

Research & Evaluation of AccessGUIDE: Guiding PowerPoint Users Towards Accessible Slides

Student project (PSYC 6023) • Aug 2021 – Dec 2021

Project Summary

I led the user research and the usability evaluation of a prototype for an improved accessibility checker in PowerPoint

Team

Lukas Schmid (Lead UX Researcher)

Tymirra Smith (UX Researcher)

Junyi Zeng (Lead UX Designer)

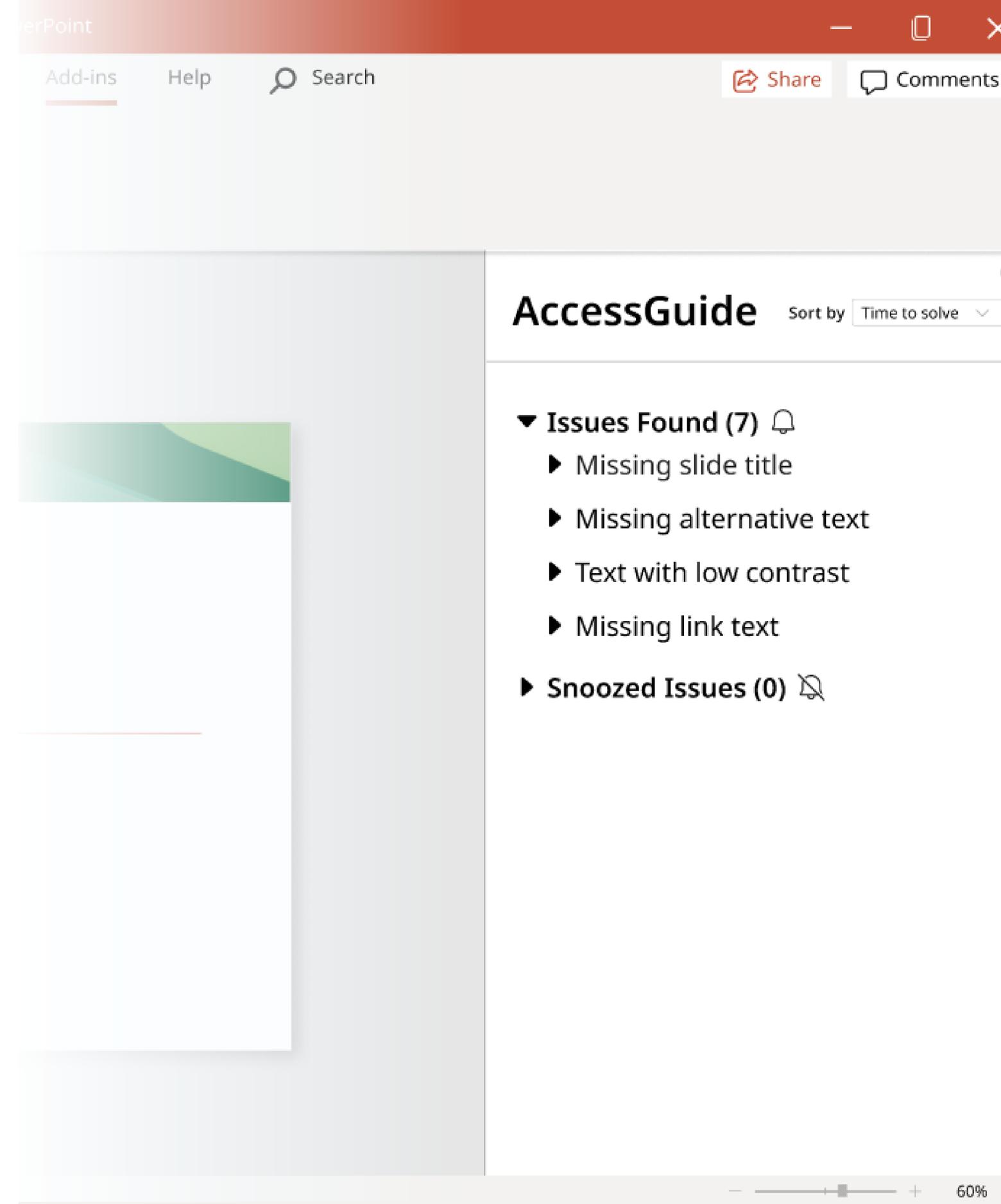
Irene Ong (UX Designer)

Responsibilities

- Contextual inquiry and interviews
- Feedback sessions
- Usability testing

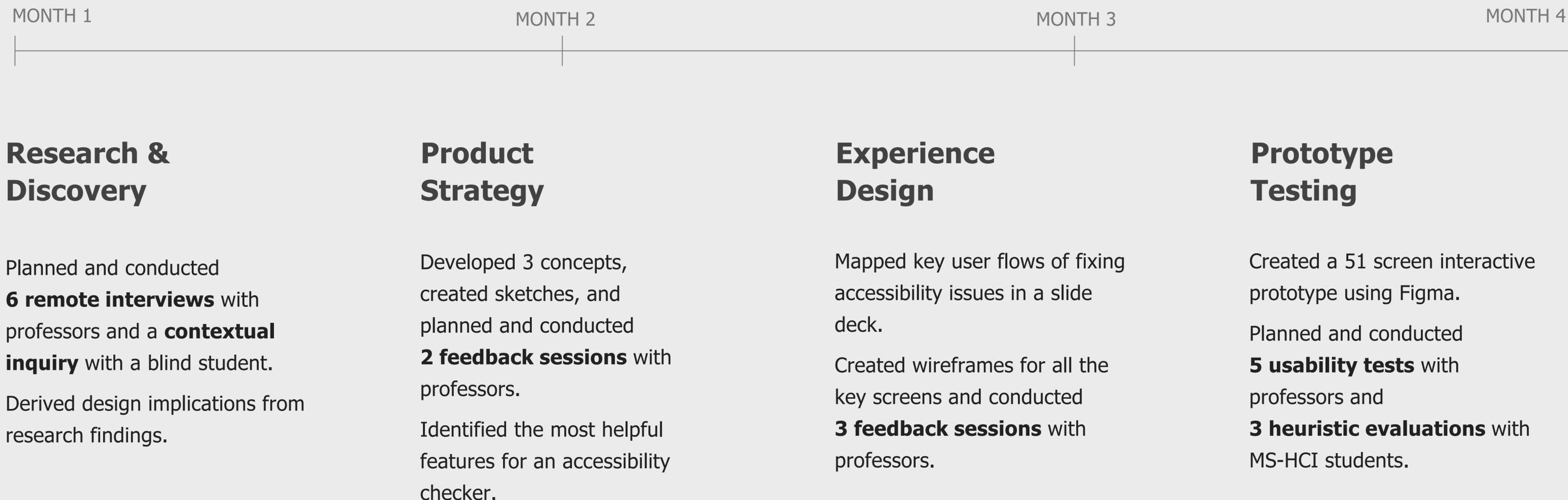
Results

During usability evaluations, participants were able to address 95.5% of the accessibility issues



PROCESS

As the Lead UX Researcher, **I oversaw all research activities** and **collaborated closely** with a fellow researcher and 2 designers.



PROBLEM STATEMENT

Course materials are often inaccessible to students with visual impairments at Georgia Tech.

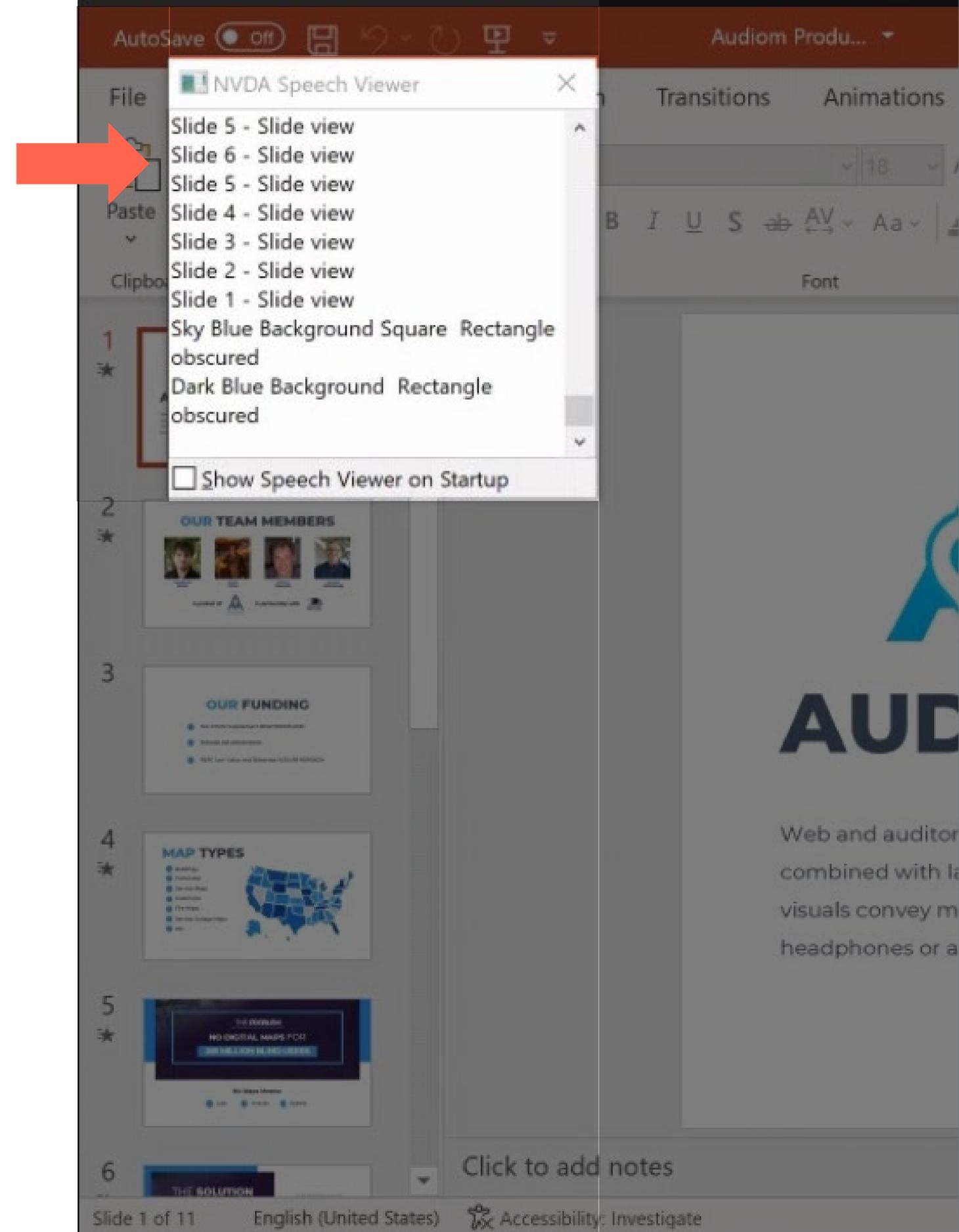
Prompt: Develop a corps of students who ...

- review the accessibility of course materials and
- work with faculty to implement more accessible versions

Potential impact: 55,249 legally blind students in the US

Problem symptoms:

- Missing alternative text
- Missing slide titles
- Useless decorative elements

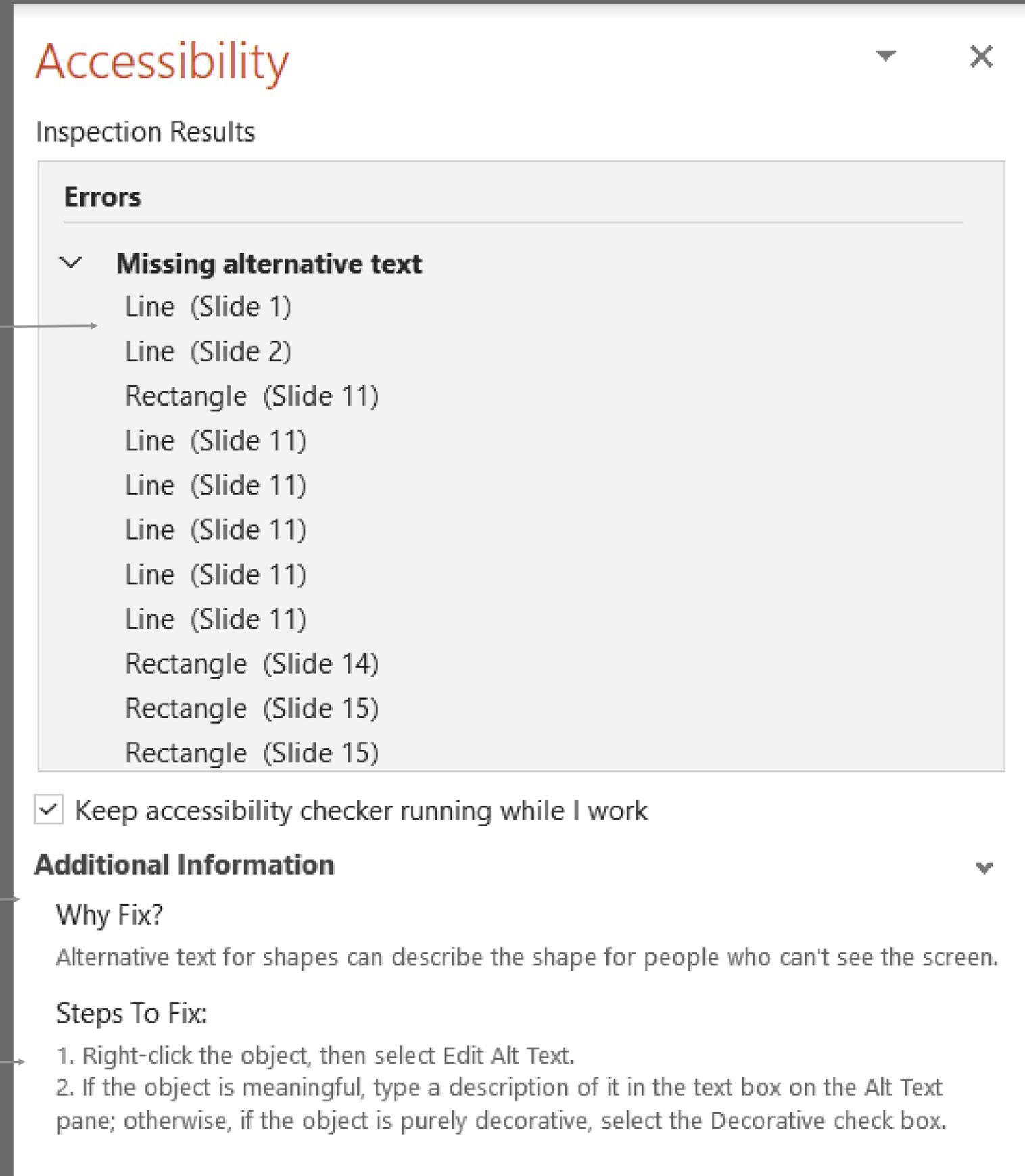


PowerPoint's accessibility checker is not helpful enough.

1 Many "errors" without an option to ignore them

2 The additional information is too scarce

3 The steps description is difficult to understand



I planned and conducted a contextual inquiry to understand how inaccessible slides pose problems.

- + Rich contextual information
- + Builds empathy

$n = 1$ blind student from Georgia Tech

SAMPLE QUESTIONS

- Can you show me the different course materials you interact with?
- Can you show me which challenges you face with inaccessible course materials?
- Can you show me some examples of accessible course materials?



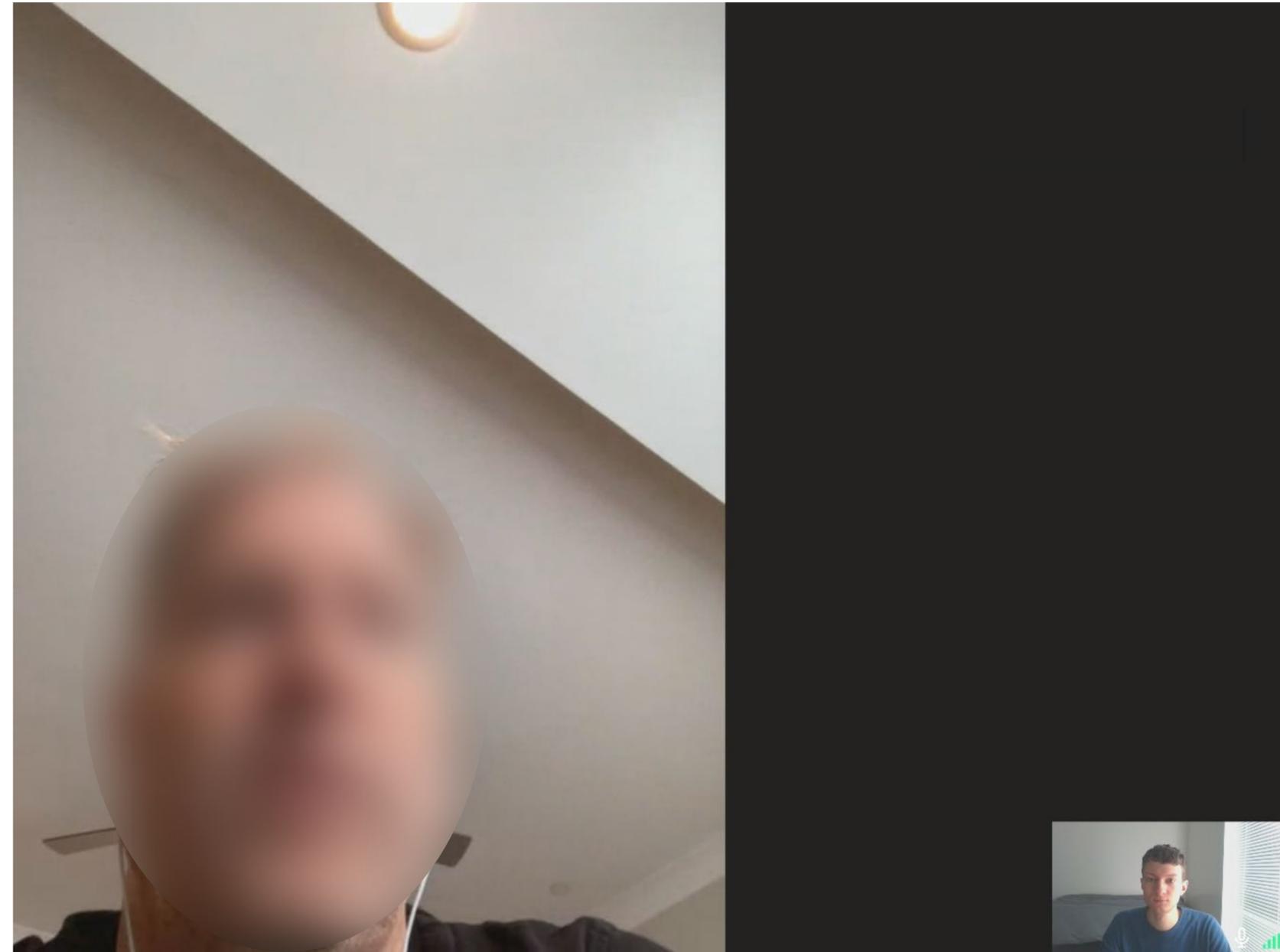
I planned and conducted 1 of 6 semi-structured interviews
to understand the process of making slides and the challenges of ensuring accessibility.

- + Rich attitudinal information
- + Leaves room for exploration

$n = 6$ professors from Georgia Tech

SAMPLE QUESTIONS

- Can you walk me through how you create class materials?
- What is important to you when creating class materials?
- What has been your experience creating accessible materials for students with visual impairments?



The interviews revealed:
Professors lack the time and know-how
to make accessible slides.

- Working on slides happens before, during, and after the semester—sometimes just an hour before a lecture.
- At all times, professors want to feel in control of their materials.
- If it can be done quickly, professors are willing to make their slides accessible.
- Professors don't know which steps to take to make a PPT accessible.

\\ *I have zero extra time to spend making accessible course materials.*

– Interview participant

\\ *I don't really know what to do with a PowerPoint slide deck to make it accessible.*

– Another interview participant

Based on the research, we focused on **two types of primary users.**



Steve: *The Dedicated Professor*

Professor at the College of Psychology
Concerned about his lecture slides' accessibility

Wants To

- Make sure that his slides are inclusive and accessible
- Learn the necessary steps how to do it

Key Insights

- "As content creators, we should be part of the solution."
- Spends the whole summer preparing a new course
- Some of his colleagues are unaware of the issues that inaccessible course materials create



Sherry: *The Busy Professor*

Professor at the College of Sciences
Has other priorities than accessibility

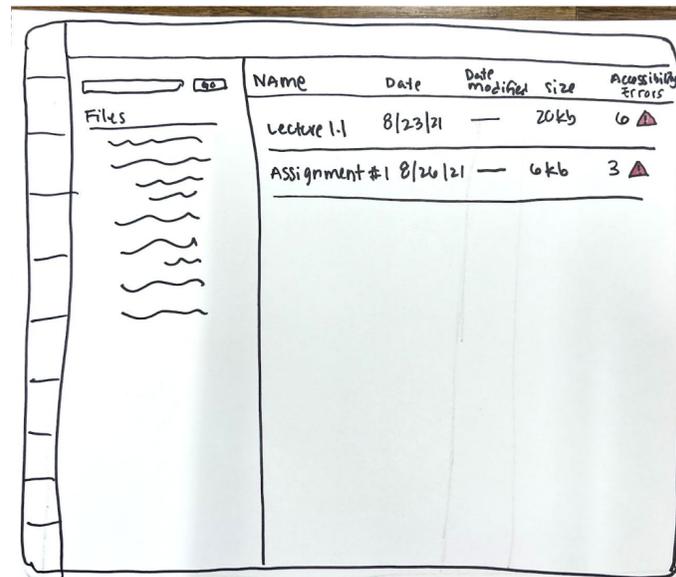
Wants To

- Make sure that her slides are correct and consistent
- Not waste time on making them accessible

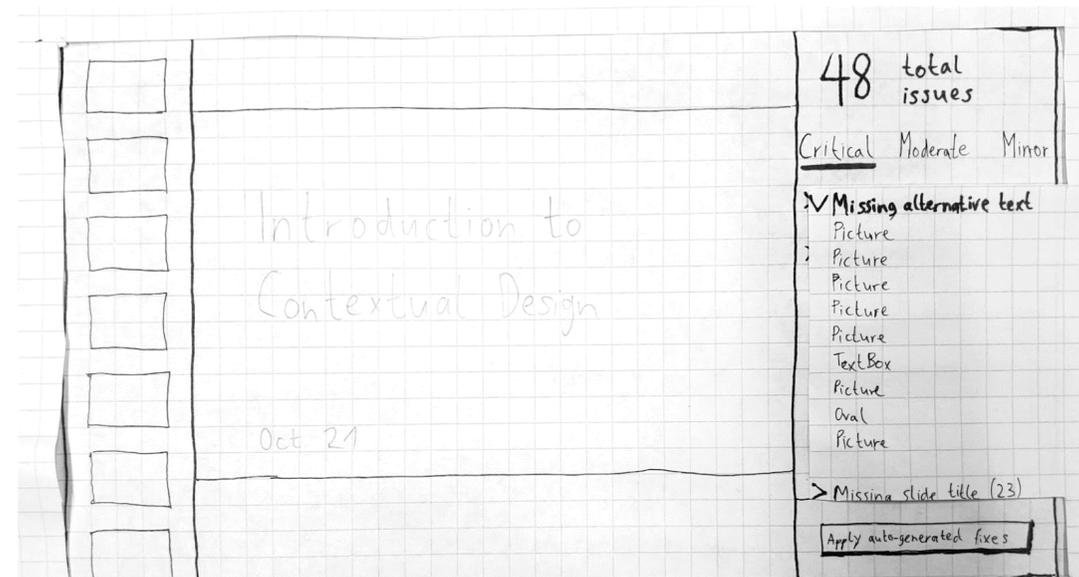
Key Insights

- "Quite frankly, I'm busy."
- Prioritizes contributing to the latest biochemistry research
- Has already created accessible PDFs when it was required for submitting a conference paper

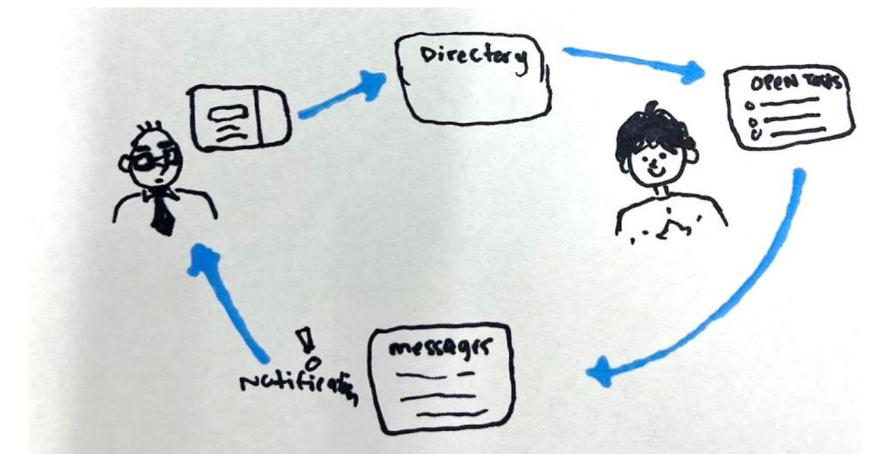
During ideation, we turned design implications into 3 concepts.



Canvas plugin



PowerPoint plugin



Volunteer-led service

Based on user feedback, we analyzed the 3 concepts.

Interview finding	Canvas plugin	PowerPoint plugin	Volunteer-led service
Working on slides happens before, during, and after the semester—sometimes just an hour before a lecture.	✓	✓	✗
At all times, professors want to feel in control of their materials.	✓	✓	✗
If it can be done quickly, professors are willing to make their slides accessible.	✗	✓	✗
Professors don't know which steps to take to make a PPT accessible.	✓	✓	✓

After receiving feedback on 3 concepts, we concluded that **a PowerPoint plugin would best meet the users' needs.**



Canvas plugin

Requires professors to save the modified files to their computer or a cloud service.



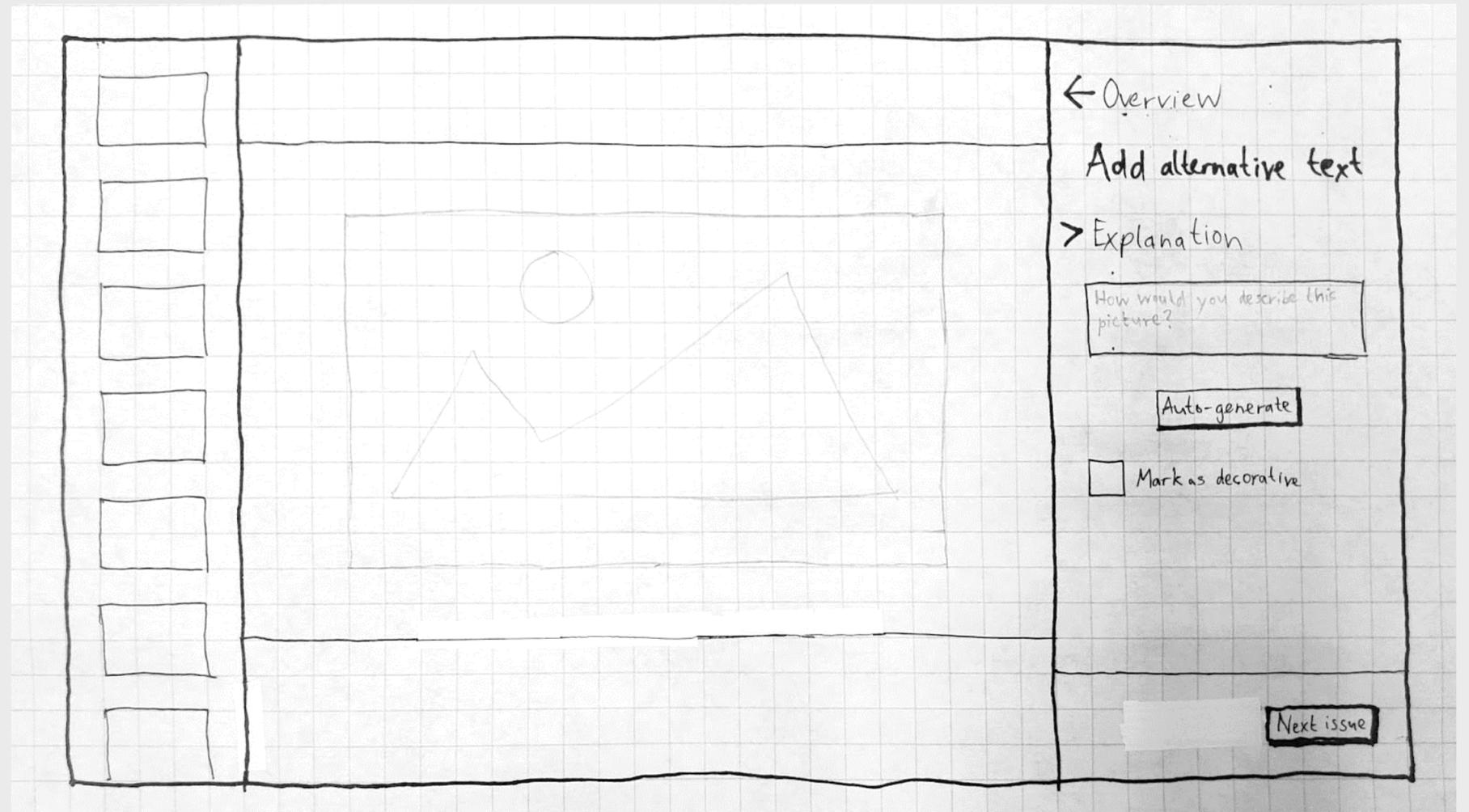
PowerPoint plugin

Fits within professors' current workflow and empowers them to ensure accessibility.

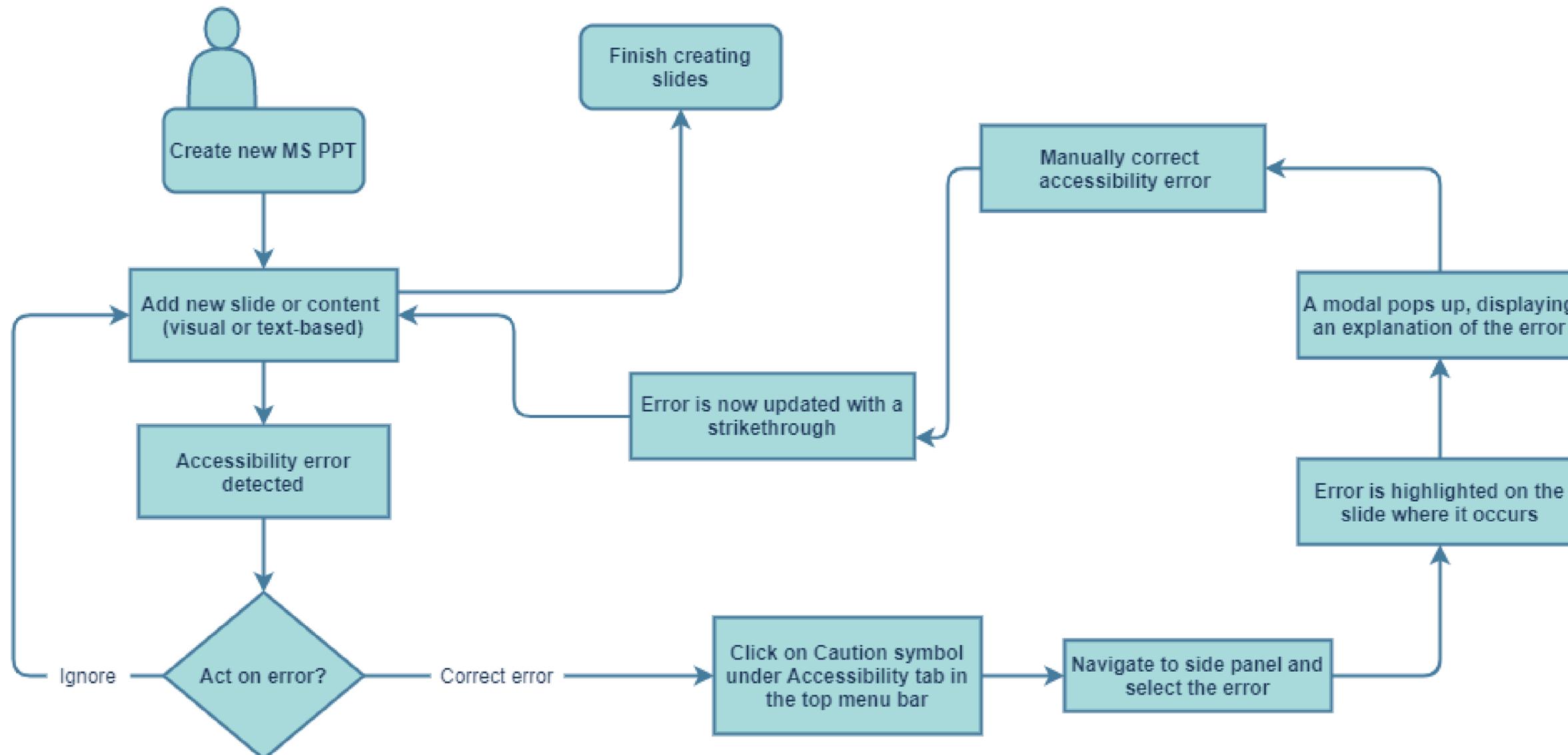


Volunteer-led service

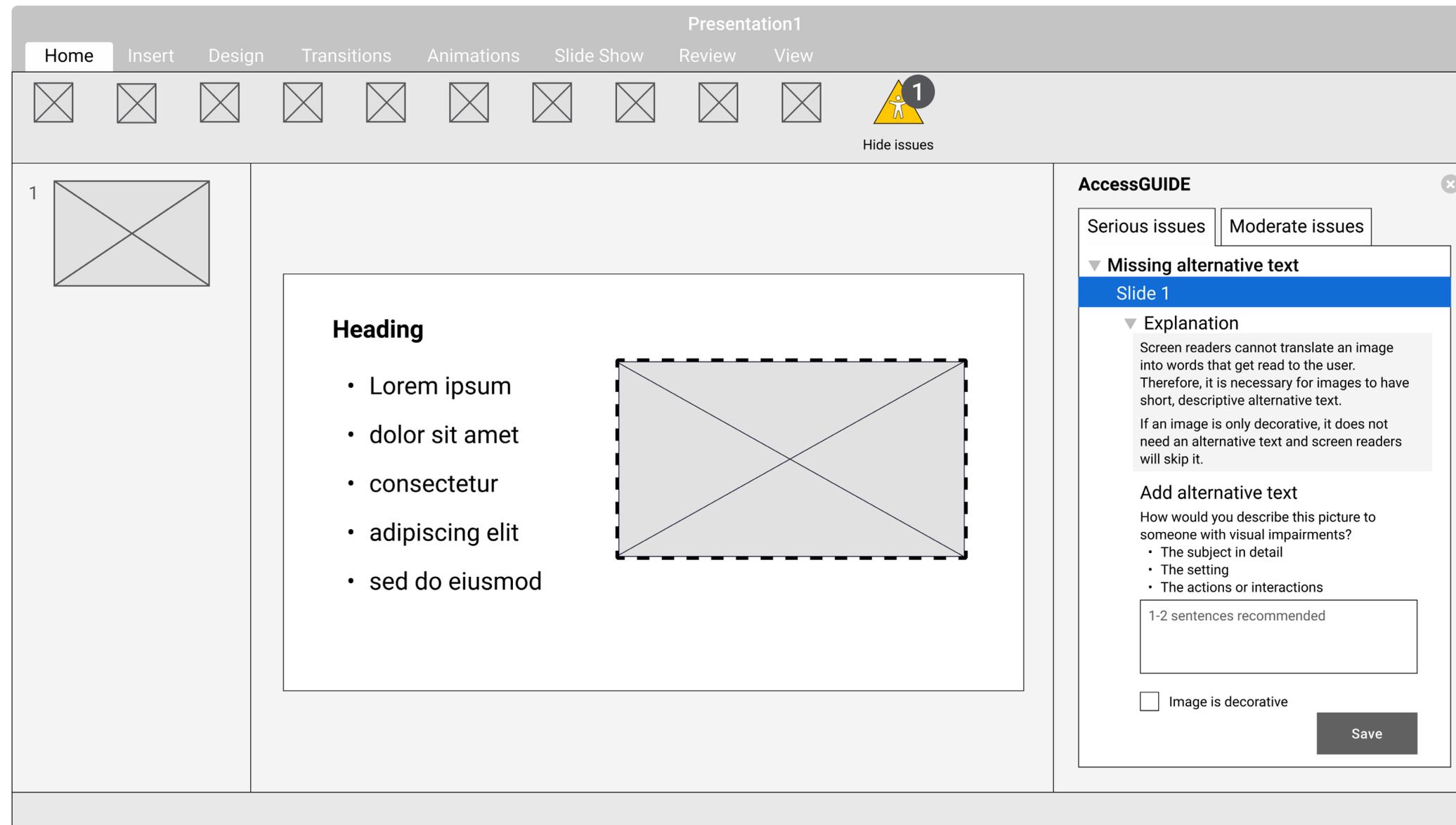
Requires skilled volunteers and makes professors dependent on them.



In collaboration with the fellow researcher,
I mapped out the user flow of creating a new slide deck.



Based on these user flows, **I created wireframes for all the key screens.**



With AccessGUIDE, professors can create accessible slides with ease.

Having one-click suggestions and actionable guidance eliminates the lack of time and know-how

Current version

Additional Information

Why Fix?

Alternative text for images and other objects is very important for people who can't see the screen. Screen readers read alternative text aloud, so it's the only information many have about the image. Good alternative text helps them understand the image.

Steps To Fix:

1. Right-click the object, then select Edit Alt Text.
2. If the object is meaningful, type a description of it in the text box on the Alt Text pane; otherwise, if the object is purely decorative, select the Decorative check box.

AccessGUIDE

▼ Explanation

A person with visual impairments need descriptive text to obtain any value from an image.

[Learn more](#)

▼ Example

- Close-up of an ear with hearing aid
- Woman adding a pink sticky note to an affinity diagram

Autogenerate

Add



Sherry, The Busy Professor, can fix accessibility issues with just a few clicks.

The screenshot shows a presentation slide on the left and an 'AccessGuide' sidebar on the right. The slide features a green header, the word 'Reality' in orange, a photo of a man in a VR headset, and the text 'object wrt real/virtual objects'. The sidebar, titled 'AccessGuide', has a 'Sort by' dropdown set to 'Time to solve'. It lists 'Issues Found (7)' with a bell icon, including 'Missing slide title' and 'Missing alternative text'. Under 'Missing alternative text', 'Slide 2' is highlighted in red, with sub-items 'Explanation' and 'Example'. A text box contains 'Man wearing a VR headset'. A progress bar shows 'HIGH CONFIDENCE'. At the bottom, 'Autogenerate' and 'Add' buttons are visible, with 'Autogenerate' highlighted by a yellow box.



Steve, The Dedicated Professor, feels empowered to address accessibility issues by knowing how to do it.

The screenshot shows a presentation slide titled "AccessGuide" with a "Sort by" dropdown menu set to "Time to solve". The slide lists the following issues:

- ▼ Issues Found (7)
- ▶ Missing slide title
- ▼ Missing alternative text
 - Slide 2
 - Slide 3**
 - ▼ Explanation
 - A person with visual impairments need descriptive text to obtain any value from an image.
 - [Learn more](#)
 - ▼ Example
 - Close-up of an ear with hearing aid
 - Woman adding a pink sticky note to an affinity diagram

The background of the slide shows a person wearing a VR headset in a lab setting, with a monitor displaying a 3D model. The text "eality" is partially visible on the left, and "bject wrt real/virtual objects" is at the bottom.

Participants were able to address 95.5% of the accessibility issues, but they were confused by the prototype's limited interactivity.



[The buttons] build expectations, I feel like I can choose them—but I cannot!

– Usability testing participant

▶ Found issues (6)

▶ Missing slide title

Severe

Slide 2

▼ Explanation

A visually impaired person that uses a screen reader relies on the slide titles to know which slide is which.

[Learn more](#)

▶ Examples

Tracking



Autogenerate

Add

Hide title during slide shows

Assign title to multiple slides

Slide numbers



Confirm

TESTING

Usability testing revealed that people **struggled to open the plugin from the mock PowerPoint ribbon**, causing them confusion.



I didn't know where to start and then I needed to click on almost everything to try.

- Usability testing participant

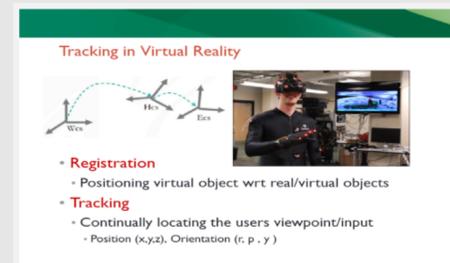


Show issues

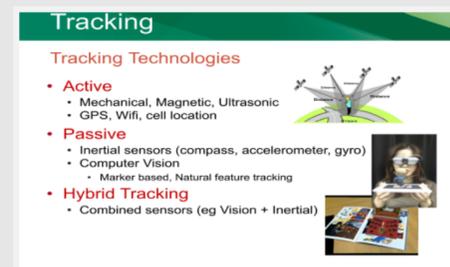
1



2



3



4



By leveraging my research methods toolkit, I enabled my team to **make evidence-based decisions from start to finish.**

Key Outcomes & Results

- “I would love that right now in PowerPoint!”
- Most users have little prior knowledge about accessibility
- In future iterations, the prototype should explore motivating users to fix accessibility issues through positive reinforcement
- The usability tests revealed far more improvable aspects than the heuristic evaluations

What I Learned

- Contextual inquiry + recorded video call = useful hack to capture the participant’s screen
- Limited interactivity affects a prototype’s usability
- An interactive prototype must be pilot-tested twice
- The poles of the SEQ can seem counterintuitive
- Participants struggled to understand the benchmark task when it is only read aloud, they need to read it