智慧城市大发展　城市管理智能化

WISDOM URBAN DEVELOPMENT　URBAN INTELLIGENT MANAGEMENT

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《中欧智慧城市合作白皮书—2014年》（初稿）指出，虽然对智慧城市市场规模和项目数量的估算存在较大差异，但全球智慧城市不断增长，且大规模发展的总体趋势毋庸置疑。

城市治理智能化

智慧城市的建设和运行，远离传统封闭和自上而下的方法，转为更加开放的模式。人们认为，确保公开和透明的治理体系可以为建设发展创新与包容的智慧城市创造机会。为实现参与性管理模式，各城市所采用的工具和技术包括：开放和包容的网络、开放的数据基础设施、可视化、仿真和游戏化、市民参与、一体化管理结构。

韩国首尔2003年建成了“e-首尔网”行政光纤网络，连接城市的主要公共建筑、相关办公室和各社区。该网络2011年升级，以支持最新的智能服务。该项目为市民提供免费的Wi-Fi服务，包括访问所有公共网站，同时辅助首尔市政府处理各种智能设备传来的海量数据。“智慧首尔2015”的主要支柱之一是增加智能设备普及率并让新用户学会使用。主要措施包括提供二手智能手机、向捐献旧手

<White paper on the China-Europe wisdom city - 2014> (draft) points out that although there is a big difference between the market scale and the estimates number of wisdom city projects, but the global wisdom city continues to grow, and the trend of the development is undoubtly.

intelligent urban governance

The construction and running of Wisdom city, is away from the traditional closed and the top-down approach, and turn into a more open model. People think that it can crate opportunities to ensure open and transparent governance system for the development of innovative and inclusive wisdom city . For the realization of the participatory management pattern, the techniques and tools are used by cities are included: open and inclusive of the network, open infrastructure, data visualization, simulation and gaming, citizen participation, integration management structure.

Seoul, South Korea, had built the "net" e - Seoul administrative optical network in 2003, connecting the city's main public buildings, the related offices and communities. The network was upgraded in 2011, to support the latest intelligence services. This project is to provide free Wi-Fi service to citizens, including access to all public website, as well as auxiliary Seoul city government to deal with all kinds of intelligent device, the huge amounts of data. One of the main pillars of “Wisdom Seoul 2015 " is increasing penetration and allow new users to learn how to use intelligent equipment. Main measures include to provide second-hand intelligent mobile phones, to donate new purchase tax breaks to old

机的市民提供新机购买税收减免优惠、开展智能ICT设备培训课程等。2012年4月，首尔启动“开放广场”机制，向市民和相关机构发布政务信息，目前已发布800余个数据集，涉及儿童照管服务、公共交通路线、公交车到站时间、停车位情况、各地区天气状况、受到推荐的餐馆等信息，而且均附带地图和互联网链接、图片或统计数字。城市管理部门鼓励利用这些公开的免费信息开发智慧城市应用，以提高公共服务效率和品质。此外，首尔还建立了政策建议在线提交系统(OASIS)，市民可通过该系统与城市管理人员直接进行政策和建议讨论。

服务方式个性化

全球范围内已经部署了诸多类型的智慧城市服务，旨在解决各个城市存在的问题以及发展优先事项。例如智能交通系统，利用传感器采集的数据主动重新规划交通，在避免拥堵的同时最大限度地提高道路使用率。智能电网技术使最终用户的能源使用更有效率，并使电力公司能够主动地识别和修复供电或供水泄漏。公共安全系统实时监控人们的活动，可用于提醒警方或为交通网络服务。医疗智能解决方案远程监控慢性病患者，这样患者可以较长时间待在家中，减小了资源紧张的公立医院的压力。学习智能解决方案如虚拟教室和新学习环境，可以提升学习效果和效率，也更加安全。

大多数智慧城市服务聚焦于智能能源、环境和交通项目，因为可以利用ICT技术确保更有效地使用能源和降低成本，通过减少污染直接改善环境，或通过减少温室气体排放间接改善环境。提供足够的公交车、火车和快捷运输，鼓励人们选择公共交通工具，从而减少道路上的私家车数量，进而缓解交通拥堵和缩短市民上下班花费的时间。

日本横滨以能源、建筑、交通运输几个领域为重点，通过引入新技术等方式降低碳排放。采取政府出资、企业参与的建设方式，总投资约为740亿元，参与企业包括东芝、日产、夏普、日本电气、东京电力、松下等，其主要工作包括发展可再生能源、企业能源管理、区域能源综合治理、生活

citizens,to develop intelligent ICT equipment training courses, etc. In April of 2012, Seoul had started the "open square" mechanism, published the administrative information to the citizens and the related institutions, it has been published more than 800 data sets, involved in child care services, public transport routes, the bus arrival time, parking situation, regional information such as weather conditions, recommended restaurants, and all with maps and Internet links, images or statistics. Urban management department to encourage use of the public free information of wisdom city application development, in order to improve the efficiency and quality of public services. In addition, Seoul has also established policy recommendations online submission system (OASIS), citizens can through the system and the urban management personnel to discuss policy and Suggestions directly .

Personalized service manner

The global has deployed worldwide urban wisdom services, aimed at solving the existing problems and development priorities. Intelligent transportation system, for example, using sensors to collect data to active re-plan the traffic actively, to avoid congestion at the same time to maximize the usage of the road. Smart grid technology to make the end user to use energy more efficiently, and make the power company to proactively identify and repair the leakage power or water. Public security system can real-time to monitor the of people's activities, can be used to remind the police or services for traffic network. Medical intelligent solutions for remote monitoring with a chronic illness, so that patients can stay at home for a long time, reduce the pressure of the strained resources of public hospitals. Intelligent solutions such as virtual classroom and the new learning environment, it can enhance learning effectiveness and efficiency, and more secure.

Most wisdom urban services focused on smart energy, environment and transportation projects, because they can make use of ICT technology to ensure more efficient use of energy and reduce cost, directly improve the environment by reducing pollution, or indirectly improve the environment by reducing greenhouse gas emissions. To provide enough buses, trains, and fast transportation, to encourage people to choose public transport, thus reducing the number of private cars on the road to ease traffic congestion and to shorten citizens' time to get to work.

Yokohama, Japan, is focus on energy, construction, transportation, several areas, with the introduction of new technologies such as way to reduce carbon emissions. Government investment, enterprises to participate in the construction, a total investment is about 74 billion yuan, the participating companies including Toshiba corp., Nissan, Sharp, Nippon Electronics Corp,Tokyo electric, Panasonic, etc., the main work includes seven fields of renewable energy development , energy management, regional energy

方式革新、家庭能源管理、区域供暖管理、智能交通七大领域。美国圣地亚哥采取政企合作方式发展智慧城市，参与者包括圣地亚哥政府、圣地亚哥电力煤气公司、通用、UCSanDiego和CleanTECH等，发展目标定为支持节能减排和可持续发展，具体目标包括：实现33%的能源采取清洁能源、帮助用户实现实时电力能耗管理、实现双向通信的智能电网、进行成果展示。

融资方式多元化

智慧城市项目需要大量投资，而融资仍是智慧城市推进过程中面临的最大挑战之一。智慧城市项目的资金可由政府提供，例如马斯达尔城通过国有银行提供，或者通过公共部门直接融资。然而，大多数智慧城市项目需要私人投资来填补资金缺口。世界各地智慧城市项目最常见的金融工具包括：公私合伙、绿色债券、节能绩效保证合约、税收增量、众筹和私人投资。

欧盟支持跨领域PPP投资的欧洲投资银行的“欧洲PPP专业技术中心”（简称“EPEC”）在一个升级德国街道照明系统的项目基础上，开发了一个标准化的PPP模型。EPEC还发布了一份旨在指导公共采购部门考虑采用公私合作伙伴关系（简称“PPP”）方法的“指南指导”。此外，欧洲投资银行还开发了特别用于为城市可获得的欧盟预算资金和私人投资提供补充的工具，为用现有金融资源提供了更大的范围和灵活性。

商业模式持续化

世界各地的城市都在探索新的商业模式，来资助各自的智慧城市项目。这些城市所采用的新兴技术和创新商业模式包括：基于云技术的即付即用模式、利用数据创造收入、试点项目、更智能化的采购。韩国釜山智慧城市采取基于云计算的即付即用模式，由当地政府与思科和韩国电

comprehensive governance, life style innovation, household energy management, district heating, intelligent transportation. San Diego adopted the mode of enterprise cooperation development in wisdom cities, participants including Santiago government, electricity gas company, General Motors, UCSanDiego and CleanTECH, development goal as support for energy conservation and emissions reduction and sustainable development, specific objectives include: to achieve 33% energy will be used clean energy, help the user to realize real-time power management, realize the two-way communication smart grid, and the showing of the energy consumption results.

Diversified financing ways

Wisdom city project needs a lot of investment and financing is still one of the biggest facing challenges for the process of promoting the wisdom city. Wisdom city project funds can be provided by the government, for example Masdar city is provided by state-owned Banks, or by the public sector of direct financing. However, most private investment wisdom city project need to fill the funding gap. The most common financial instruments of wisdom city project all over the world are including: public and private partnership, green bonds, energy-saving performance guarantee contracts, tax increment, the raise and private investment.

EU support interdisciplinary PPP investment from the European investment bank's "European PPP professional technology center" (hereinafter referred to as "EPEC") in an upgrade German street lighting system project, based on the development of a standardized PPP model. EPEC also released a aims to guide public procurement department consider a public-private partnership (hereinafter referred to as "PPP") method of the "guidelines". In addition, the European investment bank has also developed special for EU budget funds available for the city and private investment to provide supplementary tools, to use the existing financial resources to provide a greater range and flexibility.

Business model persistency

Cities around the world are exploring a new business model, to fund their wisdom city project. These emerging technologies and innovative business models are adopted by the city including: pay-as-you-go model based on cloud technology, using the data to create income, pilot projects, more intelligent purchasing. South Korea Busan wisdom city is using pay-as-you-go model based on cloud computing, is provided by the local government cooperation with Cisco and Korea Telecom. San Francisco, Seoul, Singapore and Helsinki city had built the open data portals, making anyone, including application and service developers can access various services generated data for free. San Francisco, for example, online database had provided an open platform , third-party developers based on the platform has developed a variety of applications and services, including all private but open to the public urban space map, specific items recycling, the use of information release, etc.

信合作提供。旧金山、首尔、新加坡和赫尔辛基等城市建设了开放数据门户网站，使包括应用和服务开发人员在内的任何人都可以免费访问各种服务生成的数据。例如，旧金山的在线开放数据库提供了一个平台，第三方开发者基于该平台开发了各种应用和服务，包括私人所有但面向公众开放的城市空间地图、特定物品回收、利用信息发布等。

技术应用集成化

《中欧智慧城市比较研究报告》详细探讨了相关技术，这些技术有的推动城市数据供应不断增加，有的使数据创造的机会得以实现并最终产生创新的智慧城市服务。这些技术包括：宽带、物联网、个人智能设备、云计算和大数据分析。数千家技术公司在开发和实施智慧城市解决方案，如中国移动、中国电信、大唐电信、华为、中兴等中国公司也在提供一系列的智慧城市解决方案。但就目前的发展情况来看，还没有一个公司有技术能力提供全系列智慧城市解决方案。

政府政策红利化

政府政策对于推动智慧城市技术发展起着重要作用。各国政府，特别是在东亚，以韩国、日本、新加坡为代表，都在支持智慧城市试点建设，并将本国的行业龙头企业纳入智慧城市项目的核心，意在面向新兴经济体，出口“智慧城市”相关项目和解决方案。日本经济产业省正在国内四个城市开展智慧城市试点建设，日立、NEC、松下、东芝等日本企业在国内试点城市获取相关经验后，目前正积极参与在美国、法国、西班牙、印度和中国的一些智慧城市项目。韩国政府在“建设尖端信息城市，提高市民生活质量和城市竞争力”的目标导向下，在首尔、松岛等地开展了u-city智慧城市建设试点，此外，韩国的一些信息企业，还积极拓展国外智慧城市建设市场，力图将韩国的智慧城市建设经验推广到全世界。

由于宽带和云计算是智慧城市的关键组成部分，政府政策中关于这类基础设施发展的相关法律和监管框架也会对智慧城市发展起到一定的支撑作用。

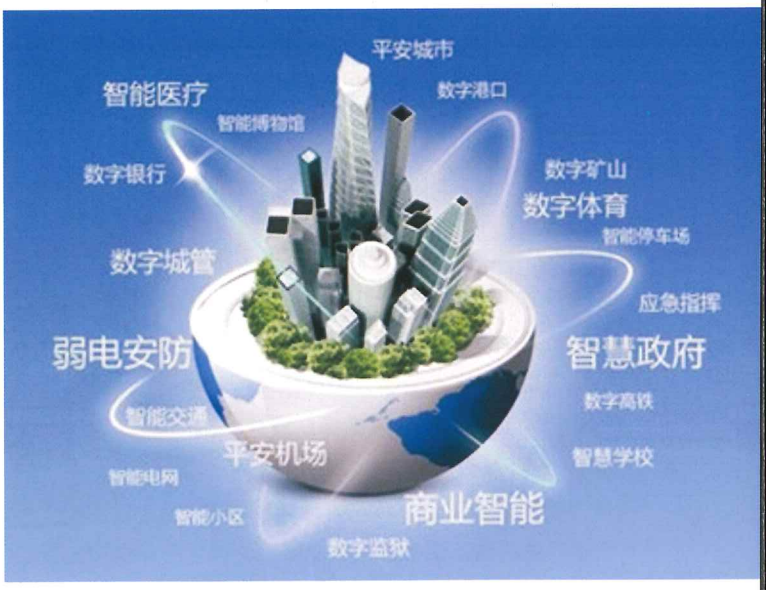
Technology integration

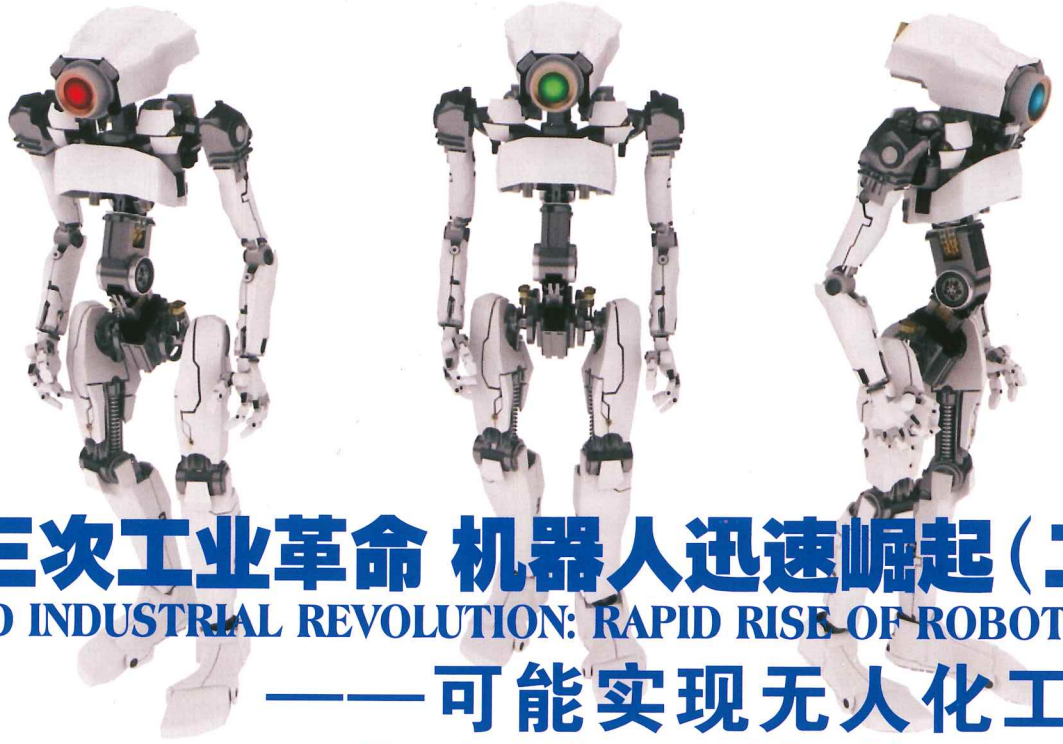
《The central wisdom city comparative study report》had discussed the related technologies in detail, some of these techniques to promote urban data supply increases, some take the data to create opportunities to realize and finally produce the wisdom of the innovation city services. These technologies are including: broadband, Internet, personal smart devices, cloud computing and big data analysis. Thousands of technology companies in the development and implementation of intelligent city solutions, such as China mobile, China Telecom, Datang Telecom, Huawei, zte and other Chinese companies also provide a series of solutions to the wisdom city. But in the present development situation, no company has technical ability to provide full range solution of wisdom city .

The government's policy red patent

The government's policy to promote the development of wisdom city technology plays an important role. Governments, especially in east Asia, represented by South Korea, Japan, Singapore, all in support pilot wisdom city construction, and that will be the country's industry leading enterprises into the core of wisdom city project, to face the emerging economies, \"wisdom city\" export related projects and solutions. Meti's four cities in the country to carry out the pilot wisdom city construction, Hitachi, NEC, Panasonic, Toshiba, Japan's enterprises pilot cities in China such as access to relevant experience,it is currently actively participating in the United States, France, Spain, India and China have some wisdom city project. The south Korean government in the construction of cutting-edge information city, improve the quality of life and urban competitiveness \", under the direction of Seoul, the pine island, etc had carried out the u - pilot city wisdom city construction, in addition, some information of the enterprises in Korea, also actively expanded foreign wisdom city construction market, aim at promoting the South Korea's wisdom city construction experience to the world.

Due to broadband and cloud computing are the critical part of wisdom city, that will play a supporting role for the government's policy on this type of infrastructure development in relevant legal and regulatory framework for wisdom of urban development.





第三次工业革命 机器人迅速崛起（二）
THIRD INDUSTRIAL REVOLUTION: RAPID RISE OF ROBOTS (2)
——可能实现无人化工厂
—— Chemical Plant Possible Without Workers

文 / 季克荣 Text/Ji Kerong

日本福冈县北九州岛市安川电机（Yaskawa）是全球工业机器人最大的制造商，它与日本发那科（Fanuc）、德国KUKA、瑞士ABB并称机器人的四大家族。1977年至今已售出汽车业、半导体、液晶业等产业用机器人超过28万台，为业界市占率第一。

3个人与18台机器人就撑起工厂

走进专门生产小型机器人的第一工厂，人们可以看见“机器人制造机器人”的现场：6百多平米的空间，摆放着一整排18台与人同高的蓝色机器人，约占据工厂1/3的面积，在透明隔板围起来的空间里，反覆进行着熔接、组装等工作。正在生产汽车业客户所需的车弧熔接、搬运、涂装等小型机器人。

隔着玻璃窗，人们盯着看机器人工作，既不会别扭，也不会迟疑，没有人声的现场，单月出货量却能达到200台。在隔板外错落分布着工作台与计算机监测系统，来回走动的工作人员只有3人，他们做的，主要是机器人运作前的准备工作。

正是最忙、产能全开的时候，却感受不到生产线分秒必争的紧张感。两百坪的厂房，一切都由3个人与18台机器人支撑着，不到一般工厂1/40的人力，就撑起一个工厂的产量。而且，效率加倍！

Yaskawa in Japan is one of the largest manufacturers for industrial robots in the world. Four major robot families include it, Fanuc of Japan, KUKA of Germany, ABB of Switzerland. Since 1977, Yaskawa has been sold more than 280000 robots to the fields of cars, semiconductor, LCD and so on. Its market share is number 1.

A Factory Only Has 3 Workers and 18 Robots.

In the first factory specialized in production of small robots, we see the scene of robots made by robots: IN a space of more than 600 square meters, a row of 18 robots are blue in color and are same high as a man. This space occupies 1/3 of the whole factory area. Soldering and assemblying and so forth are repeated in it. Small robots used in the arc soldering, handling, coating and other processes for automobile customers are being made.

Through the glass window, we stare at the robots working. In this working site with a few workers, the monthly ouput reaches 200 units. The workstation and the computerized monitoring system are arranged. There are only three workers who mainly do preparations before the work by the robot.

Even if it is very busy, the whole site is in order. This plant only have 3 workers and 18 robots, therefore the efficiency is very high. In contrast, a common plant often has 120 workers.

Where do 15 Workers go?

The first factory had 18 workers and 5 robots in 2013. When the number of workers is 3 and the number of robots increases, the defective rate was decreased by a half.

Where do the other 15 workers go?

减下来的15人去哪儿

第一工厂直到2013年工作人员都还有18人，机器人仅5台；当员工变3人后，机器人台数增加，不良率却减少了一半。

人们好奇减下来的15人去哪儿了？

安川电机会长兼社长津田纯嗣曾说：“机器人能做的，就让机器人去做；人类，就该做非人类不可的事。”搬运重物的“体力活”，或零件组装、调配大量试剂等重复性且不容出错的“耐力活”，皆转移到机器人手上；人类则是专做需要创意与经验的“动脑活”。

这里裁员的15个人就转调到事业企划部。他们当安川电机开辟新厂、生产新型机器人时，就扮演功能测试、产线效能管理的角色。换句话说，在这里，机器人带来的不是取代，而是职务再分工。“没有人会抗拒去做更有贡献的事。”

安川近两年来加速自动化的脚步，是日本企业的缩影。三年前大地震前，许多日本人对机器人都保持存疑的态度，除了产业用机器人可能剥夺人类工作外，就连人型、服务型机器人，都被认为是“没有必要存在”。

“粉红技术员”将成为潮流

一场核灾难事件，启用机器人进入核污染现场，日本人看到了人力的极限。“人，真的有必要每件事都亲力亲为吗？”此事开始影响机器人接受度。

目前，日本更现实的考虑，65岁以上的老年人已占全国总人口的24.4%，超过台湾一倍；劳动人口不足，特别是3K（危险、肮脏、辛苦）工作又没有人愿意做，长年都缺工。在日本，自动化已经不是“要不要”的选择，而是“不得不”的结果。不用机器人不行！

于是，“粉红技术员”正在安川的工厂出现。当粗重的工作由机器人负责后，原本清一色男性的工厂，开始释放出更多无体力限制的职位，只需要动脑跟企划，穿着“粉红色制服”的女性与60岁以上的老人工作者，他们开始成为新的工厂成员。“粉红技术员”加上机器人的搭档，将成为一种潮流。

目前，作为全球工业自动化重要推手的安川电机，在自己的总部内，正一步步推进可能实现无人化工厂。人们发现这个全球工业机器人最重要的诞生基地，工厂的社员休息室因为没人使用，变得冷清是很自然的变化；厂房格外安静，已经鲜少看到人员走动。

Yaskawa's president once said, "We let the robot do what it can do. Humans should do what non-humans cannot do. Therefore, robots can be used in handling, assembling and other repetitive tasks, and humans can do creative work."

The other 15 workers are transferred to the planning department. These workers have new tasks as follows: building a new factory, making new robots, and managing the functional tests and production lines. In other words, the robots lead to the new division of labor. "No one can resist to do work which results in more contribution."

Yaskawa accelerated steps of automation in the past two years, which was a microcosm of the Japanese company. Three years ago, before the earthquake, many Japanese remained dubious attitude to robots. They thought that industrial robots may deprive the human of the job, and even service robots the like were not necessary to exist.

"Pink Technician" Will Become a Trend

In a nuclear disaster event, the robot could enter the site of nuclear pollution. From this, Japanese asked, "Do humans really have to do everything by themselves?" It began to affect the acceptance of robots.

At present, Japanese have more realistic consideration. In Japan, the elderly over the age of 65 has accounted for 24.4% of the population, more than twice as Taiwan; there is a lack of labor force. Especially, no one is willing to do dangerous, dirty, and hard tasks. In Japan, automation is not a result of "must choice". The robot is necessary!

So, pink technicians appear in the factory of Yaskawa. After the heavy work is done by the robot, the male workers are transferred to the field of planning. Women and old people over the age of 60 wearing pink uniforms become new workers."Pink technicians" and robotic partners will become a trend.

At present, as an important force in the global industrial automation, Yaskawa in its own factory uses more and more robots. It was found that in such base of the global industrial robot, the worker's lounge becomes empty, and that the factory is very quiet and workers are rarely seen to move around.