2011

THE GLOBAL SMART CITY SUMMIT in TAIWAN

全球智慧城市高峰論壇

CONFERENCE RECORD

大會實錄

主辦單位 /

臺南市政府、國立交通大學

指導單位 /

行政院國家科學委員會、行政院經濟建設委員會

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Organizer /

Tainan City Government, Eco-City of the National Chiao Tung University

Guiding Unit /

National Science Council, Council for Economic Planning and Development

Co-Organizer /

Yunlin County Government, Chiayi County Government, Chiayi City Government, Kinmen County Government, Taitung County Government, Hsinchu City Government, Penghu County Government, Pingtung County Government, Miaoli County Government, Yilan County Government, Kaohsiung City Government, Chinese Institute of Urban Design

Executor /

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THE GLOBAL SMART CITY SUMMIT in TAIWAN

全球智慧城市高峰論壇

Date /

2011.12.15~12.16

Location /

Tayih Landis Hotel, Tainan

臺南大億麗緻酒店

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會議緣起 / ORIGIN

會議緣起

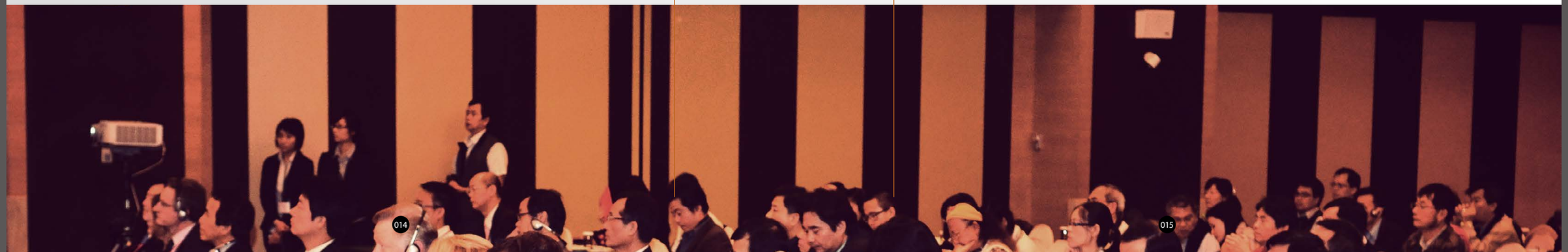
創造智慧城市儼然成為現在各大先進國家區域發展的重要指標，如何善用科技且有效地規劃與培育更符合永續發展精神的城市，則是今日所有城市領導人的共同課題。智慧城市追求的不只是節能減碳，還包括將都市治理與設計、智慧生活科技與生態社區加以結合，建構成一個創新整合的機制，使區域發展全面化，提升市民的生活品質。當基礎能量累積足夠，每項建設與規劃發揮其最大功效，城市生活將成為一個智慧運作的系統。

為了促進各城市的智慧發展，向國際智慧城市典範借鏡與交流，同時了解企業經濟發展可以共同創造的雙贏效果，臺南市政府聯合交通大學 Eco-City 健康樂活城於 2011 年 12 月 15 日至 16 日共同舉辦「全球智慧城市高峰論壇」，希望藉此創造出一個讓城市首長與企業領導者交流與學習的平台。

ORIGIN

The ability to build a global smart city is an important indicator of regional development for major advanced countries. Some common issues challenged by leaders of major cities all over the globe are how to make the best use of technology and to effectively plan for a sustainable city. Global smart cities not only pursue energy saving and carbon emission reduction, but also combine the urban governance with design. Furthermore, smart living technology and eco-community are to promote overall regional development and improve the public living quality. When the basic energy is cumulated and each development and planning are optimized, urban living is then built as the system for smart operation.

In order to promote smart development of each city, learn from model international smart cities, and at the same time, to understand the win-win results jointly created by the enterprises and economic development, Tainan City Government worked with Eco-City of National Chiao Tung University coorganized “Global Smart City Summit” on December 15 and 16, 2011 with the aim to build an exchange and learning platform for city and business leaders.



歡迎詞

各位貴賓、女士、先生，大家好！

首先，本人謹代表臺南市政府以及本次全球智慧城市高峰論壇，歡迎各位城市首長、學者、專家及各界人士，參與民國 100 年 12 月 15 日至 16 日在臺南舉行的「2011 全球智慧城市高峰論壇」。

打造智慧城市儼然成為現在各國對於區域發展的關鍵指標。如何善用科技且有效地規劃與創造更符合永續發展精神的城市，已經是今日所有城市領導人的共同課題。配合臺灣光電、高科技產業優勢，以及近年來政府所推動各項之國家型智慧科技計畫，台灣期望藉由智慧生活科技的運用來提升民眾生活品質，同時提升產業競爭力，創造新經濟發展的機會，而台南市政府也在這波潮流發展中，結合產、官、學的力量，宣示將致力成為一個低碳、便捷、永續的智慧城市。

在此，我要再度向即將參與此次研討會的各專題演講者、主持人、與談人及各界人士，表示最竭誠的歡迎，希望透過您們的力量，讓台南成為國際智慧城市的一員。同時特別要感謝本次的共同主辦單位——國立交通大學 Eco-City 中心所提供的各種協助，成就了本次的盛會。最後，希望藉由此次全球智慧城市高峰論壇的會議，能有機會與全球頂尖智慧城市、優勢智慧產業界，以及先驅智慧科技學界共同創造城市治理的構想、分享城市治理的經驗，共同實現永續發展的城市，為台南，更為人類，創造宜居、幸福的人本環境！

謹祝大家身體健康！論壇圓滿成功！

Welcome Remarks

Ladies and Gentlemen, Honored guests, welcome.

On behalf of Tainan City Government and the Summit Committee I sincerely welcome all the city leaders, scholars, specialists and people from all aspects to join the Global Smart City Summit held on December 15~16, 2011, in Tainan, Taiwan.

Building smart city has become an important index of regional development in developed countries. Today, how to utilize technology to plan/develop a sustainable city is a common challenge for all city leaders. By applying Taiwan's advantage in photonics and high-tech Industry; cooperating with the recently government-promoted smart tech plan, Taiwan sincerely hope the use of smart living technology can promote the quality of citizen's daily life, as well as the industrial competitiveness and economy development. And it is in this trend that we, Tainan City Government, would like to connect with powers from different aspects to build Tainan as a low-carbon, convenient and sustainable smart city.

In the end, I would like to express my gratitude to all topic speakers, hosts, and people from all aspects for joining this summit. Hope your participation could promote Tainan's statue as an international smart city. Furthermore, my gratitude also goes to Eco-City of the National Chiao Tung University for all your efforts to co-host this summit. We heartedly hope that through the Global Smart City Summit, by sharing city government experiences with related industries, the academic and smart cities from all corners of the world, we could work together to create a happier, a more livable environment for human future. A sustainable city! I wish health to all participants and success to the summit!

臺南市政府

賴清德市長

Ching-Te Lai

Mayor, Tainan City Government

歡迎詞

由台南市政府聯合交通大學 Eco-City 健康樂活城於 2011/12/15-18 共同舉辦全球智慧型城市經驗交流國際論壇。本次的活動特別邀請到美國迪比克 (Dubuque)、荷蘭恩荷芬 (Eindhoven)、比利時科爾特賴克 (Kortrijk)、瑞典赫爾辛堡 (Helsingborg)、印度拉瓦薩 (Lavasa) 等 5 位致力推行智慧城市的首長 / 代表講者來台共襄盛舉，共同探討如何把生態綠能、都市規劃與設計、智慧生活科技等都市治理模式加以相互結合，以形成創新整合機制，鋪陳低碳經濟城市發展之新途徑，藉由各國智慧生活科技案例分享，讓台灣的產官學進行跨國際城市交流，和國際城市合作，提出永續的生活課題，進而呈現出新觀點，並嘗試給予台南等地區都市發展的方向有些新的思維。

交通大學 Eco-City 健康樂活城是一個跨領域的平台，彙集了人文關懷、智慧科技、建築都計、創新服務與創意產業，過去幾年服務全台各縣市與大型企業，進行智慧科技系統整合與服務模式創新設計。過程中我們發現，創新不再只是過去單一的科技、系統或發明有關連，而是需要考量到以使用者及使用者的需求為中心，透過服務模式的設計聯結政府公共服務，並擴大企業體系參與城市的革新。因此，城市創新系統的成功例證，逐漸突顯的關鍵要素在於：政府政策支持與配套、資通訊科技系統整合與創新服務模式的建立，藉此打造城市環境永續性的平台與城市產業網絡的迅速創造力。

所謂城市的創新所操作的規劃，不再只是為吸引創意人才提供卓越的科技空間而已，除了需要透過整體服務模式的建立，讓市民能夠具體體驗、使用到科技服務，更必需掌握創新經濟投資過程中，建構城市營造的營運整合機制，以達到城市創新服務永續循環的理念。從而觀察各個城市地區在捲入經濟全球化歷程，其地方空間結構與環境體質的情勢下，政策因素與浮動的都市變遷樣態，我們如何掌握一個都市在面臨科技變遷的新時代？如何透過科技與服務因應都市的需求與變化？ 在此同時，我們又如何以新的觀念與方法來運用、和既有的環境條件共生，以對應一個都市在變遷中始終面臨新挑戰。我們將進一步理解成功案例背後的政策網絡、趨勢。不必然是絕對性的解決方案，而是提供一個新動態性的創新觀點，藉由彼此精彩的對談，激發我們共同來思考未來的智慧城市應是什麼模樣？ 在此，本人謹代表交通大學 Eco-City 歡迎所有的與會貴賓，並希望此場智慧城市首長高峰論壇，能夠帶給現場與會者對智慧生活有更多的無限想像！

Welcome Remarks

It is a great honor for us, Eco-City of the National Chiao Tung University, to cooperate with Tainan City Government to host The Global Smart City Summit in Taiwan on December 15-18, 2011.

In this Summit, we have invited 5 mayors/representatives from Dubuque of USA, Eindhoven of the Netherlands, Kortrijk of Belgium, Helsingborg of Sweden and Lavasa of India to share their smart city governance experience, especially in how to combine green power, urban planning/design and smart living technology to form a new integrated city system for the purpose of low-carbon city development. We hope that by sharing smart living tech experience in different countries and by cooperating with international cities, the summit could bring out a new perspective to inspire Tainan in its future city development.

Eco-City of the National Chiao Tung University is a cross-disciplinary platform for human care, smart technology, urban design, innovative and creative industry. In the past few years, we had served many cities and industries around the island, either by providing smart technology integration service or service innovation design. In the process we have discovered, innovation is no longer limited to upgrades on some specific technology or discovery. Instead, innovation needs to take user's need into consideration. Therefore, we try to strengthen the government's function of public service through redesigning service model, and promote industries' participation in urban development. Hence, these successful experiences tell us the key factors to urban innovation are government's support and complementary measures, telematic system integration, and the establishment of innovative service model. These factors help to construct a platform for sustainable urban environment and industrial network integration.

The planning for urban innovation is not just limited to provide excellent technological support for attracting talented people. Apart from the total service model for citizens to experience the advantage of technology, the planning must focus on operational integration that is critical to urban development, in the attempt to sustain the urban innovative service. How can we understand a city's fate in a time of dramatic technological change? How can we cope with a city's change by applying technology and service? Moreover how can we use new concepts and methods to deal with a city's new challenge without ruining the urban environment?

In this summit, we will take a further look at the policy networks and tendencies behind these successful cases. These discussions may not indicate an absolute solution, but we believe it can provide a creative and dynamic perspective. May these discussions inspire us to imagine what the smart city should be in the future. In the end, on behalf of Eco-City of the National Chiao Tung University, I sincerely give my warmest welcome to all the participants. Hope The Global Smart City Summit in Taiwan could bring out more innovative perspective on smart living to us.

國立交通大學智慧生活科技區域整合中心
計畫主持人兼教務長

Chin-Teng Lin
Dean of Academic Affairs & Director of
Integrated Smart Living Technology Regional Center,
National Chiao Tung University

講者、主持人、與談人介紹

/ Speaker, Moderator, Panelist PROFILES

臺灣臺南市副市長
The Deputy Mayor of Tainan City, Taiwan

林欽榮 *Charles Lin*

現任臺南市政府副市長，同時為國立交通大學人文社會系專任副教授，曾任臺北市政府都市發展局副總工程司，高雄市政府都市發展局局長等，專長領域為都市與區域研究、都市設計、公共政策分析、社區與城鄉發展、建築規劃與評論、地景與空間理論、文化資產保存、創意城市。

Charles Lin is currently the Deputy Mayor of Tainan City of Taiwan, and associate professor in the Department of Humanities and Social Science at National Chiao Tung University. In the past, he has taken the position as the Deputy Chief Engineer of Urban Development, Taipei City Government, and the Director General of Urban Development Bureau of Kaohsiung City Government, His research focuses on Urban and Regional Studies, Public policy analysis, Community development, Architectural planning and analysis, Landscape and space theories and Preservation of cultural heritage.

美國迪比克市長
The Mayor of Dubuque City, USA

Roy D. Buol

美國現任愛荷華州迪比克市市長，領導迪比克市成為 “Smarter Sustainable Dubuque,”，亦是全美第一個智慧城市。全球智慧城市創新領導人之一。

Roy D. Buol was first elected to a four-year term as Mayor of Dubuque, Iowa in November. 2005, and was re-elected in November 2009. He previously was elected as Second Ward. Representative to the City Council in 1995 and, was re-elected in 1999 and again in 2003.

Mayor Buol is a Dubuque-native and a 30-year retired employee of John Deere Dubuque Works. Since 2002, he has been Director of the Landscaping & Grounds Department at the University of Dubuque. Mayor Buol holds a Bachelor of Business Administration degree with a double-major in Business and Marketing from the University of Dubuque, where he also completed graduate coursework toward a Master of Arts in Communication. He is currently enrolled in the National League of Cities Certificate of Achievement in Leadership Program and represents Dubuque in the U.S. Conference of Mayors.

比利時柯爾特賴克市副市長
Deputy Mayor of Kortrijk, Belgium

Filip Santy

現任比利時法蘭德省柯爾特賴克市的副市長，掌管社會福利、住宅政策以及行政簡化等職責。此外，Filip Santy 也是 Leiedal 都市協會的主席、協助柯爾特賴克區域下 13 個自治市的經濟與空間發展問題。在比利時，為了改進市民與市府之間的關係，Leiedal 與 Kortrijkare 市以概念化的想法為手段，創造應用於 e 化政府，簡化市民與當地政府之溝通交流模式。

Filip Santy is currently the deputy mayor of Kortrijk, in the Flanders of Belgium, in charge of welfare, housing policy and administrative simplification. He is also the chairman of Leiedal, the intermunicipal organization that supports the broad socio-economic and spatial development of the 13 municipalities in the Kortrijk region. Both Leiedal and the City of Kortrijk are pioneers in Belgium in terms of conceptual thinking and creation of e-government applications which simplify the relationship between citizens and the local government.

荷蘭恩荷芬副市長
Deputy Mayor of Eindhoven City, Netherlands

Mary-Ann Schreurs

恩荷芬市創新、文化與公共領域部門副市長，曾任社會自由民主黨黨員，在她當政的期間內，開辦了歐洲創新計畫、提升與設計相關的產業，亦曾擔任恩荷芬市空間規劃負責人也同時是荷蘭市政協會的成員。她建立了區域創新 (local innovation) 政策，以配合恩荷芬市達到全球最先進科技城市的的目標。

Mary-Ann Schreurs is the Alderman of Innovation, Culture and Public Space in Eindhoven. She was a member of Eindhoven Municipal Council for D66 (Social Liberal Democrats). Up until her appointment as alderman, she was co-initiator of (European) innovation projects related to design. She was also Alderman of Spatial Order of the Municipality of Eindhoven and also a board member of the VNG (Association of Dutch Municipalities). She has set up a local innovation policy that fits within the ambitions of Eindhoven to be amongst the world's best high-tech and innovation regions.

印度拉瓦薩市城市經理
City Manager of Lavasa City, India

Scot Wrighton

現任印度拉瓦薩股份有限公司之城市經理，同時服務於世界經濟論壇的城市發展和基礎設施國際委員會，曾任美國密蘇里州柯克斯維爾市城市經理師，畢業於美國堪薩斯大學公共行政管理碩士，他亦是 30 個國際城市與鄉村管理協會之成員，專長為地區發展規劃管理。

Scot Wrighton is the City Manager of Lavasa Corp., Ltd. He also serves on the World Economic Forum's Global Council on Urban Development and Infrastructure. He was the City Manager, Missouri, USA. Mr. Wrighton is a 30 member of the International City/County Management Association.He specializes in local good governance and city management.

瑞典赫爾辛堡市副市長
Deputy Mayor of Helsingborg City, Sweden

Lars Thunberg

現任瑞典赫爾辛堡市副市長。曾經擔任環境委員會主席。主張以可永續發展做為制定政 策之準則，致力於全球環境永續發展議題，推廣節能計畫、汙水處理產生大眾交通工具 燃料、沼氣發電等能源回收再利用，將之應用於社會上的發展、大眾健康以及教育學習。

Lars Thunber is deputy mayor of Helsingborg city. He is also a teacher in political science at Sundsg?rden folk highschool, Helsingborg, Sweden. Due to the political commissions, he is on leave of absence for now. His political goal for Helsingborg is that all political decisions taken will have sustainability as a guideline. The goal for his engagement in the Sekom network (The National Association of Swedish Eco-Municipalities) is that he believes in sharing experiences, projects and knowledge can cooperate in building sustainable local societies in our country.

國立交通大學 Eco-City 副執行長
Vice CEO of Eco City, National Chiao Tung University

趙志峰 *Chih-Feng Zhao*

曾任交通大學 Eco-City 智慧生活科技中心專案經理、副執行長、智慧生活科技促進協會秘書長等，研究領域為智慧城市系統整合、創新服務加值應用與智慧建築規劃。曾參與協助企業獲得全球智慧生活聯盟之創新卓越智慧城市國際認證與 2011 年最佳城市服務解決方案。

Mr. Zhao was a project manager and deputy executive officer in Eco-City smart living technology center. He also served as the secretary-general in Smart Living Technology Promotion Association. He is interested in smart city system integration, innovative value-added service (VAS), and intelligent building panning. He assisted enterprises to obtain "Certificate of Innovation and Excellence for Smart Urban Technologies" and "2011 Showcase Award " from Living Labs Global.

西門子股份有限公司企業傳播事務處協理
Corporate Communication Director, Siemens Limited Taiwan

芮家楹 *Ray Jui*

芮家楹為西門子股份有限公司企業傳播事務處協理，負責領域為企業品牌、企業行銷、企業公關，永續議題方面負責環保科技方案、環保企業社會責任、永續城市，並同時擔任國立政治大學與輔仁大學講師。

Ray Jui is director of corporate communication at siemens limited Taiwan. He is response for Corporate Branding, Corporate Marketing and Corporate PR, Environmental Portfolio, Environmental CSR and Sustainable Cities.

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IBM 商業價值研究院技術長
Chief Technologist for IBM GTS Physical Security Service

徐秋風 *Chiao-Fe Shu*

目前為 IBM 商業價值研究院全球資訊科技服務事業部 (GTS) 技術長，領導 IBM 公司獲得北美地區視訊監控領導廠商殊榮，並擁有 16 年產業經驗，專長於智慧型視訊監控服務，協助各國企業與政府單位應用相關技術服務達到功能應用創新。

Dr. Chiao-Fe Shu is the Chief Technologist for IBM GTS Physical Security Service, leading Advanced Video Analytics Research and Development, Cloud Computing for Public Safety, and Strategy for Smarter Public Safety for Smarter Cities. lead Advanced Video Analytics Research and Development, Cloud Computing for Public Safety, and Strategy for Smarter Public Safety for Smarter Cities. His reseach and development covers the areas of Visual Computing, Multimedia Indexing and Retrieval, and Surveillance Video Analytics and Systems.

臺灣松下居家內裝股份有限公司總經理
Managing Director of Panahome Taiwan Residence Co., Ltd

原康裕 *Yasuhiro Hara*

現任台灣松下居家內裝（股）總經理，同時為一級建築士。於 1982 年加入 Panasonic PanaHome，現在主要負責醫療、福社系設施建築、企劃、設計、監理。得過各式造鎮設計競技大獎，曾經榮獲 1988 年建設大臣獎、1992 年建設大臣賞。

He is Managing Director of Panahome Taiwan Residence Co., Ltd and a Architect of the first class. He joined Panasonic PanaHome in 1984.

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國立交通大學土木工程學系教授兼總務長 / Eco-City 執行長
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臺南市副市長
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Distinguished Professor, Inst. of Applied Mechanics, National Taiwan University/ President, Taiwan Smart Living Association

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台南市觀光旅遊局局長
Director-General, Tourism and Travel Bureau, Tainan City Government

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國立成功大學建築系主任
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行政院經濟建設委員會副主任委員
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嘉義縣副縣長
Deputy Magistrate of Chiayi County Government, Taiwan

林美珠 *Mei Zhu Lin*

台東縣副縣長
Deputy Magistrate of Taitung County Government, Taiwan

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亞太燃料電池科技股份有限公司執行長
CEO, Asia Pacific Fuel Cell Technologies, Ltd.

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臺南市經濟發展局局長
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Programmer Manager at Department of Engineering and Applied Science, National Science Council

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良福保全股份有限公司副總經理
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Director, Fab 14, TSMC at STSP

王英朗 *Ying-Liang Wang*

皓宇工程顧問股份有限公司總監
Director, COSMOS Inc. Planning Consultants

汪荷清 *Her-Ching Wang*

國際創新創業發展協會秘書長
Secretary General, GlobalTic

蔡適陽 *Shi-Yang Tsai*

2011.12.15 / DAY 1

THE GLOBAL SMART CITY SUMMIT in TAIWAN

全球智慧城市高峰論壇

2011.12.15/ DAY 1 議程

時間	議程
08:40-09:00	**報到**
09:00-09:30	**開幕致詞** 》賴清德，臺南市市長 》曾仁杰，國立交通大學土木工程學系教授兼總務長 / Eco-City 執行長 **貴賓致詞** 》趙藤雄，遠雄企業團董事長
09:30-09:50	**專題演講一 / 臺灣臺南市－大臺南智慧城市計畫與願景** 》林欽榮，臺南市副市長
09:50-10:10	**專題演講二 / 美國迪比克市－智慧生活社區永續發展** 》Roy D. Buol，美國迪比克市市長
10:10-10:45	**座談討論一** 主持人：》林盛豐，實踐大學建築系副教授 與談人：》林欽榮，臺南市副市長 》Roy D. Buol，美國迪比克市市長 》吳政忠，國立臺灣大學應用力學研究所教授
10:45-11:00	Coffee Break
11:00-11:20	**專題演講三 / 比利時科爾特賴克市－打造智慧城市案例分享：科爾特賴克區域發展計畫** 》Filip Santy，比利時科爾特賴克市副市長
11:20-11:40	**專題演講四 / 荷蘭恩荷芬市—全球智慧區域發展：荷蘭恩荷芬智慧港** 》Mary-Ann Schreurs，荷蘭恩荷芬市副市長
11:40-12:15	**座談討論二** 主持人：》曾仁杰，國立交通大學土木工程學系教授兼總務長 / Eco-City 執行長 與談人：》Filip Santy，比利時科爾特賴克市副市長 》Mary-Ann Schreurs，荷蘭恩荷芬市副市長 》陳俊安，臺南市觀光旅遊局局長
12:15-13:30	Lunch
13:30-13:50	**專題演講五 / 印度拉瓦薩市－創新生態科技示範區域計畫** 》Scot Wrighton，印度拉瓦薩市城市經理
13:50-14:10	**專題演講六 / 瑞典赫爾辛堡市－邁向永續能源平衡城市的成功因素 , 赫爾辛堡市經驗分享** 》Lars Thunberg，瑞典赫爾辛堡市副市長
14:10-14:45	**座談討論三** 主持人：》王時思，臺南市政府研究發展考核委員會主任委員 與談人：》Scot Wrighton，印度拉瓦薩市城市經理 》Lars Thunberg，瑞典赫爾辛堡市副市長 》鄭泰昇，國立成功大學建築系副教授兼系主任
14:45-15:00	Coffee Break
15:00-16:15	**總結座談討論** 主持人：》林欽榮，臺南市副市長 與談人：》黃萬翔，行政院經濟建設委員會副主任委員 》Roy D. Buol，美國迪比克市市長 》Filip Santy，比利時科爾特賴克市副市長 》Mary-Ann Schreurs，荷蘭恩荷芬市副市長 》Scot Wrighton，印度拉瓦薩市城市經理 》Lars Thunberg，瑞典赫爾辛堡市副市長 》Sascha Haselmayer，LLG 執行長 》林美珠，嘉義縣副縣長 》張基義，臺東縣副縣長
16:15	End

THE GLOBAL SMART CITY SUMMIT in TAIWAN

全球智慧城市高峰論壇

PROGRAM of December 15

TIME	AGENDA
08:40-09:00	**REGISTRATION**
09:00-09:30	**OPENING REMARKS** > Ching Te Lai, Mayor of Tainan City Government > Ren-Jie Zeng, Professor, Department of Civil Engineering, National Chiao Tung University, Taiwan/ CEO, ECO-City > Teng-Hsiung Chao, Chairman of the Taipei-based Far Glory Group
09:30-09:50	**KEYNOTE SPEECH 1** **/ Tainan, Taiwan - Vision of sustainable development and city governance** > Charles Lin, Deputy Mayor of Tainan City Government, Taiwan
09:50-10:10	**KEYNOTE SPEECH 2** **/ Dubuque, USA - Sustainable Dubuque : Smart Technology & Community Engagement** > Roy D. Buol, Mayor of Dubuque City, USA
10:10-10:45	**PANEL DISCUSSION 1** **Moderator :** > Sheng-Fong Lin, Associate Professor, Department of Architecture, Shih Chien University, Taiwan **Panellists :** > Charles Lin, Deputy Mayor of Tainan City Government, Taiwan > Roy D. Buol, Mayor of Dubuque City, USA > Tsung-Tsong Wu, Professor, Institute of Applied Mechanics, National Taiwan University, Taiwan
10:45-11:00	Coffee Break
11:00-11:20	**KEYNOTE SPEECH 3** **/ Kortrijk, Belgium** **Creating Smarter Cities. Lessons from the Smart Cities Project in the Kortrijk Region** > Filip Santy, Deputy Mayor of Kortrijk City, Belgium
11:20-11:40	**KEYNOTE SPEECH 4** **/ Eindhoven, Netherlands** **How did Brainport Eindhoven region become the Smartest region in the world** > Mary-Ann Schreurs, Deputy Mayor of Eindhoven City, Netherlands
11:40-12:15	**PANEL DISCUSSION 2** **Moderator :** > Ren-Jie Zeng, Professor, Department of Civil Engineering , National Chiao Tung University, Taiwan/CEO, Eco-City **Panellists :** > Filip Santy, Deputy Mayor of Kortrijk City, Belgium > Mary-Ann Schreurs, Deputy Mayor of Eindhoven City, Netherlands > Julian Chen, Director, Tourism Bureau of Tainan City, Taiwan
12:15-13:30	Lunch
13:30-13:50	**KEYNOTE SPEECH 5** **/ Lavasa, India** **The Lavasa Experiment: Building Environmentally, Socially & Financially Sustainable New Cities in India** > Scot Wrighton, The City Manager of Lavasa City, India
13:50-14:10	**KEYNOTE SPEECH 6** **/ Helsingborg, Sweden** **Success factors towards a sustainable and energy neutral city. Experiences from Helsingborg** > Lars Thunberg, Deputy Mayor of Helsingborg City, Sweden
14:10-14:45	**PANEL DISCUSSION 3** **Moderator :** > Sue Wang, Chairperson, Research, Development, and Evaluation Commission, Tainan City Government **Panellists :** > Scot Wrighton, the City Manager of Lavasa City, India > Lars Thunberg, Deputy Mayor of Helsingborg City, Sweden > Tay sheng Jeng , Chairman, Department of Architecture, National Cheng Kung University
14:45-15:00	Coffee Break
15:00-16:15	**PANEL DISCUSSION –CONCLUSION** **Moderator :** > Charles Lin, Deputy Mayor of Tainan City Government, Taiwan **Panellists :** > Wang-Hsiang Hwang , Deputy Minister , Council for Economic Planning and Development > Roy D. Buol, Mayor of Dubuque City, USA > Filip Santy, Deputy Mayor of Kortrijk City, Belgium > Mary-Ann Schreurs, Deputy Mayor of Eindhoven City, Netherlands > Scot Wrighton, the City Manager of Lavasa City, India > Lars Thunberg, Deputy Mayor of Helsingborg City, Sweden > Sascha Haselmayer, CEO of LLG > Mei Zhu Lin, Deputy Magistrate of Chiayi County Government, Taiwan > Chiyi Chang, Deputy Magistrate of Taitung County Government, Taiwan
16:15	End

開幕致詞

OPENING REMARKS

臺南市市長 **賴清德**

Ching-Te Lai,
Mayor of Tainan City Government

臺南市市長 賴清德
Ching-Te Lai, Mayor of Tainan City Government

各位貴賓、各位先生、各位女士，大家早安，

首先感謝各位如此熱情的參與，本次由臺南市政府與國立交通大學智慧生活科技整合中心 Eco-city 的團隊共同主辦的全球智慧城市高峰論壇。我要在這裡代表臺南市政府跟近兩百萬的臺南市市民感謝各位的蒞臨，並且特別感謝來自美國迪比克市 Roy D. Buol 市長、比利時科爾特賴克市 Filip Santy 副市長、荷蘭恩荷芬市 Mary-Ann Schreurs 副市長、印度拉瓦薩市城市經理 Scot Wrighton 先生、瑞典赫爾辛堡市 Lars Thunberg 副市長來到臺南市，也要歡迎雲嘉南政府的代表以及各界風塵僕僕來到臺南參加本次全球智慧城市高峰論壇的所有貴賓。我也要利用這個機會感謝國內外企業廠商包含遠雄國際企業團、奇菱科技、大同、陽泰電子、良福保全，代表學術單位的交大、成大、南台等專家學者來參加本次活動並進行經驗分享，這也象徵著產官學的合作模式，非常感謝你們的參與。

籌辦這場盛會主要是希望藉由智慧城市的議題交流以及城市治理的經驗分享，創造出一個城市領導者與企業領導者相互交流與學習的平台，更期待在各個國際城市首長與國內產官學代表的經驗分享後，我們可以共同學習善用智慧科技、永續規劃，創造出更符合永續發展的城市。讓臺南市民不只可以做到節能減碳，還包括將都市治理設計、智慧生活科技與生態社區加以整合，建構一個創新整合機制，使區域發展全面化、提升市民的生活品質。

除了今天與明天的論壇經驗交流外，另一方面為了能讓智慧城市的概念種子延續播種下去，本次活動也邀請了歐盟 LLG 全球智慧生活聯盟，自 17 日起開設為期兩天的城市與產業領導者訓練認證課程，培養更多未來智慧城市的規劃專才。

今天我也要特別藉此機會跟大家分享，臺南市政府如何利用智慧生活科技創造一個新服務方式，來實現城市治理的願景，我們計畫展開一個具整合性的全方位智慧整合計畫，無論著眼於國內人口高齡化、少子化所衍生出的銀髮族照護問題，城鄉差距造成的教育資源分配問題或是協助傳統產業轉型和高科技產業運用，與其他打擊犯罪治水防災等保障市民生命財產安全，甚至到建立綠能低碳的永續城市等各方面臺南市面臨的種種問題，希望利用此計畫全方面的改善與解決問題，此計畫明年即將展開先期規劃。

我們要打造一個智慧交通便捷體系，包括交通資訊系統智慧化用來解決不必要的紅燈等待以降低因大量塞車所產生的 CO2 排放。同時在都會區的治安熱點和交通的結點，透過智慧影像系統達到即時分析即時處理，節能減碳的目的；還有智慧公車服務網與智慧化自行車租賃服務，使它成為推廣智慧交通的利器。而智慧科技的加值服務，則可以提供健康旅遊行動等等的資訊服務，進而促進綠色消費與低碳的旅遊，成就一個 system of smart transportation。

對於市民的健康照護，以智慧科技加值的衛生所量測地方高齡與幼齡市民的健康狀況，讓地區衛生所成為市民的健康俱樂部，還要連結各大醫院及地方衛生所，建立完整的智慧醫院、醫療網絡，並建立電子病歷與醫師線上看診，全面提升醫療品質、照顧全民的健康。
至於我們致力推展的觀光產業，將以智慧觀光旅遊的創新服務模式，提供更優質的旅遊資訊服務，也就是搭配智慧型手機 APP 應用軟體跟 QR Code 功能設計，運用雲端資訊營造更友善更環保的旅遊資訊環境。
另一方面，獨佔臺灣鰲頭的文化歷史資產是臺南人的驕傲，所以我們期待注入高科技的元素。讓文化產業導覽智慧服務能夠透過智慧科技來活化傳統文化內容，充實文化軟實力，創造出全新的體驗跟感受，將大臺南地區推向國際舞臺。
每個孩子都是父母親獨一無二的寶貝，政府應該給予沒有差別的待遇讓他們能夠快樂的學習成長茁壯。城鄉差距是造成偏鄉教育資源落後的原因之一，針對這個部份我們規劃有智慧城鄉教室，導入雲端的概念，創新教育服務，將

在臺南的各級學校普設智慧教室，並且重新編排智慧教材，讓教學資源可以共享，這樣一來相信可以逐步縮短城鄉差距，實現我們照顧偏鄉小校的承諾。

為市民建構一個安全無虞的生活環境，是我們責無旁貸的重大責任，我們需要防範與防災的監控系統和城鄉社區治安監控系統，也就是應用高科技的智慧監控設備來掌控所有的水文氣象，水位水利設施等運作的資料，達到防災應變的效果，以完整大臺南治安的系統；連結物業管理保全公司，完成智慧分析警民聯防及時處理的城市無縫安全防護，全面防堵以打擊罪犯，建構生產、生活、生態，三生一體的永續低碳環境，打造永續的低碳城市也是臺南市的城市願景，因此臺南市政府積極的結合產、官、學界以及社區總動員提出低碳計畫。在今年獲得行政院環保署的肯定，拿下南區低碳示範城市的獎項，其中打造永續低碳社區的九份子高度卓越計畫，則是兩項低碳標竿計畫之一。

打造低碳城市要從社區做起，位於鹽水溪流域內臺江國家公園旁，具有豐富自然環境與生態文化的九份子重劃區，是我們打造生態智慧生活，永續城市的示範專區。九份子重劃區佔地有 101 公頃，規劃內容是以生態家園的思考模式，包括符合節能減碳生態等項目，像是生態網路的串聯，植物多樣性、人行道透水鋪面，自行車規劃，棲地營造與復育等等，是一座追求低碳生活的社區，將是臺灣第一個國際級低碳示範社區計畫，預計明年 11 月完工，未來它不僅將是全國低碳生態社區典範，也將會是臺南市的地標。明年是臺南的低碳元年，也就是要讓臺南市從文化首都再近一步邁向成為低碳綠色首都，與國際一流的低碳城市接軌，讓臺南成為臺灣低碳城市的代表，讓我們的後代子孫可以幸福永續、安身立命於這塊土地。

最後我期待各位與會的國際貴賓，企業界的代表，還有專家學者在今明兩天的論壇當中，能夠暢所欲言，不吝與我們分享您的專業知識和豐沛的成就經驗，為臺南市注入國際智慧與活力。最後祝大會順利成功，謝謝大家。

OPENING REMARKS

Ching-Te Lai,
Mayor of Tainan City Government

Distinguished guests, ladies and gentlemen,

Good morning! First of all, I would like to welcome your passionate participation in this Global Smart City Summit co-organized by the Tainan City Government and Eco-City of National Chiao Tung University. On behalf of Tainan City Government and the two million citizens of Tainan, I would like to thank you for your participation, especially Mr. Roy D. Boul, Mayor of Dubuque City, USA; Mr. Filip Santy, Deputy Mayor of City of Kortrijk, Belgium; Ms. Mary-Ann Schreurs, Deputy Mayor of Eidhoven, the Netherlands; Mr. Scot Wrighton, City Manager, Lavasa, India; and Mr. Lars Thunberg, Deputy Mayor of Helsingborg City, Sweden. We also welcome the attendance of domestic and international enterprises including Fargo International Group, Chilin Technology, Tatung, Yantouch Corporation, and Lan-Fu Security as well as scholars from academic institutions including National Chiao Tung University, National Cheng Kung University, and Southern Taiwan University of Science and Technology. Your participation and the experiences that we will share in this summit present a cooperative model between government, industry, and academia. Thank you!

The aim of this summit is to share the experiences of smart cities and urban governance through discussions on relevant issues as well as to create an exchange and learning platform for city and business leaders. It is also expected that after the discussions among leaders of international cities and domestic representatives from government, industry, and academia, we will be able to learn and utilize smart technology and sustainable planning for the building of a sustainable city that will allow the citizens of Tainan City to not only save energy and reduce carbon emission but also integrate urban governance designs, smart living technologies and eco-community ideas to create an innovative integrated mechanism that promotes comprehensive regional development and improves the living quality of our citizens.

In addition to today and tomorrow's forum exchanges, this summit has also organized a two-day LLG training and certification program for city and business leaders starting on the 17th to provide planning skills for future smart cities.

Today, I would also like to take this opportunity to share with you how Tainan City Government uses smart technology to create a new service model to realize our vision of urban governance. We plan to begin a comprehensive integrated smart program to focus on caring for senior citizens due to the fewer number of children in families; distribution of educational resources between urban and rural area; assisting in the transition of traditional industries and high-tech industries; safeguarding the lives and properties of citizens with crime fighting and flood disaster prevention efforts; and the building of a low carbon sustainable city. The implementation of this program will comprehensively improve the lives of our citizens and even solve some of our most pressing problems. The pilot plan will start next year.

We would like to build a smart traffic system that eliminates unnecessary waiting for red lights thereby reducing carbon emissions caused by traffic jams. At the same time, in security hot spots and traffic nodes, a smart imaging system using real-time analysis and processing will assist in meeting our energy saving and carbon emission goals. Smart bus services and bike rental services are the best tools to promote smart traffic. The added value of smart technology will facilitate health tourism as well as smart consumption and low carbon tourism.

In terms of health care, health stations equipped with value added smart technology monitor the health status of both young children and the elderly. Regional health stations also include health clubs for our citizens. They are connected with hospitals and local health offices to establish a comprehensive smart hospital and medical network. In addition, electronic medical records and on-line medical diagnosis will help to improve overall medical quality and public health care.

As for the tourism industry that we have devoted ourselves to, the innovative smart tourism service model provides higher quality tourism information services with the utilization of apps and QR code. The utilization of cloud information will also help to create a more user and environmentally friendly tourism information system.

In addition, Tainan is proud of its rich tradition of preserving the history of Taiwan and we expect that with the introduction of high-tech elements, smart guided tour services will greatly benefit the cultural industry with traditional cultural contents transmitted via smart technology. In that way, the strength of soft cultural power is enhanced to create brand new experiences and to increase the international visibility of Tainan.

Each child is of precious value to their parents. The government provides children with fair and non-discriminatory treatment to allow them to grow and learn happily. The development gap between urban and rural areas is often one of the reasons for shortages of educational resources in rural areas. In this regard, Tainan City Government has planned a smart urban and rural classroom using cloud computing concepts to provide innovative educational services. This classroom is equipped for schools at every level in Tainan. Smart teaching material has been re-compiled to allow for the sharing of teaching material. The gap between urban and rural areas will gradually be closed to realize our promise to small schools in rural areas.

It is also our responsibility to build a safe living environment for our citizens. We need to establish a monitoring system for disaster prevention and relief. Thus, we will utilize smart monitoring equipment to monitor and manage information related to weather conditions and the water level of hydraulic facilities so that we can provide optimal disaster response services. With Tainan's comprehensive security system, we are connected to security and property management companies in order to develop a smart analysis system for police and private joint defense as well as a real-time seamless security protection system to fight crime and build a sustainable low carbon environment promoting the coexistence of businesses, high quality of life, and healthy ecology. It has always been the vision of Tainan to rebuild itself into a sustainable low carbon city. Hence, Tainan City Government has actively cooperated with industry, academia, and community members to propose a low carbon development plan. This year, our efforts were recognized by the Environmental Protection Administration with the awarding of a Low Carbon Demonstration Area and Jioufanzi sustainable low carbon community project, which will integrated into our plans.

The building of a low carbon city has to begin at the community level. Taijiang National Park, located in Yehshui river basin, has the Jioufanzi Re-planning Area with its rich environmental and ecological elements. It is the perfect demonstration area for us to build a smart ecological living and sustainable city. Jioufanzi Re-planning Area occupies 101 hectares and its planning is based on an ecological homeland model that includes ecological goals such as energy saving and low carbon emission through the promotion of ecological networks, plant diversity, permeable pedestrian pavement , bike path planning, habitat building and restoration. This is a community in pursuit of low carbon living and it is also Taiwan's first international demonstration community for low carbon living. The project is expected to be completed by November next year. In the future, it will not only be Taiwan's low carbon community model but also will become a landmark in Tainan City. Next year is the starting year of low carbon Tainan and we will rebuild Taiwan City into a cultural capital of Taiwan to move closer to our goal of becoming a low carbon green capital that connects with other international first class low carbon cities. We will make Tainan City the representative of Taiwan's low carbon cities and let our future generations enjoy a sustainable and happy life on this island.

Lastly, I would like to wish everyone much success in learning new ideas during the discussions and exchanges between and among our internationally distinguished guests, business leaders, scholars, and experts in this two-day summit. Please share with us your knowledge and successful achievements and experiences in order to help to bring international wisdom and vigor to Tainan as well as to your respective cities and organizations. Thank you.

曾仁杰
國立交通大學土木工程學系教授兼總務長
/ Eco-City 執行長

賴市長、各位嘉賓，早安！非常榮幸有機會能夠和臺南市一起共同主辦這樣的盛會，本來大會有幫我準備致詞稿，但因為今天看到那麼多國外推動智慧城市非常著名的首長，還有國內那麼多縣市的首長、局處長，還有許多致力於智慧生活科技推廣的民間企業參與，我個人是非常感動，有一些感想想跟各位分享。我覺得賴市長是一個非常有企圖心、有遠見的城市首長，他嘗試要把臺南市這一個具有文化歷史的古都，透過綠能、低碳與智慧科技，打造成一個全新的下一代城市，而下一位致詞的貴賓遠雄趙董事長，對我個人而言也是個非常有遠見、有夢想的企業家，他嘗試把藝術、人文、永續、及智慧生活科技結合在一塊，也希望能夠樹立一個典範，希望為臺灣新世代的建築做一個標竿，這個標竿不僅是國內的典範，也希望達到世界的水平。

交大 eco-city 已經成立了四年，感謝國科會的前主委吳政忠當時的推動與補助，eco-city 最主要的目的就是希望讓學研界研發的科技走出象牙塔，將它們帶到現實社會，這四年的奮鬥當中我們遭遇了很多困難，也學到很多經驗，比如說研發者重視的往往是技術的突破，不會考慮到使用者的需求，所以我們也得整合一些人文的團隊與使用者分析。同時往往只有一個單一的科技產出，這樣要讓使用者去應用也會很困難，所以我們也透過情境能夠把眾多的科技整合在一起，這當中就必須結合許多跨領域的學者專家，從過去到現在，交大 eco-city 就是扮演這個平台，另包括學者不擅於公司的經營，也不懂會計及製造，所以交大 eco-city 也結合了許多交大的校友及許多跟我們一樣有共同目標及理想的企業家，讓大家一起來幫研發者照顧公司的營運、會計及生產的部分，交大 eco-city 就是扮演這樣的平台讓產、官、學等跨領域的專家能夠整合在一起。

今天很高興能夠有那麼多企業的幫助，也感謝臺南市政府能共同主辦這個盛會，更感謝各縣市熱烈的響應，各位可以看到國內那麼多縣市，包括臺東縣副縣長及嘉義市市長都會親自蒞臨，當然還有很多各局處的長官。今天這個盛會能夠讓大家有機會學到一些東西，最重要的是學完之後能夠有機會在各位的縣市當中執行，未來有需要交大 eco-city 任何服務的地方都可以與我們聯繫，我們很願意來扮演這樣的角色，結合民間、官方及學界的力量，同時更感謝國外那麼多城市的嘉賓，你們都是在世界上推動智慧城市非常有名的佼佼者，非常感謝各位遠道而來，希望各位除了在大會中與我們分享寶貴的經驗，也希望透過與會嘉賓的提問能讓各位有所思考及收穫，必能帶回您們的國家繼續為智慧城市來奮鬥努力。最後祝大家在今天的會議中能有非常豐富的收穫，謝謝！

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Ren-Jie Zeng,
Professor, Department of Civil Engineering,
National Chiao Tung University, Taiwan
/ CEO, ECO-City

Opening Remarks by the Director of Eco-city, Professor and Dean of General Affairs, Department of Civil Engineering, National Chiao Tung University, Ren-Jie Tseng

Mayor Lai, distinguished guests, good morning!

I am honored to have the opportunity to co-organize this event. Originally, I was going to give a speech written by someone else for me. However, the presence of so many famous leaders from other countries who are known for their promotion of smart cities as well as the many Taiwanese city and county mayors and businesses that are devoted to the promotion of smart living technology has touched me. Therefore, instead of that speech, I would like to share with you my own thoughts.

I believe that Mayor Lai is an ambitious and visionary leader. He is remaking Tainan into a progressive and culturally important city through innovative green energy, low carbon, and smart living initiatives. Out next distinguished guest, who will come to deliver the opening remarks, Chairman of the Taipei-based Farglory Group, Mr. Teng-Hsiung Chao, for me personally, is also a visionary entrepreneur who dares to dream. He is setting an example for others by linking art, culture, sustainability, and smart living technology in order to create a new benchmark for the next generation of Taiwanese architects. This benchmark is should not only be a model for Taiwan but for the world as well.

It has been four years since the establishment of NCTU's Eco-city. We are grateful for the support of the Minister of the National Science Council, Mr. Cheng-Chung Wu. The main purpose of Eco-city is to lead academic and researchers out of their ivory towers and encourage them to connect with the real world. In the past four years, we have encountered many challenges and learned many lessons. For example, researchers often care about technology breakthroughs, but not the needs of users. Therefore, we recruited team members from the social studies field to conduct user analyses. At the same time, the output of a single technology may be difficult for users to apply practically, so we conduct scenario simulations to combine various technologies. By doing so, we need to work with many interdisciplinary scholars and experts. NCTU's Eco-city plays the role of the platform for different ideas. Moreover, scholars are not business people and they do not know about accounting and manufacturing.

Therefore, NCTU's Eco-city also works with many NCTU alumni and entrepreneurs who share our goals and vision. We worked together to help researchers learn to care about business operations, accounting, and production methods. This is the key part of the role played by Eco-city. We facilitate cooperation between and among industry, government, and academia.

We are very pleased to receive assistance from various local businesses and we would also like to thank the Tainan City Government for hosting this event as well as the participation of other cities and counties, for example, the attendance of the Deputy Magistrate from Taitung and City Mayor of Chiayi as well as many directors. In today's event, we will learn new things. More importantly, we need to put what we learn today into practice in your cities and counties. In the future, when the opportunity arises, Eco-city will be at your service. We are to combine the power of private, public, and academic organizations. At the same time, I would like to thank distinguished international guests for their participation. You are all well-known leaders in the international community and I appreciate the fact that you took the time to travel such long distances to contribute as well as learn. I am confident that the valuable insights you will share with us in this summit will very rewarding for everyone. I am also confident that you will learn new things here as well that you can bring back to your countries to help you in your great efforts to build smart cities. Lastly, I would like to say that it is my hope that this summit be very successful and rewarding to all involved. Thank you!

貴賓致詞

遠雄企業團董事長 **趙藤雄**

Teng-Hsiung Chao,
Chairman of the Taipei-based Far Glory Group

賴市長、曾執行長、各位遠道而來重要的貴賓、以及各位長官、各位團隊先進，大家早安！我非常高興能參與這個臺灣首次國際性的智慧城市論壇活動，我們真的是非常讚佩賴市長有這個遠見。實際上，在剛才市長的報告裡面已經把各重要發展點都找出來了，也真正的要去執行，我想這是一個未來的趨勢，未來城市的競爭力，對國家的競爭都是非常重要的。當然也感謝各位國際智慧城市運作非常成功的長官們，能夠把你們寶貴的經驗跟我們的國人作分享，讓我們作學習，至於剛才我們的賴市長及曾執行長都已經把重要的部分，包括願景、方向、專業、功能各方面也都報告過了。

我站在企業界，從事建築的工作 52 年，蓋房子、開發 42 年，所以對這方面我只能說，我是將我做過的事情做一個簡要的報告，基本上我是要報告我蓋商業辦公、企業總部、廠房的經驗，另外是住宅的經驗。廠房辦公方面，我們知道臺灣是在 1949 年政府來臺，積極想發展工業，所以那時有客廳型工廠，就在客廳裡做聖誕樹做成衣，到了 1976 年就製造很多的噪音，很多人檢舉。都會區有兩萬八千多家是要取締的違章工廠，事實上這些都是家庭企業，他們沒有能力自己找土地蓋工廠，也沒有辦法到郊外去，所以那時候就提起工業化的立體廠辦，把廠辦往上蓋高，大家分攤成本與租稅。此後就從立體廠辦發展到園區廠辦、智慧廠辦、數位廠辦，到現在的雲端廠辦。

我談兩個案例，一個是內湖，內湖有 1.85 平方公里，其中屬於工業區或是企業廠辦有 1 平方公里，原本被規劃做廢五金工廠及汽車修理廠，我看到這塊地的運用方式覺得實在太可惜，就去找當時的陳水扁市長，他說已經到了議會，我就請議會退回把它變輕工業區，然後再帶頭進去把它作成智慧型的數位廠辦，結合整個 OAVA 的應用智慧，結果大家都來投資。短短十五年，現在已經有 3.5 兆新臺幣產值，也就是一千一百億美金的產值，有 3300 家工廠，11 萬人就業機會，如果當初把它作成廢五金廠及汽車修理廠，今天可能只有 2 億美元的產值。相對的我們對這片土地進行開發也帶動周邊的商業及住宅整個發展起來，住宅區也都變成高級住宅，這個是一個案例。

另外最近我要推一個案子，叫作 U-TOWN，70 萬平方米，因為臺灣這幾年的不景氣，所以要再推這個方案。我們的企業很多都到中國去，怎麼把它們拉回來這邊做企業總部，所以我們就做一個社區的雲端，也就是讓這些企業它們不必設置機房中心，或者未來這些設備都不需要，更不需維修，然後服務又快、速度又快，擴充也可以很快，加上光纖網路的骨幹、資料的儲存，及整個金控的系統，都符合 ISO 的認證。這樣的規劃，讓企業可以只要進駐，插座一插，就馬上可以營運，使用多少就用多少，不管企業裡面的整個資源管理、客戶的關係管理、供應鏈的管理都可以順利執行。

所以無形中雖然可能只是中小企業，但是使用的資源水準卻可以達到國際級大企業的水準。全世界中由民間開發帶頭設置這個雲端社區可以算是首例，然後跟公有雲端及國際雲端再作結合，所以跟國際同步去成長，企業就可以在這作它的運籌總部，去提升它的競爭力，或是建構它的品牌。

第二個案例是住宅的案例，當時臺北縣蘇貞昌縣長一再的來找我，作了兩三次簡報，說林口從 1976 年就想要造鎮但一直沒有成功，大家都認為不可行。一個是三峽的大學城，也有約 1 平方公里閒置沒有發展，所以他負擔非常大，希望我能幫忙解套。那時的環境景氣並不好，我就想既然要解決這個問題，一定要想出比較住宅革命的方式，那我就想出『二代宅』，主題就是以環境共生、節能減碳為主，再來就是數位智慧，就是我們今天要談的智慧城市，那另外就是讓它能夠建構這個地區的品牌及永續經營，結果在 2005 年推出。那時我先去拜訪中華電信，因為它的研究中心有一千多位研究人員，我問他說你光纖甚麼時候做，他告訴我要再等五年才有市場，所以可能再四年才會作。我說要做就要現在就做，轉接器有問題不能解決我帶他去日本解決，我這才了解一根頭髮就可以代表 270 萬支的電話，解決了我們就開始架設，開始埋設光纖、無線寬頻、遠端監控、社區服務平臺、遠端交易、遠端照護，另外就是創造 IPV6（Internet Protocol version 6，網際網路通訊協定第 6 版），這些努力帶來的結果是一萬一千戶在短短五年內全部賣完，連國際人士都來購買。

往下要談一個案例，要非常感謝在座的林副市長及曾執行長，他說我們這個地方是不是來建構一個智慧城市，我們認為有道理，所以就委託交大，提出了 12 項 i 智慧的想法，譬如說整個社區的服務中心、防災、安全、求救、智慧交通、智慧巴士、LED 燈光等涵蓋智慧家庭的服務平台、遠距離

*2011.12.15 / **DAY 1***

的照護，或是能源的管理、恆溫恆濕的管理等。我們拿了六項去全球智慧城市聯盟認證皆被認可通過，所以這在世界也是首創，現在我們正在積極推動，也獲得整個市場的認同，歡迎各位到現場指導，我想那個城市將來會變得非常漂亮，是一個能夠永續的城市。

城市競爭力是國家的競爭力，智慧科技這方面是非常重要的，我們需要好好的去應用高科技的力量。也不要忘記科技來自於人性，一定要用在人的身上，用在每個家庭的成員上，我想科技的力量就會無限地擴大。我們身為企業的一份子，也希望在這樣的趨勢及方向下能追隨各位，一起來參與這個盛會，我今天在此特別來祝這個論壇成功，大家健康快樂，謝謝！

遠雄企業團董事長 **趙藤雄**
Teng-Hsiung Chao,
Chairman of the Taipei-based Far Glory Group

Teng-Hsiung Chao,
Chairman of the Taipei-based Far Glory Group

Mayor Lai, Director Tseng, all of our distinguished guests from afar, ladies and gentlemen, good morning!

I am very happy to participate in Taiwan's first international smart city summit and I would like to be the first to convey my admiration for Mayor Lai's vision. In fact, from the remarks of the mayor, just a few minutes ago, we have already understood important development points and realize what we really need to do. I think this is a trend that will continue and be key to the competiveness of cities in the near future. It is also critical for national competiveness. I also would like to thank our foreign guests who have successfully operated smart cities in their respective countries for sharing your valuable experiences with us and for providing us with this great learning opportunity. Mayor Lai and Director Tseng have told us about important aspects such as vision, direction, professionalism, and functions.

I have been in the business field and engaged in construction for 52 years. I have been building houses and participating in development projects for over 42 years, so what I would like to share with you is a brief report of my practical experiences with building a smart city, especially in regards to building offices, headquarters, factories, and residential housing. Our government came to Taiwan in 1949 and since then it has been proactive in developing local industries. During that time, we used living rooms as factories where our people manufactured garments and Christmas trees. By 1976, due to noise pollution, about 28,000 illegally built factories were reported in urban areas. These factories were family businesses that were not able to land suitable for their companies and move outside their cities. The proposed solution was to build higher industrial geometric buildings so that these companies could establish factories and share costs and taxes with others within the building. Since then, geometric factory buildings have evolved into industrial parks, smart factories, digital offices, and now factory clouds.

Now, I am will share present two cases. The first one is Neihu, which occupies 1.85 square kilometers. Approximately one square kilometer was originally planned for the building of used hardware and auto repairing factories. For me, it was a waste of land utilization. I spoke with Mr. Chen Shui-bian, who was the City Mayor during that time, and he advised me to make an alternative proposal to the City Council. I thus asked the Council to reject the Neihu proposal and change the area into a light industrial park. I then led the development of a smart digital office and in the end, a lot of companies came to invest in this area. After a relatively short period of 15 years, the area last reported that it had an annual turnover of NT$3.5 trillion, equivalent to US$11 billion. There are 3,300 enterprises present that have created 110,000 jobs. If this area had been built for heavy industries, then it may have only made US$200 million in turnover. Moreover, this development also led the development of nearby businesses and residential areas, some of which were eventually developed into luxury houses.

Recently, I have been promoting a project called U-TOWN, which occupies about 700,000 square meters. This project is important to me because of the economic recession of the last few years. A lot of Taiwanese businesses have moved to China and it is not likely that they will come back and repatriate their headquarters here. Thus, we have established a community cloud to let these businesses enjoy quick and convenient services without moving their equipment and without spending time and money on maintenance. It is expandable and features an optical network backbone, data storage facilities, and a financial system that are ISO certified. This system allows enterprises to be ready for operation as long as they plug in. Resource management, customer relationship management, and supply chain management can also be implemented smoothly.

Thus, separate, they may be small and medium-sized enterprises but by pooling their resources in this manner, they can be world-class competitors. This is also the first project led by the private sector in the world. This allows us to work with both public and international clouds and grow synchronically with the international community. Our enterprises are able to maintain their headquarters in Taiwan as well as improve their competiveness, and/or build their brands.

The second case concerns residential housing. In 1976, the former County Magistrate of Taipei, Mr. Su Cheng-chang, and I had frequent discussions regarding what was then called the Linko community building. A lot of people believed that its construction was not feasible. Another troubled project was University Town in Sanxia on a previously abandoned one square kilometer track of land. He was burdened and asked for my help. During that time, the economy was not good and I thought that a new concept in residential housing would be needed in order to solve the issues related to these two projects. Thus, I created the "second generation residence" with a theme of coexisting with the environment and saving energy and reducing carbon emission with the help of computer technology. It turns out that this is a predecessor to what we know as a smart city today. In addition, we needed to construct a brand for the area and look for sustainable management. In 2005, I visited Chunghua Telecom because its research center has more than 1,000 researchers. I asked about the availability of optical fiber and, at that time, they told me that the market would be ready five years later. They wanted to wait for four years. I told them now is the time. I took them to Japan to help the resolve a converter issue they were dealing with. It was here that I really comprehended how a line the width of a hair could handle data from 2.7 million telephones. Then we started the installation of optical fiber, wireless broadband, remote monitoring, community service platform, and remote trading and care giving projects. We also contributed to the creation of Internet Protocol Version 6 (IPV6). These efforts now have resulted in all 11,000 units being sold out within five years. Apparently, some of the new owners are foreigners.

For the next case that I want to share with you, I need to thank Deputy Mayor Mr. Lin and Director Tseng for their support. They have been instrumental in the effort to build a smart city. We entrusted NCTU to do the foundation work. There are 12 i-thoughts proposed involving service centers, disaster prevention, security, rescue, smart transit, smart bus, LED lighting smart family service platform, long-distance care provision, energy management, and temperature and humidity management. We submitted six items to the Global Alliance of Wisdom City and all of them were certified by the Alliance. This is also the world's first successful example. Now we have been actively promoting market recognition. We welcome your participation and I think that this city will become very beautiful since it is a sustainable city.

The competiveness of a city is directly related to that of a country. The application of smart technology is critical, we need to make best use of the power of technology while not forgetting that technology has to be human centered and benefit all of us. It should also be relevant to each member of a family. I believe that the power of technology is expandable. As a representative of the business community, we wish to follow you in this direction and are happy to participate in this event. Today I would like to wish much success for this summit and good health and wealth to each of you. Thank you!

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專題演講

Keynote Speech 1

臺灣臺南市－大臺南智慧城市計畫與願景

Tainan, Taiwan
Vision of Sustainable Development and City Governance

主講人：**林欽榮**，臺南市副市長
Speaker : **Charles Lin,** Deputy Mayor of Tainan City Government, Taiwan

謝謝今天在場所有貴賓，尤其是來自國外的朋友。看到所有座位都坐滿，我也非常興奮。我也延續剛剛市長強調的，臺南是新興的五個主要城市之一，其實是同時性的挑戰也是同時性的機會。這個挑戰在於整個行政結構的調節，我們要面臨的是在臺南縣市整併之後的新挑戰，包括傳統產業的轉型再生、公共運輸服務提升、城鄉差距的調節、地方自有財源不足，同時我們必須面對地理的潛力及區位的差異，原有發展性資源需要再整合，而智慧城市是一個方向。臺南市為什麼要發展智慧城市？尤其在多年以來觀察臺南市既是一個文化首都，又是一個高科技的城市，我們必須嘗試去創新智慧生活科技，將其應用到公共服務系統，我想臺南市是必須走這樣的路。有四大原因，第一是回應全球降低溫室氣體行動，所以我們才成為低碳南臺灣的代表城市，第二是尋求城市能源創意解決方案，這裡是多陽光的臺南，又是全球最重要的 PV 生產基地，除此之外，全球每個城市都有義務去尋求整合能源的新方案；第三是接軌智慧生活之政府政策，尤其在愛臺十二項建設、四大智慧型產業及智慧生活科技應用，幾乎也是當今整個國家的政策，甚至是座落在整個臺南，也是我們的強項；第四是帶動智慧生活科技與創新都市公共服務模組，組織產業發展並活化經濟，這顯然是我們必須走的答案。

說明了這些理由之後，我就來簡略介紹市長就任以來，我們團隊提出大臺南旗艦計畫，分享於經濟、生態、社會公益實踐、城鄉差距的弭平、永續發展，最重要關鍵的是，臺灣從來也沒有一個城市將旗艦計畫放入智慧城市的 Program。從明年開始我們展開研發，希望所有的企業、國外廠商、學術界都當臺南市是最好的基地，第二年開始微型實驗，進入到擴大佈建及商轉，從這幾個目標來說，從今年開始也有許多由國科會補助的研究中心開始展開計畫。

我也延續剛剛市長的致詞所提示的，這一項一項都必然由每個局來執行，包括今天到場的衛生局林聖哲局長，他已經把他的行動逐步的配備起來，也看中了一些衛生所的調節，我們的教育局主導的智慧教室也開始與 IBM 或微軟進行合作，水利局也特別對於整個防洪治水的智慧條件進行整備，歸納起來至少有六個環節是我們明年開始到以後的三、四年，希望能夠透過公共服務的加值，透過智慧服務化，來自於防災、節能、交通、醫療、教育、治安這幾個面向所做的規劃與執行。

城市就是一個公共服務的實驗平台，臺南在自我的城鄉整併之後，有需要將我們的公共服務系統來與智慧生活科技應用整併，而執行這些的前題就是認同城市的永續發展，剛剛市長致詞中

林欽榮，臺南市副市長
Charles Lin, Deputy Mayor of Tainan City Government, Taiwan

特別指示了於市政府旁 101 公頃的九份子地區，希望能在今天的宣示之後，能與在地的建築師與市民進行更多的溝通。

最後簡約的介紹幾個進行中的智慧計畫，首先是九份子的永續生態低碳社區建構，結構明年就可以完成，位於臺南市政府的正北邊，介於鹽水溪與嘉南大圳之間，它會是新的鑽石。我們也願意跟臺灣各縣市學習，尤其是遠雄趙董事長在得到全球認證的智慧生活社區的案例裡給了我們相當大的啟發，這樣的分區，這樣的低密度，以及這樣的生態條件，都已經在進行實作。另外透過雲端提供公共資訊服務，增強我們所需要的社區巴士，做為低碳能源的應用，作為社區安全防護等等，而這些必然要與政府各個平行機關設定連結。這個計畫也獲得行政院環保署認定成為低碳城市關鍵的實驗基地，所以我們必須有所準備，透過這樣的條件逐步佈局、調節，甚至是將智慧生活性的科技推廣更多的應用。

另一項正在進行的案子，由經濟發展局與交通局共同合作，與中央一起進行智慧電動車的運行計畫。我們如何利用電動車生產聚落在臺南的優勢，運用自己的公共服務系統的調節，透過市政府的安排，設計使用電動車的路線與車程。相信可以達到市民所期待的拉近城鄉之間距離的服務，補足目前城鄉運輸的不足。目前已經進行變電站、充電站的相關設置，請各位拭目以待。

總結，城市需要創意、城市需要生態、城市需要科技、城市需要幸福。從這個條件來講大概只有都會區的公共服務系統是一個可行的方案。因此，唯有用少來做多，才能讓臺南市更有智慧，必須全面照顧，不是拿來作的單一表達的時尚，是照顧最基本的生活需求，基於永續生產、社會正義、基於幸福城市的營造，我們可以說：生態的營造 + 低碳家園的承諾 + 邁向智慧城市 =21 世紀臺南的新方程式。謝謝！

Thank you to all our distinguished guests, especially our friends from afar. I am very happy to see that all of the seats have been taken today. I would like to continue emphasizing what our mayor just said to us, that Tainan is one of the five newly emerging cities in Taiwan and we face both challenges and opportunities at the same time. This challenge includes an adjustment of administrative structure. The new challenges we face after the merging of Tainan City and County include the transformation and renewal of traditional industries, the improvement of public transit services, the gap between urban and rural areas, and insufficient local financial resources. Meanwhile, we need to face the geographic potential and regional difference; the existing development resources need to be re-integrated and the idea of a smart city offers a new and viable direction.

Why do we need to develop Tainan City into a smart city? For many years, Tainan City has already been a cultural capital and a high-tech city. We need to take advantage of our residents' inherent cultural and technological aptitude to use smart living technology and apply it to

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our public service system. I think that this is the way to go for Tainan City and there are four reasons for my opinion. First, we need to be proactive in our efforts to reduce greenhouse gas emissions. That is why we became a low carbon Southern Taiwanese representative city. Second, we need to look for innovative solutions to energy use issues in the city. Tainan has plenty of sunshine and it a world-class PV production site. In addition, each city in this global village has the responsibility to look for new solutions to challenges in energy production. Third, we need to coordinate with government policies on smart living, in particular, the i-Taiwan 12 Projects, Four Major Smart Industries, and smart living technology applications that cover almost all current national policies. These are also Tainan City's policies and our strength. Fourth, we need to lead in smart living technology development and innovative urban public service modules to encourage organizational and industrial development and economic revitalization.

After giving you the reasons, I will describe the Great Tainan Flagship Plan that our team created after our mayor took over the office. It covers the economy, ecology, social justice, balance in urban and rural development, and sustainable development. The key is that in Taiwan this is the first city to integrate its flagship project with a smart city program. Beginning next year, we will inaugurate an R&D program and hope that all enterprises, international investors, and academia will soon regard Tainan City as an inspiration for their projects. In the second year, we will start micro-experiments and then enter the expansion and operation stage. In order to reach these objectives, several research centers were given grants by the National Science Council to start their projects.

I would also continue on the remarks of our mayor in regards to the fact that each bureau in the Tainan City Government will carry out their own projects. For example, Mr. Lin Sheng-che, the Director of the Health Bureau is already set to implement his department's plans. Moreover, the Education Bureau has also begun cooperating with IBM and Microsoft to develop smart classrooms. The Water Resources and Sewage Bureau is preparing smart technology for flooding prevention and treatment programs. In short, we have at least six links that we will start working next year and will continue for the next three to four years. It is our hope that, via the added value of public services and smart technology, we will plan and implement innovative projects in the fields of disaster prevention, energy saving, transportation, medical services, education, and security.

Our city is an experimental platform for new ways to provide public services. Tainan, after the merger, will need to integrate the two public service systems and incorporate smart living technology. The goal is to encourage sustainable development. As indicated by our mayor in his opening remarks, an example was necessary communication efforts made between local architects and the public regarding the use of the 101 hectare Jioufanzi Area.

In the end, I would like to briefly introduce some smart projects in process. First is the construction of the Jioufanzi sustainable, ecological, and low carbon community. The structural building will be completed next year. It is located in the northern part of Tainan between the Yenshui River and Chianan Canal. It is a new diamond. We are also willing to learn from cities and counties around Taiwan. We are especially inspired by the globally certified smart living community of Chairman Chao of the Farglory Group. The theories involving sub-zones, low density, and ecological conditions are now part of practical applications. In addition, through the provision of public information services by a community cloud, we are able to improve our ability to meet community bus demand to fulfill the needs for low carbon energy use and community security protection. But these inevitably need to connect with several horizontally operating governmental units. This project has been recognized by the Environmental Protection Administration of the Executive Yuan as a critical low carbon city experimental site. Thus, we need to be prepared and utilize smart living technology through the above arrangements and for future changes.

Another project in process is being carried out by the Economic Development Bureau and Transportation Bureau as well as the Central Government. It focuses on an operational plan using smart e-cars. We will make use of the production cluster of e-cars in Tainan as a strength as well as adjust our public services system. Through an arrangement with the Tainan City Government, e-car routes and driving distances have been designed. We believe that this will close the distance gap between public services provided for urban and rural areas by solving the issue of insufficient transportation services in rural areas. At present, we have installed charging station equipment. Please wait and see the miracle as it unfolds.

In conclusion, a city needs creativity, a healthy ecology, technology, and peace of mind. Public services are the key. We need to serve more with limited resources to enable Tainan to become a smart and caring city. We need to care for the basic needs of life based on sustainable production and social justice. That is the way to build a happy city. We can say the new formula of Tainan in the 21st Century = ecologically-friendly buildings + low carbon efforts + smart city technology. Thank you.

Keynote Speech 2

專題演講

美國迪比克市－智慧生活社區永續發展

Sustainable Dubuque : Smart Technology & Community Engagement

主講人 Speaker :

Roy D. Buol **美國迪比克市長**
The Mayor of Dubuque City, USA

Thank you, good morning. As Mayor of Dubuque, Iowa, I want to thank the summit organizer for this opportunity. I'm honored to be involved in this highly critical summit in creating a green greener and more sustainable planet. Dubuque is a Midwestern American community with a population of 58,000 citizens and is located on the banks of the Mississippi River. It's near the state of Iowa, Wisconsin, and Iowa. Dubuque is centrally located within several metropolitan areas. Although Dubuque's population is only 58,000, there are 3 million people who live within 100 miles of Dubuque and 67 million live within 500 miles. Dubuque is small enough to be adaptable and implement change efficiently. Yet it is large enough to be relevant. It focuses on creating a sustainable environment for communities of 200,000, and smaller, where a significant 40% percent of American population resides. In the 1980s, Dubuque experienced an extremely difficult time and at one time had the highest unemployment rate in the whole nation, 24%.

Fortunately, community leaders gathered together to create public and private partnerships that became monumental in the changes that would occur in the next 20 years. Now as a long time public servant, I can attest that Dubuque's transformation has been the result of many public and private partnerships cultivated locally, regionally and nationally. We share a candid spirit that has to this day focused on not whose idea something is but how we can turn a good idea into reality. One of the ideas is what is known today as the sustainable Dubuque. I was sworn in as the Mayor of the city of Dubuque in January 2006. Early that summer I attended my first conference of US Mayors. During that conference, I joined with 230 mayors and signed on the Mayors' climate protection agreements to address the climate problems through reducing carbon dioxide emitted in our city. Today, over 1000 mayors have signed up with their commitments. In August 2006 our City Council passed a section and we voted unanimously that pursuing a sustainable green city is the city council's top priority. The success of Dubuque's sustainable vision is that it is grassroots and community-driven efforts. In 2007, the city council created a sustainability task force, comprised with individuals from different backgrounds and of different interests, including the local government, schools, utility companies, religious organizations, neighborhood associations, News organizations, non-profits, Environmental organizations, and business stakeholders.

The task force met regularly, and collected communitywide input to define of what sustainability meant to them. The result of these efforts, along with other data collected by the task force, were used to develop a sustainable Dubuque and model which focuses on life qualities. This is our vision statement: Dubuque is a viable, livable and equitable community. We embrace economic prosperity, environmental integrity and social/cultural vibrancy to create a sustainable legacy for generations to come. In order to implement that vision, the task force identified 11 key principles to support three pillars, and to guide the community's path to a more sustainable future. Supporting the pillar of economic prosperity are four principles: regional economy, smart energy use, resource management and community design. Supporting the pillar of environmental integrity are three principles: healthy air, clean water, and native plants and animals. Supporting the pillar of social/cultural vibrancy are the four principles of green buildings, healthy local

foods, community knowledge and reasonable mobility. Sustainable Dubuque is built on a public/private partnership between residents, government, businesses, schools, and nonprofits. Our model has been widely embraced in Dubuque, as well as being recognized in the region, nationally and internationally. We have grown to understand that as a community, our voice do have a global impact. Through this understanding, we are working aggressively and innovatively to do our part to ensure that our next generation can enjoy the same life quality as we do today. Our community is positioned as one of the best instrument of finding climate change solutions through collecting, interpreting and sharing of carbon footprint data.

As I attend summer conferences throughout the United States, I advocate for local leaders to take action. As I shared with my council colleagues in May 2006, and which remains true today, cities that develop sustainability today will have competitive economic advantages into the future. this philosophy has enabled Dubuque to become an early leader among smaller American cities. We can change the world to expand awareness, create partnerships, to encourage initiatives involving all sectors of our community, the region, the nation and beyond. In the end, Dubuque's focuses on the vision and sustainability has been a very grass-roots, public process. Its success can be directly attributed to the city council's determination to involve citizens from the outset. What we achieved today is the direct result of the knowledge and understanding that sustainability can only be approached through life quality. It is our approach to life quality that no one is excluded. Everyone who wants to do so can participate and contribute. Sustainable Dubuque is proving that when local government takes the vision to the grassroots, citizen engagement is a driving force to its success. In September 2009, We combine our smart Dubuque initiatives with smart technology. We collaborated with the IBM research Center, the IBM's division for the "let's build a smarter planet" campaign. This research partnership is called "smarter sustainable Dubuque." Its plans included development, having smarter technologies and implementation strategies, and creating a replicable, international model of sustainability for communities of 200,000, and under.

The model will integrate community engagement and education, provide more energy efficient way of operating municipal services and buildings, decrease carbon emissions, create new jobs, increase financial savings, and achieve a higher quality of life for the entire community. The goal of this research project is to give Dubuque citizens what they need, reliable information specific to them, to do what they want, which is to save money, conserve energy, to support the local economy and environment. As the saying goes, a picture is worth 1000 words, so I would like to show you a short video about our efforts in Dubuque.

Video Clip

In 2005, Roy Buol ran for the Mayor of Dubuque, Iowa on a platform of engaging citizens as partners. And what he'd heard from the citizens were consistently surrounding water quality, recycling, green space, public transit, cultural vitality, accessibility and downtown revitalization. In 2009, Mayor Buol was instrumental in the launching of "Smarter, Sustainable Dubuque," a unique private-public partnership between the city of Dubuque and IBM research, the division of IBM responsible for "A Smarter Planet" campaign. Dubuque has a wonderful collaborative atmosphere. It was built out of necessity. In the 1980s, upon suffering from high unemployment rate and the decline of traditional industries, the public-private sectors formed a series of communication channels that allowed them to act quickly and flexibly. What was built out of necessity is now a new opportunity. Markets, new products, and new collaboration have led to growth and success.

Citizen : When I think about a smart and sustainable Dubuque, I think of smart as giving the individuals and businesses the real-time information they need when they make decisions about resource management. It has changed the whole paradigm of how we think about resources and conservation.

Citizen : Having IBM here as a partner, we are able to solve some of the issues and priorities what we were working on in our community. The imperatives are continued growth and success as a city and a community.

Citizen : In 1984, we have an unemployment rate that was the highest in the United States at 23%. Today, we are in an even more severe recession globally and nationally, and Dubuque is a shining star. The unemployment rate is lower than the state average, which is significantly lower than the national average. We have some of the best jobs and we are one of the top 10 communities in the United States in the next five years. And that's because we elected talent, supports talent, and people in the private sector supported the town.

Mayor : When I was elected Mayor in 2005, one of my platforms was that we need to create a sustainable community. I told my city council colleagues that cities who commits to sustainability today will have decided advantages over those who don't in the near future.

Citizen : I came back from the Council meeting and sustainability was identified as one of the top priorities. I had to try and define that. I remember going to the city manager and said, you know, I think this is something that we need to define. This is something that the community should define. The director was from the city policymakers who were citizen- elected. We really need a process. They need to give us the definition, and then we can decide what our work would be.

Citizen : So the business and the community is working with the government in a way that I never saw in any other communities before I came here. I think that there is a feeling that the citizens are challenging the government. I like that because they would come and say this is what I think you should be doing, and they feel that they are involved in the government. They also have a real stake in the outcome, whether it's government activity, business activity, or what the school is doing. that is what fosters the communitywide collaboration.

Citizen : I think one of the greatest challenges today is working across different sectors both in the community but also in different levels of the government, the local government, State government and the Federal government. It's a rule of thumb to find a common denominator.

Citizen : It's a community that's small enough that you can really do some unique experiment that is replicable, yet it is big enough that it has applications elsewhere. If it works here then it can work somewhere else. We are small enough to get it work, but we are big enough to be credible and suggest others to do it, even if they are larger than we are.

End of Video

The smarter sustainable Dubuque initiatives is engaging volunteer residents and businesses who can use technology and want to better use their resources like water, electricity, oil and natural gas. Individual awareness is also considered as a component. These new technology digitize and connect city systems, sense and analyze integrated data, and allow Dubuque to respond intelligently to the needs of citizens.

It also give city governments new insights into how to conserve Dubuque's resources. It will help them become more sustainable, and improve their opportunities in an increasingly competitive world economy. IBM research developed websites or portals utilizing cloud computing technology for both our smarter water pilot study and smarter electricity pilot study. The result of the Smart water pilot study showed an eight fold increase in our detection of water leaks, and an overall 7% reduction in our water use.

We are in the process of completing the smart electricity pilot study. In reviewing historical data and analyzing daily use of electricity, IBM has determined that almost 26% of everyday household use is phantom power electricity which has been consumed by appliances when not in use or do not provide any value to the residents. The savings opportunities alone are very significant. Preliminary results are already showing a range of 4 to 11% reduced energy utilization per month for engaged households. We are currently recruiting Dubuque volunteers for our smarter travel pilot study. The smart meter will analyze travel patterns, routes, and operate differently. We are utilizing two technologies, a new smart phone application developed by IBM and a unique radio frequency identification or RFID tag to collect data about the way the user drive, bike, or walk to work.

The smart phone app is a kind of technology that the residents are already familiar with and allow users to receive real-time update on road closures and other traffic events. The RFID tag was developed to track packages in cooperating delivery system. The anonymous, aggregated data collected through this system will be used by a city and its transit partners to implement policies and other road impacting options and improve current public transit options. We're proud that IBM chose Dubuque as its first Smart city in North America for this project. More than 10 million dollars of outside public and private investment has been pledged to support the smarter sustainable Dubuque research efforts. Before I conclude, I'm honored to share with you this short video about Dubuque's research efforts with IBM.

Video

It is a town that transitioned tremendously in the past decades. From a basic agricultural and manufacturing town to a mixed industry and today is considered one of the more progressive sustainable communities in the United States. The goal of a smart sustainable Dubuque research project is to integrate information across different sides of energy and resources. It's about giving people what they need, which is information specific to how they use resources, to do what they want, which is to save money, conserve resources and protect the environment.

To do that requires a lot of data, and that's where cloud computing of IBM comes in handy. IBM wants to help. It doesn't matter where your sensors are, how many there are, when they are sending data. We can pool all that together, and solve problems. The main smarter sustainable Dubuque projects are smarter water, smarter electricity, smarter natural gas and smarter travel. The most exciting thing to me is probably the first time I saw the water pour. I had four galleons per hour leak in my household.

I was astounded. 25 to 28% of the water produced in the country is lost through leaks. As the water pilot came into conclusion, we saw 6.6% reduction in water consumption; we also saw an eightfold increase in leak detection. It's a positive result from the water study. We're also excited about the early indications we got from the electricity pilots. I owned a 100 year old home so I want to make it as efficient as possible. It's a wonder way to check what we are using every day and change our living to reduce our footprints. The portal has told me this September our usage were down 26% from last September, so our energy bills should be down by 26%. You move from the research to the IBM cloud and you have the smart project in place. All these things are happening seamlessly, there are not invisible to the end users, the Dubuque. You don't see the crap; you don't know what's going on the backside. I just know it's very simple to use and it gives me the information on my home and what I need.

I think the next phase we are looking at it is moving the silos together, from water, electric, natural gas, and travel, And see what kind of interrelationships we can see in these things. Through cloud computing. You can make a lot of these things cost effective. For communities like Dubuque, this kind of partnership with IBM is critical. The beauty of cloud computing in a smarter sustainable Dubuque is it gives us access to the world's finest technology and the world's finest technicians without having to pay the upfront investments. IBM is a wonderful partner for Dubuque in this sustainable Dubuque project because there is an organizational alignment in sustainability and the ability to use data more smartly in the future. I think this is technology and innovation coming together societal innovation and business innovation, and that is why it's so exciting. Another thing with IBM is that they are like a natural marriage of the two on this smarter sustainable Dubuque project.

While Dubuque is not the only city that has taken a proactive and technology-oriented approach to resource consumption and sustainability, Dubuque is at this time the only American community that is integrating all the individual resources or silos of energy to an integrated sustainability system. Giving citizens the power of real-time water uses information and reducing electricity consumption or natural gas consumption is new. Giving citizens the ability to use their travel and transit data to improve their health is new. This ability to view all personal energy interaction within the community is unique. I thank you for your time and your interest, and I look forward to learning from all of you as we focus on the goal of creating a smarter sustainable world. Thank you very much.

謝謝，早安。

身為愛荷華迪比克市市長，本人要感謝論壇的主辦單位給我這個機會。本人很榮幸受邀對此次建立更綠、更環保與更永續地球至為關鍵的論壇。

迪比克位於美國中西部密西西比河河畔，人口約為 58,000 人。它為愛荷華、威斯康辛的邊境城市，也與許多大都會為鄰。雖然迪比克市的人口只有 58,000 人，在迪比克 100 英哩內，居住人口達 300 萬人，在 500 英哩內，有 6700 萬人居住。迪比克很小，很容易調適與有效執行改變。但是它也大到不容忽視。它著重為 200,000 人或更少一點的人建立環境永續社區，這已經含 40% 美國人的居住地。在 1980 年代，迪比克歷經一段非常艱辛的時間，且一度有著美國全國最高的失業率，高達 24%。幸運地，社區的領袖聚集在一起，建立公私夥伴關係，這成為未來 20 年改變的動力。

身為長期的公職人員，本人可以證實迪比克的轉變是經地方、地區與全國深耕公私夥伴關係的結果。我們共有的信念不是誰的想法重要而是如何將想法落實。其中一項重要的想法是今日所謂的永續迪比克。我在 2006 年 1 月宣誓就職為迪比克市長。在那之前的夏天我參加第一次的美國市長會議。在那會議中，本人與 230 位市長一起簽署市長的環境保護協議，透過減少城市的碳排放來因應氣候問題。

今天， 1000 多位市長已經簽署並且做出承諾。在 2006 年 8 月，我們的市議會通過，市民也投票同意永續綠色城市是我們的優先目標。迪比克市的永續願景能夠成功是因為基層與社區的努力。在 2007 年，市議會成立由來自不同背景、代表不同利益個人所組成的永續任務小組，包括地方政府、學校、電力公司、宗教組織、鄰里協會、新聞組織、非營利、環境組織與企業關係人等。任務小組定期開會，並且收集社區意見，定義出永續性的意義。這些努力的結果，加上任務小組收集的其他資料，都用來發展永續的迪比克市以及注重品質的模式。這是我們的願景宣言：迪比克市為有活力、宜居與平等的社區。我們擁抱經濟繁榮、環境完整以及社會 / 文化活力，為未來世代建立永續傳承。

為了實踐該願景，任務小組定義出 11 個關鍵原則以支持三大支柱，並且引導社區邁向更永續的未來。支持經濟繁榮支柱的四個原則為：區域經濟、智慧能源的使用、資源管理與社區設計。支持環境完整支柱的三個原則為：健康空氣、乾淨水源以及原生動植物。支持社會 / 文化活力支柱的四個原則為綠建築、健康當地食物、社區知識與合理動力。永續的迪比克市建立在居民、政府、企業與非營利組織之間的公 / 私夥伴關係。

我們的模式在迪比克市受到廣大支持，在地區、美國以及國際上也受到認同。我們瞭解到社區的聲音在全球有影響性。透過這樣的理解，我們積極、創新地善盡責任，確保我們的後代可以享有與我們一樣的生活品質。我們的社區定位為透過收集、詮釋與分享碳足跡資料找出氣候變遷的解決方案。我夏天時在美國參加研討會時，我支持地方領袖採取行動。我在 2006 年 5 月與市議會所分享的現在仍是事實，今日永續發展的城市，在未來仍能保有競爭優勢。這個理念讓迪比克市成為美國小型城市的領導。藉由提高意識、建立夥伴關係、鼓勵社區、國家與國際各界參與，我們可以改變世界。

最後，迪比克市的願景與永續性為十分基層性、公眾過程。我們今天所達成的是瞭解永續性是只能夠透過生活品質建立的直接結果。我們所提升的生活品質，含括每一個人。只要願意，每個人都可以參與以及貢獻。永續的迪比克市證明了地方政府採納基層意見的作法，公民參與是其成功的動力。在 2009 年 9 月，我們結合智慧迪比克方案與智慧技術。我們與 IBM 研究中心合作進行 IBM 的「一起建立更有智慧星球」活動。此研究夥伴關係稱為「智慧永續迪比克市」。其計畫包括開發、發展更有智慧技術與執行策略，並且建立 200,000 人可以複製、國際模式。

此模式將整合社區參與與教育，提供更具活力與有效方式運作市區服務與建築、減少碳排放、創造新工作、省下更多財物並且提升整個社區的生活品質。此研究計畫的目標為給予迪比克市市民所需要的，提供特定資訊、做他們所想要的、更節省成本、能源，支持當地經濟與環境。就是俗語說的，一字千金，因此我將以短片來介紹迪比克市的努力。

短片

在 2005 年，Roy Buol 以市民參與平台，參選愛荷州迪比克市市長。他持續聽到市民談論水品質、回收、綠色空間、公共運輸、文化活力、使用性與市區活化等問題。在 2009 年，Buol 市長推動獨特的迪比克市與 IBM 負責「更有智慧星球」活動研究部門之間公私夥伴關係的「更有智慧、永續迪比克市」。迪比克市有極佳的合作氛圍。是根據需要所建立的。在 1980 年代，在遭受高失業率與傳統產業蕭條後，公私部門建立可以快速與彈性回應的溝通管道。根據我們需要所建立的是新商機、市場、新產品，新的協同帶來成長與成功。

市民：我要的是智慧與永續的迪比克市，智慧就是在個人與企業要做出資源管理時，給予他們所需要的即時資訊。這改變了我們對於資源與保育的整個思想典範。

市民：與 IBM 合作，我們能夠解決社區目前努力的議題以及鎖定優先工作。重要的是整個城市身為一個社區持續成長與成功。

市民：在 1984 年，我們的失業率是全美最高，高達 23%。今天，我們處於全球與全國更艱困的不景氣中，迪比克市是個閃亮星星。失業率遠低於全國平均。我們有最佳的工作，在未來五年是美國前十大最佳城市。而這是因為我們選出最有能力人才，支持人才，私人產業中人才也支持城市。

市長：我在 2005 年當選市長，我的目標之一為建立永續社區。我告訴市議會今天致力於永續發展的城市在不久的未來可以掌握優勢。

市民：我剛參加完市議會會議，永續發展是我們的優先工作之一。我必須嘗試努力並且給予定義。我記得去跟市政府人員說過，這是我們需要定義的事。這是社區需要定義的事。主事者是城市的決策者，並且是由市民所選出。我們真的需要一個流程。他們需要給我們定義，我們可以決定要工作的事。

市民：所以企業與社區與政府合作，這個方式是我之前從未見過的。我認為這是市民在挑戰政府。因為他們會告訴政府該做什麼，該參與什麼。他們真正參與的結果，不論是政府活動、企業活動或學校活動，這會促進社區協同。

市民：我認為今天的極大挑戰為在社區內不同產業以及各級政府，地方政府、州政府以及聯邦政府之間不同部門的合作。我們夠小可以行得通，但是我們夠大值得信賴，可以建議別人跟著做，即使他們比我們大。

短片播放完畢

更有智慧永續發展的迪比克市方案讓可以使用技術與願意更善於利用水、電力、石油與天然氣的市民與企業自願參與。個人意識被視為重要的組成。這些新技術將城市系統數位化並加以連結，分析整合資料，並且讓迪比克市可以明智地回應公司需求。它也提供市政府新的見解，如何保育迪比克市資源。它將幫助他們更永續，並且改善在全球經濟中競爭的機會。

IBM 研究開發網站或入口網站利用雲端技術進行我們的更有智慧的用水前導研究與更有智慧的電力前導研究。更有智慧的用水前導研究顯示出我們的漏水偵測增加八倍，整體減少 7% 的水資源使用。我們的智慧電力前導研究正在完成中。在檢視歷史資料與分析每日使用電力部分，IBM 發現近 26% 的每日家庭用電為不使用電器或不能提供給居民任何價值的幽靈電力使用。光是省下這些用電就有顯著效果。初步結果已經顯示可以為住家用戶每月節省 4-11% 的能源使用。

我們目前在招募迪比克市義工進行更有智慧交通前導計畫。智慧計程器會分析交通模式、路徑並且以不同方式運作。我們利用兩項新技術，由 IBM 開發的新智慧手機運用與獨特的無線頻率辨識或 RFID 標籤，收集使用者駕車、騎自行車或走路上班等資料。

智慧型手機 app 是市民已經熟悉的技術，並且允許使用者收到終點以及其他交通事件的最新即時資訊。在運作提供系統時，開發 RFID 標籤追蹤計畫。透過此系統收集到的匿名、整合資料將由市政府以及其運輸夥伴使用以執行政策以及其他影響道路交通與改善目前公共運輸選項。我們很驕傲 IBM 選擇迪比克市執行其在北美州第一個執行智慧城市計畫。外部公私部門投資注入 1000 萬美元支持更有智慧、永續迪比克市研究。在我的結論前，我很榮幸可以與你們共同觀看迪比克市與 IBM 合作研究的介紹短片。

短片

這個城市在過去十年有了巨大轉變。從基礎農業與製造業城鎮，變成農工混合城市，而今天被視為美國持續永續發展的社區。智慧永續迪比克市研究計畫的目標為整合不同能源與資源資訊。它是給予人們他們需要的東西，告訴他們如何使用資源，作他們想作的事，節省金錢、資源以及保護環境。

要達成上述目標需要許多資料，因此 IBM 的雲端運算非常便利。IBM 希望協助。不管感應器的地點在哪，有多少台感應器，什麼時候傳送資料，我們都能夠整合，並且解決問題。主要的更有智慧、永續迪比克市計畫為更有智慧水資源、電力、天然瓦斯與交通。對我而言最振奮的是水資源的改善。過去我家裡每小時漏水四加侖。我很驚訝在美國有 25%-28% 的水是因為漏水流失的。在水資源使用前導計畫結束後，我們見到減少 6.6% 的水資源使用，我們也見到漏水偵測增加八倍成效。水資源研究有正面效果。從電力研究得到的初步指標也很令人振奮。我的房子有百年歷史，所以我希望能夠儘量有效率。很神奇地，只要我們檢查每天的使用情況，改變我們的生活，就可以減少我們的碳足跡。

入口網站告訴我今年我們的用量比去年九月減少 26%，所以我們的電費減少了 26%。把 IBM 的雲端研究變成智慧計畫。這些事都是無縫完成，終端使用者迪比克市見不到。你不知道背後的運作。我只知道很容易使用，我在家裡就可以拿到我需要的資訊。

下一個階段，我們要更進一步整合水資源、電力、天然氣與交通資料，並且瞭解彼此之間的交互關係。透過雲端運算，可以實現成本效益。像迪比克市這樣的城市，與 IBM 這樣的夥伴關係很關鍵。更有智慧、永續迪比克市中雲端運算的好處為讓我們可以使用世界最佳的技術與技術人員，不需要投入龐大的金額。在更有智慧、永續迪比克市計畫中 IBM 是迪比克市的絕佳夥伴，因為組織的永續性以及在未來能夠更有智慧使用資料的能力。

我認為這是結合科技與創新的社會與商業創新，這也是非常令人振奮的原因。與 IBM 的更有智慧、永續迪比克市計畫合作，就像是婚姻的自然結合一樣。

儘管迪比克市不是唯一一個對資源使用與永續採用主動、技術型方法的城市，迪比克市卻是唯一的美國城市將所有個別的資源整合至永續性系統中。給予市民即時用水資訊，減少電力或天然氣使用的權力是新的作法。給予市民利用交通資料，改善交通的能力是新的作法。可以檢視所有個人在社區中能源使用互動的能力是獨特的作法。謝謝各位，也很期待聽到各位對於建立更有智慧永續世界的作法。謝謝！

2011.12.15 / **DAY 1**

座談討論 *Panel Discussion 1*

林盛豐 *Sheng-fong Lin*

實踐大學建築系副教授
Associate Professor, Department of Architecture, Shih Chien University, Taiwan

除了今天兩位專題演講的主講者之外，我特別介紹一下吳政忠教授，他是臺灣智慧生活空間發展協會的理事長，他一直在推動 SMART LIFE 的相關事務，他也曾經擔任過行政院國科會副主任委員，同時也是行政院科技顧問組的副執行秘書，在這些職位上都一直在關心智慧城市這件事情。

In addition to two keynote speakers, I would like to especially introduce you Professor Tsung-Tsong Wu who is the Director of Smart LISA and has been promoting SMART LIFE. He also served as Deputy Minister of National Science Council of Executive Yuan as well as Deputy Secretary General of Science and Technology Advisory Group of Executive Yuan. He has been very attentive to the development of smart cities.

吳政忠 *Tsung Tsong Wu*

國立台灣大學應用力學研究所特聘教授
Distinguished Professor, Inst. of Applied Mechanics, National Taiwan University

我很欽佩前兩位講者描繪著城市未來的願景，結合生態環境與在地經濟就業機會，整合智慧科技，讓我們得到許多的啟發。尤其是 Buol 市長，就算城市人口數不多，但對於城市的規劃卻考慮到未來全世界可能會面臨的挑戰。

首先就是溫室效應。我們該怎樣去創造低碳的環境？

第二，綠色能源的應用。包括如何節約？節約能源對於臺灣來說一直是非常重要的，如何利用智慧科技於電廠電錶？甚至是到使用端家家戶戶的應用，還有生態保存。不只是我們一般討論到的環境議題，更包含動物植物！這是對於臺灣同樣重要卻容易被我們忽略的，尤其是原生植物。再來是在地美食，剛好我們臺南發展的重點項目之一。

最後一點，所有計畫除了政府面的執行，還有公民的參與！這關聯到計畫的支持推動力。無論是哪一階段，都需要公民的參與。

小的城市實驗成功的話，代表我們以後也可以從社區做為一個開始，逐漸再發展到整個城市甚至整個國家。身為臺南人，每次回到臺南，看見臺南的改變，尤其是往智慧城市方面的進步，真的感到很欣慰。

臺灣在過去 30 年一直以製造代工為主，非常傑出也有效率，可是面對未來，只有製造代工是不夠的。因此觀察全世界的走向，首先要注意的就是環境的變遷和保護、能源的節約與利用，也就是說，未來的 2、30 年，改變我們的生活型態是必要的。

接下來大臺南的規劃，也是朝著三個方向在走。

首先是未來環境的永續、能源的應用；第二個是高齡化社會的醫療和照顧；第三個是在公平公益的前提下活化在地經濟，惟有創造未來性的產業布局，才能留住優秀的人才。

相信臺南憑藉著文化特性，以及智慧科技的發展將會有很大的機會。

主持人：
林盛豐，實踐大學建築系副教授

與談人：
林欽榮，臺南市副市長
Roy D. Buol，美國迪比克市市長
吳政忠，國立臺灣大學應用力學研究所教授

Moderator :
Sheng-Fong Lin
Associate Professor, Department of Architecture, Shih Chien University, Taiwan

Panellists :
Charles Lin,
Deputy Mayor of Tainan City Government, Taiwan
Roy D. Buol
Mayor of Dubuque City, USA
Tsung-Tsong Wu
Professor, Institute of Applied Mechanics, National Taiwan University, Taiwan

I admire very much the vision portrayed by two previous speakers that combines with ecological environment and local economic and employment opportunities. We are very much inspired. In particular, Mayor Buol serves for a city with small populations but still considers the future challenges they may face in urban planning.

First is global warming and how should we create the low-carbon environment?

Secondly, the application of green energy includes how to conserve energy. It has been very important for Taiwan to save energy and to use smart technology for meters of power plant. This shall even be applied to each household. In addition, there is ecological conservation not only for the generally discussed environmental issues but also the inclusion of animals and plants. This is also equally important to Taiwan but we often ignore, especially, native plants. Next are local delicacies. It is also the priority development item of Tainan.

Last, all projects shall include both the execution by the government and the participation by the public! This relates to plan support and drive. No matter at which stage, we all need the public participation.

If the experiment succeeds in small cities, that means we can start from communities and then expand to the whole city or even nation. As a native of Tainan, I come back each time to Taiwan and witness its changes. I am very impressed of its advancement to a smart city.

In the past three decades, Taiwan was focused on the role of a manufacturing country. We are outstanding and efficient. But in the future, this is not sufficient. We need to observe the world trends. First, we need to pay attention to environmental changes and protection as well as energy conservation and utilization. That is to say, in the next 20 to 30 years, we need to change our life style.

For the planning of great Tainan, there are also three directions.

First is future environmental sustainability and energy application. Secondly, we need to attend the medical needs and caring for the aged society. Thirdly, under the principle of fairness and welfare, we need to vitalize local economy. Only with the creation of future industrial positioning, we are able to retain the talent.

I believe with cultural features and the development of smart technology, Taiwan has the great potential.

Roy D. Buol

美國迪比克市市長
The Mayor of Dubuque City, USA

Thank you for those comments about what we are doing in Dubuque. When I first ran for the office in 1995, part of my campaign is that we must engage citizens. From that point on, for everything I have done, I think about who our partner is so as to make the project work, whether they are individual citizens, businesses, State governments or Federal government. It's about bringing people together, and making them feel that they are a part of the solution. That was the whole idea behind our Smart Sustainable Dubuque project. We make it a top priority as the city government, and then we turn to the citizens and said "you tell us as a community what sustainability means to you and what principles that we will use to create that community." They brought back that plan to us about eighteen months later, and everyone in our city uses that plan. The plan was used to guide our decision-making. So everything we think about and do in the city is in some way related to sustainability. I believe that the whole smarter sustainable Dubuque project is going to take the city to the next level and we will really have competitive advantages not only as citizens but as businesses over communities that don't have that technology and that real-time information to help them make their energy and resource use decisions. Ultimately it will save money, save resources, help the environment and the economy. So a factory in Dubuque is more competitive than another factory in other parts of the nation because they are going to pay less for the resources and energy that they use in

making that product. We found out that as we progress in our sustainability model, we are attracting young people. The best out there. They want to live in a community like Dubuque, where there's a sustainably program, and they see people are really working for the future. It's a very robust system that has generated good quality of life and peace for the city.

謝謝對於我們在迪比克市所做努力的讚賞。我第一次擔任市長時是在 1995 年，我的主張之一就是要讓市民參與。從那時開始，我所做的每一件事，我都會思考夥伴是誰，要如何才能讓計畫成功，不管我們的夥伴是個別市民、企業、州政府或聯邦政府都一樣。這是將人連結在一起，讓他們覺得自己是解決方案的一部分。這是我們智慧永續發展迪比克市計畫背後的整個想法。我們把它視為市政府的優先目標，然後告訴市民，「你們告訴我們社區的永續性意義以及我們應該使用哪些原則來建立社區」。18 個月後市民給了我們計畫，每個人都執行這個計畫。這個計畫也指導我們做決策。所以我們思考以及在城市中執行的每件事都與永續性有關。我認為整個更有智慧、永續的迪比克市計畫會將整個城市帶往下一個階段，不僅我們的市民、企業與社區都有競爭力，過去他們沒有技術，現在即時資訊包住它們可以做出能源與資源使用決策。最後它可以省錢、省資源、幫助環境與經濟。所以在迪比克市的工廠比其他地方或國家的工廠更具有競爭力，因為所支付用來生產的資源與能源費用較低。我們發現隨著永續性模式的操作，我們能夠吸引年輕人。最佳的人才。他們想住在迪比克市這樣的城市，有永續計畫，看到真正為未來努力的人們。這是很穩健的系統，能夠為城市產生良好的生活品質與帶來和平。

林欽榮 *Charles Lin*

臺灣臺南市副市長
The Deputy Mayor of Tainan City, Taiwan

After listening to Professor Wu and Mayor Buol, I would like to use 2 min to share what I thought. I have three issues and one question. The first one is the role of city leaders and the role of municipality. What kind of the role should city governments and city leaders play in pursuit of a better and smarter city? I can learn from Dubuque and the mayor on how to make the city smarter. So that's my reflection about the roles of city leaders. The second issue is the mechanism. What we can do in Tainan is partnership performance. On the partnership platform is academia. We also welcome local businesses to participate. Thirdly, we are looking into intergovernmental co-operation. In Tainan besides city governments, we also have branch offices of the Central government, including National Park Service, and some other offices about agriculture. So to make the city smarter we can promote intergovernmental co-operation. Besides going to enterprises like IBM, we also have intergovernmental co-operation, and some social engagements. Most importance to me, I can learn from the experience of Dubuque. Another thing is the scope. You can make your home even smarter than right now. The Dubuque focus is on smarter water. But I think the scope of a smarter city should really depend on what you need. Also we have to consider the scale.

For example, population scale and geographic scale. I think Mr. Sascha is an expert on this issue. so I would like to hear the experts' opinions on this issue. We have a population of 2 million. we have an area of 2200 square kilometers. We've got a lot of geographic differences. How can Smart technologies be applied to overcome the difficulties of different scales? I look forward to hearing your opinions and I especially expect Mr. Sascha to speak on this.

在聽完吳教授與 Buol 市長的談話後，我想要用兩分鐘來分享我的想法。我要提出三個議題與一個問題。第一，城市領袖的角色以及市政府的角色。在追求更佳與更有智慧的城市目標中，市政府與城市領袖應該扮演甚麼角色？我可以向迪比克市以及市長學習如何讓城市更有智慧。所以這是我對城市領袖角色的反思。第二個議題是機制。我們在台南要如何執行夥伴關係。夥伴平台為學術界。我們也歡迎地方企業的參與。第三，我們在尋求跨政府合作。在台南，除了市政府，我們也有中央政府所屬機構，包括國家公園服務以及一些其他農業辦公室。所以要讓城市更有智慧，我們可以提倡跨政府合作。除了 IBM 這類的企業，我們也有跨政府合作以及社會參與。對我而言，最重要的是可以從迪比克市經驗來學習。另一個議題是範圍。你可以讓你的住家比現在更有智慧。迪比克市的焦點為更有智慧的用水。但是我想智慧城市的範圍應該根據你的需要而定。我們也必須考慮規模。

例如，人口規模與地理規模。我認為 Sascha 先生是這個議題的專家，所以我想請專家來分享他的看法。我們有 200 萬人。面積為 2200 平方公里。我們有許多地理差異。智慧科技要如何應用才能克服不同規模的困難？我期待聆聽您的意見，特別是 Sascha 先生的看法。

林盛豐 *Sheng-fong Lin*

實踐大學建築系副教授
Associate Professor, Department of Architecture,
Shih Chien University, Taiwan

Now we have questions from the audience again. I think both questions can be answered by Charles.

現在我們有來賓提問。我想兩個問題都可以由林副市長來回答。

林欽榮 *Charles Lin*

臺灣臺南市副市長
The Deputy Mayor of Tainan City, Taiwan

We should consider how to use small technologies to promote Tainan as the city of gourmet. Also for water resources I think it's a problem faced by many cities in Taiwan. If we can use technology in this respect I believe we can save a lot of money. Mayor Lai has been considering this, and he wanted us to make operation for our model. This means negotiation is needed with Tai-power technicians. My point is even though city leaders have big dreams, they still need to find affordable technologies. Moreover I think we can use the help of construction and real Estates businesses and learn from them.

我們應該考慮如何使用智慧科技來推廣台南為美食之都。水資源的使用也是，這是許多台灣的城市所面對的問題。如果在這方面我們可以使用科技，我認為可以省下許多錢。賴市長已經在考慮這個方法，他要我們以我們的模式來運作。這表示必須與台電技術人員協商。我的看法是即使城市領袖有遠大夢想，仍然需要可以負擔得起的科技。再者，我認為我們可以透過建築與房地產業的協助，並且向他們學習。

吳政忠 *Tsung Tsong Wu*

國立台灣大學應用力學研究所特聘教授
Distinguished Professor, Inst. of Applied Mechanics, National Taiwan University

有關於智慧電網的部份，由於節能的需求，可以預測智慧電網在臺灣的發展應該是會有好的發展。事實上臺灣有兩萬三千戶的高壓電的電錶預計在未來兩三年間安裝完成。另外一個挑戰在於六百萬戶低壓電的電錶安裝，智慧電錶就是所謂的 AMI 只是第一步，之後台電才能有各種再生能源的應用。事實上臺灣目前你要有風力發電，超過 20%你要回賣給台電是不可能的。臺灣現在正在進行這整個計畫，我認為這是未來的一個趨勢，智慧科技是唯一能幫助節約能源的方法，也會帶給臺灣未來相關業者很大的商機。事實上，做 Green Technology 不只是在保護環境，也帶給國家新產業的契機，所以必須要現在就投資，可能 5 年、6 年、10 年、20 年以後就是一個新的產業崛起，不管是在哪個城市或國家，都能擁有很強的競爭力。

In terms of smart grid, due to the need of energy conservation, the development of smart grid in Taiwan is expected with great potential. In fact, Taiwan's 23,000 households with high voltage electricity meters are expected to be completely installed in the next two to three years. Another challenge is the installation of the low voltage electricity meters in 6 million households. Smart electricity meters are also called AMI and they are the first step. Then TaiPower will have various applications of renewable energies In Taiwan, as long as you have the wind power generation, it is possible that you can sell the power back to TaiPower as long as you generate the power from wind exceeding 20%. Taiwan is now implementing this project and I believe this is the future trend. Smart technology is the only way that can help to save energies and it will bring huge business opportunities to Taiwan's relevant industries in the future. Green Technology is not only protecting the environment and it brings new opportunity to a nation. It is critical that we need to invest now. It is possible that after 5, 6, 10 or 20 years later, it will become a newly emerging industry. Cities or countries have that will have powerful competiveness.

Roy D. Buol

美國迪比克市長
The Mayor of Dubuque City, USA

I am honored to have this opportunity to join the discussion. Dubuque is a small city, so I'm not familiar with what's going on globally. I'm looking forward to the presentations to come, and I'm really encouraged by what Taiwan is trying to do. I told my wife, the time I started to think seriously about sustainability is when we started to be blessed with grandchildren. I call sustainability generational planning. It's not about our generation about our children and their children. We need to do everything we can us a global community to ensure that they have the resources to have the same quality of life as we enjoy today. Thank you for joining us today and I hope to keep in touch after this conference.

我很榮幸有機會參與這個討論。迪比克市是個小城市，所以對於全球化我不熟悉。我期待之後的簡報，台灣的做法對我有諸多啟發。我告訴我太太，我開始認真考慮永續性時就是我們有了孫子的時候。我們必須以全球村的身分來做每一件事，以確保我們的子孫能夠有資源享有我們今天的生活品質。謝謝你今天的參與，會後我希望能保持聯絡。

Keynote Speech 3 專題演講

比利時科爾特賴克市－打造智慧城市案例分享：科爾特賴克區域發展計畫

Creating Smarter Cities. Lessons From The Smart Cities Project In The Kortrijk Region

主講人 Speaker :

Filip Santy

比利時科爾特賴克市副市長
Deputy Mayor of Kortrijk City, Belgium

Ladies and gentlemen, I would like to thank the organizer of this conference for inviting me as a speaker. The Kortrijk region has just finished an important and successful project with its European partners in the North Sea area on creating a smarter city. As most of you are not familiar with the Kortrijk region, I would like to make a brief introduction. The regime is in the centre of Europe. You can get to Kortrijk in 35 min by high-speed rail from Brussels. If you stay on the high-speed rail you can reach London after 80 min. you can also go to Paris easily from Kortrijk. A couple of years ago, Kortrijk has joined in the co-operation with France and other French-speaking Belgian regions which intends to strengthen social and political cooperation. The city of Kortrijk has 75,000 inhabitants. It is the most important municipality in a region of 13 municipalities. The region that Kortrijk belongs to has some 280,000 inhabitants. And its principal activity is the development of business parts. But the region is also very involved in sharing services such as the e-government and ICT. That is why Kortrijk and the region have become partners in the smart city project. Ladies and gentlemen world is changing in a way that the history has never seen before. Everywhere people are staring at tiny screens, playing games, typing messages or downloading videos. The smart phone brings convenience collectivity and instant communication to everyone. People are getting smarter cities need to get smarter too. I don't mean every municipality should spend their precious funds developing smart phone applications. Cities need to be much smarter than that. What is smart? When we talk about smart, it is a new way of thinking and doing that puts citizens, visitors, businesses, the customers of the municipality first. Cities must be dedicated to meeting their demands and needs, and continuously improving their services. The smart cities in Europe are discovering how to use technology to redesign internal procedures to provide more efficient and effective services. Some municipalities may need to re-engineer their business processes. Some may choose to recentralize their customer services. Sometimes they need to reconsider the channel of interacting with customers. Whatever change they chose to make, the true essence of smart all comes down to people. Technology is a means to an end, but the clever e-service will fail, if people don't like it or won't use it. Municipal employees of all levels must realize that their work will always focus on serving customers. Customers meanwhile must be ready to engage with the city authorities, to make every e-service deliver on its promise.

Our projects brought together local authorities and academia to share ideas and pilot initiatives to make their city smarter. On the screen are the logos of our partners. The project was supported partly by the European Union and the European regional development fund. We work for three years to develop a better e-customer service. During this presentation I want to present to you the discoveries of the project, of course without going into all details.

Smart city was a project that operated on three domains. The first was about services, such as product catalogue on developing, aligning internal and external processes, developing new interfaces and increase customer satisfaction. The second was about mobile and wireless services. This was about developing wireless and mobile applications that allow less accessible places to use the services. The last is about user research. The aim is to stimulate the central

place of users, to enable ways for the users to know better.

Furthermore, the smart city operates on three unique methods: use of academic knowledge, mainstreaming, and co-design. Academic knowledge and network has enabled e-government initiatives to reach better results and work in a broader context. The results were collectively evaluated. Secondly, working with regional and national authorities should help the development to have a real impact, and make it easier to be applied in other municipalities. The third is to have the design and application participated by our end user, the citizens. User research, user interaction, and good communication will ensure that the services are actually used. Smart city was a sequel to an e-government project which made geographic system materials to be easily published. Smart city continued to build on the existing initiatives and strengthen them. Therefore a significant part of the smart city aims to expand and enrich the existing platform for local and online Information services is offered to the public. In short the 13 municipalities joining the project not only used the same development and software, but also sharing services and knowledge. Information is coming from local databases also from higher authorities and is brought together in one system. All municipalities can access the information as they want.

We learned a lot from the project which is useful for further actions and development. We have put them in 12 points which I will briefly develop now.

The first lesson is the service list, provided as the standard way when communicating within and between organizations. it uses unique numeric identifiers for each service. The numeric identifiers make it possible to share information about a service whenever it is gathered. It helps us build collective intelligence about services and users. Another big advantage is that services combined by one organization can be used by many others if the individual service is clearly referenced. The description and content of e-forms can be compiled by legal experts for sharing, and if necessary, they can be customized by local authorities.

Secondly it is important to define relationships in other resources in a clear way. For example who are your customers, which type of people uses a particular service. Knowing the social and demographic characteristics of your customers helps you to decide how to present services, and let you know channels of communication they are using. Services can be bundled together according to the type of people who require them.

Now I skip to the sixth reason. Services are often similar in many places. What has worked well can be freely copied by other authorities. So quality of analysis is very important. This information can be found on the website that I mentioned. There are also videos. Due to time constraints I will move on.

The second lesson that we learned is from research. The academic network has provided us a wide range of research and evaluation support and has helped in the delivery and planning in a wide range of events workshops, and publications. The result of this part of the project is quite impressive. I have a lot of practical research reports with me. They are also on the website of the smart city project. They are about evaluation and analysis of the project developments, and self assessments and direct improvements from local municipalities. Finally, communicating the lessons and findings on the smart city project.

Wireless network should not be about Internet access. It should be about delivering services. That is really the key idea about the smart city. But before providing services the city should be able to provide Internet access. Therefore we have developed some different models. The most important is the hot spot model. It seems most convenient for visitors. It focused on general public and can be offered at a very low cost. With sponsoring, it's possible to be offered for free. Otherwise there is the utility model. It aims to cover as much of the city as possible. It facilitates the development of professional wireless services. Of course costs in this case are quite high. It is estimated that about 80% of the information carries direct or indirect geographic co-relation. Therefore, linking information to geographic information system offers a lot of possibilities for analysis and decision making. For example, combining geographic information with income tax Information and quality information in housing makes it possible to detect an underdeveloped area in your city.

Lesson five, within a smart city project, one of our partners wrote a smart city framework paper defining the smart digital city from the e-government point of view. When striving to excel in e-services, it is necessary to determine what characterized well developed digital city. The smart digital city is described in this model in 10 approaches. It is a city well performing in all 10 characteristics. It is in touch with its clients, citizens, local economies, visitors, and co-workers. It builds a community which includes everyone and is well organized, innovative and sustainable. In other words the smart digital city is built on the smart combination of these characteristics, indicating a well-balanced and integrated vision and policy. Based on these characteristics, the author of the paper developed and analyzed the tools which potentially allow the list of the most important utilization of the smart city. It is meant as a tool to gain insight in the city's digital goals, ambitions, and the level of achievement. If you want to see the results you can find a demo on the Memori's website. The resource is not a ranking, but it gives insight into each principality's performance to previously established benchmarks, as well as their own priority goals and ambitions. It is also possible to compare results with those of other municipalities.

Here I quote a scholar who published in the European Journal of E-practice: "the public sector is facing important challenges and should rethink how the public service can be reoriented to create public value. They need to ensure that the government serves the needs of the society, rather than the government....What is customer content -centered? That's an important question. It is the organizational unit in municipality that serves cities in a wide range of channels." You can find the paper on the Internet. The web is the place where citizens and businesses can get their questions answered. It should be able to answer 80% of the questions at first point of contact without having to involve any municipal department staff. The challenges municipalities face when trying to deliver this sort of systematic change cannot be ignored. They need to put customers first and to develop different approaches to meet different demands. It also requires significant changes on how municipalities work. The transformation may meet many struggles. In order to develop a customer contact strategy, the answer model that can be used is a model that was developed by the Dutch government. It identifies five fields which must be addressed when developing a customer contact centre. In our city we have a unique customer contact centre which can be reached by calling 1777. It's a free phone number. It's working excellently. People can get easy access to the information. It follows the so-called principle of "click, call, face, home." When customers can't find what they want in the municipal website (click), they can call the free phone number, and if necessary, a face-to-face contact with the municipal staff and even a home visit is possible, especially for elderly and disabled people.

Without design and plans, your house may look like this. However this is how many municipalities build their ICT department. Many organizations failed to produce strategies. They produced plans without sufficient scope and quality. A lack of strategic planning compromises ICT projects on the efficient use of resources. The government e-project finds itself in ever-increasing demand across institutional boundaries. In this kind of situation there is little room for quality. So we make careful preliminary studies then decide and deliver their offerings to have best possible services.

Web portals are most important for modern municipalities. They provide fast, useful and convenient key public services. It delivers high levels of customer satisfaction. My time is running out, but I think it's important to say that the web is not just limited to communication. It connects people and let them interact and share. So it's a great opportunity for businesses and governments to use the web to deliver services to their customers. During the smart city project, a lot of municipalities have added online services of digital e-forms, which allows users to submit requests for services at their own convenience without having to call the town Hall or call the service centre during office hours. This is the model we are still developing. Now people are getting into the websites to get e-services, and we are working on secure authentication to give individuals access to their case files and the status of their applications on a personalized basis. This is to be launched next week. People can identify themselves by entering into the websites and get all the information you want to know. That's an important step forward.

What's also important is improving business processes. They define the ability and potential of municipalities to provide customers and employees with high-quality services. So now we have a model that looks at different processes. It will be easier for customers and employees to find the way to procedures that was on the website and in the back offices.

The idea of co-design is also important. We talk about attracting or involving people in what we were doing in the municipality. Co-design is bringing stakeholders into the process of design. What we learn from this is that you must start with the problem of your users, and then focus on design, thinking mainstream citizen engagement and be prepared for organizational change and on a long-term justice-based relationship.

I skipped the next points. Of course there is no e-government without good governance. Good models and best practices must be sought by the policymakers, especially in the context of European policies. From the local level to the highest authority, everybody must share the same vision. Projects should be connected to each other to provide a solid base to achieve high impact results, bringing together governments, academia, and commercial partners to a better output.

The last lesson was to know the importance of our citizens. Customer insights let us know our customers' context and preferred channels of communication and services delivery. It is more efficient.

Ladies and gentlemen, the smart city project has achieved the initial goals. I can tell a lot more on this, but I have to stop here. Thank you very much for your attention.

各位先生、女士，我要感謝會議主辦單位邀請我擔任講者。科爾特賴克地區剛與北海地區的歐洲夥伴完成一項重要與成功的計畫，建立智慧城市。因為各位大部分都對科爾特賴克地區不熟悉，所以我想要簡短地介紹。本地區位於歐洲的中央。搭高鐵從布魯塞爾到科爾特賴克只要 35 分鐘，到倫敦 80 分鐘，你也可以輕鬆到巴黎。幾年前，科爾特賴克與希望加強社會與政治合作的法國以及其他比利時法語地區聯盟。科爾特賴克市有 75,000 人，是本地區 13 個城市中最重要的城市。科爾特賴克地區的人口有 280,000 人。主要經濟活動為商業。但是本地區也非常投入共享服務，像是 e 化政府與 ICT。這就是為什麼科爾特賴克與本地區合夥建立智慧城市的原因。各位先生、女士，世界正在改變的方式是我們前所未見。在各地，人們緊盯著電腦、打遊戲、傳訊息或下載影片。智慧型手機帶給集體便利以及即時通訊給每一個人。人們變得更有智慧，城市也必須如此。我的意思並不是每個城市應該將寶貴的資金投入開發智慧型手機應用。城市必須比這更有智慧。什麼是智慧？我們所談的智慧是新的思維與方式，以市民、訪客、企業、市政府的顧客為優先。城市必須致力於滿足他們的需要與需求，並且持續改善服務。在歐洲智慧城市發現要如何使用科技重新設計程序，以提供更有效率、成效的服務。有些城市可能需要重新設計商業程序。有些可能選擇集中客服。有時候他們必須重新考慮與顧客互動的通路。不管做什麼改變，智慧的真正本質都必須來自人們。科技是達成目標的工具，但是如果人們不喜歡或不使用，聰明的 e 化科技還是會失敗。各層級的政府員工都必須了解他們工作的重心為服務顧客。顧客同時必須準備好參與市政府當局，以旅行每個提供 e 化服務的承諾。

我們的計畫讓地方政府與學術界共享想法與先導型計畫，讓城市更有智慧。螢幕上是我們夥伴的標章。這項計畫部分是由歐盟與歐洲地區發展基金支持。我們努力了三年，開發更佳的 e 顧客服務。在簡報中，我會跟大家說明計畫的結果，當然不會提到所有細節。

智慧城市是由三個領域執行的計畫。第一個是服務，像是開發、協調內、外部程序、開發新介面與提高顧客滿意度等產品類別。第二為行動與無線服務。這是有關於開發無線與行動應用，讓較無法存取的地方使用服務。最後是使用者研究。目標為刺激使用者，讓使用者更了解。

再者，智慧城市以三個方法運作：學術知識的使用、主流化與共同設計。學術知識與網路讓 e 畫政府方案有更好的結果，以更廣泛的方式運作。我們共同評估結果。第二，與地區與國家當局合作可以幫助發展，有真正的影響，其他城市也更容易應用。第三，由終端使用者，市民，參與設計與應用。智慧城市是 e 化政府計畫的系列，要讓地理系統服務更容易發佈。智慧城市持續建立在既有方案上，並且加強。所以，智慧城市有很重要的目標要擴大與加強提供給大眾的地方與線上資訊服務既有平台。總之，13 個加入的城市不只使用共同開發的軟體，也共享服務與知識。資訊來自地方資料庫與更高的單位，並且整合至一個系統中。所有城市可以在需要時使用。

我們從這個對進一步行動與發展很有幫助的計畫學到很多。我們有 12 點發現，我現在就簡短地跟大家說明。

第一點是服務單，是與組織以及組織之間的通訊標準方式。每個服務使用獨特的號碼辨識。號碼辨識比較容易分享不管在何時所收集的服務資訊。它幫助我們建立服務與使用者的集體智慧。另一個極佳的優點為一個組織結合的服務，只要有清楚的參考，就可以讓其他組織使用。E 形式的說明與內容可以由法務專家編輯以分享，必要時，可以由地方當局客製化。

第二，以清楚的方式，定義其他資源中關係很重要。例如，你的顧客是誰、什麼樣的人使用那些特定服務。了解顧客的社會與人口特色幫助你決定提供服務的方式，並且讓你知道他們在使用的溝通管道。服務可以根據需要使用對象類型加以結合。

現在，我跳到第六點。服務通常在許多地方都很類似。行得通的可以沿用。所以，分析的品質很重要。資訊可以在我提到的網站上找到。也有影片。由於時間的關係，我就往下講。第二個我們學到的是研究。學術網路已經提供我們許多研究與評估支持，並且已經幫助提供與規劃許多活動工作坊與出版。此部分計畫的結果令人印象深刻。我有帶來許多實際的研究報告。在智慧城市計畫網站上也有提供。都是有關計畫發展的評估與分析以及地方政府的自我評估與直接改善。最後，要溝通智慧城市計畫的學習經驗與發現。

無線網路不是只有網際網路的使用。它應該是提供服務。這是智慧城市的關鍵想法，但是在提供服務之前，城市應該能夠提供網際網路的使用。因此，我們發展了一些不同的模式。最重要的是熱點模式。對訪客最方便。它鎖定一般大眾，並且以低費用提供。透過贊助，可以免費提供。還有使用率模式。它既可能含括所有城市。它促進專業無線服務的發展。當然這種成本相當高。據估計約 80% 的資訊提供直接或間接與地理相關。因此，連結資訊與地理資訊系統提供許多的分析與決策可能性。例如，結合地理資訊與所得稅務資訊以及住戶的品質資訊可以偵測城市中未開發地區。

第五個經驗，在智慧城市計畫中，一位我們的夥伴撰寫智慧城市架構書，從 e 化政府觀點定義智慧城市。在努力執行 e 化服務時，必須決定數位城市的特點。智慧數位城市在此模式下有 10 個方法。它是可以履行 10 個特色的城市。連結顧客、市民、地方政府、訪客以及同仁。它建立可以含括每個人的社區，並且有良好組織、創新以及永續。換句話說，智慧數位城市建立在這些特色的智慧結合，顯示出均衡與整合的願景與政策。根據這些特色，本文作者發展與分析可以讓智慧城市善用的清單。它是可以了解城市數位目標、野心與成就的工具。如果你想要了解這些結果，你可以在 Memori 網站找到試用版。此資源不是評比，但是會讓你了解每個項目的績效與之前建立基準的比較以及他們自己的優先目標與野心。也可以與其他城市比較。

在此，我引用在歐洲 E-practice 期刊發表的一位學者的話：「公部門正面對重要挑戰並且應該重新思考公共服務如何加強以創造公共價值。他們必須確保政府服務社會需求，而不是政府…什麼是以顧客內容為中心？這是個重要的問題。它是市政府的單位以廣泛管道服務城市。」你可以在網路上找到這篇論文。該網站是市民與企業可以找到問題答案的地方。第一次就可以回答 80% 的問題，不需要任何市府人員介入。在嘗試提供這類系統改變時，不能忽視市政府面對的挑戰。他們必須以顧客為優先，並且發展不同的方法，以滿足不同的需求。它也需要顯著的改變，才能運作。轉變可能會面對許多挑戰。為了發展顧客聯絡策略，可以使用荷蘭政府開發的模式來回答問題。它指出在發展顧客聯絡中心時，必須注意的五個部分。在我們的城市中，我們有獨特的顧客聯絡中心，可撥打 1777 聯繫。它是免費電話，運作得非常良好。依照「按一下、撥打電話、面對面、到府服務」的原則運作。如果顧客不能在市政府網站找到需要的東西（按一下），他們可以撥打免費電話，如有需要，市府人員會做面對面聯絡，甚至到府服務，特別是針對老年人與殘障人士。

沒有設計與計畫，你的家可能看起來就像這樣。然而，這是許多城市政府建立 ICT 部門的方式。許多組織無法產生策略。他們產生沒有足夠範圍與品質的計畫。缺乏策略規劃組成的 ICT 計畫不會有足夠的資源使用。政府的 e 化計畫會面對許多跨制度界線的越來越多需求。在此情況下，沒有什麼品質而言。所以，我們謹慎進行初步研究，然後決定並且提供最佳服務。

入口網站對現代城市很重要。他們提供快速、有用與便利的關鍵公共服務。它有高度的顧客滿意度。我的時間差不多到了，但是我覺得必須提到網站不是只限於溝通。它連結人們，讓大家互動與分享。所以企業與政府可以使用網站服務顧客。在智慧城市計畫中，許多城市增加數位 e 形式的線上服務，讓使用者可以方便地提出服務要求，不需要打電話給市政廳或在辦公時間內，打給服務中心。這是我們還在開發的模式。現在人們到網站取得 e 化服務，我們正在發展安全授權，讓個人以個人化基礎使用他們的案例檔案以及應用狀態。這個將在下星期推出。人們可以自行確認身分進入網站，取得所需要資訊。這是很重要的一步。

改善商業程序也很重要。他們定義市政府提供顧客與員工高品質服務的能力與潛能。所以現在我們有一個可以處理不同程序的模式。對顧客與員工而言，比較容易在網站與辦公室找到的方式。

共同設計的想法也很重要。我們討論吸引或涉入市民參與市政府在做的事。共同設計是將關係人帶入設計流程中。我們學到的是你必須從使用者的問題開始，然後鎖定設計，想一想主流市民參與以及準備好組織改變與長期的正義為主關係。

我跳過下一點。當然沒有好的政府，就沒有 e 化政府。好的模式與最佳實踐可以由政策制定者來執行，特別是在歐洲政策脈絡之下。從地方到最高層級，每個人都必須有共同的願景。計畫必須與彼此連結以提供穩固的基礎，達成影響效果，結合政府、學術界以及商業夥伴，才能有更佳的結果。

最後一個是了解我們市民的重要性。顧客的看法讓我們了解顧客的脈絡以及喜愛的溝通管道與服務提供。會更有效率。

各位先生、女士，智慧城市計畫已經達成初步目標。我可以講更多，但是我必須就此打住。謝謝各位。

專題演講

Keynote Speech 4

荷蘭恩荷芬市－全球智慧區域發展：荷蘭恩荷芬智慧港

How Did Brainport Eindhoven Region Become the Smartest Region in the World

主講人 Speaker :

Mary-Ann Schreurs 荷蘭恩荷芬市副市長
Deputy Mayor of Eindhoven City, Netherlands

Thank you. It's Chinese silk. I'm really happy to be here because the things I have learned in the few days that I've been here are tremendous. I just said to my colleague from Kortrijk I am going to steal everything you have said and just implemented it, because it's the right thing to do. I was asked to speak on how Eindhoven becomes the smartest city in the world, and in the last few days I realized that it was just in the nick of time because I think that the next year New Taipei will win it, I look at the plans in Tainan, I think probably the next year Tainan will have it. So we're just in time. It's a picture of Eindhoven. A lot of you probably don't know where Eindhoven is. Everybody in the world knows PSV, that's our football club. And everybody in the world knows Phillips.

Speaker plays a video clip

More than 100 years ago Eindhoven became an important location for technology because of Phillips. This is it. It's located in the south of the Netherlands. It's highly technological. Always smarter and faster. This is our technical University. They've chosen to go for three main topics: energy, automotives, and health. This is the house was all the technological appliances for the good lives and easy lives. All kinds of care technologies are implemented. It is about empowering people. The technologies are centered on people. This is a very interesting one. We are organizing in the home all access to hospitals and physicians and making older people taking exercise and actually that means they don't have to spend so much time going to hospital. In a way we can say they get back their old lives.

But in the 1990s, it didn't look like this. We were going under. We have big manufacturing companies like Philips laying people off. Phillips was on the verge of collapsing. Just because the national government bought Phillips' patents that they survived. But now we are on top of the world. Why? The answer is cooperation between the local governments, the industries, and our institutes. The aim is open innovation. It's not like you give something away. Your talent will be put into good use. Nowadays nobody in the world is able to do things on their own. They lack the knowledge. So co-operation is the key to the future. That is called a triple helix structure, and that's the brainport. And of course, if you do things in an open and innovative ways, everybody will want to go along. A lot of companies are lending in Eindhoven. We are also trying to create opportunities for new starting companies. For instance, one of the things you saw is the high-tech campus in Eindhoven. That's where the high-tech companies are, and we are trying to add research centre to it to create added value. That's what we focus on, and now we have research institutes landed in Eindhoven which has recently created liquid light crystals.

So you have an environment in which you cooperate, and you can also share the facilities. But is this enough? No. In the end, you can invent things, but it has to be produced. So another thing that is very important concerning innovation is to have a supply chain. So we have a high-tech campus, we also have another campus in which the supply chain create new ways to produce things. For example, we have a big manufacturer of machines that make about 85% of the world's chips. The supplies of the manufacturer are all within the Eindhoven region because you cannot really make new things without being close together. The campus where these companies gather is essentially an electronic campus with all kinds of engineering.

If you look closely, a lot of things that were produced in Eindhoven are things that make it possible to produce other things. We have semiconductor manufacturer, and also manufacturers that produce robot components. But the essential question is: what are you going to make? So it is interesting to look at our technical University because our technical University has decided to go for three subjects that they're good at, and also matter in the society. They go for energy, health, and also automotives. What's really going on in the economics is that we are going from having things such as consumer products to experiencing things, certain interesting environments, to the things that create good life.

The economic advantages lie in creating that type of things. It's interesting because those things are also things that matter in our society. It means that you have to have different types of campuses. For example when you have to work closely with hospitals, you campus will be located partly in the hospitals. If you are going for automotives, your campus has to partly be in public place. They are doing all kinds of experiments on the roads. And that brings us to the next subject. What exactly is the role of the government? When you look at the high-tech campuses, we try to bring in new companies. We try to establish new research institutes. And now we are talking about something totally different. We are talking about the things that we actually have to do. Health, for example. That means we become a stakeholder, and the campuses really have to change fundamentally because what we should do is to put our citizens first. It's wonderful to look at our city and especially our technical University, because design is a subject that we are very good at. It's not just urban design but also social design.

Its brilliance lies in making things work for people, and creating a co-creating process with the people themselves. On thus slide is the term "empowerment." Empowerment is making your citizens an active part of creating the

solutions. Essentially it means that Eindhoven has decided that from now on our city is a living lab. We desperately want to create the future as soon as possible for our citizens. We start with health and we follow with education because those are the topics most important to our society. That means we are going to engage everyone, every organization that was part of the play. For example if you are looking at health, you look at housing, which actually means we're creating a new type of campus.

We are creating a virtual campus with everybody in Eindhoven working around the end-users, our citizens. I don't think everybody in Eindhoven has it clear yet. Engaging in this type of processes means every organization has to change. You know organizations are organized top-down, they're just doing their duties. And now you expect them to act as an integrated part of the whole. That means no organization will stay the way it was. The financial rules of our local government will change. All the rules have to change. Society will never be the same again. But the good thing is it will be better. And the other good thing is, it will cost less money and we will need less people to do it. We don't have enough people and money to do the health system as it is. Actually it didn't function that well. We make it better in one swoop. This is ambitious, but there is no way of avoiding going that way. Sometimes you have to look around and ask what is really important and make it happen. Sometimes you have to look at very simple political things.

All of us have stated that you have to bring them. And now Eindhoven is bringing European cities together. It really has to be an open structure; otherwise all the services that we want to bring about will not be able to be accessed. It will be monopolized in a way so open standards are the things we really need to look at now. We need to go on and on and on and create the things that we really need to create. I think I have already talked for a very long time. So I'll come to a conclusion. I'd like to share one thing with you. We're all engaged in creating a new interactive light grid that is also related to issues such as air quality and are related to the data we have in the health Department. So we can intervene also in public transport and make lives better for our citizens. But let's come back at why I was asked to be here for the first place. Why do we become the smartest region in the world? The jury visited us because of the triple helix structure, the co-operation between government, industry, and another institute. But they gave it to us because we applied it within health and care. Because we really are trying to make lives better.

To summarize, all of us are able because of a wonderful technical invention: the Internet. It helps create and design the world that we always wanted. So let's do it now. Thank you.

謝謝。它是中國絲綢。我真的很高興來到這裡，因為過去幾天我學了很多，來到這裡真好。我剛跟科爾特賴克市市長說，我要來偷你們剛才所說的所有東西，然後實施，因為這些都是正確的事。我受邀要講恩荷芬市如何成為世界上的智慧城市，而在過去幾天，我了解到只是時間的問題，因為再過幾年新北市會取而代之。我看了台南的計畫，可能明年台南就會迎頭趕上。所以只是時間的問題。這是恩荷芬市。許多人大概都不知道恩荷芬市在哪裡。世界上的每個人都知道 PSV，我們的足球隊以及飛利浦。

講者撥放影片

100 多年前，恩荷芬市因為飛利浦成為重要的科技地點。這就是恩荷芬市。它位於荷蘭南部。有高科技，總是有智慧與快速。這是我們的科技大學。我們選擇了三個主題：能源、汽機動車與健康。這是應用技術帶來良好與輕便生活的住屋。使用所有照護科技。這是授權人們。科技以人為中心。這是很有趣的部分。我們在家中提供所有醫院與醫師服務，讓老年人運動，讓他們不用花太多時間去醫院。我們讓他們可以安享老年生活。

但是在 1990 年代，並不是這樣。我們的服務不足。我們有像飛利浦這樣的製造公司，資遣員工。飛利浦瀕臨破產。政府購買他們的專利才能倖存。但是現在我們名列世界第一。為什麼？答案是跟地方政府、產業與其他機構之間的合作。目標為開放創新。這不是你給東西。你的才能能夠施展。現在世界上沒有人能夠獨自行事。他們缺乏知識。所以合作是未來的關鍵。這稱為三螺旋形結構，這是腦埠。當然，如果你以開放與創新方式行事，每個人都想要跟隨。許多公司都在恩荷芬市投資，我們也嘗試為新創公司製造機會。例如，在恩荷芬市的高科技校區。這是高科技公司的所在地，我們嘗試新增研究中心，以創造新增價值。這是我們的焦點，我們在恩荷芬市有LCD的研究機構。所有你有可以營運的環境，你可以共享設施。但是這樣是否足夠？不夠。最後你可以發明東西，但是還是要生產。所以另一件關於創新很重要的事是要有供應鏈。所以我們有高科技學校，我們有其他學校讓供應鏈可以以新方式生產。例如，我們有大型機器製造商，可以生產 85% 的世界晶片。供應商供應也都在恩荷芬地區，因為要製造新的東西你必須彼此相鄰。這些公司所在地的校區基本上是電子校園，有各種工程。如果你仔細檢視，許多東西都在恩荷芬市製造，並且可以用來製造其他東西。我們有半導體製造商以及生產機器人組件的其他製造商。

但是重要的問題是：你要做什麼？所以檢視我們的技術大學很有趣，因為我們的技術大學已經決定鎖定他們以及社區擅長的。他們選擇能源、健康以及汽機動車。在經濟中真正發生的是我們從消費產品到經歷活動、特定有趣的環境到產生良好生活的事物。經濟優勢為產生這類的事物。它很有趣因為這些事物在社會中很重要。它意味著你必須有不同類型的學校。例如，你必須與醫院緊密合作，你的校區有部分必須在醫院內。如果你要發展汽機動車業，你的校區必須在公共地區。他們必須進行所有的實驗。

我們進入下一個主題。政府的角色又是什麼？當你檢視高科技學校，我們嘗試引進新公司。我們嘗試建立新的研究機構。現在我們討論完全不同的東西。我們討論實際必須做的事。例如，健康。這表示我們成為關係人，學校必須有基礎的改變，因為我們應該以市民為優先。如果你檢視我們的城市，特別是我們的科技學校，因為設計是我們真正擅長的。它不只是都市設計，也是社會設計。它的優點在於對於所有人而言行得通並且與人們建立共同的程序。在此方面為「賦權」。賦權為讓市民主動參與產生解決方式的過程。基本上，它表示恩荷芬市已經決定我們的城市為生活實驗室。我們都極度希望為市民創造未來。我們開始健康，給予教育，因為這是對我們社會最重要的事。這表示我們要讓每個人、每個組織參與。

例如，如果你檢視健康、住屋，這表示我們在建立新類型學校。我們建立虛擬學校，讓在恩荷芬市中的每個人可以與終端使用者，市民，合作。我認為不是每個在恩荷芬市的人都很清楚。參與是每個組織都必須改變的程序。組織常是由上而下的組織，每個人只負責自己的工作。現在你預期他們整個整合。那表示所有組織都必須改變。地方政府的財政規定必須改變。所有的規定都必須改變。社會不會再是相同。但是會變得更好。其他的好事是會使用更低的成本，更少的人力。我們無法用過去的成本與人力來執行健康制度。事實上它運作得也不好。我們一下讓它變好。這就是野心，但是這是無可避免的方式。有時候，你必須檢視四周，看看哪些最重要，然後讓它發生。有時候你必須檢視很簡單的政治事項。我們說的是你要結合他們。現在恩荷芬市結合了歐洲城市。它真的是開放的結構；否則所有的服務都不可能使用。這樣真的是單方方式，所以我們必須真正檢視。我認為已經講了很久了。所以我要進入結論部分。我想要與各位分享，我們已經參與建立與空氣品質等相關議題的新方法，並且與我們在健康部門的資料有關。所以，我們可以介入公共運輸，讓市民的生活更好。讓我們回到我受邀到此的原因。為什麼我們成為世界上的智慧城市？評審團來視察我們因為三螺旋架構，政府與產業以及其他機構的合作關係。但是他們認同我們是因為我們在健康與照護的應用。因為我們真的試著讓生活過得更好。

最後，我們能做到，因為神奇的技術創新：網際網路。它幫助建立與設計我們一直想要的世界。讓我們現在就開始。謝謝。

2011.12.15 / DAY 1

座談討論 Panel Discussion 2

曾仁杰 *Ren-Jie Zeng*

國立交通大學土木工程學系教授兼總務長 / Eco-City 執行長
Professor, Department of Civil Engineering ,
National Chiao Tung University, Taiwan/CEO, Eco-City

Thank you for joining us. Our panel includes three distinguished guests. The first one is Filip Santy, Deputy Mayor of Kortrijk City, Belgium. Mr. Santy is in charge of welfare, housing policy, and administrative simplification. He is also the chairman of an organization that supports social, economic, and special development of 13 divisions. Before I start, I would also like to express my condolences for the bombing that just happened. The second guest is Miss Mary-Ann Schreurs, Deputy Mayor of Eindhoven City. She has a degree in theoretical chemistry, a very advanced and difficult discipline. She was also a member of the Eindhoven council for social and Liberal Democrats. She also co-initiated a European innovation project related to design. The third guest is Mr. Julian Chen, director of Tourism Bureau of Tainan City. Dir Chen has a Master's degree. We welcome questions from the audience.

I would like to address my first question to Mr. Santy. You just provide us with a nod of useful methodologies in promoting a smart city. I'm particularly interested in the European service list. Could you give us some examples of the service items? For example, what would be the service items on the Kortrijk service list?

謝謝加入我們。我們座談有三位貴賓參與。第一位是比利時柯爾特賴克市副市長 Filip Santy。Santy 先生負責福利、住屋政策以及行政簡化。他也是支持社會、經濟與特別發展等 13 個部門組織的主席。在我開始前，我要對剛發生的爆炸事件表達慰問。第二位貴賓為恩荷芬市副市長 Mary-Ann Schreurs 女士。她取得理論化學非常先進與困難領域的學位。她也是社會與自由民主恩荷芬市議會成員。她也共同發起與決策有關的歐洲方案計畫。第三位貴賓為陳俊安先生，他是台南市觀光旅遊局局長。陳局長取得碩士學位。我們歡迎來賓提問。

我想請教 Santy 先生。你提供我們推廣智慧城市的許多有用的方法。我對於歐洲服務單特別感興趣。是否可以給予我們一些服務項目的範例？例如，科爾特賴克市的服務項目為何？

Filip Santy

比利時科爾特賴克市副市長
Deputy Mayor of Kortrijk City, Belgium

To give you some more explanation on the service list, it is making a fundamental analysis of what you're doing as a city government and city administration. The analysis is the basis of what you're going to offer to the public. Our experience was that city services are quite the same. Birth, dying, demand for subsidies, these are all similar procedures. If you can do good analysis, you can easily find a solution of working together to find a most efficient way

to provide new public services to the citizens for a lower cost. It is one thing that we city servants and politicians should look for in this time of society evolution.

為了給你更多有關服務單的說明，必須進行身為市政府與行政機構所做事物的基本分析。此分析為你將提供給大眾的基礎。我們的經驗為城市服務也是如此。生育、死亡、補助需求，這些都是相同程序。如果你的分析夠好，你可以輕鬆地找到最有效的運作方式，以低成本提供新的公共服務給市民。這是我們身為公僕與政治家所必須在社會演變中所檢視的事。

曾仁杰 *Ren-Jie Zeng*

國立交通大學土木工程學系教授兼總務長 / Eco-City 執行長
Professor, Department of Civil Engineering ,
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The second question will be addressed to Mary-Ann. I know many cities in Taiwan have chosen cities like Eindhoven as a model. They are very interested in applying IFC titles. It is their long-term goal when they initiate smart city projects. You just mention that Eindhoven won the title because of the three helix structure. Are there any criteria that the jury focuses on?

第二個問題是要請教 Mary-Ann。我知道在台灣有許多城市會選擇像恩荷芬市這樣的城市當模範。他們對於 IFC 獎項很感興趣。這是他們在推行智慧城市方案的長期目標。你剛剛提到恩荷芬市贏得這個獎是因為三螺旋結構。有沒有其他評審團注意的標準？

Mary-Ann Schreurs

荷蘭恩荷芬市副市長
Deputy Mayor of Eindhoven City, Netherlands

The thing they're looking for are things that are important in society. So a sound economy is necessary. Implementation of broader services is also important. In the end it is what makes all happy. It's so rewarding to do work that matters. So my advice is just to do the right thing. One of the things we have to do as a city is to be part of a conglomerate. You had to share knowledge with other city. We can go so much faster when we share knowledge. In the end you have to know what you're going for, so you have to focus. No city has it all. So some things are developed by other city and you just implement it. Some things have to be co-created with other cities. So be smart, and be smart with the selection of the company and people you work with. Also in our campuses, we put companies together that will make added-values, otherwise it's wasteful for them most of the times.

他們看的是對社會重要的事。必須要有穩定的經濟。更廣泛服務的提供也很重要。最後，要讓大家滿意。做重要的事很有成就感。所以我的建議是做正確的事。我們身為城市必須做的一件事是成為集結的一部分。你必須與其他城市分享知識。我們可以發展得更快，只要我們分享知識。最後你必須知道你的成果，所以必須鎖定目標。沒有城市可以做所有的事。有些由其他城市開發的，你只需要執行。有些必須與其他城市共同建立。在我們的學校中，我們與創造附加價值的公司合作，不然會有產生浪費。

主持人：
曾仁杰
國立交通大學土木工程學系教授兼總務長 /
Eco-City 執行長

與談人：
Filip Santy，比利時科爾特賴克市副市長
Mary-Ann Schreurs，荷蘭恩荷芬市副市長
陳俊安，臺南市觀光旅遊局局長

Moderator :
Ren-Jie Zeng
Professor, Department of Civil Engineering ,
National Chiao Tung University, Taiwan
/CEO, Eco-City

Panellists :
Filip Santy
Deputy Mayor of Kortrijk City, Belgium
Mary-Ann Schreurs
Deputy Mayor of Eindhoven City, Netherlands
Julian Chen
Director, Tourism Bureau of Tainan City, Taiwan

曾仁杰 *Ren-Jie Zeng*

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Professor, Department of Civil Engineering ,
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Now let's hear Professor Chen's opinion. What will be your vision for the Bureau of Tourism of Tainan city?

讓我們聽聽陳教授的意見，臺南市觀光局的願景為何？

陳俊安 *Julian Chen*

臺南市觀光旅遊局局長
Director, Tourism Bureau of Tainan City, Taiwan

我們從前兩位講者中可以發現，做為歐洲重要的智慧城市有三個基礎元素，我也將就這個部份提問，希望可以吸取經驗讓臺南朝智慧城市邁進。

在兩個成功的案例裡面，我們發現第一個成功的要素是：政府部門擁有整合平台。第二個是：重視寬頻與無線網路的建構。第三是：產、官、學充分結合。

所以在這三項基礎上，我想請問有關 e 政府的部份，根據臺南過去的經驗，目前面臨到的是在縣市合併之後，城市的網路建構相對來說雖然是容易的，但是城鄉差距是目前有待解決的一個非常重要的問題。由於高昂的網路費用成為社會階級的門檻，因此在建立無線網路的部份，我想請問比利時柯爾特賴克市副市長鄉村地區網絡普及化，公部門該如何去執行？

第二個部分是，在城市政府內部有許多的部門，如何將資訊整合，最終以單一入口網站以及單一整合服務的方式來達到 e 政府最高的效能。我想如果沒有這些初步的整合工作，後面的行動也就變成空談。

第三個問題是，想請問荷蘭恩荷芬市副市長有關寬頻無線網路的普及建構。臺南有個類似的部份就是我們也有發展一定程度的高科技園區，以及足夠的創新產業。而荷蘭的經驗讓我們知道外部環境營造的重要，那麼公部門在其中應該扮演什麼樣的角色？在臺南目前基礎的情況下，對於我們想要進一步發展產、官、學的計畫，不知道我們副市長有什麼樣的建議提供參考？

From the talks of two previous speakers, we are able to find three basic elements in smart cities in Europe. I would like to raise relevant questions for Tainan to learn from them and to move toward the building of a smart city.

In these two successful cases, we found the first successful element as the government shall have an integrated platform. Secondly, we need to focus on the establishment of broadband and wireless network. Thirdly, academia, the government, and the industry shall be fully connected.

Thus, on these three bases, I would like to ask about e-government. According to the past experience of Tainan, after the merging of Tainan City and County, it is relatively easy to construct urban network but the key is to solve the gap between the urban and rural area. The high cost becomes the barrier for social classes, I would like to know the prevalence of network in rural Kortrijk area and how can the public sector implement the work.

Secondly, there are many departments under municipal government, and how can we integrate the information and provide single portal website and integrated services to obtain the optimal effectiveness of e-government? I think that without the initial integration, the following action will be in vain.

The third question is about the broadband wireless network prevalence and establishment in Kortrijk. In Tainan, we have a high-tech science park close to the development level as well as innovative industries as those in Kortrijk. For Dutch experience, we understand the building of external environment is very important. What role shall the public sector play? In Tainan, we would like to develop further for the cooperative project between and among the industry, the government, and academia. What suggestion would Deputy Mayor provide us?

Filip Santy

比利時科爾特賴克市副市長
Deputy Mayor of Kortrijk City, Belgium

First, about filling up the gap of the city and the suburb countryside. I think maybe Belgian is slightly different from Taiwan because a lot of our countries are very much city like. We have a long tradition in our country to have cable television at a low cost. But it's different when you want to bring fiber to the home. It's quite easy to do in the city, and now we are making an experiment. There are areas in the city were inhabitants are not so well educated, not so on the high-level. So we're experimenting to see how they can use fiber to the home for e-services. Also we want to use fiber to the home to attract younger people to work from their home, and use the broadband as a normal thing. So we have contracts with a private company to make fiber to the home reliable. But on the other hand we had an experiment on e-health. It was developed to have more contact for elderly people living at their homes without much contact with people. We want to help them have contacts with a call centre using televisions because computer is too difficult for them. It's easier to use a remote system to talk to a person at the call centre by television. Technically that was walking very well, but one of the difficulties we have is to convince the higher authority, the health Department of the national level to participate. So it's always a problem that who is going to pay for the new services offering to the public. Of course you cannot solve the problem on the local level. That is one of the bigger difficulties. Setting this is a general answer to your other questions. It's always a matter of costs. So that's a political discussion and you have to make choices.

Secondly, the integration of different governments. Of course that is a problem. I don't know the situations here in Taiwan, but in Belgian we have a lot of governments. Sometimes it takes a long time to have a new government. We've waited more than two years to have a new Federal government. Last week we has one, so now we can continue to discuss with the government. Fortunately we have another government, the provincial government, and they have their own systems. One of the obstacles is the different databases in different governments. That's quite technical. We have managed with our ICT people from the smart city project. So like I have said in my speech, we need to convince the policymakers that it is a really important thing to bring together those different systems so we don't have to input information to several databases. We want to update just one, and all the other databases will update automatically. We've now reached that point, so it can work. It takes a long time to convince people, to work together and to find solutions.

首先關於城鄉差距部分。我認為可能比利時的情況跟台灣有點不同，因為在比利時很多地方是城市。我們長久以來都有低費收看有線電視的傳統。但是要把光纖引進住家就不一樣了。要在城市執行很容易，我們現在在做實驗。在我們的城市中有些地區的居民未接受良好教育，不是高階層的人。所以我們在實驗看看他們如何在家中使用光纖接受 e 化服務。我們也想要在住家裝設光纖，吸引年輕人在家工作，使用寬頻則很常見。我們與私人公司簽約，讓住家的光纖品質穩定。但是另一方面，我們也進行 e- 健康實驗。更加照護獨自居住的居家老人。我們希望幫助他們使用電視，聯絡服務中心，因為要用電腦對他們來說太難。透過電視，使用遙控系統跟在服務中心的人聯絡比較簡單。技術上，運作得還不錯，但是我們面對的困難之一為必須說服更高主管機關，讓國家健康部參與。所以對於提供新服務給大眾，付費一直是個問題。當然，無法由地方政府解決問題。這是更大的困難之一。這是你其它問題的答案。總是費用問題。所以這是政治問題，你必須做出選擇。

第二，不同政府的整合。當然是個問題。我不知道在台灣的情況，但是在比利時，我們有許多政府。有時候要等很久才會有新政府。我們等了兩年多才產生新的聯邦政府。上週，我們有了新政府，所以現在我們可以持續與政府討論。幸運地是我們有其他政府，省政府，他們有自己的系統。我們的困難之一是不同政府的不同資料庫。這很技術性。我們在智慧城市計畫中與 ICT 人員合作。所以我在演講中提到我們需要說服決策者，才能整合不同的系統，才不需要把資訊放在不同資料庫中。我們只需要更新一個資料庫，所有其他資料庫就會自動更新。我們現在已經完成，可以行得通。它需要很久的時間說服人們，一起努力，找出解決方式。

Mary-Ann Schreurs

荷蘭恩荷芬市副市長
Deputy Mayor of Eindhoven City, Netherlands

Allow me to add two things. One is that the city is the place where things are happening. It's not in the national level any more. It's in the city. So you're so right in bringing about the questions of integrating information. The local government system isn't always organized. It is organized in silos. In the end we all live in undivided reality. So what we have to do is to perceive the city is where all is happening, and it is happening in the lives of an individual. So all we need to do is not bringing your batches together, but creating from the point of view of the people you are working for. So just step inside the shoes of your citizens, and see how they look at your system. Design will come in useful here. Another thing is more important, and that is to make use the abilities of people. It is fundamentally an interactive system. The future is about using all possibilities that are there. Everyone is in essence a piece of a puzzle; everybody is a part of the solution. For example we have old factories of Phillips in the city. We have to reuse it for city development. We allow companies and organizations to do things there. In the area we have a lot of technological start-ups who are very creative. We look at the place more closely because we want to make it a living quarter for officers. We think this may be a new making of the environment where with a style you can live and enjoy culture. And we see these companies are really small. Then we think maybe the place can be used for educational function. Or maybe we can add a new type of culture, a multi media culture. It would be an asset to the things that you want to do in your free time. On the other hand it will also be an asset for these new technology companies. The technologies are also about cultural content. So the idea is sometimes you just have to look closely for what is already there, and if I may give you one advice, it's just dare to be different. Don't just play copycats to other cities because your city is in many ways very similar to other cities. It's the thing that you do in your city give it its own identity, its edge. In Taiwan what is especially appealing to me is the way things are organized for the elderly. All functions are gathered together so you can do some new things for the elderly without bothering to organize it. Everything is already there. You can create new products for the new era in co-operation with the elderly. You have tremendous advantage over the rest of the world.

讓我補充兩件事。一件是城市所處的環境都在改變中。不再是國家政府的事。而是城市的事。所以你提出的整合資訊問題很正確。地方政府系統不是一直都很有組織。它是分區儲存。最後我們都生活在不可分離的事實中。所以我們必須做的是將城市看待在處於改變的環境中，並且改變發生在個人生活中。我們需要做的不是連結你的批次，而是讓你所服務的人能夠方便使用。為你的市民設身處地著想，想看看他們怎麼看待你的系統。設計才會有用。另一件事更重要，就是要運用人們的才能。這是互動系統的基礎。未來就是使用所有既有的可能。每個人都是解決方式中的一部分。例如，我們城市中有飛利浦的老舊廠房。我們必須重新用來作為城市開發。我們讓公司與組織使用。在本地區有許多有創意的新創科技公司。我們更仔細地檢視，因為我們希望這裡能夠成為辦公室總部。我們認為這是建造新環境，讓大家生活與享受文化。或者我們可能新增新文化，多媒體文化。它會是你在閒暇時想要的資產。另一方面，它會是新科技公司的資產。這些科技也是有關文化內容。所以你必須仔細檢視已經存在的東西，如果要我給建議，你必須大膽創造不同。不要一昧地因為你的城市跟其他城市類似就模仿他人。這是必須給予你城市自我認同、優勢的東西。在台灣我很感興趣的是為老年人提供的方式。功能都已經齊全，為老年人提供服務不需要再組織。一切都準備好了。你可以與老年人合作在新時代創造出新產品。比起世界其他各地，你享有極大優勢。

曾仁杰 *Ren-Jie Zeng*

國立交通大學土木工程學系教授兼總務長 / Eco-City 執行長
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Time is almost up. But please allow me five more minutes. We have a quite important question from the audience. The question is addressed to Mary-Ann and Filip. Your two cities are performed really well. But if you look back on the process of promoting smart cities, what will be the most difficult thing that you've encountered? For my own part I also have a question. The innovations are quite new so there might be uncertainties. If you want the results to be good and solid, sometimes the government has to co-operate with commercial companies. But citizens may think that government should be impartial. Is that an issue for your two cities?

時間差不多了。請再給我五分鐘。觀眾提出一個很重要的問題。問題是要請教 Mary-Ann 與 Filip。你們兩個城市都運作得非常好。但是如果回顧推廣智慧城市的過程，你們遇到最困難的是什麼？我自己也有個問題。創新因為很新，所以有不確定性。如果你想要良好與穩健的結果，有時候政府必須與商業公司合作。但是市民可能會認為政府會不公平。對你們兩個城市而言，是否造成問題？

Mary-Ann Schreurs

荷蘭恩荷芬市副市長
Deputy Mayor of Eindhoven City, Netherlands

I'll start with the last thing. We have an issue with EU regulations because every company has to have the same advantages. But we can cope with this. We can do it in the following way: you can make a joint venture. As long as the outcome is uncertain, you can do it with the company. The second thing is you don't want it to remain a monopoly. In other words you can give some advantages to the company, but the system as such should remain open. So you should be careful about the steps that you make later. You do it with the company because the outcome is unclear yet. But the next thing that you make should be essentially accessible to all and that's a duty you owe to your society. So what we do is we take the first step, and make sure that the next step will be able to be taken. And now for the other thing that you said. What is bothering me most actually is the national government. They are organized very much top-down but we are going for an integrated reality. As Filip has said, when you're doing something right, you also take care to spend less money. So as I said in my speech, in the society, things really have to change in a fundamental way. The national government should make it possible for us to do that. Cities should get together and demand that it should be done. We should do it globally. But the nice thing is that the industry and citizens are supporting us now. So it's just a matter of time.

我先回答最後一個問題。我們有遭遇 EU 法律中問題，因為每個公司都應該有相同的優勢。但是我們可以處理。我們以下列方式處理：你可以成立合資企業。只要結果是不確定性的，你可以跟公司合作。第二，你不希望維持壟斷。換句話說，你可以給公司一些優勢，但是系統應該維持開放。所以之後的步驟要非常謹慎。你可以與公司合作因為結果不確定。但是再來要所有人都可以進入，這是你對社會的責任。所以我們採取第一步驟，確定下一個步驟的執行。其他的問題部分，最困擾我的其實是國家政府。他們是由上而下的組織，但是我們是整合實體。就像 Filip 說過的，事情做對，可以省錢。所以我在演講時也提到社會上必須有基本的改變。國家政府應該盡可能這麼做。城市應該團結，要求國家政府改變。應該全球聯盟。但是最棒的是產業與市民給我們的支持。所以這只是時間的問題。

Filip Santy

比利時科爾特賴克市副市長
Deputy Mayor of Kortrijk City, Belgium

I fully agree with what Mary-Ann is saying. It is always difficult to cope with obstacles. There are obstacles in the administration, in the public. People don't like changes but you have to persuade them. For city administrations, it's not easy to make people think in another way. So the processes which we have come through can help people to have a more integrated approach to problems. A lot of administrators are thinking in an administrative way. They don't know what the citizens demand. So using languages that are understandable, especially to less educated people, is very important. There are too many forms that are really too difficult. So we should try to make it in clear languages that everybody can understand. So we are going step by step to that evolution. Of course it's not only a matter for the local government. You also have to find a way to attract or persuade local enterprises or anybody who is a stakeholder. The public-private partnership is very important. As for how we started the process, I think it is relevant here. We have a long process of rethinking the layout of our organization. How do we change our 50 years old structure? We have to rethink it and see what new things are coming up. What we are asking now from the provincial government is called right of experimenting. If there is a legal opposition that you can't go further as a local government, you want to have the authorization of the provincial government to experiment. So now we are trying to persuade the provincial government to go that way, which is not easy, but we are continuing to try. Hopefully it will work.

我非常同意 Mary-Ann 所說的。要處理問題一向很難。公共管理上有問題。人們不喜歡改變，但是你必須說服他們。對城市管理而言，要讓人們改變想法不容易。所以我們的程序可以幫助人們有更整合的方法解決問題。許多行政人員都以行政方式在思考。他們不知道市民的需求。所以必須使用可以被理解的語言，特別是接受較低教育的人們。有許多很困難的形式。我們試著以清楚的語言，讓每個人能夠理解。所以我們是逐步演進。當然這不只是地方政府的事。你也必須找出方式吸引或說服當地企業或所有關係人。公私夥伴關係很重要。至於我們如何開始的部分，我覺得與這有關。我們一直在思考組織配置。我們要如何改變 50 多年的老舊組織？我們必須重新思考發生的事。我們向省政府要求實驗權利。如果身為地方政府你面對法律的阻撓，你必須取得省政府的授權，才能進行實驗。所以我們現在在說服省政府這麼做，這不容易，但是我們會繼續嘗試，希望能夠行得通。

曾仁杰 *Ren-Jie Zeng*

國立交通大學土木工程學系教授兼總務長 / Eco-City 執行長
Professor, Department of Civil Engineering ,
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Let's give a big applause for the three distinguished guests. Thank you for your participation.

請給三位貴賓，掌聲鼓勵。謝謝！

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印度拉瓦薩市－創新生態科技示範區域計畫
The Lavasa Experiment: Building Environmentally, Socially & Financially Sustainable New Cities in India

主講人 Speaker :
Scot Wrighton 印度拉瓦薩市城市經理
The City Manager of Lavasa City, India

I greatly appreciate this opportunity, not only sharing our experience with you, but also learning from your experiences, which will eventually benefit all of our communities. However, I felt that I might be in the wrong conference. All the speakers before me have been talking about how to build smarter cities based on the existing urban environment, while I will be focusing on how to build a new city from ground up.

would like to echo Filip's definition of a smart city. It's not just about technology, but includes improving processes and procedures at local level, and producing effective and efficient services to citizens. Lavasa is currently a private city, and is transiting into a public city. When we are envisioning what our new city would look like, architects will show a picture like this, which is not likely to come true in this century. More realistically, the city environment will be denser and greener. And an urban rooftop should look more like this in the future- greener. But in fact, in Africa and Asia, where most of my work locates, urbanism is nothing like the pictures I just showed. This is a typical India city. Huge mega-cities are growing faster and bigger, overwhelmed by continuous population inflow- a problem that has to be solved, especially in India, which is expecting to become the country with the largest population in the world by 2040.

What is the solution? There are at least 4 strategies. The first is redevelopment and improvement of existing mega cities. The second is management of townships and satellite subdivisions around existing cities. This is the fastest-growing category in Indian urbanization, because that's the only place left where residents could assess necessary infrastructure, but currently is not properly regulated. Third is to stop the inflow of population by improving the life in rural areas, including transportation and communication. The fourth is what my city is doing- to build a new city to divert the flow of people. World Bank, International Monetary Fund, Boston Consulting Group and McKinsey Global Report are all working on the subject. Based on their estimation, in the future 40 years, 350 million Indians will be moving from urban to rural areas, and India will need 500 new cities. My opinion is that building 500 cities is not really feasible, but 200 cities could really share 40% of the burden of existing cities. I hope this gives you the context of the necessity of building new cities. To achieve the goal, three things are indispensible. First is planning, long-term planning on every aspect of city life. The second is remodeling your business plan, taking sustainability into consideration. The third is governance, which is the pillar and core of any city operations. So first we need to pick a location. From India's three main economic corridors, Lavasa locates near the Mumbai-Pune corridor. We took livable city indexes as reference, and try to achieve those performances, to systematically put all the pieces into the right positions, as part of our sustainability planning. What you're seeing here is the Master Plan, covering around 100 km2. The left side of the plan, the green area, could accommodate around 300,000 people. After completion, the total area could accommodate half a million people. This is the rate that we would like to work at to build new Indian cities. Digital terrestrial mapping is used for better analysis, to minimize unnecessary field survey and erosion. GIS is used for, not only land-use planning, but also project management and Citizen Call Center coordination.

Lavasa is now like a laboratory. We adopt as many smart technologies as possible, as it is easier to deploy in a brand new city. But that doesn't mean we embrace every smart technology- the determinant is whether the technology can deliver cheaper, faster and better services. To me, smart city is not just about technology. Our new approach in township planning, joint-venture partnership that helps control building and energy use via contractual means, and Citizen Call Center are all part of the smarter city solution.

In addition, due to the tremendous need to for urbanization, some areas in Indian city have no access to infrastructure. We need to go back and fix it, to build systems of transportation, water supply and sewage, hospitals, housing, and so on. The priority is given to facilities that support everyday life of locals instead of temporary needs of tourists.

We also try to control the ratio of residential to non-residential areas, which in India now is around 6 or 7 to 1. Through aggressive Master Planning, we would like to lower the ratio to 2 to 1, so that the value of residential area could stay high.

Here you are looking at a graphic of financial sustainability, showing where the money will come from to support the city in a long term. Real estate is currently the main financial pillar, and Lavasa Corporation Limited has invested in more than 40 joint-venture companies, operating a variety of services. So 15 years later, when the revenue from real estate sector starts to decline, operation revenue could fill the gap.

The other source comes from city management service. The developers don't want to get involved into the utility businesses, so we hired companies to provide these services, and pay annuity for their initial capital cost. We also created our own technology company, My City Technology SPV, which is also invested by other large technology companies. So later they main gain interest of suffer losses with us, depending on how the SPV performs. When it comes to urban sustainability, I think the pictures tell the best story. These are photos taken in 2007. Just one year later, it looked like this- that's how fast the area was developing, and becoming greener, because of a good Master Planning. Urban sustainability is now valued by cities around the world, but my question is, how could we compare the sustainability efforts made by one city to another? To me, I think the important thing is to compare the outcomes instead of the means. Take power distribution as an example. It makes no sense to compare smart power distribution in Lavasa and Tainan, since it might be done differently to suit local environment. But the final results- how much energy is produced through alternative method, how much cheaper per unit of cost- could be compared. Last remark on governance. Government officials are naturally risk-averse, because they must make sure the tax-payer's money is using well. So

you need to couch your ideas to fit their outcomes, to help them achieve their community vision. By doing so, it'll be much easier to form a long-term partnership with the government. In India, the government structure pushes most of the capital assets into Special-Purpose Vehicle, the Indian term of joint-venture. Separate asset holding companies are holding the streets, water lines, sewage lines and all the infrastructure. The government is hold by town committee, and in fact it is just a management company. So if the government buys the asset from us, they can get their return on investment. Or they can leave it to private hands, and pay a usage fee.

In your brochure, we've listed several lessons we learnt along the way. Also it is important to have a value proposition. That's what we get from the Lavasa Model. If you are interested in building a new city, I'll be more than happy to have a discussion with you later. Thank you so much.

本人非常感謝有這個機會不只分享我們的經驗，也能向各位學習，我們的社區一定會受惠。但是，我覺得自己好像來錯了研討會。所有在我之前的講者，談的都是根據既有都會環境，建立智慧都市，而我要談的是如何從基礎建立新城市。

我認同 Filip 的智慧城市定義。它不只是科技，而是必須包括地方的改善程序與過程，並且產生給予市民的有成效與效率服務。拉瓦薩目前是個私人城市，正在轉換為公共城市中。我們預期新城市看起來像是這樣的圖片，不過在本世紀這個理想還不可能達成。更切實際地，城市的環境將會更密集與更環保。在未來都市區的屋頂看起來會像是這樣，更綠。但是，事實上，我所工作的地點，亞洲與非洲，都市都不像我剛才給大家看的圖片。這是典型的印度城市。超大型城市發展得更快速、更大，有越來越多的人口移入，這是印度特別需要解決的問題，而印度預計在 2040 年即將成為全世界人口最多的國家。

解決方法是什麼？至少有 4 個策略。首先是既有大都會的再開發與改善。第二為既有城市附近的城鎮與衛星部門的管理。這是印度都市化快速成長的類別，因為唯一會剩下的地方為居民可以使用必要基礎設施，但是還未有適當法律管轄的地方。第三為藉由改善農村生活，停止人口移入，包括交通與通訊。第四為我的城市所做的，建立新城市分散人口流動。世界銀行、國際貨幣基金組織、波士頓顧問集團以及 Mckinsey 全球報告都就這個主題在努力。據估算，在未來 40 年，3.5 億的印度人將會從都市遷移至農村地區，印度需要 500 個新都市。我認為要建立 500 個新都市並不可行，但是 200 個城市可以分擔 40% 既有城市的負擔。

我希望讓大家了解需要建立新城市的脈絡。為了達成此目標，需要三件事。第一是規劃，城市生活中每一部分的長期規劃。第二是從新改造你的商業模式，考慮永續性。第三是治理，它是所有城市運作的支柱與核心。

所以，首先我們必須選定地點。印度的三個主要經濟走廊中，拉瓦薩市靠近孟買 - 普納走廊。我們參考宜居城市指標，試著達成績效，有系統地把所有東西放在正確位置。你看到的是主計畫，含括範圍為 100 平方公里。計畫左邊為綠色區域，可以容納 300,000 人。這是我們想要建立新印度城市的比率。數位區域劃分可以用來做更好的分析，減少不必要的田野調查與損害。我們使用 GIS 做土地利用規劃，也進行專案管理以及協調市民服務中心。

拉瓦薩市就像實驗室一樣。我們盡可能採用智慧科技，因為這在嶄新的城市要佈署比較容易。但這不表示我們使用所有智慧科技，決定因素為是否可以提供低廉、快速與更佳的服務。對我而言，智慧城市不只是科技。我們在城鎮規劃的新方法，合營夥伴關係透過合約方式，幫助控制建造與資源使用，市民服務中心也是智慧城市解決方法的一部分。

除此之外，因為都市化極大需求，印度城市中的有些地區無法取得基礎設施。我們必須加以解決，建造交通、供水與廢水系統、醫院、住屋等。優先目標為當地居民每日生活所需的設施，而不是旅客的暫時性需求。

我們也嘗試控制至非住宅區的居民比率，目前印度的比率為 6 或 7 比 1。透過積極的主計畫，我們想要將比率降為 2 比 1，這樣住宅區的價值才能維持。

你看到的是地理或財政的穩定性，顯示出長期支持城市的資金來源。房地產是目前主要的財政支柱，而拉瓦薩有限股份公司投資了近 40 個合資企業，提供各種服務。所以 15 年後，來自房地產的營收開始減少後，營運收入會填補此空缺。

其他的來源為城市管理服務。開發商不想涉入電氣事業，所以我們雇用公司來提供這些服務，並且付給年費，支付其最初營運成本。我們也建立自己的科技公司，My City Technology SPV，這是由其他大科技公司所做的投資。所以之後他們主要根據 SPV 的績效來收取利潤。

在都市永續性部分，我認為這些圖片可以闡述最佳的故事。這是在 2007 年拍攝的照片。在一年後，看起來就像是這樣，這是此地區快速發展所致，而且變得更環保，因為好的主計畫。都市永續性現在受到全世界許多城市的重視，但是我的問題是我們如何與其他城市的永續努力比較。對我而言，重要的是比較的結果而不是方法。以電力供應為例。比較拉瓦薩與台南的智慧供電一點也沒意義，因為我們採用不同的方法來滿足社會需求。但是最終的結果，透過替代方法產生多少能源、每個單位的成本便宜多少是可以比較的。

最後，治理。政府官員通常都會規避風險，因為他們必須確定納稅人的錢用在刀口上。所以你必須將想法與最終結果做協調，幫助實現社區願景。

這麼一來，會更容易與政府形成長期的夥伴關係。在印度，政府的結構把許多資本資產帶入特別目的工具中，也就是印度的合資企業。個別的資產控股公司掌握住街道、供水管線、廢水管線以及所有的基礎設施。政府由城鎮委員會主導，但是實際上是由管理公司主導。所以，如果政府向我們購買資產，就可以讓投資回收。不然政府就必須由私人公司主導，支付使用費。

在手冊中，我們已經列出幾個學習經驗。這是很有價值的部分。這是我們從拉瓦薩模式學習到的。如果你對建立新城市感興趣，之後我很樂意與你討論。謝謝。

專題演講

Keynote Speech 6

瑞典赫爾辛堡市－
邁向永續能源平衡城市的成功因素，赫爾辛堡市經驗分享

Success Factors Towards A Sustainable and Energy Neutral City.
Experiences From Helsingborg

主講人 Speaker :

Lars Thunberg 瑞典赫爾辛堡市副市長
Deputy Mayor of Helsingborg City, Sweden

First I would like to thank you for inviting me, to participate in this important conference in Tainan. I also treasure this opportunity to share some of Helsingborg's experience in smart city building. Helsingborg has been working on the climate change and environmental issues for many years, and its goal has always been building a sustainable society. The focus will not only be on high-technology, but more on robust systems. Helsingborg is a 900-year-old city locating on South West of Sweden, within 20 minutes ferry passage to Denmark. The city has been positioned as a center of communication since its establishment, both internationally and domestically. The municipality of Helsingborg has around 8000 employees mostly in education healthcare and other forms of care. Many private enterprises are established themselves in the city, many comprise financial, food and transport companies including IKEA and other big-name companies. We enjoy major unity in major issues in the City Council, such as sustainable development.

We have some challenges of course. Our mission is to turn Helsingborg to a sustainable city before 2035. We want to promote social health and health equity, to integrate a segregated city, and fight environmental impact such as air pollution, greenhouse gases, traffic noise and lack of biodiversity which is one of the greatest dangers to the planet. Some other challenges include developing the southern harbor from industrial area to a sustainable new part of the city. We want to build more sustainable houses and apartments because the city is growing. We have a vision to be an energy neutral city in 2035.

We decided to begin with the definition of sustainable development in 1997 to a report to the United Nations. Our Common future is all about the three aspects: environmental, social, and economical sustainability. The Swedish Parliament has set up two important strategies for sustainability: one for health and one for environment, both with specific goals that were implemented in the national and local level. The city council has adopted some strategic documents. This demonstrates the political will and what we want to achieve in important and specific fields. The documents are connected to the overall strategic documents that Helsingborg will be the most attractive community for people and companies. There is another objective in the environmental and climate work. One of the strategic documents, plans for a sustainable environment, was prepared by various municipal departments. Seven areas for improvement were identified. Sustainable development is defined by incorporating environmental, economical, ecological, and social aspects. The plan is revised every year. It is a strategic part of the city budget. Another strategic document is the Helsingborg environmental program. This is an example of how we have worked across sectors for many years. We work with other municipals, private businesses, and our citizens, to produce local environmental targets and attain them.

The energy program has an long-term vision that Helsingborg will be energy neutral in 2035. There are also short and long-term goals of goals about renewable energy, saving energy, reducing CO2 emission, etc.

Here I want to show you how the seven areas on the sustainable platform are linked together. They are housing and urban development, security and safety, children and teenagers, work and education, health and living habits, healthy ageing, and environmental quality. The key to success is to get as many people on board as possible. Through various activities, we encourage the general public and politicians to join, and give business organizations the opportunities to get involved in various projects. There is well established collaboration within the city where the specialist knowledge of local administrators and the political power of policymakers work together efficiently, with positive effects and success as the outcome.

One element that has contributed to our success is that we have been involved in several networks, both national and international. I'm the chairman of the National Association of Swedish eco-municipalities, a network comprising 85 collaborating municipalities, where sustainability is based on environmental aspects. With training, conferences, and seminars, we learn from each other's successes and also from each other's mistakes. Our network also serves as an opinion forum and local voice in relation to the Swedish government. In recent years we have developed cooperation with other parts of the world. I have been invited to the United States, Japan, Kenya, many countries in Europe. We have been invited to inspire other cities to form networks like the Swedish municipality movements. Our ambition is to have informal regular meetings where we exchange ideas in order to learn from one another and develop local sustainability. So I want to demonstrate the importance of including the developing world in collaborative work.

Thanks to clear strategy and effective program, including drawing local targets from the national strategy, Helsingborg was announced top environmental municipality in Sweden in 2009. The Journal reviewed 290 Swedish municipalities, and concluded that Helsingborg did the best environmental work. Since then we've managed to remain on the top 10 list.

The strength of Helsingborg's environmental work is shown especially well in environmental workshop, where all students in a municipality are educated in environmental and energy issues. The objective is to teach children how to solve environmental problems in practice. Each year group has a theme that deals with everyday environmental issues caused by our actions. We are proud that all children in Helsingborg are given this very important foundation. For many years we have been running several very interesting projects. For example, we train businesses in different environmental issues, giving them advice about law, and help them to regard regulations in climate work. One example is our environmental breakfast. The environmental department invited local businesses to breakfast meetings. We are in contact with about 100 companies in Helsingborg. Since 1996, Helsingborg has been working with an environmental management system. We created a structure where schools, residential care facilities technical units and offices, with a total of 8000 employees to set their environmental targets, including activities and set new targets.

The greatest benefit is that the structural work on environment is under way in municipal departments. To prevent the leaking of nutrients from agricultural land, Helsingborg is creating wetlands, in which while trying to preserve natural processes, raise the level of nitrogen which has been lost through efficient and large-scale use of agricultural land.

The slides show how carbon dioxide emission has been going down in Helsingborg since 1990. CO2 emission has been decreased by 35%. The target to reduce CO2 emissions by 10% by 2010 has been surpassed. It is primarily achieved through switching from coal in neighborhood heating system which was introduced in as early as the 1960s. It is a great improvement both for the environment and the health. By using bio-fuels and waste energy from industrial processes instead of coal, we have now made another step forward towards an energy system that uses no fossil fuel. The mission to half greenhouse gas emissions by 2050 also seems attainable providing that emissions from traffic decrease. The transport sector has moved in the opposite direction, and they comprise half of the greenhouse emission. Within 1990 and 2009, emission of carbon dioxide from traffic increased by 9%. Obviously there are still lots to do.

In 2004 we developed division and set the target to double the journey made through public transportation in 10 years. It comes up is to make bus journeys more attractive to cars, measures include customized timetable, accessible and pleasant bus stops with electronic information to convert streets as prioritized bus traffic, and reasonable cost for the travelers. Moreover in 2005, all the city buses were replaced with 65 new buses completely driven by gas. And today more than 100 bio-fuel buses served the guests. As an interesting piece of information, I can mention that the regional authority has taken a political decision to be fossil fuel free in 2015 on the public transport. It is an important signal to all the companies that are producing bio-fuel.

We also have ambitions to public health. Therefore we want more people to walk and cycle in the city. We are investing heavily in cycle and pedestrian paths. Lighting and surfacing has been improved, new map of cycle routes has been printed, information about cycle routes have been put on our website. This campaign and focus on the mobility management is also part of the strategy.

And now I would like to tell you about a concrete case. We have maybe one of the best disposal facilities in the world. It's about how our landfill, the biggest in Sweden, became the net producer of CO2. 25 years ago we decided to do something radical. We started with a compulsory waste separating system and collected the sorted waste in every household. The amount of household waste per capita has reduced while the total of collected waste has increased with the growth of the population. We define household waste as the last fraction, with seven other fractions. Some factors are crucial when engaging citizens in the system. It has to be a compulsory source separation. We've chosen an eight fractions system. It has to be comfortable and well used. Information is very important, and it has to be a visible and transparent system. We use this waste hierarchy, first to minimize and then to reuse, recycle, energy recovery if you can do anything about it, the last thing is disposal.

We see organic waste as a valuable resource because it is the raw material for the production of biogas from industrials, supermarkets and households. This is the industrial process of producing vehicle fuel with organic waste. Here is the overview of the process. NSR is a public-owned company. This is where we refuel the 120 buses. One of the benefits of producing bio gas is that 120,000 tons of bio fertilizer, a waste product of the process, is re-distributed by 20 km long pipe-line system to the big farms around Helsingborg. The farmers are very happy because of the top-quality of fertilizers and because they don't have to go to the plant to collect it because it is now transported by pipeline.

Next step will be to produce liquid biogas. In 2013, we will have the biggest LBG plant in the world where we collect the liquid methane from the old landfill and on to produce and convert it into liquid biogas. This is a Swedish and American technology. So by cooperation we delivered less waste from household, no need of fossil vehicle fuel, no need of artificial fertilizer, no leaking of methane from landfill, and recycling of CO2.

To sum up, the work in Helsingborg takes a strong political will, and we have to accept that actions take time. It's about long-time investment and is very important to involve kids, citizens and businesses. Smart systems are important. We have to admit that it's not done, but we are in track, and we want to share and learn, and that's why I'm here. Dear friends, the common simple tip is not to give up, to be patient. Things take time. One success factory sticking from a robust system is not about exciting and exclusive projects that attract media, but rather about everyday activities, tackled step by step. The city of Helsingborg has succeeded in coming all the way, much has been done, but much still remains before we attain our targets. I'm sure we all seek participation from citizens. I hope my sharing our experience would encourage those of you in the conference. Success will benefit our kids, and the future generation. Thank you very much.

首先，我要感謝你們邀請我來參加此次在台南舉行的重要會議。本人也非常珍惜這次會議，可以分享赫爾辛堡在建立智慧城市的經驗。赫爾辛堡多年來一直致力於氣候變遷與環境議題，我們的目標一直是建立永續社會。我們的焦點不只是在高科技，還有更穩健的系統。

赫爾辛堡為位於瑞典西南部的 900 多年歷史城市，搭渡輪到丹麥，只要 20 分鐘。自從建立以來，我們一直被定位為國內與國際的通訊中心。赫爾辛堡市政府有 8,000 名員工大部分都是負責教育、健康照護以及其他形式的照護。許多私人企業都在本市投資，包括金融、食品、交通公司，如 IKEA 以及其他大公司。市議會在主要的議題上都有一致目標，像是永續發展。

我們當然也面對一些挑戰。我們的使命為將赫爾辛堡在 2035 年之前轉變為永續城市。我們希望推廣社會健康與健康平等，整合遭分離的城市，並且對抗環境的影響，像是空氣汙染、溫室氣體、空氣噪音與對地球帶來最大威脅的缺乏生物多樣性。其他的挑戰還包括將南部漁港從工業區開發為城市中永續的新地區。我們希望建立更永續的住屋與公寓，因為我們的城市一直在成長中。我們的願景是在 2035 年成為資源中和的都市。

我們在 1997 年決定從永續發展的定義開始著手，向聯合國提出報告書。我們共同的未來，包括三個部分：環境、社會與經濟永續性。瑞典議會為永續性訂定了兩個重要策略：一個是健康，另一個是環境，兩者在國家與地方層級執行時都有特定的目標。市議會已經採用一些策略文件。這顯示政治意志以及我們所希望達成的重要與特定目標。這些文件與赫爾辛堡將成為最吸引人民與公司的社區策略文件相關。在環境與氣候工作上有其他目標。策略文件之一的永續環境計畫由各個市政府部門準備。確認出需要改善的七個部分。永續發展定義納入環境、經濟、生態與社會等環節。每年都會修訂計畫。它是本市預算的策略部分。另一個策略文件為赫爾辛堡環境計畫。這是我們多年來如何跨部門合作的範例。我們與其他市政府、私人企業以及我們的市民合作，訂定並且達成地方的環境目標。

能源計畫的長期願景為赫爾辛堡將會在 2035 年達成能源中和。在再生能源、節能、減少 CO2 排放等都有長短期目標。

在此我要向你展示七個永續平台如何整合。他們為住屋

與都市發展、安全與保全、兒童與青少年、工作與教育、健康與生活習慣、健康老齡以及環境品質。成功的關鍵為盡量擴大參與。透過各種活動，我們鼓勵一般大眾與政治家參與，並且給予企業組織機會參與各個計畫。在城市間有已建立的協同，當地行政人員的專家知識與決策者的政治權力可以有效合作，帶來正面成效與成功結果。

我們成功的一個要素為我們已經涉入許多網路，包括國內、外。我是瑞典生態城市國家協會主席，我們的協會網路有 85 個城市會員，我們努力達成生態永續性。透過訓練、會議與座談會，我們向彼此的成敗學習。我們的網路也是瑞典政府的意見論壇與地方意見平台。近年來，我們已經與世界各地合作。我曾受邀至美國、日本、肯亞以及許多歐洲國家。我們受邀去激勵其他城市組成像瑞典城市運動網路。我們的雄心為舉辦非正式的定期會議交換意見，彼此學習並且發展地方永續性。所以我要展示在協同工作中含括開發中國國家的重要性。

由於清楚的策略與有效的計畫，包括國家策略中的地方人才，赫爾辛堡在 2009 年榮獲瑞典的環境城市。該雜誌評比了 290 個瑞典城市，並且選出赫爾辛堡為最佳環境城市。從那時候起，我們一直維持在 10 名內。

赫爾辛堡環境工作的優勢特別展現在環境工作坊中，工作坊會教導所有學生環境與能源議題。目標為教導兒童實際解決環境問題。每一年都有一個主題，鼓勵採取行動，處理每日的環境議題。我們很驕傲所有赫爾辛堡的兒童都有良好的環保基礎。多年來，我們執行多項有趣的計畫。例如，我們在不同的環境議題上訓練企業，提供法律意見並且幫助他們有關氣候工作的法規。範例之一為我們的環境早餐。環境部邀請當地企業參加早餐會報。我們與約 100 家在赫爾辛堡的公司保持聯繫。自 1996 年起，赫爾辛堡與環境管理系統合作。我們建立含括學校、住宅設施技術單位以及辦公室的結構，員工總人數為 8000 人訂定環境目標，包括活動與訂定新目標。

最大的助益為環境的結構工作規市政府部門管轄。為了避免營養物排放至農地，赫爾辛堡建立濕地，同時保育自然、透過有效與大規模農地利用提高流失的氮程度。

這張投影片顯示赫爾辛堡的二氧化碳排放自 1990 年開始一直在減少。CO2 排放已經減少了 35%。我們已經超越到了 2010 年減少 10% 的 CO2 排放目標。它主要是透過轉換自 1960 年代開始使用的燃煤的暖氣系統來達成目標。對環境與健康而言都是大幅改善。藉由使用生脂燃料與工業過程中產生的廢能源取代媒，我們又更進一步邁向不使用石油燃料目標。到 2050 年減少一半的溫室氣體排放使命也似乎可以達成，因為交通的排放量已經減少。交通部門已經改向運作，交通的排放占溫室氣體排放的一半。在 1990 年與 2009 年之間，來自交通的二氧化碳排放增加了 9%。我們還有需要改善的空間。

在 2004 年，我們設立的專責部門與訂定在 10 年內要增加公共運輸旅程雙倍的目標。我們讓公車的旅程比汽車更吸引人，措施包括客製化的時間表、易抵達與怡人的公車站，提供電子資訊，將街道劃分為優先公車交通區以及合理的搭乘價格。再者，在 2005 年，所有的市公車都汰換成 65 輛完全使用天然氣的新公車。今天有 100 多輛生脂能源公車在載客。地方當局已經決定在 2015 年之前公共運輸完全不使用石油燃料。對生產生脂能源的公司而言，這是個重要的訊號。

我們對於公共健康也有雄心。所以我們希望更多市民走路與騎自行車。我們大額投資自行車道與人行道。燈光與路面情況都有改善，重新印製自行車路線圖，網站上也提供自行車路線。此活動鎖定行動管理，也是策略中的一部分。

現在我要給大家舉一個實際例子。我們有世界上最佳的處理設施。我們的掩埋場，瑞典最大的，成為 CO2 的淨生產設施。25 年前我們決定採用新措施。我們開始時規定執行廢物分類系統並且在每戶家中收集回收分類廢棄物。每人平均的家庭廢棄物已經減少，同時所收集廢棄物總量隨著人口增加而增加。我們定義家庭廢棄物為最後的部分，另外還有七個其他部分。在此系統中市民參與有幾個關鍵要素。它必須是義務的資源分類。我們已經選定八大類系統。必須是舒適並且很好使用。資訊非常重要，它必須是能見與透明系統。我們使用此廢棄物分級，先減廢然後再利用、回收、恢復能源，如果都無法處理，才丟棄。

我們認為有機廢棄物是有價值的資源因為它是生產來自產業、超市與家庭沼氣的原料。這是使用有機廢棄物產生汽車燃料的工業過程。這是整個過程一覽。NSR 是公共公司。這是我們 120 輛公車的加氣情況。產生沼氣的好處之一為過程中產生的廢棄物 120,000 噸的生物肥料可以透過 20 公里長的管線輸送到赫爾辛堡附近的大型農場。農人都很開心，因為肥料的品質很高，不用到工廠收集，只要利用管線就可以輸送。

下一個步驟為產生液化沼氣。在 2013 年，我們將有全世界最大的 LBG 廠，我們可以從老舊掩埋場收集液態甲烷，用以生產與轉換為液態沼氣。這是瑞典與美國的技術。透過合作，我們的家庭產生更少的廢棄物，不需要石油汽車燃料、不需要人造肥料、不會有甲烷流入農地，並且回收 CO2。

總之，赫爾辛堡的努力需要政治意志，並且我們必須接受行動的執行需要時間。它是長期投資，必須讓孩子、市民與企業參與。智慧系統很重要。我們必須承認還未完成，但是我們很上軌道，並且我們希望分享與學習，這就是為什麼，我在此的原因。親愛的朋友，通用簡單的訣竅為不放棄，有耐心。需要時間。穩健系統的成功要素不是吸引媒體的振奮與排外計畫，而是與每日生活有關的計畫，必須逐步實施。赫爾辛堡市成功了，我們做了許多，但是在達成我們目標之前，還有許多要做。我確信我們都在尋求市民參與。我希望我的經驗分享可以鼓勵來參加研討會的各位。我們的成功受益的是我們的孩子，未來的世代。謝謝!

2011.12.15 / DAY 1

座談討論 Panel Discussion 3

王時思 *Sue Wang*

臺南市政府研究發展考核委員會主任委員
Chairperson, Research, Development, and Evaluation Commission, Tainan City Government

Good afternoon, everyone. I'm Sue Wang, chairman of Research, Development and Evaluation Commission of Tainan city government. It is like an R&D department in the private enterprise. It's my honor to serve as the moderator. On my right hand side is Scot Wrighton, the City Manager of Lavasa City, India. And then Mr. Lars Thunberg, Deputy Mayor of Helsingborg City, Sweden. The next guest is Professor Taysheng Jeng, chairman of Department of Architecture, National Cheng Kung University. I think we would first have a discussion among the panelists, and there were welcome questions from the floor. Would Professor Jeng give us some comments or questions?

各位午安。我是台南市政府研究發展考核委員會主任委員王時思。它就像私人企業的研發部門一樣。我很榮幸可以擔任主持人。我右手邊是拉瓦薩市城市經理 Scot Wrington。然後是 Lars Thungberg，瑞典赫爾辛堡市副市長。下一位貴賓是國立成功大學建築系主任鄭泰昇主任。我們先與與談人討論，然後開放現場提問。鄭教授是否有意見或要提問？

鄭泰昇 *Tay sheng Jeng*

國立成功大學建築系副教授兼系主任
Chairman, Department of Architecture, National Cheng Kung University

Thank you. It's my honor to participate in this conference. The two speeches this afternoon are impressive. Scot provided us some experience in experiment and how to develop a mega city and measure sustainability. Lars shared with us the experience of Helsingborg, which in some ways is quite similar to Tainan city. The political will demonstrated by the authority is impressive. I have two questions. The first is, according to the estimation of the United Nations, rural population is expected to increase to 9.2 billion in 2050. 75% of them will live in cities. One way to deal with this is to build megacities. Another approach is to redevelop cities like Tainan. A smart city involves managing the city environment and managing city residents' lives. People talk about frameworks. A framework has to do with social, environmental, and economic issues. However, there are more and more social economical and education divide in the world. My opinion is that the future city should not just look at material indicators like GDP, but also care about the happiness of human beings. We should look at a new indicator called GNH, which is gross national happiness. While we are looking at issues like sustainability, I'm concerned that the problem of economic divide has not been addressed and it is not in the scope of sustainability projects. Yet happiness is directly related to how people feel. Could you share with us your opinions on the point of happiness? How do we measure the factor of happiness in the sustainability project?

主持人：
王時思
臺南市政府研究發展考核委員會主任委員

與談人：
Scot Wrighton，印度拉瓦薩市城市經理
Lars Thunberg，瑞典赫爾辛堡市副市長
鄭泰昇，成功大學建築系副教授兼系主任

Moderator :
Sue Wang
Chairperson, Research, Development, and Evaluation Commission, Tainan City Government

Panellists :
Scot Wrighton
the City Manager of Lavasa City, India
Lars Thunberg
Deputy Mayor of Helsingborg City, Sweden
Tay sheng Jeng
Chairman, Department of Architecture, National Cheng Kung University

謝謝。很榮幸參加這個研討會。下午的兩個演講都令人印象深刻。Scot 提供我們實驗的經驗以及如何發展大城市與衡量永續性。Lars 分享了赫爾辛堡的經驗，在某個程度上與台南很類似。有關當局展現的政治意志令人印象深刻。我有兩個問題。第一，根據聯合國的估算，農村人口預計會在 2050 年增加為 90.2 億。當中的 75% 將會居住在城市。其中的處理方式就是建造大城市。另一個方法就是城市再開發，像台南一樣。智慧城市涉及管理城市環境與管理城市居民生活。人們討論架構。架構必須處理社會、環境與經濟議題。然而，世界上有更多的社會、經濟與教育落差。我認為未來的城市不應該只是看 GDP 這類的物質指標，也應該重視人類的幸福。我們應該檢視新的指標像是 GNH，全國幸福指數。同時我們也必須檢視永續性等議題。我關切的是經濟落差的問題還未解決，它也未含括在永續性計畫範圍內。然而，幸福是與人們的感覺直接有關。兩位是否可以分享對於幸福的看法？我們要如何測量永續性計畫中的幸福因素？

Scot Wrighton

印度拉瓦薩市城市經理
the City Manager of Lavasa City, India

I think this is an important issue. Earlier this year I went to Bhutan. It is the country in which the government decides to measure national gross happiness. In part it is based on the culture of Buddhism, but I challenge the government officials that I was with, and just like you said, how do you measure that? But they haven't decided how to measure it. Gross National product can be measured by itself. As for happiness, I don't know the answer, and I think the conclusion has to come out of a political dialogue. What kind of community-wise sustainability measure can we compare different cities against? It may cover of the three aspects that you mentioned, but also be used as a tool. For example if a Mayor has a opportunity of greener solid waste disposal system, but have the offset in terms of price or social cost, he needs something to help him make the decision. Another question is about the disparity between rich and poor. The mega city is a multimillion huge city. The intended experiment is how to build a sustainable medium-sized city, of less than half a million people. As a city manager, I've seen over the years that per person cost in a mega city is actually cheaper than in a medium-sized city. If some of the surveys are to be believed, it is the smaller cities that scores highest in terms of happiness, because life is simple there. That's a partial answer to your question.

我認為這是個重要的議題。今年初我去了不丹。它是政府決定測量全國幸福指數的國家。它部分是根據不丹文化，但是像你一樣，我問不丹政府要如何測量？但是他們還未決定要如何測量。全國生產毛額可以自行測量。至於幸福，我不知道答案，我認為結論可以從政治對話討論出來。社區的永續性測量我們要如何與不同的城市比較？它可能含括你所提到的三個部分，但是也可以當成工具來使用。例如，如果市長有機會採用更環保的固體廢棄物處理系統，但是相對地價格或社會成本過高，他必須有其他事物來協助他做出決定。另一個有關於貧富不均的問題。大城市為數百萬人城市。實施的實驗為如何建立永續中型城市，人口不到百萬人。身為城市經理，我多年來見到在大城市中每人的成本實際上比中型城市低。如果研究可信的話，小城市的幸福指數比較高，因為生活比較簡單。這是我對你提出問題的回答。

Lars Thunberg

瑞典赫爾辛堡市副市長
Deputy Mayor of Helsingborg City, Sweden

You talk about the challenges in the world here. Or it's a very different experience to be in Lavasa India or in Sweden. I think we need to ask, whether the GNP is enough to measure economic wealth because it doesn't take into account the natural resources or the operating system. I think these factors should also be considered. We in the rich countries need to be more aware of how our private consumption compares with other countries in the third world. We calculated that our CO2 emission per capita is about six tons if we take into account the imported products, it would be about 10 tons. So we need to be aware of our ways of living.

你提到世界所面對的挑戰。在印度拉瓦薩或瑞典都是非常不同的經驗。我認為我們必須問，不論 GNP 是否因為沒有考量天然資源或運作系統，而不足以測量經濟財富。我認為這些要素應該列入考慮。我們在富有國家必須更注意私人消費性公司與第三世界國家的競爭。我們所計算出的每個人平均 CO2 排放為六噸，如果加入進口產品，為十噸。所以我們必須注意我們的生活方式。

王時思 *Sue Wang*

臺南市政府研究發展考核委員會主任委員
Chairperson, Research, Development, and Evaluation Commission, Tainan City Government

I have a question too. Tainan is not like the typical technology cities. We don't pursue a busy or intensive lifestyle. We are passionate about our historical assets. I'm wondering for city like ours how do we find ways to build a smart city and involve everyone in the project? Do you have any suggestions on how to find our own smart ways? The second question is, as a government official, I'm interested to know how you launch a project when the government is not so smart.

我也有一個問題。台南不像典型的科技城市。我們不追求忙碌或密集的生活方式。我們對於歷史資產懷抱熱情。我想像我們這樣的城市，要如何找到建立智慧城市的方式以及要如何讓每個人參與計畫？對於我們要如何找到智慧方式，您有無建議？第二個問題是，身為政府官員，在政府不是那麼有智慧時，要如何推動計畫？

Scot Wrighton

印度拉瓦薩市城市經理
the City Manager of Lavasa City, India

First of all it's important that the smart cities are not an end in itself. It's a process. I think the most important thing is to engage your citizens in creating outcomes that they want. The outcome may be achieved through technology but in the end we hold our elected officials to good quality of life and efficient governance. So we start with using smart technologies and measuring the outcome that we can decide what kind of smart life we want. So don't see the smart city as an end, but see it as a process. That's my answer to your first question.

The question about the government is more problematic. About the government, what I say is true in India at least, is we ask the government to get out of the way. In our city, the government has not invested one rupee. What we have from them is enabling us with legislation. So what I said to our government is let us experiment. We'll take the financial risk, succeed or fail. And you can decide whether this is replicable or not. So in India, the government offers only space to operate, but a lot less in investment. Probably the opposite of Helsingborg.

首先很重要的是智慧城市本身並不是個結束。它是個程序。我認為最重要的事是讓市民參與產生他們希望的結果。透過科技可以達成結果，但是最後我們的良好生活品質與有效治理必須仰賴選出來的官員。所以我們開始使用智慧科技以及測量我們希望的智慧生活結果。所以，不要把智慧生活視為結束，要把它視為程序。這是我對你提出第一個問題的回覆。

有關政府的問題比較有爭議。關於政府，我說的至少是在印度的情況，我們會要求政府不參與。在我們的城市中，政府一個盧布也沒投資。我們從政府得到的只有法規。所以我對政府說的是讓我們實驗。我們會承擔財政風險，成或敗。你可以決定是否可以複製。所以在印度，政府只提供運作的空間，不是投資。或許在赫爾辛堡的情況不同。

Lars Thunberg

瑞典赫爾辛堡市副市長
Deputy Mayor of Helsingborg City, Sweden

It's hard for me to give you advice because the situation is quite different. But the law in Sweden has granted us more power. The State government has almost nothing to do with the municipality system. We can get private loan to develop, and get cultural and environmental partners to assist the system.

The second question involving the government is very important. When we're launching a project, we incorporated our targets with the national strategy. Such is our relationship with the State government.

我很難給你建議，因為情況不同。但是瑞典的法律授與我們權力。國家政府對於市政府系統無管轄權。我們可以取得貸款來開發，並且獲得文化與環境夥伴的在系統上的協助。

第二個有關政府的問題很重要。我們推動計畫，將目標納入國家策略中。這是我們與國家政府的關係。

王時思 *Sue Wang*

臺南市政府研究發展考核委員會主任委員
Chairperson, Research, Development, and Evaluation Commission, Tainan City Government

Professor Jeng, do you have any comments?
鄭教授，您有沒有意見？

鄭泰昇 *Tay sheng Jeng*

國立成功大學建築系副教授兼系主任
Chairman, Department of Architecture, National Cheng Kung University

Yes. I'm quite interested in the political will demonstrated by the Helsingborg city. My question is how do you enforce your policies? Another question is as you said, actions take time, but how long can the residents wait? Another thing is that you worried about attracting media attention, but sustainability is the right way to go. Personally I think we should not ignore the media, especially when the media have the power to impact policy directions, which is the case in Taiwan.

是的。我對赫爾辛堡展現的政治意志很感興趣。我的問題是你如何執行政策？另一個問題就像你說的執行行動需要時間，但是居民能夠等待多久？另一件你擔心的吸引媒體注意的事，但是永續性是正確的事。我個人認為我們不應該忽視媒體，特別是當媒體有權力影響政策方向時，這是在台灣的情況。

Lars Thunberg

瑞典赫爾辛堡市副市長
Deputy Mayor of Helsingborg City, Sweden

The media in Sweden have a quite long tradition to care about the environment. So it's not a question of whether we should do some things, rather about the details of doing it. Yes we are very dependent on the media, and we are quite powerless in front of them. They set the agenda. But we still have to have a strong political will.

在瑞典媒體的傳統為重視環境。所以我們是否做同樣的事不是個問題，而是執行的細節。沒錯，我們很依賴媒體，並且在媒體面前，我們較無權力。他們主導議題。但是我們仍然有強烈的政治意志。

Scot Wrighton

印度拉瓦薩市城市經理
the City Manager of Lavasa City, India

Lars is absolutely right. The media has the power to drive the agenda. So the solution is not to let them drive the agenda. I think we should have some way that is agreed upon to measure the outcome of a sustainability project. If we can agree on that, cities worldwide that are doing sustainability projects then set the agenda. In Lavasa, for example, we get 90% of rainfall in the monsoon. Our total annual rainfall is about 6 m, a huge amount. The rest of the year is fairly dry. We had the media come in and they asked, why aren't you doing rainwater harvesting. Everybody was doing it, why don't you. We said rainwater harvesting doesn't work with Lavasa. We don't have to harvest the rain when it is coming down in buckets day in day out for four months. What I need to do is to capture the water and use it to recharge the groundwater. That's what I need. As long as we are running according to their agenda, they get the driving force.

Lars 說得很對。媒體有權力主導議題。所以解決方式不是讓他們主導議題。我認為我們應該有經同意的一些方式來測量永續性計畫結果。如果我們同意，全世界正在執行永續計畫的城市就可以制定議題。例如，在拉薩瓦，90% 的雨量來自季風。我們的每年總雨量為 6m，雨量充沛。其他時間都是旱季。我們有媒體來，問到，為什麼不收集雨水。每個人都在做，為什麼你們不做。我們回答拉薩瓦不適合雨水儲存。我們不用水桶在四個月中每日收集雨水。我們是留住雨水，補充地下水。這是我需要的事。你隨著他們的議題走，媒體就有主導動力。

王時思 *Sue Wang*

臺南市政府研究發展考核委員會主任委員
Chairperson, Research, Development, and Evaluation Commission, Tainan City Government

Thank you. We have already run out of time. Before we finish, do the panelists have any comments to make?

謝謝，我們已經超過時間了。在結束前，與談人有沒有要發表其他意見？

Scot Wrighton

印度拉瓦薩市城市經理
the City Manager of Lavasa City, India

I just want to say again, start with the kids; that's the crucial issue. Educate them, and they would educate their parents and households. So start with the kids.

我要再次強調，從孩子做起，這是關鍵議題。教育他們，他們會教育父母與家人。所以從孩子開始。

Lars Thunberg

瑞典赫爾辛堡市副市長
Deputy Mayor of Helsingborg City, Sweden

Helsingborg is more than 1000 years old, while Lavasa as an organic city is hardly more than 1000 days old. But this afternoon I have learned and appreciated how much we have to learn from each other. We can use the common experiences to benefit our citizens. So thank you again to let me have this opportunity to join the forum.

赫爾辛堡有百年以上歷史，而拉薩瓦是個有機城市，不到 1000 天的歷史。但是今天下午我已經學習與了解到我們彼此有許多要學的。我們可以使用共同的經驗讓市民受惠。所以再次謝謝您讓我有機會參加這個論壇。

總結 座談討論 *Panel Discussion-Conclusion*

林欽榮 *Charles Lin*

臺灣臺南市副市長
The Deputy Mayor of Tainan City, Taiwan

在場所有嘉賓及朋友們，經過一整天的國際會議下來，六個城市宣示與互相發表讓我們獲益良多，這個段落是經過我們一起設計的，將有 80 分鐘的時間，我們用這樣的形式來進行綜合討論。由我開始再跟各位總體介紹一次，首先我右手邊的第一位是行政院經濟建設委員會黃萬翔副主委，也是全國智慧城市的命題裡一定要邀請的全國中央階層裡主要負責城鄉發展及國土規劃，黃副主委一向對這樣的區域合作有些看法及倡議，尤其今天的會議是結盟了臺灣的十一個縣市針對這議題來討論。第二位我要介紹的是 LLG(全球智慧生活聯盟) Sascha Haselmayer 執行長，我們在第三及第四天也特別設計了一個智慧生活科技應用的議程，是由他來主持的。第三位是美國迪比克市 Roy D. Buol 市長，迪比克市在全球被評價是前十個最智慧的城市，而且也致力於城市的永續發展，也被美國評定為宜居的中小型城市。第四位是比利時科爾特賴克市 Filip Santy 副市長，他今天的演說提到了整個歐盟的智慧城市的推動及企劃，也強調 E-government 是很重要的平臺，他也針對智慧城市的定義給我們新的觀點。第五位是荷蘭恩荷芬市 Mary-Ann Schreurs 副市長，長期對於今天所提倡的跨界整合給了我們宏觀的看法，恩荷芬市也被公認為是個很智慧的城市。第六位是瑞典赫爾辛堡市 Lars Thunberg 副市長，他特別強調整個城市的觀念必須從下一代開始就要培養共識，尤其在能源的對應方面，赫爾辛堡市在二氧化碳的減量方面是非常有成績的。第七位是印度拉瓦薩市 Scot Wrighton 城市經理，雖然城市只不過一千多個日子，但整個城市從零開始，發展是很有節奏的。最後要介紹的是臺東縣張基義副縣長及嘉義縣林美珠副縣長。

我想把這個場次分成兩部分。首先，我邀請在台上的各位發言。我也會讓觀眾發言，請大家問問題。現在我先邀請 Sascha 發言。

Distinguished guests and dear friends,

After one day international conference, we heard the presentations from six cities and learned a lot. This section has been planned by all of us and we now have 80 minutes to conduct panel discussion. Once again, I would like to introduce you on my right hand side, Wang-Hsiang Hwang, who is Deputy Minister, Council for Economic Planning and Development in charge of urban and rural development. Deputy Minister Hwang has always been promoting this kind of regional cooperation and especially, at Today's meeting, we have invited representatives from 11 cities and counties around Taiwan to discuss on the issue. Next, I would like to introduce to you CEO of LLG, Sascha

主持人：
林欽榮，臺南市副市長
與談人：
黃萬翔，行政院經濟建設委員會副主任委員
Roy D. Buol，美國迪比克市市長
Filip Santy，比利時科爾特賴克市副市長
Mary-Ann Schreurs，荷蘭恩荷芬市副市長
Scot Wrighton，印度拉瓦薩市城市經理
Lars Thunberg，瑞典赫爾辛堡市副市長
Sascha Haselmayer，LLG 執行長
林美珠，嘉義縣副縣長
張基義，臺東縣副縣長

Moderator :
Charles Lin Deputy Mayor of Tainan City Government, Taiwan
Panellists :
Wang-Hsiang Hwang Deputy Minister, Council for Economic Planning and Development
Roy D. Buol Mayor of Dubuque City, USA
Filip Santy Deputy Mayor of Kortrijk City, Belgium
Mary-Ann Schreurs Deputy Mayor of Eindhoven City, Netherlands
Scot Wrighton the City Manager of Lavasa City, India
Lars Thunberg Deputy Mayor of Helsingborg City, Sweden
Sascha Haselmayer CEO of LLG
Mei Zhu Lin Deputy Magistrate of Chiayi County Government, Taiwan
Chiyi Chang Deputy Magistrate of Taitung County Government, Taiwan

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Haselmayer who will also host the agenda of smart living technology application on the third and fourth day of this summit. The third distinguished guest is Mayor Roy D. Buol of Dubuque, USA where has been ranked as the world's top ten smart cities devoted to sustainable development. Meanwhile, it has been ranked by the US as the most livable medium and small size city. Next is Deputy Mayor of Kortrijk, Belgium, Mr. Filip Santy whose presentation today emphasized on the promotion and planning of smart cities of EU as well as E-government as an important platform. He also gave us insights for the definition of smart cities. Mary-Ann Schreurs, Deputy Mayor of Eindhoven City, Netherlands, whose long-term efforts on interdisciplinary integration provide us macro thinking. Eindhoven City has also been recognized as a smart city. Lars Thunberg, Deputy Mayor of Helsinborg City, Sweden, who especially emphasized on the importance to educate our next generation, in particular, for the response to energy use. Helsinborg has achieved a lot in terms of reduced CO2 emission. Then Scot Wrighton, City Manager of Lavasa City, India. Although the City has only the history of 1,000 days, but starting from zero, the City has been developed with good rhythm. The last ones I would like to introduce to you are Mei Zhu Lin, Deputy Magistrate of Chiayi County Government and Chiyi Chang, Deputy Magistrate of Taitung County Government, Taiwan.

I would like to divide this section into two parts. First of all I would like each of you on the stage to give your viewpoints. Though I would open the floor to the audience and invite them to ask questions. So now I would like to invite Mr. Sascha to talk.

Sascha Haselmayer

LLG 執行長
CEO of LLG

Thank you. I have enjoyed the presentations today. First of all I want to talk about the direction of the Tate. It is also the global direction about how we look at smart city and what Taiwan can learn from the experiences of other cities. I think the main theme today is that citizens have become the main reason for change. Many projects would not be possible without the participation of citizens. I think there is a serious implication. There are cities that listen closely to their citizens we have seen today examples of cities where citizens participate in designing and services and they are partners with the government in the transformation of the city. Another thing to be noticed is that most of you adopt little changes. None of you mentioned major geographic projects. It's just small changes involving stakeholders. You use technologies such as social media to achieve this. I think this is one of the main themes. But sometimes a city needs to make big investments. Sometimes you need to make big infrastructure projects. That is a different process. In big projects you only have to make several major decisions. But when you involve citizens as partners, you have to ask what they want. It may be environment or health issues. It may be about CO2 emission and who will be the concrete hero or the winner. It is a very abstract concept about citizen's motivation. And it's difficult to incorporate that into policies.

Not in question is whether we need to segment citizen's territory. There are different groups of citizens that need to be taken care of, like the security of property or the care of the elderly. So we need to consider that in the next level of city planning. How do we assess their needs and ensure the city is accessible to them. So these are a few ideas I think we can build around and see what happens.

Another thing is that smart city is a process that is reusable. But they are cities where technology is not available, and we need to think about what role technology is going to play. So it is ultimately about investment, regulation and what kind of public/private partnership we want. I think businesses play a big role here. Also measurement is critical. I think other speakers are going to tell us more stories. Communication is not only possible but also advisable. So maybe without the audience some of us will gather together and share experiences.

When it comes to Tainan or Taiwan, I think Taiwan is very fortunate. It has good social services and citizens are very organized. I think from the outside, there might be some things that we don't understand, like the one advantage that you have is high technology, and the government has a high technology culture. So the question is at what level you use the technology when you serve the citizens. It's interesting to see how we translate some of the processes. Helsingborg started 40 years ago, other cities might be two or 20 years ahead. So the public will have an expectation that they compare themselves with other communities and want all those things. I think it's really important to manage those expectations. Where can we take our citizens quickly and where we take the citizens and journalists to separate their wastes. You see this is done in other places for many years. They have taken time to educate the children. So it would be inspiring to look at what other people are doing.

謝謝。我很喜歡今天的報告。首先我要先提到我們如何看待目前全球的智慧城市方向以及台灣可以向其他城市經驗學到什麼。我認為今天的主題是市民成為改變的主因。沒有市民的參與，很多計畫都不可能執行。我認為這是很重要的指標。有些城市很注意聆聽市民的意見，我們今天見到許多範例，在服務設計時就讓市民參與，在城市轉變過程中與政府是夥伴。另一件該注意的是大家都很少改變。大家都沒提到主要的地理計畫。只有讓關係人參與的小改變。你使用像是社群媒體的技術達成此目標。我認為這是許多主題的一個項目而已。但是有時候城市需要大額投資。有時候你需要大型基礎設施計畫。那是不同的程序。在大計畫中，你只需要作出主要決定。但是當你讓市民參與成為夥伴，你必須詢問他們的希望。可能是環境或健康議題。可能是 CO2 排放以及誰是具體的英雄或優勝者。它是與市民動機相關非常抽象的觀念。很難納入政策中。

我們需要區分市民區域。有不同的市民族群需要照顧，像是財產安全或老年照護。所以我們需要考慮下一階段的城市規劃。我們如何評估他們的需求並且確保可以取得服務。我想這些是我們可以開始並且看看可以發生什麼事。

另外智慧城市的過程是可以再使用的。但是有些城市沒有科技，我們必須思考科技所扮演的角色。所以最重要的是投資、法規以及我們需要的是哪類公 / 私夥伴關係。我認為企業在此扮演重要角色。測量也很關鍵。我想其他講者可以跟我們說更多。溝通不僅可能，我們也建議溝通。就算沒有聽眾，我們也必須聚集與分享經驗。

至於台南或台灣，我認為台灣很幸運。它有良好社會服務與有秩序的市民。我從外來看，可能有我們不懂的東西，像是你們擁有的高科技優勢以及政府的高科技文化。問題是你可以為市民使用的技術層級。看我們能夠如何轉換這些過程。赫爾辛堡在 40 年前開始，其他城市可能在 20 年前開始。所以大眾預期他們可以與其他城市比較以及希望有所有服務。我認為真正重要的是管理這些預期。哪些可以很快達成，哪些不行。這些在其他地方很多年前就已經執行。他們花了很多時間教育孩子。所以看看別人做的總能啟發我們。

林欽榮 *Charles Lin*

臺灣臺南市副市長
The Deputy Mayor of Tainan City, Taiwan

Mr. Sascha mentioned that the pursuits of smart city must be based on consensus. Lavasa is a new scenario. I think we should learn from that. Next I would like to invite Mr. Wang-Hsiang Huang to speak because he's a initiated many corporations. So let's hear his comment.

Sascha 提到追求智慧城市必須有共識。拉瓦薩是新的情境。我想我們應該可以學習。接下來我要邀請黃萬翔副主委來談，因為他促成許多合作。讓我們來聽聽他的看法。

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黃萬翔 *Wang-Hsiang Hwang*

行政院經濟建設委員會副主任委員
Deputy Minister , Council for Economic Planning and Development

我覺得今天的全球智慧城市高峰論壇是非常的有意義，不同的國家在不同的面向卻在同樣的目標及同樣的時間進行同樣的努力，彼此都可以進行資訊的交換和學習，我自己今天也參加了一整天，我覺得獲益良多。

有個課題大家非常專注的就是中央政府都令人關心且擔心的，大家都很擔心中央政府和地方合作推動的各項重大減碳政策；第二個就是把推動的策略向各位作報告；第三個是介紹幾個實際的案例。大家都知道全球氣候變遷已經是個世界的議題，每個國家都不能置外於這個衝擊，臺灣從兩個角度在處理，一個是氣候變遷調適，一個就是節能減碳的推動。我們從 2008 年開始有做三個階段的推動，第一個階段是 2008 年的永續能源政策綱領：有三個主要原則，第一是效率，我們希望每年能提升能源效率 2% 以上，第二是潔淨，我們希望 2016 年至 2020 年二氧化碳的排放量能回到 2008 的排放量，最終目標是回到 2000 年的排放量，第三是穩定，我們希望能有穩定供應的能源政策。第二階段我們推動節能減碳行動方案，有五個面向，能源、產業、運輸、環境、生活等五個面向來推動。第三個階段是國家節能減碳總計畫，也就是把這個方案整合在一起，一共有 10 個標竿 35 個計畫在推動，包括智慧運輸、智慧建築、智慧電網、智慧消費及生產來推動。智慧運輸的作法主要是將幾個系統無縫接軌，大眾運輸網的推動，另外有智慧交通系統的建置及綠色交通工具的推動。

實際上的推動有兩個值得一提的：一是將來在小琉球及綠島把所有的機車及大客車全數汰換成電動車，第二個是在訂定電動車相關制度，包括產業的輔導、消費環境的建立以及相關的鼓勵措施。智慧建築的部分：從使用綠建築及材料等去做雙軌的推動，希望能達到舒適、健康及環保的作用。在公有的建築方面有 2990 件得到了綠建築的標章，綠建築的使用也從 5% 提高到 30%，是從生態、節能、減廢、健康等面向來評估。智慧電網的部分包括現在在推動的物聯網及高壓低壓智慧電網的建置，在高壓用戶的智慧電網明年就可以完成，低壓用戶在 2016 年會建置到 500 萬戶。在智慧消費、生產及就業方面，包括很多產業的推動、節能減碳的補貼、相關的教育及環境的政策。政府的投資包括愛臺十二項建設的智慧臺灣及智慧生活產業及環境，總共有 4176 億元的公共建設投資，另外振興經濟擴大公共建設於 98 年也投資了國家資通相關建設。

產業部分也有四塊相當重要的部分，包括雲端運算、智慧綠建築、智慧電動車、發明專利產業化。現在政府在黃金十年推動的陽光屋頂，就是希望在建築物的頂端建置太陽光電板來創造新的能源，如在臺南市安南區的國立臺灣歷史博物館的光電牆，年發電量達 17 萬度，可節省 145 公噸的二氧化碳排放量。另外有個案例向各位介紹：莫拉克風災後於屏東地區推動種電計畫，讓地層下陷的土地來設置太陽光電板，讓農民增加收入也輔導他們轉型轉業。另外就是低碳社區推動，去年 (2010 年) 推動了 25 個低碳社區，今年預計有 50 個。然後有四個低碳城市：新北、宜蘭、臺中、臺南，另外還有四個低碳島：澎湖、金門、綠島、小琉球也在推動當中。低碳社區的推動主要是用新的規劃理念來促進社區的低碳、節能及效率，作法也是從中央、地方的政府及民間產業的合作共同推動。

現在向各位介紹低碳城市規劃的新構想，傳統的作法收集是地形、人口、社會等資料，通常是在地形圖上作一些土地資源的安排，現在大家都在談未來的都市，都以低碳及智慧都市作目標，要得到這樣的成果，第一個要務就是在 input 這些資料時就要有低碳的資料跟基礎的資料。因為沒有這樣的資料就不會有這樣的結果出來，所以在規劃時就會整合風力、水源圖等作規劃，初步上可以把土地的脆弱及敏感度都加入。在技術上因為臺灣的 NGIS 技術都已建置完成，應用的雛形正在開始，現在可以把 NGIS 所有的地理資訊應用在規劃中，另外可加上幾個圖，像等能源圖、等雨量圖、等災害圖，再加上剛剛提到的調適變遷的觀念，我們在都市規劃結構裡就可先針對節能減碳產生比較大的效用，最後再進入到建築、交通及電網的部分，將來也會把每個地區的脆弱度擺在裡面，在都市規劃中透過產業空間如何讓它們集中、分享、節能，同時也把設施服務的成本降低，所謂的智慧城市服務的部份能加入，都市的規劃就可以走向低碳都市，最重要還是後續的永續營運，剛剛很多專家也提到，營運裡面有包括社會的、生活的及財務的部分，事實上財務的營運非常的重要，也必須在財務營運發生效果，讓這些建設不會變成閒置，效能才能提高，現在整個臺灣的都市已經走向數值地形圖的測量，開始邁進數值規劃，將來用數值規劃專家系統來協助規劃，達到數值城市的理想，這樣對於低碳城市就有關鍵性的改變。

舉澎湖低碳島作為例子，很多人對於低碳有很多的定義，當初推動低碳島時，因為不同的部會有不同的主張，如果我們只注重新能源的話那就只能稱新能源島，如果我們推動電動車的話那就稱電動車島，如果我們推動節能減碳的話那就稱節能減碳島，可是低碳島不是單一的面向，從中央的立場將所有有關的八個面向加入，包括再生能源、節約能源、綠色運輸、低碳建築、環境綠化、資源循環、低碳生活、低碳教育，分成八個面向作整個衰減及指標的建立，這樣才成為完整個低碳島嶼，我們也希望從低碳島嶼建立之後可以轉到低碳城市。

將來 2015 年希望將再生能源的供應占總能量的 56%，最終目標是達到 100%。最後談到國際交流，臺灣是屬於 APEC 的系統裡相當重要的組織，APEC 有 17 個會員國，推動有 14 個子計畫，臺灣在裡面也在開始推出新的計畫，我們和美國合作，美國有個專家系統是請賓州大學，臺灣是請臺灣經濟研究院，共同要建立一個智慧能源社區資訊平臺，這 17 個國家對於智慧能源都市所作的制度、成果、案例、資訊等全部作在這個資訊平臺的網站，這網站就設置在臺灣。因此我們也做了這樣的國際交流，將來建置完成後，大家可以共同來利用這個平臺來收集資料及分享心得，也可供給西方其他的聯盟來觀摩。

I think today's Global Smart City Summit is very meaning and we have seen different countries have been working with same efforts toward the same goals at the same time. We can learn and exchange information from each other. I attend this summit the whole day and I am also benefited.

There is an issue of concern on the cooperation between the central and local government on the promotion of major carbon emission reduction measures. I would like to brief to you about our promotion strategies. Thirdly, I would like to introduce you several real cases to let you know global climate change has become a world issue and no single country can be left behind. Taiwan addresses this issue from two perspectives: mitigation of climate change and promotion of energy saving and carbon emission reduction. Since 2008, we began three- stage promotion. Stage 1 is the guideline of sustainable development policy in 2008 based on three principles: efficiency by improving energy efficiency by 2% year by year; cleaning with the return to CO2 emission level back to that of 2008 between 2016 and 2020 and further to that of 2000; and stability with energy policy of stable supply. In Stage 2, we promoted energy saving and carbon emission reduction initiatives with five dimensions: energy, industry, transportation, environment, and living. Stage 3 is master plan of national energy saving and carbon emission reduction that integrates all initiatives including 10 benchmarks and 35 programs such as smart transportation, smart architecture, smart grid, smart consumption, and smart production. Smart transportation enables seamless connection of several systems and promotion of public transit network. In addition, there is establishment of smart traffic system and green transport vehicles.

In fact, two things deserve our attention. First, motorcycles and buses on Xialiuoqiou and Green Island will be replaced with e-vehicles. The second thing is the enactment of e-vehicles including the industrial consultation, the building of consumption environment, and encouragement of relevant measures. In terms of smart architecture, green building and material are both promoted to achieve comfortable, healthy, and environmentally friendly functions. There are 2990 buildings certified with green label and the utilization of green building has increased from 5% to 30%, evaluated from ecology, energy saving, emission reduction, and health. Smart grid includes the promotion for the establishment of the Internet of Things and high and low voltage smart grid. The establishment of high voltage grid will be completed next year and for low voltage, it is expected to be completed in 2016 reaching 5 million households. In terms of smart consumption, production, and employment, there are several items of industrial promotion, subsidies of energy saving and carbon emission reduction, and policies related to education and environment. The investment of government includes smart Taiwan and smart living industry of 12 i-Taiwan projects in total of 417.6 billion dollar investment. In 2009, public construction for economic stimulation also invested on relevant establishment of national information and communication systems.

There are also four important parts related to the industry including cloud computing, smart green building, smart e-car, and the industrialization of invention and patent. The solar roofs promoted under golden ten-ear are aimed to create alternative energy through the installation of solar panel of the top of roofs. For example, photovoltaic wall of National Museum of Taiwan History in Annan District, Taiwan generates 17,000 kw of power and saves 145 tons of CO2 emission per year. In addition, aqua solar farm project implemented in Pingtung after Typhoon Morakot installs photovoltaic panel on the sediment land to increase farmers' income and help them to find new jobs. Furthermore, for the promotion of low carbon communities, last year (2010), we worked with 25 low carbon communities and we expect 50 communities will join us this year. We have four low carbon cities: New Taipei, Ilan, Taichung, and Tainan. We also have four low carbon islands: Penhu, Kinmen, Green Island, and Xiaoliuoqiuo under promotion programs. The promotion of low carbon communities

uses new planning concept to achieve low carbon, energy saving, and efficiency goals cooperated by the central government, local government, and private sector.

I would like to present you new concept of low carbon city planning. Traditionally, we collected information of geography, demography, and society and arranged land sources on topology map. Now we are talking about future cities based on low carbon and smart goals. To achieve the results, we firstly need to have low carbon information at hand or we cannot achieve the results. Thus, during planning, we integrated wind power and water source maps. Initially, we need to include land vulnerability and sensitivity. Technically, NGIS of Taiwan has been completed and the initial application just began. We are now able to apply NGIS to planning. We also can add some maps such as those of energy, rainfall, and disasters. We also need to incorporate with mitigation concept we just mentioned about. In the structure of our urban planning, we are able to focus on energy saving and carbon emission reduction for better effectiveness. Then for architecture, transportation and grid, we will also include vulnerability. Through industrial space, we will consider centralization, sharing, and energy saving in urban planning. Meanwhile, we try to minimize costs of service facilities to include those required for smart cities. This kind of urban planning allows us to move toward low carbon cities. The most important thing is sustainable operation. As indicated by many experts, operation consists of social, living, and financial aspects, financial operation is very important and the results shall be seen. That will avoid the facilities being idled and it is the way to improve effectiveness. Now Taiwan's cities are move toward the use of measurement of digital terrain map and in the future, digital planning expert system will assist us to achieve ideal results, a key change to the transformation to low carbon cities.

Take Penghu island as the example. Different people have different definitions for low carbon. In the beginning when we promoted low carbon island, different departments had different ideas. If we focus on alternative energy, e-car, or energy saving and carbon emission reduction then it can only be referred to as alternative energy island and so on. But low carbon island is not the focus of single dimension. From the perspective of Central Government, it shall include eight aspects including renewable energy, energy saving, green transit, low carbon architecture, green environment, resource recycling, low carbon life, and low carbon education as the indicators. This is the way we complete the building of low carbon island and we hope that the model can be transferred to the building of low carbon cities.

By 2015, it is expected that the supply of renewable energy can consist of 56% of the total supply and the ultimate goal is 100%. For international exchanges, Taiwan belongs to the important organization of APEC system that is comprised of 17 member states to carry out 14 sub-projects. Taiwan also initiates new project to cooperate with the US. An expert system consists of those from the University of Pennsylvania and Taiwan Institute of Economic Research in charge of the community information platform for smart energy. Systems, results, cases, and information of smart cities in 17 member states will be included in this platform. This platform is installed in Taiwan. We welcome you to use this platform to collect data and share your thoughts. This can also serve as the reference for our western allies.

林欽榮 *Charles Lin*

臺灣臺南市副市長
The Deputy Mayor of Tainan City, Taiwan

Mr. Huang has given us some valuable points to think about. The Taiwan government and the US government have a pact to develop a platform for intelligent energy. We hope this will soon be completed. Next I would like to invite Mr. Buol, Mayor of Dubuque city, to give us some comments.

黃副主委給了我們很多寶貴的論點去思考。台灣政府與美國政府有簽訂合約共同開發智慧能源平台。我們希望可以很快完成。接下來我要邀請迪比克市市長 Buol 先生發表他的看法。

Roy D. Buol

美國迪比克市長
The Mayor of Dubuque City, USA

Thank you and it's a great pleasure to listen to the experiences of all the five smart cities. I think one city is very similar to us. And there is one big city Lavasa that I have no idea how that is. But after listening to the presentation, certainly that is a very smart city. But what I found today is that there is no quick way to develop a smart city. Every city is different. You have to find what you have in your community and build a smart city around that. You should always involve citizens in the process. You have together believed what you're doing at the government level you have to make that sustainability sustainable. Let the citizens know what they will gain from this. It will change the way they behave for sustainability. We are trying to make them change by giving them real-time information. And make them more aware of the process of consuming resources. We want to make sustainability more sustainable. I think every one of the presenters today offers that opportunity to their community.

謝謝，非常榮幸能夠聽到所有五個智慧城市的經驗。我想有一個城市跟我們很像。還有我不知道的大城市拉瓦薩市。但是在聽過演講後，它確實是個非常有智慧的城市。但是我發現今天要發展智慧城市沒有快速的方法。每個城市都不一樣。你必須找出你有的作為建立智慧城市的基礎。在過程中，必須讓市民參與。一起朝目標前進，政府必須確保永續性。讓市民知道他們會獲得什麼助益。這會改變他們對永續性的行為。我們試著給他們即時資訊，讓它們改變。我們希望更永續。我認為今天所有講者都提供這樣的機會給他們的城市。

林欽榮 *Charles Lin*

臺灣臺南市副市長
The Deputy Mayor of Tainan City, Taiwan

Thank you, Mr. Buol. Next I would like to invite Mr. Filip to talk.
謝謝你，Buol 先生。接下來，我要邀請 Filip 先生。

Filip Santy

比利時科爾特賴克市副市長
Deputy Mayor of Kortrijk City, Belgium

I fully agree with what you said. I have learnt from this conference is programming the idea from the inside. I'll go back to Belgian with the local things to think over. I can persuade my colleagues in the City Council to put more effort in what we are already doing, so thank you. A difficult question that I want to raise is that we have a program with arts. I was personally very disappointed in the lack of results in a conference last week. Only a couple of counties support what we want and it will be no use if the rest of the world is not participating. We still have a problem with this global situation and hope this conference will make people more aware of our problems. Another problem is alternative energies. I think more individuals should have the opportunities of buying alternative fuel. You need to be very convinced to make that investment. So there is still more work to do concerning alternative energies. Also individuals need to have the change in mind.

我完全同意你所說的。我從這個會議學到從外啟發想法。我回到比利時會好好再思考我們的規劃。我可以說服市議會更努力，所以謝謝你。我要提出一個困難的問題，是有關於我們一個計畫。我個人非常失望上周所舉行會議結果。只有幾個國家支持我們想要的結果，如果大家不參與那就一點用也沒有。我們仍然有全球定位的問題，希望此次會議能夠讓我們注意這個問題。另一個問題是替代能源。我認為應該有更多人可以買替代燃料。你必須相信這值得投資。所以關於替代能源，我們要做的還有很多。個人也必須改變想法。

林欽榮 *Charles Lin*

臺灣臺南市副市長
The Deputy Mayor of Tainan City, Taiwan

Thank you. Now Mary-Ann, please.
謝謝，接下來請 Mary-Ann。

Mary-Ann Schreurs

荷蘭恩荷芬市副市長
Deputy Mayor of Eindhoven City, Netherlands

I have learnt a lot in this conference. Now I would like to focus on something else, especially answering Mr. Sascha's view. A few years back, my back is aching, and I need to take massages. Then I found in Taiwan, the blind are educated to massage. I think that is very smart. The benefits of today's society are that you have the ability to make everyone participate. I believe all societies benefit from technology. What makes people happy doesn't change but the form changes. Because ICT has been collecting data, nowadays the information is shared through the Internet. Everybody is able to participate. You can do the right things such as form groups. I think Filip has given us a good example. They have developed apps for citizens, and it doesn't matter what languages they speak, they can always find their ways in Eindhoven. That essentially means political system will take another form. It will permit more citizens and they will be more organized. It's good for everybody because real engagement is now possible. In the Swedish example, Lars has mentioned is difficult to involve everyone. You have to educate the young. There is a lack of means for another way, but the means is here now. Now you can do it with all of us. With those means, you now have very difficult decisions to make. For example sometimes it is infrastructure that people need, and then it's up to us to convince the citizens

that this is the way to go. You essentially share information, answer questions, incorporate stakeholders. It's hard work, but that's our work. In the end everybody has to agree that it's a good process. But that will not make it any easier for us. Among us we will have to make it happen. Thank you.

在這次會議中，我學到很多。現在，我想要專注談，特別是回答 Sascha 的問題。幾年前，我背痛，需要按摩。我發現在台灣有教導盲人按摩。我想這真的很聰明。今天社會上的好處就是你有能力讓每個人參與。我認為所有社會都能獲得科技的助益。讓人們滿意的是只改變形式而不去做其他改變。因為 ICT 已經收集資料，今天資訊透過網際網路共享。每個人都能夠參與。你可以做正確的事像是組成群組。我認為 Filip 已經給了我們很好的例子。他們為市民開發 apps，不論他們講什麼語言，他們都可以在恩荷芬市找到他們的方式。這表示政治系統可以有其他形式。可以讓更多市民更易組織。這對大家很好，因為有可能進行真正的參與。以瑞典來說，Lars 提到很難讓每個人參與。你必須教育年輕人。其他方面可能缺乏工具，但是現在工具就在此。你可以使用所有人的工具。利用這些工具，你必須做出困難的決定。例如，有時候是人們需要的基礎建設，我們必須說服人民情況是如此。你基本上是在分享資訊、回答問題、與關係人合作。這是很困難的工作，但這是我們的工作。最後每個人必須同意這是個好的過程。但是做起來並不容易。我們一定要做。謝謝。

林欽榮 *Charles Lin*

臺灣臺南市副市長
The Deputy Mayor of Tainan City, Taiwan

I totally agree with Mary-Ann 's view. And here I have a question. How do we prioritize our pursuit of smart city in terms of the application of technology? How can we better help those who are disabled or other disadvantaged groups? I hope we can come back to this later. So now I would like to invite Lars to share his point of view.

我完全同意 Mary-Ann 的看法。我有一個問題。我們在科技應用方面，要如何排列我們追求智慧城市的目標？我們要如何更進一步協助殘障或弱勢族群？我希望我們等下可以回過來談。現在我邀請 Lars 來分享他的看法。

Lars Thunberg

瑞典赫爾辛堡市副市長
Deputy Mayor of Helsingborg City, Sweden

There's not just one way to achieve smart cities. Each of us has our own challenges but I think together we can find a better way. I think it is important to promote cooperation between the business sector, the public sector, and the private sector. I think people in the city do not separate their lives into social, economical or environmental sectors. Their lives are about everyday challenges. It is our job to provide a smart system to improve their lives. I technology can be very valuable to make a difference. We have a lot to learn from some of the cities. It is very valuable for us to meet in this place and I thank for providing this opportunity. I'm very impressed with what is going on and what you're going to do here in Taiwan. We've seen a lot of valuable examples, so thank you very much.

要達成智慧城市目標不是只有一個方法。我們每一個城市都有自己面對的挑戰，但是我認為我們可以一起找到更好的方式。我認為必須加強與企業、公部門以及私部門的合作。城市中的人們無法將他們的生活與社會、經濟或環境區隔。他們的生活就是每天的挑戰。我們的工作就是提供智慧系統改善他們的生活。我們可以向其他城市學習到很多。參加此次會議對我們受益良多，我非常感謝有這個機會。我對於台灣所做的印象深刻。我們看到許多寶貴的範例，謝謝。

林欽榮 *Charles Lin*

臺灣臺南市副市長
The Deputy Mayor of Tainan City, Taiwan

Before I turn to Scot, I must point out that we may not be ready yet, but we have the ambition to achieve. As Mayor Lai pointed out this morning, next year will be the first year for the city to get smarter. Also we will form a closer bond with other cities. As the organizer of this conference, I must say I also learned a lot from you. Now let's hear Scot's comments.

在我邀請 Scot 發言前，我必須指出我們可能還沒有準備好，但是我們有想要達成的雄心。如同賴市長今天早上所說的，明年是台南的智慧年。我們與其他城市會有更緊密聯繫。身為會議主辦單位，我必須說我也向各位學到很多。現在我們來聽聽 Scot 的想法。

Scot Wrighton

印度拉瓦薩市城市經理
the City Manager of Lavasa City, India

Most of what I have to say it has already been said by more distinguished colleagues. So I'll just make a few remarks about governments. As someone who's been involved with the teaching and consulting of local governments I think I have something to share with you. In the end a lot of what we do comes down to governments.

For the last 50 years or so, the city has experimented a lot in the West in terms of segregation of uses. I think particularly in Asia will live our lives in a more mixed up way. The innovation in urbanization is going more along the line of mixed uses. My experience is primarily in India and the United States. And the governments there are good at planning documents that are not to be realized. The reason that they are not implemented is not that they're not good ideas but because there is not a government vehicle to put them in place. Across the world there is a misalignment between State government and local governments and the follow-up of resources at the right level. It's not the local government's responsibility to set currency. Likewise it is not the State government's job to worry about bus routes. And to allocate resource accordingly is very political and a government decision. Our second speaker in the afternoon has pointed out that local government has a fear of what the national government will do. That's true in a lot of places. I've worked with many elected mayors. It amazes me that sometimes I thought I'd got someone in the national governments who understand the local level, but they always forget. I implore you, those elected officials, do not forget the innovative skills in the local level. They need autonomy in decisions and resource allocation. Lastly, I want to mention that the imperatives for the local government in this century is never like before. The world is becoming increasingly organized. In a few years, 70% of the world population will live in cities. The economic power and political power will follow that. Local government will be where decisions are made. Limits will be suffered by Europe, India, and the United States alike. Many of the national governments simply will not be able to provide the basic supports that are needed. I speak in a lot of Indian cities, I hear over and over again local officials said the government has to do this and that, and I have to say, guys, this is not going to happen. It's not because the central government doesn't want to. It's because they don't have the resources. As a local government official, we need to prepare our local structures for when we need to rely more on our own resources. It's not just changes in technology. It will also be changes in policies. It will be a different world that local governments live in.

我要說的大部分已經都由許多貴賓說過了。所以我就說一下對政府的意見。以涉入教導與諮詢地方政府的身分，我有一些想法可以與大家分享。我們所做的最後還是來自政府。

過去 50 年來，西方城市在分區使用部分做了許多實驗。我認為在亞洲我們的生活比較屬於混合型。我的經驗主要是印度與美國。兩國政府都非常擅長不能實現的規劃。不能執行的原因不是立意不佳，而是沒有可運作的政府工具。全世界都有國家政府與地方政府不協調的問題，後續資源也分配不佳。地方政府對於貨幣議題沒有責任。同樣地，中央政府也不需要管公車路線。分配資源是政治議題，也是政府的決定。下午的第二位講者指出地方政府會擔心中央政府的決定。在許多地方都是如此。我跟許多民選市長合作過。有時候我驚訝地發現有中央政府的人非常了解地方政府事務，但是大家都會忘記。我提醒你們，民選官員們，不要忘了地方的創新技能。地方需要決策與資源分配的自治權。最後，我要提及在本世紀中地方政府必須履行的事跟之前完全不同。我們的世界越來越有組織。在幾年內，70% 的世界人口將會居住在城市。經濟力量與政治力量將會跟隨他們。地方政府必須做出許多決定。歐洲、印度與美國都會面對限制問題。許多國家政府不會提供必要的支持。我到過許多印度城市演講，一再聽到地方政府官員說政府必須做這做那，我必須跟他們說，這就是現在發生的事。不是因為中央政府不希望做。而是因為他們沒有資源。身為地方政府官員，我們必須在需要仰賴自我資源時，準備我們的地方結構。這不只是科技的改變，而是政策的改變。地方政府所處的是不同的世界。

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林欽榮 *Charles Lin*

臺灣臺南市副市長
The Deputy Mayor of Tainan City, Taiwan

Before we move on, I would like to focus on two issues. One is how governments can act like big corporations to achieve better performance. The second issue is how can we adopt smart city as a policy and promote local economy. Now I would like to invite Mr. Chung to speak.

在我們繼續之前，我要先講兩個重點。一個是政府可以像大公司一樣達成更佳績效。第二，我們要如何採用智慧城市作為政策與促進地方經濟。張副縣長請發言。

張基義 *Chiyi Chang*

臺東縣副縣長
Deputy Magistrate of Taitung County Government, Taiwan

我來自鄉下的臺東，但我不是鄉下人，我看到現在不再是國家跟國家的交流，是城市跟城市的交流平臺，我們今天可以從美國、比利時、荷蘭、印度、瑞典的城市等獲得經驗，雖然城市的基礎略有不同，但大家的經驗或觀點其實很類似，所以在實踐的方式，每個城市都用不同的方法。

對臺東來講，比較能夠學習的大概就是印度的經驗，因為臺東是個交通偏僻，沒有第三級產業，但是我聽到最後讓我最訝異的是印度的經驗，這是最不一樣的，因為它是個從新開始並成為一個不可思議的理想城市，今天聽下來大概有幾點是可以學習的：第一個就是比較慢做，不代表不能做，像印度拉瓦薩市不到一千日，但所有新的觀念可以透過新的方法來實踐，所以我認為臺東因為交通不方便，很多還沒做的東西不代表不可以用跳躍式的作法，只要系統是對的。或者是美國的觀念，那麼小的城市，只有 20 萬人，因為 IBM 在做智慧城市，這樣的方法在控制公共的資源讓城市的經濟或產業獲得轉變。荷蘭的經驗大概跟臺東比較難比因為它比較像新竹，比較是城市跟科學如何做整合。瑞典的經驗和臺東比較接近，不過他們是很早就開始的，並從多方面去耕耘。聽下來這些城市其實重點好像不在去發明一個新的科技，而是把一些既有的科技去做整合，我聽到最重要的其實是你的參與，或是跨部會的整合。因為不管是在低碳、永續城市經營裡，今天講的都是全面性的整合，這點我覺得非常特別。

另外一點我覺得臺東有的機會是，因為臺東有百分之八九十是國有土地，這個國有土地是在國有財產局的手中，我聽到印度可以這樣做，一個全新的城市讓企業去投資去開發的概念，然後用民間的方式去經營，所以我就想到我們昨天在臺大跟黃副主委在討論區域治理，區域治理可能不見得合作對象是隔壁的鄰居，比方說臺東跟花蓮的合作。臺東有那麼多的國有土地，未來在經建會的支持之下，花東發展條例讓我們有一些新的預算、觀念、想法及機制的產生，如果我們跟臺北合作，跟民間合作，提出一個新的方案，也許可以跳脫既有的悲情架構，可以有個全新的發展。臺東本來就很低碳，因為沒有製造業，我常常提我的案例，我以前在新竹教書在臺北住，每天通勤花三個小時，我現在回到臺東是個非常小的 size，每天騎腳踏車三分鐘就可以上班，所以我多出來的時間就是回歸到生活面。臺東在教育的部分有些城鄉落差，現在我們在作雲端教育，臺東大概一百多個學校裡有一半以上學校總人數是 100 人以下的小學校，所以我們也透過微軟作雲端學校的實驗。因為是小的城市所以全面推行比較容易，所以未來如果有企業的幫忙像美國的 IBM 或臺東的微軟，不需要投入太多的資金就可以很快地全面到位，這就可以弭平距離的落差，所以我認為未來臺東要走智慧城市是因為它的幅員特別廣大，而人口特別少，所以如何利用有效的智慧城市的觀念與管理讓臺東有新的出路是非常重要的。最後感謝林副市長，他永遠都是能把最新的觀念或理想整合在一起，更重要的是他是執行力一流的的執行長。

I come from rural Taitung but I am not a rural resident. Now I have witnessed the exchanges not between state and state but city and city. We learned from cities in the US, Belgium, Netherlands, India, and Sweden. Although each city is different, yet we have similar experiences or perspectives and we realize our goals with different methods.

For Taitung, we probably benefit more from Indian experience. Because we are at the remote area and we do not have tertiary industry. The Indian experience impressed me because it started the building from the starch and now becomes an amazing city. I also learned that firstly, action takes time and it does not mean that we cannot take the action. Like Lavasa City only has the history of 1,000 days but it has innovative way to realize its new concepts. Thus, although Taitung does not have convenient traffic, yet we have a lot to achieve and we need to be patient as long as the system is right. For the US experience, even a small city with the population of 200,000 people, they cooperated with IBM to control public resources to transform city economy and industry based on the building of smart city. It is difficult to compare Taitung to the Dutch experience since it is a city more like Hsinchu that combines the development of a city and technology industry. Swedish experience is more like Taitung but they started much earlier on various fields. For me, all presentations show the importance is not on the development of a new technology but rather the integration of existing technologies. The most important thing, for me, is participation or inter-departmental integration. Whether it is the management of low carbon or sustainable cities, it is all about comprehensive integration. That really impresses me very much.

I, additionally, think Taitung has the opportunities because about 90% of lands in Taitung are owned by the national government at the hand of National Property Administration. I learned from Indian experience, the concept to develop with private investment and operate by the private sector. This reminded me of that yesterday, we and Deputy Minister, Mr. Hwang yesterday at National Taiwan University discussed about regional governance that shall include cooperation not only with your neighbors such as the cooperation between Taitung and Hualien. In Taitung, we have large lots of national lands, and under the support of Council for Economic Planning and Development, Rules Governing the Development of Hua Tung will provide us some new budgets, concepts, thinking, and mechanism. If we cooperate with Taipei and the private sector, we are able to come up with new proposals. We are able to get away from the structure of "a city of sadness." We will have brand new development. Taitung itself is a low carbon city and we do not have manufacturing industry. I often use myself as the example. I used to teach in Hsinchu and live in Taipei. It took me three hours to commute. Now I live in Taitung, a tiny city. It takes three minutes to my office by biking. I have more spare time now. For education, there is a divide between urban and rural area, so we now are engaged in cloud education. Among more than 100 schools in Taitung, half of them have students less than 100 people. We, thus, work with Microsoft to conduct cloud school experiment. Because we are small, it is easier to implement. In the future, if any businesses like the US IBM or Microsoft in Taitung would like to assist us, a small portion of investment will allow full implementation and the divide can be closed. In the future, smart city is ideal for Taitung since it is spacious with fewer population and it is important for Taitung to find a new way with effective use of smart city concept. In the end, I would like to thank you Deputy Mayor, Mr. Lin, who always integrate newest concepts or ideas. More importantly, he is the best policy executer.

*2011.12.15 / **DAY 1***

林欽榮 *Charles Lin*

臺灣臺南市副市長
The Deputy Mayor of Tainan City, Taiwan

We appreciate the comments from Mr. Chung. Now we would like to have Ms. Lin to speak.
我們謝謝張副縣長。現在請林副縣長發言。

林美珠 *Mei Zhu Lin*

嘉義縣副縣長
Deputy Magistrate of Chiayi County Government, Taiwan

首先非常榮幸能夠參加這樣的論壇，當然也非常感謝臺南市的副市長，也是我過去的好同事，他非常的熱忱，非常有能力地來主辦這個論壇，讓我們有機會來學習到世界上其他的智慧城市的經驗，所以我也特別邀請我們的重要部門的局處長，希望他們能夠全程與會。

因為這是一個全球化的世界，如果說我們沒有辦法了解別的國家的經驗，我們自己在這個孤島上面是很難有進步的空間，所以有這樣的機會真的是要再次感謝副市長的熱情，能夠讓這個論壇順利進行。在整個議程進行之前，林副市長也跟我們商量過且誠摯得邀請我們參加，所以我們知道這是個非常好的機會，要成為一個智慧城市，剛剛很多的學者及城市的負責人有提到，其實公民的參與是非常的重要，我覺得要有個智慧城市最重要是要有智慧的人民，我們所作的努力也是為了要和人民分享，所以一切的需求我們都站在一個公平均權的概念才是正確的。

嘉義等於像是西岸的臺東，因為在整個西岸的發展，嘉義是屬於比較落後的地區，目前大部分的人口都是從事農業，幾乎也沒有工業，我也很贊成我們張副縣長所說的，其實我們落後也是一種優勢，因為我們之前並沒有工業，但是我們現在發現一些微型的工業也是需要的，所以也非常感謝經建會黃副主委還有中央的協助，希望未來我們在嘉義有一些工業的發展，但是在工業發展時，如果沒有一些基礎建設，事實上是沒有辦法讓人感受到你是個智慧城市，所以過去的城鄉差距恐怕不能完全仰賴中央的幫忙，但是我覺得中央在這個時候還是有很重要的責任，就是將我們的城鄉差距盡量的抹平，有些重要的設施還是要中央來做，而且我們不是只有工業。我們南部地區，臺南高雄好一點，在雲林彰化嘉義地方幾乎是文化沙漠，所以除了在社會面、經濟面，其實文化面也很重要，像一些重要的建設，我覺得中央還是有必要投注一些資金來做一些比較大的建設，讓我們各方面都能夠均衡發展，這才是真正的智慧城市。我們不能說一個高鐵坐下來到了嘉義我不想下車，因為它是個文化沙漠，因為它是個落後地區，我們希望高鐵站每站下來的地方都是均衡的地方，所以我是覺得很公平地一些重大的建設是要由中央來做，同時我也不贊成一些觀念說別人有的我們就應該要有，過去我們有一些發展的經驗，譬如說我們根據臺灣各個地區的特色發展了一些特色發展，可是臺灣就是這麼小，結果每個縣市就想別的縣市有我也要有，否則就輸人家，就是站在立足點的公平，但這樣做下來的結果就是我學你的你學我的，大家 copy 來 copy 去，於是沒有什麼特色，所以本來是要發展地方型的特色，變成一個全國性的特色，那就不叫特色。

我覺得有些發展要有一定的方向，必須要是實際的方向，而不是只是想要，應該是一種需要，所以我們必須要隨需要來發展。同時我也贊成剛剛說的，要創造一個價值，我們資訊及資源的整合可以透過一個有系統有組織的平台整合起來，能夠成為一個網絡，臺灣就是這麼小，大家可以一起來資源共享，這樣均衡發展就比較快、比較容易達成，所以我們是為了產業服務來創造智慧價值，而且我們是為了生活來服務，增進城市的幸福。最後還是要說的是，所有的智慧城市都是為了人民，永遠是人民優先，為了人民的幸福要永續持續的發展智慧型的城市。謝謝！

It gives me the privilege to participate in this forum and of course, my thanks go to Deputy Mayor of Tainan City, Mr. Lin, who was also my old coworker. He has great passions and abilities to host this summit and give us the opportunity to learn from smart cities around the world. I also invite my directors of several important bureaus to come and learn.

This is a global world. If we cannot understand the experiences of other countries, we are not able to know how much room we have on this isolated island to make progress. Again, I would like to thank for the invitation of Deputy Mayor and for the successful organization. Before the agenda, Deputy Mayor Mr. Lin discussed with us and we knew it is really a good opportunity to learn to be a smart city. As mentioned by many scholars and the directors of cities, citizen participation is critical. I think the most important thing for smart cities is smart people. Our efforts shall be shared with people and we need to consider the needs based on the concept of equality.

Chiayi is more like Taitung on west coast of Taiwan because we are left behind the development on the west coast. The majority of our people are engaged in agricultural sector and we do not have industry. I fully support what Mr. Chung said and in fact, falling behind is also an advantage because we do not have heavy industry but we found the necessity to develop micro-industry. We appreciate very much of the support given by Deputy Minister, Mr. Hwang and national government. In the future, we would like to develop some industries in Chiayi but this cannot be achieved without infrastructure. It is impossible to let others feel Chiayi is a smart city. The issue of urban and rural divide cannot be fully relied on the assistance of national government. But I still believe it is the responsibility of national government to help close the gap. The building of infrastructure is the work of national government. In addition, we do not only want industry. In Southern Taiwan, Tainan and Kaohsiung are doing better but in Yunlin, Changhua, and Chiayi, we are like the cultural desert. Besides society and economy, culture is also very important. There is a need for national government to invest in big infrastructure building for the balance development of smart cities. We should let riders of THSR would like to get off each station since each city has its unique features. Of course, I am not for the uniform development. Copycat is not good for development. We need to preserve our uniqueness.

Some development shall also be shown with directions. They shall also be realizable. They shall be based on needs not wants. We need to develop according to needs. At the same time, I agree with what has been said for the value creation. Through a systematic and organized platform, we are able to integrate information and resources and to develop a network. Since Taiwan is small, we are able to share with each other. That will facilitate balance development and the achievement of goals. We create smart values for industrial services and we serve to live for the happiness of cities. In the end, I would also want to state that smart cities are for the people and we shall always put people first. For the happiness of our people, we need to sustainably develop smart cities. Thank you.

林欽榮 *Charles Lin*

臺灣臺南市副市長
The Deputy Mayor of Tainan City, Taiwan

Here I have five questions. The first is how can we apply the smart city approach to government procurement and create more value. The second question is that we heard from all presenters the so-called triple Helix structure which is co-operation among the government, industries and academia. And I wonder what Taiwan can learn from this mechanism. Is it possible for us to replicate the experience in Taiwan? If so, where should we start? The third question is how do we align the operations among different levels of government and best allocate resources. The next question is how we decide the priority of the services list items and how we can best benefit those disadvantaged groups. So would Mr. Sascha please answer my fourth question?

在此，我有五個問題。第一，我們要如何在政府採購上應用智慧城市發法來創造更多價值。第二，我們聽到所有講者提到三螺旋結構，政府、產業與學界合作。我想台灣能從這機制學到什麼。我們在台灣可不可能複製該經驗。如果可以，我們該如何開始？第三，我們要如何在不同階層的政府間合作以及如何能夠最佳分配資源。下一個問題為我們如何決定服務單項目中的優先順序以及我們要如何讓弱勢族群受益。Sascha 先生是否可以回答我的問題？

Sascha Haselmayer

LLG 執行長
CEO of LLG

I will like to address the questions of procurement and services. I found that every city in the world has the same problem. We want to invent something new for our own city. We do not look at solutions that have been found by other cities. Companies like IBM will tell cities that they are going to do something new with their own marketing purposes. Doing something new is so politically motivating of course. There are 576,000 mayors in the world. Of course every city is different, but that can't justify we are going to reinvent everything over and over again. So in terms of services, we need to identify what services are needed in the city, how we can measure performances, and how we are going to procure services. Of course companies will write up the challenges of cities so that corporations will respond. Unless we begin to deal with the problems of procurement, listing challenges and accept the fact that we need to import from each other, we cannot build a successful smart city industry. Smart city industry does not exist to create technology. Its purpose is to provide solutions. Technology only makes sense when it stays. Technology takes investments, and it needs to be implemented to stay. I think procurement can be improved in this respect because we need to open up the market. If there is an alliance created among the cities, we will be happy to provide catalogues and solutions. When there are people like you who have already found the solutions, then these solutions can be used by other cities.

我回答採購與服務問題。我發現世界上每個城市都有相同的問題。我們想為城市投資新事物。我們不會從其他城市已找到的解決方式著手。像 IBM 這樣的公司會告訴城市，基於行銷目的，他們會做新的事物。當然新的事物在政治上比較有誘因。全世界有 576,000 位市長。當然每個城市都不一樣，但是無法將所有事情都須重新來過合理化。所以就服務而言，我們必須確定出城市需要的服務、我們如何測量績效以及我們如何採購服務。當然公司會以合作解決城市面對的挑戰。除非我們開始處理採購問題，列出挑戰並且接受我們需要彼此協助，否則無法建立成功的智慧城市產業。智慧城市產業不是用來創造科技的。它的目的是提供解決方案。科技只能在可用時才有效果。科技需要投資，它也必須執行才有用。我想採購在這方面可以改善，因為我們必須開放市場。如果城市間建立聯盟，我們樂意提供目錄與解決方案。像諸位已經找到解決方案者，這些解決方案可以讓其他城市使用。

Roy D. Buol

美國迪比克市長
The Mayor of Dubuque City, USA

First of all I would like to point out that our smart Dubuque initiative is not just an initiative by the city. Citizens participate and decide what they need. It's a public private partnership in all levels. We had help from the Federal government in terms change of regulation and state law. We need to recognize all our partners. It's not just one entity that makes this happen. Our goal is to make our city sustainable. We're close to Metropolitan areas, so I always tell my citizens are going to be valued by their investment. We are saving money for the municipality. And we save citizens money. So we make all levels of the partners know, whether they are states or citizens, that they are part of the solution.

首先我要指出迪比克市的方案不只是城市提出的方案。是由市民參與並且決定他們想要的。它是個層級的公私夥伴關係。在法規與州法律修訂部分，我們獲得聯邦政府的協助。我們必須肯定所有夥伴的努力。不是一個組織就能讓一切發生。我們的目標是讓城市永續。我們靠近都會區，所以我告訴市民投資會有回饋。我們為城市節省經費，為市民省錢。所以我們讓所有夥伴知道，不論是州政府或市民，他們都是解決方案的一部分。

Filip Santy

比利時科爾特賴克市副市長
Deputy Mayor of Kortrijk City, Belgium

I would like to comment on the triple Helix. In Taiwan your University and high schools are funded on the federal level, and some of them are located in the city. Why don't you use the resources to do something, like offering educational programs to local community so that they can work together and improve their image? So there are a lot of opportunities not only in higher education but also in elementary levels. In my region there is a project. The children are very few opportunities to receive technical education. They only receive technical education in higher education. That will be late. So the idea of the project I mentioned is to allow elementary school children opportunity to brainstorm and think of crazy things. Then we asked technical schools and design schools to see if they can realize the ideas. If the idea is workable, though we asked a third school to co-operate with a local company and realize the product. It is beneficial to all parties involved. So you see co-operation among schools, government and industry really brings a lot of benefits. Thank you.

我想要回應三螺旋。在台灣，你們的大學與高中都是由中央政府資助，有些學校位於城市。你們為什麼不用這些資源做些事，像是提供教育課程給當地社區，透過合作來改善形象？不只在高等教育，在小學也有很多機會。在我的地區，有一個計畫。兒童很少有機會接受技術教育。要等到更高等教育才有機會技術教育。那時就比較遲了。所以我所提到的計畫想法就是讓小學生進行腦力激盪，讓他們想一些新奇的事。然後我們請技術學校與設計學校看看這些想法可不可以實現。如果可行，我們就請第三所學校與當地公司合作，變成產品。對參與各方來說都很有幫助。所以學校、政府以及產業之間的合作真的可以帶來許多好處。謝謝！

Mary-Ann Schreurs

荷蘭恩荷芬市副市長
Deputy Mayor of Eindhoven City, Netherlands

Organizations and people change only when they need to do that. You had to start a trend to get them move. Essentially all the stakeholders are connected, and if one goes down, the others go down as well, so it's easy to get them work together. In Eindhoven because of the budget cuts, we have less money so we cut spending, but we also invest in certain areas. Now if there is a way to save money the institutions will make sure the city council follows it. So people will change but they need difficult circumstances. Maybe we need less money. Money is a means. And we want to make sure that money will circulate within the area.

組織與人們只會在需要改變時才改變。你必須讓他們開始改變。特別是所有關係人都連結起來時，一個倒下，其他人也會跟著倒下，所以最好讓他們合作。在恩荷芬市，因為預算刪減，我們的經費變少，所以費用也刪減，但是我們還是投資在特定部分。現在，如果可以省錢，制度會確保市議會遵守。所以人們會改變，但是是因為情勢所逼。或許我們需要比較少的經費。錢是一項工具。我們希望確保錢是在區域內流通。

Lars Thunberg

瑞典赫爾辛堡市副市長
Deputy Mayor of Helsingborg City, Sweden

So much wisdom has been shared. I have not much to add. Food is important in the community. I think that food consumption is something that presents an opportunity. I think that it is smart city too to grow organic food. Food was grown in one place and transported to another place which adds to costs and harm the environment. I think as a way to support local businesses the public sector can buy more local food. And you can also encourage people to invest in the smart city system. Food will not have to be transported and the farmers can earn more surplus. As for technology I think maybe the government can encourage people to work from home. It saves transport and energy. These are just some examples, thank you.

我們分享了這麼多智慧。我要補充的不多。食物對城市很重要。我想食物的消費也帶來機會。也有智慧城市是生產有機食品的。在某地生產的食品，運送到另一地會增加成本與損害環境。我認為為支持地方產業，公部門可以購買更多當地食品。你也可以鼓勵人們投資智慧城市系統。食品不需要運送到其他地方，農人可以賺取更多收益。至於技術，我想政府可以鼓勵人們在家工作。可以省下交通與能源。這些只是範例。謝謝。

Scot Wrighton

印度拉瓦薩市城市經理
the City Manager of Lavasa City, India

In my experience, the role of governments is central, whatever objectives we have. And I think using procurement to achieve our ultimate objective is not new. Procurement has been used for many years to advance local favoritism. You can put whatever process you want in your procurement policies. But I think to be more innovative in our procurement practices you need to do two things. The first is to seek out what other governments in other countries are doing. To persuade the parties involved, we need to be able to point out what other guys are doing. The second thing is you need to have the freedom to do this. In India I don't have the freedom to write the standard for procurement. There must be some leniency from the State government to allow you to experiment. Innovation tends to be on the local level. I'm not suggesting the States and Central governments to break up from our practices. I'm only suggesting they give local officials the ability to innovate in our procurement processes. I strongly believe that solutions for the government have to come from local officials as well. It's a new world and if we don't change, things will be imposed upon us. Several years ago in the Australian state of Victoria, there is such strong function of local governments that the state and national government abolished its local governments. I'm not sure what happened next, but I'm sure the local government is the source of the solution. Today the Italian government is in such distress that it is suggested all local government less than 1000 be abolished.

Local governments are merged with the nearest ones. I'm not saying whether that is good or bad. But these crisis situations will come and the local governments are suggesting the alternative. They think they need to be created and learn from each other about how to do things better.

在我的經驗中，政府的角色很重要，不論我們的目標為何。我認為使用採購達成我們最終目標並不是新的做法。多年來已經有使用採購增加地方吸引力的作法。你可以把你希望的過程放入採購政策內。但是我認為在採購政策中如果要更創新，你必須做兩件事。第一件事是看看其他國家的政府在做什麼。說服參與的各方，我們必須能夠指出其他人在做什麼。

第二是你必須要有自由可以這麼做。在印度，我沒有自由可以訂定採購標準。必須由州政府寬容讓你實驗。創新是屬於地方的。我不是建議州政府與中央政府置之不理。我只是建議他們給予地方官員能力在採購程序中去創新。我深信政府的解決方案必須來自地方官員。這是個新世界，如果我們不改變，就必須承擔一切。幾年前，在澳洲的維多利亞，國家與州政府廢除了地方政府的強大功能。我不確定接著發生什麼事，但是我確定地方政府是解決的來源。今天義大利政府處於困境中，建議解散不到 1,000 人的地方政府。地方政府就與鄰近地區合併。我不是說這是好或壞。但是這些危機的解決方案應該來自地方政府，而地方政府也在建議替代方法。他們認為必須互相學習如何做得更好。

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林欽榮 *Charles Lin*

臺灣臺南市副市長
The Deputy Mayor of Tainan City, Taiwan

Will Mr. Hwang give us some final remarks?
請黃副主委做結語。

黃萬翔 *Wang-Hsiang Hwang*

行政院經濟建設委員會副主任委員
Deputy Minister , Council for Economic Planning and Development

聽了很多專家的建言，談一下自己的感覺，第一個剛剛提到綠色採購，綠色採購和綠色的建設、投資是一體的兩面，如果能夠用綠色採購可以得到綠色就業，那就可以得到綠色的成果，我想這是非常的重要。第二我也提一個案例就是在臺灣的澎湖，就是剛剛報告過的低碳島的部分，他們現在作一個風力發電的公司，是讓澎湖縣民全民入股，跟政府及業者三方成為一個公司，這些民眾透過公投來加入公司以後可以來支持這個作業，也分享這樣的成果。剛剛 Mary-Ann 提到說能夠讓大家有公平均衡的機會享受到資源分配及福祉是最重要的一種參與，我覺得這是個非常好的作法。

另外就是要處理這樣的課題是全球化的問題，但解決問題卻是地方化，而且必須要量身訂做，雖然大家可以彼此學習，但還是有要量身訂做的投入與設計，但是合作的部分，剛剛臺東縣張副縣長提過，我們的合作不一定要在隔壁才能合作，距離不是問題，互相能夠互利互補才是合作的基礎，所以今天這樣的論壇也建立一種全球化合作的機會，將來這個合作我想也是繼續可以推動的。最後我對於區域治理的部分有個想法，現在整個世界上都在變動與衝突之中，從環境、經濟等各種方面都在變動與衝突之中，事實上我們每一個都市也是在變動與衝突之中，要解決這種衝突，政策擬定與規劃就是政府的責任，所以沒有衝突就沒有動力，沒有衝突就沒有政策，那我非常同意 Mary-Ann 的想法，我們從事非常長時間的政府工作，是樂於面對衝突，而且從衝突中找到創意。

最後我想推薦臺南市，臺南市是具有文化、觀光、美食跟科技等多樣化的都市，也希望幾位貴賓留在臺灣的時間多去看看臺南市，從各種不同的面向來看看臺南市，也希望在臺灣的時間都能過得非常愉快，將來我們都能永續經營做跨領域的合作！

After listening to many suggestions of experts, I would like to express my thoughts. First, about green procurement we just mentioned. Green procurement and green construction and investment are two sides of the coin. If green employment can be achieved via green procurement, then we are able to have green results. I think this is very important. Secondly, I would also like to mention a case in Taiwan, Penghu, the low carbon island I just mentioned. Now they are building a wind power plant that invites residents as shareholders to set up a company with the government and the industry. The public gave their support by voting and share the results. As mentioned by Mary-Ann, the most important participation is to allow fair access of each one for the distribution of resources and welfare. I believe this is an efficient way.

In addition, we need to deal with issues of globalization but at local level. The solution must be tailor made. Although we can learn from each other, yet we need to have tailor made input and design. In terms of cooperation, as Deputy Magistrate of Taitung County, Mr. Chung, pointed out we shall not only cooperate with our neighbors. Distance is not an issue. Complementary cooperation is the basis. Today's summit is also an opportunity for global cooperation and this shall continue going on. In the end, I would like to share with my opinions toward regional governance. The world now is changing and in conflict including environment and economy. In fact, that is also happening in cities. In order to solve the conflict, the government has the responsibility to enact and planning policies. If there is no conflict, there shall be no drive and no policy. I totally agree with the thoughts of Mary-Ann. We have been long time working for the government and we shall be comfortable to deal with conflicts and find the creativity among conflicts.

Finally, I would like to recommend you to enjoy your stays here in Tainan City, where has the diversified looks of culture, tourism, gourmet, and technology. I also wish you have pleasant stays here and in the future, we can have more interdisciplinary cooperation.

林欽榮 *Charles Lin*

臺灣臺南市副市長
The Deputy Mayor of Tainan City, Taiwan

Thank you for your attendance, distinguished guests, ladies, and gentlemen. Global Smart City Summit will end here. I believe the sharing, especially the direct dialogue, is inspiring to us. I would like to especially thank for Deputy Minister Mr. Hwang who has been with us during his busy schedule and given us the policy responses. I would look forward to seeing you at tomorrow's joint singing ceremony as well as the sharing by the industry and academia. Thank you for your participation.

非常謝謝今天所有出席的貴賓及在場的各位，全球智慧城市高峰論壇就在這裡結束，我想這樣和六個城市的分享，尤其是直接的對話，都能夠給我們新的啟發，特別要感謝的是黃副主委百忙中抽一整天陪著我們，來表達政策上的呼應，也期待明天大會的共同簽署儀式，以及產學界、學術界要來做分享，繼續歡迎諸位參與，今天的論壇活動就到此結束，非常謝謝！

2011.12.16 / DAY 2

THE GLOBAL SMART CITY SUMMIT in TAIWAN

全球智慧城市高峰論壇

2011.12.16/DAY 2 議程

時間	議程
08:40-09:00	**報到**
09:00-09:30	**智慧城市合作意願書 簽署儀式** 由臺南市市長、美國迪比克市市長、荷蘭恩荷芬市副市長、印度拉瓦薩市城市經理、瑞典赫爾辛堡市副市長、比利時科爾特賴克市副市長共同簽訂
09:30-09:50	**專題演講一 / 智慧科技創新服務模組於未來城市之應用－以 i236 計畫與遠雄智慧社區為例** 》趙志峰，國立交通大學 Eco-City 副執行長
09:50-10:10	**專題演講二 / 企業智慧發展分享－西門子：永續城市的解答** 》芮家楹，西門子股份有限公司企業傳播事務處協理
10:10-10:30	**產官學座談討論一** 主持人：》張皇珍，臺南市環境保護局局長 與談人：》芮家楹，西門子股份有限公司企業傳播事務處協理 》黃林輝，亞太燃料電池科技股份有限公司執行長 》葉惠青，臺南市經濟發展局局長
10:30-10:40	Coffee Break
10:40-11:00	**專題演講三 / 企業智慧發展分享－ IBM：如何打造智慧化安全城市** 》徐秋風，**IBM** 全球技術服務部技術長
11:00-11:20	**產官學座談討論二** 主持人：》顏純左，臺南市副市長 與談人：》徐秋風，**IBM** 全球技術服務部技術長 》阮昌榮，行政院國家科學委員會工程處副處長 》張博堯，良福保全股份有限公司副總經理 》王英朗，台積電南科 14 廠廠長

時間	議程
11:20-11:40	**專題演講四 / 企業智慧發展分享－ Panasonic : Panasonic 居家整體的 CO2±0 住宅提案** 》原康裕，臺灣松下居家內裝股份有限公司總經理
11:40-12:00	**產官學座談討論三** 主持人：》溫琇玲，中國文化大學建築及都市計畫系所副教授 與談人：》原康裕，臺灣松下居家內裝股份有限公司總經理 》汪荷清，皓宇工程顧問股份有限公司總監 》蔡適陽，國際創新創業發展協會秘書長
12:00-13:30	Lunch
13:30-17:30	**臺南市導覽行程 City Tour** 參觀古蹟、乘船遊台江國家公園、四草濕地 ... 等
17:30	End

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THE GLOBAL SMART CITY SUMMIT in TAIWAN

全球智慧城市高峰論壇

PROGRAM of December 16

TIME	AGENDA
08:40-09:00	**REGISTRATION**
09:00-09:30	**CEREMONY OF SIGNING COOPERATION AGREEMENT**
09:30-09:50	**KEYNOTE SPEECH 1** **/ Innovative and Smart Technology Service Model in the Application of the Future- i236 project and Huazhong Intelligence-living Community** > Chih-Feng Zhao, Vice CEO of Eco City, National Chiao Tung University
09:50-10:10	**KEYNOTE SPEECH 2** **/ Siemens - Answers for Sustainability Cities** > Ray Jui, Corporate Communication Director, Siemens Limited, Taiwan
10:10-10:30	**PANEL DISCUSSION 1** **Moderator :** > Hwang-Jen Chang, The Director-general of Environmental Protection Bureau, Tainan City Government **Panellists :** > Ray Jui, Corporate Communication Director, Siemens Limited, Taiwan > Line- Huei Huang, CEO, Asia Pacific Fuel Cell Technologies, Ltd. > Hui-Ching Yeh, Director, Economic Development Bureau, Tainan City Government
10:30-10:40	Coffee Break
10:40-11:00	**KEYNOTE SPEECH 3** **/ IBM - Building Smarter Public Safety for a City** > Chiao-Fe Shu, IBM T.J. Watson Research Center
11:00-11:20	**PANEL DISCUSSION 2** **Moderator :** > Chun-Tso Yen, Deputy Mayor of Tainan City, Taiwan **Panellists :** > Chiao-Fe Shu, IBM T.J. Watson Research Center > Chang-Wing Yuen, Programmer Manager at Department of Engineering and Applied Science, National Science Council > Bo Yao Chang, Vice President, Liang Fu Security Corp. Ltd > Ying-Liang Wang, Director, Fab 14, TSMC at STSP
11:20-11:40	**KEYNOTE SPEECH 4** **/ Panasonic - Panasonic : Panasonic's Residential Proposal of CO2±0** > Yasuhiro Hara, Panahome Taiwan Residence Co., Ltd Managing Director
11:40-12:00	**PANEL DISCUSSION 3** **Moderator :** > Show-Lin Wen, Associate Professor, Department of Architecture and Urban Design, Chinese Culture University **Panellists :** > Yasuhiro Hara, Panahome Taiwan Residence Co., Ltd Managing Director > Her-Ching Wang, Director, COSMOS Inc. Planning Consultants > Shi-Yang Tsai, Secretary General, GlobalTic
12:00-13:30	Lunch
13:30-17:30	**CITY TOUR**
17:30	End

智慧城市合作意願書簽署儀式

Ceremony of Signing Cooperation Agreement

由臺南市市長、美國迪比克市市長、荷蘭恩荷芬市副市長、印度拉瓦薩市城市經理、瑞典赫爾辛堡市副市長、比利時科爾特賴克市副市長共同簽訂。

Signed jointly by Mayor of Tainan City; Mayor of Dubuque City, USA; Deputy Mayor of Eindhoven City, Netherlands; the City Manager of Lavasa City, India; Deputy Mayor of Helsinborg City, Sweden; and Deputy Mayor of Kortrijk City, Belgium

各位貴賓、各位女士、各位先生，大家早安！

我再次代表臺南市市民，非常感謝來自美國、來自歐洲、來自亞洲各個國際上主要的智慧城市的市長、副市長們，以及來自國內的企業界、專家學者，共襄盛舉參加這次的高峰會，這也可以說是臺南市歷史性的一刻，就臺南市的城市建設目標而言，其中低碳城市、智慧城市是我們要發展中非常重要部分。經由這次高峰會的論壇，同時經由各位市長副市長，以及專家學者、企業界提供寶貴的意見，不僅僅是對臺南市未來的城市建設注入一股智慧的軟泥，我相信讓每位與會的貴賓們應該也從彼此的切磋當中得到非常好的經驗，因此再次特別利用這個機會表達感謝。今天非常難得的是我將代表臺南市市民跟五個國際一流知名的智慧城市代表簽署合作備忘錄，我想這代表幾個意義：第一個意義當然是代表科技沒有國界，分別來自美國、歐洲、亞洲，但是經由科技之間的交流，讓我們國家跟國家的界限消弭無形。第二個意義就是我們的友誼也超越了國界，我想大家不遠千里跋涉來到臺南，中間的路途遙遠，我相信是非常的辛苦，但是大家有這份感情來到臺南市，也讓我們彼此之間不分你我。第三個更重要的意義是對於智慧城市的建立在我們簽訂之後的未來應該會有幫助，當然我們不諱言，相較於其他五個國際上重要的城市而言，臺南市尚在起步階段，我們有很強的企圖心，也希望未來能增加彼此的交流，除了智慧城市的建立以外，我們市民跟市民之間的交流、文化交流、體育交流、經貿交流，我都希望經由今天的合作備忘錄的簽立，未來能夠達到這樣的目標。

最後我還是要提醒各位，臺南市在臺灣的歷史上有三百年的時間是臺灣的首都，所以臺南市就是臺灣的文化首都，全國八十九個國定古蹟有二十二個是在臺南市，同時也是米其林觀光雜誌以三顆星（最高顆星）推薦最多景點的城市，臺南市的四草濕地跟曾文溪口濕地是國際一流的濕地，我們今天下午也安排了一個市區觀光，希望大家在工作之餘也不要忘了輕鬆一下，了解這個城市之美，我相信應該有助於讓我們的感情更加增進。最後也祝福大家身體健康、萬事如意，謝謝！

我特別利用這個機會補充介紹一下，我們的蘭花，這個蘭花是臺南市本身生產的蘭花，我們今年去參加世界蘭展，得到世界蘭展的總冠軍！

2011.11.16 / **DAY 2**

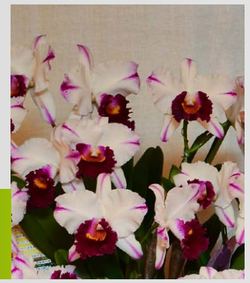
Distinguished guests, ladies, and gentlemen, good morning,

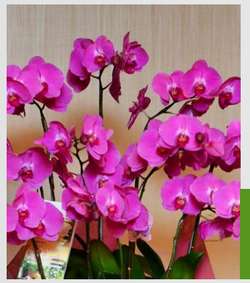
Once again, on behalf of residents of Tainan City, I would like to thank mayor and deputy mayors from US, Europe, and Asia as well as distinguished guests from business and academia for your participation in this summit. This is the historical moment of Tainan. For urban development goals of Taiwan, low carbon and smart city is key to our goals. Via this summit, we are able to share the valuable opinions from mayor and deputy mayors, experts, scholars, and businesses that not only provide insightful input but also a meaningful leaning experience. Once again, I would like to take this opportunity to thank you.

It is a rare opportunity today for me on behalf of residents of Tainan City to sign the cooperative memorandum with the representatives from the world's five leading smart cities. I believe the signing indicates, first, technology transcends national border. We are from different parts of the world but exchanges among us transcend national boundaries. Secondly, our friendship also transcends national boundaries. Our distinguished guest came afar to Tainan and I believe it is a long way but after you arrived in Tainan, you immediately feel the friendship between us. Thirdly, this singing of cooperative memorandum will benefit the future building of smart cities. Frankly speaking, comparing with five leading cities, Tainan is still at the initial stage but we are ambitious. It is also hoped that in the future our exchanges can be strengthened not only in the building of smart cities but also in private, cultural, sports, and business exchanges. The singing today will help us to achieve these goals.

In the end, I would also like to remind you, in history, Tainan was Taiwan's capital for 300 years and we are Taiwan's cultural capital. Among the 99 nationally ranked historical site, there are 22 in Tainan City. Tainan is also ranked as the 3 star tourist city in Taiwan (the highest rank) by Magazine du Guide Michelin with its largest number of tourist sites. Tainan's Sizao Wetland and Zengwen River Mouth Wetland are also the first class wetland. This afternoon, we arrange you the city tour and do not forget to get relaxed after this conference. I invite you to know the beauty of Tainan that will help us to understand each other more. I would also like to wish you good health and happiness. Thank you.

In addition, our orchid is local produce and last year, we participated in World's Orchid Show and was awarded as championship.





臺南市政府

賴清德市長

Ching-Te Lai

Mayor, Tainan City Government

贈禮致詞
Remarks

美國迪比克市長 ***Roy D. Buol :***

迪比克市沿著密西西比河，所以畫中的迪比克市顯示出鮮明的迪比克建築、山丘、河流以及船舶，這是迪比克的每日生活。

Roy D. Buol The Mayor of Dubuque City, USA :

Dubuque is a city along the Mississippi River, so this is a painting showing some of the significant buildings and structures of Dubuque, with hills, the river and boats that we see every day in Dubuque.

荷蘭恩荷芬市副市長 ***Mary-Ann Schreurs:***

這真的是很難得的場合，科技讓我們彼此更靠近。我有個禮物給您。這是 TomTom GPS 可以在您駕車時為您導航。這個儀器特別的地方在於它是恩荷芬市發明的產品，但是台灣製造。這個儀器可以導引您到恩荷芬市，所以我誠摯地希望您能夠很快地來訪。

台南市市長 **賴清德 :**

原來 Eindhoven 和臺南市已經在合作了，本來我還擔心有沒有辦法去她的城市，現在有這個導航系統我就可以答應了。

Mary-Ann Schreurs Deputy Mayor of Eindhoven City, Netherlands :

This is indeed a rare occasion, where technology brings us closer. I have a present for you. This is a TomTom GPS that could help you find directions when you drive. The special thing about this device is that it was created in Eindhoven, but produced in Taiwan. The product could direct you to Eindhoven, thus I sincerely hope that you can come to visit us, soon.

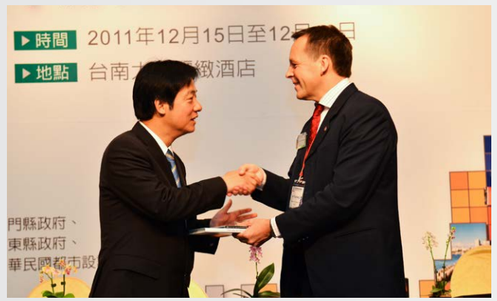
Ching-Te Lai Mayor of Tainan City Government :

Eindhoven has been cooperating with Tainan! I was worried about I cannot find the way to your city and now with this navigation device, I am able to visit your city.

贈禮致詞
Remarks

Lars Thunberg Deputy Mayor of Helsingborg City, Sweden :

To extend my gratitude to Tainan City, I would like to present a book with nice pictures of Helsingborg, and also CD of symphony orchestra from Helsingborg, playing classical music. And I also welcome you to Helsingborg sometime.



瑞典赫爾辛堡市副市長 *Lars Thunberg:*

為了表達我對台南市的感激，我要致贈有著赫爾辛堡照片的書以及赫爾辛堡交響樂團演奏的古典音樂 CD。我也歡迎您到訪赫爾辛堡。

Filip Santy Deputy Mayor of Kortrijk City, Belgium :

I learned and enjoyed the conference very much. In return to the hospitality, I am sending a special woven textile to Tainan City and the Mayor. The textile was famous in the 17th century, but today we have innovated the textile with modern design, woven Kortrijk in a new way.

比利時科爾特賴克市副市長 *Filip Santy:*

我很高興從研討會中學到很多。為了回應您的熱情，我要致贈特殊的紡織品給台南市以及市長。這是 17 世紀知名的紡織品，但是今天我們以現代設計將其創新，以新的方式設計科爾特賴克市。

Keynote Speech 1

專題演講

智慧科技創新服務模組於未來城市之應用－以 i236 計畫與遠雄智慧社區為例

Innovative and Smart Technology Service Model in the Application of the Future- i236 project and Huazhong Intelligence-living Community

主講人 Speaker :

趙志峰 *Chih-Feng Zhao*

國立交通大學 Eco city 副執行長
Vice CEO of Eco City, National Chiao Tung University

首先跟各位介紹我們交通大學 Eco city 中心這四年來在智慧科技與智慧服務中跨領域的整合，希望在未來能應用於智慧城市，以兩個城市與各位作簡報及說明。

第一個是新竹 41 萬人口的智慧安全城市的建構，第二個是在新北市約有 1 萬人的智慧社區。

根據聯合國統計，2050 年全球人口數將會超過 90 億，其中超過三分之二的人口會居住在城市，尤其以亞洲地區是非常高度城市化的部份。1900 年城市人口百分比為 13%，而 2050 年會成長到 70%，等同於一年地球上會新增 7 個紐約市。這之中將會產生諸如污染、交通的問題，根據統計 1982 年到 2001 年的交通流量增加了 236%，所以，如何透過智慧科技解決問題即是我們面臨的課題。由美國所研究的資料顯示，臺灣在每人平均碳排放量為亞洲最高，碳排放密度更為世界最高，每年超過 11 公噸。在未來高度城市化的情況下，碳排放量也是會產生許多問題，包括交通、安全、汙染等。我們希望將智慧科技透過產官學合作提供服務，解決城市的問題、提昇城市的效能。

Eco City 健康樂活城的目標與願景，是針對高齡、高壓族群及未來城市問題，建立健康樂活城體驗館。將學校中的技術推動生活場域實驗室，推動智慧科技與創新服務，複製成功案例，推動創新智慧城市。拓展國際合作，推動整案輸出。

交通大學 Eco City 有四個引擎作為機制，收集了很多科技成果，包含了展示館裡有 88 項科技成果，其中居家、運動、辦公及車用的空間都有一些相關的科技發明，整個串起來就是未來智慧城市的雛形。再來透過 Users Lab 了解使用者的需求分析，如何去應用這些科技，把這些服務在使用前、使用中、使用後都作使用者的需求調查，看使用者如何在這些地方獲得最重要的科技。在實驗室做完後我們就希望帶到真實場域，包含城市或社區裡作體驗分析，體驗分析也結合了新竹市及高雄市等地區，透過科技產品的確認及社區溝通後，

將科技導入社區，透過自動化的方式作回饋的收集。經過測試後科技及服務會作修改，成熟後會變成具體的商業模式叫 Lab Company，也就是說每一項技術及服務未來都可以成為可行的商業模式回饋到產官學界。

夢工廠永續發展的願景，則是由老師發現好點子或更多需求，以農場概念培育人才、技能，灌溉之後成為良好的發明、創新運用、商品與服務。Eco City 透過交大夢工廠本身、交大校友會、交大 EMBA 的力量，可提供跨領域的平台，包括人文、空間、建築、科技等，分成四大項目：智慧科技系統整合、城市服務模組規劃、生活實驗室應用建構、國際合作與企業資源連結。

接下來以兩個城市為例跟各位做個報告，首先是新竹智慧安全城市的建構，已經在七個社區建置智慧安全系統，下一階段預計推展到 41 萬人口的新竹市。我們認為安全城市是做為智慧城市的一個基本條件，行政院統計臺灣民眾最重視的議題是安全，很多民眾也認為安全維護是需要再被提升的，而目前保全的現況問題為 24 小時監控效益極低、誤報率高以及耗費時間長而破案率低。其主要原因在於資訊平台未能整合、不連貫也不透明，也沒透過智慧化將系統作串聯。美國的紐約市及西班牙的馬德里都是用智慧系統的串聯，來協助治安單位作資訊整合，這方式的確提升了治安的成效。目前在新竹七個社區產官學合作領域架構，Eco City 提供整體服務規劃、公部門協調、以及社區居民店家的使用者訪談。我們在對的時間提供對的服務，將保全公司與社區巡守隊結合也與警察局結合，再加上社區民眾四方結合。除了攝影機智慧監測系統，還有緊急求救壓扣，社區巡守隊配戴智慧手機。透過主動偵測、通報，協助縮短追捕時間、提高破案率。在這樣的服務架構底下，我們預期具體的效益如下：降低警報時間、節省保全成本、節省警力資源。

再來是新北市左岸智慧生活社區的規劃，全區約有 15 個社區約 3000 個住戶，主要是將智慧科技結合市政府，突破以往局限於住家內的智慧科技，擴展到整個社區，甚至到公部門系統的結合。尤其是在警報系統部分，也希望透過這項智慧社區的規劃，將臺灣推到國際。以上是我的報告，謝謝！

First of all, I would like to introduce you the interdisciplinary integration efforts of Eco-city in smart technology and services we have done in the past four years. It is hoped that in the future, our efforts can be applied to smart cities. My presentation uses two cities as examples.

The first one is the construction of smart safe city of Hsinchu that has the population of 410,000 inhabitants. The second one is a smart community in New Taipei City with the population of 10,000 people.

According to UN statistic, by 2050, global population will exceed 9 billion and two thirds will live in cities, especially for highly urbanized Asia. In 1900, urban population accounted to 13% of global population by 2050, the percentage will grow to 70%. That means seven new cities like New York City will be created. Problems such as pollution and traffic congestion will occur. As shown in statistic, between 1982 and 2001, traffic volume increased by 236% and how to use smart technology to solve the issues becomes our challenge. Studies done by the US indicate Taiwan has the highest carbon emissions per capita among Asian countries and our carbon emission density is on the world's top, exceeding 11 tons per year. In lieu of high urbanization in the future, carbon emissions will result in many problems including traffic, safety, and pollution. It is hoped that smart technology via the cooperation of the industry, government, and academia, can provide services to solve issues faced by cities and to improve effectiveness.

The goals and visions of Eco-city are to solve problems for the elderly, those under high stress, and future cities. We established experiential hall and living lab with technologies develop at NCTU, promote smart technology and innovative services, duplicate successful cases, assist the building of smart and innovative cities, expand international cooperation, and export our experience.

NCTU's Eco-city is operating based on the mechanism of four engines. We collect a lot of technology results including 88 items in exhibition such as living, sports, office, and vehicle related inventions. All of them connected present the initial model of smart city. Through researches done by Users Lab, we analyze user's demands as well as survey users before, during, and after the use of technology. We also try to understand where users can access to the technology. After researches done in the lab, we bring them to the reality including cities and communities. Experiential analyses have been done in both Hsinchu and Kaohsiung. After we confirm and communicate with communities, we then introduce technology to the communities and collect feedback through automatic methods. Then we modify technology and services. The mature business model is referred to as Lab Company. That is to say each technology and service in the future will become feasible business model that can be implemented by the industry, government, and academia.

The sustainable development vision at Lab Company is built on the talent cultivation like farming. We incubate them for better invention, application, innovation, products and services. Eco-city empowered by Lab Company, Association of NCTU Alumni, EMBA of NCTU provides interdisciplinary platform that integrates four fields in culture, space, architecture, and technology to work on integration of smart technology system, urban service model, living lab application, international cooperation, and links to business resources.

Next, I am going to report to you two cities as case studies. First is smart safe city construction in Hsinchu. We have installed smart security system in seven communities. Our next stage will expand the system to cover 410,000 people in Hsinchu. We believe a safe city is the basic condition for a smart city. Statistic of Executive Yuan shows the biggest concern of people in Taiwan is security and many of them agreed security shall be enhanced. The current status of 24 hour security patrol is low in efficiency, high error report ratio, long time consuming, and low crime detection due to the lack of links to smart system that can help security monitoring agency to integrate information. Our method really improves security monitoring. At present, seven communities in Hsinchu under the supportive structure of the industry, government, and academia, have been assisted by Eco-city in overall service planning, negotiation with public sector, and interviews with residential and business users. We provide right services at the right time and make security patrol company, community security patrol team, and the police to work closely. We also involve residents of the communities. In addition to smart camera surveillance system, there are emergency button and smart phones for active detection and reporting to save chasing time and to improve crime detection rate. Under this service structure, we expect the concrete effectiveness of quick reporting time, saving security patrol cost, and save police resources.

Next is about smart community planning of Zuoan, New Taipei City where has 3000 households in 15 communities. We mainly connect smart technology to household technology and expand it to the whole communities and even the public system, especially with alarm system. It is also hoped that with the planning of this smart community, we are able to open up Taiwan's international market. This is my presentation today. Thank you.

專題演講

Keynote Speech 2

永續城市的解答 Answers for Sustainability Cities

主講人 Speaker：
芮家楹 Ray Jui
西門子股份有限公司企業傳播事業處協理
Corporate Communication Director, Siemens Limited, Taiwan

我要和大家分享從西門子的角度對永續城市的觀點與解答，首先很快速的跟大家提一下我們全人類正面臨的四大趨勢所帶來的嚴重衝擊：人口增加以及高齡化、全球化、氣候變遷、都市化。

都市不只是發展的引擎，更是氣候變遷的首要敵人。一個都市貢獻了 80%的 GDP，同時也消耗了 70%的能源、釋放 70%的二氧化碳。所以所謂的節能減碳護地球及永續發展，都市必須立即行動扮演領頭羊的角色。

很多人對西門子的印象還是停留在賣手機的，但已經是過去式了，西門子公司針對剛剛提到的幾個趨勢在三年前就已經作出了組織及策略方向的調整，今天的西門子是一家整合性的科技公司，整合了工業、醫療、科技及基礎建設與城市。工業部分我們提供工業解決方案，工業自動化及科技，在臺灣有 70%的廠商使用我們的自動化設備，最近的再生能源部份我們也有著墨。以醫療來說，西門子的醫療設備都是數一數二的，不管是振子斷層、磁共振或 X-Ray 等等。最後和我們今天的主題最相關的，就是成立了基礎建設與城市事業領域，希望透過這樣的組織與資源配置，幫助全球各大都市爭取永續未來的發展。

過去幾年我們跟各大智庫合作，例如與經濟學人智庫合作，實施全球五大洲綠色城市評比，檢測環保政策與績效。透過提供專業調查報告給國家領導者，讓他們得知自身國家或城市的的優劣勢，也得到其他城市的經典範例做為參考。此外也提供實施永續城市的科技方案，今天我特別著墨能源、交通、醫療、樓宇四大部分。

綠色建築部分，多數樓宇擁有者或建造商都希望在營建部分盡量減少成本，卻忽略若在初期多投資 1-3%便能壓低後期的營運及維護成本，更達到節能減碳的效果。西門子能透過現有的科技技術成功的替建築物節能 10%，以臺北 101 為例，我們幫助臺北 101 獲得美國 LEED 白金級綠建築認證，成為全世界最高的綠建築。

綠色醫院部分，高齡化造成醫療的需求也持續攀升，現今的醫院都必須提供高品質、高效率及民眾可負擔的醫療服務，但也面臨了健保改革及環保需求的挑戰。西門子為了成就綠色醫院分成三個部分著手：醫療科技、樓宇科技以及資訊與通訊科技，以達到最先進、最少污染、最節能減碳、在臨床與行政管理間的協調。結果可是讓每個人在醫院停留的時間減少 46%，每張病床的能源及二氧化碳的消耗也可減少 50%。

綠色運輸部分，一個城市要永續發展必須要有完善的大眾運輸以保持競爭力。西門子建議第一是以無需架線的輕軌電車代替捷運，可以不破壞城市中的風景，並且可以減少 30% 的能源消耗。第二是以油電混和的巴士代替公車，使用電力驅動技術減低能源使用，可以減少 40%的二氧化

碳以及燃料消耗量。第三是增加電動巴士或電動車的應用，目前西門子已經在倫敦與德國有實際的運作。

再生能源部分，臺灣是一個高度倚賴能源進口的國家，希望能提高再生能源的使用比率。對我們而言，建立使用配套措施更為重要。如智慧電網，將再生能源統合到網絡當中、減低傳輸中耗損量。西門子在過去實際案例中，幫助減少 3.17 億噸的排碳量，等同於七個著名大城市，相信業界合作下，節能減碳絕對不是個夢。

最後有三個呼籲：**1.** 城市永續需要有全盤的考量，在經濟競爭力、環境保育、生活品質之間求得平衡。 **2.** 城市永續必須政府與產業攜手合作，由政府提供市場拉力、業界提供技術推力。 **3.** 城市永續發展要從教育下一代開始，透過寓教於樂，將節能減碳的觀念從小培養。

I would like to share with you the concept and solution of sustainable cities from the perspective of Siemens. Firstly, I would like to briefly talk about serious impacts brought by four trends that we are facing now: the increasing and aging population, globalization, climate change, and urbanization.

Cities are not only the engine of development but also the cause of climate change. When a city contributes 80% of GDP and at the same time, it consumes 70% of energy. For so called energy saving and carbon emission reduction and sustainable development for the protection of our earth, cities shall play the role of lead sheep.

Many people have the impression of Siemens as a cell phone seller but that is our history. Siemens responded to the above mentioned trends three years ago by adjusting organizational structure and strategy direction. Today Siemens is an integrated technology company that consists operation of industry, medical care, technology, infrastructure and city building. In terms of industry, we provide industrial solution, automation, and technology. In Taiwan, 70% of companies use our automation equipment and we also involve in the development of renewable energy. For medical care, medical equipment provided by Siemens are world class products including positron emission tomography, magnetic resonance, or X-Ray. Finally, it is the field related to today's theme infrastructure and city business. It is hoped that through the new organization and resource allocation, we are able to assist cities around the world to gain their sustainable future.

In the past years, we have been cooperating with think tanks such as the Economist to rank green cities in five continents and measure environmental protection policies and performance. We then provide professional survey results to national leaders to allow them to know about the pros and cons of their cities or countries. We also acquire classic models for reference. In addition, we provide solutions for the implementation of sustainable cities. Today, I would like to especially emphasize on four parts: energy, transit, medical care, and building.

For green building, most building owners or builders would like to minimize their costs but they ignore the fact that by investing 1-3% more in the initial stage, they are able to reduce operating and maintenance costs in later stage for the achievement of better results on energy saving and carbon emission reduction. Siemens is able to use existing technology

to successfully save energy for buildings, by 10%, for the case of Taipei 101. We helped Taipei 101 to acquire the US LEED Platinum Level Green Building certification and let it become the highest green building of the world.

In terms of green hospital, aging population pushes the increasing demands for medical care. Currently, hospitals needs to provide high quality, efficient, and affordable medical care services but they also face the challenges of insurance program revolution and environmental protection request. Siemens works on three parts to address to the issue: medical care technology, building technology, and information and communication technology to achieve the goals of advancement, most a, minimized pollution, energy saving, and carbon emission reduction. We coordinate clinic and administrative management. The results are 46% less staying time in hospitals and 50% less energy consumption and carbon emissions per bed.

For green transit, a city that likes to go for sustainable development needs to have sound public transit to maintain its competitive edge. Siemens suggests the replacement of line-less light tram cars to replace rapid transit system that will not interrupt urban landscape and saves 30% energy consumption. Secondly, hybrid buses shall be used to reduce energy consumption with electric power drive to reduce 40% CO2 emission and fuel consumption. Thirdly, the application of e-cars or e-bus shall be introduced and at present, Siemens has been implementing relevant programs in London and Germany.

For renewable energy, Taiwan relies heavily on energy import and we shall increase the utilization ratio of renewable energy. For us, supporting measures are more important such as smart grid that can combine the use of renewable energy in the network to reduce loss during transmission. Siemens in the past practical cases help to reduce carbon emissions by 317 million tons equivalent to the emission volume of seven big cities. I believe under cooperation, energy saving and carbon emission reduction is a dream that can be realized.

In the end, I would like to call for: **1.** The whole consideration of sustainability to look for balance between economic competiveness, environmental conservation, and living quality; **2.** Cooperation for sustainability between the government and the business for respectively providing market pull and technology; and **3.** Education for next generation via practical participation and concept development since childhood.

產官學座談討論 *Panel Discussion-1*

張皇珍 *Hwang-Jen Chang*

臺南市環境保護局局長
The Director-general of Environmental Protection Bureau, Tainan City Government

對抗全球化氣候變遷的問題，政府跟企業應該攜手合作，提供給所有市民一個方便的生活與態度，我想不管是永續還是低碳都是一種生活的態度，從生活態度去改變地球自然而然就可降溫。在賴市長上任後永續低碳及智慧城市是臺南市發展的核心，也成為行政院環保署核定的低碳城市。臺南市也積極參加國際上有名的組織。

For the response to global climate change, the government shall work hand in hand with businesses to provide all citizens a convenient living and a right attitude. I believe that sustainability and low carbon are the attitude toward life. By changing attitude, the global temperature will come down. Tainan City focuses on sustainable, low carbon, and smart city building after Mayor Lai took over the office and now is certified by EPA of Executive Yuan as a low carbon city. Tainan also actively participates in international well-known organization.

黃林輝 *Line- Huei Huang*

亞太燃料電池科技股份有限公司執行長
CEO, Asia Pacific Fuel Cell Technologies, Ltd.

永續是一種生活型態，我們也知道說目前的技術其實不是問題，而是因為沒有行動，而行動就是根據生活方式的改變。我個人認為使用科技去解決問題其實是末端處理辦法，根本上還是從教育開始，不只是教育小孩，而是教育我們改變觀念，不然再怎麼節能減碳早晚有一天會撞牆。就技術部分個人覺得是要趕快發展和再生能源有關的技術，不然等到出問題一定會來不及。

Sustainability is a life style and we are for the availability of existing technology, it is not a problem but we are lack of action. Action shall be taken according to the change of life style. I personally believe that the solution with technology is only for the end treatment. Basically, we need to start from education, not only kids but also adults. We need to change our mindsets or energy saving and carbon reduction will fail. For technology, I believe we need to develop technology related to renewable energy sooner.

主持人：
張皇珍，臺南市環境保護局局長
與談人：
黃林輝，亞太燃料電池科技股份有限公司執行長
芮家楹，西門子股份有限公司企業傳播事務處協理
葉惠青，臺南市經濟發展局局長

Moderator :
Hwang-Jen Chang The Director-general of Environmental Protection Bureau, Tainan City Government
Panellists :
Line- Huei Huang CEO, Asia Pacific Fuel Cell Technologies, Ltd.
Ray Jui Corporate Communication Director, Siemens Limited, Taiwan
Hui-Ching Yeh Director, Economic Development Bureau, Tainan City Government

2011.12.16 / **DAY 2**

葉惠青 *Hui-Ching Yeh*

臺南市經濟發展局局長
Director, Economic Development Bureau, Tainan City Government

我以目前兩個案例，與大家分享臺南市政府為了打造低碳家園所做的努力。

第一是臺南市政府要建構一個陽光電子城，希望臺南可以使用太陽投射到土地的能源，所以我們盡量使用科技設備來發展太陽光電。總共分為十個面向：陽光屋頂、陽光社區、陽光公社、綠色廠房、農業大棚、陽光地標、陽光好行、光明之鄉、綠能新城、永續校園。

臺南市開始推動計劃的七個月以來，有八大措施：成立專案辦公室、架設專屬網站、協調銀行融資減低使用太陽能光電設施的負擔、辦理教育宣導將觀念普及大眾、推動租賃機制、協助併聯審查、規劃補助計畫、推動分區競賽。

成果方面，自去年 12 月 25 日迄今，取得能源局完工證明統計和能源局同意備案統計。

目前所面臨的問題：(1) 優惠購電價格調降、(2) 幅員廣大，不易感受陽光電城意象、(3) 線路容量的瓶頸、(4) 公部門預算有限，宜引導產業參與。同時也有因應的加強推動作法措施。再來是為了推動低碳城市以及輔導產業發展，臺南市提出了電動車的計畫，結合民間產業資源包括車業、租賃業等。這個計畫未來會有幾個路線：公有路線、商務路線、園區路線、其他則以私人或車廠做試驗。這些路線涵蓋臺南主要行政區，預計在兩年建立起來。數量部分，希望在臺南市就能有 300 輛，其中 75 輛行駛公有路線的公務車優先汰換，另外 225 輛希望由民間一起來參與。相關配套措施如充電裝置分成三期配合佈建，由商務路線開始，再來往外擴展至公家或路邊停車場、低碳的旅遊路線，最後是在電動車上本身加裝充電裝置。

相信臺南市政府在這個部分不只是坐而言而是起而行，希望能在低碳以及永續的部份做到領頭羊的角色，協助臺南市真正朝 smart city 發展。

I use two existing cases to share with the efforts of Tainan City Government for building low carbon homeland.

Firstly, Taiwan City Government would like to construct a solar city with the aim to use solar energy and we will make the best use of technology to develop photovoltaic industry and there are ten aspects: solar roof, solar community, solar company, solar factory, agriculture greenhouse, solar landmark, solar trip, the home of solar, new green energy city, and sustainable campus.

It has been seven months since the implementation in Tainan and there are eight measures: establishment of designated office, installation of website, coordination with financing to lower the burden of photovoltaic facilities, public education, promotion of rental mechanism, assistance to joint verification, and planning subsidy program, and promotion of district contests.

In terms of results, since December 25 last year, we have acquired construction completion certificate and approval from Bureau of Energy.

Currently, we face challenges: (1) lower incentive electricity cost; (2) the difficult to promote the image to spacious Tainan; (3) difficulties of pipeline allocation; and (4) limited budget to encourage the participation of businesses. At the same time, we have responsive measures for promotion. In order to promote low carbon city and consult industrial development, Tainan City proposed e-car plan that combines with private sectors such as automobile and rental services. In the future, this plan includes several routes: public lanes, business routes, park routes, and others for the experiment of private or car factories. These routes cover Tainan's major administrative area and they are expected to be completed in two years. In terms of volume, in Tainan, we will have 300 e-cars and among them, 75 public cars will be replaced first. The rest 225 e-cars will be projects participated by the private. Supporting measures such as charging facilities will be completed in three stages. We will start operation from business routes and then the areas will be expanded to public agencies or roadside parking spaces, low carbon tourism routes, and charging equipment of e-cars.

I truly believe in this regards, Tainan City Government does take the action and plays the role of leading sheep in low carbon and sustainable development to build Tainan into a real smart city.

張皇珍 *Hwang-Jen Chang*

臺南市環境保護局局長
The Director-general of Environmental Protection Bureau, Tainan City Government

我再補充一下，除了運用太陽能之外，環保局在此項計畫中，預計在明年建構便捷的電動機車充電系統。同時運用預算來鼓勵市民選購電動摩托車取代油耗摩托車。

I would like to add more. In addition to utilization of solar power, Environment Protection Bureau also involves in the project and we expect to construct convenient charging system for e-scooters. At the same time, we allocate budget to encourage the public use e-cars to replace fuel consumed motorcycles.

芮家楹，西門子股份有限公司企業傳播事務處協理
Ray Jui, Corporate Communication Director, Siemens Limited, Taiwan

專題演講

Keynote Speech 3

如何打造智慧化安全城市
Building Smarter Public Safety for a City

主講人 Speaker :
徐秋風 *Chiao-Fe Shu*
IBM 全球技術服務部技術長
IBM T.J. Watson Research Center

I would like to start with an introduction of IBM, to clarify a few misconceptions. IBM started promoting the idea of a smarter planet, because it felt its social responsibility. But building a smarter planet cannot be done by a single company. It requires the cooperation of the government, vendors around the world, and IBM itself. The following clip will give you a better idea about what IBM is doing now.

Video Clip

How to build a smart city that fulfills various needs of citizens? By collecting ideas and working together.

"Together," that's the keyword of the clip. IBM is an IT company, specializing in software, hardware and services. We need partners, like Siemens, to build infrastructure. Here I would like to thank the Mayor of Dubuque for mentioning IBM in his speech, and taking risks to become the first smarter city under the IBM scheme. I thus pay my tribute to his outstanding leadership and vision to build a smarter city, to which IBM will always be a reliable partner. Today I will share with you a few successful stories from more than 2000 IBM projects around the world, so you can see concrete examples of how IBM technology is implemented in building smarter cities. We will focus particularly on public safety. As many speakers have mentioned, in the future, the majority of world population will be living in cities. So the solution to any problem relating to people's life, will be building a smarter city. The request for innovation is heating on. Innovation is not just about technology, but also about the process and the change of people's behaviors.

For citizens, their first priority is safety, and then convenience, followed by opportunity and prosperity. Today in many US or European cities, aging infrastructure and declining budget is causing big threats. The solution requires innovation, and information plays an important part in it.

Cities become smarter if they are instrumented, interconnected and intelligent. For IBM, instrumented means a well-developed sensor network serve as the infrastructure of a reporting system. And all information is connected via internet. After processing with IBM analytics, you can build a smarter city. That's the area that IBM is now focusing on.

Smarter cities need to be supported by three pillars: leveraging information, anticipating problems, and coordinating resources.

IBM has devoted in building smarter cities for more than a decade, participating in more than 2000 projects now. Some of them have seen great achievements. You will get a better understanding from the following clip.

Video Clip

Join IBM. Let's build a smarter planet. Be smarter in terms of the manner of water and energy consumption. As the world population continues to converge towards cities, cities now need smarter policing and traffic. Many cities have become smarter with IBM's help. In addition, the world also needs smarter systems of food and drug supply. All these could be achieved with IBM, which aims at bringing a new level of smart to how the world works.

From the 2000 projects, IBM is trying to find a repeatable best practice that suits the needs of most cities. For example, when leveraging information, IBM Intelligent Operation Center allows you to link every government department instead of just a few. Through collecting these information, you can anticipate problems, and coordinate resources to formulate solutions. So IBM Intelligent Operation Center is a collective of best practices in our past experiences.

On top of the agenda is public safety issue, which is the focus of my presentation, followed by transportation and water supply. For IBM, public safety is not just about surveillance cameras. IBM built crime database for better analysis- one example is the New York City Real-Time Crime Center. The following clip will show you how it is done and what it is doing.

Video Clip

In the past, the New York Police Department holds information in separate portfolio and different modes. Now with IBM Real-Time Crime Center, all the information is linked, helping investigators to bring pieces of evidences together and catch the criminal in the end. IBM has proven its capability in assisting crime investigation by combining technology, software and services.

That's one of analytics examples. The City Police make use of the information provided by Crime Center, which assisted them in catching the perpetrator. The second example of analytics is based on historical record, to predict in which area, at what time, a criminal behavior is likely to happen. The case in Memphis is a good demonstration. The city police is facing rising crimes but a shrinking budget. The following clip will show you how the system helped Memphis police to bring down the crime rate.

Video Clip

Smart is fighting crime with data. In Memphis, citizen safety has been prioritized by the mayor, and he aimed at decreasing the crime rate. The head of police realized that if the police continued using the old method, it would only bring the same result without achieving the mayor's goal. So, IBM SPSS Statistics was utilized, technology and software were brought in to make use of police's existing data. Through analytics, the historical records become meaningful. It helps to predict possible crime scenes, thus the head is able to allocate officers accordingly. IBM's solution provides a brand new perspective on old data, and helped bring the crime rate down by 25% in the past 5 years.

Surveillance camera is still an important part of the project- that's why we're doing the analytics for Chicago, and other big cities. The following clip should explain everything.

Video Clip

Chicago has the world's most sophisticated surveillance system. And it is getting smarter. Now the camera is able to know what to look for, with the technology "video analytics." In the Operation Center of Chicago City's Office of Emergency Management and Communication, thousands of surveillance cameras are sending in real-time frames. To efficiently using all the information, video analytics is introduced to tell cameras what to look for. After programmers entered simulated scenario that is aimed at into the system, the camera will trigger the alarm once it senses similar scenes. The data will be stored for a retrospective investigation. The system has reached operational effectiveness.

I'll skip some of the details. The next project is in Madrid, Spain, where an Emergency Operation Center is built.

Video Clip

To improve the security in Madrid City, we have integrated all the security and emergency agencies in the city. It helps us to detect and response to unusual events at a faster speed. Safer city is a smarter city.

City managers could make use of our assistance in various modes. The first is on premise service- IBM helps to build operation platform at specified location, and you can install all the necessary software on your facility. The second is shared services- a few cities could share the same infrastructure. The third is a cloud service- just log in, and pick the needed smart service, such as reports or indexes.

Our assistance is based on the idea of "software as service," and it could help minimize upfront fees, necessary know-hows, and budgets. Many cities started with smaller deployment, and migrate to larger scope of services once impressed by our capability. Or they simply hire IBM experts to operate the system for them. IBM has already built some small cloud centers around the US, and now is aiming at expanding to the whole world.

Again, IBM's smarter planet project, is to build smarter cities together with other players. As a 100-year-old IT company, IBM is marching to its next century with a robust business model that guarantees sustainable growth. Our solution helps cities to leverage information, anticipate problems, and coordinate resources. We believe that IBM's best practices gathered from the projects around the world, will make IBM the best partner for building a smarter city. Thank you.

我想要先介紹 IBM 釐清幾個錯誤概念。IBM 開始推廣更有智慧地球，因為 IBM 覺得這是它的社會責任。但是建立更有智慧的地球無法由一家公司獨立完成。它需要全世界政府、供應商以及 IBM 的合作，以下影片可以讓大家更瞭解 IBM 所作的事。

短片

如何建立可以滿足各種市民需求的智慧城市？集合想法並且一起合作。

「一起」是關鍵字。IBM 是 IT 公司，專長為軟體、硬體與服務。我們需要夥伴，像西門子，來建立基礎設施。我要感謝迪比克市市長在演講中提及 IBM，並且承擔風險成為 IBM 計畫下第一個更有智慧城市。我要感謝他的卓越領導與願景，建立更有智慧城市，在此方面，IBM 一直是值得信賴的夥伴。今天，我將跟你分享 IBM 在全世界 2000 多個計畫中的幾個成功故事，所以你可以瞭解 IBM 科技在建立更有智慧城市上的實際例子。我們特別注重公共安全。就像許多講者所提到的，在未來，全世界大部分的人口會住在城市中。所以與人們生活相關問題的解決方式都會包括在建立智慧城市中。對創作的要求持續中。要創新的不只是技術，也包括過程與人們行為的改變。

對市民而言，優先目標是安全，然後是便利、機會與繁榮。今天在許多美國或歐洲城市，老舊的基礎設施與遭刪減的預算造成巨大威脅。解決方案需要創新，而資訊扮演著重要角色。

只要有架構、連結與整合，城市變得更有智慧。對 IBM 而言，有架構意味著有發展良好感應器網路做為通報系統的基礎設施。所有資訊透過網路連結。在使用 IBM 分析工具處理後，你可以建立更有智慧城市。這是現在 IBM 注重的部分。

更有智慧的城市必須受到三個支柱支持：增強資訊、預期問題以及協調資源。

IBM 投入建造更有智慧城市已經有十多年歷史，迄今參與過 2000 多個計畫。有些計畫已經有良好成就。以下影片會讓你更瞭解。

短片

加入 IBM。讓我們一起建立更有智慧的地球。在水和能源的使用要更有智慧。隨著全世界人口持續聚合到城市，城市現在需要更有智慧的政策與交通。在 IBM 的協助下，許多城市變得更有智慧了。除此之外，全世界也需要更有智慧的食品與藥物供應。這些都可以與 IBM 一起達成，讓我們的世界更有智慧。

從 2000 個計畫中，IBM 嘗試找出滿足大部分城市，可以重複的最佳實例。例如，在加強資訊部分，IBM 智慧營運中心讓你可以連結所有而不只是幾個政府。透過收集資訊，你可以預期問題以及協調資源，找出解決方法。所以 IBM 智慧營運中心就是我們過去經驗最佳實例的代表。

最重要的是公共安全，這也是我報告的重點，之後為交通與水資源供應。對 IBM 而言，公共安全不只是監視錄影機。IBM 為了能更佳分析建立犯罪資料庫，其中一個例子是紐約市的即時犯罪中心。以下影片會告訴你我們怎麼做以及在做什麼。

短片

在過去，紐約市警察局將資料放在不同的檔案與結點中。現在透過 IBM 即時犯罪中心，所有的資訊都連結在一起，幫助調查人員收集證據，逮捕罪犯。藉由結合科技、軟體與服務，IBM 證明了它協助犯罪調查的能力。

這是一個分析的例子。市警局使用犯罪中心提供的資訊，協助逮捕犯人。第二個分析的例子是根據歷史記錄，來預測哪一個區域、在什麼時間、有哪些犯罪行為會發生。在曼菲斯的例子就是最好的證明。以下影片將讓你瞭解此系統如何幫助曼菲斯降低犯罪率。

短片

智慧就是以資料打擊犯罪。在曼菲斯，市民的安全是市長重視的優先目標，市長的目標為降低犯罪率。警察局長了解到如果警察持續使用舊方法，會有相同的結果，無法達成市長的目標。所以，就使用 IBM SPSS 統計，在既有資料上應用技術與軟體。透過分析，歷史紀錄變得有意義。它協助預測可能的犯罪現場，因此警長可以據此調派警官。IBM 的解決方案提供舊有資料全新觀點，並且在過去 5 年協助降低犯罪率 25%。

監視錄影機仍然是計畫重要的一部分，這就是為什麼在芝加哥執行與其他城市執行分析工具的原因。

短片

芝加哥有全世界最純熟的監視系統。而且越來越有智慧。透過「video analytics」現在錄影機也知道要拍些什麼。在芝加哥緊急管理與通訊辦公室的營運中心，數千部攝影機正在傳送所見即所得 (real-time frame)。為了有效使用所有資訊，引進 video analytics 通知錄影機要拍些什麼。在程式輸入系統鎖定模擬情境後，在拍到類似現場後，錄影機就會啟動警報系統。資料就會儲存，進行回顧性調查。系統已經達到營運成效。

我要跳過細節。下一個是西班牙馬德里計畫，我們在那裏成立緊急營運中心。

短片

為了改善馬德里市的安全，我們整合了全市的安全與緊急單位。它幫助我們以最快速度偵測與因應不尋常事件。更安全的城市是更有智慧的城市。

城市經理可以在許多模式中使用我們的協助。第一是產業服務，IBM 幫助在特定地點，建立營運平台，你可以在設施中安裝任何必要軟體。第二是共享服務，幾個城市可以共享相同的基礎設施。第三為雲端服務，只要登入，取得需要的智慧服務，像是報告或索引。

我們的協助是根據「軟體作為服務」的想法，它可以幫助減少前端費用、必要的知識以及預算。許多城市開始更智慧的配置，並且在我們的協助下，匯入更大範圍的服務。只需要雇用 IBM 專家為他們操作系統。IBM 已經在美國建立一些小型雲端中心，現在目標為擴充到全世界。

再次，IBM 的更有智慧地球計畫室與其他各方建立更有智慧城市。身為百年歷史的 IT 公司，IBM 以保障永續發展的穩健事業模式邁下下一個世紀。我們的解決方案幫助城市增強資訊、預期問題以及協調資源。我們認為 IBM 從全世界收集來的最佳實例會讓 IBM 成為建立更有智慧城市的最佳夥伴。謝謝!

產官學座談討論 *Panel Discussion-2*

阮昌榮 *Chang-Wing Yuen*

行政院國家科學委員會工程處副處長
Programmer Manager at Department of Engineering and Applied Science, National Science Council

國科會如大家所知向來比較重視學術上的研究，自三、四年前意識到此議題的重要性，即開始提供補助給相關學術機構，全臺灣共三處，也包括這回的協辦單位交通大學。很高興這樣的論壇能真正幫助我們所謂的產、官、學合作。正如同前面各位講者不斷提及的，要推動智慧城市首重市民的參與，我相信很快地就能進入一個更理想的狀況。

As known by all of us, National Science Council has been concerned more on academic studies. About three to four years ago, we sensed the importance of this issue and began to provide relevant grants to three academic institutions in Taiwan including the co-organizer of this conference, NCTU. I am very happy that this forum can achieve what we referred to as the cooperation between the industry, government, and academia. As mentioned continuously by previous speakers, the priority of building a smart city is to have participation of citizens. I believe we are able to achieve our goals soon.

張博堯 *Bo Yao Chang*

良福保全股份有限公司副總經理
Vice President, Liang Fu Security Corp. Ltd

在智慧城市的安全架構底下，保全公司將擔任非常積極的角色。我藉由剛剛徐博士的影片為更為進一步說明。我們可以從影片中發現，所有的監控範圍都是公共區域，而且是在犯罪行為結束之後，然而許多犯罪行為都是發生在專有地區，因此需要保全公司與業者的密切配合。透過合約的關係，我們可以在第一時間判斷所謂的犯罪行為，並且將資訊提供給警方。

一般民眾對於使用的影像都有過多浪漫的想法，以為裝了監視器便能遏止犯罪的產生，事實上不然，所以要導入智慧科技於保全系統。我們公司大概在五、六年前就已經開始使用所謂的智慧影像管理，最主要就是因為消費者對於影像的需求越來越大，無論是樓管服務或是專有地區店鋪、人身安全甚至企業安全等不同的領域，唯有保全公司在前端將影像事件轉換成準資安事件報告給警方，才有可能大幅降低犯罪率。

目前已經與新竹市政府合作將影像導入系統，也希望未來能與臺南市政府進一步洽談。

主持人：
顏純左，臺南市副市長
與談人：
阮昌榮，行政院國家科學委員會工程處副處長
張博堯，良福保全股份有限公司副總經理
王英朗，台積電南科 14 廠廠長
徐秋風，**IBM** 全球技術服務部技術長

Moderator :
Yen Chun-Tso Deputy Mayor of Tainan City, Taiwan
Panellists :
Chang-Wing Yuen Programmer Manager at Department of Engineering and Applied Science, National Science Council
Bo Yao Chang Vice President, Liang Fu Security Corp. Ltd
Ying-Liang Wang Director, Fab 14, TSMC at STSP
Chiao-Fe Shu IBM T.J. Watson Research Center

Under the safety structure of smart city, security companies play a very active role. I would like to use Dr. Hsu's clip to explain further information. From the clip, we can find out that surveillance area belongs to public domain and the detection may begin after crimes. But a lot of criminal behaviors occur in certain areas and we need to closely cooperate with the industry. Through contracting relationship, we are able to detect crimes at the quickest time and provide the police information.

The public are more likely to fanaticize video images. They think the installation of surveillance devices will stop crimes. In fact, it is not true and therefore, we need to introduce smart technology into security system. About five to six years ago, our company started using smart image management mainly due to greater demands for images. Floor management services or designated stores, human safety or even business security relies us to convert image event in the front into security data and to give to the police to lower crime rate dramatically.

Currently, we have been working with Hsinchu City Government to introduce images into the system and we are talking about the possibility of cooperation with Tainan City Government.

王英朗 *Ying-Liang Wang*

台積電南科 14 廠廠長
Director, Fab 14, TSMC at STSP

科技進步飛快，如今的許多成就是 10 年前想像不到的，同理可證 5 年 10 年後的世界應該可以實現更多的夢想。

臺南市在全球是非常重要的一個城市，他之於世界的影響舉足輕重，假若今天海嘯發生在臺南，你將買不到全球 80%的筆記型電腦、70%的手機、50%的汽車、50%的電視，因為光由我目前服務的單位第 14 廠為例，單月生產的晶片等同於英特爾全公司的產能。全世界有一半以上的電腦、手機等需要我們的晶片，一旦這裡發生什麼問題，後續產品根本做不出來。所以說臺南市對於全世界的智慧科技是非常重要的。

The quick advancement of technology makes things that we have never imaged a decade ago to come true. Likely, five or ten years later, we will be able to realize more dreams.

Tainan is a very important city for the globe. It has the important influence. If Tsunami strikes Taiwan today, 80% of notebooks, 70% cell phones, 50% automobiles, 50% TV sets cannot be purchased. Because take my service unit, Fab 14, as the example, our monthly chip production equivalent the capacity of Intel. More than half of computers and cell phones in the world need our chips. Once something is wrong here, the rear-end products cannot be produced. Thus, Tainan is very important for the world's smart technology.

徐秋風 *Chiao-Fe Shu*

IBM 全球技術服務部技術長
IBM T.J. Watson Research Center

我所來自的中心所執行的是非常尖端的研究，如果趁這次機會有學界想加入合作當然是非常好。IBM 所秉持的理念就是用電腦智慧型的方式打敗人類。

My center executes very advanced studies. We welcome any one of you from academia to join us. IBM believes that we are able to defeat humans with computer intelligence.

台下貴賓：
Questions from the floor:

公共安全結合攝影機進行監控是不是會帶來隱私問題？再來是預測部分，是對於未來會發生的問題進行提報嗎？那背後的資訊從何得知？

When public security combines with camera for monitoring, will that violate privacy? Next, about projection, does it project problems that occur in the future? Where does the information come from?

徐秋風 *Chiao-Fe Shu*

IBM 全球技術服務部技術長
IBM T.J. Watson Research Center

我們從數十年前從事這項研究開始，IBM 事實上相當嚴格，監控的研究與隱私上的研究是同步進行的。以我們的觀點而言，科技技術進步是更能幫助保障隱私權的。

We began this research about several decades ago. In fact, IBM has been very strict to conduct studies on monitoring and privacy at the same time. For us, the advancement of technology provides more protection for privacy.

王英朗 *Ying-Liang Wang*

台積電南科 14 廠廠長
Director, Fab 14, TSMC at STSP

其實針對隱私權，我們也可以透過所謂的「影像辨識系統」，利用電腦去做資料搜尋。不經過人為觀看這些影像，應該就沒有所謂的隱私權問題。

In terms of privacy right, we are able to use so called "image identification system" for data search with computers. As long as no manual operation, there is no problem related to privacy violation.

阮昌榮 *Chang-Wing Yuen*

行政院國家科學委員會工程處副處長
Programmer Manager at Department of Engineering and Applied Science, National Science Council

我想隱私權是一般大眾比較擔心的問題，我個人認為這是主動跟被動的問題。其實監視系統放在那邊是大家安全的保障，屬於被動型的設置。只有在發生了事情時，才是主動的處理，而現在的技術也可以盡量幫助減少人為的參與。當然最重要的就是在個人權益保障、科技面提昇、制度的之間取得平衡點。

The public concern is more on privacy. I personally believe that it is an issue of being active and passive. Surveillance system is put there to protect our security and it is a passive device. It handles events actively when something is wrong. Modern technology minimizes human interruption. Of course, the most important thing is the balance between the protection of individual rights and technology advancements.

張博堯 *Bo Yao Chang*

良福保全股份有限公司副總經理
Vice President, Liang Fu Security Corp. Ltd

其實消費者最擔心隱私的問題，最主要是因為提供時間和提供的內容是什麼。那麼以保全公司的立場而言，與業者的合約上必須載明，提供影像的前提只有準資安事件。事實上與會者大可解除這種疑慮，因為最後治安的維護人員還是公部門。那公共區域的影像也是在專有地區犯罪發生之後，成為偵辦案件輔佐的一個資源，這是在整體偵查形式上非常必要的。

Actually, consumers are worried about privacy violation because they do not know the provision time and contents. For security companies, the contracts with operators need to be clearly stated. The premise to provide images is for security information use. Actually, participants of this conference can relax because the maintenance belongs to the job of public sector. Images in public area will only be used as the proof after crime occurs since it is necessary for detection purpose.

台下貴賓：
Questions from the floor:

請問貴組織單位是否有計劃幫助臺南市政府推動九份子重劃地相關等低碳釋放地區？甚至整個臺南市的低碳構建？

Is your organization helping Tainan City Government to promote low carbon sink of re-planning area in Jioufenzi or even low carbon building in the whole Tainan?

顏純左 *Yen Chun-Tso*

臺南市副市長
Deputy Mayor of Tainan City, Taiwan

因為時間的關係請這位等一下於休息時間再去請教。
Due to time constraints, this shall be discussed during the break.

2011.12.16 / DAY 2

專題演講

Keynote Speech 4

Panasonic －居家整體的 CO2±0 住宅提案

Panasonic : Panasonic's Residential Proposal of CO2±0

主講人 Speaker :

原康裕 Yasuhiro Hara 臺灣松下居家內裝股份有限公司總經理
Panahome Taiwan Residence Co., Ltd Managing Director

各位好，我是松下居家內裝股份有限公司的原康裕，請多多指教

我們松下集團將在 2018 年迎接創業 100 周年，我們對於 100 周年的願景是成為電子產業的 No.1 的環境革新企業，我們將環保做為所有事業的主軸，掀起環保革新。這邊有兩項革新，一個是綠色生活的革新，就是實現豐富心靈的綠色生活方式，另一個革新是綠色事業的革新，是實踐並提出低減環境負荷極致的解決方案。在環保創意宣言方面，在生活上的環保創意，我們將二氧化碳零排放的生活方式推廣到全世界，在經營模式的環保創意方面，我們將創造並實踐能將資源可以運用到最極限的運用模式。接下來我想跟各位看一段影片，是在神奈川縣的藤澤有個工廠的智慧城市，請大家看一下影片！

播放短片

剛才各位看到的影片裡的藤澤智慧城市，我在這邊跟各位介紹，在這個智慧城市所使用到的住宅性能，我們在環保住宅方面所採取的二氧化碳減量排放的措施方面，第一個是在建築物方面先採取一些措施，第二個在住宅裡使用的家電要使用省能的家電，第三個是靈活地運用再生能源。

第一個在建築物方面是使用高隔熱化、高氣密化的措施，另一點是在作熱換氣時盡量減低熱耗損，進而達到二氧化碳的減排。第二點在家電方面，引進松下集團的最新節能家電 (ECO NAVI)，另外就是利用能源監視器讓能源可視化，目前我們對於環保住宅正在進行驗證的工作，在每一個家電都安裝測量器，每分鐘就會測量一次能源消耗的狀況。我們去日本標準家庭一家四口的能量消耗數據，2010 年 8 月開始做家庭的驗證工作，我們將持續三年，目前為止我們有 14 個家庭進行 45 天居住實驗，我們資料去除了夏季的部分，可以看得出來預想中的數據與實際的數據是非常相近的，我們會再分析實際得到的資料再去發展新商品。

在臺灣方面我們和工研院合作來發展智慧型電表，目前正在作驗證階段的工作，驗證的內容是用自家的電視就可以直接得到用電資訊，目前我們只能看智慧電表所顯示的畫面，但將來我們希望能結合監視器或對講機，讓這個功能不只是只能看，而且可以主動去控制。我們在臺灣希望透過松下集團的家電，再加上松下集團的電工結合居家內裝，一起共同開發臺灣的環保事業。臺灣松下集團在 10 月 13 日宣佈了臺灣環境宣言，宣言裡我們承諾在生產方面、事業方面及員工方面都會積極推動減排活動。以上就是我的報告，謝謝各位聆聽！

Good day, I am Yasuhiro Hara from Panahome Taiwan Residential Co., Ltd.

In 2018, Panasonic will greet its 100 anniversary and our vision is to become No.1 environmental revolution new business for electronic industry. We, based on environmental protection, initiate revolution of environmental protection on two things: green life and green life style that enrich our minds. Another revolution is green business that realize and reduces environmental burdens. In terms of environmental creativity declaration, we will introduce zero CO2 emission life style as the creativity in life to the world. In terms of environmental creativity, we create and realize the optimal utilization model of resources. Next I am going to show you a smart city in Fujisawa, Kanagawa Prefecture.

VIDEO

As you see the film of Fujisawa smart city, I would like to introduce you the residential function. We adopt CO2 reduction measures for buildings and we use energy efficient appliances in the households. Thirdly, we utilize renewable energy.

Buildings adopt heat insulation measures to reduce heat loss during exchanges to reduce CO2 emission. Secondly, in terms of household appliances, we introduce Panasonic's energy saving ECO NAVI. Energy monitor helps us to visualize energy consumption. At present, our environmental residency is under verification. Each piece of appliance is installed with meter and it shows energy consumption per minute, A standard household consumption for four members in one family is measured. In August, 2010, we started family consumption verification, The survey lasts three year. At present, we conducted 45 day living experiment with 14 households. Except for data of summer, projected data and actual one are close to each other. We will analyze acquired data and develop new products.

We cooperated with ITRI Taiwan for smart meters and it is now at the verification stage. The contents are about acquire electricity consumption data via TV sets in households. We are now only able to see the screen of meters. In the future, we hope to combine the function with surveillance device or walkie talkie to allow automatic control besides viewing function. It is our hoped that with Panasonic household appliance and electronic engineering, we are able to develop Taiwan's environmental protection industry. On October 13, Panasonic announced its Taiwan Declaration stating our promise of emission reduction in production, business, and employees. I now end my presentation. Thank you.

2011.12.16 / DAY 2

產官學座談討論 Panel Discussion 3

溫琇玲 *Show-Lin Wen*

中國文化大學建築及都市計畫系所副教授
Associate Professor, Department of Architecture and Urban Design, Chinese Culture University

今天我們看到松下如何從一個企業對地球二氧化碳的減量作貢獻，我們可以看到，從原料的擷取到生產過程的檢核，直到最後怎樣提供給人民使用，這都是我們可以學習的部分。但是臺灣企業和日本企業不一樣的是，臺灣其實不太有這麼大的企業，因為沒有這麼大的企業，所以很多工作在做的時候就需要很多的整合。中國文化大學建築研究所就將 67 個生活科技的產業作整合，在臺北市萬隆作了一個智慧化居住空間展示中心。

Today we witness how Panasonic as a business contributes to the reduction of CO2 emissions. We see the verification from the material extraction, production, and product provision to end users. These are what we can learn. Taiwan businesses are different from those in Japan since we do not have big businesses in Taiwan and thus, we require more integration. Graduate Institute of Architecture of Chinese Culture University integrates 67 industries of living technology and constructs a smart living exhibition center in Wanlung, Taipei.

汪荷清 *Her-Ching Wang*

皓宇工程顧問股份有限公司總監
Director, COSMOS Inc. Planning Consultants

今天面對西方和東方企業的差異，也面對中國和印度的現代化，臺灣已經走到養生產業的部分，但在這個時代我們怎麼面對 Marketing, Promotion, advocate，我覺得是很困難的事。

今天我看到這個主題是由臺南站出來，以前我們都是來這裡看休閒農業、生態旅遊、文化創意，這存在一個了不起的機會。今天我們究竟有沒有辦法促成大企業跟我們政府政策、人民需求有連結。Think globally, act locally, what's next product?

這個 product 一定是政策領導，針對最終的使用者而來。回頭來說，京都議定書發生了什麼事？加拿大要退出，美國中國還在對抗，我們可以預期已開發國家的智慧投資必然會減緩，而它們是最大的消費者，但相對的開發中的國家的智慧投資會快速成長，所以臺灣站在哪裡？我們下一步怎麼走？我們有沒有辦法在這個轉捩點上作連結，我的想法是需要有智慧地由下而上的行動。

We face the difference between the east and the west as well as the modernization of China and India. Taiwan now has been developing its health industry but I find it difficult to face the challenges of marketing, promotion, and advocating.

It inspired me when I arrived at Tainan Station. Before we came to Taiwan to look at recreational farming, eco-tourism, and cultural creativity. There are great opportunities. But today are we able to facilitate big businesses to come to connect with governmental policies and the public demands? Think globally, act locally and what's next product?

This product must be guided by governmental policies and designed for end users. If we look back, what happened to Kyoto Protocol? Canada would like to withdraw and the US and China are against it. We expect that smart investment in developed countries will slow down but they are big consumers. Relatively, smart investment in developing countries will grow faster. So where is Taiwan? How should we take our next step? Are we able to connect with the turning point? I believe smart action shall be taken bottom up.

蔡適陽 *Shi-Yang Tsai*

國際創新創業發展協會秘書長
Secretary General, GlobalTic

我們剛剛看到這樣世界級的公司把未來的城市規劃得這麼詳細，讓我們看到了一個智慧的桃花源，它整個規劃從最底層的能源開始，接著是資訊，第三層是生活面，這是個非常棒的概念，未來臺灣在規劃智慧城市都從這種思維去思考。很佩服由一個企業跳出來來規劃這樣一個桃花源，臺灣也有幾家公司看到這樣的前景，臺灣的科技也絕對可以做到這樣的境界，未來絕對可以扮演重要的角色，唯一就是缺乏一點點系統的概念，我們很高興 IBM 跳出來扮演這樣的角色。我們也看到臺南市政府在這方面的投入，未來絕對是在生活及商業當中取得平衡點，創造出全亞洲甚至是全世界的智慧城市。

We have already seen the world class company plans the future cities in details. It let us see the smart paradise in the world. It plans from the bottom energy, then information and living. This is a very good concept. In the future, when we plan smart cities in Taiwan, we shall follow the concept. I admire the planning by a business for the paradise in the world. Taiwan also has several visionary companies and Taiwan has the technology to do so. In the future, we are able to play an important role but we are lack of systematic concept. We are happy to see IBM takes the important part as well as the efforts of Tainan City Government. In the future, we are definitely able to find the balance between life and business to create Asia's or the world's top smart city.

台下貴賓：
Questions from the floor:

請問以目前的科技製造太陽能電池所消耗的能量應該還是遠超過該太陽能電池所產生的總能量，從這個角度來看發展太陽能發電的意義是什麼？

With existing technology we use more energy to produce solar cell than the energy generated by solar cell and then, from this perspective, what is the meaning for us to develop solar cell?

原康裕 *Yasuhiro Hara*

臺灣松下居家內裝股份有限公司總經理
Panahome Taiwan Residence Co., Ltd Managing Director

我想這是一個非常困難的問題，如果這個太陽能發電是能夠吸收一百然後再產出一百的話就變成永續的能量，那現在我們採用的太陽能發電板在全球的交換效率是最高的，我們現在就盡量把效率提高去解決這個問題。

I think this is a very difficult question and if solar generation can absorb 100 and generate 100, then it will become sustainable energy. Now we use the solar panel with the highest exchange rate in the world to generate power and we try our best to increase efficiency in order to solve the issue you raised.

溫琇玲 *Show-Lin Wen*

中國文化大學建築及都市計畫系所副教授
Associate Professor, Department of Architecture and Urban Design, Chinese Culture University

我這裡有些補充，雖然現在效率不好，但我們相信它未來有潛能發展，所以我們要繼續去做，不能因為現在效率不好就不做了，那就沒有發展的機會了。今天的與談到此結束，謝謝大家！

I will like to add up that although now the efficient is not good but we believe it has future potential for development. Thus, we will continue working and will not stop just because of poor efficiency now or we will not have the chance to develop. Today's panel discussion will end now. Thank you.

主持人：
溫琇玲
中國文化大學建築及都市計畫系所副教授

與談人：
汪荷清，皓宇工程顧問股份有限公司總監
蔡適陽，國際創新創業發展協會秘書長
原康裕，臺灣松下居家內裝股份有限公司總經理

Moderator :
Show-Lin Wen
Associate Professor,
Department of Architecture and Urban Design,
Chinese Culture University

Panellists :
Her-Ching Wang
Director, COSMOS Inc. Planning Consultants
Shi-Yang Tsai
Secretary General, GlobalTic
Yasuhiro Hara
Panahome Taiwan Residence Co., Ltd
Managing Director

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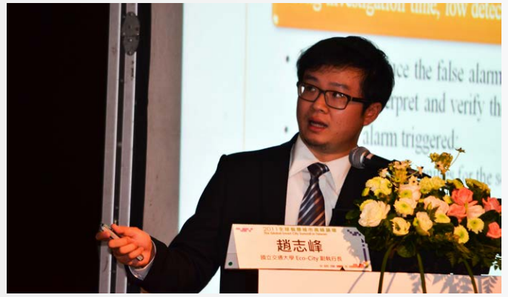
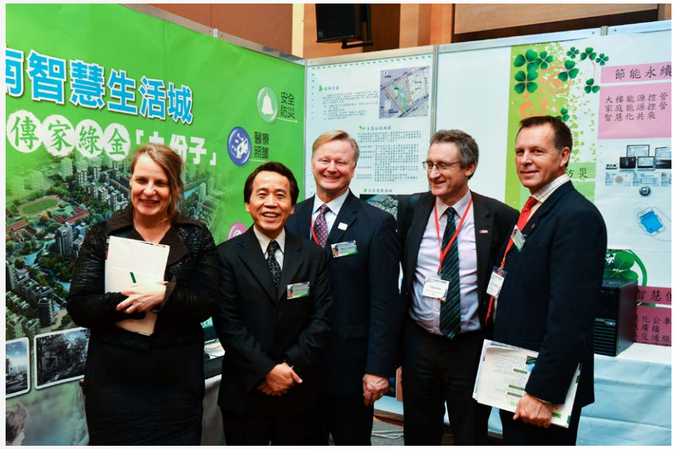
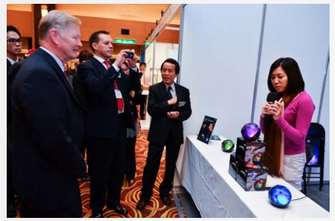
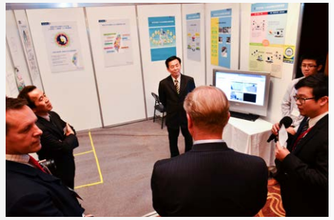


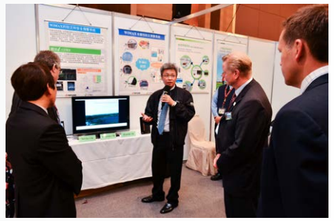
智慧生活科技成果展示

Smart Technology and Achievement Demonstration









臺南市導覽行程
City Tour

全球智慧城市高峰論壇 - 大會實錄
The Global Smart City Summit In Taiwan - Conference Record

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出版：臺南市政府
地址：臺南市安平區永華路二段 6 號
電話：(06)299-1111
網址：www.tainan.gov.tw

出版年月：民國 101 年 10 月
ISBN：978-986-03-3711-2 (光碟片)
GPN：4310101964

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