

– Smart City supported by Japan ASEAN Mutual Partnership –

Smart JAMP

APPLICATION FORM for Smart City Project Formulation Study

1. Project Summary

(1) Project Title: Study for Replanning of Bandar Cyberport to become Smart Healthcare Hub

(2) Name of the City: Johor Bahru

(3) Category of the Study: (A) Master plan and (B) Pre-Feasibility Study

Propose intervention for the Masterplan

① Type of Study

This is a Pre-Feasibility Study to promote pilot project of Smart Medical Hub in Bandar Cyber Port (this corresponds to IRDA7s Step-1 implementation plan shown in page-6 above in approximately 35 acre land). Based on the current condition of the target area stipulated in CDP of entire Iskandar region, this study will identify the most appropriate project components among the development projects in the target area (block).

The study should also include to:

- 1) Identify the most suitable components to be introduced in Smart Healthcare Hub
- 2) Identify potential smart technologies that will develop medical network of the nation and integrate it to world medical data and information system
- 3) Analyze the possible level of medical and smart service technologies to be applicable to the medical services and facilities (hospitals and clinics) in Iskandar Malaysia
- 4) Search the possibility of smart technology envisaging low carbon / sustainability / new lifestyle,
- 5) Examine the project schemes towards the project implementation, and
- 6) Survey the investment interests of the Japanese companies.

Thus, necessary yet important study activities to be made during the pre-feasibility study to identify best option to promote IRDA's pilot project implementation in Bandar Cyber Port.

② Scope of Study

- a. To sort out the prerequisites and issues of the projects

The following fundamental prerequisites and issues towards the project implementation of smart wellness and healthcare services will be sorted out:

1. Issues and problems identified in the superior plan and related plans concerning the target block
2. The related laws and regulations

3. Regional connectivity between the surrounding areas, Johor Bahru and Iskandar
4. Socio-economic conditions
5. Basic infrastructure development conditions
6. Issues and problems related to social and environmental considerations (particularly concerns of medical waste and soil water treatment)

In addition to the above, the following actions to be made at preliminary level:

1. Study by identifying basic condition or requirement for future master plan formulation for the 2nd step as above
 2. Study of issues and potentials for service expansion of pilot project and extension to Johor Bahru urban areas during the 3rd step
- b. To evaluate current proposed pilot project site for Smart Healthcare Hub development
- Collect current site-oriented data and information for the pilot project implementation to evaluate whether the proposed land in Bandar Cyber Port is effective and appropriate or not. Evaluation criteria with several index to be set for comparison among other potential sites (environmental/social consideration, appropriateness to bring the healthcare services, land acquisition and development easiness, etc.)
- c. To provide the best usage for the site
- Based on CDP and the development policy of the related organization inclusive of IRDA, the data, such as target area (in some cases, includes domestic and foreign markets), target users, expected demand of services, and needs for service fields/sectors will be collected and analyzed, and the appropriate functions and program scales will be determined towards the development of proposed smart services.
- This study will pursue the functions also from the following points.
- ✓ The possibility of smart technology and products for the expected wellness and healthcare service to be introduced
 - ✓ The technology to be introduced towards the regional medical network (phased development to be considered)
 - ✓ The variation of transportation services in conformity with users' behavior and their needs
 - ✓ The elements of medical tourism services to be introduced, and the proposal of related technology
 - ✓ Environment-oriented facilities with technology, such as green buildings, eco-construction, renewable/saving energy system, etc.
- d. To determine Zoning Plan
- The deployment of additional elements (parking lot, public square, park and walkways/driveways) accompanying with the core medical and healthcare services will be planned through estimating the size and demand of functions to be introduced, setting conceptual design of the basic service program and calculating the size of required facilities (construction) based on the scale and demand. Then preliminary level layout plan will be generated.

e. To propose project schemes

The most appropriate schemes as well as some options on how to develop, operate and manage the proposed smart service functions and facilities will be recommended considering from the various points summarized below.

- Ownership of the project: the government as owner of the regional facilities and/or participation of private sectors including PPP
- Financing the project costs
- Demarcation point to project responsibility and risk, etc. among potential stakeholders

f. To do survey the business interest of the Japanese companies

Japanese companies are considered as potential investors in the business fields of smart technologies as well as related products and services, and of real estate development, operation and management. The various Japanese companies will be considered for study on their interests and intention on such business. The study target includes Japanese companies operating in Malaysia and Singapore as well.

g. To plan for onwards project promotion

From the results of above holistic survey, the issues and risks will be sorted out for the project implementation and its promotion envisaging the expansion of smart city project to Iskandar Malaysia in parallel.

③ Smart technology and products expected to be introduced in the project

The technologies to be considered in the “Smart Healthcare Hub Projects” pre-feasibility study for the site are summarized hereafter. However, these are current assumptions and may change through the study progress and with the study result. The study shall include the followings:

a. Possibility of healthcare and beauty-care (including pharmaceutical) business

A group of products including general medical equipment to be introduced for selected medical services

- ✓ DX, AI and IoT connected with regional medical network, and ultra-high-speed communication technology like 5G
- ✓ Tools to apply overseas medical services and information (distribution logistics as well)

b. Smart building

- ✓ Newest architectural structure technology to ensure security and safety (includes seismic isolation system and vibration-free floor system)
- ✓ Air-conditioning load reduction technology, such as double skin wall, and green eco-roof / wall
- ✓ General building maintenance and control system of facilities (not limited to BIM but includes management of medical services provision)
- ✓ Smart power generation, smart oxygen inhalation, and smart medical chart data system

c. Renewable energy

- ✓ PV on roof/wall, temperature-difference air-conditioning, and mass heat storage

d. Re-use of water resources

- ✓ Underground facilities for rainwater storage and water purification for reuse

- e. Auto-driving personal mobility
 - ✓ Smart wheel chair connected with ID of patient and user, and mini EV bus operation in the complex (includes operation information service, smart fare collection system, etc.)
 - ✓ Transportation guide system for supplies and goods inside the building (such as unmanned logistic equipment)
 - ✓ Smart transportation and related services system provision to the local airport
- f. ICT systems for disaster prevention and security
 - ✓ Security system equipped with CCTV and AI
 - ✓ ID system commonly usable for both medical and accommodation facilities and inside the complex

(4) Justification of the Project Implementation

4.1 Current Status of Smart City Projects in the Target City

a Smart City Iskandar Malaysia

Johor Bahru City (Iskandar Malaysia is the region (hereinafter referred to as “IM”)) is one of Malaysia’s economic growth corridor covering a total area of 2,217 sq km (12% of Johor State), and contribute to more than 70% of the State’s economic development to date.

In year 2012, IM has been selected as a pilot region for the smart city model for Malaysia. Accordingly, to achieve a smart city in the region, an overall framework so called “Smart City Iskandar Malaysia (SCIM)” was formulated and Iskandar Malaysia Regional Authority (IRDA) plays a role as an implementing agency for this framework.



Figure: SCIM Framework

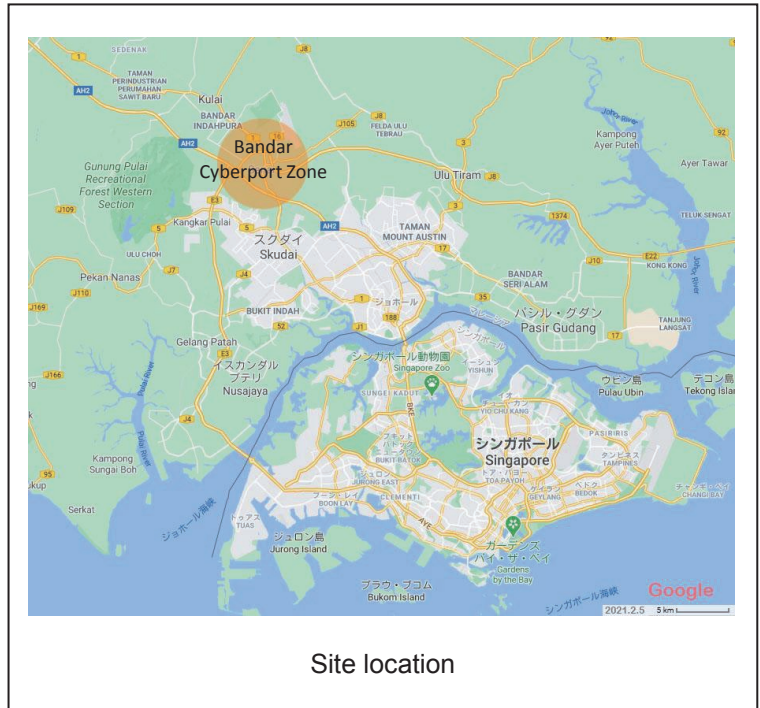
The SCIM includes 3 areas, 6 dimensions, 28 characteristics and 35 programs shown in the right.

Iskandar Malaysia, an economic region located within Malaysia's state of Johor, has been rapidly growing since its inception in 2006 and is primed to become the preferred international metropolis to invest, work, live and play.

Strategically located at the southernmost tip of mainland Asia and more than 3 times the size of neighboring Singapore, it sits on the world's busiest shipping routes and is within a 6-hour reach of major Asian cities through the Senai International Airport.

Iskandar Malaysia consists of five strategic zones (called as "Flagship"). Bandar Cyber Port, the target area of the proposed

project, is located in Flagship E, where the urban development with an agglomeration of high-tech industry is designated taking an advantage of proximity to the Senai International Airport. Iskandar Region Development Authority (IRDA) has identified a 35-acre area land for possible development and expects investments and development by Japanese companies with advanced smart technologies.



Site location

b. Smart City progress to date

From 2012 to 2020 the six dimensions has been translated into many individual projects and programs undertaken by various government agencies, local municipalities, private stakeholder and the communities.

There are five different municipalities in IM and each have taken different SCIM projects related to their priorities and readiness. Other stakeholders such as private developers subscribed to the SCIM guideline to implement specific projects relating to their development as means to be noticed as recognized. IRDA acts as the coordinator to streamline these projects and facilitate the knowledge sharing among the stakeholders to encourage synergy, inter agency collaboration and innovation.



Figure: SCIM projects in IM to date

Successful SCIM project developments, coupled with the positive branding, recognition and support from international groupings such as ASEAN Smart City Network (ASCN) encouraged the State and Federal government to fully embrace the Smart City dimensions.

c. Economic and Development Opportunities

The proposal on replanning of Bandar Cyber Port to become smart development that focus on healthcare and wellness are very much aligned with SCIM – Smart Living, towards providing a better health ecosystem that leveraging on technology for local and ASEAN region needs. This proposal also aligned with the promoted Healthcare economic sector that IRDA is promoting and with the following benefit:

- Introduction of functions in collaboration with global high-tech research, taking advantage of proximity to Malaysia Institute of Technology
- Development of international economic and industrial city, taking advantage of location of the international airport
- Cooperation with sports academy, with ample access to sport sciences and physiotherapists from local

and regional centres

- Development of a world class tourism and healthy life business center to promote wellness and better lifestyle needs and market development for the region, considering the world-wide pandemic of COVID-19³
- Formation of an international halal business hub targeting Islamic/Muslim economic market promoted by the Government of Malaysia and increasing global demand for the product offering
- Introduction of sustainable and sophisticated smart city technology for low carbon society, mobility enhancement and improvement of quality of life (QOL)
- Formulation of business development plan attractive to investors from Japan and the world

4.2 The Proposal

a Transform Bandar Cyber Port into a Smart Healthcare Hub

Recognizing the untapped potential to develop a niche medical and healthcare offering to complete the regional services eg cosmetic surgeries in Penang and Bangkok and the busiest regional travel hub in Singapore, the need and potential of developing a regional medical and healthcare hub is very vast. This hub can take local and regional culture and ethnicity into account, while considering the development of smart medical and healthcare services in IM region. Introducing the State-of-the-Art technologies potentially from Japan such as robotics assisted palliative care, smart sensors and such in order to achieve the international quality and level of medical and healthcare services through the smart development in the region. Consequently, IRDA has been expecting a development of best environment for mutual cooperation in the world to exchange medical services and information beyond the country boarder through the regional and international networking utilizing high standard ICT technologies connected with advanced medical centers in the world.

IRDA's development plan relating to the smart city development rollout can consider the proposed area in Bandar Cyber Port as a pilot development project of an “advanced medical and healthcare service and its networking are highly necessary corresponding to expanding industries and economic growth of the region and to needs of increasing foreigners.”

b. Strategies in Medical and Healthcare Sector Development

Strategies suggested by IRDA to further develop medical and healthcare sector are summarized as follows:

- Formulation of smart medical and healthcare development nodes or nexus masterplan in the IM region
- Realization and convergence of smart medical and healthcare network in IM region
- Comprehensive development of smart medical and healthcare center together with research, education

³ Considering development of Iskandar region as an international trading and business district adjacent to Singapore and increased visit of the people from developed countries, provision of sophisticated medical services will be inevitable. According to CDP, development of medical zone was planned in Nusajaya. However, the development has been suspended due to the withdrawal of Chinese fund.

and training institutes and facilities

- Setting up smart environment for the IM region to provide total healthcare services⁵ with correct information quickly as part of a more holistic health or palliative services
- Introduction of State-of-the-Art medical technologies, like those in Japan, and networking with worldwide medical and healthcare centers and institutions
- Establishment of regional supply chain of medical devices and pharmaceuticals.
- Introduction of technologies, such as DX (digital transformation), Medical Robotics, environmental friendly building, etc. that should become supporting foundation for smart medical and healthcare services
- Realization of the first model of Smart Medical and Healthcare Hub in Iskandar Malaysia.

Attract and increase medical tourism by providing variety of healthcare and wellness services



Iskandar Region Comprehensive Development Plan (CDP), Source: IRDA

In line with IRDA's Comprehensive Development Plan (CDP), IM Promoted Sectors (Healthcare) and SCIM (Smart Living), IRDA has been considering a new formulation of smart medical and healthcare development master plan. On the other hand, IRDA seeks better development steps in order to achieve more effective and faster smart healthcare service development in the region. This is the main reason that IRDA considers a **pilot project of smart healthcare service and its network development** to be first implemented in this region as a **"model project"** in order for effect and impact analysis of the market and demand in the region. Furthermore, by acknowledging the model projects positive effect, the smart development should be horizontally expanded in the CDP's urban development centers so-called "Flagship Zones" in Iskandar region with network enhancement. IRDA has then identified Bandar Cyber Port for effective pilot project

⁵ There are various types of treatment services considered for service provision, not only western medicine but also psychiatry, oriental medicine, food health care, including halal and vegan, qi gong, yoga, aesthetic treatments such as Ayurveda, various therapies, sports medicine, psychiatry, etc.

implementation in order to evaluate the smart development impact and effect result and believes the master plan formulation following the pilot project of smart healthcare development should be the most effective project procedure even from the viewpoint of smart technology introduction to the region.

From the mid-term development stage point of view, IRDA further expects an expansion of pilot project to a more function integrated smart healthcare service center by developing comprehensive medical center, medical research center, medical schools, specialized technology center, medical and healthcare training center, medical data center and medical tourism facilities, as noted within concerned development. The development shall also consider to include regional medical centers, information and service network based on the regional medical service hierarchy, and medical supply chain and logistic services, and these shall be all incorporated in the smart medical and healthcare development master plan.

With integration of the current state-of-the-art technologies, such as AI and IOT, IRDA has identified 35 acre land in Bandar Cyber Port Zone as pilot project for a smart healthcare center. Bandar Cyber Port Zone has been designated as Flagship Zone-E under the CDP targeting high-tech industry and multi-service development. IRDA would like to propose the implementation to be taken in 6 stages and as follows:

- Stage-1: Pilot Project Implementation of Smart Medical and Healthcare Center development in Bandar Cyber Port (this includes initial stage of medical tourism function)
- Stage-2: Formulation of Iskandar Region Comprehensive Smart Medical and Healthcare Development Master Plan, after the review and evaluation of Step-1 pilot project development effect and impact
- Stage-3: Upgrade and enhancement of Smart Medical and Healthcare Center in Bandar Cyber Port in order to establish Integrated Medical Service Center (this includes medical data center)
- Stage-4: Plan and implement a development of supply chain (including logistics and specified productions) for medical products, goods, medicine, etc. in the industrial development zones in the south of Iskandar and Senai International Airport area for improved healthcare services.
- Stage-5: Horizontal expansion and development of smart medical and healthcare service facilities and centers in the designated Flagship Zones, and establishment of regional medical network
- Stage-6: Integrate and link Iskandar Regional Smart Medical Network to the world medical and healthcare network system

The smart medical and healthcare center development in Bandar Cyber Port in the 1st stage is the initial pilot project to implement, which includes the introduction of State-of-the-Art technologies and high speed information networking system to connect with some existing hospitals and clinics in Johor Bahru urban area.

The formulation of development master plan in Stage-2 consist of expansion of the pilot project smart medical and healthcare center. Stage-3 will include preliminary study of supply chain and logistics planning in which consequently, IRDA considers that several options for the master plan to be prepared.

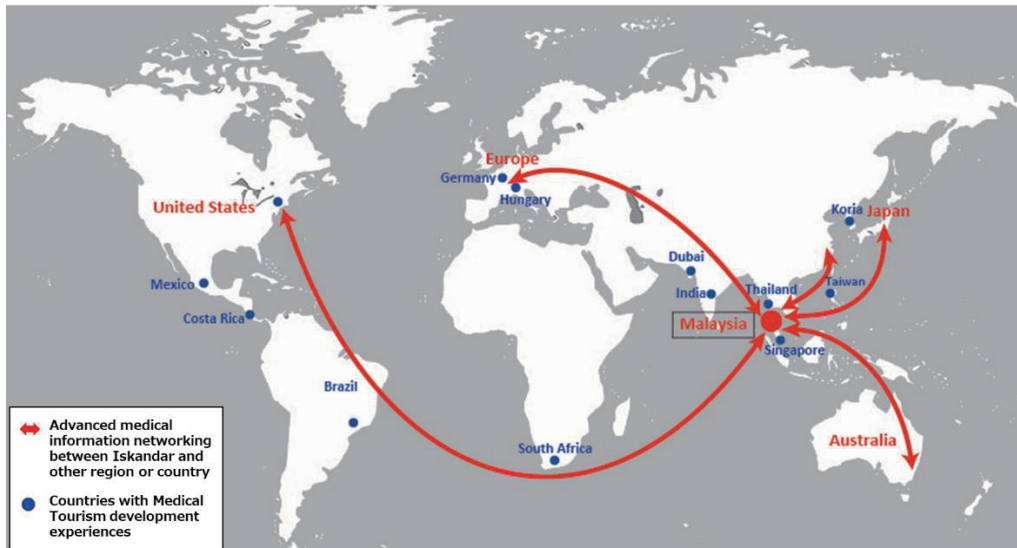
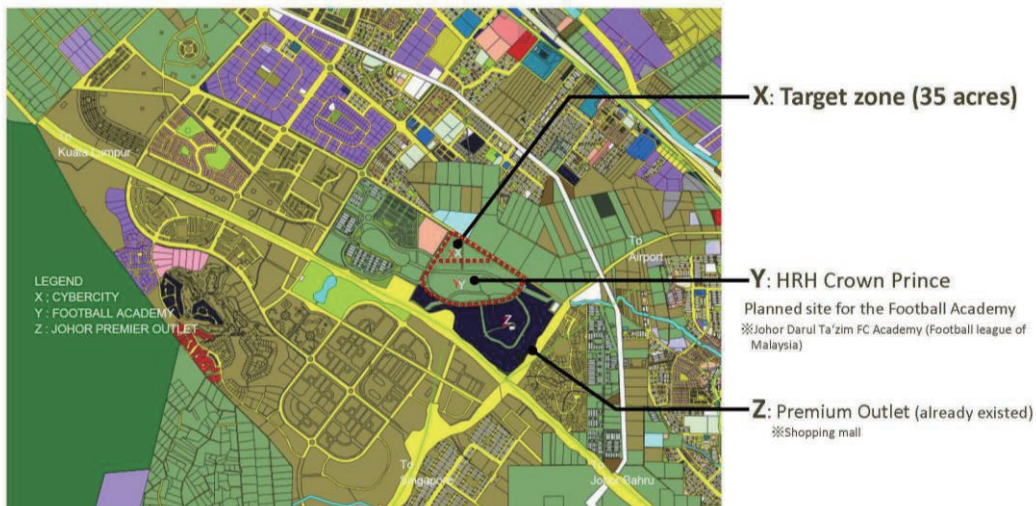


Image of Medical Research and Educational Networking in the World

Networking and integration to the worldwide medical research and clinical services should be able to further improve the quality of remote or distance medical services through its spread and generalization in the world, such as remote or distance high level surgery operation, due to current innovation and invention speed of ICT technologies including 5G that will soon be upgraded and installed worldwide.

c. Site background and initial proposal

In 2018, a Japanese team has proposed an economic masterplan for the Bandar Cyber Port, focusing on healthcare and wellness tourism at the area marked as X in below image.



Proposed plan prepared by Japanese Development Team (2018)



Development and Land Use Concept prepared by Japanese Development Proposal Team (2018)

The plan only shows the lands use zoning as in the figure above which include activities such as Wellness Zone, Healthcare Zone, and Residential Zone. , with key sector of “healthcare and wellness” as main function. In Iskandar Malaysia region, wellness with perspective of Muslim and halal are well intended and various services⁶can be considered from the viewpoint of promotion and improvement of good health rather than simply improving medical institutions and services based on Western medicine.

With provision of various types of treatment services, target customers will be expanded to not only residents of the region but international community. Furthermore, the provision of smart medical services, including the networking of regional medical information, has not yet been implemented in Iskandar region, and this proposal can serve as a model case for smart medical networks. In the future, various medical services, can come in various hi technology and interconnected services, long distance medical staff and fields of advanced medical care. Therefore, the introduction of smart services that lead to the provision of appropriate medical services with integration of data and information is highly expected.

4.3 Long term goal of the project

Realizing health care as 1 of the promoted sector, international level high quality medical services is one of the important actions to make Iskandar Malaysia an Sustainable Metropolis of International Standing. This Smart Healthcare Hub is envisioned to become the regional health and wellness model that provide a comprehensive network of smart medical services for the region and the world. and make Johor Bahru City the Regional Hub for Medical Tourism in ASEAN.

5.0 Other relevant projects (if any)

reference made to Comprehensive Development Plan of Iskandar Malaysia. (planned and implemented by IRDA) and Iskandar Malaysia Smart City Framework

⁶ There are various types of treatment services, not only western medicine but also oriental medicine, psychiatry, food health care, including halal and vegan, qi gong, yoga, aesthetic treatments such as Ayurveda, various therapies, sports medicine, psychiatry, etc.