probes that reveal more of the user’s intent while showing the potential of the CUI, e.g. time to *order more dog food.*

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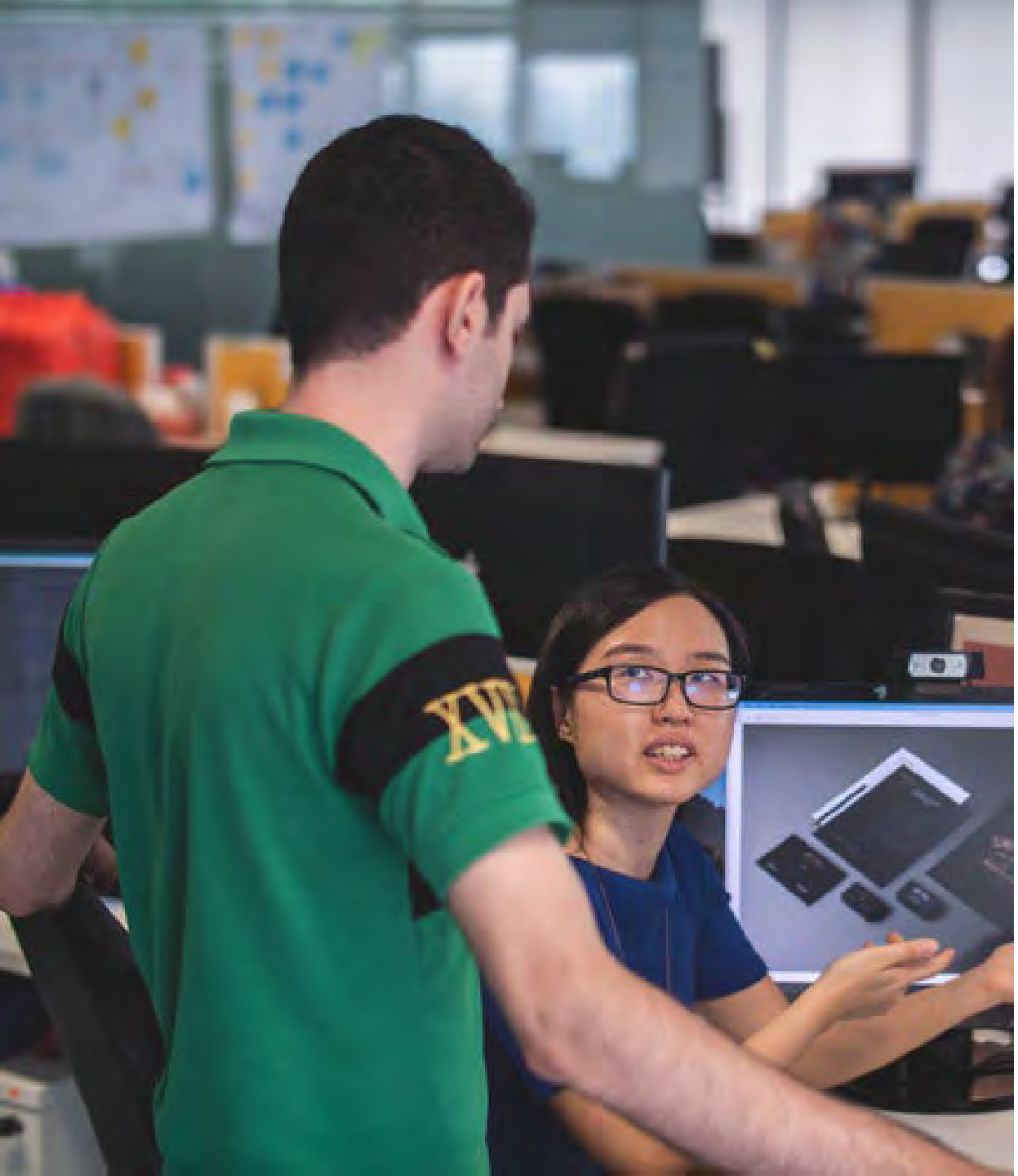

Think conversationally

Humans take turns

- When we have a conversation we take turns, like asking a question, pausing, waiting for a response and in some cases explicit direction.
- The easiest technique is to ask a question, a user will respond as a reflex.

Think about conversational flow

- Avoid putting an instruction after the question. e.g. “Would you want to hear more? Say yes, no or repeat.”
    - Consider presenting the instruction first or even removing it.

Use discourse markers

They manage the flow of a conversation

They act as guideposts and acknowledgements:

- Timelines (“First”, “Finally”)
- Acknowledgements (“Thanks”, “Perfect”)
- Positive feedback (“Good job”, “Nice going”)
- Assurance and generic replies (“Sorry to hear that”, “OK”)

Think of them as conversational etiquette.

Conversation about the weather is the last refuge of the unimaginative.

Oscar Wilde

GAME CHANGERS

THANK YOU!