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#### GIS Transformation in Korean Society for last 20 years

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Prof. Sung-Ryong Ha President, Korean Association of GIS Dean, Chungbuk National University

#### **GIS** appearance in S. Korea

For last two decades, GIS technology and its business circumstance in Korea have been dramatically progressed.

Public voices of GIS needs was born from early 1990s after two big accidents of municipal GAS pipe explosion.

Substantial triggering momentum to promote GIS in our livelihood was IMF economic crisis in 1997 to provide jobs for high-educated job losers.



Reports: A fork lifts operator, who having insufficient knowledge about underground urban facilities commits a rash act to trigger a big explosion.



In the centre of Seoul Metropolitan, Gas pipe exploded and got 50 more killed and injured, again (1994.12.8.)

**Report:** Commits a rash act of piling at a main street of Seoul Metropolitan, gets loose a joint coupler of gas pipes buried under the ground.



Apr. 30 1995

### Loiter on the way to build a GIS DB.

raising a humar disaster risk.

The Board of Audit and Inspection outsets inspecting why the way to develop Gis data was delayed.

Dong A Ilbo Daily, Apr.29 1995 Not to be Delayed more to set up an accurate GIS system of urban underground buriers.

Current reality of data managing is that engineers are walking rounds at data holders such as Korea Electricity Corp. for begging geospatial information.

UK-Japan had developed an integrated management system of GIS



매설물

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#### **Objective of presentation**

To review the national status of Korean National Geographic Information System development including ubiquitous-GIS.

To analyze policies established for fulfill the mission of Green Growth of Korean society.

#### Master Plan of Koran National GIS Development

At the behind of GIS progress in Korea, the governmental leadership dominates in almost business fields from administrative public service to private industrial sectors.

Master plan of 'National GIS (NGIS) projects' is established in year 1995.
The plan consisted of three stages, 1'st (1995-2000), 2'nd (2001-2005) and 3'rd stages (2006-2010).

### Jobs to digitize CITY maps in IMF 84 Among 100 Economic Crisis, year 1997



#### A Paradigm Changes in GIS Business

Phase-1 DB Distribution by government('95~'00)

Establishing GIS master plan and Data Phase-2 DB supply by private sectors ('01~'05)

Active expansion of GIS data and application to many business areas Phase-3 Customization Stage ('06~'10)

Customized DB Distribution for municipality, industry, citizen



Source: Policy trend to promote GIS industry,2008, M.O.C.T.

#### Leadership to Build GIS is Shifted to Market from Government



## System Integration (SI) Boom for higher value of GIS under 'Digital Korea' campaign





#### DSS for Harbor Port Environment Similarity Analysis



#### Application of LMIS (Land Management Information system) to evaluate Feasibility of Land



Source: Digitalization of land business based on GIS, 2008, Korean Highway Corporation

#### **UPIS-Seoul in Year 2009**



#### Infrastructure for Realization of Ubiquitous Society

On the basis of successful experiences of '1st and 2nd NGIS', there were many positive responses in wide range of administrative service areas.

With reflection of this circumstance, 'Ubiquitous-Korea Project, which is a national strategy based on ubiquitous technology had been launched from year 2006.

And, 'Ubiquitous-City' Plan is materialized in 3rd NGIS period. Many ministries of government gave orders for new projects of ubiquitous city.

#### **Ubiquitous City Policies in Ministries**



### Why? U-City in Korea

Where must we apply the National GIS-infrastructure ?

Selected Target is "Urban"

Good infrastructure of GIS/RS

Good market opportunity of commercial use of GIS

A How can we maximize the value of GIS infrastructure.

- Confederation of telecommunication technology with GIS technology in urban.
- GIS incorporated with USN and RFID technology: U-city

#### **U-city taskforces**



#### **U-City Projects in Korea**

U-City development is a key aspect for the next generation of economy in Korea.

The governments either central or local leaded U-City projects. Infrastructure building was focused on a digital sensor networks construction in Korea.





Source: U-City Development Examples. Samsung SDS, 2008.

#### Infrastructure for U-City : USN-RFID network

#### Ubiquitous Sensor Network (USN)

#### Radio Frequency Identification (RFID)



Management of Growth (temp., humidity) Anti-disaster (Fire alarm, Flood control)

- Tracking of produce
- Product info. search
- Produce record management

## Issues to cope with current U-GIS limitation

It was clear that we were still in an indistinctive stage to discover the right way toward ubiquitous society.
We were standing in front of tough barriers from not only technical but also financial aspects in terms of U-GIS.
The changes from device-driven as well as service-driven was very aggressive and fast. Convergence among emerging technologies, such as mobile GIS, 3D GIS, and computing device should be organized suitably in order to develop ubiquitous cities.

A new NGIS policy beyond the scope of current national GIS master plans from 1995-2010 may be required to comprise with the issues listed.



### Impact of computing mobile devices on GIS market

Another aspect of GIS development is IT device revolution in private markets.

Early GIS strategies were implemented on the super optical communication network coupled with computers.

Sy emergence of computing device, potential business fields of u-GIS are widen through the converging with other advance IT technologies.

### Convergence of Device-, Networkand Service-driven

- Service: is done with convergence of Wire/Wireless communication, Broadcasting systems, and internet service.
- **Device**: High performance and multiple accessibility are provided through device convergence. Communication
- Network: is born by 3 G convergence (mobile phone, wireless internet technology, and broadcasting system)



#### Computing Mobile Infrastructure: WiFi and Wibro

- WiFi is a short distance internet communication network, by which internet user access to the wireless internet in a certain range of a wireless accessing apparatus (AP).
- It is defined as the basic standard related to wireless LAN by IEEE in 1997 and inscribed as IEEE802.11.
- WiBro (Wireless Broadband Internet) is a special technology by which mobile internet user accesses to the internet while user is moving with 60 Km/hr using portable wireless device and also get accessed to various data sources and contents.
- On June 2006 in Korea, KT as a WiBro proprietor and SK as a telecommunication proprietor began to a business of commercial WiBro service. It was recorded as
- the first case of Commercial WiBro service in the world.

## Infrastructure evolution from private business sectors



#### Infrastructure of U-BcN (Ubiquitous Broad band Network)





Source : Money today news

#### Data Traffic change using smart phone



In Year2009, Korean mobile market was hit by a wave of intriguing devices, Smart phone.

Data Traffic of wireless internet was up 64% by expending of Smart phone.



## New renewable energy and IT convergence

New Korean government launches new development strategy, 'Green Growth' in which three missions are included as Low carbon, New renewable energy, and IT convergence.

All three are closely related to GIS by which digital information has to be created.

#### 4th NGIS plan for Green Growth with U-BcN



#### National Geospatial information System(2008~2012)



N-GIS

Public Service

### New Renewable Resource Map using 3D GIS



Accurate information of energy resource locations

3D high accuracy map using remotely sensed data

selection for feasible location to develop renewal energy resource facilities

Decision making support system for new renewable resource planning

#### Wind power density map



## Wind Shear distribution at altitude 80 meter



#### Standard Map service



### **LBS** Market

#### ♦LBS : Location Based Service

#### Information

Navigation

Tracking







#### Safe & Security

#### Entertainment

#### Commerce









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#### The Advent of "오빠 믿지<mark>? (Sweet I Believe in me? )</mark>" at ap Market of iphone in S. Korea

'오빠믿지?' 어플 등장논란, 사생활 침해 vs 재밌 고 유용한 기능 갑론을박!  It's an ap for real time location tracking.

Denunciation on Privacy Violation of LBS



# Real time location tracking system on smart phone



Privacy Violation issues in Convergence-GIS-Korean Society!

The tough task to be achieved ASAP.

#### Thanks for your attention.