

# Guidelines for Human-AI Interaction



## How to use these cards

You can use these cards throughout your design process as you evaluate existing ideas, brainstorm new ones, and collaborate with the multiple disciplines involved in creating AI.

Each card presents a guideline and an example that illustrates the guideline in practice. The guidelines are not rules or patterns and need not be used as a checklist. Not all may apply in every case, and in some specialized cases, such as bots or voice interaction, additional guidelines might be needed. In some cases, you will find you need to make trade-offs between guidelines.

You are using these guidelines “the right way” if you are considering them in your work to engage in dialogue about human-centered AI.

Please let us know how you are using these cards. Send feedback to [aiguidelines@microsoft.com](mailto:aiguidelines@microsoft.com).

Learn more: <https://aka.ms/aiguidelines>.

1

INITIALLY



Make clear  
what the system  
can do.

Help the user understand what the  
AI system is capable of doing.

# EXAMPLE IN PRACTICE

Search here to get started

QuickStarter helps you discover ideas and create an outline for a great presentation. Get started by searching about your topic.

 Search

Or start with one of these topics:



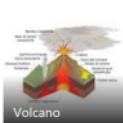
International  
Space Station



Amelia Earhart



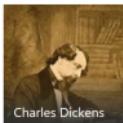
Paris



Volcano



Wind Power



Charles Dickens

Powered by Bing

PowerPoint's **QuickStarter** builds an outline to help you get started researching a subject. It displays suggested topics that help you understand the feature's capabilities.

Make clear what the system can do.

1

2

INITIALLY



Make clear how well the system can do what it can do.

Help the user understand how often the AI system may make mistakes.

## EXAMPLE IN PRACTICE

Office's new companion experience, **Ideas**, docks alongside your work and offers one-click assistance with grammar, design, data insights, rich imagery, and more. The unassuming term "Ideas," coupled with the label "Preview," helps set expectations about the presented suggestions.

Make clear how well the system can do what it can do.

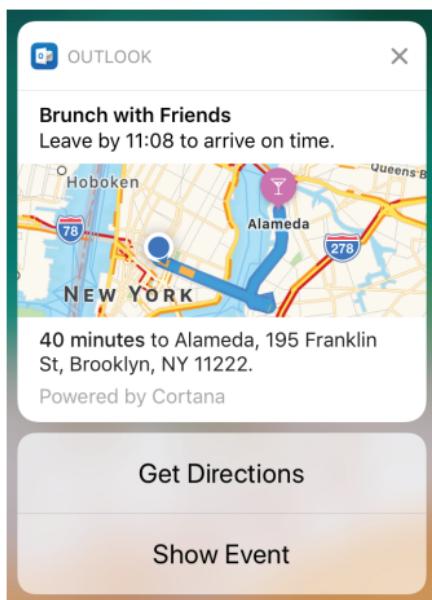
3

DURING INTERACTION

# Time services based on context.

Time when to act or interrupt  
based on the user's current task  
and environment.

## EXAMPLE IN PRACTICE



When it is time to leave for appointments, Outlook sends a **Time to Leave** notification—with directions for both driving and public transit—taking into account current location, the event location, and real-time traffic information.

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## DURING INTERACTION

Show contextually relevant information.

Display information relevant to the user's current task and environment.

## EXAMPLE IN PRACTICE

The screenshot shows a Microsoft Word window with a sidebar titled "Acronyms". The sidebar contains two entries:

- BPO**  
**Business Planning and Operations**  
Found from your email ▾
- EDC**  
2 definitions found  
**European Development Center**  
Found from your file ▾  
**Error Detection and Correction**  
Found from your file ▾

Powered by machine learning, **Acronyms** in Word helps you understand shorthand employed in your own work environment relative to the current open document.

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## DURING INTERACTION

Match relevant social norms.

Ensure the experience is delivered in a way that users would expect, given their social and cultural context.

## EXAMPLE IN PRACTICE

The screenshot shows the Microsoft Word Editor (preview) interface. At the top, it says "Editor (preview)" and has a "Go to Ideas" button with a lightning bolt icon. Below that, there are navigation arrows and a count of "2 Remaining". A section titled "Consistency" suggests using consistent spelling for compound words. It lists three sentences with "non-profit" underlined in orange: "...Happy Equines is a nonprofit organization that...", "...The non-profit operates in the...", and "...to contact this non-profit is through their ...". There is also a partially visible sentence at the bottom. A red link "Select individually" is located below the third sentence. The "Replace instances in this slide with:" section contains two dropdown menus: one for "nonprofit" (count 1) and one for "non-profit" (count 2). Below these are buttons for "Ignore Once" and "Settings".

When **Editor** identifies ways to improve writing style, it presents options politely:  
“Consider using ...”

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DURING INTERACTION

# Mitigate social biases.

Ensure the AI system's language and behaviors do not reinforce undesirable and unfair stereotypes and biases.

## EXAMPLE IN PRACTICE

MyAnalytics



Calendar clean up

You have 4 conflicts tomorrow afternoon.



Things change. Keep your important people list up to date.

**MyAnalytics** summarizes how you spend your time at work, then suggests ways to work smarter. One way it mitigates bias is by using gender-neutral icons to represent important people.

Mitigate social biases.

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WHEN WRONG



# Support efficient invocation.

Make it easy to invoke or request the AI system's services when needed.

## EXAMPLE IN PRACTICE

Location	State
Seattle, WA	WA
Portland, OR	OR
Chicago, IL	IL
San Francisco, CA	CA
Phoenix, AZ	AZ
Austin, TX	TX
Los Angeles, CA	CA
Bellevue, WA	WA
Houston, TX	TX

**Flash Fill** is a helpful time-saver in Excel that can be easily invoked with on-canvas interactions that keep you in flow.

8

WHEN WRONG



# Support efficient dismissal.

Make it easy to dismiss or ignore undesired AI system services.

## EXAMPLE IN PRACTICE

The screenshot shows a Microsoft Forms interface. At the top, there is a choice question with three options: "Male", "Female", and "Prefer not to say". Below the options are buttons for "Add option" and "Add "Other" option". To the right are toggle switches for "Multiple answers" and "Required" and an ellipsis button. A toolbar below the question includes buttons for "Choice" (which is selected), "Text", "Rating", and "Date".

Suggested question

What is your age? X

Microsoft Forms allows you to create custom surveys, quizzes, polls, and questionnaires. In Forms, some choice questions trigger **Suggested Options**. Positioned beneath the relevant question, the suggestions can be easily ignored or dismissed by clicking the "X."

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## WHEN WRONG



# Support efficient correction.

Make it easy to edit, refine, or recover when the AI system is wrong.

## EXAMPLE IN PRACTICE

The screenshot shows the 'Alt Text' dialog box in Microsoft Word. The title bar says 'Alt Text'. Below it is a question: 'How would you describe this object and its context to someone who is blind?'. A note says '(1-2 sentences recommended)'. A text input field contains the text 'A close up of a green plant'. Below the input field is a button labeled 'Description automatically generated'. At the bottom of the dialog are two buttons: 'Generate a description for me' and 'Mark as decorative' with an info icon.

Alt Text

How would you describe this object and its context to someone who is blind?

(1-2 sentences recommended)

A close up of a green plant

Description automatically generated

Generate a description for me

Mark as decorative i

**Auto Alt Text** automatically generates alt text for photographs by using intelligent services in the cloud. Descriptions can be easily modified by clicking the Alt Text button in the ribbon.

# 10

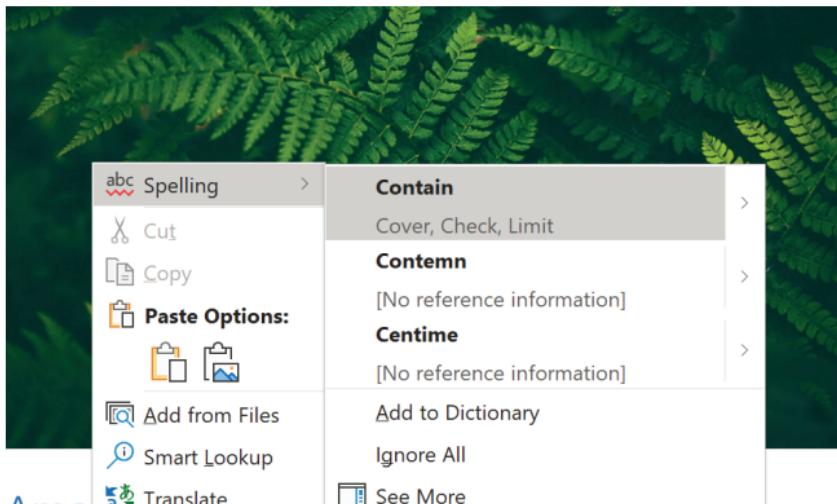
## WHEN WRONG



# Scope services when in doubt.

Engage in disambiguation or gracefully degrade the AI system's services when uncertain about a user's goals.

## EXAMPLE IN PRACTICE



When **AutoReplace** in Word is uncertain of a correction, it engages in disambiguation by displaying multiple options you can select from.

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WHEN WRONG



Make clear why  
the system did  
what it did.

Enable the user to access an  
explanation of why the AI system  
behaved as it did.

# EXAMPLE IN PRACTICE

## Documents

### Recommended

Miki Maruyama edited this Mon at 3:15 PM

**Contoso sales analysis**

In 2016, Contoso's worldwide sales topped \$335M. Of that, 36.7% was from the sale of electronics. In that category, 42.5% of Contoso sales were of Fabrikam products, and due to Contoso's exclusive contract with Fabrikam, the company's sales of its own manufacture-produced products was 17.3% higher than sales of similar products manufactured by other brands.

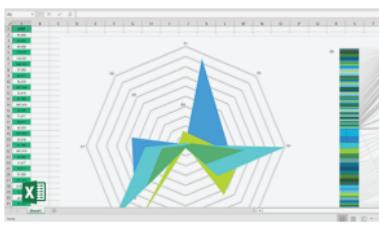
In the flat screen TV category, Contoso-branded TVs manufactured by Fabrikam comprised 47.2% of Contoso sales, an increase of 5.4% compared to 2015. Meanwhile, in the stereo category, Fabrikam-produced Contoso-branded made up 41.1% of Contoso sales, a 7.8% increase over 2015.

Contoso sales analysis  
Miki Maruyama's OneDrive

Ela Carerro mentioned you Jun 18 at 6:03 PM

**Finance Planner**

Finance Planning > Documents > 2018



Office online **recommends documents** based on history and activity. Descriptive text above each document makes it clear why the recommendation is shown.

Make clear why the system did what it did.

11

12

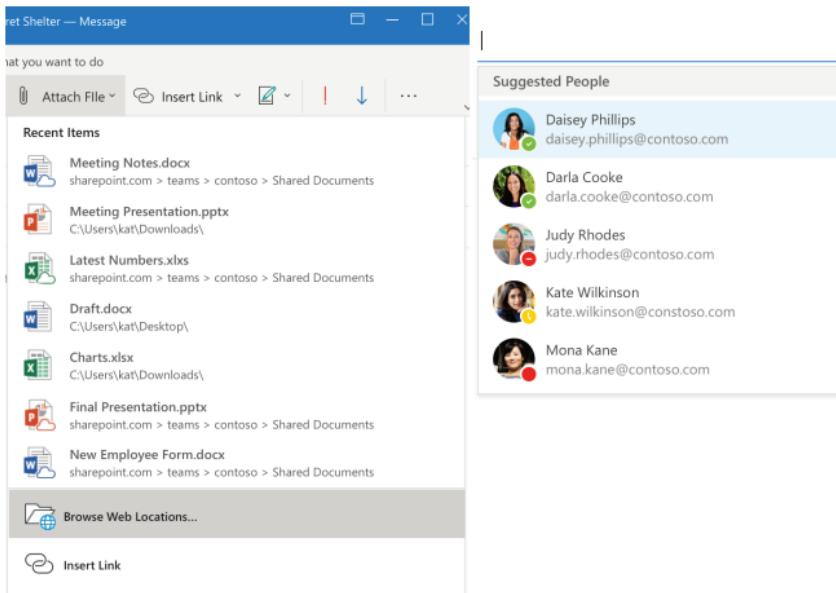
OVER TIME



Remember  
recent  
interactions.

Maintain short-term memory and  
allow the user to make efficient  
references to that memory.

## EXAMPLE IN PRACTICE



When attaching a file, Outlook offers a list of **recent files**, including recently copied file links. Outlook also remembers people you have interacted with recently and displays them when addressing a new email.

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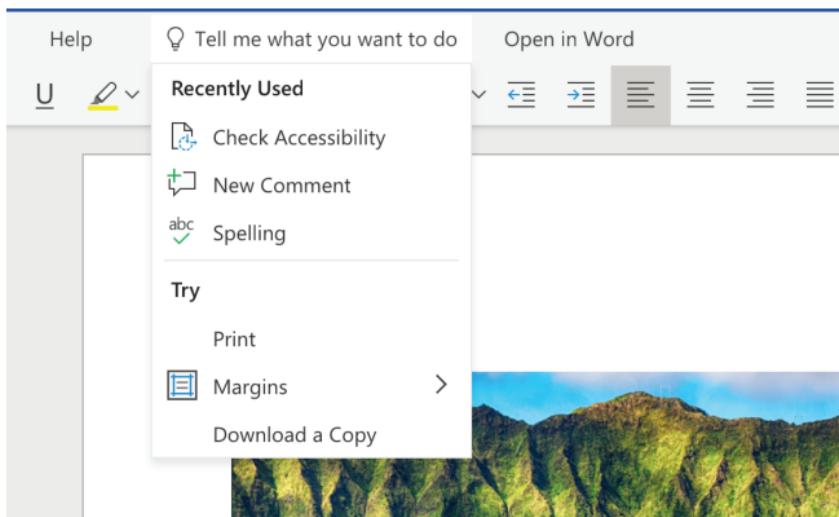
OVER TIME



# Learn from user behavior.

Personalize the user's experience by learning from their actions over time.

## EXAMPLE IN PRACTICE



Tap on a Search bar in any Office application and Search lists the top three commands on your screen that you're most likely to need—personalized to you. The technology, called "**0-Query**," doesn't even need you to type in the Search bar to provide a personalized, predictive answer.

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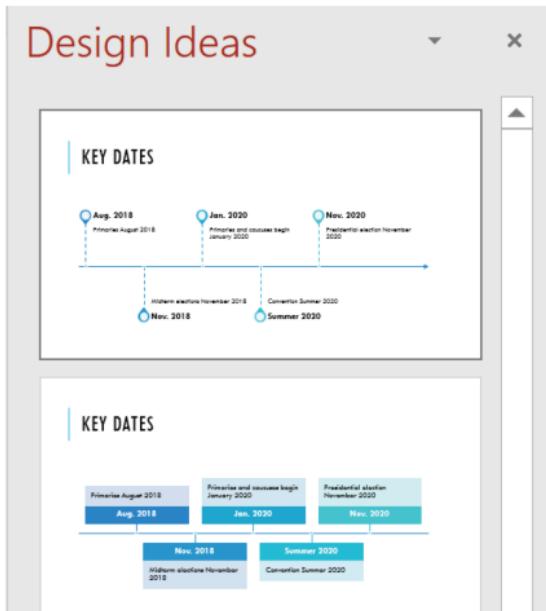
OVER TIME



Update and  
adapt cautiously.

Limit disruptive changes when updating  
and adapting the AI system's behaviors.

## EXAMPLE IN PRACTICE



PowerPoint **Designer** improves slides for Office 365 subscribers by automatically generating design ideas to choose from. Designer has integrated new capabilities such as smart graphics and icon suggestions into the existing user experience, ensuring the updates are not disruptive.

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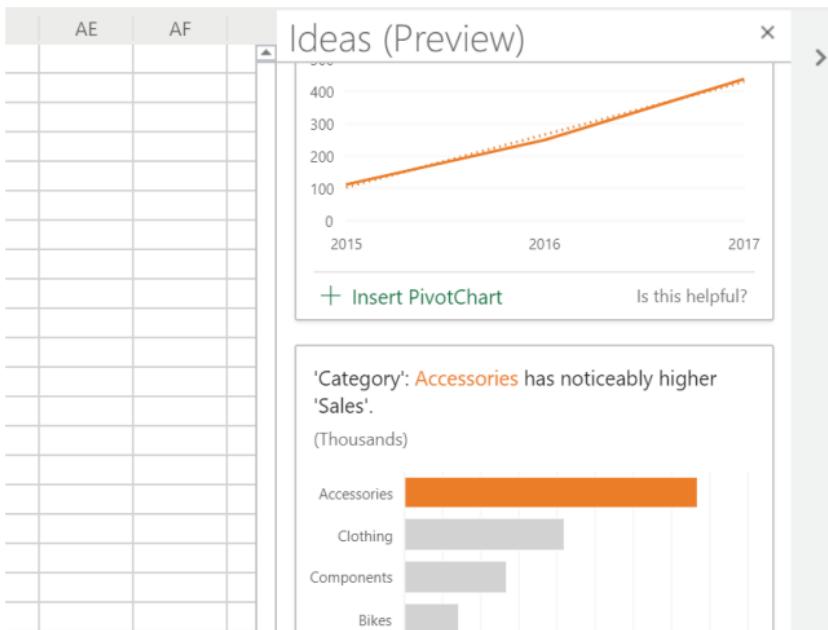
OVER TIME



# Encourage granular feedback.

Enable the user to provide feedback indicating their preferences during regular interaction with the AI system.

## EXAMPLE IN PRACTICE



**Ideas** in Excel empowers you to understand your data through high-level visual summaries, trends, and patterns. It encourages feedback on each suggestion by asking, “Is this helpful?”

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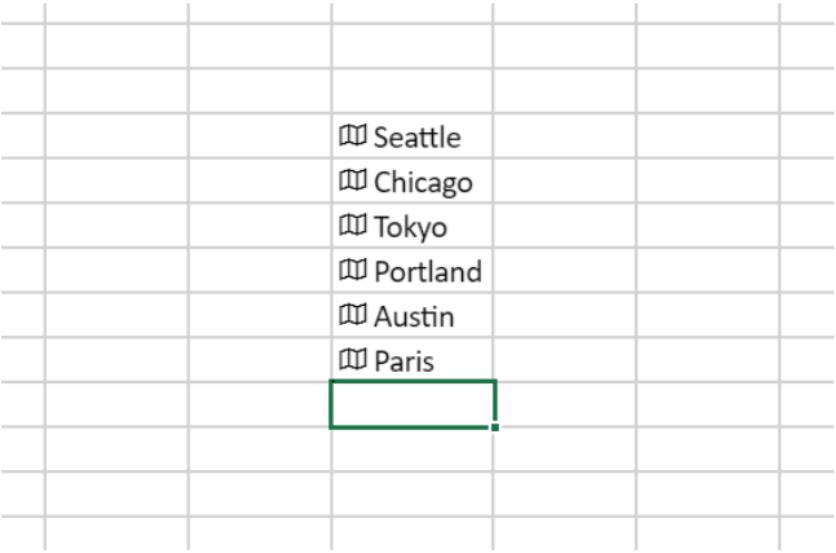
OVER TIME



Convey the consequences of user actions.

Immediately update or convey how user actions will impact future behaviors of the AI system.

## EXAMPLE IN PRACTICE

- 
- ⠀ Seattle
  - ⠀ Chicago
  - ⠀ Tokyo
  - ⠀ Portland
  - ⠀ Austin
  - ⠀ Paris

You can get stock and geographic **data types** in Excel. It's as easy as typing text into a cell and converting it to the Stocks data type or the Geography data type. When you perform the conversion action, an icon immediately appears in the converted cells.

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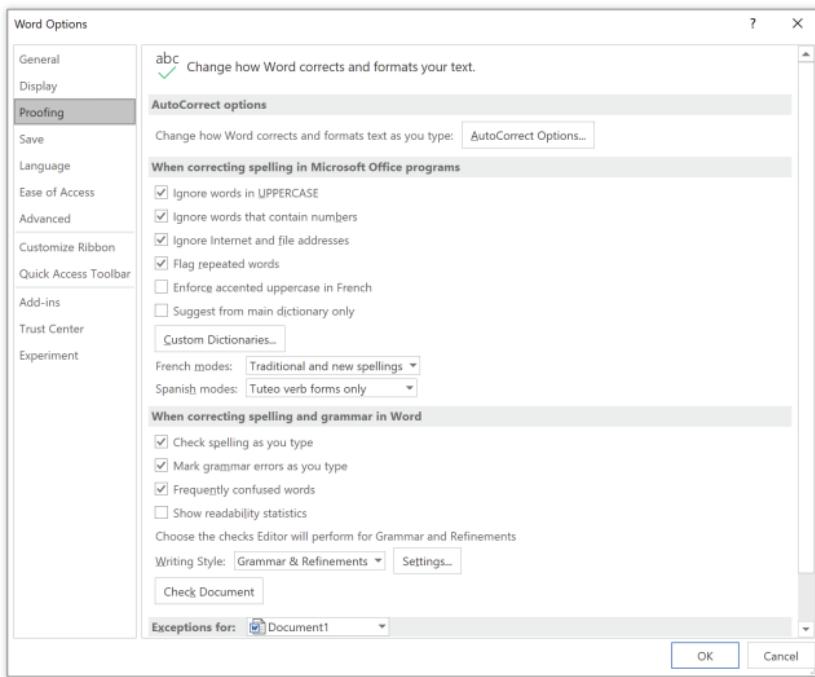
OVER TIME



# Provide global controls.

Allow the user to globally customize what the AI system monitors and how it behaves.

## EXAMPLE IN PRACTICE



**Editor** expands on the spelling- and grammar-checking capabilities of Word to include more advanced proofing and editing designed to ensure your document is readable. Editor can flag a range of critique types, and allows you to customize its behavior.

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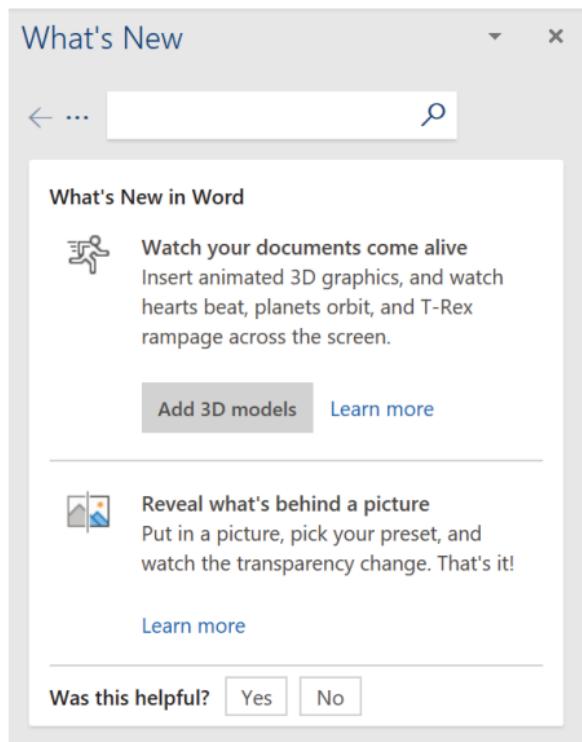
OVER TIME



# Notify users about changes.

Inform the user when the AI system adds or updates its capabilities.

## EXAMPLE IN PRACTICE



The “**What’s New**” dialogue in Office informs you about changes by giving an overview of latest features and updates, including updates to AI features.

## INITIALLY

1. Make clear what the system can do.
2. Make clear how well the system can do what it can do.

## DURING INTERACTION

3. Time services based on context.
4. Show contextually relevant information.
5. Match relevant social norms.
6. Mitigate social biases.

## WHEN WRONG

7. Support efficient invocation.
8. Support efficient dismissal.
9. Support efficient correction.
10. Scope services when in doubt.
11. Make clear why the system did what it did.

## OVER TIME

12. Remember recent interactions.
13. Learn from user behavior.
14. Update and adapt cautiously.
15. Encourage granular feedback.
16. Convey the consequences of user actions.
17. Provide global controls.
18. Notify users about changes.





These guidelines are the result of a rigorous synthesis and validation process. We identified more than 150 potential design guidelines in scholarly research, documents across Microsoft, and articles in the public domain. We grouped the guidelines by theme, which resulted in a short list. We then conducted three rounds of validation:

1. We tested the guidelines ourselves, by applying them to popular products' AI features. We revised the list of guidelines, removing redundancies, confusion, and any guidelines that cannot be observed from the UI.

(continued)

2. We tested the revised list of guidelines by having 49 UX designers and researchers across the company apply them to various products. We revised the wording of some guidelines based on that feedback.
3. We asked 11 UX experts to review and validate the revisions.

The research process we used and the guidelines, along with more examples, are presented in a CHI 2019 paper available at <https://aka.ms/aiguidelines>.