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**V-MIEX**

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VIRTUAL-MELAKA INTERNATIONAL INTELLECTUAL EXPOSITION

ROAD TO COMMERCIALISATION

**V-MIEX BOOK**



# V - MIIEX BOOK

## 'ROAD TO COMMERCIALISATION'

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# FOREWORD

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



Welcome to Virtual-Melaka International Intellectual Exposition 2022 (V-MIIEEX 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-MIIEEX 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.



**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-MIIEEX 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-MIIEEX 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-MIIEEX22 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-MIIEEX 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.

# ABOUT V-MIIEEX

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-MIIEEx 2022 is one of these platforms which contribute relevant ideas that could help communities of all walks of life cope with this pandemic.

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-MIIEEx).

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-MIIEEx 2022) with the theme, 'Road To Commercialisation'. V-MIIEEx 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.

# Smart Rescue: Smart Fire Management System For Smart City

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## Abstract

The advancement of technology needs to be combined with emergency services to increase people's safety. One of the most common incidents to happen is fire incidents. A late response from the firefighters could lead to casualties, material loss, and trauma in a fire incident. Moreover, the government also needs a form of technology that can help them make better decisions on preventing fire incidents, and to control the quality of firefighters. To counter the problems stated above, an application software called "Smart rescue" is made. Smart rescue aims to provide a reliable and fast way of reporting fire incidents to the fire department which is in charge of fire incidents in a particular area. Smart rescue also provides data visualizations of fire incidents that happen in various areas and the response time of firefighters, thus giving the government a tool to assist them in making critical decisions regarding fire incidents. Before the making of this web application, there is a similar application made by another institution. But the application fails, as it has many malfunctions and is too hard to access since it has to be downloaded first. But smart rescue tackles that problem by making a lightweight, practical, offline-available, and flexible software, as it can be installed on all devices as an application and also can be opened on a browser as a website. Smart rescue has been tested by Pekanbaru city's official government and is currently being recognized as the application being used by the local fire department. We believe that smart rescue can be a smart way to provide the best assistance that people may need in dire situations. The software can also be adapted by other governmental institutions residing in other cities or areas.

Keywords: Fire fighter, Smart rescue, Emergency services, Fire incidents, Government

## 1. INTRODUCTION

With the advancement of technology utilization and development, emergency services provided by government institutions have to be combined with the latest form of technology to maximize public services effectively. Many accident categories need immediate assistance, but one of the most common accidents that need immediate response is fire incidents. However, there isn't much software that supports high flexibility and responsivity for the people to report a fire incident in a very concise and easy way. Moreover, a fast response time from the firefighters is also crucial, as a faster rescue could result in minimizing the casualties, material loss, and trauma in a fire incident. That's the issue that comes from the general public, but the government has a problem too regarding fire incidents. The government has to know which area in a city has the highest rate of fire incidents, so they can efficiently do fire incident

prevention in that specific area. Also, the government needs to know about the average response time in responding to fire incidents by the firefighter team, so they can do quality control of emergency services provided by the body of the governmental institution. The

government needs software that can gather fire incident response data and software that can calculate response time statistics for better decision-making. But the problem is, there isn't any software application that can fill all the requirements above.

## **2. OBJECTIVE**

Smart rescue aims to provide a reliable, fast, and concise way of reporting fire incidents to the firefighter department which is in charge of fire incidents in a particular area. Not only that, Smart rescue aims to educate the general public about how to prevent fire incidents and how to deal with them if the situation occurs. From the government side, smart rescue aims to assist the government through a system that can handle fire incident reports efficiently, and Smart rescue also aims to provide statistics and data visualization about the fire incidents rate in every reachable area and the performance of the firefighter department, so that they can be better at decision making for handling and preventing fire incidents.

## **3. NOVELTY & INVENTIVENESS**

The Smart rescue software has a predecessor, which is the earlier version of the application in 2019, made by another institution. But the system finds several problems, as the general public finds it hard to install the application. The predecessor application is only available in a mobile application form, and there are still lots of bugs in the application, such as errors in emergency alarm for the firefighter department, which can be fatal since emergency services should be able to run smoothly and flexible. Thus, with this new Smart rescue system, we provide a sustainable, lightweight, flexible, offline-available, and high responsivity at the same time, since the software is a website-based application that is installable on every device using a technology called TWA (Trusted Web Activity) & PWA (Progressive Web Application). The software is also available on popular platforms such as the google play store because web applications with TWA technology can be released to the google play store. The software also uses geolocation tracking technology, so that the application can provide accurate fire incident reports hence the incident can be handled effectively. Lastly, for the government to see the data visualizations & statistics of fire incidents happening in various areas, the data that comes from the fire incident reports by the public will be processed using data mining & data processing technology.

## **4. PRACTICALITY & USEFULLNESS**

Smart rescue provides a system where the general public can report fire incidents in various ways, including phone calls, SMS, and WhatsApp, and if the situation is still manageable, they can also report through a form provided in the software. The smart rescue also provides an education system where people can learn about how to prevent and deal with the emergency fire situation. From the authority side, Smart rescue provides an alarm system for the firefighters, so when a fire incident report has been confirmed, the system will ring an alarm and provide a virtual map so that the firefighter team can go to the exact location of the incident. If the incident needs assistance from the police to secure the area, or from the state electricity company to control an indication of electric system failures that causes the fire incident, the system also provides an alarm for the police and the state electricity company, so that they can come to the incident site if needed. Lastly, Smart rescue aims to prevent fire incidents also.

The Smart rescue system provides a dashboard for the government to check every area's fire incident rates so that they could take needed measures to decrease the fire incidents in the



particular area. The dashboard also provides data visualization about the firefighter department response time for the government to make better decisions in managing the firefighter department. Smart rescue has been tested by Pekanbaru city's official government, and is currently being recognized as the application being used by the local fire department. The software can also be adapted by other governmental institution residing in other cities or areas.

## 5. CONCLUSION

The government must provide a safe and secure environment for the public. The government should be able to enhance the currently available emergency services with the advancement of technology, and one of the most general emergencies that need to be enhanced with the help of technology is fire incidents. To ensure public safety even more, the government has to be able to make accurate decisions on how to handle and prevent fire incidents, so that the fire incident rate can be minimized efficiently. With Smart rescue software application that promotes an easy-to-use, flexible, practical, and user-friendly application, the targets above are not only possible but very promising for the times to come. We believe that we can commercialize this software by acting as a third-party software provider. The government can rent and use our Smart rescue, which will be beneficial for both the people and the government. End of Word, We trust that smart rescue can be a smart way to provide the best assistance that the people may need in dire situations.

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