"A Smart World: A Development Model for Intelligent Cities"
(Keynote)

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SMART SUSTAINABLE COMMUNITY International Group (Cyprus, Russia, Greece, Slovenia, Malaysia, Australia, India, USA)

Smart/Intelligent Eco Regions and Cities

EU, Cyprus
2011

AGENDA

SMART/SUSTAINABLE WORLD

- **VISION**: The SUSTAINABLE WORLD of Smart Communities, Smart Eco Planet
- **MISSION**: smart eco communities, intelligent green cities, sustainable living, healthy and smart environments, renewable energy global infrastructure, smart green real estates; the citizens' well-being, physical, mental, and social
- **GOALS**: Promoting a Smart World Foundation Framework, the principles, guidelines, standards, solutions, specifications, technologies, for constructing Sustainable Communities: local, national, international or worldwide; Networking government leaders, policy makers, industry players, local governments, city managers, academia, developers, technology providers and NGOs across the world, promoting smart sustainable communities; smart solutions to critical global problems, as climate change, fresh water, or green energy; advancing converging solutions in Education, Science, and Research, Technology, Engineering and Industry
- **PRINCIPLES AND STRATEGIES**: Smart World Global Policy, Sustainable Development, Eco World Development, Digital World Development, Social World Development, Comprehensive Planning, Sustainable Urban Design and Planning, Smart/Intelligent City Solutions, Eco City Development Principles
- **TECHNOLOGIES:** Intelligent ICT Technologies; Ecological/Clean/Environmental Technologies; Social Innovations and Technologies, KM Technologies, Integrated Networks
- **SUSTAINABLE STRATEGY**: The Triple Bottom Line Sustainability Model (Full Cost Account)
- <u>Natural Capital</u> (Planet, Environmental Protection and Ecosystems Conservation and Enrichment),
- <u>Social Capital</u> (People, Citizens, Social Well-Being and Equity),
- <u>Economical Capital</u> (Profit, Growth, Sustainable Business)
- **SUSTAINABLE WORLD/CITIES PROGRAMS:** EU 2020, UN Global Compact Cities Program: Sustainable Cities; EU CONCERTO Communities; Intelligent Energy; EU Initiative on Smart Cities; IBM's Smarter Planet, Cisco's Smart + Connected Communities; Smart/Sustainable Cyprus Initiative
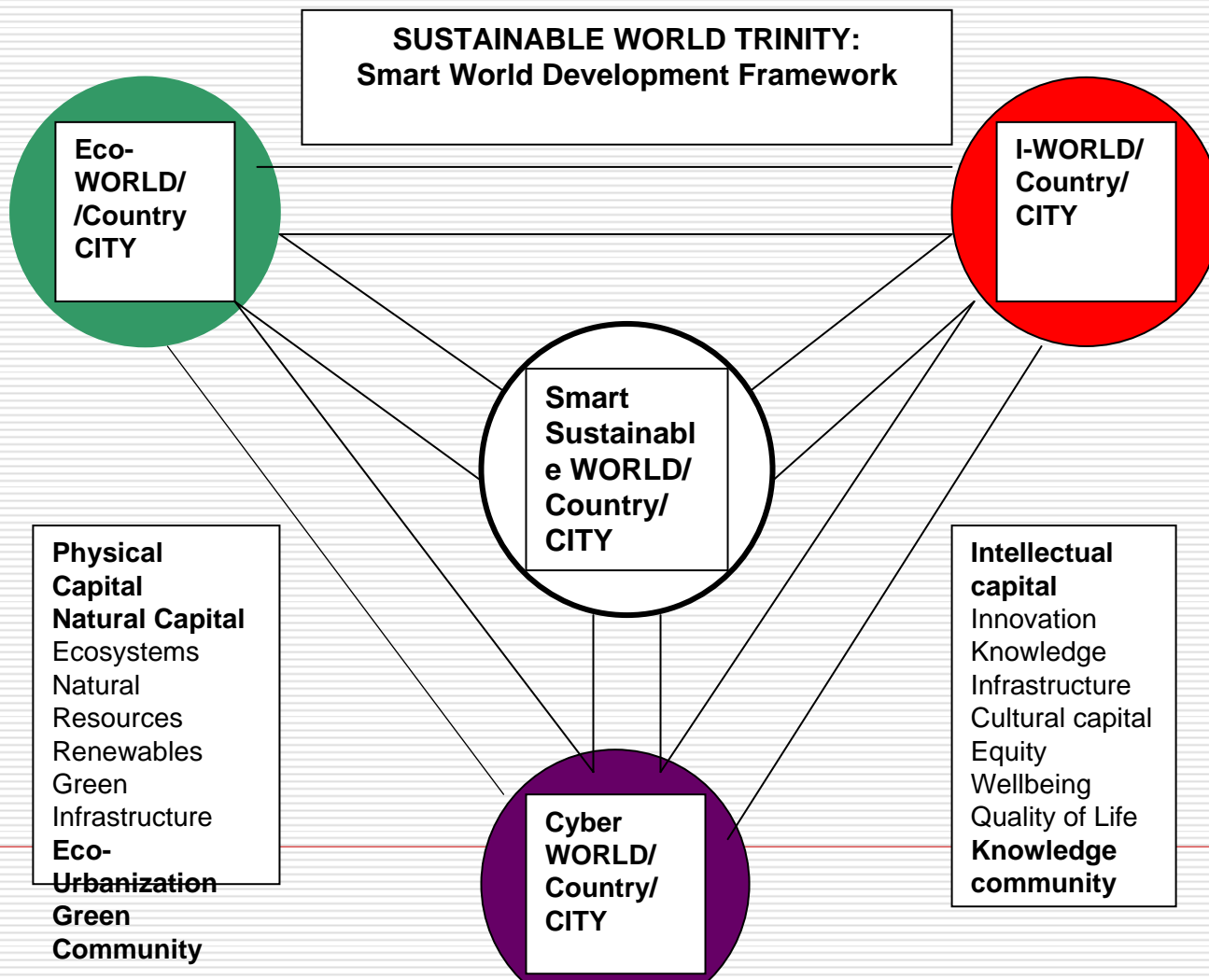
WORLD 2020

- The World has to go through a substantial transformation, to become smart, intelligent and ecological (see the "Smart World" Trinity diagram). It's driven by three key factors: Intelligence, Integration, and Innovation. The Smart World Strategy aims to model Future World as an eco-intelligent Planet of sustainable communities, villages, cities, regions, and countries. The Smart World is to be distinguished with the structures and features as below.
- Quality Growth, smart, sustainable and inclusive, natural capital, human capital, knowledge capital, intellectual resources, and smart world development
- Globally Connected Virtual Reality Communities, Towns, Cities, Regions, and Countries
- Sustainable global infrastructures and public utilities and distributed green energy networks
- Smart security/defense infrastructures (intelligent monitoring and measurement systems, sensor/actuators networks, ground-based and marine, wired and wireless, data collection systems; cybersecurity, illegal activities prevention)
- Innovation/knowledge economies (industry and sustainable corporations, innovation clusters, innovation districts, CDB, techno parks, knowledge clusters, disruptive technology/business eco-parks smart malls, university eco campuses, seaports, airports)
- Smart Global Governance and i-governments, i-services to citizens, businesses, and local governments
- Intelligent eco-communities, ubiquitous eco-cities and eco-regions
- Ecological environments, i-infrastructures and innovative transportation systems
- Smart mobility, innovative ICT networks and multi-play telecommunications systems, optical and wireless global connectivity
- Smart banking systems and financial services; sustainability in public finances; stability funds
- Healthcare Triangles, e-health and telemedicine
- Knowledge Triangles, education, R&D and business; innovation clusters
- Smart living, wellbeing, quality of life, smart, green, and healthy lifestyle
- Intelligent space exploration (smart navigations systems, autonomic spaceships, mass space tourism)

SMART WORLD Commission

- **International Governmental Organizations** (G20, the United Nations, UN; European Union, EU; Council of Europe; World Bank, WTO; IMF,...)
- **International Corporations or Multinational Corporations** (IBM, Cisco Systems, Siemens, Huawei Technologies, Oracle, HP, Accenture...)
- **International Nongovernmental Organizations** (the World Economic Forum, Horasis; Industry Partners, Strategic Partners);
- **Global Public Policy Networks** (Smart + Connected Communities Institute, Social Networking Websites and Forums; ICF, Intelligent Community Forum; EUROCITIES Knowledge Society Forum; CONCERTO Communities, Ontolog Forum,...);
- **Sustainable Investment Industry** (GIIN, Global Impact Investment Network,...);
- **Civil Society** (Social Networks and Civil Associations and Organizations);
- **Private Sector** (1000 World's Top Company, Real Estate Developers, Sustainable Architecture Groups;
- **Academia** (Universities and Research Institutions)
- **Public Figures**: international political leaders, top business leaders, intellectuals, celebrities, and journalists
- **Sustainable Cities Stakeholders and Developers:** Songdo and Incheon (Korea), King Abdullah Economic City (Saudi Arabia), GIFT, Lavasa, and Nano City (India), Wuxi Huishan and Meixi (China), Masdar (UAE), Living PlanIT Valley (Portugal), Skolkovo (Russia), Neapolis (Cyprus), etc.
- **Key Consultants**: Smart Sustainable Community Int Group, EIS Encyclopedic Intelligent Systems Ltd

SUSTAINABLE WORLD TRINITY

SUSTAINABLE WORLD TRINITY:
Smart World Development Framework

Eco-WORLD/
/Country
CITY

I-WORLD/
Country/
CITY

Smart
Sustainabl
e WORLD/
Country/
CITY

Physical
Capital
Natural Capital
Ecosystems
Natural
Resources
Renewables
Green
Infrastructure
Eco-
Urbanization
Green
Community

Intellectual
capital
Innovation
Knowledge
Infrastructure
Cultural capital
Equity
Wellbeing
Quality of Life
Knowledge
community

Cyber
WORLD/
Country/
CITY

THE RISE OF THE SMART CITY

- [ ] The beauty of any healthy city is its capacity to aggregate people, skills, talents, resources, capital, businesses, government, and infrastructure, physical and social, supported with complex systems for land use, transportation, utilities, sanitation, housing, and public services.

- [ ] A Smart City is generally characterized as an innovative urban settlement with Intelligent Information and Communications Technology Infrastructure built in the Environment, Transport, Utilities and Energy Networks, Buildings, Social Infrastructure, Government, and Services.

- [ ] The emerging market of smart/ intelligent cities is projected over $ 1 trillion in the next decade, and 3,1 trillion Euro for the next twenty years.

- [ ] There are smart cities projects in Asia, the Middle East, Europe, Americas, South and North, Europe, Russia, and Africa. The statistics show that over 2000 Smart City projects have been started or going on in Asia, Europe, the Americas and Africa

- [ ] Several new cities have been master-planned from scratch, as Putrajaya (Malaysia), Songdo and Incheon (Korea), King Abdullah Economic City (Saudi Arabia), GIFT, Lavasa, and Nano City (India), Wuxi Huishan and Dongtan and Meixi (China), Dubai Waterfront, Dubai Central, Masdar (UAE), Living PlanIT Valley (Portugal), Neapolis (Cyprus), and Skolkovo (Russia)

The Trillion Worth Issues To Clarify

- ☐ What is a real smart city, a truly sustainable city? What defines the true smart city, or what makes a city full sustainable?
- ☐ How to distinguish the common city, the smart city, the digital city, the intelligent city, the eco city, the knowledge city, and the innovation city?
- ☐ What are the main market drivers, opportunities and challenges for the smart city development?
- ☐ What are the key policies, strategies, standards, technologies, and issues of the smart city development?
- ☐ How do smart city models and projects differ across the world?
- ☐ Which financing models are used in the smart city development?
- ☐ Who are the key players in the smart city market and how do they relate to each other?
- ☐ How large is the global smart city technology market, and how will it be parted by type, strategy, technology, budget, industry sector, region, and ownership?
- ☐ What is smart branding and smart city branding?
- ☐ What is an intelligent nation? And how is this high status achieved?

WHAT IS NOT A SMART CITY

- ☐ It is not a conventional city/metropolis/urban center
- ☐ It is not a digital city or wireless city or mobile city
- ☐ It is not an ecological city or green city or ecologically healthy city or quality urban system
- ☐ It is not an intelligent city or knowledge city or social intelligence city or creative city
- ☐ It is not a network-based smart + connected community
- ☐ It is not a city only with a smart community
- ☐ It is not a city only with a smart environment
- ☐ It is not a city only with a smart economy
- ☐ It is not a city only with a smart transportation
- ☐ It is not a city only with smart utilities and energy systems
- ☐ It is not a city only with smart education
- ☐ It is not a city only with a smart public safety
- ☐ It is not a city only with smart buildings
- ☐ It is not a city only smart healthcare
- ☐ It is not a city only with smart public administration
- ☐ It is not a city only with business parks
- ☐ It is not a city only with innovation clusters
- ☐ A smart city is not public administration/authorities that deliver innovation services and infrastructure, based on information and communication technologies
- ☐ A smart city is not a city with a smart economy; smart mobility; a smart environment; smart people; smart living; and, finally, smart governance
- ☐ It is not also a city with smart transportation, utilities, healthcare, education, public safety, or building systems management.

FRAGMENTED SMART CITY PROJECTS I

- 1. **Smart Economy** (Innovation, Productivity, Innovative Spirit, Intellectual Property, Entrepreneurship, Knowledge Market/Industry, Openness)
- Smart Economy: Holyoke, Massachusetts
- Smart Economy: Kochi, India
- Smart Economy: Malta
- Smart Economy: Manado, Indonesia
- Smart Economy: Nanjing, China
- 2. **Smart Environment** (Natural Capital and Resources, Sustainable Resource Management)
- Smart Environment: Amsterdam, Netherlands
- Smart Environment: Burlington, Ontario
- Smart Environment: Dublin, Ireland
- Smart Environment: Dubuque, Iowa
- Smart Environment: Glasgow, Scotland, United Kingdom
- Smart Environment: Lyon, France
- Smart Environment: Malaga, Spain
- Smart Environment: Peterborough, United Kingdom
- Smart Environment: San Diego, California
- Smart Environment: Shenyang, China
- Smart Environment: Santa Barbara, California
- Smart Environment: Stockholm, Sweden
- Smart Environment: Sydney, Australia
- Smart Environment: Yokohama, Japan
- 3. **Smart Governance** (e-Participation, public/social services, transparency, political strategies and perspectives)
- Smart Governance: Chengdu, China
- Smart Governance: Edinburgh, United Kingdom
- Smart Governance: Matosinhos, Portugal
- Smart Governance: Syracuse, New York
- Smart Governance: Wilmington, North Carolina

FRAGMENTED SMART CITY PROJECTS II

- 4. **Smart Lifestyle** (<u>Smart Living, Quality or Life, health conditions, cultural facilities, safety and security, education facilities, housing qualities, tour. Attractivity, and social cohesion</u>)
- Smart Lifestyle: Boise, Idaho
- Smart Lifestyle: Houston, Texas
- Smart Lifestyle: Johannesburg, South Africa
- 5. **Smart Transportation** (Smart Mobility, innovative, safe and sustainable transport systems and facilities)
- Smart Transportation: Alameda County, California
- Smart Transportation: Alcoa, Tennessee
- Smart Transportation: Portland, Oregon
- Smart Transportation: Southampton, United Kingdom
- 6. **Smart Community** (Social Cohesion, Unity in Community, Human Infrastructure, Interfaces, Integration)
- Smart Community: Chattanooga, Tennessee
- Smart Community: Dublin, Ohio
- Smart Community: Eindhoven, the Netherlands
- Smart Community: Issy-les-Moulineaux, France
- Smart Community: Luxembourg
- Smart Community: Queensland, Australia
- Smart Community: Stratford, Ontario, Canada
- Smart Community: Windsor-Essex, Ontario, Canada
- [ABI Research Report: http://www.abiresearch.com/research/1007213-Smart+Cities#tables]

WHAT IS A SMART CITY: The Trinity City, A Smart Sustainable City™

- **The Urban Trinity of Information/Cyber City, Intelligent/Knowledge City and Ecological/Clean city:**
- Digital/ICT/Hi-Tech/Ubiquitous/Mobile/Cyber City (Digital/Information Capital; Innovative Technologies, Intelligent ICT Infrastructure, Multi-Play Telecom Network, ICT spaces/systems/applications, Ubiquitous Computation, Internet of Things, Network-integrated Real Estate, Virtual Lifestyle)
- Sustainable/Ecological/Green/Zero-Carbon/Zero-Waste/Eco Friendly/Solar City (Natural Capital; RES Technologies, Green Energy Network, Eco Estate, Green Lifestyle)
- Knowledge/Learning/Innovation/Intelligent/Science/Intellectual/ LivingLab/Creative/Human/Social City/Noopolis (Intellectual Capital; Social Cohesion, Knowledge Assets, Knowledge Triangles, Health Triangles, Intelligent/Smart Lifestyle)

VALUE PROPOSITIONS

- Eco-Intelligent Digital Network Integrated Infrastructure
- Sustainable Living, Well Being and Quality of Life
- Ecopolis (smart environment/natural capital and resources, eco-health, safety and security, engineering and sanitation, conservation and protection, landscape integrity, and awareness; re-use, reduce, recycle and recover of resources, materials and energy);
- Smart People, Communities, and Society, Social and Human Capital;
- Future Proof Smart Technologies;
- Network Integrated Township (Smart Connected Communities, Ubiquitous Eco City);
- City Intelligence (Knowledge and Health Triangles, Intelligent Management Urban Platform);
- Environmental Infrastructure, Smart Utilities and Energy Networks;
- Smart Mobility (innovative transportation, FO ICT networks);
- Intelligent Green Lifestyle and QoL Facilities (cultural, health, safety, housing quality, education, touristic, and entertainment);
- Smart Governance (i-services, social, cultural and political cohesion);
- Innovation Economy and Knowledge Industry
- Sustainability Standards;
- Private, Public and Civil Society Partnership; financing schemes: BOT, BOOT, BOO, BLT, DBFO, or DCMF (Design, Build/Construct, Own, Operate, Transfer, Manage, Finance, Lease);
- Intelligent Investment Projects (Impact/Socially Responsible Investment)

Smart Eco City Platform: Virtual Reality City/Digital Model/Online Intelligent City/EcoCity Portal/Urban OS/Smart City Cloud Platform/Service Delivery Center

- The Virtual Reality Smart City is a complete multidimensional digital representation of a real-life future city, to be operating as an Intelligent Community Operating System, or Urban Intelligent Management Platform, or Digital Ecosystem Smart Environment, or Smart City Cloud Platform.

- It will provide a 5D+ digital visualization/simulation/drawing of city terrain, core infrastructure, green energy and utilities networks, facilities, real estate, residential and commercial, soft social infrastructure, intelligent urban environment, and home services:

- A. Entire Urban System (Digital City project, Sky/Cloud City, a greenfield land site, terrain, green space, landscape& gardens, city infrastructure, road networks, renewable energy and utility networks, ICT infrastructure, integrated real estate, smart urban services, sustainable urban planning and design, landscape architecture, urban agriculture, living roofs, ecological planning, smart city design; tools, PWBS, Digital City software, LandXplorer; Consultants, Autodesk)

- B. Smart Eco Homes, Residential (Eco City project, sustainable planning, design and construction, residential units, attached, semi-detached, detached eco homes, BIM models)

- C. Intelligent Eco Estates, nonresidential (Knowledge City project, sustainable planning, design and construction, BIM models)

- D. Innovation Clusters Models (Knowledge/Innovation City project, sustainable planning, design and construction; BIM models)

- E. Smart Social Infrastructure (Knowledge/Innovation City project, sustainable planning, design and construction, architectural and engineering; tools, BIM models)

DIGITAL CITIES, SOFTWARE CITIES, INTERNET CITIES, WEB CITIES, VIRTUAL URBAN ECOSYSTEMS

☐ A common architecture of digital cities may be described by a four level structure: 1. the *information storehouse*, a database including all digital content, in any form, texts, images, diagrams, sounds, video, and multimedia. The digital content is usually organized according to the logical patterns, the districts, and the hierarchy of the city. 2. the *applications* level, which structure the digital content and provide online services. A digital city that offers information services, e-market, and e-government, includes at least three applications, which assume the tasks of delivering information, commercial, and governmental services. 3. the *user interface*, which includes all the web pages that users visit in order to get the services provided by the digital city. Driving a user in the different areas of the digital city, the user interface may utilize maps, 3D images, texts, and diagrams. Then, a fourth level is *administration*, a tool crossing the database and the applications, which enables managing the user rights to the applications and the digital content of the database.
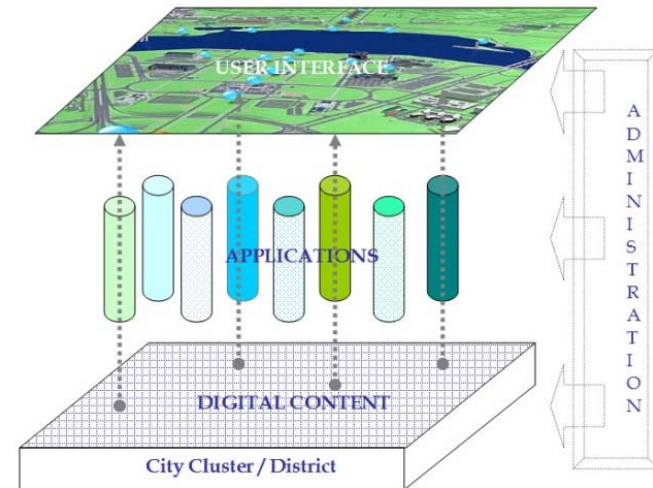
Architecture of Intelligent Cities & Virtual Innovation Space

□ **L1**: The basic level of an intelligent city is the city's productive clusters, in manufacturing and services. This level gathers the creative class of the city made by knowledgeable and talented people, scientists, artists, entrepreneurs, venture capitalists and other creative people, determining how the workplace is organized and how the city is developing. Proximity in physical space is an important factor that facilitates knowledge cooperation and exchange among producers, suppliers, service providers, and knowledge workers.

□ **L2**: A second level is made of institutional mechanisms regulating knowledge flows and co-operation in learning and innovation. This level gathers institutions enhancing innovation: R&D, venture capital funds, technology transfer and training centers, intellectual property, spin-off incubators, technology and marketing consultants. Institutions manage intangible mechanisms of social capital and collective intelligence that guide the matching of individual capabilities and skills, and actualize the complex processes of innovation within the clusters of the city.

□ **L3**: The third level is made up by information technology and communication infrastructures, digital tools and spaces for learning and innovation. These technologies create a virtual innovation environment (Fig. 3), based on
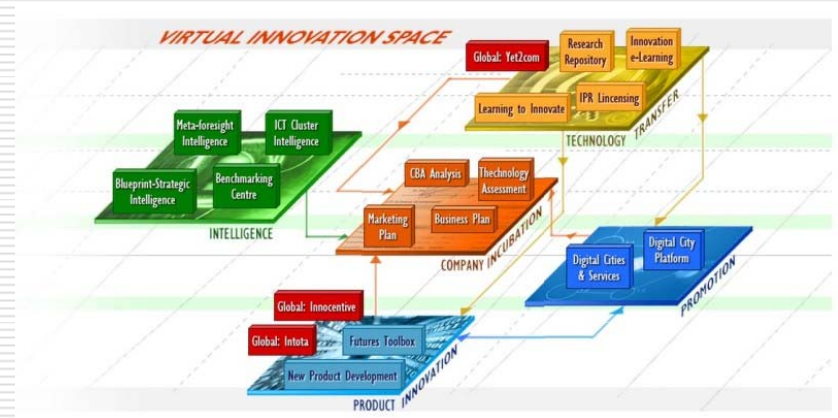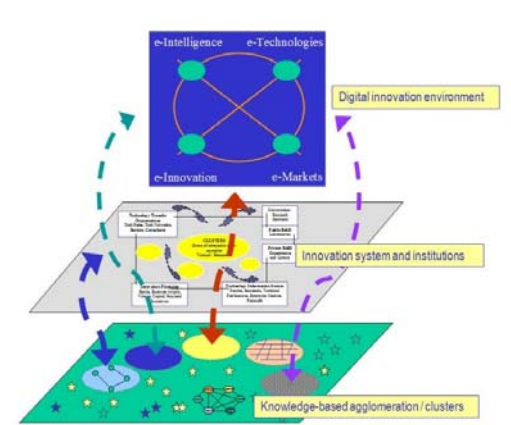
A Sky Network of Digital Cities: A SSGC Intelligent Operations Inter-cloud Platform

- An intelligent ecosystem model for globally emerging sustainable communities and smart cities.

- **Federation of Cloud Cities in the Intelligent Sky Computing Platform**: an O-Federation of i-cities in the smart clouds with a common ontology and semantics, cloud interoperability, inter-cloud protocols, addressing, naming, identity, trust, presence, messaging, multicast, time domain, application messaging (for the Figure, credit to Cisco Systems)
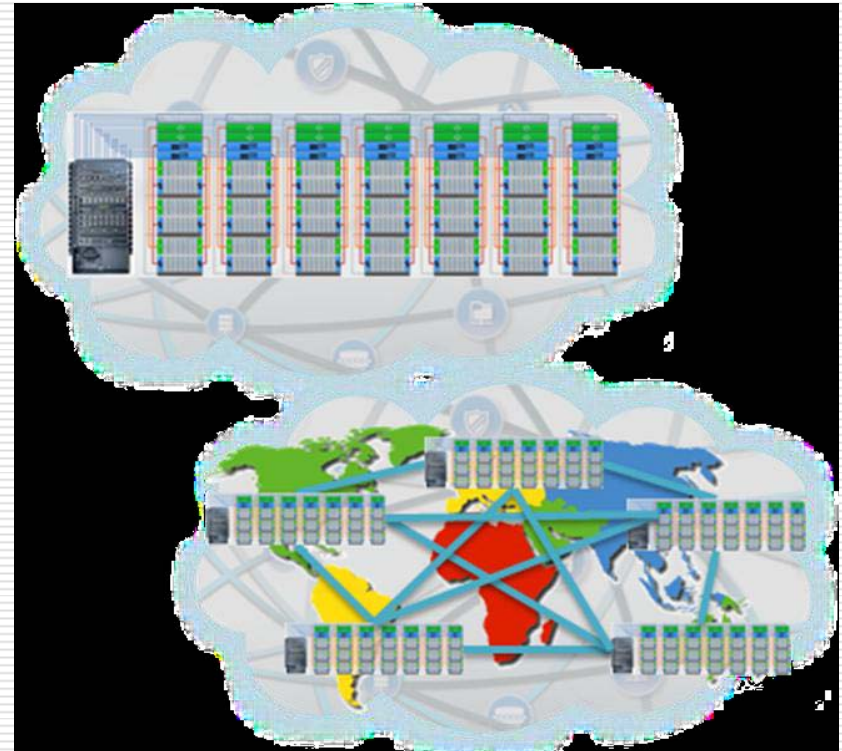
SMART CITY SYNTHESIS: EU 2020 Strategy, IBM's Smarter Planet and Cisco's Smart + Communities

- ☐ the Smart World Concept is comprising the Sustainable Growth Concept, the Smarter World Ideas (IBM), and the Smart + Connected Communities Schemas (Cisco), by applying the integrated, holistic model at every level, global, national, regional, urban or local

- ☐ A true sustainable city is a multiple urban entity, having many features, forms, or spaces. As a minimum, it's a triplex city of information, ecology and humans

- ☐ As smart/green/intelligent technologies are shifting to sustainable technologies, so smart/green/intelligent communities, to sustainable communities - districts, towns, cities, metropolises, regions, countries or the entire planet.

- ☐ Relying only on any big technology developers hardly decides the principal challenges of sustainable urban development, be it the Huawei's smart city technical concept or Oracle's solutions for smart cities, Smart Processes, Smart Infrastructure, and Smart Innovation for local governments, smartly promoting their business products, services, packages and suites.

- ☐ From technological prospects, its a digital city, cyber city, networked city, or digitally smart city, where NG ICT networks, mobile and ubiquitous and cloud computing, 4G+ wireless networks, augmented virtual reality, sensor networks, software agent technologies, etc. are embedded in the physical urban environment.

- ☐ From ecological perspectives, it is a clean city, green city, eco city, or ecologically healthy city, where distributed energy networks, renewable energy sources, green technologies, etc. are embedded in the physical urban space.

- ☐ From social prospects, it is an intelligent city, social capital city, knowledge city, innovation city, or creative city, where knowledge-intensive activities, intelligent governance and social networks, meaningful public spaces, and knowledge triangle infrastructure are shaping the social city environment.

- ☐ **Full sustainability consists in a synergetic integration and interaction of all urban dimensions, as integrated physical, virtual, natural, social, and institutional spaces.**

SMART BRANDING

- The SMART brand name and equity is becoming of most decisive factor of all assets, as economic resources producing economic benefits and values, tangible and intangible: physical assets as fixed real estate, plants and equipments and current assets as cash and inventory, and nonphysical assets as patents, goodwill, trademarks, software, bonds and stocks.

- the **BRAND Equity** is measured as the **MARKET CAPITALIZATION** minus **TANGIBLE ASSETS** and **INTANGIBLE ASSETS** (measurable), the brand equity approximates the market capitalization for real smart legal entities.

- in terms of capabilities and visibility leaders are: IBM, Buro Happold, Siemens, GE, Accenture, SAIC, Alstom, Mitsubishi Heavy Industries, ABB, Oracle, Samsung, Cisco, Philips, SAP, HP, Home Depot and Autodesk.

- Apple with the i-tablet computing products and services having the brand value about $ 153 billion, or IBM with the Smarter Planet methodology, having the brand value about $ 101 billion

- It's plain that the smart branding brings the maximum value than it covers a whole new city or the entire country.

Greenbang Smart Matrix™–Smart Cities
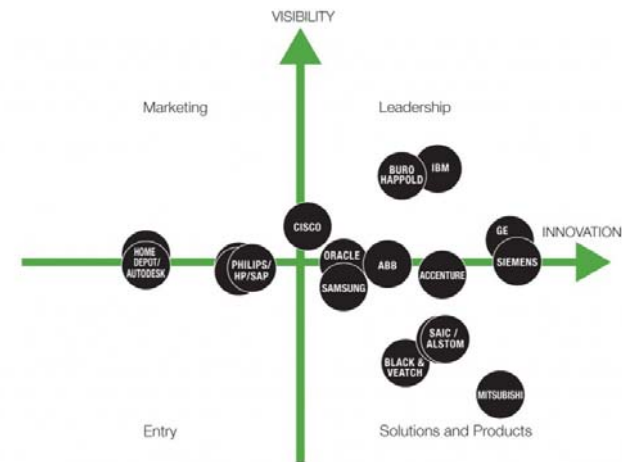
INTELLIGENT NATIONS PROJECTS

- ☐ Singapore, Intelligent Nation 2015 (iN2015), 10 years master plan of "an Intelligent Nation, a Global City, powered by Infocomm", to enable: Innovation, Integration, Internationalisation. To achieve the goals of the masterplan, the Infocomm Development Authority of Singapore (IDA), together with the industry, identified programmes and initiatives categorized under four building blocks: globally competitive infocomm industry; sectorial transformation of the key economic sectors, government and society; ultra-high speed, pervasive, intelligent and trusted infocomm infrastructure; globally competitive infocomm manpower

- ☐ The Smart Island Malta, the National ICT Strategy (the Smart Island strategy of seven streams, the national RTDI strategy; the National Industrial Policy; SmartCity Malta Project of the global knowledge-based township; the next generation ICT environment, a connected society, putting the 'e' on everything, a smart and global workforce, reinventing government, e-Business, world leading ICT industry

- ☐ Intelligent Taiwan, formulated by the Council for Economic Planning and Development, and involving all ministries. The i-Taiwan is advancing 12 construction projects in transportation (fast network, port-city regeneration, international airport city), industrial innovation (hi-tech industrial clusters, intelligent Taiwan, industrial innovation corridors), urban and rural development (urban and industrial park-regeneration, farm village regeneration), environmental protection (coastal regeneration, green forestation, flood prevention and water management, and sewer construction) as well as intelligent industries (cloud computing). Its five key concepts are: regional development balance, industrial innovation, new urban and regional features, intelligent capital accumulation, and sustainable development. Its key purposes are expanding domestic demand, improving the investment environment, boosting the health of the economy, and upgrading the quality of life. The total investment is about NT$ $ 4 trillion.

Smart Cyprus: a Vision of Smart World

Smart Cyprus TRINITY COMMUNITY of Sustainable Growth and Quality of Life: Eco/Clean, Dig/Intelligent, and Soc/Innovative

Eco-CYPRUS/ City/Town/Village

I-CYPRUS/ City/Town/Village

Smart Sustainable CYPRUS/ Community/ City

Digital CYPRUS/ City/Town/Village

- ☐ **Demonstrative Intelligent Nation Project for Smarter Europe:**
- ☐ Cyprus 2020
- ☐ Smart Cyprus Commission
- ☐ Smart Cyprus Trinity
- ☐ Strategic Objectives
- ☐ Knowledge Society Prog
- ☐ Science & Technology Pa
- ☐ Innovation Business (Kr Industry) Clusters
- ☐ Innovation Networks: C Communication, Collabo
- ☐ Project Planning Stages
- ☐ Smart Cyprus Factors
- ☐ Wellbeing, Growth and V
- ☐ Full Sustainable Commu
- ☐ Smart Sustainable Urbanism
- ☐ Intelligent/Smart Eco City
- ☐ Smart Sustainable City: Value Propositions
- ☐ Eco City Development Projects
- ☐ Smart City: Balanced Land Use
- ☐ National, Regional and Urban Programs and Master Planned Developments
- ☐ Programs, Projects, Plans
- ☐ Current Situation
- ☐ Smart/Sustainable Cyprus Promoters/Contacts

Physical Capital
Natural Capital
Ecosystems
Natural Resources
Renewables
Green
Infrastructure
Eco-Urbanization
Green
Community

Intellectual Capital
Innovation
Knowledge
Infrastructure
Cultural capital
Equity
Wellbeing
Quality of Life
Knowledge community

Information capital
u-Computation
ICT Infrastructure
AVR
Internet of Things
Digital/Smart Community

SMART WORLD/CITIES ENABLING TECHNOLOGIES

- **ICT INNOVATION for Smart Cities**
- CITY SERVICES, Safety & Security/ Emergency Response/Technology Enablers: Integrated Operations Center; Public Transport Optimization; Mobility; Unified Communications (Voice, Video and Data)
- HEALTH Technology Enablers: Telehealth (monitoring equipment in the home); Telecare via video conferencing; Mobile clinical assistance and applications for patients to monitor activtity, heart rate, etc
- HOME Technology Enablers: Home area network; Smart Meters; Secure building management; In-home displays
- SPORTS AND LEISURE Technology Enablers: Ticketing, travel & accommodation; Security, surveillance and risk control; Event administration; Media & communications; Stadium management
- EDUCATION Technology Enablers: Connected learning; Online libraries; Unified Collaboration; Video Conferencing for tutorials and homework
- TRANSPORT Technology Enablers: Supply Chain & Logistics Optimization; Private Transport Optimization; Virtual Conferencing &Telecommuting; Efficient Vehicles (PHEV, EV); Traffic Flow & Optimization
- BUILDING Technology Enablers: Energy

- **GREEN INNOVATION: ENVIRONMENTAL/ECOLOGICAL/GREEN/CLEAN TECHNOLOGIES (Cleantech, Greentech, Envirotech for Transport, Electricity, Heating, and Cooling)**
- Global and Environmental Technologies/Engineering; Renewable Energy Technologies: (Bioenergy (Biomass, Biofuel, Biogas), Solar Power, Geothermal, Wind Power, Ocean (Wave/Tidal) Power, Hydropower); Carbon Capture and Storage Technologies, Distributed Renewable Management (Smart Grids, Energy-Efficient Systems).
- ENERGY Technology Enablers: T&D Network Management (Smart Grid); Smart Metering; Intelligent Power Generation; Renewable Energy Management.
- GREEN ECONOMICS Solutions: Green Buildings, Green Products and Materials,
- RES, Clean Transportation, Water Management, Waste Management; Land Management (Sustainable Landscaping, Organic Agriculture, Habitat Conservation, Urban Forestry and Parks, Soil Stabilization)
- **SOCIAL INNOVATION: SOCIAL/POLITICAL TECHNOLOGIES** (Smart Public Policy, Knowledge Society Strategy, Education Policy, Innovation Strategy, Economic, Social, Environmental and Technological Sustainability/ National, Regional and Local Social Policy, Future-Oriented Strategy, Sustainable Development Strategy, Knowledge Economy, Smart Cities Strategies, Smart Development Comprehensive Planning, Sustainable (Regional and Urban) Development)

COMPUTER AND INFORMATION TECHNOLOGY: STRATEGIC COMPUTING TECHNOLOGIES

- **COMPUTER AND INFORMATION TECHNOLOGY: STRATEGIC COMPUTING TECHNOLOGIES (IEEE)**
- CIT 2011: http://www.cs.ucy.ac.cy/CIT2011/
- Computer and System Architecture
- High Performance Computing
- Utility Computing
- Cloud Computing
- Ubiquitous Computing
- Software Engineering/Computer Programming/Application Software/Programming Languages
- Computer Networks (Internet/Web + Internet of Things = The Smart World)
- Telecommunications (MultiPlay Telecommunications Networks, Wireline and Wireless)
- Artificial Intelligence and Multi-Agent Systems
- Computer Graphics/Image Processing
- Information Visualization
- Information Security/Computer Security
- Management of Data and Database Systems
- New Web Technology and Applications
- IT in e-Health, e-Business, e-Learning, e-Government
- (Business Computing: CAD, CRM, Data Warehouse, DSS, GIS, Utility Computing)
- (Human-Computer Interaction)
- (INTERNET OF THINGS)
- Web 2.0. Social Computing Platform (Facebook, Twitter, LinkedIn, MySpace, and Orkut)
- Advanced Data Analytics and Business Intelligence
- I-Government, i-Health, i-Business, i-Learning, i-Services, etc
- Ontological Engineering (Semantic Web and Knowledge Technologies)

- ICT CLUSTERS FORESIGHT (RUSSIA, Skolkovo Innovation Center; W3C, IEEE, ISO, IETF)
- http://www.i-gorod.com/en/it/
- New generation of multimedia search engines
- Recognition and processing of images, video and audio
- Analytical Software
- Mobile applications
- Embedded Control Systems
- WebX.0
- Complex engineering solutions
- New technology for data transfer and storage
- Cloud computing
- Green IT
- Software for the financial and banking sectors
- IT Security
- IT in medicine and health care
- Wireless sensor networks
- IT in education
- (INTERNET OF THINGS)
- UBIQUTIUOUS INTELLIGENCE AND COMPUTING
- Smart Systems
- Smart Environments
- Smart Objects
- Social Innovations
- Building Smart Worlds in Real and Cyber Spaces

CURRENT SITUATION: World's State of Affairs

- ☐ The current world faces a number of planetary challenges involving: Environment, Energy, Food, Water, Transportation, Infrastructure, Society, Healthcare, Education, Governance, and Economy. Its goods and benefits, the digital revolution, technological revolution, environmental revolution and local social revolutions shaping more integrated, inclusive, fair world. Its ills and evils, international terrorism, world crisis, regional wars, mass culture, civil unrests, and the global risks/threats as below.

- ☐ Global Threats (Economic, Social, Political, Military, Cultural, Technological, and Ecological) and Instability/Volatility (in Society, Global Economy, and Finances, Public and Private)

- ☐ Social Exclusion, Political Instability, Unemployment, and Poverty (the rich richer, the poor poorer)

- ☐ Unsustainable Development (Absence of Knowledge/Innovation Societies, Digital Economies, Green Economies, and Innovation Economies; Low Quality of Life, Inefficient Global Governance, Poor Mobility, Poor Natural Capital Management, Ecological Degradation, nonrenewable energy sources, CO2, inefficient land use and buildings, transport, waste, water, sanitation, pollution, air/water/soil/food quality, climate change)

- ☐ Unsustainable World's Urbanization (global urban expansion, soil sealing and erosion, standard low-quality construction projects, lack of smart, ecological, or sustainable cities)

- ☐ Smart/Sustainable World Strategy is the only real cardinal solutions to the current world's state of affairs

INFORMATION RESOURCES AND CORPORATE REPORTS

- Europe 2020. (2010) The EU's growth strategy for the coming decade. European Commission
- IBM's Smarter Planet. What is a Smarter Planet.
- Palmisano, S. (2008), A Smarter Planet: the Next Leadership Agenda.
- It's a smart world. (2010) Economist, November, 2010
- Ubiquitous Intelligence and Computing: - Building Smart Worlds in Real and Cyber Spaces (2010). UIC 2010 http://www.nwpu.edu.cn/uic2010/
- Komninos, N. (2002) Intelligent Cities: Innovation, knowledge systems and digital spaces, London and New York, Spon Press
- Komninos, N. (2006) The Architecture of Intelligent Cities: Integrating Human, Collective and Artificial Intelligence to enhance knowledge and innovation.
- Kanter R., Litow S. (2009) Informed and Interconnected: A Manifesto for Smarter Cities Harvard Business School
- Abdoullaev, A. (2010) Neapolis Smart EcoCity: A Development Framework for Sustainable Communities, ISBN 978-9963-9958-0-6; Cyprus, EU.
- Abdoullaev, A. (2011) Smart EcoCity™ (Intelligent Eco City™), ISBN 978-9963-9958-1-3; Cyprus, EU.
- Abdoullaev, A. (2011) Smart/Sustainable World, http://www.eis.com.cy
- Abdoullaev, A. (2011) Smart/Sustainable Cyprus, http://www.eis.com.cy
- Andrea Caragliu, Chiara Del Bo, Peter Nijkamp. Smart cities in Europe.
- Andrés J., González A., Rossi A. (2011) New Trends for Smart Cities.
- Smart + Connected Communities: Changing a City, a Country, the World (2010). Cisco Systems.
- Building and Managing an Intelligent City (2011) Accenture
- Making Cities Smart and Sustainable (2011) Alcatel-Lucent
- Smart Home, Smart City (2011) Siemens
- Smart Cities: true icons of the 21st century (2011) FT, Orange
- Is Your City Smart Enough? (2011) Ovum
- Brilliant life powered by Smart City (2011) Huawei
- Smart Cities (2011) Pike Research
- Smart Cities (2011) ABI Research
- Smart Mobile Cities: Opportunities for Mobile Operators to Deliver Intelligent Cities (2011) GSM Association, Accenture
- Building Sustainable Cities. Cities in the Cloud (2011) (Living PlanIT)

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