



Zero Project
AI Assistant

Zero Project AI Assistant and Search

A Detailed Journey of Innovation, Collaboration, and Ethical Testing

November 2023 – November 2024

The “Zero Project AI Assistant and Search” is a web app reflecting Zero Project’s commitment to using innovative technology to empower the disability community. From its inception to the latest rounds of testing, this AI tool was developed with a focus on inclusivity, collaboration, and responsible AI practices. This story captures the detailed journey of how the Zero Project Team, along with global stakeholders, developed an AI-powered assistant that addresses the needs of accessibility advocates, researchers, and policymakers while maintaining high ethical standards.

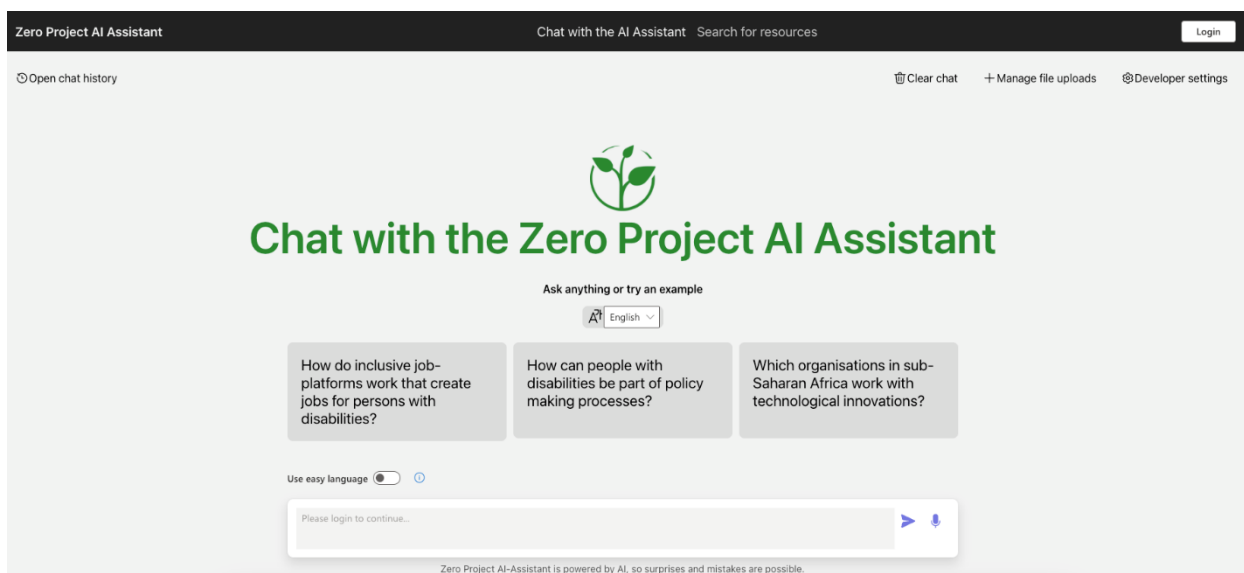


Zero Project AI Assistant

Project Overview and Vision

The Zero Project AI Assistant and Search originated from an initiative aimed at simplifying research and policy development in the field of disability accessibility. Initially named "Model Policy Assistant," its primary goal was to empower policymakers and researchers by streamlining access to critical information. Recognizing the potential for greater impact, the project was not only renamed but also technically enhanced. The resulting Zero Project AI Assistant reflected a broader scope and became a tool for a wider audience. A second app, "Zero Project Search" was added later in 2024.

Microsoft played a pivotal role in this endeavor, not only sponsoring the project but also providing access to cutting-edge AI technologies that ensure the assistant operates at the highest standards. This backing offered the much-needed technical foundation for developing a powerful and reliable tool.



Interface of the Zero Project AI Assistant

Prototype Development and Challenges

By late 2023, the Zero Project AI Assistant had already laid the foundation for an innovative web-based chat application prototype. At the heart of this prototype was Retrieval-Augmented Generation (RAG) technology. Unlike traditional AI models that generate answers from training data, RAG combines domain-specific, and if desired, non-public information stored in a knowledge base with generative capabilities to produce contextually relevant answers. This approach ensures accuracy and reliability.

A significant challenge during this early development was document chunking – the process of breaking down large texts into manageable segments. Imagine organizing books on a shelf; each section must be easily accessible. Similarly, the AI needed to parse extensive documents into digestible chunks, enhancing processing efficiency without losing context.



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The Zero Project AI Assistant underwent significant further development over 2024. The team faced the intricate task of handling more complex data sources. The web app needed to process and understand multimodal data to serve diverse user queries effectively. This included not just traditional text data, but also images, videos, and interactive formats. Developing the capability to seamlessly interpret and integrate these varied data types required significant technical ingenuity and innovation.

A noteworthy feature of the AI Assistant was its transparency. Users could opt to view the original source of the information – be it a document, video, or any other media type – thereby enhancing the credibility of each response. This layer of transparency was vital in establishing the service's integrity for both tech-savvy users and those deeply engaged in the disability community.

Zero Project AI Assistant Chat with the AI Assistant Search for resources Logout ai-advanced@flow@zeroproject.org

Open chat history Clear chat + Manage file uploads Developer settings

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Consultation with organizations of persons with disabilities on disability-specific issues

In Philippines, the CRPD was concerned about the lack of information, coupled with effective and meaningful consultations involving persons with disabilities and their representative organizations. Therefore, in 2018, it recommended that Philippines consult and involve representative organizations of persons with disabilities, particularly those living in remote and rural areas, in decision-making processes and public affairs concerning the implementation and monitoring of the CRPD.¹²⁹ Since then, the government of Philippines has actively consulted with and sought the participation of Life Haven Inc., an OPD established in 2005 to advocate for the right of persons with disabilities to live independently and be included in the community, including through empowerment, equal opportunities, integration, and participation.

Life Haven is a member of the Asia-Pacific Network for Independent Living Centres, an umbrella group of OPDs throughout the Asia-Pacific region. Life Haven's Executive Director, Mr. Jun Benjamin Bernardino "Since we are the best experts on our needs, we need to show the solutions we want, need to be in charge of our lives, think and speak for ourselves - just as everybody else," explains that public and private sector entities in Philippines have consulted with Life Haven about employment matters, including how to make reasonable accommodations for employees with disabilities,

¹²⁹ United Nations, United Nations Disability Inclusion Strategy, January 2019, 14, Systematic close consultation with and active involvement of organizations of persons with disabilities on a disability-specific issues.

¹³⁰ OHCHR, CRPD, 13 December 2006.

¹³¹ United Nations CRPD, General comment No. 7 (2018) on the participation of persons with disabilities, including children with disabilities, through their representative organizations, in the implementation and monitoring of the Convention, CRPD/C/GC/7, 9 November 2018. Available from: <<https://documents-ddp-ny.un.org/doc/60LND0CGEN/D/8/036/34/PDF/G3433454.pdf?OpenElement>>

¹³² United Nations CRPD, Concluding observations on the initial report of the Philippines, CRPD/C/PHL/JC01, 16 October 2016, 2.

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Use easy language

Type a new question

Zero Project AI-Assistant is powered by AI, so surprises and mistakes are possible.

Response to user enquiry 'How can people with disabilities be involved in policy-making? Are there any good examples?' with the 'Use plain language' accessibility feature enabled in the Zero Project AI Assistant

Community Engagement and Participatory Design

Community engagement and participatory design were pivotal in shaping the Zero Project AI Assistant and Search tool. By involving global accessibility advocates from organizations such as the International Labour Organization (ILO) and the Global Initiative for Inclusive Information and Communication Technologies (G3ICT), the project ensured that the tool would address real-world needs and foster inclusivity.

Participatory design, a collaborative approach where users actively contribute to the design process, was employed to gather insights from these advocates. Through structured focus groups, participants provided feedback on user experience, accessibility features, and functionality, ensuring the tool aligns with diverse needs.



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This iterative process led to key enhancements, such as integrating Speech-to-Text (STT) and plain language features, which cater to users with visual or mobility impairments. These additions reflect a commitment to inclusivity, making the tool more accessible for all.

Testing Phases and Feedback Iterations

Testing the Zero Project AI Assistant and Search was a multi-faceted process that integrated various methodologies to ensure both technical robustness and user satisfaction. At the core of this phase was holistic user interaction testing and Responsible AI (RAI) Red Teaming, both critical in refining the product for its target audience – the disability community and stakeholders.

Holistic user interaction tests focused on how real users interacted with the AI Assistant and Search tools. The goal was to understand how intuitive the interface was, whether responses from the AI were helpful, and if the tool could handle various queries effectively. These tests involved members of the disability community who provided direct feedback on their experiences. This hands-on approach helped identify areas where the tool might be confusing or difficult to use, ensuring it was accessible to everyone.

In tandem with this, Responsible AI (RAI) Red Teaming was employed. RAI Red Teaming is a process where the AI system is intentionally tested with challenging or adversarial scenarios to ensure it behaves ethically and fairly. This involved simulating situations where the AI might be asked sensitive questions or presented with ambiguous information. The purpose was to check if the AI could handle these situations appropriately, avoiding biased or misleading responses.

Complementing these evaluations, use case testing allowed the team to place the AI Assistant within specific contexts that mirrored real-world applications. These scenarios ranged from simple information retrieval to more complex policy-related queries. Participants noted areas for enhancement, leading developers to refine the process transparency and improve follow-up query handling.

Milestones and Technological Advancements

The development of the Zero Project AI Assistant and Search was marked by significant milestones and technological advancements, each addressing specific challenges and enhancing functionality to better serve the disability community.

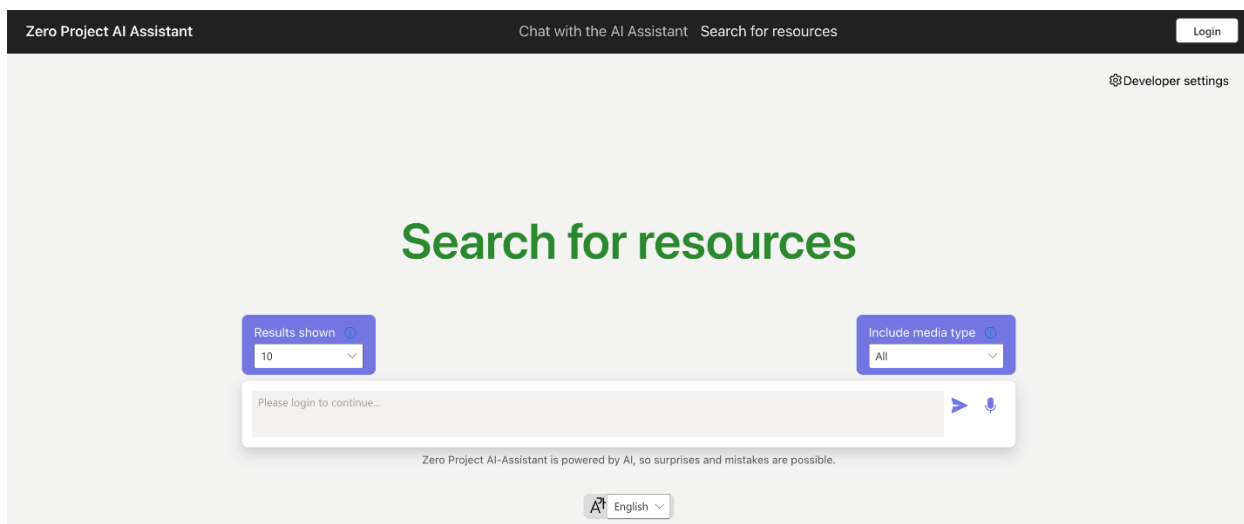
- **Module 1: Proof of Concept (Nov 2023 - Jan 2024):** This phase focused on establishing a foundational prototype using Microsoft Azure's infrastructure and Retrieval-Augmented Generation (RAG) technology. The assistant initially interacted with a database containing thousands of disability-related innovations, addressing the challenge of efficiently chunking documents and managing complex data.
- **Module 2: Infrastructure Optimization (Feb - Jun 2024):** The team expanded the infrastructure to handle diverse data types, including PDFs, videos, images, Office documents, and SQL databases. This involved creating a robust data landing zone and backend system for ingesting varied content, enhancing the tool's versatility.
- **Module 3: Feature Implementation (Jul - Sep 2024):** Key enhancements included allowing users to upload private data into a shared index, enriching context for images



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and videos, and implementing chat history. These features were tested with users from the disability community to ensure they met users' needs. The addition of accessible features like plain language, Text-to-Speech (TTS), and Speech-to-Text (STT) further solidified the tool's inclusivity ethos.

- **Module 4: Final Development (Sep - Nov 2024):** Final developments integrated feedback from previous testing phases. Notably, the introduction of the Zero Project AI Search offered a powerful frontend that shared the database with the AI Assistant. This search function provided users the flexibility to filter results by keywords or specific media types, allowing efficient retrieval of information aligned with individual needs.



Interface of the Zero Project Search

Outcomes and Future Prospects

The Zero Project AI Assistant and Search have achieved significant milestones in their development journey, culminating in a robust tool designed to empower the disability community with inclusive and responsible AI practices. By integrating advanced technologies like RAG and multimodal data handling, the project has successfully created an accessible platform that bridges gaps in disability inclusion research and policy-making.

The impending launch of this tool marks a transformative step toward democratizing access to critical resources for policymakers, researchers, advocates, and the broader Zero Project community. A key feature of the AI Assistant is its ability to provide transparent, fact-based responses, with users having the option to view original sources directly within the web app. This transparency ensures accountability and builds trust, addressing a common concern in AI applications.

Accessibility has been central to the project's design, with features ensuring usability for individuals with diverse needs. The integration of Zero Project AI Search further enhances functionality by allowing users to explore data beyond chat interactions, complementing the Assistant's capabilities and offering a comprehensive approach to information retrieval.



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The project sets a benchmark for ethical AI development by prioritizing user feedback and continuous improvement. As it moves forward, ongoing community engagement will guide future enhancements, such as expanding support for additional languages and refining features like private data interaction and media context enhancement.

In essence, the Zero Project AI Assistant and Search represent not just a technological advancement but a commitment to equity and inclusion. By fostering collaboration between technology and ethical practices, it paves the way for a new generation of tools that prioritize accessibility and responsibility, ensuring that advancements in AI benefit everyone equitably.