V-MIIEX

28 JUNE
06 JULY
2022

VIRTUAL—MELAKA INTERNATIONAL INTELLECTUAL EXPOSITION

ROAD TO COMMERCIALISATION

V-MIIEX BOOK

V – MIIEX BOOK
'ROAD TO COMMERCIALISATION'

EDITORS AND COMPILERS:
Dr. Nur Hayati Abd Rahman
Dr Syukri Abdullah
Wan Hasmat Wan Hasan
Aini Qamariah Mohd Yusof
Norazlan Anual
Dr. Khairunnisa Abd Samad
Nordianah Jusoh @ Hussain
Rozana Othman
Norlela Abas
Azira Rahim

COVER DESIGN:
Adi Hakim Talib

ASSOC. PROF TS. DR MOHD RASDI ZAINI
Rector
Universiti Teknologi MARA (UiTM) Cawangan Melaka

Welcome to Virtual-Melaka International Intellectual Exposition 2022 (V-MIIEX 2022). It is an honour for me on behalf of UiTM Melaka Branch to thank all of you for joining the programme and we are proud to inform you that this is the 12th year consecutively, UiTM Melaka Branch is organizing this exposition.

V-MIIEX 2022 is a platform to improve the commercialization collaboration among industries and communities and at the same time, we also give the opportunity to academicians and students to share ideas and increase their potential innovation products with the industries and communities through their projects. This exposition also serves as a platform to cultivate and upload the nation's innovation culture by presenting new ideas and research by young people, especially from academia, universities, college, high schools, and primary school students.

The economy and development of the country faced a challenging phase in 2021 due to the Covid-19 pandemic. We faced changes in business, education, society, and lifestyle. However, the pandemic proved to be a blessing in disguise as it somehow gave people ideas which would be beneficial to improve their lifestyle and solve problems that might occur in the future.   Besides, 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 the "Research, Innovation and Commercialization", this exhibition is organized to encourage more commercialization of products that are beneficial to scholars, industries, and communities to tackle such issues to improve our present and future life.

Since 2009, UiTM Melaka Branch has successfully become the organizer for this innovation exposition. We are not only successful in organizing the exposition, but I would proudly say that we have also successfully embarked on commercialized products. With the number of participants for this year's exhibition, we believe that more commercialized products will be produced in line with the theme for this year, "Road to Commercialisation".

This exposition would never happen without dedication, teamwork, and commitment. A round of applause should be given to the committee teams as 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

DR. NUR HAYATI BINTI ABD RAHMAN
Deputy Rector Research & Industrial Linkages
Universiti Teknologi MARA (UiTM) Cawangan Melaka

It is a great pleasure to welcome all the participants and presenters to the Virtual Melaka International Intellectual Exposition (VMIIEX 22). I am delighted that through this periodic event, we managed to bring together scholars and professionals from various fields to engage through this virtual platform where ideas and breakthrough are discovered and leveraged for commercialization potential.

Since 2009 UiTM Cawangan Melaka has held twelve Invention and Innovation Design competitions and this year we are very honoured to have the second year of VMIIEX organized in digital platform. This has proven that despite the global challenges due to the recent pandemic, it is never an issue for UiTM Melaka to continuously organize this yearly prestigious event and to support the ministry's aspiration in leveraging creativity and innovation in the new norm.

VMIIEX 22 is organized with no sole objectives of accomplishing the University's KPI but instead we are determined to make this programme as the place to help heighten commercialization collaboration in research and innovation with the industry and community through joint exhibitions from various external organizations.

Our aspiration is to also provide exposure and opportunities to academic staff as well as students from public and private universities to engage in direct excellent scholarly activities with the industry and community through activities that can be measured and assessed. As for the Research and Industrial Linkages Office of UiTM Melaka, this exhibition is seen as the platform that can encourage active collaboration and knowledge transfer with industries; objectively to support various activities that will benefit all stakeholders from the various government agencies, local and international universities, industries and communities.

Through the theme of "Road to Commercialization" this year, V-MIIEX 22 is committed to have this event as a boulevard to inspire and cultivate creativity and innovation to the numerous levels of inventors through exposure on latest technologies, astonishing ideas and creative designs with great potential to be commercialized. For this year, we proudly introduce a special category which is the "Endemic Challenge" as the provision to the government of Malaysia's goal of moving towards the endemic.

To ensure that the competing products in this exhibition is not exclusively for the purpose of competition, V-MIIEX 22 is dedicated for the commercialization of highly potential innovation products, which is attained through its active collaboration with tailored needs industries. The commercialization effort was not for income generation purpose only but it aimed to spearhead the development of quality products in line with industrial needs and community benefit.

Therefore, it is a great honour for me on behalf of the Research and Industrial Linkages Office as well as the organizing committee to have all participants in this competition and I would like to express my highest gratitude especially to the Rector of UiTM Melaka and all strategic partners and sponsors for supporting the event.

To finish, I sincerely wish VMIIEX 22 a remarkable success. I believe that this will not be the only collaboration between UiTM Melaka and the respective partners and linkages, but a beginning of a long and fruitful cooperation in future.

Thank you very much.

road to commercialisation . . .

WAN HASMAT WAN HASAN
Project Director V-MIIEX 2022
Universiti Teknologi MARA (UiTM) Cawangan Melaka

Assalamualaikum and Warmest Greetings.

It gives me an enormous pleasure, on behalf of the organizing committee to welcome all participants and presenters to the Virtual -Melaka International Intellectual Exposition 2022 (VMIIEX '22) with the theme "Road to Commercialisation". We are honoured and glad to welcome all participants to this biennial event.

This is the second time that we have organized this biennial event virtually. V-MIIEX 22 is an innovation competition, in which, innovation products, ideas and systems related to various science and technological fields are exhibited as a solution for the presented problems.

V-MIIEX22 expectantly will be a platform that gathers experts from academies, scientists, and researchers, locally and internationally, to contribute towards the growth of scientific and technological knowledge in each participant's specialisation and expertise.

The competition also serves as a platform to give fresh exposure to the various level of inventors, as well as to encourage the culture of innovation design focused on latest technologies and related to new norms technologies and inventions due to COVID-19.

V-MIIEX 22 is also hoped to be an avenue for gathering and disseminating the latest knowledge on ideas and acquisition of innovation among the participants. It is hoped that the competition will be able to open the mind of the participants towards latest technologies and design. It is also in line with the government's aspiration to encourage innovation activities in Malaysia.

As a final note, I would like to congratulate my fellow committee members for their tremendous effort, which have been critical to the event's success. In addition, I would like to thank our co-organizer, event sponsors and supporters. Optimistically, we wish that all new knowledge that is discovered, invented, or innovated will drive towards our future sustainability.

Thank you.

FOREWORD

The world after COVID-19 is unlikely to return to the world that was. Despite the challenging pace during the pandemic, the strong rebound is expecting in this exciting year 2022. Malaysia is welcoming the great prospects ahead with positive impact on the country's economy and development. Hence, the hope for greater opportunities motivates for more creative thinkers to come up with innovative ideas that can be put forward to be harnessed to overcome similar problems in the future. V-MIIEx 2022 is one of these platforms which contribute relevant ideas that could help communities of all walks of life cope with this **p**andemic.

UiTM has identified research, innovation, and commercialization to be among the core components and strategic effort towards becoming a well-known and prominent university. Aside from realizing this goal, with these components and efforts, fostering the development of knowledge, generating financial stability of the university, and producing knowledgeable academicians are also potentially achievable.

By having invention and innovation competition yearly, UiTM Cawangan Melaka is confident that it could further enhance creative and innovative abilities among staff and students. In support of the government notion which upholds the importance of innovation, UiTM Cawangan Melaka has taken the initiative of organising the Virtual Melaka International Intellectual Exposition (V-MIIEx).

In instigating and nurturing the continuous culture of inventing and innovating, this event is an ideal platform for lecturers, administrative staff, students, and the public to showcase and commercialize their products or prototypes as well as novel ideas. The first IID which was held nationally in UiTM Cawangan Melaka in 2009, has successfully gathered and displayed more than 37 inventions and innovations. Accordingly, to continue this strong passion towards inventing and innovating, the IID competition should be continued and celebrated.

With that, the Division of Research and Industrial Linkages will be organising its 12th IID competition, the Virtual - Melaka International Intellectual Exposition (V-MIIEx 2022) with the theme, 'Road To Commercialisation'. V-MIIEx 2022 hopes to welcome 200 competing products to be showcased and commercialized, at the same time, attract attention of related and matching industry.

Objectives

1. Encourage and instill 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 skillful 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.

AWAXI - Realtime Patient Monitoring System Based on Internet of Things (IoT)

Marya Batubara[1], Auliya Rahmi[2], Ardianto Wibowo [3], Muhammad Mahrus Zain [4], Adib Darna[5]

[1, 2, 3,4,5]Politeknik Caltex Riau, Pekanbaru, Indonesia

marya18ti@mahasiswa.ac.id, auliya0905@gmail.com, ardie@pcr.ac.id, mahrus@pcr.ac.id, adib19si@mahasiswa.pcr.ac.id

Abstract

Medical devices are one of the important things in health agencies to serve the community. Medical devices available in Health Agencies still have a high dependence on medical personnel in their use. Not only medical devices, but the patient's TTV examination system is also still done manually by medical personnel. There are 4 components of TTV that must be monitored regularly in patients, namely blood pressure, pulse, breathing, and body temperature. Incidents that often occur due to delays in TTV examinations are the rise and freezing of blood in the infusion hose, resulting in complications and lack of quality of service in The Health I Instance. Health agencies must provide accurate and integrated medical devices in accordance with technological advances to provide the best service for the community. One of the most common emergencies that need to be improved with technological advances is patient checking. Prototype medical devices were developed to minimize these problems called AWAXI. AWAXI has several features such as Xi-real-time, Xi-user, and Xi-mobile. Patient data recorded on the website is used as a reference by the health Agency for further examination. Families and nurses can find out the patient's condition in real-time by using the app. With no exact product yet to be found with the function and scope, AWAXI comes with a new inpatient experience for patients with tools and innovations that provide convenience and comfort during examination and help medical personnel reduce direct contact with patients in the New Normal Covid-19 Pandemic. Testing has been carried out in several health agencies such as Awal Bros Hospital and RSIA Anissa as well as dr. Misbah, and Abdul Hadi Clinic. AWAXI is developed into one of the commercial products that can be widely utilized by health agencies to monitor the condition of inpatients in real-time.

Keywords: AWAXI, Xi-real-time, Xi-user, Xi-mobile, real-time, Monitoring

1.INTRODUCTION

Medical devices available at Health Agencies still have a high dependence on medical personnel in their use. Not only medical devices, but the patient's TTV examination system is also still carried out manually by medical personnel. There are 4 main vital sign components that must be monitored regularly in patients, namely blood pressure, pulse, respiration, and body temperature. Control and monitoring of TTV are very limited and manual checks must be carried out at the health Agency. Infusion is the most frequently used tool. The current infusion examination is still done manually. If there is a problem such as a blockage or running out of fluid, it will be dangerous for the patient if it is not treated immediately, such as complications. The number of TTV checks of patients but not balanced with the readiness of medical equipment and a sufficient number of medical personnel, resulting in less than optimal

60

handling. Handling carried out by medical personnel must be carried out regularly so that there is no delay in handling. Prototypes of medical devices have been developed to minimize these problems, but there are several shortcomings, including the system is still partial, not integrated, has a fairly expensive price, and has incomplete features. We need another solution to improve the existing medical device called AWAXI. AWAXI is a real-time patient monitoring system based on the Internet of Things and integrated. AWAXI has a new feature, namely being able to handle patients quickly in the event of an emergency via a panic button, and nurses receive notifications of these emergency conditions through the AWAXI website and alarms. Providing a new inpatient experience for patients with tools and innovations that provide convenience and comfort during examinations can help medical personnel reduce direct contact with patients in the New Normal in the midst of the Covid-19 Pandemic. In its implementation in several health institutions such as Awal Bros Hospital and Anissa RSIA and dr. Misbah, and the Abdul Hadi Clinic. AWAXI is running quite stable in carrying out its basic functions. AWAXI was developed into a commercial product that can be widely used by health agencies to monitor the condition of inpatients in real-time.

2. OBJECTIVE

It was created to assist medical personnel in monitoring the patient's condition in real-time so that there are no delays in handling. AWAXI is designed to be one of the products to deal with the limitations of nurses to meet the New Normal in the midst of the Covid-19 Pandemic. AWAXI not only contributes to minimizing delays in checking patients, but patient data recorded on the AWAXI website can be used as a reference by health agencies for further examinations and families can find out the patient's condition and nurses can monitor the patient's condition without having to come to the patien AWAXI is the second version of the Patient Monitoring System in 2019. It's room directly. -continuously by using the app.

3. NOVELTY & INVENTIVENESS

1 it has several weaknesses such as the absence of Xi-emergency, Xi-mobile, and alarm features for the nurse's room and the lack of accuracy in sensors. Therefore, v.2 of the Patient Monitoring System was created called AWAXI. AWAXI has conducted comparative studies but has not found a product that exactly matches the function and scope of AWAXI. However, there are several products that have been developed to monitor the patient's condition, namely Health Calculator, and Thermometer. All comparators still have several weaknesses, including the system is still partial, not integrated, having a fairly expensive price, and incomplete features. AWAXI was developed into a commercial product that can be widely used by health agencies to monitor the condition of inpatients in real-time. AWAXI has several new features such as Xi-real-time, which is useful for providing real-time information on the patient's condition (knowing the condition of the infusion weight, the patient's heart rate (BPM), infusion weight, room temperature conditions, and the patient's body temperature condition), Xi-user is useful for providing access to nurses about the patient's condition through the website, Xi-mobile helps provide information on the patient's condition using an android-based application and there is a notification in the form of an alarm in the nurse's room.

4. PRACTICALITY & USEFULNESS

AWAXI was developed to assist Health Agencies in knowing the patient's condition through a monitoring system with web and mobile applications that can be known in real-time. AWAXI has four variables that must be measured based on the condition heart rate, infusion weight, body temperature, and room temperature. How to use AWAXI is very easy, just attach this tool to the patient's arm and finger. The device that is attached to the patient's arm is a body

temperature sensor and the device that is placed on the patient's finger is a heart rate sensor. The infusion and room temperature sensors are on the AWAXI device. If the device is installed on the patient, AWAXI will real-time monitor the patient's condition based on the sensor value. The infusion sensor will measure the weight of the infusion fluid, if the infusion fluid runs out there will be an "Out of Infusion" notification on the website. The heart rate, body temperature, and room temperature sensors will be displayed on the website. AWAXI also has a push-button feature built into the AWAXI device. If the patient presses the push button, the alarm in the nurse's room will sound and there will be a notification on the website. With these features, AWAXI is more practical in helping medical personnel handle patients so that medical personnel no longer manually check the patient's condition. Based on the initial testing that has been carried out, the AWAXI sensor is accurate enough that the product can be produced and commercialized by several Healthcare Agencies.

5. CONCLUSION

Health agencies must provide accurate and integrated medical tools to provide the best service for the community. Health agencies must be able to improve services according to technological advances, and one of the most common emergencies that need to be improved with the help of technology is patient checks. AWAXI can assist medical personnel in monitoring the patient's condition in real-time so that there are no delays in handling. AWAXI is designed to be one of the products to deal with the limitations of nurses to meet the New Normal in the midst of the Covid-19 Pandemic. With these features, AWAXI is more practical in helping medical personnel handle patients so that medical personnel no longer manually check the patient's condition.

REFERENCES

1. Mugni, S., & Hirawan, D. (2018). Rancang Bangun Sistem Monitoring Kesehatan Pasien Rawat Inap Berbasis Internet Of Things.

2. Adi, SS, & Septiani, AD (2015). Perancangan Alat Pemantau Kondisi Kesehatan Manusia. *Edu Elektrika, 4*.

3. Muljodipo, N., Sompie , R. S., & Robot, F. R. (2015). Rancang Bangun Otomatis Sistem Infus Pasien. *Jurnal Teknik Elektro Dan Komputer*, 12-22.

4. Hindley, G. (2004). Infection Control In Peripheral. *Nursing Standard, 18*, 37-40
5. Guyton and Hall. 2007. Fisiologi kedokteran. Ed. 9. Jakarta : EGC, pp : 221-222