

MELAKA
INTERNATIONAL
INTELLECTUAL EXPOSITION

MIIEX'24

12 JUNE '24

Dewan Taming Sari,
Universiti Teknologi MARA Caw. Melaka,
Kampus Alor Gajah, Melaka

*"Empowerment of Special
Needs through Invention
& Innovation"*

**EXTENDED
ABSTRACT**

MiiEX'2024

MELAKA INTERNATIONAL INTELLECTUAL EXPOSITION 2024

**“EMPOWERMENT OF SPECIAL NEEDS THROUGH INVENTION AND
INNOVATION”**

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UiTM Cawangan Melaka

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78000 Alor Gajah

Melaka Bandaraya Bersejarah

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MiiEX'2024

MELAKA INTERNATIONAL INTELLECTUAL EXPOSITION 2024

**“EMPOWERMENT OF SPECIAL NEEDS THROUGH INVENTION AND
INNOVATION”**

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INNOVATION, INVENTION, AND DESIGN

FOREWORD BY THE RECTOR OF UiTM CAWANGAN MELAKA



Professor Ts. Dr. Mohd Rasdi bin Zaidi

Rector, Universiti Teknologi MARA (UiTM)

Cawangan Melaka

Welcome to the Melaka International Intellectual Exposition 2024 (MIIEX '24). It is an honour for me, on behalf of UiTM Cawangan Melaka, to thank all of you for joining MIIEX '24. We are proud to inform you that this is the 13th consecutive year that UiTM Cawangan Melaka is organizing this exposition. Since 2009, UiTM Cawangan Melaka has successfully hosted this innovation exposition. Not only have we succeeded in organizing the exposition, but we have also successfully embarked on commercialized products.

2024 is a special year where MIIEX 2024 emphasizes the development of special needs. As we know, special needs indicate a limitation in a person's ability to engage in and benefit from various aspects, such as daily activities and education. Hence, with the theme "Empowering Special Needs Through Invention and Innovation," it is a platform for industries, professionals, academicians, students, and communities to share their innovative ideas and products to increase accessibility for those with special needs.

The successful implementation of MIIEX '24 is our joint success. This event was supported by the Melaka state government through YB Datuk Fairul Nizam bin Roslan, the EXCO of Science, Technology, Innovation, and Digital Communication. I also want to express my

gratitude to Universitas Negeri Padang, Indonesia, Universitas Muhammadiyah, Makassar, Indonesia, the International Association of Economic and Businesses (IAEB), Universiti Sains Islam Malaysia, Ibnu Umri Maktum Research Center (UMMI), USIM, and The Southeast Asia Minister of Education Organization Regional Centre for Special Educational Needs (SEAMEO SEN) as our co-collaborators for MIIEX 2024.

The collaboration from various parties in MIIEX '24 is a platform that will improve cooperation and interweaving among industries, professionals, academicians, students, and communities in shaping their potential in developing innovation products. This exposition also serves as a platform to cultivate and uphold the nation's innovation culture by presenting new ideas and research by young people, especially from academia and universities. Indirectly, MIIEX '24 will encourage all inventors towards empowering Science, Technology, Engineering, and Mathematics (STEM), especially in primary and secondary schools.

The new digital landscape also inspires more innovation and new ideas that contribute to various activities, such as business and industries. As a university that encourages "Research and Innovation," we aim to foster more innovative products that benefit scholars, industries, and communities, addressing issues to improve our present and future life.

This exposition would never happen without dedication, teamwork, and commitment. A round of applause should be given to the committee teams, who are the backbone of this exposition. Their hard work, effort, and time made this exposition possible.

Finally, I would like to conclude this brief remark by thanking all the participants and stakeholders for joining the exposition. We hope that this collaboration never ends here.

Thank you.

FOREWORD BY THE DEPUTY RECTOR (RESEARCH & INDUSTRIAL LINKAGES)



Associate Professor. Dr. Nur Hayati binti Abd Rahman

Deputy Rector (Research & Industrial Linkages), Universiti Teknologi MARA (UiTM) Cawangan Melaka

With much passion and privilege, let me warmly welcome all of you to the Melaka International Innovation Exhibition (MIIEX), UiTM Cawangan Melaka's flagship event. I firmly believe that events such as these demonstrate the gradual evolution of this platform in terms of its significance and its governing principles within the sphere of learning and the broader scholarly society.

The theme for this year, "Empowering Special Needs Through Invention and Innovation," strongly connects to our mission of using research and technology to make a positive impact on the world we live in. Besides enforcing the message of diversity, this theme also reaffirms our focus on creating products to improve the lives of people with disabilities (PWDs). Such innovations are vital as only through focused constructive changes can society become more sensitive to the needs of all members.

MIIEX allows researchers, students, and industry professionals to come together, share their innovative research, and develop viable research partnerships. It has been great to see the enthusiasm of the participants and the efforts they put into their projects, which can offer various social and economic benefits. This is why one can state that MIIEX is a great

opportunity for creating connections between the academic environment and industry, facilitating the implementation of innovative and promising projects.

Finally, I would like to express my sincere appreciation to all the members and supporters of the organizing committee, all the participants, sponsors, and everyone involved in preparing this event. I want to express my gratitude for your commitment and involvement, as the success of MIIEX and the development of an active culture of innovation in our university and beyond is partly owed to your support.

Thank you

FOREWORD BY THE PROJECT DIRECTOR



Dr Zulkefli bin Muhamad Hanapiyah

Senior Lecturer

Assalamualaikum and Warmest Greetings,

It gives me a great pleasure, on behalf of the organizing committee, to welcome all participants and speakers to the Melaka International Intellectual Exposition 2024 (MIIEX '24) with the theme "Empowering Special Needs Through Invention and Innovation." We are honoured and pleased to welcome all participants to this biennial event.

MIIEX '24 is a platform that gathers experts from local and international industries, academia, scientists, researchers, and the community to contribute to the advancement of scientific and technological knowledge. This knowledge helps develop disruptive innovation products that improve daily activities for businesses and the community, especially those with special needs.

MIIEX '24 provides an atmosphere for inventors of all levels to gain new exposure and collaborate. Indirectly, this promotes a collaborative and innovative culture that focuses on cutting-edge technologies and new standards in technology and creativity.

MIIEX '24 is anticipated to serve as an arena for participants to acquire and disseminate revolutionary information on ideas and innovation. It is intended that the competition will expose the contestants' minds to the latest technologies and designs, aligning with the government's goal of encouraging innovation in Malaysia.

Finally, I want to compliment my fellow committee members on their amazing efforts, which were vital to the event's success. In addition, I want to thank our co-organizers, event sponsors, and participants. Optimistically, we hope that all new knowledge discovered, invented, or innovated will lead us toward future sustainability.

Thank you.

**FOREWORD BY MELAKA STATE EXCO OF SCIENCE, TECHNOLOGY,
INNOVATION AND DIGITAL COMMUNICATIONS**



YB Datuk Fairul Nizam bin Roslan

Melaka State Exco of Science, Technology, Innovation and Digital Communications

Welcome to the Melaka International Intellectual Exposition 2024 (MIIEX '24). It is an honor for me, on behalf of UiTM Cawangan Melaka, to thank all of you for joining MIIEX '24. We are proud to inform you that this is the 13th consecutive year that UiTM Cawangan Melaka is organizing this exposition. Since 2009, UiTM Cawangan Melaka has successfully hosted this innovation exposition. Not only have we succeeded in organizing the exposition, but we have also successfully embarked on commercialized products.

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Finally, I would like to conclude this brief remark by thanking all the participants and stakeholders for joining the exposition. We hope that this collaboration never ends here.

Thank you.

MIIEX'24 ORGANISING COMMITTEE

COMMITTEE	NAME
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	DR NORASHIKIN ADAM
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	PN NOR HALAWAH AHMAD
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	AFZAN SAHILLA BINTI MOHD AMIR HAMZAH
	MUHAMMAD FURQAN BIN AZHAR
	KHAIRUL AZHAR BIN LOCHMAN

ABOUT MIIEEX'24

MIIEEX'24 is an innovation competition annually organised by UiTM Melaka with the intention to bring together ideas and inspiration that could fit in for commercialization needs.

This event creates a platform for researchers to establish networking, partnership and opportunities to collaborate with industries.

OBJECTIVES

1. Encourage and instil passion towards inventing and innovating among UiTM Cawangan Melaka staff, students and academicians of local and international higher education institutions;
2. Highlight distinguished talents of skilful inventors and exhibit intellectual products, inventions and innovations among local and private tertiary institutions, government and private agencies, including international participants;
3. Become an effective Business Matching platform for participating research products, matching industries and partnering government agencies;
4. Recognise, inspire and promote invention and innovation products to be patented and commercialized;
5. Increase passion towards inventing and innovating through research and boost interests of government and non-government agencies to obtain consultancy services from a line up experts of higher education institutions and UiTM Cawangan Melaka.

THEME

'EMPOWERMENT OF SPECIAL NEEDS THROUGH INVENTION AND INNOVATION'

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Voxtech: Empowering Fintech Accessibility for Visually Impaired

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Abstract

VoxTech is a revolutionary product designed to transform financial management for individuals with visual impairments. Traditional wallets have posed significant challenges in today's digital era, especially for those with visual impairments. With the rapid evolution of technology and the growing prevalence of digital payments, accessibility and security have become paramount concerns. VoxTech addresses these challenges head-on by seamlessly integrating smartwatch and digital wallet technologies, offering a comprehensive solution tailored specifically for visually impaired individuals in Asia. Key features of VoxTech include currency detection, multilingual options, and GPS tracking for enhanced security and convenience. The product's uniqueness lies in its innovative fusion of smartwatch functionalities with accessibility features like voice activation, QR scanning, and GPS tracking. These features empower users with real-time transaction monitoring, independent navigation in unfamiliar areas, and seamless payment experiences. VoxTech simplifies financial management through intuitive setup, customizable preferences, and user-friendly interfaces. Its potential for commercialization is vast, given the increasing demand for wearable tech and contactless payment solutions. Market research indicates a surge in consumer interest driven by factors such as convenience, security, and lifestyle integration, particularly among visually impaired individuals. In summary, VoxTech represents a transformative leap in financial accessibility and independence, offering a holistic solution that aligns with evolving technological trends and user needs.

Keywords: Fintech, disability ICT, visual impaired technology assistance, financial inclusion, wearable devices, visual impaired digital banking access.

1. INTRODUCTION

In the realm of assistive technologies for visually impaired individuals, there exists a range of products aimed at facilitating financial management. However, these products are often marred by significant limitations that hinder their effectiveness and fail to meet the comprehensive needs of visually impaired customers. One such existing product is a talking vision audio wallet, which boasts several features such as currency note detection, multilingual support, real or fake money detection, braille compatibility, and portability. While these features provide some level of assistance, they fall short in offering real-time transaction monitoring, intuitive navigation, and secure payment methods, leaving visually impaired users vulnerable to financial risks and limitations in managing their finances independently.

Another existing product, the smart wallet, integrates a camera and a single-click button to identify currency and display the amount, along with separate pockets for different currencies. While this enhances currency recognition to some extent, it lacks advanced functionalities like GPS tracking, voice activation, and customizable accessibility settings. Additionally, the smart wallet anti-lost GPS system offers location tracking and separation alerts but requires users to download a specific app, limiting its accessibility and integration into daily financial activities. These limitations underscore the pressing need for an innovative solution like VoxTech that addresses the shortcomings of existing assistive financial tools and provides a comprehensive suite of features tailored to the unique needs of visually impaired individuals.

According to a news report by Fadila Awaludin, visually impaired individuals face challenges such as difficulty withdrawing money due to inaccessible screens and vulnerability to hijacking incidents. These real-world scenarios highlight the critical importance of VoxTech in revolutionizing financial accessibility and security for visually impaired users, offering features like voice-activated transaction monitoring, QR scanning capabilities, intuitive navigation assistance, and secure payment methods. VoxTech's innovative approach aims to empower visually impaired individuals with enhanced financial independence, security, and confidence in managing their finances effectively and autonomously.

2. OBJECTIVE

The primary objective of VoxTech's new innovative product is to address the existing limitations in assistive financial tools for visually impaired individuals and provide a comprehensive solution that enhances financial accessibility, security, and independence. Through advanced technologies and user-centric design, VoxTech aims to revolutionize the way visually impaired customers manage their finances, offering a seamless and inclusive experience tailored to their specific needs. This objective aligns with the recommendations and suggestions put forth by academicians and experts in the field, emphasizing the importance of integrating cutting-edge advancements to overcome the challenges faced by visually impaired individuals in financial management.

Furthermore, VoxTech's objective includes promoting financial inclusion by leveraging voice activation, QR scanning, intuitive navigation, and secure payment methods to empower visually impaired users in conducting real-time transaction monitoring, seamless payments, and secure financial interactions. By focusing on enhancing user experience, accessibility, and security, VoxTech aims to set a new standard in assistive technologies for visually impaired individuals, contributing to their overall well-being, independence, and confidence in managing financial transactions effectively.

3. NOVELTY & INVENTIVENESS

The novelty and uniqueness of VoxTech's innovative product lie in its transformative impact on various facets of society, particularly for the visually impaired community. Unlike existing products that offer limited features such as currency detection and GPS tracking, VoxTech's solution integrates cutting-edge technologies like voice activation, QR scanning, and real-time transaction monitoring. This comprehensive approach not only enhances financial accessibility but also fosters economic sustainability by empowering visually impaired individuals to engage more actively in financial transactions and manage their funds independently. By enabling secure and efficient payment methods through intuitive voice commands and QR scanning, VoxTech's product not only addresses the challenges faced by visually impaired individuals but also contributes to the economic empowerment of this demographic segment.

Moreover, VoxTech's product emphasizes human wellbeing by promoting autonomy and confidence among visually impaired users. The integration of GPS tracking and navigation

assistance ensures safer and more efficient travel experiences, reducing dependency on external assistance and enhancing overall mobility. This not only improves the quality of life for visually impaired individuals but also contributes to societal inclusivity and equal access to essential services. The competitive advantage of VoxTech's innovation lies in its user-centric design, customizable accessibility settings, and seamless integration with existing financial systems. By prioritizing user experience and leveraging advanced technologies, VoxTech's product sets a new standard for assistive technologies, making significant strides towards a more inclusive and accessible society for all.

4. PRACTICALITY & USEFULNESS

VoxTech's innovative product offers unparalleled practicality and usefulness, revolutionizing the financial management experience for visually impaired individuals. By incorporating advanced features such as voice activation, QR scanning, and intuitive navigation, VoxTech streamlines the financial transaction process, making it more accessible and efficient for users with visual impairments. This enhanced practicality translates into a user-friendly interface that allows individuals to manage their finances seamlessly, promoting independence and confidence in financial decision-making.

Moreover, VoxTech's product stands out for its practicality in real-world scenarios. For instance, in a study by Fadila Awaludin, it was highlighted that visually impaired individuals often struggle with traditional financial tools due to accessibility barriers, leading to challenges in withdrawing money and potential security risks. VoxTech addresses these concerns by providing a secure and accessible platform that enables users to conduct transactions with ease and safety. The usefulness of VoxTech's product extends beyond basic financial management, offering a comprehensive solution that empowers visually impaired individuals to navigate complex financial landscapes independently. Its intuitive design and robust security features ensure that users can handle a wide range of financial tasks confidently, making VoxTech a valuable tool in enhancing the overall financial well-being and autonomy of visually impaired individuals.

5. CONCLUSION

In conclusion, the innovation of the VoxTech represents a transformative in accessibility, convenience, and empowerment for individuals with visual impairments. By seamlessly integrating essential financial functions into the familiar form factor of a smartwatch, this innovative solution redefines the way visual impaired individuals interact with their finances. The VoxTech offers practical advantages such as enhanced security, customized assistance, and seamless integration with everyday life, empowering users to manage their finances independently and with confidence. Furthermore, the VoxTech addresses the limitations of traditional wallets and existing digital payment solutions by prioritizing accessibility and inclusivity. Through intuitive voice commands, tactile feedback, and advanced biometric authentication features, it ensures that blind individuals can navigate their financial landscape with ease, regardless of their visual impairments.

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