Topic 2: Developing an Ubiquitous Network Society for seamless e-services

Preparing Policies and Measures for an Ubiquitous Network

Organizer: Ministry of Transportation and Communications

Co-organizers: Ministry of Economic Affairs,

National Communications Commission (NCC)

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Report Outline

Background

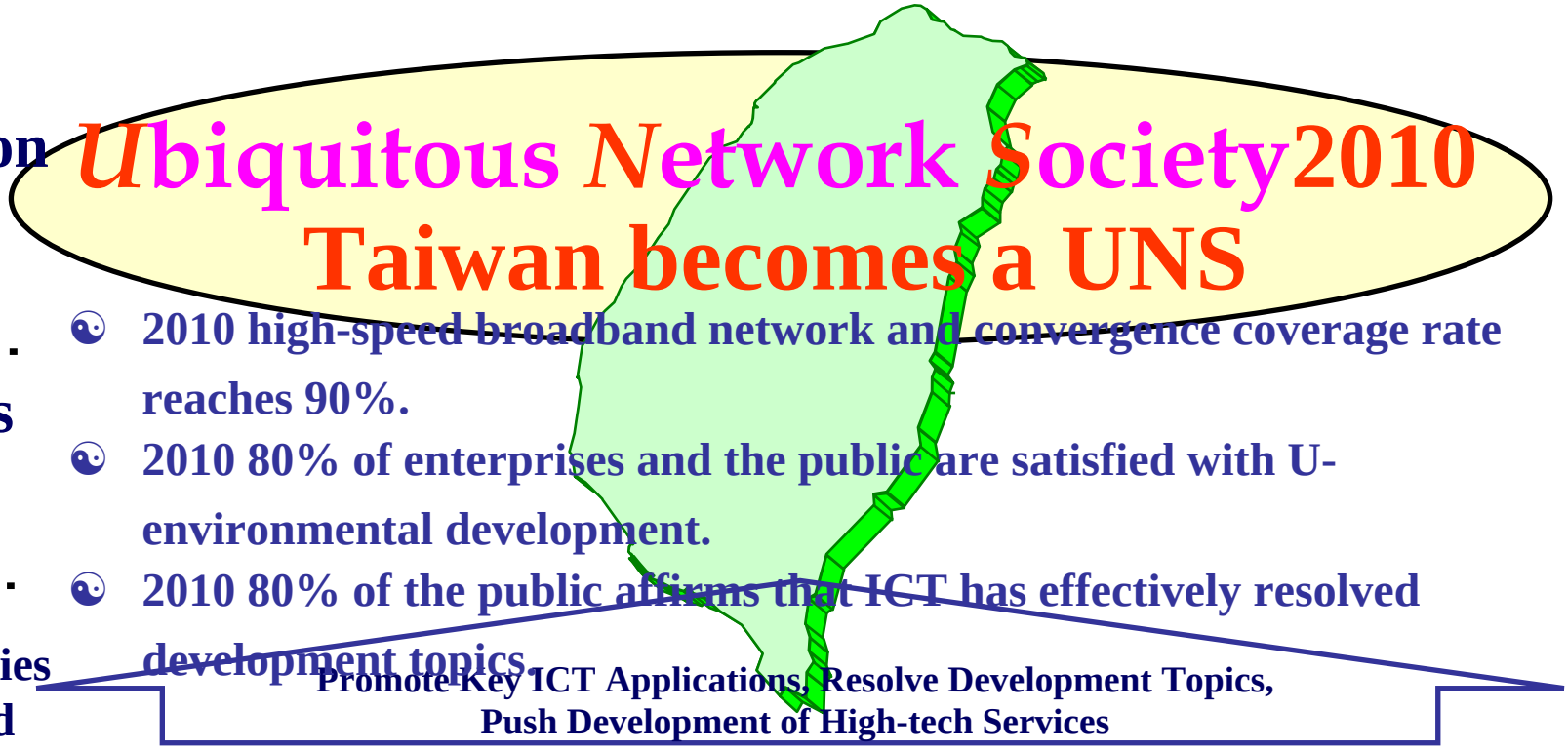
Analysis of Problems

Suggested Measures

Background(1)

- Following up the strategic plans u-Japan and u-Korea, Taiwan must respond timely after the maturation of e-Taiwan and M-Taiwan programs; in addition, the relevant policies must be expanded and revised to develop a ubiquitous network society (UNS) for seamless e-services.
- To smoothly implement the UNS and make roaming the ubiquitous network (UN) a reality so that the public may enjoy convenient access to information for daily life, the convergence of heterogeneous networks and the creation of sensory equipment is necessary to spur forward the development of ubiquitous services.
- Digital technology has made it possible to separate network and services. A single network can provide voice, data and audiovisual multimedia services, thus the traditional separate regulatory mechanism for communication, broadcasting and Internet cannot satisfy the demands of digital convergence era. Future regulatory mechanisms must develop in the direction of horizontal management and, moreover, must pay attention to the design of laws and regulations for the mechanisms that will govern fair and transparent competition among all network layers.
- The government, following the basic principle of regulation in the Communications Basic Law, will formulate policies and plans, revise relevant action laws and will create a fair operating environment and promote the development of the communications industry.

Background (2)-UNS Program Framework



vision *U*biquitous *N*etwork *S*ociety2010
Taiwan becomes a UNS

goals

- 2010 high-speed broadband network and convergence coverage rate reaches 90%.
- 2010 80% of enterprises and the public are satisfied with U-environmental development.
- 2010 80% of the public affirms that ICT has effectively resolved development topics.

policies and measures

Promote Key ICT Applications, Resolve Development Topics,
Push Development of High-tech Services

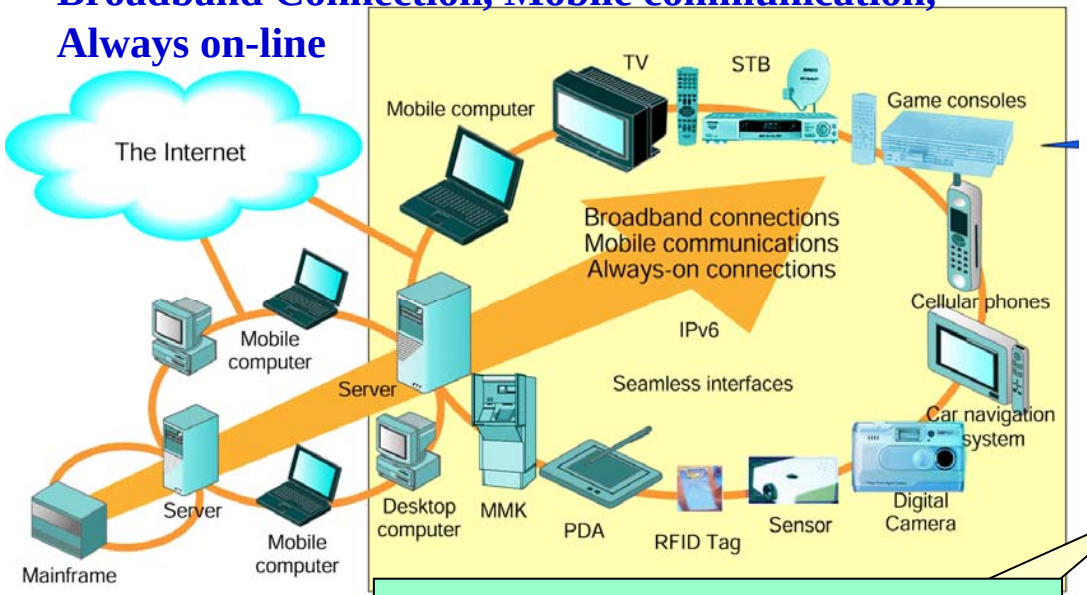
Promote Key Applications for the *U*-life

Prepare the UN

Complete the development environment of UNS

Analysis of Problems (1)-Vision and Framework of the UN

Vision for the Development of the UN:
Broadband Connection, Mobile communication, Always on-line

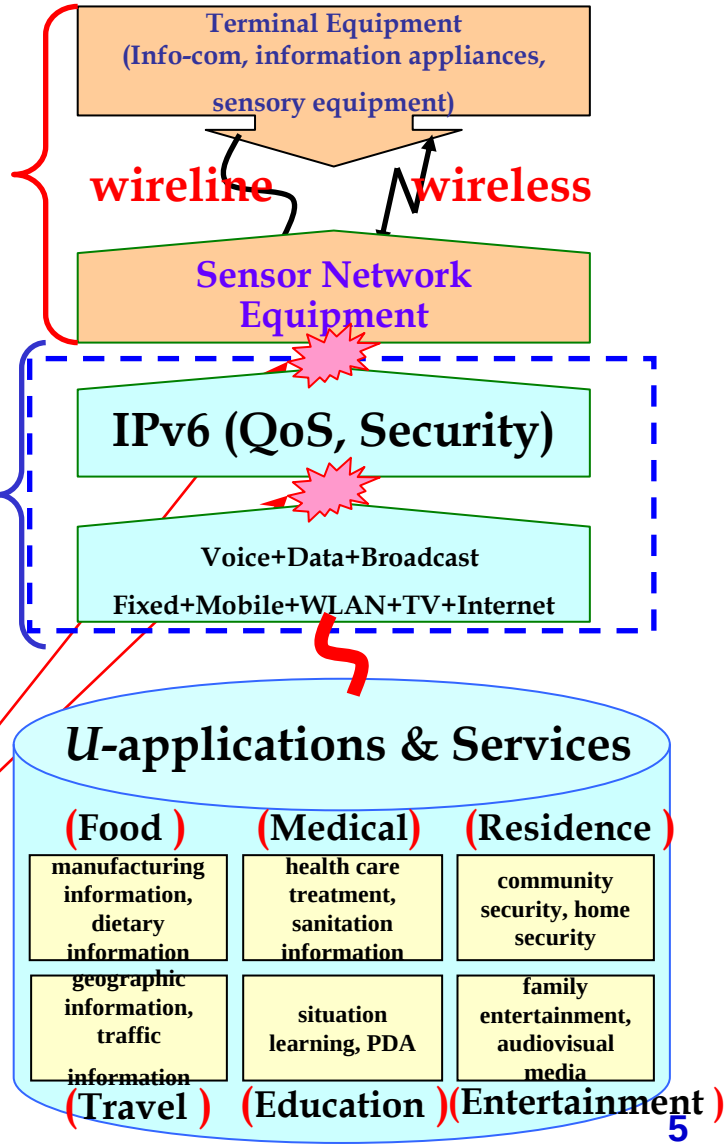


Reference : "Toward Realization of the Ubiquitous Society", NRI, April 2005

The Essence of UN

- Telecom & Broadcast Convergence
- Wired & Wireless Convergence
- High-speed Broadband
- Ubiquitous Accessibility
- Sensor Applications
- Secure & Dependable
- Timely & Interactive

Prepare a UN, Promote Development of Applications & Services



Analysis of Problems (2)-UNS Subscribers' Broadband Requirements

Per Subscriber Requirements (in bps)		
Broadband Service	**bps (download)**	**bps (upload)**
High Definition Streaming Video	subtotal:60M	subtotal:20M
Live TV VOD Entertainment/Game on Demand	20M/service 20M/service 20M/service	
Web Browsing & Applications	10M	10M(P2P)
Video Conferencing/VoIP	2~20M(HD)	2~20M(HD)
Remote Control	1M	1M
Total Requirement	73~91M	33~51M

Data source: KT research, 2003

- To promote the development of the various network services and applications, access network bandwidth must be increased to meet the demands of terminal equipment and digital content development; in addition, this should be coordinated with the construction of a wireless sensory environment to provide the public with everyday u-life information thus realizing the UNS.
- To spread the ubiquitous network, a high-speed broadband (10M+bps) network should reach a coverage rate of 90%. A wired and wireless convergent network in major urban areas can provide 20Mbps as a promotional target.

Analysis of Problems (3)-Current State of the UN

◆Fixed Network Broadband

❖Transmission Network by Optic Fiber

- Local & Long-distance relay：100%(since 2000)

❖Digital Switching Network

- Local, Long-distance & Int'l：100%(since 1999)

❖Broadband Network Access (2005/12)

- FTTC coverage ：88.94%
- FTTB coverage ：15.39%
- ADSL service coverage to villages：99.01%

◆Wireless Network Broadband (2005/12)

❖Public WLAN

- Access points (AP): 3,880 (includes only telecom operators, not schools or research organizations).
- Subscribers: 39,672 (paying), 51,358 (non-paying, does not include subscribers in schools or research organizations).

❖3G

- 5 operators went into full operation as of the end of 2005, one operator selected cdma2000 system, the others WCDMA system.

Analysis of Problems (3)-Current State of the UN

- **Digitized Broadcast and Television (2005/12)**
  - **CATV End Terminal：57.14%**
  - **DTV Service Coverage：71.60%**
- **RFID**
  - **In 2005 the Ministry of Economic Affairs drafted a strategy for RFID applications and industry development.**
  - **The Ministry of Transportation and Communications in coordination has planned for the 922-928MHz portion of the band to be made available for RFID technical development and has revised the "Technical Standards for Low-powered Radio Frequency Devices".**

Analysis of Problems (4)-UN Development Difficulties

- **Fiber local loop connections Not Yet Widespread—Reasons**
  - **Fixed network operators: channel construction is difficult and costs are high; moreover, there is not yet any consumer demand for high-speed broadband (10Mbps) and no impetus for an urgent need to promote fiber local loop connections.**
  - **ISP operators: high-speed broadband circuit fees of fixed network operators are too high and create operation difficulties; moreover, digital content operators have no incentive to design high-speed broadband killer applications.**
  - **Consumers: in the absence of killer applications, they are unwilling to subscribe to expensive high-speed broadband network connections.**
- **The public's resistance and rejection of the construction of wireless base stations and telecom hub rooms has impacted the scope of UN installations.**
- **Because communication and broadcasting laws and regulations have not yet converged, when digital broadcasters and telecom operators get involved in cross-sector business activities they face limitations imposed by current laws and regulations.**
- **The dominant operator has more than a 90% share in the ADSL market and more than a 70% share in the ISP market, thus the market for broadband service has not yet reached the fully competitive stage.**
- **CATV local loop access is still unable to compete with ADSL.**
- **Standards for sensory equipment have not yet been established, and sensory services have not yet been coordinated with development, which has impacted the creation of sensory environment.**

Suggested Measures

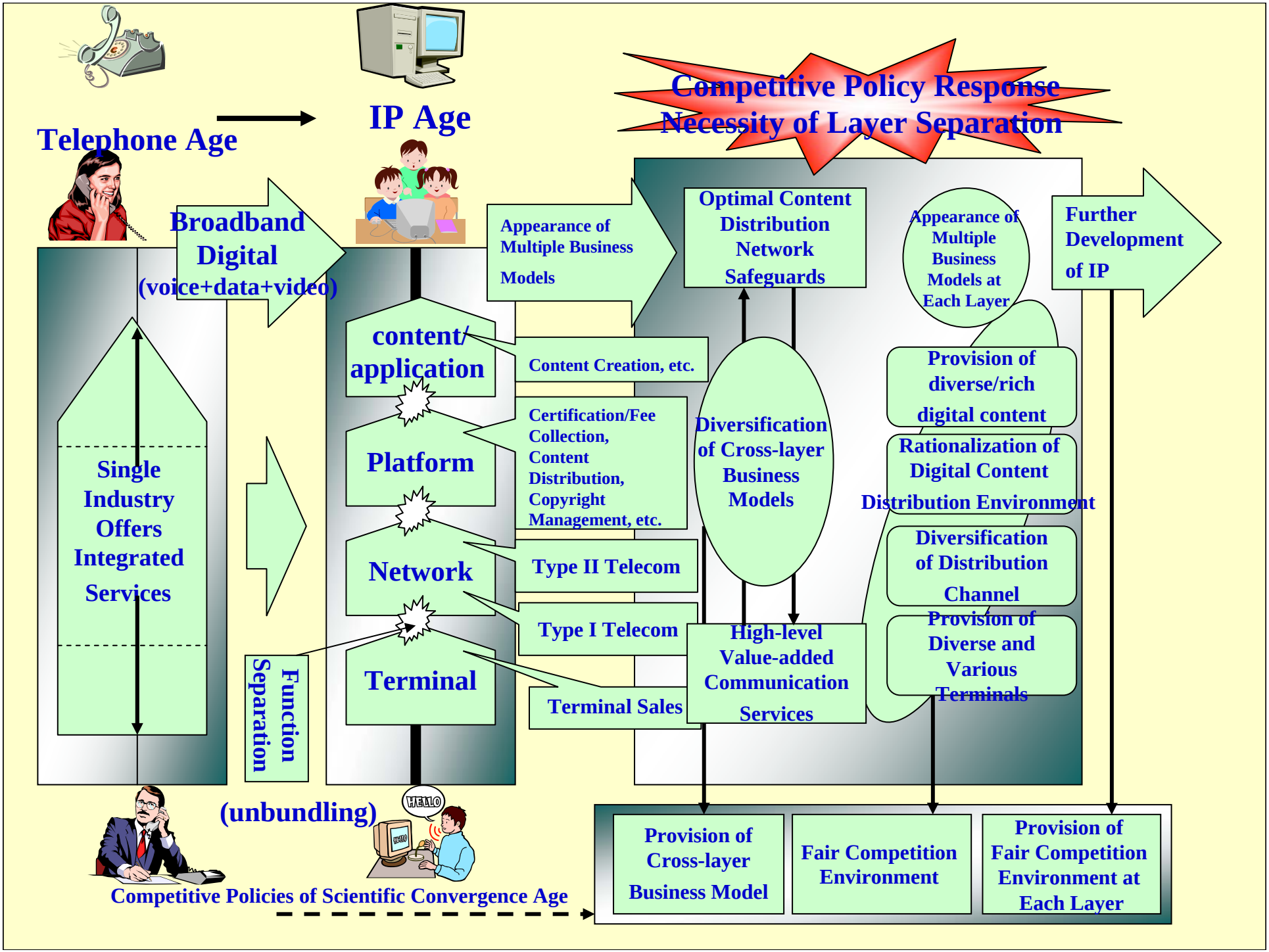
- **Construction**
  - Accelerate Construction of a High-speed Broadband Network.
- **Laws and Regulations**
  - Promote the Convergence of the Information and Communications (Info-com) Network with Digital Broadcasting.
  - Create a Fair Competition Environment.
- **Industry**
  - Promote the Construction of a Sensory Environment.
  - Construct a Ubiquitous Network City (u-City).

Construction: Accelerate the Construction of a High-speed Broadband Network

- Promote "right of way" and the acquisition of scarce resources
  - Continue to promote the "Construction Program for Broadband Conduits" to accelerate the deployment of fiber local loop networks.
  - Release frequency resources for the use of wireless broadband access (WBA).
    - Make 2.5-2.69GHz an experimental band, before the end of 2006 complete preparation for vacating frequencies and licensing of WBA service (like WiMAX).
    - Open up 3.4-3.7GHz for fixed network operators to apply for constructing wireless local loop (WLL) as "last mile".
    - Allow operators to use 2.4GHz and 5GHz unlicensed bands to construct WLAN and provide services.
- Adopt market-oriented spectrum management measures to encourage the efficient allocation and utilization of scarce resources.
- Promote the arrangements for and the implementation of co-location of telecom hub rooms and infrastructure sharing.
- Formulate a law for non-ionization radiation protection as well as standards for the construction of wireless base stations and telecom hub rooms. In addition, strengthen the public sector's efforts at periodically measuring electromagnetic wave, analyzing data and conducting special public information activities to overcome public resistance to the construction of base stations and telecom hub rooms.
- Encourage operators to use high-speed ADSL, microwave relay and WBA (like WiMAX) technologies to act as a substitute network to solve the gap of broadband network construction in remote areas.
- Encourage operators to use power line network to provide consumers broadband network access service.

Laws and Regulations: Encourage the Convergence of the Info-com network with digital broadcasting.

- **Horizontal Management**
  - Revision of the current vertical management pattern based on industries to horizontal one based on functions in order to introduce a regulatory system of cross-media and layer separation.
- **Light Management**
  - Simplification of procedures for market entry and exit and, in an efficient competitive market, adopting post-event management as the primary approach; nevertheless, prior-event management focused on dominant operators as an asymmetric regulation to strengthen consumer protection problems that market competition cannot solve.
- **Technology Neutrality**
  - When converging communications, media and the Internet, a position of technology/platform neutrality must be maintained.
  - Regulatory standards should not be determined by the transport platforms but by the nature of the services, and the same standards should be applied to services of the same type.
  - Introduce the practice of the EU and divide audiovisual multimedia services into linear (broadcasting by schedule) and non-linear (accessing on demand) and, in addition, provide each with different regulatory standards.
- **Regulatory Harmonization**
  - In response to the convergence of services (like fixed-mobile convergence, FMC), review and revise current laws and regulations and eliminate obstacles to the development of services convergence.
- **Policy Priority**
  - To forestall the competing application of variant laws and regulations by different ministries with regard to the construction of Info-com network, the principle of government policy priority should be affirmed and, when necessary, decisions should be made by executive orders.

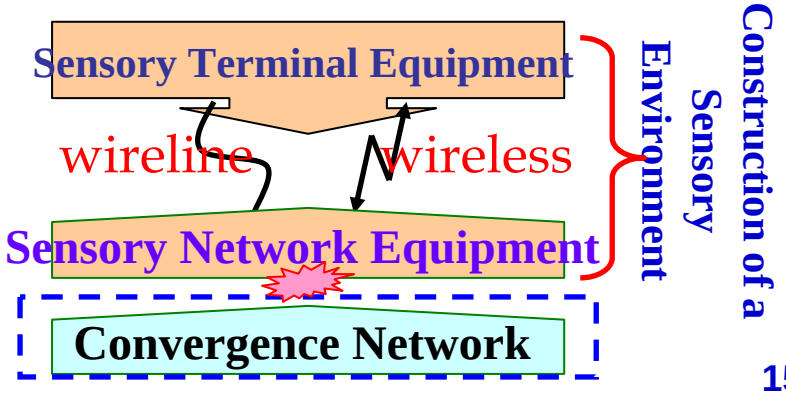

Telephone Age
IP Age
Competitive Policy Response
Necessity of Layer Separation
Broadband
Digital
(voice+data+video)
Appearance of Multiple Business Models
Optimal Content Distribution Network Safeguards
Appearance of Multiple Business Models at Each Layer
Further Development of IP
content/ application
Content Creation, etc.
Platform
Certification/Fee Collection, Content Distribution, Copyright Management, etc.
Network
Type II Telecom
Type I Telecom
Terminal
Terminal Sales
Diversification of Cross-layer Business Models
High-level Value-added Communication Services
Provision of diverse/rich digital content
Rationalization of Digital Content Distribution Environment
Diversification of Distribution Channel
Provision of Diverse and Various Terminals
Single Industry Offers Integrated Services
Function Separation
(unbundling)
HELLO
Competitive Policies of Scientific Convergence Age
Provision of Cross-layer Business Model
Fair Competition Environment
Provision of Fair Competition Environment at Each Layer

Laws and Regulations: Create a Fair Competitive Environment

- **Regulatory Prevention**
  - Responding to the development of layer separation in the IP era, communications and broadcasting laws and regulations should be revised as soon as possible to strengthen standards for function separation and to avoid creating new bottlenecks to provide a fair competition for cross-layer business model.
  - Create a wholesale pricing mechanism for services to promote the maintenance of a service-based competition in the broadband market.
- **Promote arrangements for line-sharing of LLU to benefit new operators in developing their business and expanding competition.**
- **Regularly review market development focusing on market dominators practicing asymmetric regulations in order to eliminate anti-competition actions.**

Industry: Promote the Construction of a Sensory Environment

- **Establish and promote standards for sensory equipment.**
  - Create Chinese National Standards (CNS) for Taiwan's sensory equipment to benefit factories in designing and manufacturing wireless terminal and transmission sensory equipment.
  - Create a mechanism for Taiwan's sensory equipment's compatible certification logo, testing procedure formulations and organizations.
- **Develop core technology for sensory applications.**
- **Continue to release spectrum resources: with regard to frequencies that have been recovered, if some are suitable for constructing a sensory environment, then release them after research as quickly as possible.**



Industry: Construct a Ubiquitous Network City (u-City).

- Formulate policies to promote cooperation among those operators in communications, construction, equipment manufacturing (information appliances, sensory equipment) and digital content to encourage the installation in newly constructed condominium or commercial buildings of sensory equipment for home care, entrance control, security protection and situation learning; in addition, conduct integrated environmental experiments in ubiquitous services to create a basis for the design and development of a u-City.