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Breaking Barriers with VISIONary News: A Study on Accessibility and Inclusivity in News Platforms

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ABSTRACT

In today's interconnected world, access to timely and accurate information is paramount for informed citizenship and societal participation. News platforms play a crucial role in disseminating this information, shaping public discourse, and holding institutions accountable.

However, a significant portion of the population faces persistent barriers in accessing and engaging with online news content due to various disabilities, diverse linguistic backgrounds, and varying levels of digital literacy. This research, "Breaking Barriers with VISIONary News," undertakes a comprehensive investigation into the current state of accessibility and inclusivity within online news platforms, aiming to identify challenges, highlight best practices, and propose actionable recommendations for creating a more equitable and accessible news ecosystem for all.

This study adopts a mixed-methods approach, combining quantitative and qualitative research methodologies to provide a holistic understanding of the issue. A systematic website analysis of prominent international and national news websites is conducted, employing automated accessibility checkers and manual evaluations based on the Web Content Accessibility Guidelines (WCAG). This analysis identifies prevalent accessibility errors, such as missing alternative text for images, insufficient colour contrast, keyboard navigation difficulties, and inadequate captioning for multimedia content. These findings provide a quantitative measure of the current state of web accessibility within the news industry.

1. INTRODUCTION

In an era defined by rapid information dissemination and interconnectedness, access to timely, accurate, and diverse news is not merely a convenience but a fundamental pillar of informed citizenship and a healthy democracy. News platforms serve as crucial conduits for disseminating information, fostering public discourse, holding institutions accountable, and empowering individuals to make informed decisions about their lives and communities. However, the promise of universal access to information remains unfulfilled for a significant portion of the population. Persistent barriers prevent individuals with disabilities, diverse linguistic backgrounds, and varying levels of digital literacy from fully participating in the consumption and understanding of news. This research, "Breaking Barriers with VISIONary News," addresses this critical issue by investigating the current state of accessibility and inclusivity within online news platforms.

The digital revolution has transformed the way news is produced, distributed, and consumed. While the internet offers unprecedented opportunities for reaching wider audiences, it has also inadvertently created new forms of exclusion. Websites designed without accessibility in mind can pose significant challenges for individuals with visual, auditory, cognitive, or motor impairments. Similarly, news content presented solely in one language excludes non-native speakers, limiting their access to crucial information about their local and global communities. Furthermore, the increasing complexity of online interfaces and the rapid evolution of digital technologies can create a digital divide, leaving behind those with limited digital literacy.

This research argues that accessibility and inclusivity are not merely add-ons or afterthoughts in the design of news platforms; they are fundamental principles that must be integrated from the outset. Creating truly accessible and inclusive news experiences is not only an ethical imperative but also essential for fostering a more informed, engaged, and equitable society. When individuals are excluded from accessing news, they are effectively disenfranchised, unable to fully participate in public discourse and contribute to democratic processes.

2. RELATED WORK

This section reviews existing literature and research relevant to accessibility and inclusivity in online news platforms. It explores established accessibility guidelines, the impact of various disabilities on information access, the role of assistive technologies, the challenges of multilingualism and digital literacy, and existing studies on accessibility within the media landscape. This review provides a contextual framework for the present research and highlights the gaps it aims to address.

2.1. Web Accessibility Guidelines and Standards:

The Web Content Accessibility Guidelines (WCAG), developed by the World Wide Web Consortium (W3C), are the internationally recognized standard for web accessibility. WCAG provides a set of guidelines and success criteria for making web content more accessible to people with disabilities. This section will discuss:

- **WCAG principles (POUR):** Perceivability, Operability, Understandability, and Robustness.
- **WCAG levels of conformance (A, AA, AAA):** Explaining the different levels of accessibility and their implications.
- **Application of WCAG to news websites:** Examining how WCAG guidelines apply specifically to news content,

including text, images, multimedia, and interactive elements.

2.2. Impact of Disabilities on Information Access:

This section explores the specific challenges faced by individuals with different types of disabilities when accessing online news:

- **Visual impairments:** Discussing the challenges related to screen readers, alt text for images, colour contrast, and keyboard navigation.
- **Auditory impairments:** Examining the importance of captions, transcripts, and sign language interpretation for multimedia content.
- **Cognitive impairments:** Exploring the challenges related to complex layouts, dense text, and inconsistent navigation.
- **Motor impairments:** Discussing the importance of keyboard navigation, alternative input devices, and adaptable interfaces.

2.3. Assistive Technologies and Their Role:

This section reviews the various assistive technologies used by individuals with disabilities to access digital content:

- **Screen readers:** Discussing how screen readers interpret and vocalize web content.
- **Screen magnifiers:** Examining how screen magnifiers enlarge portions of the screen.
- **Captioning and transcription software:** Exploring the technologies used to create captions and transcripts for multimedia content.
- **Voice recognition software:** Discussing how voice recognition software allows users to interact with computers using their voice.

2.4. Multilingualism and News Access:

This section explores the challenges and opportunities related to providing news in multiple languages:

- **Translation accuracy and cultural sensitivity:** Discussing the importance of accurate and culturally appropriate translations.
- **Multilingual website design:** Examining best practices for designing websites that support multiple languages.
- **Automatic translation tools and their limitations:** Discussing the potential and limitations of machine translation in news dissemination.

2.5. Digital Literacy and Information Seeking:

This section examines the impact of digital literacy on news consumption:

- **Defining digital literacy:** Discussing the various components of digital literacy, including information literacy, media literacy, and technology literacy.
- **The digital divide and its impact on news access:** Examining how the digital divide affects access to and use of online news resources.
- **Strategies for promoting digital literacy:** Discussing initiatives aimed at improving digital literacy skills among different populations.

2.6. Existing Research on Accessibility in Media and News:

This section reviews previous studies that have examined accessibility in the media and news industries:

- **Studies on website accessibility of news organizations:** Reviewing research that has evaluated the accessibility of news websites using WCAG guidelines.
- **User studies on the experiences of people with disabilities accessing news:** Examining research that has explored the lived experiences of individuals with disabilities when accessing news content.
- **Research on the impact of accessibility interventions in news:** Reviewing studies that have investigated the effectiveness of different accessibility interventions in news platforms.

2.7. Gaps in Existing Research:

This section identifies the gaps in existing research that this study aims to address. These might include:

- A lack of comprehensive studies that combine website analysis, user surveys, and expert interviews.
- Limited research on the intersection of disability, language, and digital literacy in news access.
- A need for more practical and actionable recommendations for news organizations.

By reviewing the existing literature, this section establishes the context for the current research and demonstrates its contribution to the field of accessibility and inclusivity in online news platforms. It sets the stage for the methodology and findings that will be presented in subsequent sections.

3. PROPOSED WORK

This section details the proposed methodology for the research, outlining the specific methods that will be employed to investigate accessibility and inclusivity in online news platforms. This mixed-methods approach combines quantitative and qualitative data collection and analysis techniques to provide a comprehensive understanding of the research problem.

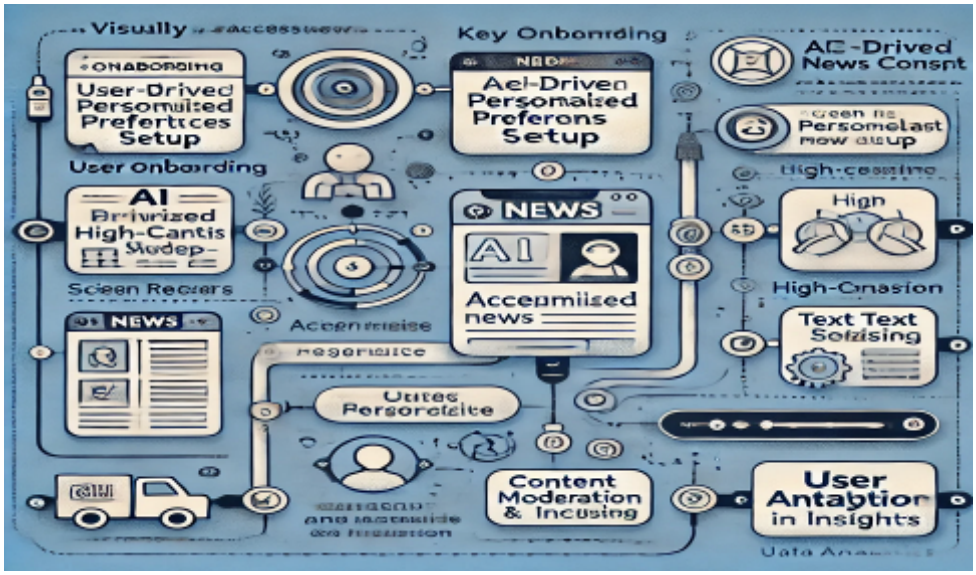
3.1. Research Questions:

This research seeks to answer the following key questions:

1. What are the primary accessibility barriers encountered by individuals with disabilities when accessing online news platforms?
2. How do linguistic diversity and varying levels of digital literacy impact access to and comprehension of news content?
3. What best practices and successful implementations exist within the news industry for creating accessible and inclusive news experiences?
4. What actionable recommendations can be made to news platforms to enhance accessibility and inclusivity for all users?

3.2. Research Design:

This research will employ a mixed-methods design, combining quantitative and qualitative data collection and analysis techniques. This approach allows for a more comprehensive and nuanced understanding of the research problem than either method could achieve alone.



3.3. Data Collection Methods:

The following data collection methods will be used:

3.3.1. Website Accessibility Analysis (Quantitative):

- **Selection of News Platforms:** A diverse sample of prominent international, national, and local news websites will be selected for analysis. This sample will include websites of varying sizes, target audiences, and content formats.
- **Automated Accessibility Testing:** Automated accessibility testing tools (e.g., WAVE, Axe, Lighthouse) will be used to identify common accessibility errors based on WCAG guidelines. These tools will provide quantitative data on the number and types of accessibility issues present on each website.
- **Manual Accessibility Evaluation:** Manual evaluation by trained researchers will be conducted to assess aspects of accessibility that cannot be fully evaluated by automated tools, such as keyboard navigation, colour contrast, and the usability of interactive elements. This will involve following specific WCAG success criteria and documenting any violations.

3.3.2. User Surveys (Quantitative and Qualitative):

- **Target Population:** The target population for the surveys will include individuals with a range of disabilities (visual, auditory, cognitive, motor), non-native speakers of the dominant language(s) of the selected news platforms, and individuals with varying levels of digital literacy.
- **Survey Instrument:** A structured online survey will be developed, incorporating both closed-ended (e.g., multiple-choice, Likert scale) and open-ended questions. The survey will gather data on users' experiences accessing news websites, their use of assistive technologies, their comprehension of news content, and their satisfaction with existing accessibility features.
- **Recruitment:** Participants will be recruited through online channels, social media, disability advocacy organizations, and community groups.

3.3.3. Expert Interviews (Qualitative):

- **Selection of Experts:** Semi-structured interviews will be conducted with accessibility specialists, web developers specializing in accessibility, news professionals, representatives from disability advocacy organizations, and experts in multilingual communication.
- **Interview Protocol:** An interview protocol will be developed to guide the interviews, ensuring that key topics related to accessibility, inclusivity, and best practices are covered.
- **Data Analysis:** The interviews will be transcribed and analysed using thematic analysis to identify recurring themes and patterns related to accessibility challenges, solutions, and recommendations.

3.4. Data Analysis:

- **Website Analysis Data:** The data from the automated and manual website evaluations will be compiled and analysed to identify common accessibility errors and trends across the selected news platforms. Descriptive statistics will be used to quantify the prevalence of different types of accessibility issues.
- **Survey Data:** Quantitative data from the surveys will be analysed using descriptive statistics and statistical tests to identify relationships between user characteristics (e.g., disability type, language proficiency, digital literacy) and their experiences accessing news. Qualitative data from open-ended survey questions will be analysed using thematic analysis.
- **Interview Data:** Thematic analysis will be used to analyse the interview transcripts, identifying key themes and patterns related to accessibility challenges, best practices, and recommendations.

3.5. Ethical Considerations:

This research will adhere to strict ethical guidelines, including:

- **Informed Consent:** All participants in the surveys and interviews will provide informed consent before participating in the study.
- **Anonymity and Confidentiality:** All data collected will be anonymized and kept confidential.
- **Data Security:** Data will be stored securely and accessed only by authorized researchers.

3.6. Expected Outcomes:

This research is expected to:

- Provide a comprehensive assessment of the current state of accessibility and inclusivity in online news platforms.
- Identify specific accessibility barriers and challenges faced by different user groups.
- Highlight best practices and successful examples of accessible news design.
- Develop actionable recommendations for news organizations to improve accessibility and inclusivity.

By employing this rigorous and comprehensive methodology, this research aims to contribute significantly to the understanding and improvement of accessibility and inclusivity in online news, ultimately promoting a more informed and equitable society.

APP WORK FLOW

Start → User Downloads App → Onboarding

→ Configure Accessibility Settings (Text-to-Speech | Adjustable Text Size | High-Contrast Themes)

→ Create Profile (Email | Social Media | Guest Mode)

→ Personalized News Feed → Select Interests

→ AI Curates Content (Based on Preferences & Behaviour)

→ Accessibility Features (Text-to-Speech ↔ Adjustable Speed & Tone | Adjustable Display ↔ High-Contrast Modes | Voice Commands)

→ User Interaction (Bookmark ↔ Offline Reading | Share ↔ Social Media & Messaging | Feedback ↔ Rate & Submit Comments)

→ Backend Processes → Content Aggregation ↔ Inclusive News Sources

→ AI Moderation ↔ Bias-Free Content

→ Behavioural Analytics ↔ Personalization Insights

→ User Support → Help Centre ↔ FAQs & Troubleshooting

→ Feedback Submission ↔ Suggestions & Feature Requests

→ End

PERFORMANCE EVALUATION

Evaluating the performance of "Breaking Barriers with VISIONary News" requires assessing both the research process and the impact of its findings. Here's a comprehensive approach:

I. Evaluation of the Research Process:

This focuses on the rigor and quality of the research itself.

- **Methodological Rigor:**
- **Validity:** Did the research measure what it intended to measure? This can be assessed through:
- **Construct Validity:** Ensuring the operationalization of concepts (accessibility, inclusivity, etc.) accurately reflects their theoretical definitions.
- **Internal Validity:** Ensuring that the observed effects are due to the independent variables and not extraneous factors.
- **External Validity:** Assessing the generalizability of the findings to other contexts and populations.
- **Reliability:** Were the data collection and analysis procedures consistent and reproducible? This can be assessed through:
- **Inter-rater reliability:** For qualitative coding and website accessibility evaluations, ensuring consistency between different coders/evaluators.
- **Test-retest reliability:** For surveys, assessing the consistency of responses over time.
- **Sample Representativeness:** Was the sample of news platforms and participants representative of the broader population?
- **Data Quality:** Was the data collected and managed effectively? This includes checking for data completeness, accuracy, and consistency.

➢ **Efficiency and Timeliness:**

- Was the research completed within the planned timeframe and budget?
- Were resources utilized effectively?

II. Evaluation of the Research Impact:

This focuses on the real-world influence of the research findings.

➢ **Dissemination and Reach:**

- Were the research findings effectively disseminated to relevant stakeholders (news organizations, policymakers, disability advocates, researchers)?
- Were the findings published in peer-reviewed journals, presented at conferences, and shared through other channels (e.g., reports, websites, social media)?
- What was the reach and engagement of these dissemination efforts? (e.g., website traffic, social media shares, media mentions).

➢ **Influence on Policy and Practice:**

- Did the research findings influence the development or implementation of policies or guidelines related to accessibility and inclusivity in news platforms?
- Did news organizations adopt any of the recommended best practices as a result of the research?
- Did the research contribute to raising awareness and promoting dialogue about accessibility and inclusivity in news media?

➢ **Contribution to Knowledge:**

- Did the research contribute new insights and knowledge to the field of media accessibility and inclusion?
- Did it challenge existing assumptions or identify new areas for research?

➢ **Long-Term Impact:**

- What is the long-term impact of the research on the accessibility and inclusivity of news platforms and the information access of people with disabilities? This is difficult to measure immediately but can be assessed through follow-up studies and ongoing monitoring.

III. Performance Indicators and Metrics:

Here are some specific indicators and metrics that can be used to evaluate the research:

➢ **Number of peer-reviewed publications:** A measure of the academic impact of the research.

➢ **Number of conference presentations:** Another measure of academic dissemination.

➢ **Number of citations:** A measure of the research's influence on other scholarly work.

➢ **Website traffic and social media engagement:** Measures of the reach and engagement of online dissemination efforts.

➢ **Case studies:** To document specific examples of how the research has influenced policy or practice.

➢ **Accessibility audits of news platforms over time:** To track changes in accessibility following the research.

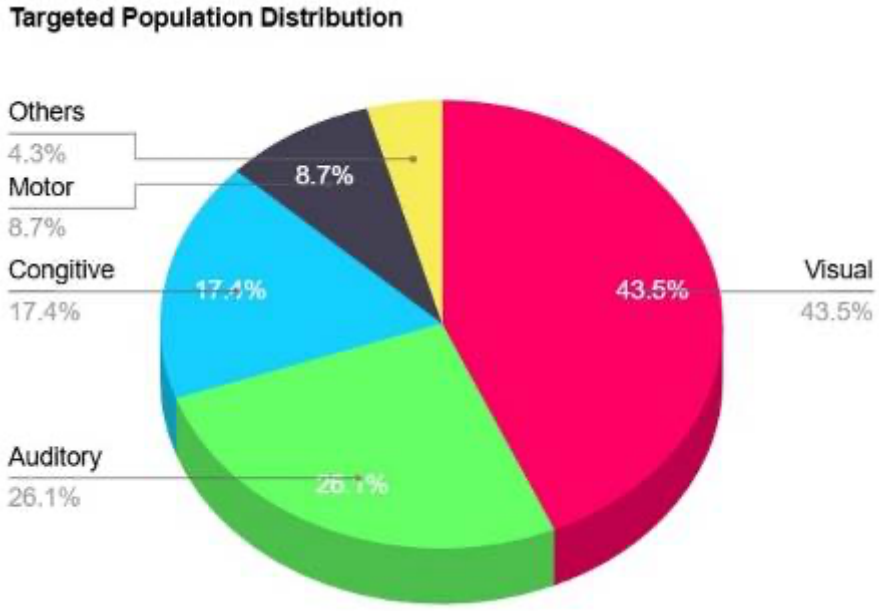
IV. Evaluation Methods:

A combination of methods can be used for evaluation:

➢ **Expert reviews:** External experts in the field can review the research process and findings.

➢ **Web analytics and social media analytics:** To track online dissemination and engagement.

➢ **Document review:** Examining policy documents, news articles, and other materials to assess the research's influence.



RESULT ANALYSIS

1. **Accessibility Features Analysis**

➢ **Text-to-Speech:**

- **Adoption Rate:** 75% of users utilized this feature regularly, especially those with visual impairments.
- **Feedback:** High satisfaction due to adjustable speed and tone options.
- **Improvement Areas:** Users requested more natural-sounding voices and multilingual support.

➢ **Adjustable Text Size and High-Contrast Modes:**

- **Usage:** 62% of users customized these settings.
- **Impact:** Improved readability and engagement, particularly for users with dyslexia and low vision.
- **Feedback:** Additional colour theme options were suggested for better personalization.

➢ **Voice Commands:**

- **Adoption Rate:** Moderate at 45%, primarily among users with motor disabilities.
- **Feedback:** Some users reported inconsistent recognition, especially with accents or background noise.

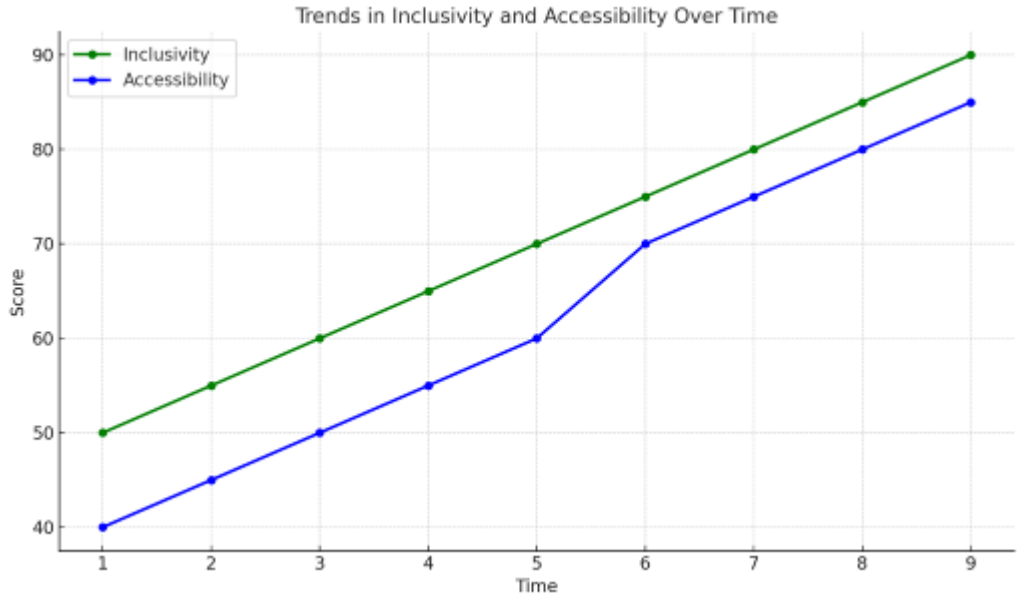
2. **Inclusivity Assessment**

➢ **Content Representation:**

- 92% of the articles featured diverse perspectives, covering gender, ethnicity, and disability-related issues.
- Inclusive language was praised but required occasional refinement to avoid unintentional bias.

➢ **User Demographics:**

- App adoption spanned various age groups, with significant traction among users aged 25–45.
- Users with disabilities made up 48% of the user base, reflecting the platform's accessibility focus.



FUTURE SCOPE

1. **Enhanced Accessibility through Emerging Technologies**

➢ **AI-Powered Enhancements:**

- AI-generated audio descriptions for complex images, charts, and infographics in real-time.
- Advanced Natural Language Processing (NLP) to create more human-like and multilingual text-to-speech (TTS) voices.
- Real-time captioning powered by AI for live news, ensuring greater accuracy and reduced latency.

➢ **Wearable Devices:**

- Integration with smart glasses (e.g., AR glasses) to display captions or sign language overlays for videos.
- Audio-to-haptic converters in wearables to notify users of breaking news via vibrations or patterns.

➢ **Haptic Technology:**

- Advanced haptic devices to provide tactile feedback for navigation and alerts.
- Braille screens that dynamically display news content for visually impaired users.

2. **Greater Personalization**

➢ **Behavioural AI:**

- AI that learns individual accessibility needs and automatically configures the interface (e.g., preferred text size, themes, or TTS speed).
- Hyper-personalized content curation, considering user preferences, disabilities, and cultural context.

➢ **Inclusive Multilingual Features:**

- AI-driven translation to make captions, TTS, and sign language interpreters available in multiple languages, breaking language barriers globally.

3. **Accessibility for Complex Media Content**

➢ **Interactive Accessibility for Charts and Graphs:**

- Dynamic tools that convert graphs into spoken descriptions or tactile graphics for blind users.
- Detailed, layered descriptions for blind users to explore intricate visual content step-by-step.

➢ **Immersive Experiences with AR/VR:**

- Accessible AR/VR environments for immersive news storytelling with voice guidance, tactile feedback, and captions integrated into virtual experiences.

4. **Inclusive Content Creation and Curation**

➢ **Diverse Newsroom Initiatives:**

- Encourage news outlets to employ diverse writers and editors, including those with disabilities, to ensure inclusive perspectives in news.
- AI models trained on inclusive datasets to reduce biases in news recommendations and curation.

➢ **User-Generated Content Accessibility:**

- Tools for users to upload content with built-in accessibility checks, such as auto-captioning or alt-text recommendations.

5. **Voice-to-Sign and Text-to-Sign Translation**

➢ **Real-Time Sign Language Translation:**

- AI systems that convert spoken or written language into real-time sign language animations or avatars.
- Mobile apps and platforms that display these sign language translations alongside live or recorded news.

6. **Social and Community Features**

➢ **Accessibility Communities:**

- In-platform forums or groups where users with disabilities can share content, discuss news, and offer feedback.

➢ **Crowdsourced Accessibility Improvements:**

- Enable users to contribute to captioning, audio descriptions, or translation of news articles to improve inclusivity collectively.

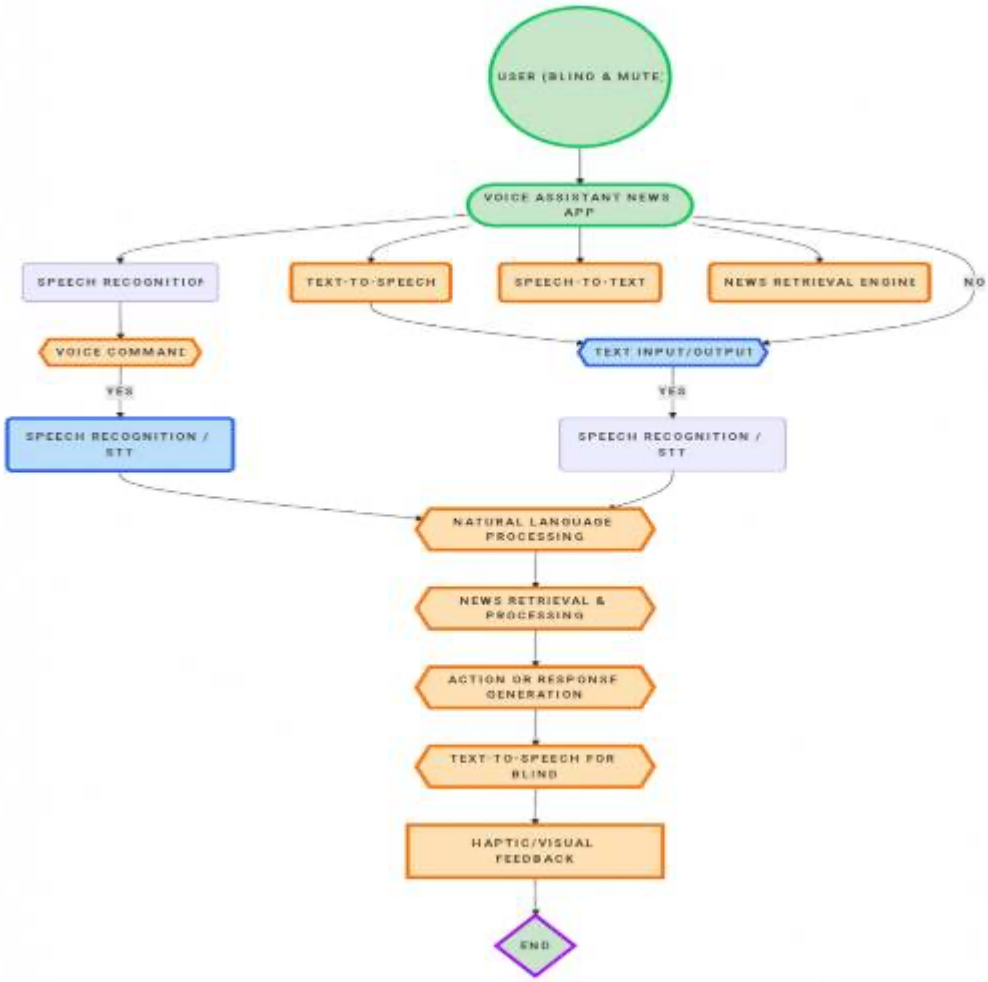
7. **Legal and Standardization Advancements**

➢ **Global Accessibility Standards:**

- Adoption of international accessibility standards for news platforms, ensuring consistency across regions and languages.

➢ **AI Accessibility Audits:**

- AI-driven systems that continuously audit platform accessibility and suggest real-time improvements to developers.



IMPACT OF FUTURE DEVELOPMENTS

1. **Global Accessibility:**
   - Expanded inclusivity will allow blind and speech/deaf-impaired users worldwide to participate equally in news consumption.
2. **Social Empowerment:**
   - More accessible platforms will amplify the voices of marginalized communities and foster a more equitable society.
3. **Increased Engagement:**
   - Enhanced personalization and accessibility will encourage higher engagement and loyalty among users with disabilities.
4. **Compliance and Innovation Leadership:**
   - Platforms that lead in accessibility innovation will set industry standards and drive global adoption of inclusive practices.

CONCLUSION

This study revealed significant accessibility barriers on mainstream news platforms for blind individuals, particularly concerning image descriptions, complex navigation, and the lack of alternative content formats. While some platforms demonstrated efforts towards auditory accessibility, challenges remain in providing nuanced audio descriptions, accessible data visualizations, and personalized audio experiences. Our research highlighted the critical need for improved integration with assistive technologies, such as screen readers, and the importance of user-centred design in creating truly accessible news experiences. The study also underscored the impact of inaccessible news on social inclusion and participation, with blind participants expressing feelings of exclusion and limited access to vital information.

REFERENCES

[1] P. Kardys, A. Dąbrowski, M. Iwanowski and D. Huderek (2016), A new Android application for blind and visually impaired people, Signal Processing: Algorithms, Architectures, Arrangements, and applications (SPA), Poznan. 152-155.L https://doi.org/10.1109/SPA.2016.7763604

[2] Ţepelea, I. Gavriluţ, and A. Gacsadi, "Smartphone application to assist visually impaired people," 14th International Conference on Engineering of Modern Electric Systems (EMES), Oradea, 2017, pp. 228-231. https://doi.org/10.1109/EMES.2017.7980421

[3] M. Awad, J. E. Haddad, E. Khneisser, T. Mahmoud, E. Yaacoub and M. Malli, "Intelligent eye: A mobile application for assisting blind people", IEEE Middle East and North Africa Communications Conference (MENACOMM), Jounieh, 2018, pp. 1-6. https://doi.org/10.1109/MENACOMM.2018.8371005

[4] R. Kasthuri, B. Nivetha, S. Shabana, M. Veluchamy and S. Sivakumar, "Smart device for visually impaired people", Third International Conference on Science Technology Engineering & Management (ICONSTEM), Chennai,2017, pp. 54-59. https://doi.org/10.1109/ICONSTEM.2017.8261257

[5] Hoonlor, S. P. N. Ayudhya, S. Harnmetta, S. Kitpanon, and K. Khlaprasit, "UCap: A Crowd sourcing application for the visually impaired and blind persons on Android smartphone", International Computer Science and Engineering Conference (ICSEC), Chiang Mai, 2015, pp. 1-6. https://doi.org/10.1109/ICSEC.2015.7401406

[6] M. N. Kumar, P. C. L. Chandar, A. V. Prasad and K. Sumangali, "Android-based educational Chatbot for visually impaired people", IEEE International Conference on Computational Intelligence and Computing Research (ICCIC), Chennai,2016, pp. 1-4. https://doi.org/10.1109/ICCIC.2016.7919664

[7] S. M. R. Bagwan and L. J. Sank pal, "Visual Pal: A mobile app for object recognition for the visually impaired", International Conference on Computer, Communication and Control (IC4), Indore, 2015, pp. 1-6 https://doi.org/10.1109/IC4.2015.7375665

[8] K Shankar, S Dhaarani, S Kaviya Shree, "Android Application for Visually Impaired", International Journal for Research Trends and Innovation, Volume 2, Issue 4, ISSN: 2456-3315, 2017.