

Urban Solutions to City Living in Singapore and the Asian Belt Region

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要約

シンガポールの政府機関であるEDB (Economic Development Board: 経済開発庁) は、公共機関と先進技術を有する民間企業との間で継続的なパートナーシップを結び、都市ソリューションの開発を行っている。これらの分野には、(1) 都市交通、(2) 環境技術、(3) クリーンエネルギー、(4) 水・環境、(5) セキュリティ、(6) 情報通信技術がある。

(1) 都市交通分野では、EV (Electric Vehicle: 電気自動車) のタスクフォースは2010年末までに充電ステーションの実証プラントを結びつけたネットワークを構築し、将来の需要を満たすように計画を展開している。シンガポールは、電気自動車業界の専門知識を有した企業によるEVのテストや充電ステーション構築を歓迎している。(2) 環境技術分野では、「持続可能な開発に関する青写真2009」(Sustainable Singapore Blueprint 2009) の下、シンガポールは2030年までに建物の80%がグリーンマークの認定を達成することをめざしている。(3) クリーンエネルギー分野では、燃料電池や風力エネルギーなどを使用した革新的なクリーンエネルギーソリューションの開発に注力しており、スマートグリッドなどのエネルギー管理技術を促進している。(4) 水・環境分野では、シンガポールは世界の水処理技術の集積地をめざしている。(5) セキュリティ分野では、セキュリティが強化されたeIACS (Enhanced Immigration Automated Clearance Systems: 入国管理自動手続きシステム) の実装により通関が容易になった。シンガポールは、人々を守るセキュリティソリューションの開発・実用化を推進している。最後に、(6) 情報通信技術分野では、シンガポールは2015年までに「インテリジェントアイランド」になることをめざしている。企業の技術開発を支援するこ

とで、通信設備をアップグレードし、ネットワークセキュリティ、健康、教育などの分野で新しいソリューションを開発している。

このような中、日立アジア社 (Hitachi Asia Ltd.) シンガポールは、2010年4月に設立した社会イノベーション事業の統括組織 (CoE: Centre of Excellence) を、アジアベルト地帯における社会イノベーション事業推進の中核拠点の一つと位置づけ、スマートグリッドや水処理、セキュリティ、都市交通システムなどに関する先進技術やソリューションの事業開拓を図っている。

例えば、スマートな次世代都市の分野では、日本で実績のあるエネルギーインフラをアジアベルト地帯の国・地域で実装することを計画し、最終的にはスマートな次世代都市へ進展させていく。現在CoEは、日立製作所本社および日立中国社 [Hitachi (China) Ltd.] とも連携し、中国の天津エコシティ、広州ナレッジシティの都市開発に参画している。また、都市交通分野では、セントーサ島のモノレールが、今後のCoEの活動のグリーン交通分野におけるマイルストーンになると考えている。さらに、インテリジェント水処理システム分野では、水管理システム、水の品質管理と水資源を効率的に利用するソリューションを提供していく。

CoEは、さまざまなテストベッドの機会を利用し、日立グループの専門知識を基に先進的なソリューションを都市に適用開発していく。また、日立アジア社のCoEチームは今後の課題に取り組み、情報通信技術、社会インフラ、エコエネルギーなどを統括したプロジェクトをシンガポールとアジアベルト地帯に推進していく。

OVERVIEW: As more than half of the world's population migrates to cities, increased demand for resources is presenting itself as a challenge to urban developers, and also as a lucrative market to the social infrastructure business. In Singapore, government bodies and domestic companies are partnering with established private-sector companies in conducting extensive research and development activities which focus on providing viable solutions to improve the quality of city living. Hitachi Asia Ltd.(HAS) has set up the Centre of Excellence(CoE) which aims to develop and expand the Social Innovation Business in the Asian Belt Region through collaboration with Governmental Agencies, Government-linked Corporations and private companies.

INTRODUCTION

The Singapore EDB (Economic Development Board) has announced its vision of creating "Urban Solutions" through continuing partnerships between public agencies and the private sector. Singapore's efforts in sustainable development have been noted by UN-HABITAT's official, Mr. Banji Oyeyinka during the launch of UN-HABITAT's flagship publication "State of the World's Cities 2008/2009" report¹⁾. The report also cited Singapore as an example of good governance and balanced development²⁾. Having successfully developed expertise in urban greenery, renewable energy and water management, Singapore now seeks to leverage its "excellent public infrastructure" to attract industry players to kick-start their businesses in Urban Solutions through R&D (research and development) in Singapore itself³⁾. Singapore will be presented as a "Living Laboratory" where actual testbedding activities are to be carried out. The process would also include accessing and determining the suitability and eventual commercial viability of the developed solutions.

EDB'S URBAN SOLUTIONS

The 6 target areas which EDB has identified are Urban Mobility, Built Environment and City Management, Clean Energy, Environment and Water, Public Safety, and Information Technology⁴⁾.

Urban Mobility

A sum of S\$20 million is being invested to study the effectiveness of electric-powered vehicles in a tropical climate, starting from this year. Led by 3 public-sector groups, the

EV(electric vehicle) Taskforce is looking at setting up a network of charging stations by the end of 2010, and has plans to expand further to meet demand in the future. Electric cars will also be provided by Renault-Nissan Alliance and Mitsubishi Motors Corporation as test fleets from 2010 to 2011³⁾. Singapore welcomes companies with expertise in the electric vehicles industry to test their EVs as well as set up charging infrastructure in its compact city and environment-friendly setting.

Singapore's LTA (Land Transport Authority) also aims to build a transport system through the implementation of ITS (intelligent transport systems). Companies such as International Business Machines Corporation, 3M Company and Cisco Systems, Inc are partnering Singapore to explore possible solutions, such as integrating user experience and transport optimization³⁾.

Built Environment and City Management

Developing sustainable buildings has been a priority for Singapore under the Sustainable Singapore Blueprint 2009. While Singapore aims to have 80% of its buildings achieve Green Mark certification by 2030, business opportunities will also be available for companies who design and develop environment-friendly buildings. Furthermore, other technologies which could be tested also include features which would be used to ensure indoor environmental quality and energy management.

As developers and property owners start to acknowledge the commercial, economic and environmental value associated with green buildings, Green Mark certified buildings in recent years have also risen number. One of the more notable Green Mark Platinum building is the award winning Tampines Grande⁵⁾, where Hitachi Square is located.

Clean Energy

High demand for energy coupled with the rapid depletion of fossil fuels has forced the world to search for more eco-friendly solutions. Therefore, Singapore has identified the Cleantech industry as a potential business market which is set to grow and flourish.

Strategically located in the tropical sunbelt, where it receives 50% more radiation from the sun as compared to other major hubs for solar technology today, Singapore is confident of expanding and reaching out to consumers in the Asian sunbelt region in the near future.

Besides solar energy, Singapore is also keen on developing innovative clean energy solutions using fuel cells, biomass and

wind energy. Last but not least, smart grid is also included as an area of focus in a bid to promote efficient energy management.

Environment and Water

What started off as a humble way of addressing its own water scarcity issues has since elevated Singapore’s position to that of a Global Hydrohub with a thriving water industry eco-system.

Not only is Singapore home to more than 70 water companies today, homegrown companies like Hyflux Ltd. are also enjoying global success. Hyflux is building the world’s largest seawater desalination plant in Algeria. Another domestic company, Sembcorp Industries, has also exported its solutions to other countries and is set to build and own a US\$15 billion power plant in Oman.

It is evident through the success of Singapore’s homegrown water companies that the vision to develop and export urban solutions is an achievable one indeed.

Public Safety

Public safety becomes a concern as the threat of terrorism continues to loom in the wake of the 9/11 attacks. Singapore has chosen to use sophisticated technology which provides secure and speedy solutions for the people. One such example already implemented is the eIACS (Enhanced Immigration Automated Clearance Systems) which makes it a breeze for Singaporeans to

clear immigration when they travel.

Singapore continues to invite industry players to locate their R&D activities here, so as to work hand in hand in developing and commercializing solutions which protects not only key assets, but most importantly its people.

Info-communications Technology

Singapore is upgrading its communications infrastructure in time to become an “intelligent island” by 2015. Companies can also tap on plans to set up a “Next Generation Broadband Network” which would churn out new solutions in the areas of e-Health, e-Education, network security and the like.

With mobile penetration rates of more than 130%, Singapore is an ideal location to experiment with mobile applications and location based services as well. IT has also been deployed in many government services in Singapore over the last 20 years, making Singapore a leader in the use of IT in e-Government services.

Currently, a data centre testbed is being developed for industrial testing and development of new innovative solutions which are energy saving and cost efficient.

HAS’S CENTRE OF EXCELLENCE

The CoE (Centre of Excellence), established on 1 April 2010, aims to develop and expand the Social Innovation Business in

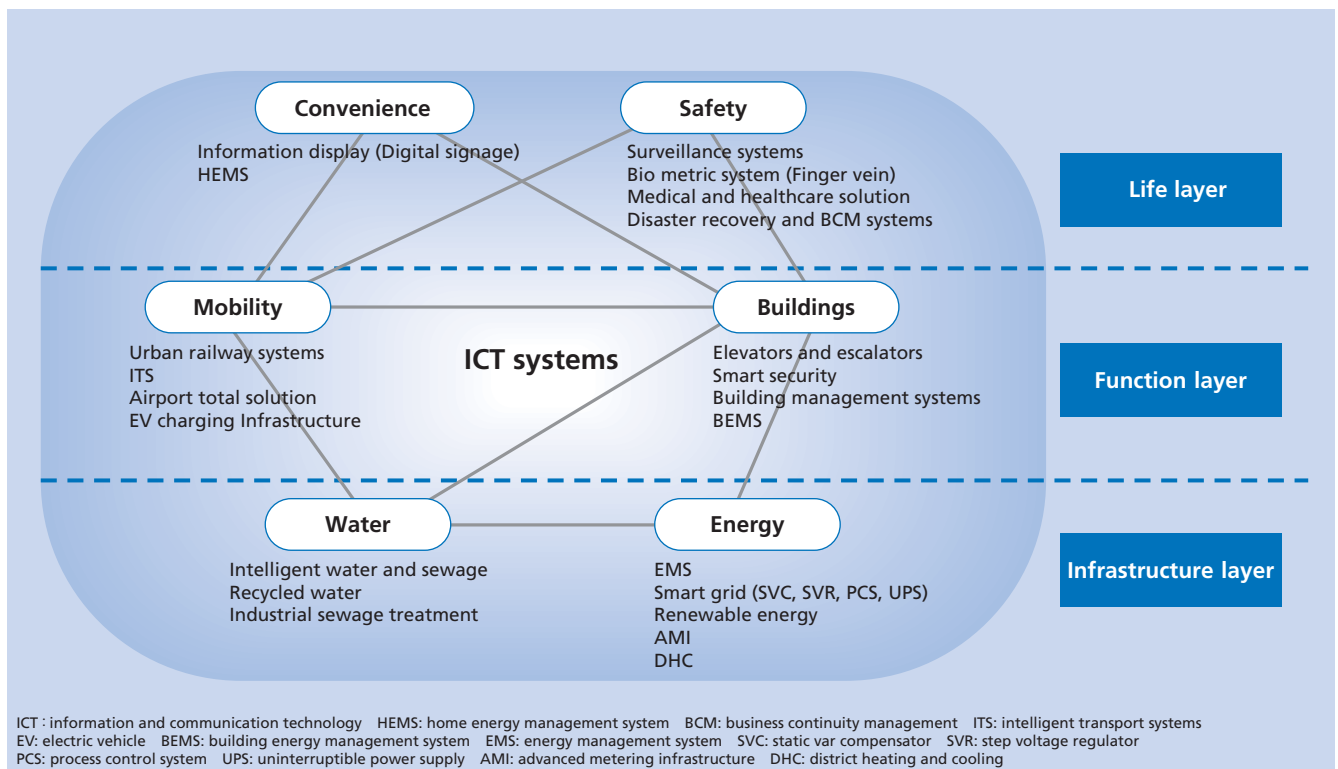


Fig. 1 | CoE Business Activities
The wide spectrum of products and systems that intertwined the Urban Solutions created synergistic opportunities among them.



Fig. 2 | Finger Vein Biometric Technology for Security Management
 Finger vein biometric technology is a highly sophisticated personal identification system that balances security and convenience for assured authentication.

the Asian Belt Zone through cooperation with government agencies, government-linked corporations and private companies (see Fig. 1, Fig. 2).

The Asian Belt Zone consists of 24 countries and areas, such as but not limited to China, ASEAN (Association of Southeast Asian Nations) countries, India, Middle Eastern countries and other countries located within the territory⁶⁾. By harnessing Hitachi's advanced Information Technology systems with Power and Industrial strategic businesses, the CoE strives to offer cutting-edge solutions in Urban Development, Transportation Systems, Water Treatment, Energy and Environment for a safe, comfortable, intelligent and sustainable society.

CoE looks forward to leading Hitachi's collaborations with both governmental and local organizations in Singapore alike, to realize the shared vision of developing new technologies which would serve as urban solutions for cities worldwide in the near future. In line with Hitachi's 100th anniversary policy, moving into the next 100 years with reliable technology, Hitachi is committed to contributing to the development of

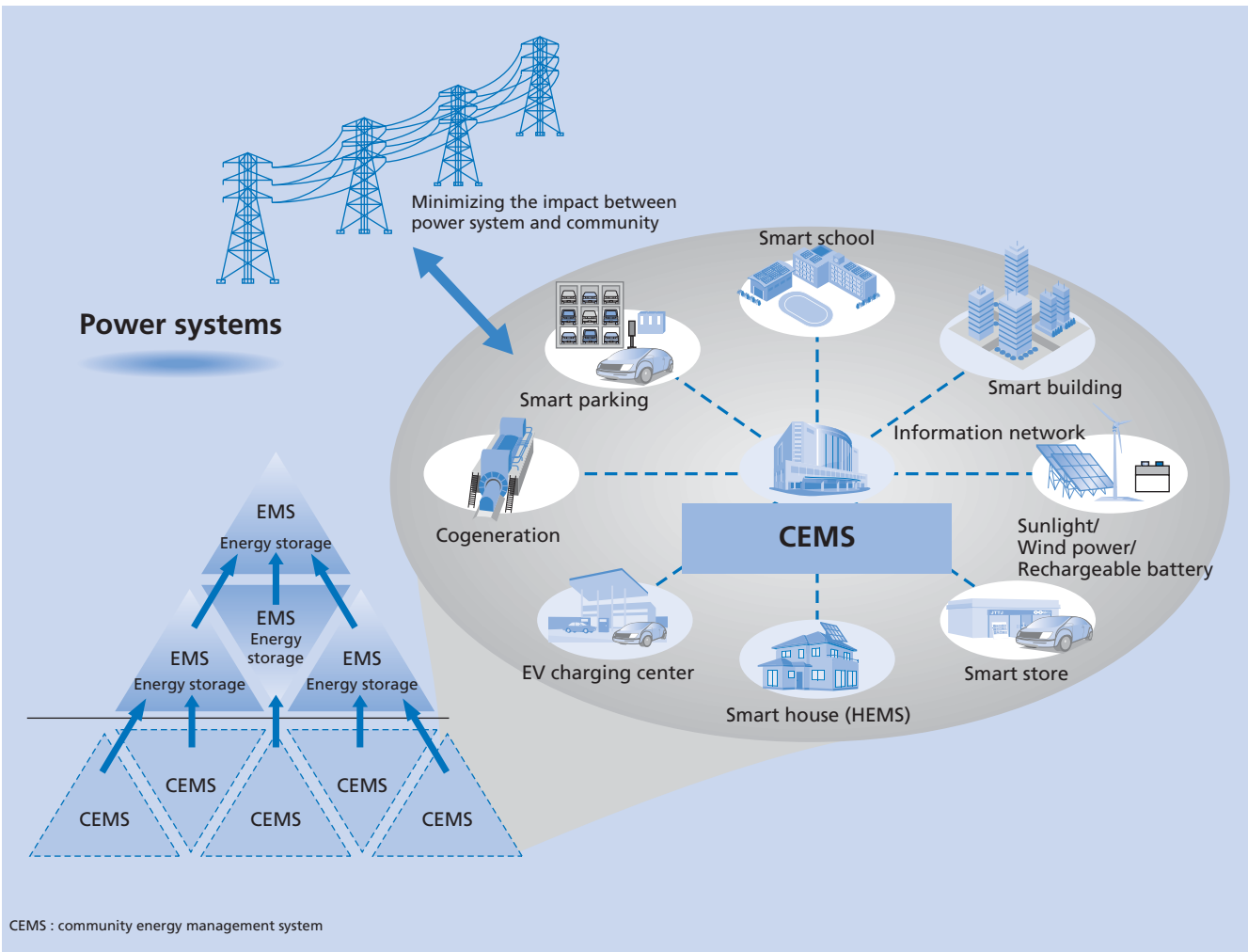


Fig. 3 | Hitachi's Vision of Smart Community
 Smart community adopts a similar model as a power system, and Hitachi is striving towards an economic and optimized solution via experimental projects.

societies around the world through the strengthening of its Social Innovation Business.

Smart Community

The CoE is looking at implementing Japan’s proven energy infrastructure in the Asian Belt countries. Furthermore, there are plans to eventually progress towards a community level of energy management dubbed as the “Smart Community” (see Fig. 3). CoE is also involved in projects which focus on developing city solutions in China’s Tianjin Eco-City and Guangzhou Knowledge City.

Mobility

The introduction of Sentosa Express Monorail highlights the very fact that it has always been at the heart of HAS (Hitachi Asia Ltd.) to contribute to efficient urban mobility in Singapore, even before buzz words such as “green mobility” became commonly used (see Fig. 4). This has set the milestone for CoE’s future endeavours in this area.

Since commencing operations in January 2007, the HAS-built Sentosa Express Monorail has become the key mode of access into the popular Sentosa Island. Armed with years of experience in advanced monorail technology, Hitachi has developed a transportation system which not only boasts of being energy efficient but also prides itself as an environmentally-friendly and convenient mode of transport⁷⁾.



Fig. 4 | Hitachi-built Sentosa Monorail
Hitachi monorail system is a cost effective urban transit that not only relieves traffic congestion but also aesthetically less intrusive and environmentally-friendly.

Intelligent Water System

By integrating advanced information and control systems with our water treatment system, CoE aims to maximize the usage of limited water resources by creating an Intelligent Water System for cities all over the world (see Fig. 5).

CoE’s water solutions include implementing water management systems, water quality control and the efficient utilization of water resources. The Environment-Friendly Water Management System is designed to reduce environmental load and running cost while the Micro-bubble Generator provides a compact and cost-effective water treatment solution.

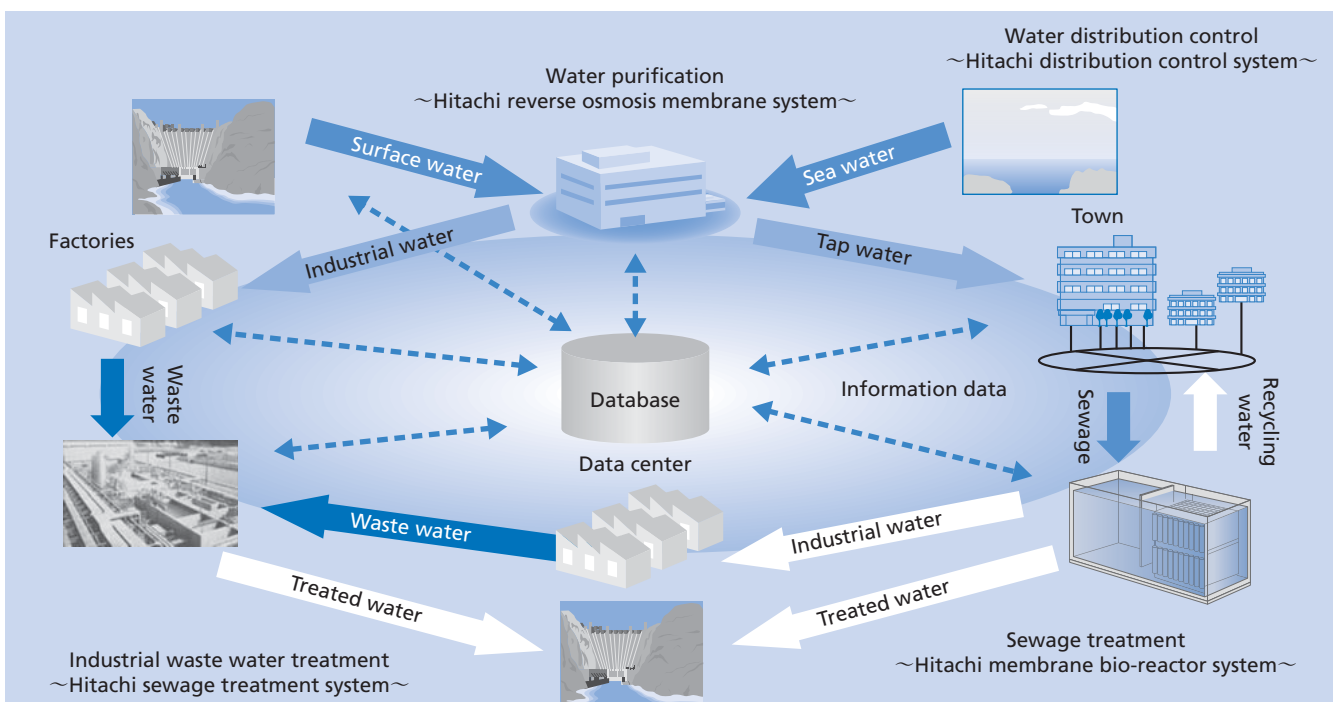


Fig. 5 | Hitachi’s Intelligent Water System
An advanced water management system that integrates and synergizes both information and control systems to achieve a total water environmental care.

CONCLUSIONS

This article has given an overview of EDB's approach and strategy on tackling the challenges of rapid urbanization. It has also described Hitachi's plans to expand its Social Innovation Business through CoE's partnership with both governmental agencies and private companies in Singapore.

CoE's next steps include looking into the various testbedding opportunities available and also to commit Hitachi's expertise to developing advanced solutions applicable to cities worldwide. HAS's CoE team will be tackling the challenges of the future and promoting key projects which synergize Info-Communication Technology, Social Infrastructure and Eco Energy in Singapore and the Asian Belt Region.

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