

IPv6 Deployment Strategies and Status in Taiwan

Hung-Chang Lee

IPv6 Deployment & Development Program
Taiwan Network Information Center (TWNIC)

Taiwan



hcllee@mail.tku.edu.tw

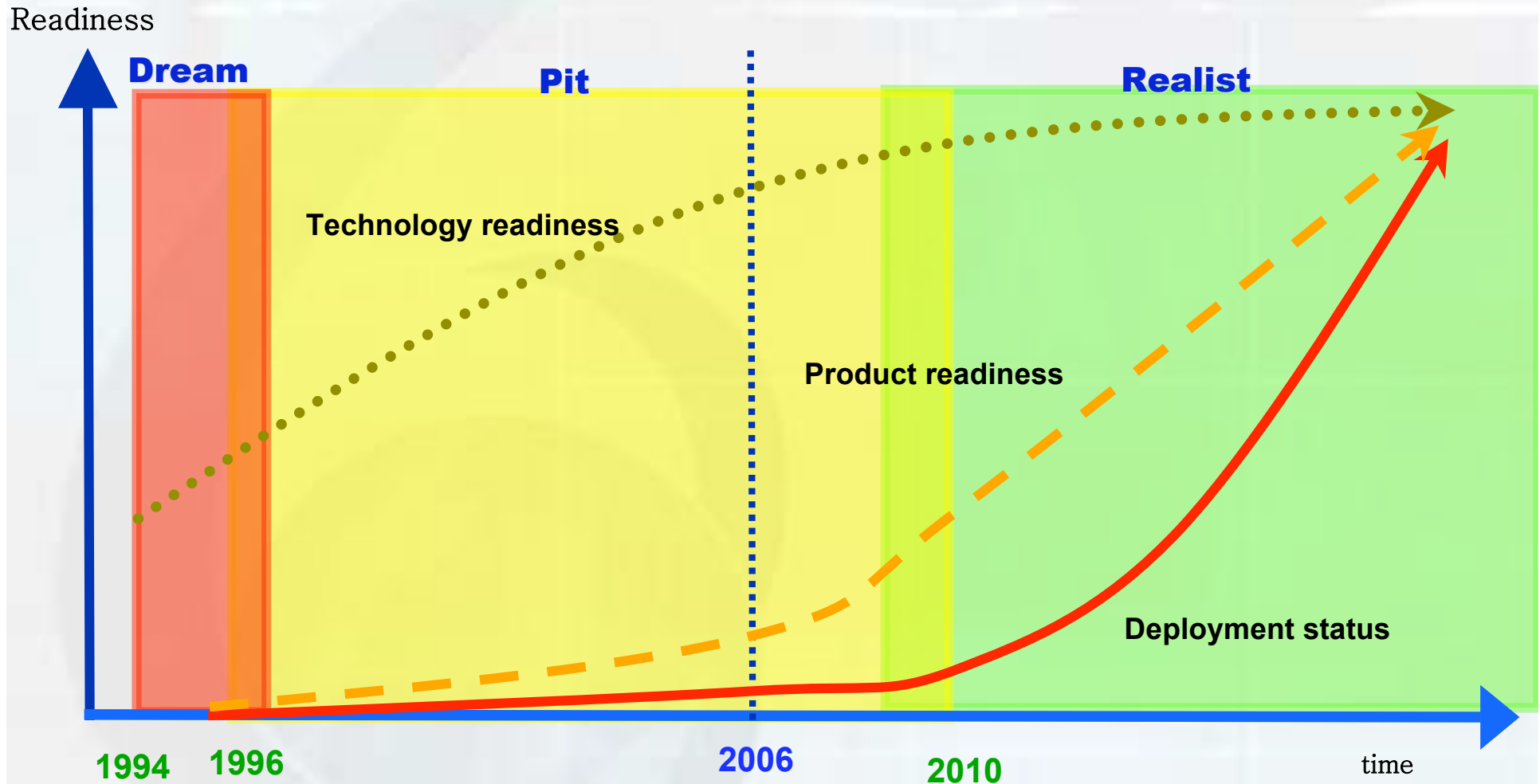


Contents

- Paradigm of IPv6 – Dream, Pit, Realist
- IPv6 Deployment and Development Program in Taiwan
 - IPv6 Infrastructure
 - IPv6 Industrial
 - IPv6 R/D
 - IPv6 Promotion
- Future plan: Ripple effect(漣漪)
- Summary



Paradigm of IPv6 - Dream, Pit, Realist



Paradigm of IPv6



Driving Forces (Pit to Realist)

- IPv4 address depletion
- IPv6 product readiness
- IPv6 Killer Service
- Internet vision (U-Japan, U-Korean...)



Taiwan Strategies

- Deploy IPv6 in evolution way rather than revolution way
- Get Ready
- Wait for the Cut-in Point

IPv6 Deployment & Development Program



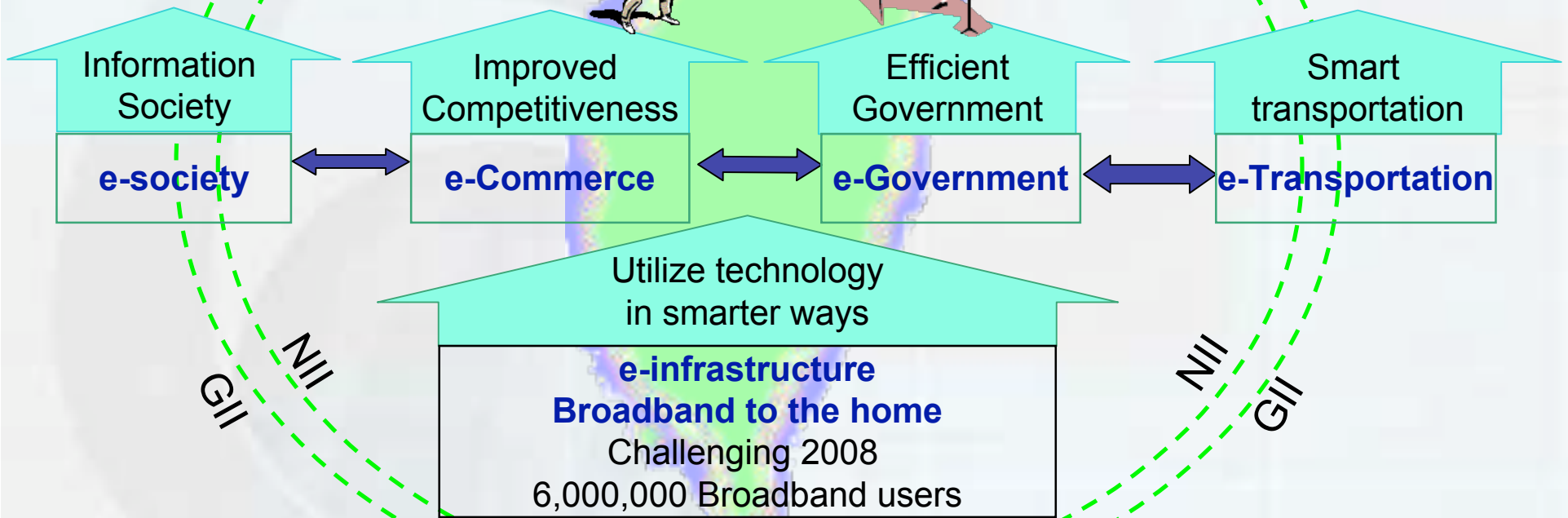
National Information and Communications Initiative Committee

Knowledge-based economy

e-Taiwan

2002-2007

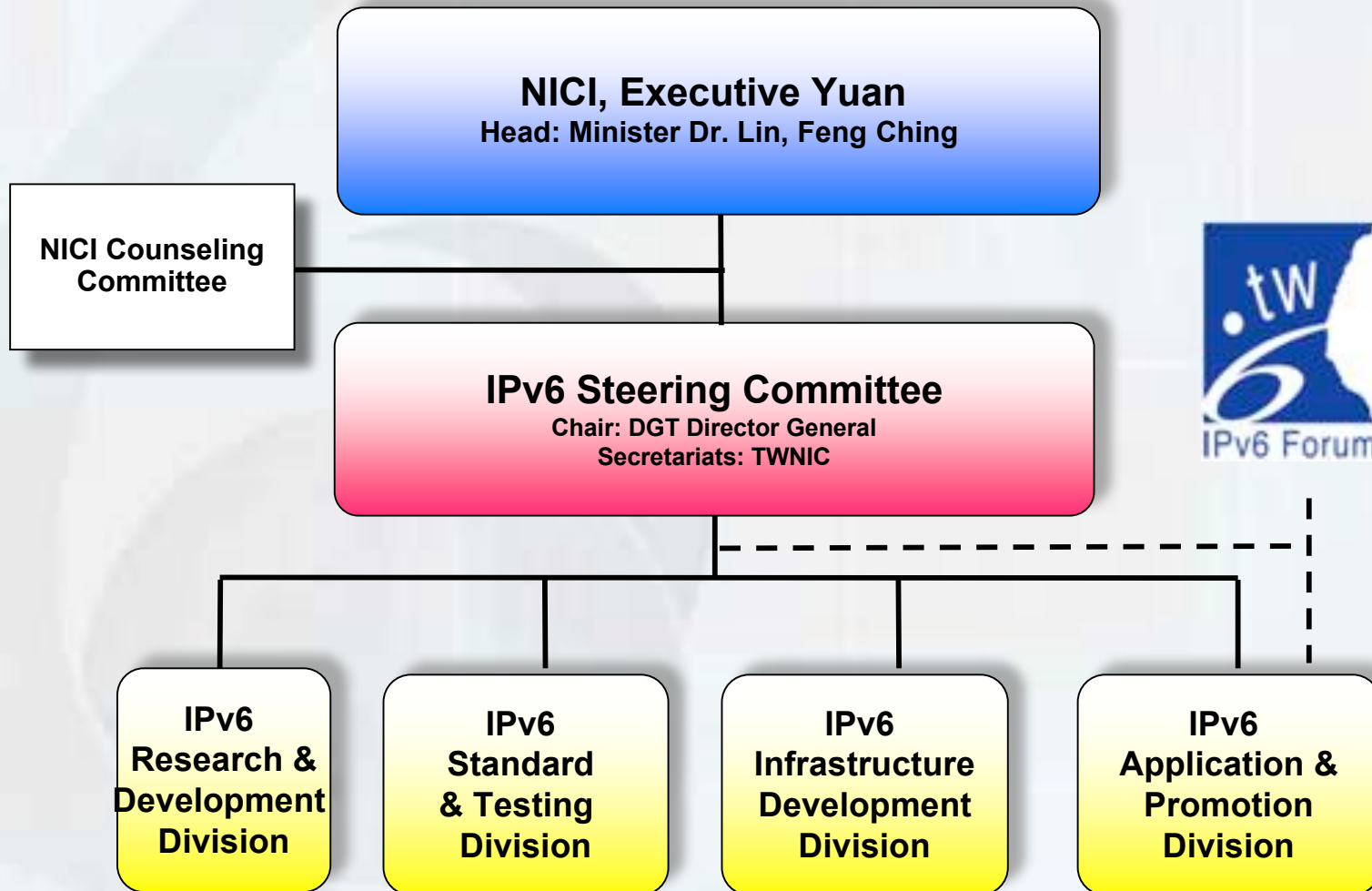
Green Island



Challenge 2008!!!



NICI IPv6 Steering Committee





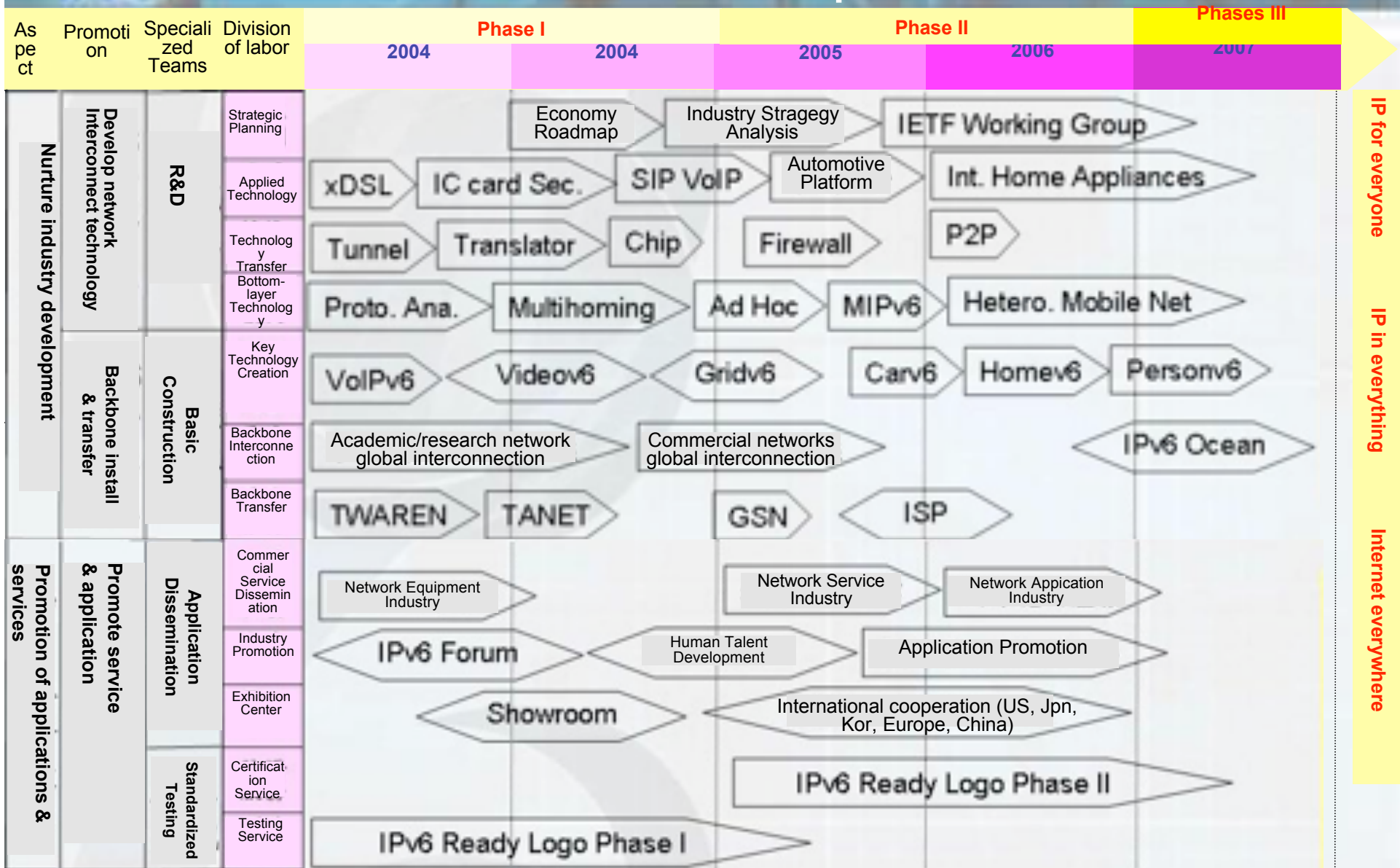
Project Implementation Structure & Roadmap



Item appearing in all phases



Item not appearing in all phases



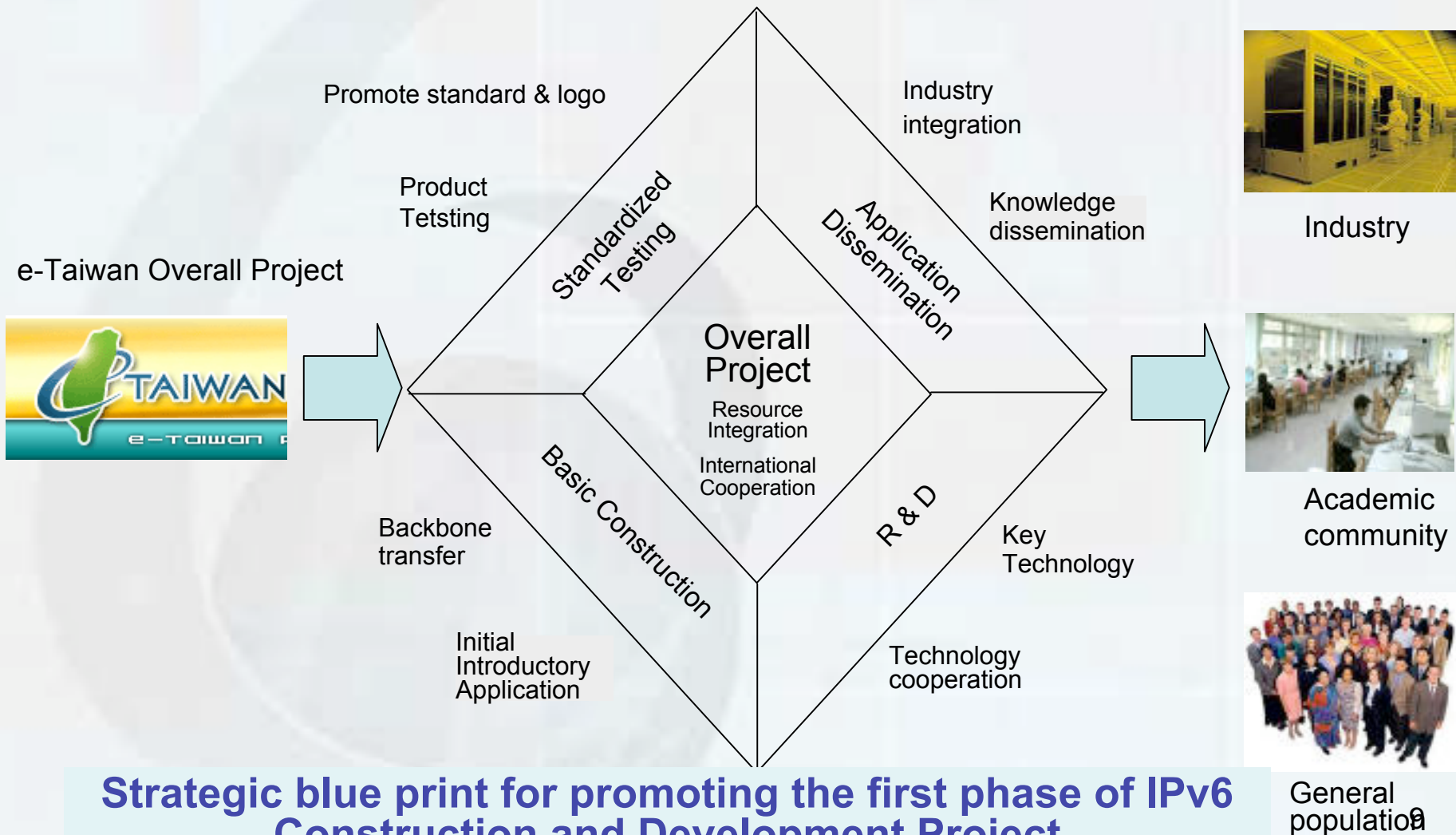
IP for everyone

IP in everything

Internet everywhere



Project Phase I (2003~2004) Promotional Strategy: Diamond Shape

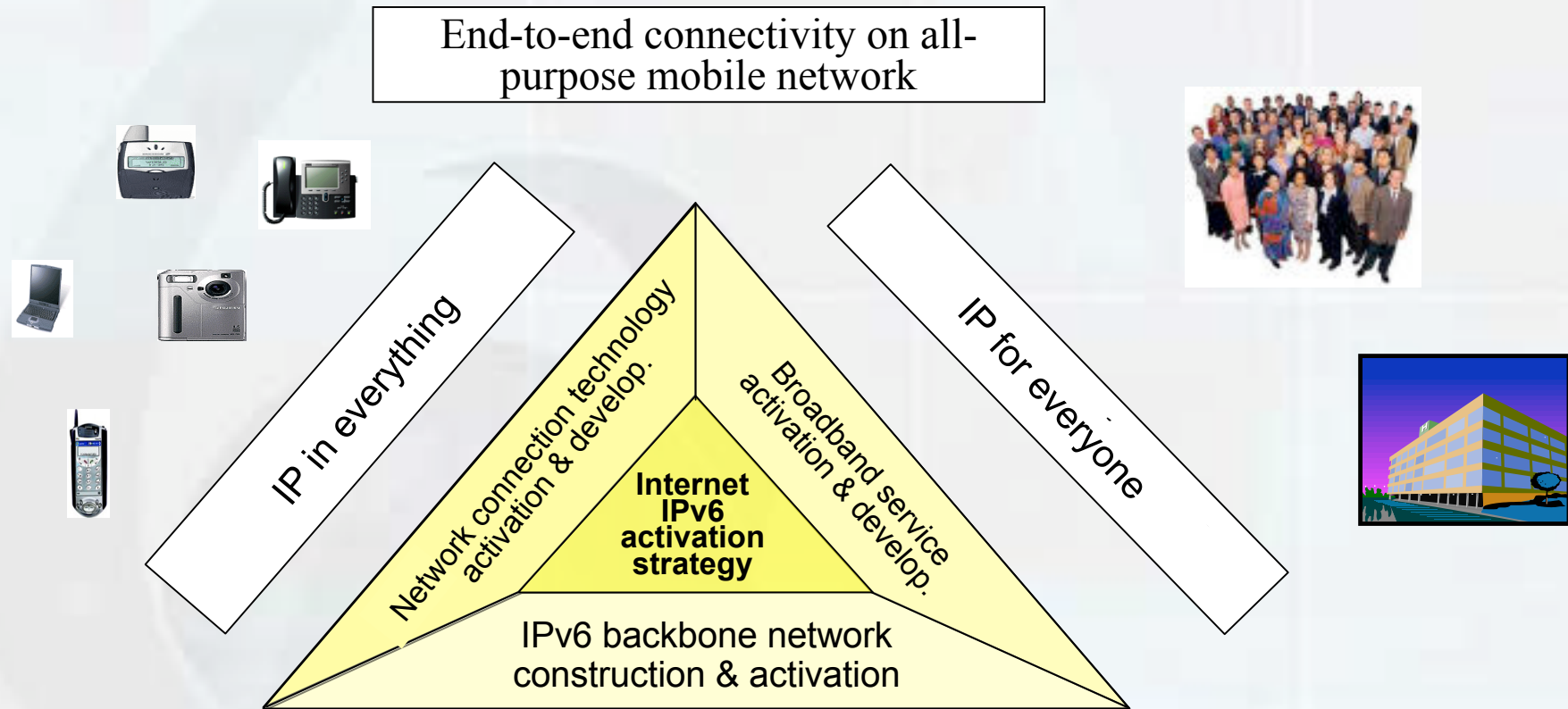




Phase I (03~05) Overall Results

- Rolling type promotional strategy: modifications to the promotional strategy based on the current progress and status
 - Preliminary construction items
 - Backbone transfer: Taiwan Advanced Research and Education Network (TWAREN) has been converted to IPv6, and is capable of providing IPv4 and IPv6 dual services
 - Introductory applications: Converting VoIP to IPv6, converting long distance grid network to IPv6, and network multi-media traffic to IPv6
 - Research & Development items:
 - Key technology: Research and development of IPv6 Mobility, IPv6 Chip, IPv6 Security
 - Technology transfer and cooperation: 2 items at, respectively, National Dong-Hwa University (Mobility) and National Chiao-Tung University (Translator)
 - Standard Testing items
 - Standard and logo promotion: Phase I (promotion), Phase II (certification)
 - Product testing: IPv6 Ready Logo, 16 submissions (3rd in the world)
 - Application promotion items:
 - Industry integration: IPv6 Forum
 - Knowledge dissemination: IPv6 Showroom, education & training, publications
- ➔ Taiwan's IPv6 construction and deployment are well underway, the next step should be to emphasize the activation of IPv6 service applications.

Phase II (05~07) Implementation Strategy: Golden Triangle



Taiwan's promotional strategy for Phase II IPv6 construction and development



IPv6 Network Infrastructure in Taiwan

- **Moving steadily towards IPv6**
 - 17 production IPv6 address blocks allocated
 - IPv6 bandwidth in Taiwan
 - Total bandwidth on the domestic network's physical circuits is 11.5Gbps
 - Total bandwidth on the international network's physical circuits 11.13Gbps
- **IPv6 Backbone in Taiwan**
 - Academic & Research Networks
 - TWAREN / TANet2 (Support IPv6 since Mar. 2004)
 - TANet (Enabling IPv6 in the Backbone)
 - Commercial Networks
 - Most major ISPs (HiNet, SeedNet, TTN, Taiwan NTT, TFN, Gigamedia) already got IPv6 addresses
 - 2 ISPs provide commercial trial services
 - 2 IPv6 exchange points available
 - Government network
 - GSN starts to deploy IPv6 in 2005, 4 trial nodes established



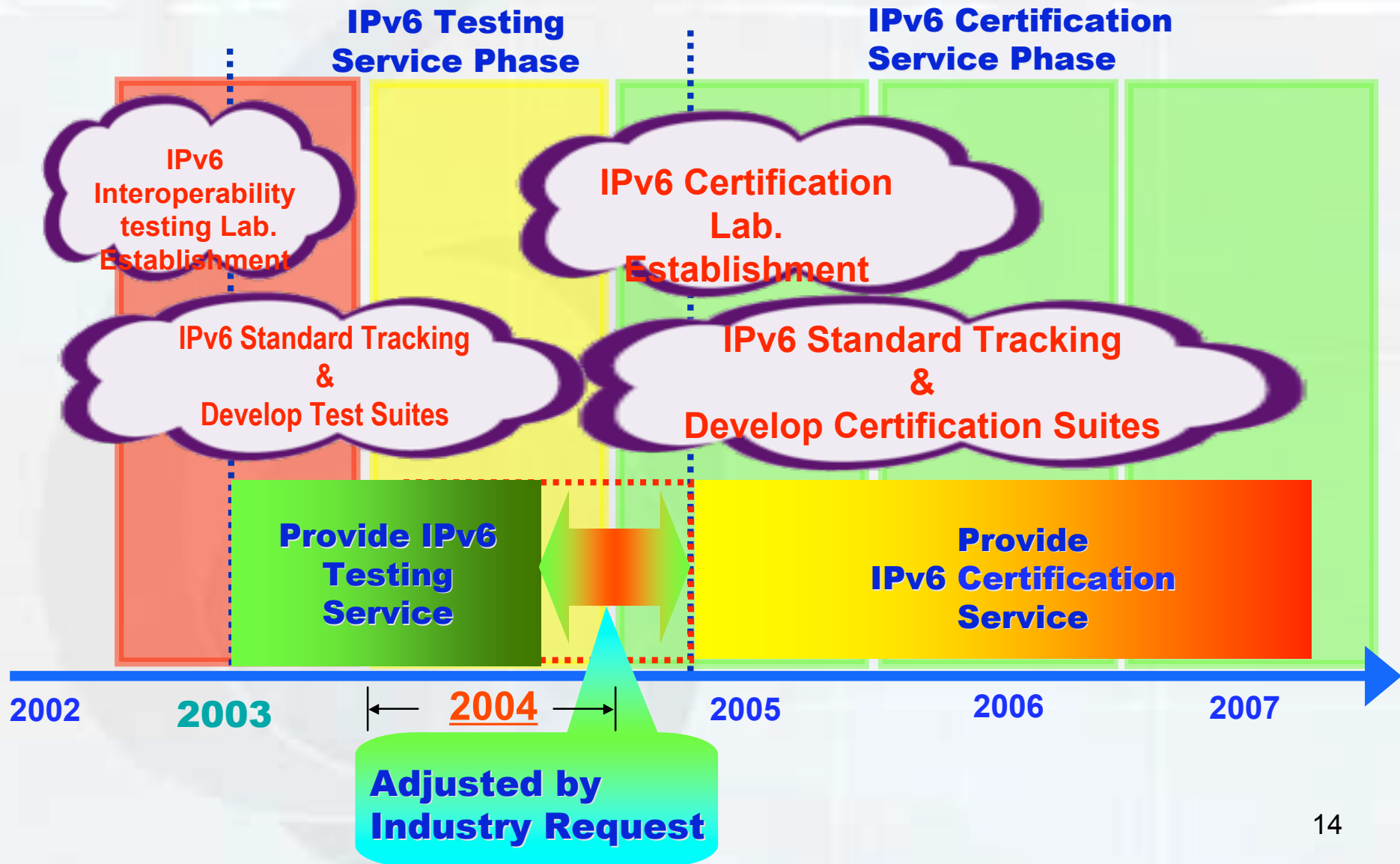
National IPv6 Standard & Interop Testing Lab

- Established in July 2003
- Official delegate of IPv6 Logo Committee, IPv6 Forum
 - IPv6 Ready Logo Phase 1
 - IPv6 Ready Logo Phase 2





IPv6 Testing & Certification Roadmap





IPv6 Products by Taiwan Industries

- Home Gateway
- ADSL Wireless IAD
- Enterprise Security Multimedia Router
- Firewall Client Software
- IPv6 IPsec Router
- IPv6 SoC
- IPv6 Video Phone

ZyXEL

ALPHA

明泰科技
Alpha Networks Inc.



ASKEY COMPUTER

AMBIT

Ambit Microsystems Corporation

ADMtek
Partnership Now & Future

Leadtek

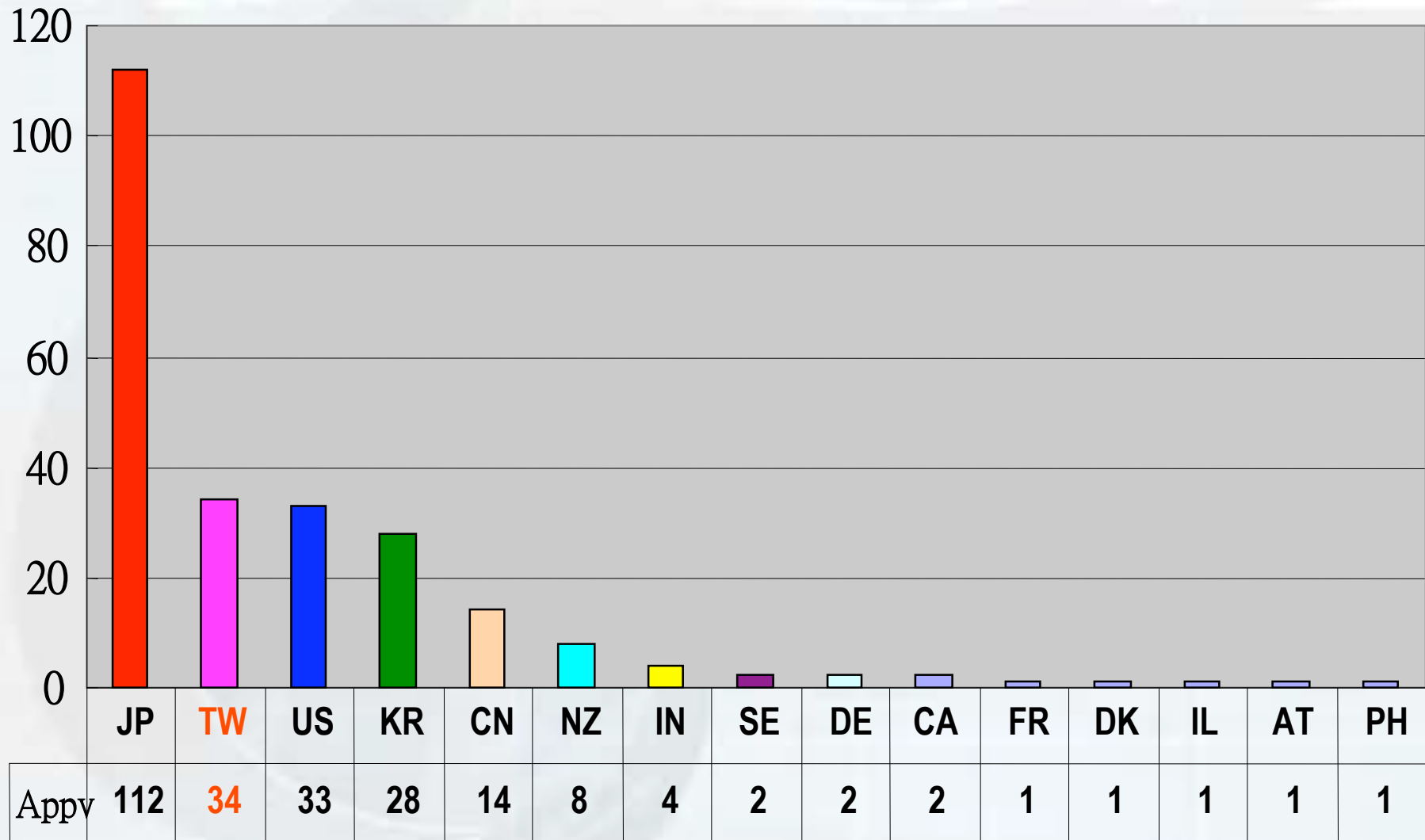
We Make Dreams a Reality

Accton
Making Partnership Work

LOOPCOMM
Technology Inc.



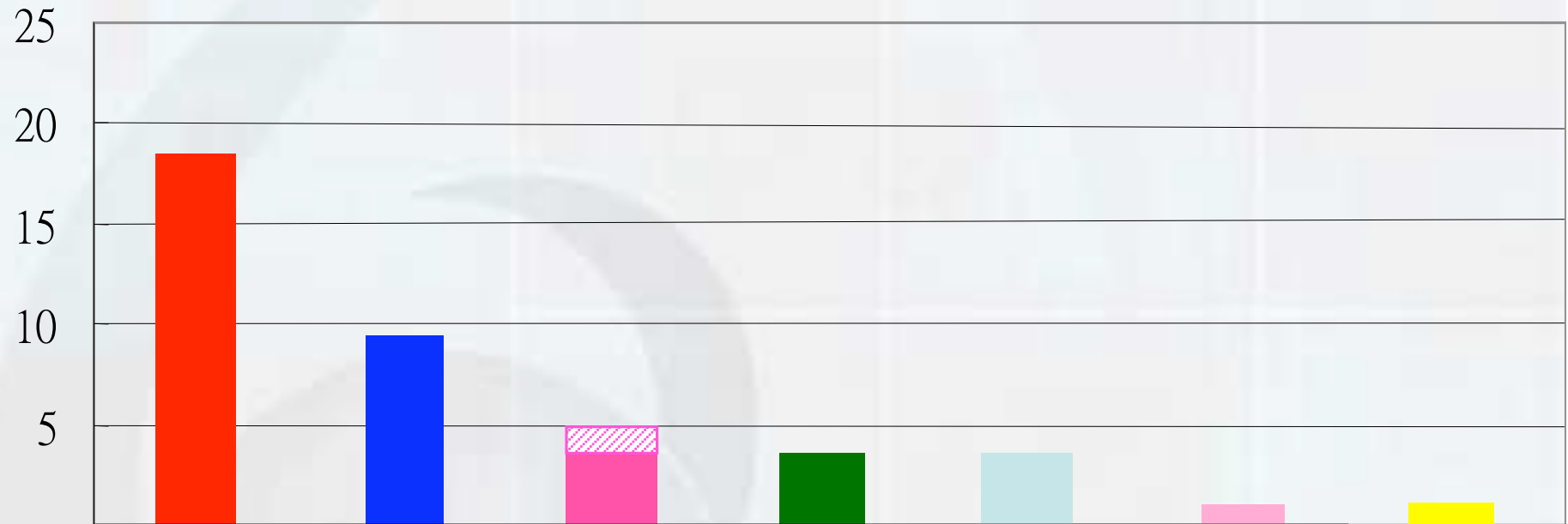
IPv6 Ready Logo Phase I (2006/7/12)



Total : 244 ¹⁶



IPv6 Ready Logo Phase II (2006/5/11)



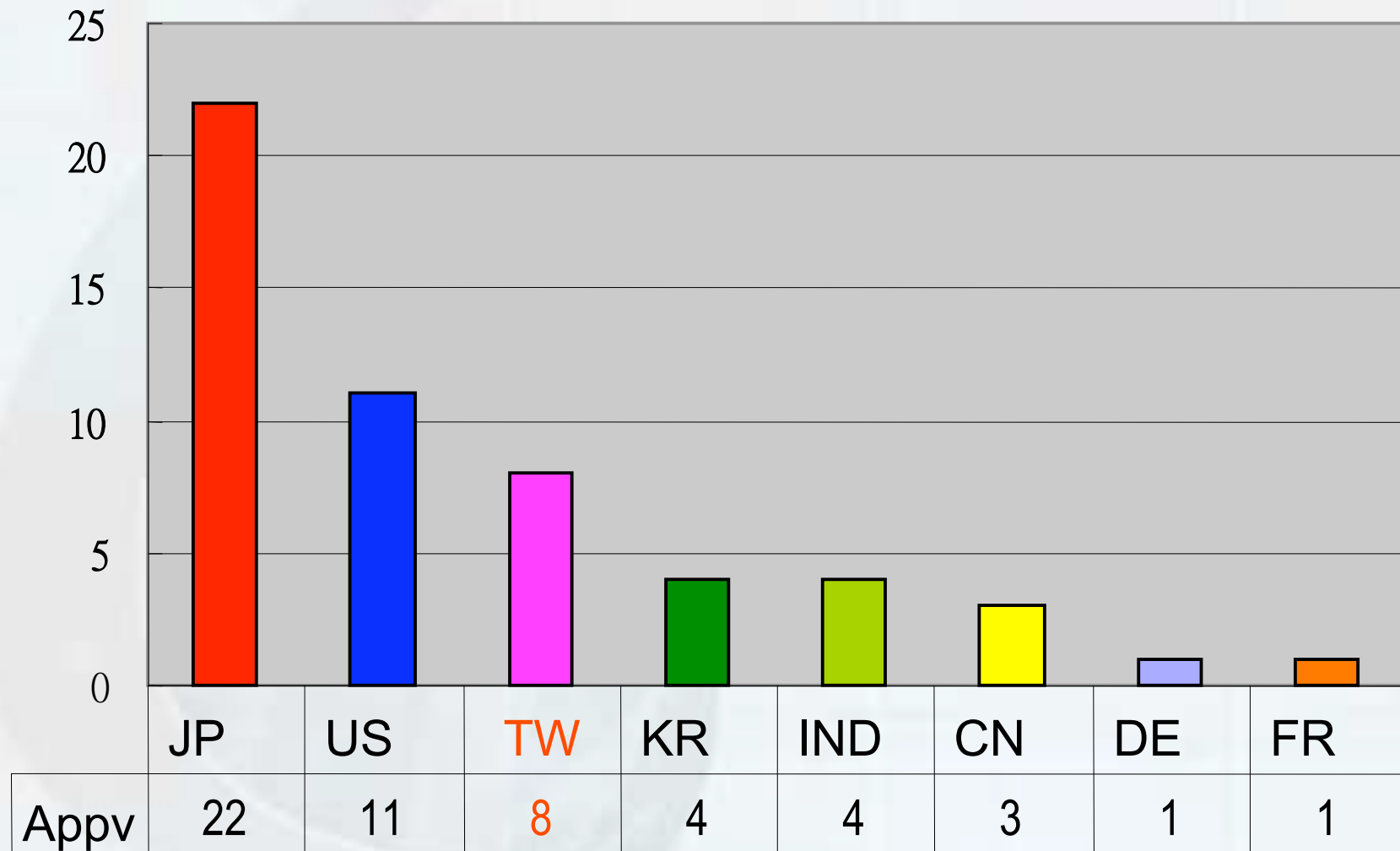
Country	JP	US	TW	KR	IND	DE	CN
Approved	18	9	4	4	4	1	1

TOTAL: 40

17



IPv6 Ready Logo Phase II (2006/7/12)



Total : 54 18



IPv6 Ready Logo Phase I Approved List (Taiwan)

ID	Company	Product	Version	date
01-000122	CHTTL	IPv6 Service Gateway	R 1.0	2003/11/21
01-000128	III	TTF TCPIP Protocol Stack(for host)	Ver.1.0	2003/12/02
01-000129	III	TTF TCPIP Protocol Stack(for Router)	Ver. 1.0	2003/12/02
01-000130	Intel Innovation Center	Intel IXDP425 Development Platform	IIC-IPv6READYLOGO-001	2003/12/05
01-000136	Alpha Networks	Home Gateway	ver 1.0	2003/12/19
01-000139	Draytek	Vigor3300	ver 2.5.1	2004/01/15
01-000166	Alpha Networks	xDSL Wireless IAD	9.0.4.14.R20319	2004/04/09
01-000184	Zyxel	ES-3026	ZyNOS 3.53	2004/06/14
01-000196	Intel Innovation Center	Intel IXDP425 Development Platform MLV 3.1	MVL3.1 IIC-IPV6READYLOGO-002	2004/06/21



IPv6 Ready Logo Phase I Approved List (Taiwan) (Cont.)

ID	Company	Product	Version	date
01-000215	Alpha Networks	Wireless Router (Host)	V1.0H	2004/09/01
01-000216	Alpha Networks	Wireless Router	V1.0R	2004/09/01
01-000217	Draytek	DrayOS	V3.0	2004/09/02
01-000231	Delta Networks	CG-WLBARAG	V1.00-6	2004/09/17
01-000232	Delta Networks	CG-BARFX	V1.00-6	2004/09/17
01-000233	Zyxel	ZyWall-200	pre v1.0	2004/10/01
01-000234	Zyxel	ZyWall-200	pre v1.0	2004/10/01



IPv6 R&D Prototypes



NAT-PT Single Chip Translator



6IDS (IPv6 Intrusion Detection System)



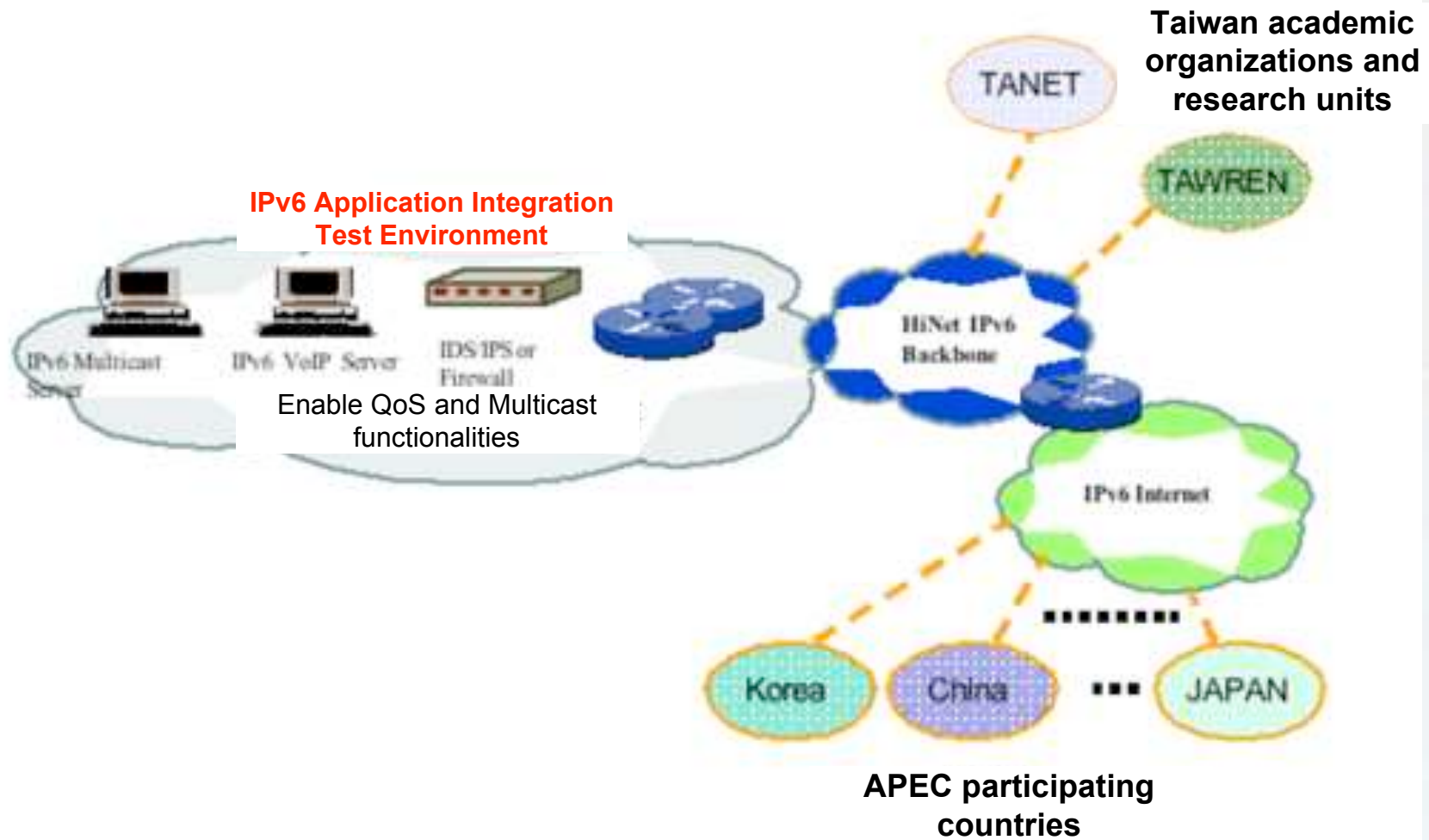
**IPv6 Multihoming
SOHO Router**



IPv6 Video Phone

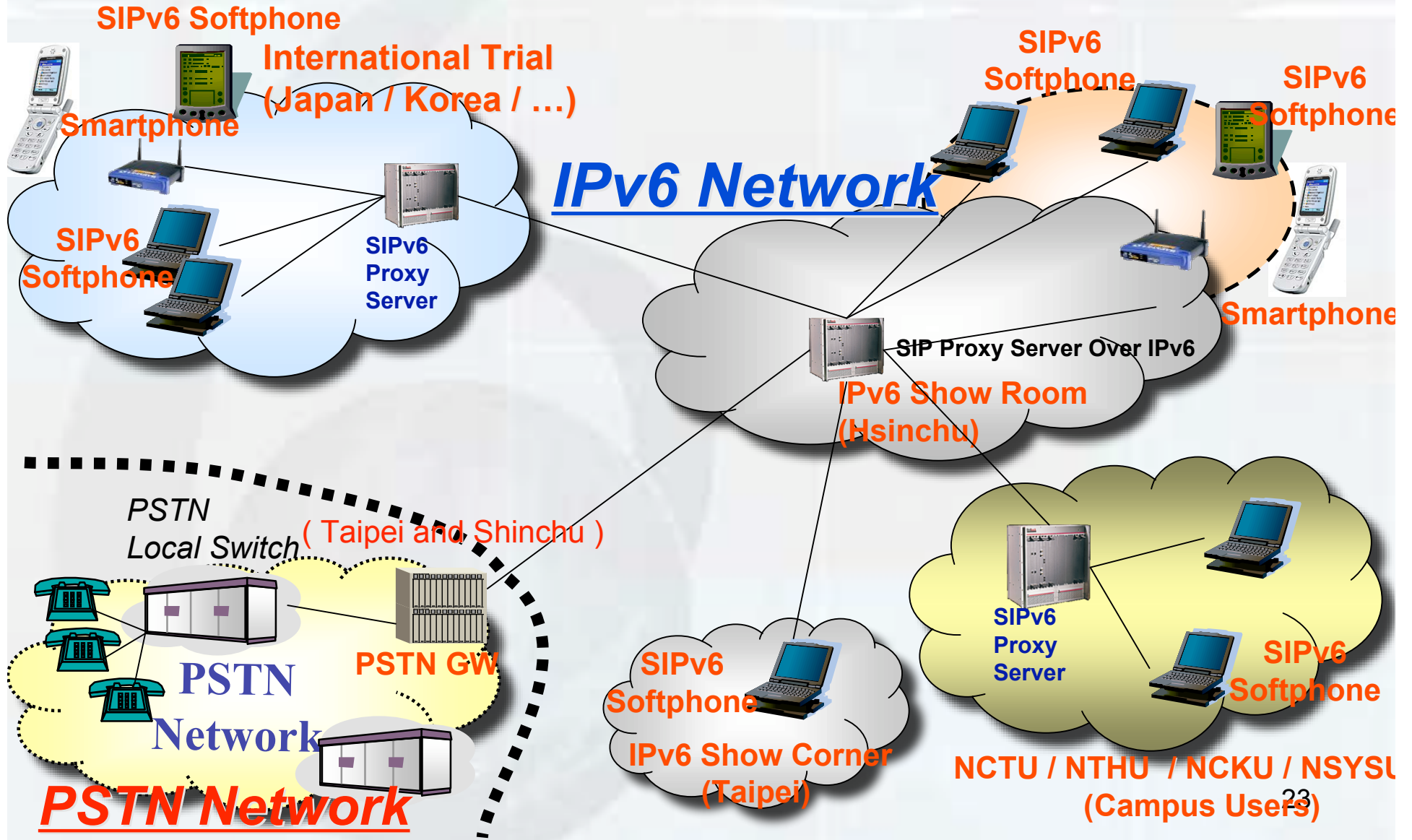


Participation in Killer Applications on APEC TEL





IPv6 Trial: SIP based VoIPv6



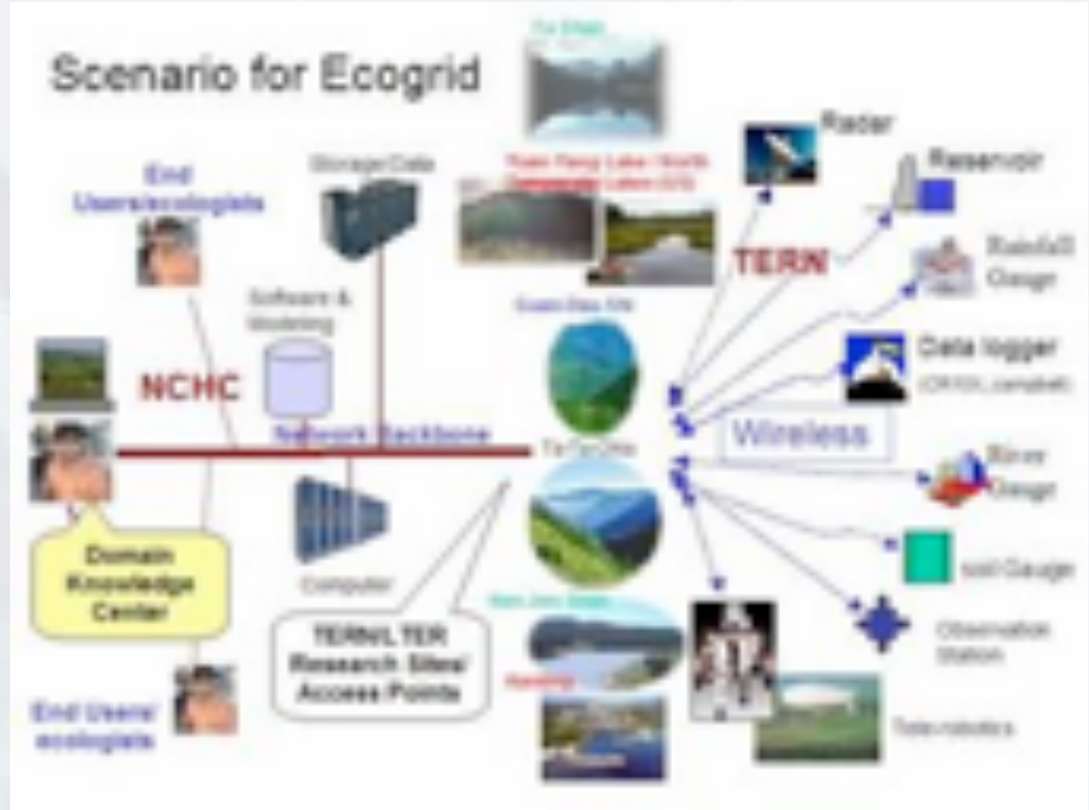


IPv6 Trial: Commercial VoD Service



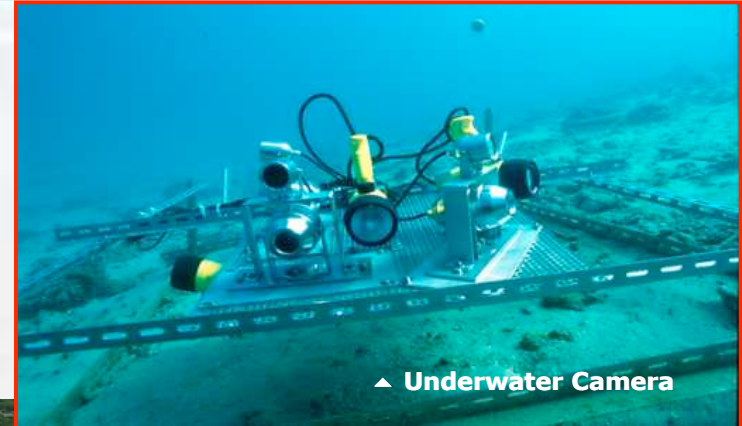
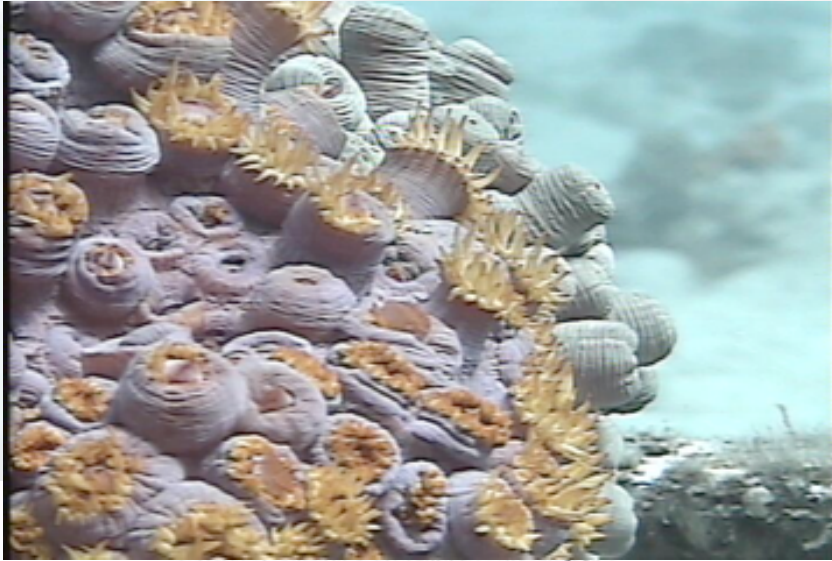


IPv6 Trial: Eco-Grid

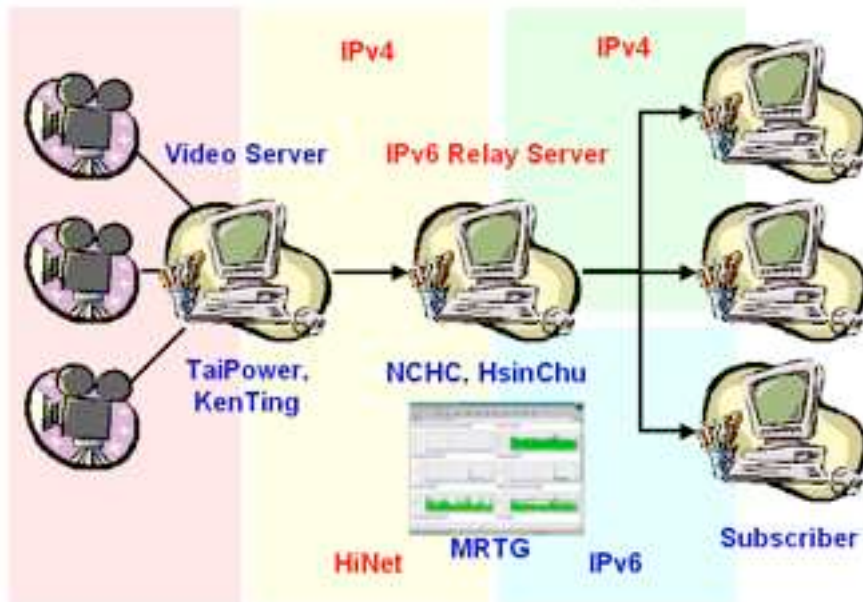




IPv6 Trial: Eco-Grid



▲ Underwater Camera



▲ Nuclear Power Plant 3

◀ Outdoor IPv6 Smart Sensor Server



IPv6 Trial: Public Multimedia Payphone





Promotion Activities

- Semi-Annual magazine
- IPv6 Portal Website
 - <http://www.ipv6.org.tw/>
- Domestic Events
 - Trainings, Workshops, Seminars
- International Event
 - The 1st Global IPv6 Summit in AP
- International Cooperation
 - Korea, Japan, EU, China
- IPv6 Showroom/Showcase
 - Opened Mar.2004
- Taiwan IPv6 Summit
 - 2006 IPv6 Summit in Taiwan
 - Opened Aug. 1-3, 2006



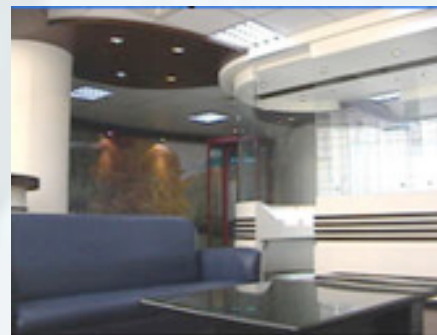
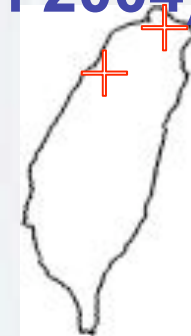
2005 IPv6 Summit in Taiwan





IPv6 Demonstration Sites

- **IPv6 Demonstration Sites(Opened on March 2004)**
- **IPv6 Showroom** connecting to international IPv6 through TWAREN
- **Taipei** (www.v6corner.org.tw)
 - Located in central Taipei
- **Hsinchu: IPv6 Showroom**
 - Located in ITRI headquarters, near Science-based Industrial Park
 - 100+Sqm divided into 3 areas:
 - Public
 - Home
 - Office





Cooperation MoUs

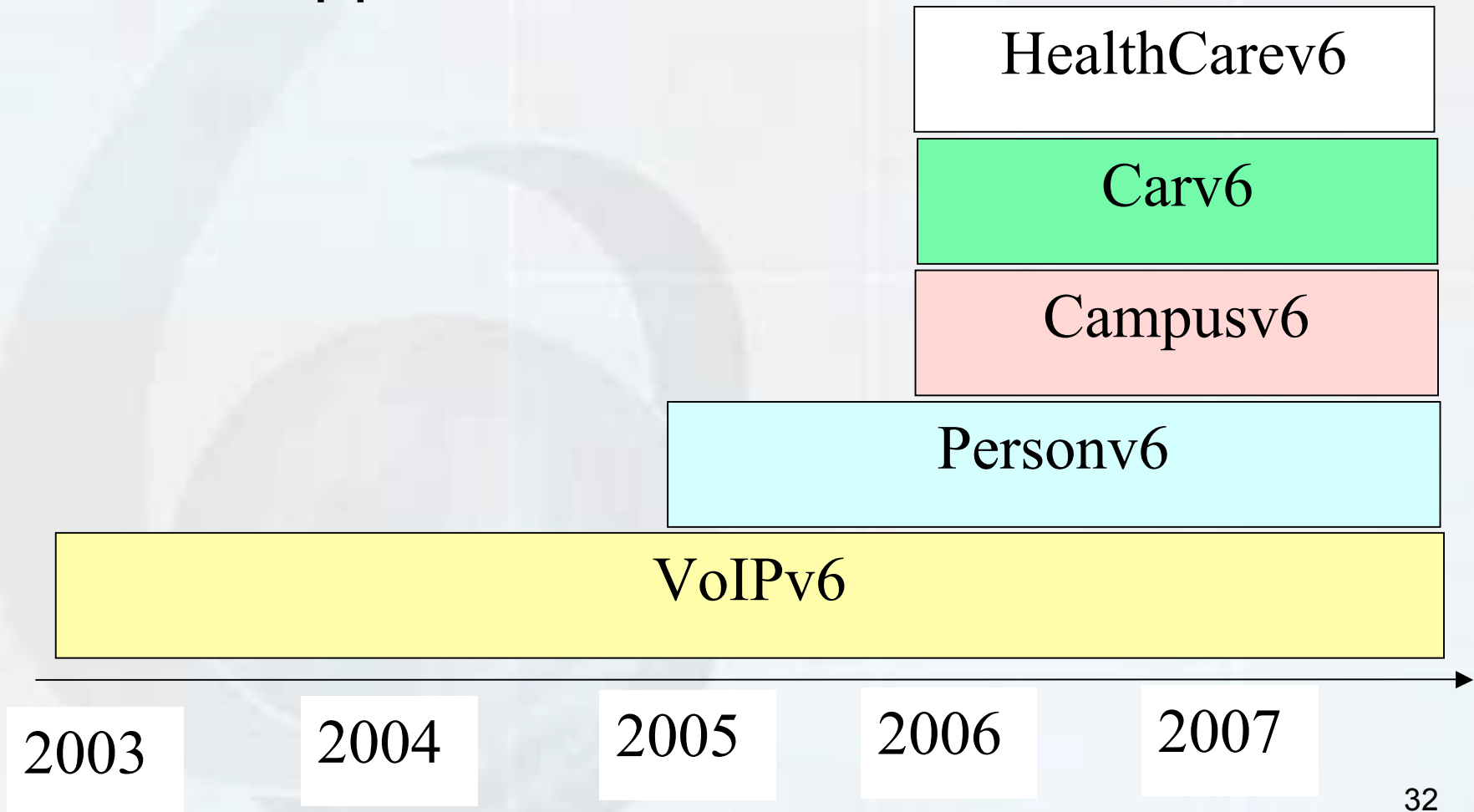
- **General Topic MoU**
 - IPv6 Promotion Council, Japan
 - Feb. 2003, Taipei
 - IPv6 Forum Korea
 - Aug. 2003, Seoul
- **Showcase Coop. MoU**
 - Eurov6
 - Feb. 2003, Taipei
 - IPv6 Promotion Council
 - Aug. 2003, Taipei
- **Interop. Testing Coop. MoU**
 - TAHI Project
 - Aug. 2003, Taipei
- **Research Coop. MoU**
 - University of Southampton, UK
 - Dec. 2004, Southampton
 - University College London, UK
 - Dec. 2004, London





Killer Services in IPv6

- Killer Application Task Force





Work Items in Killer Services

- **Personv6: 6 Items**
 - VPNv6, FMIPv6, D6IDS, Live6, Ubi-IMv6, AcoustaNomad
- **Carv6: 3 Items**
 - OBUv6, Middlewarev6, VoiceAPv6
- **Campusv6: 3 Items**
 - Ecogridv6, eLearnv6, Dormv6
- **VoIPv6: 2 Items**
 - VoIPcampus, VoIPIndustry
- **Healthcarev6: 3 Items**
 - Audio/Videov6, Biosensorv6, Medicinev6



Future plan: Ripple effect(漣漪)

- IPv6 ripple effect:
 - A small physical service that use IPv6 and IPv6 alone, within this service, some human needs can be satisfied through IPv6 technologies.
- Some examples:
 - Domain specific VoIP
 - Physical on-line game
 - Domain specific Security and Surveillance



Summary

- Taiwan Internet Strategies [Evolution]
- Got all evolved into IPv6 activities through a project-Taiwan IPv6 D&D program
- Seeking IPv6 ripple and hoping to propagate the ripple to worldwide.



Thank you!