

# Using Machine Learning for Web Accessibility



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## Background

- The use of machine learning (ML) in web accessibility has produced algorithms for creating alternative text for images, auto-captioning for videos, text simplification, overlays, speech recognition and more.
- However, these technologies are often technology-driven rather than focusing on the needs of end users. As a result, they often partially work or do not work or cause more problems than they were meant to fix.
- One major problem is the lack of stakeholder involvement.
- These ML technologies have highlighted a need for greater stakeholder involvement and proper techniques and strategies to enhance the outcomes.
- This work explores how machine learning can be used to enhance web accessibility.
- It examines how stakeholders might be effectively brought into the development processes to produce useful and beneficial ML-driven technologies for digital accessibility.

## Methodology

### Co-Create & Co-Design

- Our initial trial will involve a co-creation approach.
- We will run focus groups with digital accessibility experts and users to explore the potential of machine learning in accessible web navigation.
- We plan to adopt an iterative methodology as shown in figure 1:

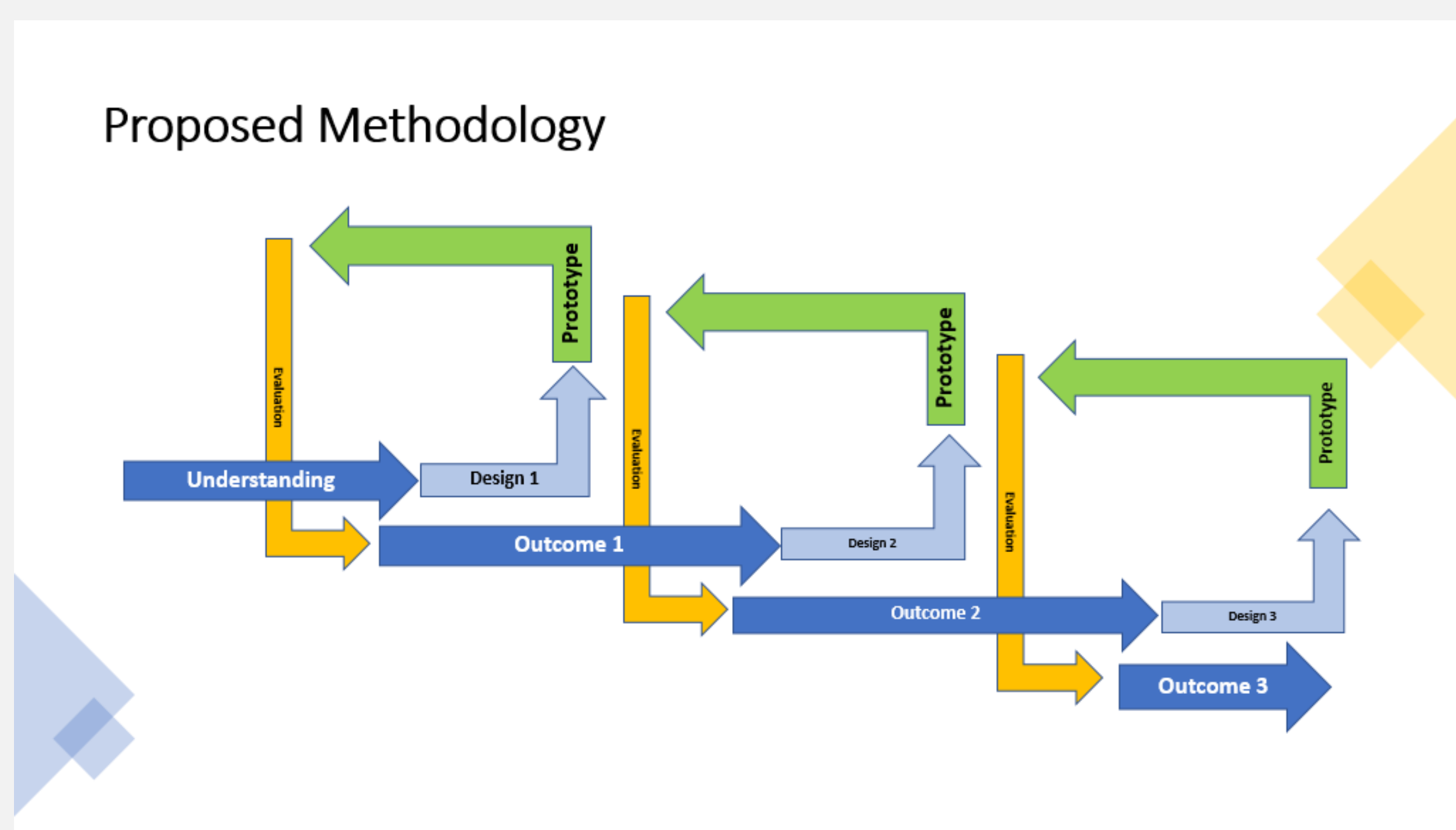


Figure 1

### Structure

We aim to develop and run a number of separate focus groups with approximately 5-7 digital accessibility experts. Following each focus group, a subset of participants will be invited to take part in an individual interview. A semi-structured interview script will be created with open-ended questions based on the following themes:

- Understanding the web accessibility process.
- What are the barriers to accessible website design?
- Experience of the auditing and remedial process for web accessibility.
- Potential for machine learning to enhance or support these processes.

## References

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## Expected Deliverables

1. **Report on existing machine learning algorithms and tools used by digital accessibility experts:** Participants will be involved in focus group discussions on existing applications of machine learning in web accessibility, auditing websites and remedial processes involved in digital accessibility.
2. **Report on auditing and remedial processes for web accessibility:** participants will share their experience in digital accessibility, including the challenges they face, discuss general potential remedies and solutions
3. **Recognise and record suggestions made by the experts on the future and potential of machine learning in making web navigation accessibility for all:** present findings on the focus groups discussions and interviews on the potential of machine learning in digital accessibility
4. **Case Study:** Incorporating these findings into the development of a machine learning web accessibility solution (using block classification to enhance web navigation for screen reader users)



Figure 2

## Conclusions

- This study will explore how machine learning has been used and its potential in digital accessibility from expert's point of view.
- Findings from this study will feed into developing a solution using machine learning, to address accessible web navigation for screen reader users.

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### HOST INSTITUTIONS



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