



# Inclusive Personalities for Conversational User Interfaces

A Preliminary Discussion

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# Authors

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With more than 25 years of experience in a variety of mediums, Jennifer has led product teams and served in nearly every role in the product lifecycle. Prioritizing inclusion, Jennifer aims to ensure no one is excluded from products and services from the beginning. They see inclusion as culture, not a feature to be backlogged.

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Lead Human-Centered Engineer



Jeff leads research in human-machine teaming and accessibility at The MITRE Corporation. Before coming to MITRE, Jeff spent 15 years developing games, simulations, learning software, and museum exhibits. Jeff has advanced degrees in Computer Science and Anthropology and an undergraduate degree in Linguistics.

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## Professional Experience

- Senior Human Centered Design, Accessibility Engineer, The MITRE Corporation (2021 – Present)
- Invited Expert, W3C Web Content Accessibility Guidelines (WCAG) Working Group (2019 – Present)
- UX Lead / Product Manager, U.S. Digital Response (2021 – Present)
- Programming Director, 2021 AIGA DC DotGov Conference, focus on inclusion and equity impact (2020 – 2021)
- Senior UX Designer, Accessibility Specialist, Ad Hoc, LLC (2019 – 2021)
- Design Lead, Fidelity Investments (2013 – 2015, 2019 – 2020)
- UX Lead and Web Application Software Engineer, Freelance & JenStrickland.design (1995 – Present)  
[FEMA, Boston Area Rape Crisis Center, Harvard University National Preparedness Leadership Initiative, Houghton Mifflin, Pearson Custom Publishing, MIT University]

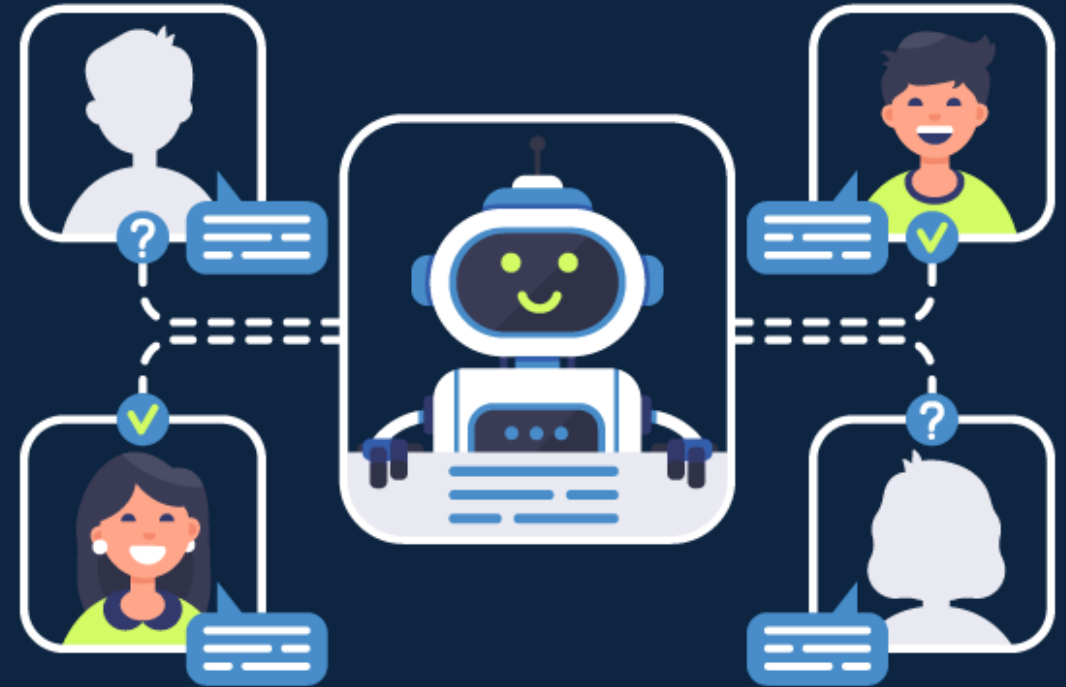
## Publications & Activities

- Accessible Design for Cognitive Considerations. Ad Hoc, LLC. 2020
- Ohana for Digital Service Design: inclusive digital product lifecycle.
  - 2021 World Information Architecture Day (WIAD), 2021.
  - User Experience Professionals Association (UXPA) DC, 2021.
  - Digital.gov Government UX Summit, 2020.
- You're Killing Your Users.
  - UX Camp, DC, 2021.
  - Black Code Collective at The Washington Post, 2018.



# Agenda

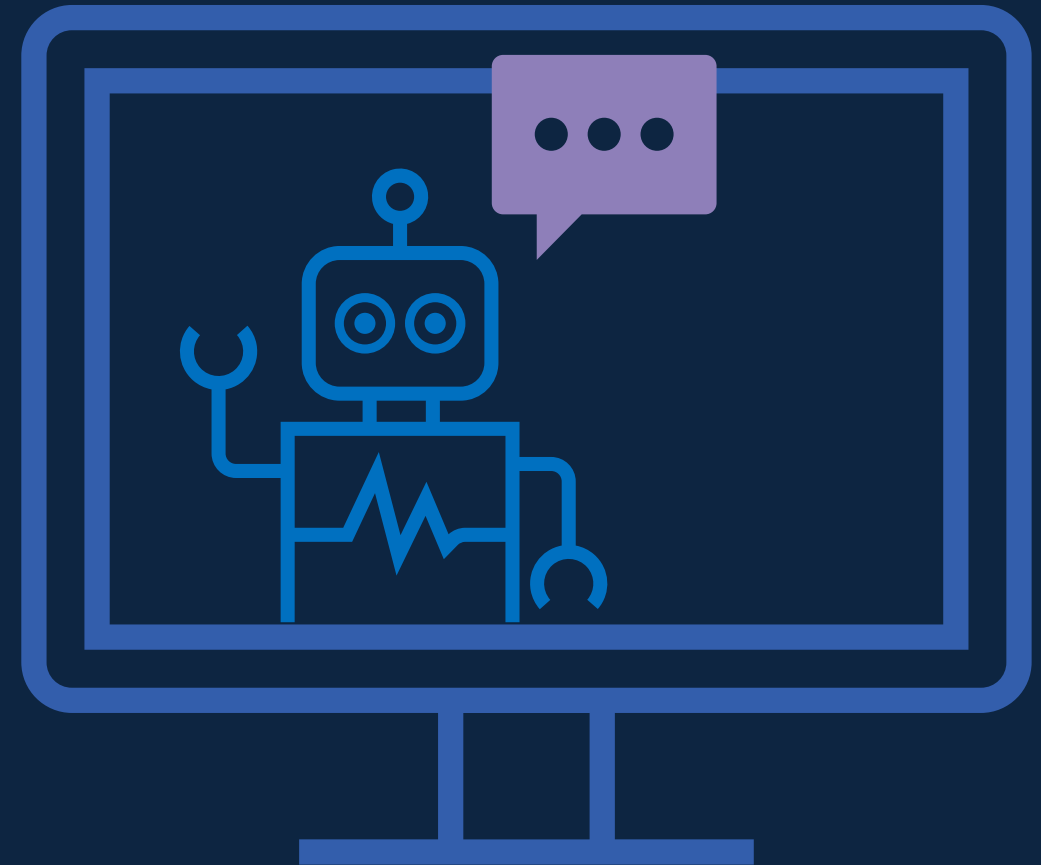
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# Introduction

Conversational user interfaces (CUIs) such as text-based chatbots and voice-based assistants have become a popular solution for commercial services and are increasingly used to deliver government services as well.

Government services must be accessible for all, a broader audience than private companies.



# Introduction: Craft a CUI personality for diverse groups of users with disparate needs, wants, and expectations

- How does a CUI's personality include or exclude sections of the population?
- How can we ensure CUIs don't unintentionally alienate the people being served?
- Most existing CUI standards refer to plain language, web content standards, screen reader usability, navigation, and such.
- Existing standards do not explicitly address the novel problem space of artificial personality.



# Background: Inclusive design

- Inclusive design is an approach seeking to ensure all can access and are included in the design and outcome of a service or product.
- A key guidepost is being mindful of who is included or excluded.
- It's helpful to take a “design by” approach, bringing the service consumer into the design of outcomes.
  - Hiring for lived experience is a tremendous asset to bringing awareness to inclusive processes.
  - Design workshops with consumers in the design and development processes are invaluable in ensuring outcomes serve diverse audiences.



# Background: Inclusive design for the public sector

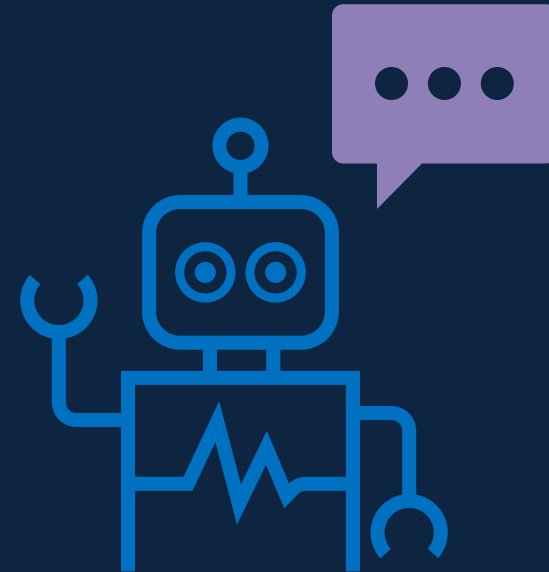
- Most private sector products are willing to exclude those with low incomes due to a profitability focus.
- For government or public sector services, people with low income are likely to be the critical users for whom access may be a matter of life or death.
- Government and public sector services are especially relevant for inclusive design due to the range of human experience served — **Where else does a service have an audience with such diversity in geography, culture, economics, ability, etc.?**





# Background: CUI personality overview

- Personality for CUIs is a topic of interest for researchers and industry.
- Personality shapes a CUI's response content.
- Web-based CUIs often have a visual component like an avatar that can reflect personality.
- For voice-based systems, different voice types can similarly reinforce different kinds of personalities [6].



# Background: CUI personality strategies

- Some industry experts offer strategies for how to design CUI personalities, such as:
  - identifying personality traits the CUI should have, which can be based on established models of personality (e.g., [7]) or brand values (e.g., [8])
  - identifying kinds of people to use as models for the CUI's behavior.
  - Persson et al. [9] refer to these two strategies as trait schemas versus social role schemas
  - it is possible to use both together, for instance as recommended by Google [10] when developing for Google Assistant.



# Background: Application of inclusive design to CUI personality

UI experts documented six Inclusive Design Principles [11], for which we provide examples to illustrate applicability to CUI personality.

## 1. Provide comparable experience:

A CUI should use simple straightforward language so that people who cannot fluently read the CUI's language can complete tasks with success similar to those who can.

## 2. Consider situation:

A CUI should use empathy if users are likely to be under pressure.

## 3. Be consistent:

A CUI should adhere to familiar conversational conventions, such as Grice's maxims (see [12]).

## 4. Give control:

A CUI should give the user plenty of opportunities to steer the conversation.

## 5. Offer choice:

A CUI should be responsive to different language styles and registers.

## 6. Prioritize content:

A CUI should convey only content most relevant to the conversation topic so the user can stay focused.

## 7. Add value:

A CUI should not engage in talk or offer conversation paths that do not improve user experience or satisfaction.

# Challenges for inclusive CUI personalities:

## Grace, respect, empathy, and mindful language

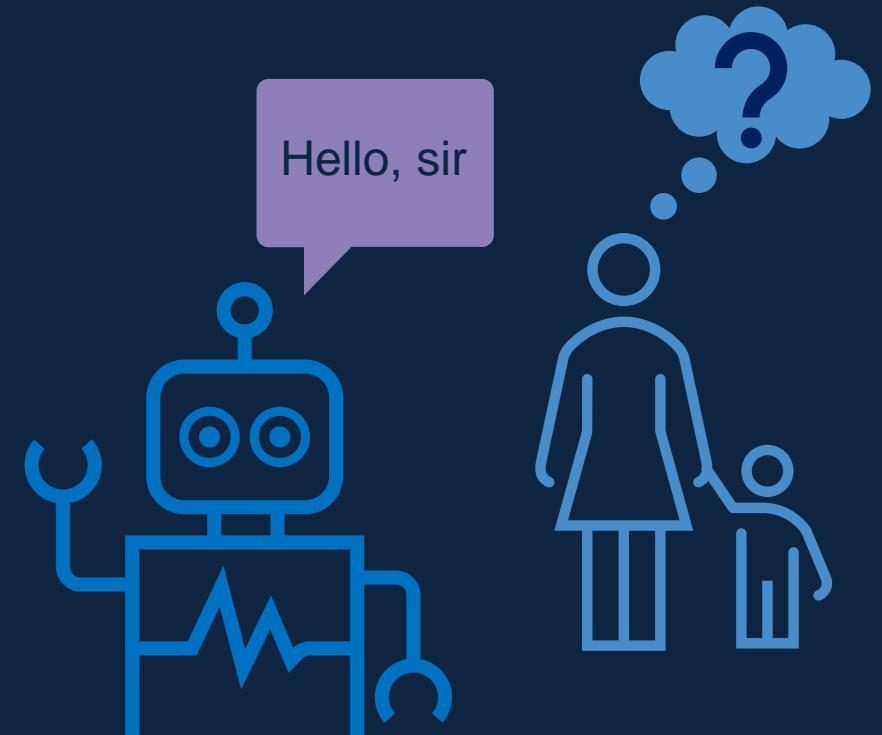
- What sort of personality will best serve the user's purpose and scenario?
  - It varies depending on the individual's perspective, which may itself vary based on culture, gender, age, ability, or any of several factors.
  - To bring grace, respect, and empathy to the CUI personality, the design team must conduct inclusive research with a broad range of human experience to design mindful, effective (and possibly affective) conversation.
- Empathy can improve adoption of CUIs and improve human mood [13], [14]. However, inaccurate empathy such as unmerited sympathy may decrease user's trust [15].
- Consider how a person's background may influence the perception of personality, and how that might impact the acceptance of a CUI.
- Follow the Inclusive Design Principles: "provide comparable experience," "consider situation," "be consistent," "give control," "offer choice," and "add value."



# Challenges for inclusive CUI personalities:

## User's self-identification

- Imagine a CUI that refers to you regularly as a different gender than you identify as, or refers to abilities that you do not have — how would you feel?
- An individual's identity is a personal statement reflecting their history, experience, values, and mission — how might a CUI welcome the full range of human identity, which may vary in language, lingo, tone, and even code switching?
- When designing a CUI's personality, be aware of any biases and stereotypes informing the design and how this could interact with users' self-identification.
- Follow the Inclusive Design Principles: “consider situation,” “give control,” and “offer choice.”



# Challenges for inclusive CUI personalities:

## User's situation and mood

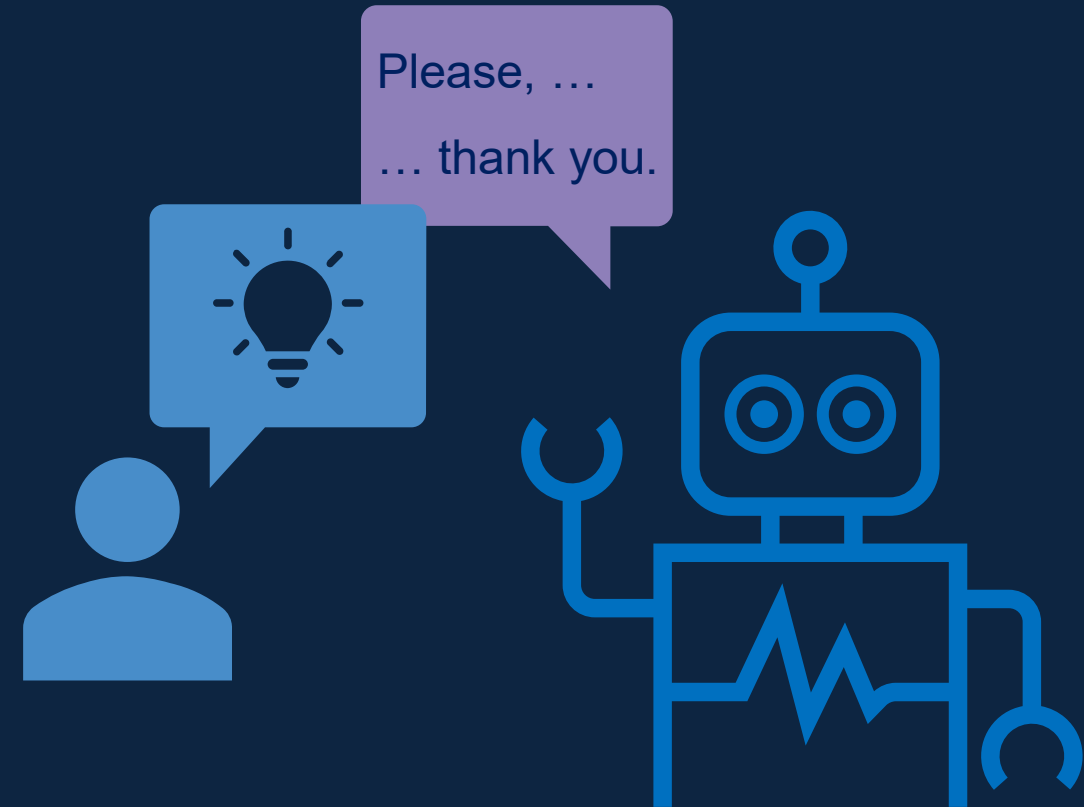
- There are situations that may be particularly stressful for people, such as navigating an unfamiliar city. Google Maps anticipated this by offering character voices such as Morgan Freeman or Santa Claus, which can defuse tension. Additionally, conversations between passengers and drivers tend to be simple and concise to account for their divided attention [17], [18].
- The user's mood, like situation, affects conversational priorities. While an impatient user needs answers quickly, other users might appreciate additional content acknowledging their emotional state, such as potential targets of fraud [19].
- Follow the Inclusive Design Principles: “consider situation,” “be consistent,” and “prioritize content.”



# Challenges for inclusive CUI personalities:

## Politeness

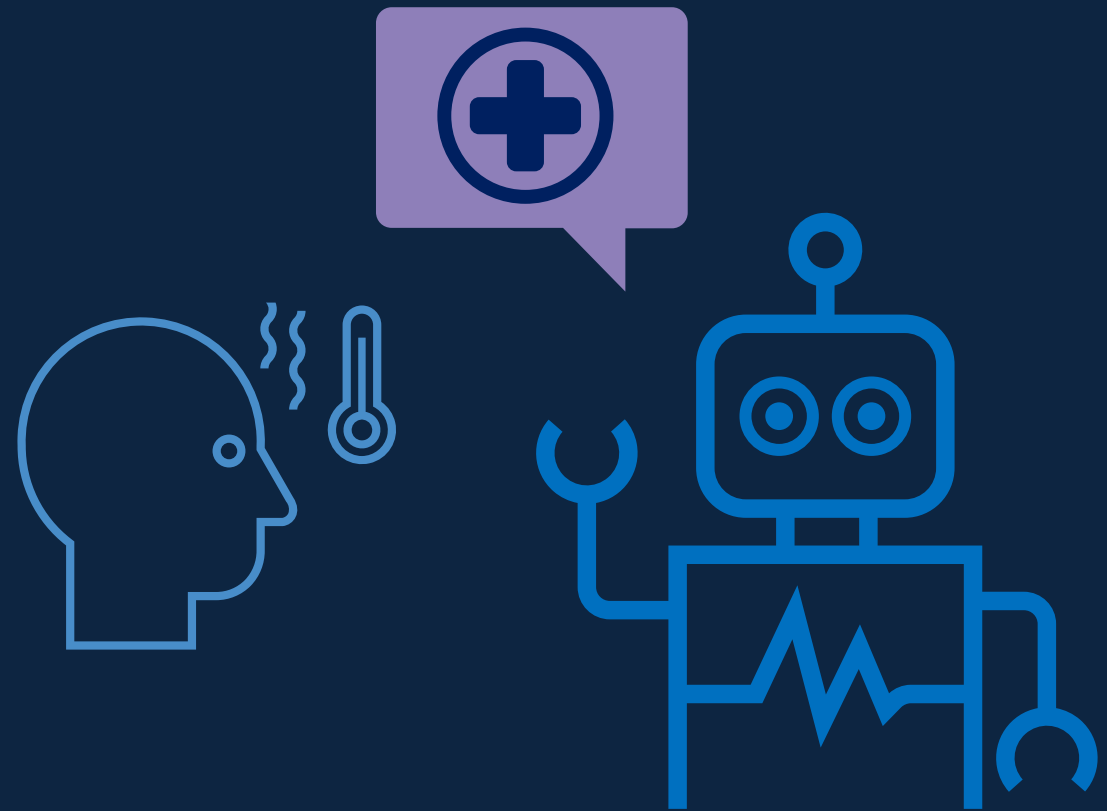
- What level of formality and politeness should a CUI show its human user?
- Politeness theory distinguishes between positive and negative face.
- It is important to identify the range of face needs for the CUI's intended users.
- Humans expect the politeness of an interaction to be appropriate to the social relationship. Determine whether users are likely to approach the CUI as a social partner, and if so whether the CUI is viewed as a close peer or as a formal representative of some organization.
- Follow the Inclusive Design Principles: “consider situation,” “give control,” “offer choice,” and “add value.”



# Challenges for inclusive CUI personalities:

## Different interaction styles and preferences

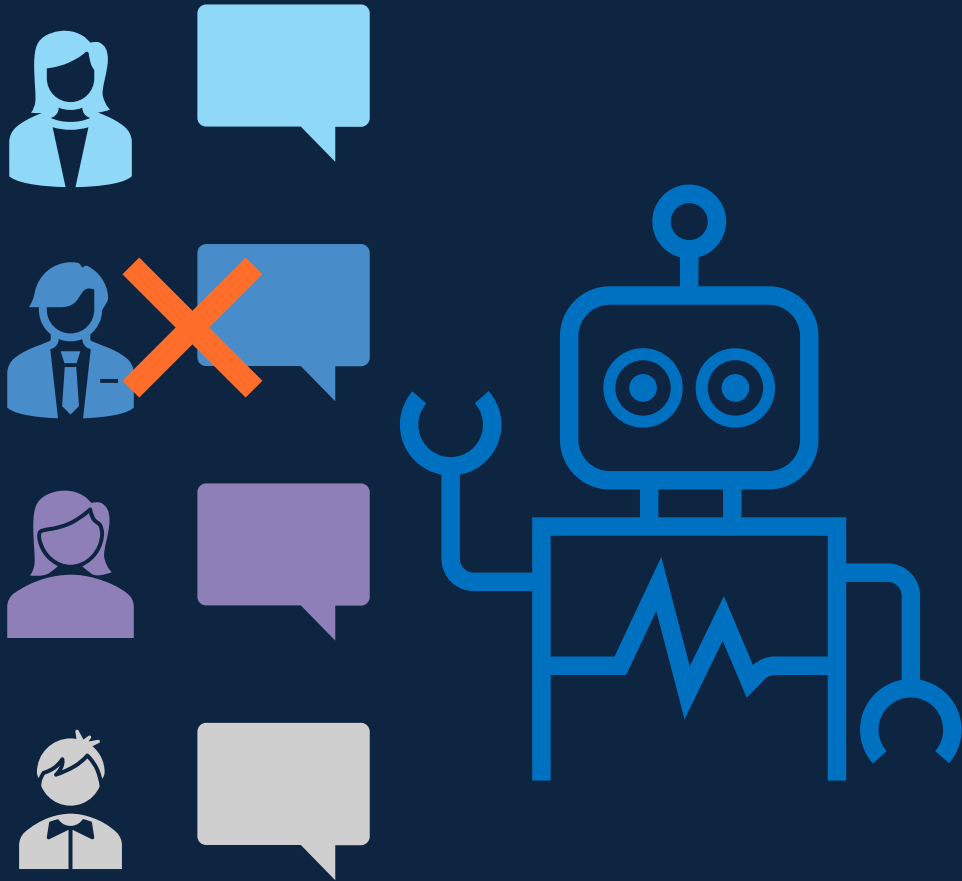
- When speaking with CUIs assisting with chronic disease management, patients preferred different healthcare provider interaction styles, such as paternalistic, informative, and deliberative, based on their ages and the nature of their disease [22]. In domains like healthcare that have clear taxonomies of interaction styles, CUI designers need to determine what user attributes will influence their preferences, or simply test a range of interaction styles with a large representative sample of target users to understand which are preferred.
- Follow the Inclusive Design Principles: “consider situation,” “give control,” “offer choice,” and “prioritize content.”





# Recommendations for inclusive CUI personalities:

## Know your users, be aware of who you are including/excluding



- When designing a CUI, understand your audience through user research, interviews, and contextual inquiry.
- Some teams document a list of those they are willing to exclude (for example, users of Internet Explorer 7 since it is well-past the sell-by date) and keep the list in mind throughout the design and development to guide decision-making.
- Providing a text-based chatbot along with any audio is a way to be inclusive of those with hearing considerations.
- For Veteran survivors of military sexual trauma, research might reveal some personality features may be too “soft” and make the Veteran feel they are not understood. Get to know your audience and provide personalities that suit their needs.

# Recommendations for inclusive CUI personalities:

## Offer a range of personalities for a range of people



- Offering a selection of personalities is one avenue that some interfaces offer. For example, Siri offers a selection of voices as well as languages from a range of countries and regions. Each has a slightly different personality, and some users select their language from a particular region because of the personality they associate with it, such as a U.S. user choosing a U.K. accented voice.
- Microsoft's Clippy virtual assistant evolved to offer alternative avatars with different personalities. An important rule of thumb, though, is: "No matter what you choose, avatars won't cure bad interactions. Just ask Clippy."

In other words, personality choices must be targeted and not just for the sake of variety.

# Recommendations for inclusive CUI personalities:

## Make sure the bot's personality enhances its purpose

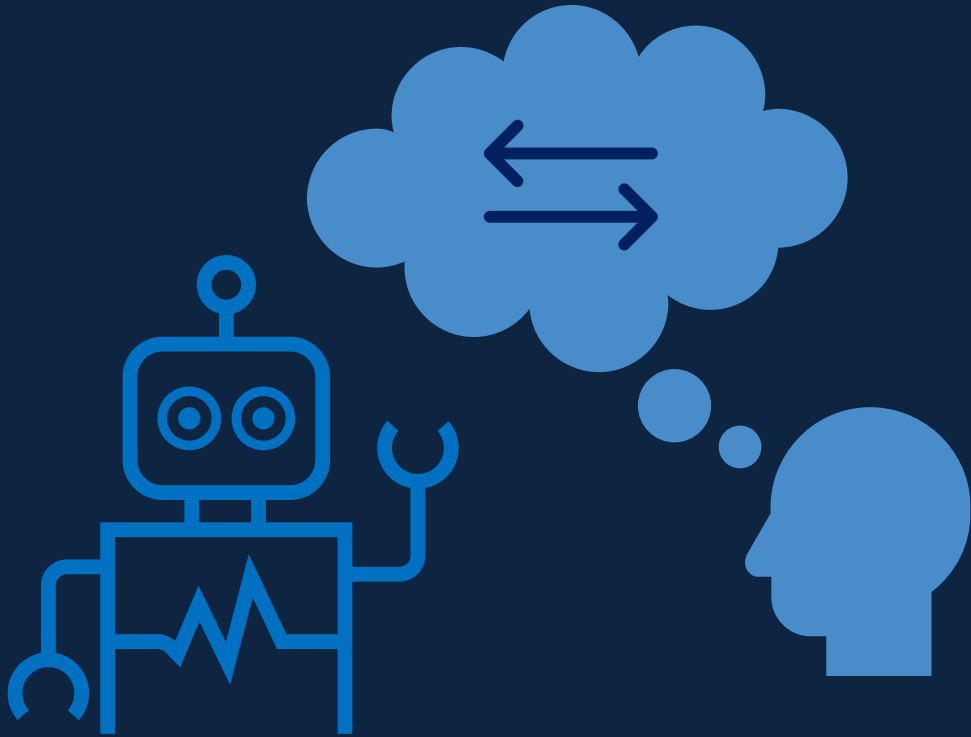


Understanding the user's purpose is key in designing suitable services.

Depending on the audience, the bot may need to be formal or casual; humor and even conflict may be used to provoke critical thinking.

- In the “Bots of Conviction” case study, the bot was a cat that asked the user if they would **bury their loved ones beneath their bed**. Users generally were surprised, which allowed the bot to reveal that in some ancient cultures they did this to keep their loved ones close. The bot's personality is confidently of another culture, eliciting discourse and reflection.
- In helping Veterans ready for life after active duty, a bot may need to be both compassionate and challenging, as it reminds users to go to training, submit forms, and attend to other tasks.
- In contrast, the Amazon customer service bot is friendly, upbeat, and apologetic as it addresses customer service issues. If it took a humorous approach, that would likely offend some customers already upset about a product issue.

# Recommendations for inclusive CUI personalities: Understand users' tendency to anthropomorphize

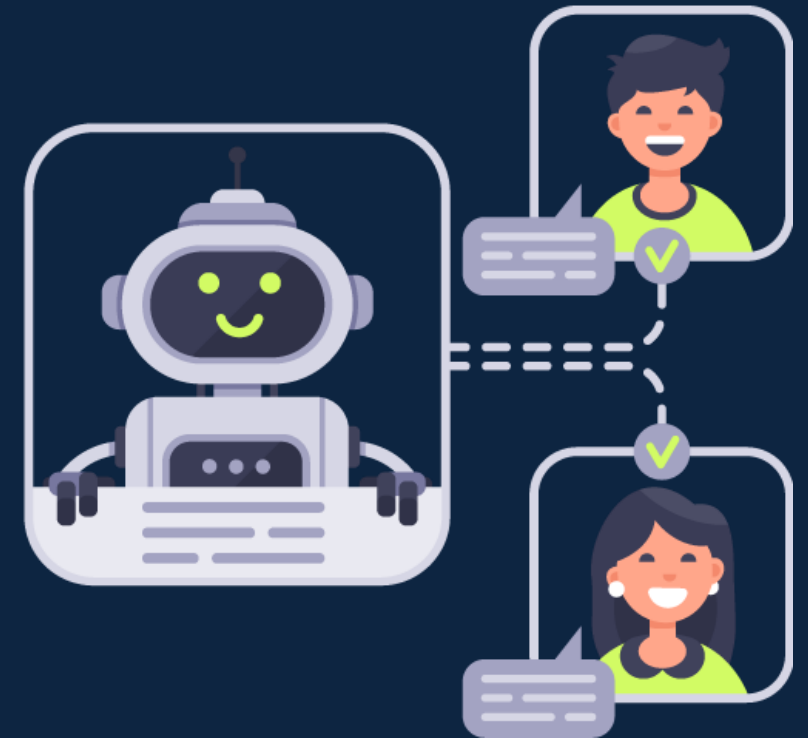


- Some of the challenges mentioned in this paper depend on whether users are likely to view the CUI as a social partner or a transactional means to an end.
- Factors affecting a user's tendency to anthropomorphize technology include age, gender, computer anxiety, and need for interaction [25].
- Users likely to anthropomorphize CUIs can be expected to appreciate social conventions such as appropriately polite and empathic language.

# Conclusion

In this paper we presented challenges that should be systematically addressed in research to move toward inclusive CUI personalities, as well as some overarching recommendations or themes to guide development.

- Studies exploring the impacts of empathy and politeness in conversational robots and software need to be integrated with studies of how diverse users respond to manifestations of social cues in technology.
- CUI dev teams should take advantage of user-centered research and design tools, such as personas, user stories, and structured interviews to understand and anticipate the range of needs, attitudes, and expectations of their users.
- Most CUIs take an initially neutral personality and when an interaction becomes more complex transfers the conversation to a human being. Until a CUI can precisely adapt to a user's preferences, that approach remains among the most inclusive. However, ambitious research, synthesis, and tool development can bring us closer to CUIs that serve all potential users at all times of day.



# Thank you!

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See paper for references