



Topic 1. Establishing a Secure and Trustworthy ICT Environment

1.3 Strengthening Information Security in the Educational System and Enhancing Information Security Literacy

August 18, 2009

Computer Center, MOE



Outline

- I. Vision of Policies**
- II. Current Situation**
- III. Trends & Future Development**
- IV. Strategies**
- V. Action Plans**
- VI. Discussions**





I. Vision of Policies





II. Current Situation(1/15)

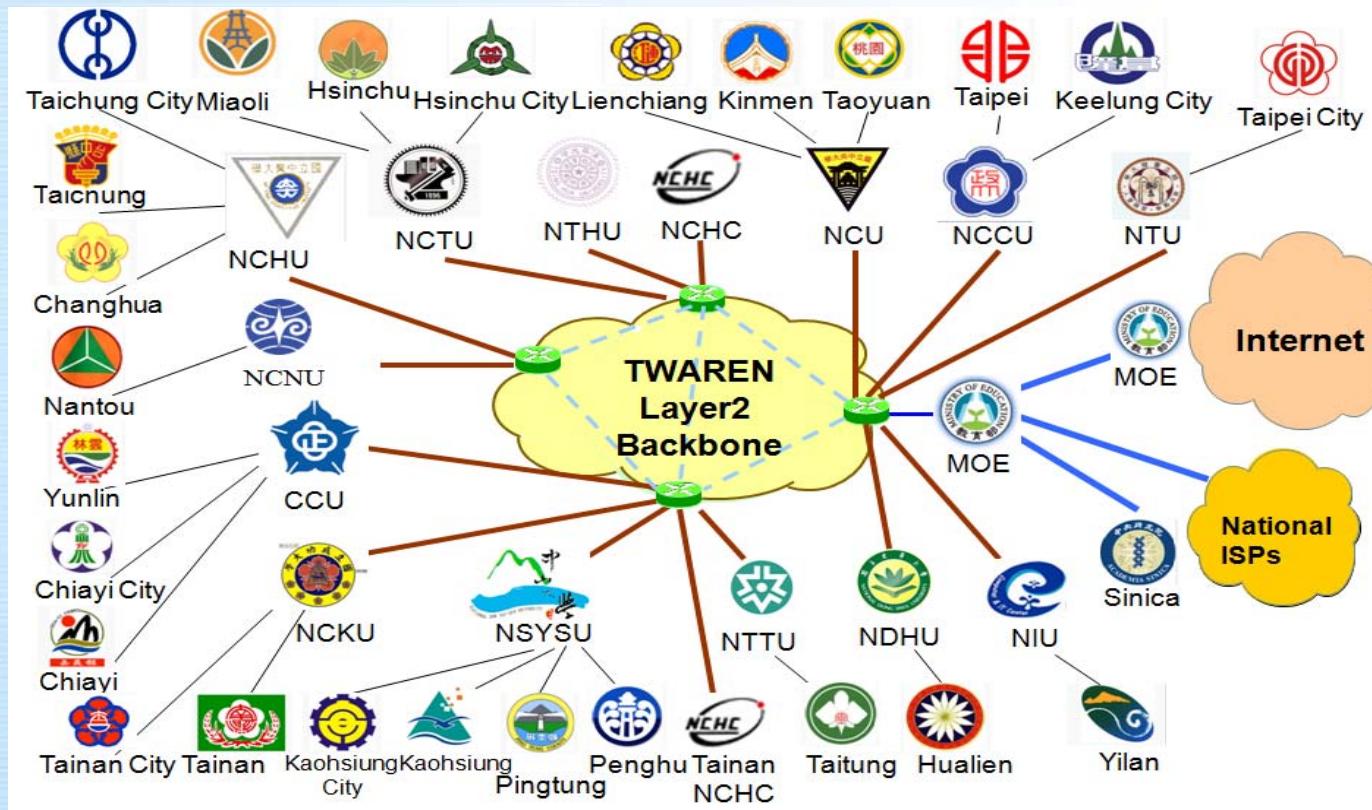
- 1. Current Situation of TANet**
- 2. ISMS in Educational System**
- 3. Construction of a Secure Environment**
- 4. Defending against Inappropriate Information**
- 5. The Management of P2P Bandwidth**
- 6. The Promotion of Information Literacy and Ethics**
- 7. Information Security Education Program**



II. Current Situation(2/15)

1.Current Situation of TANet

- Initiated in **July 1990** by the MOE, TANet is Taiwan's nationwide network for teaching, learning and research
- Currently it connects **4,108 schools** and academic institutions, with over **4 million users**



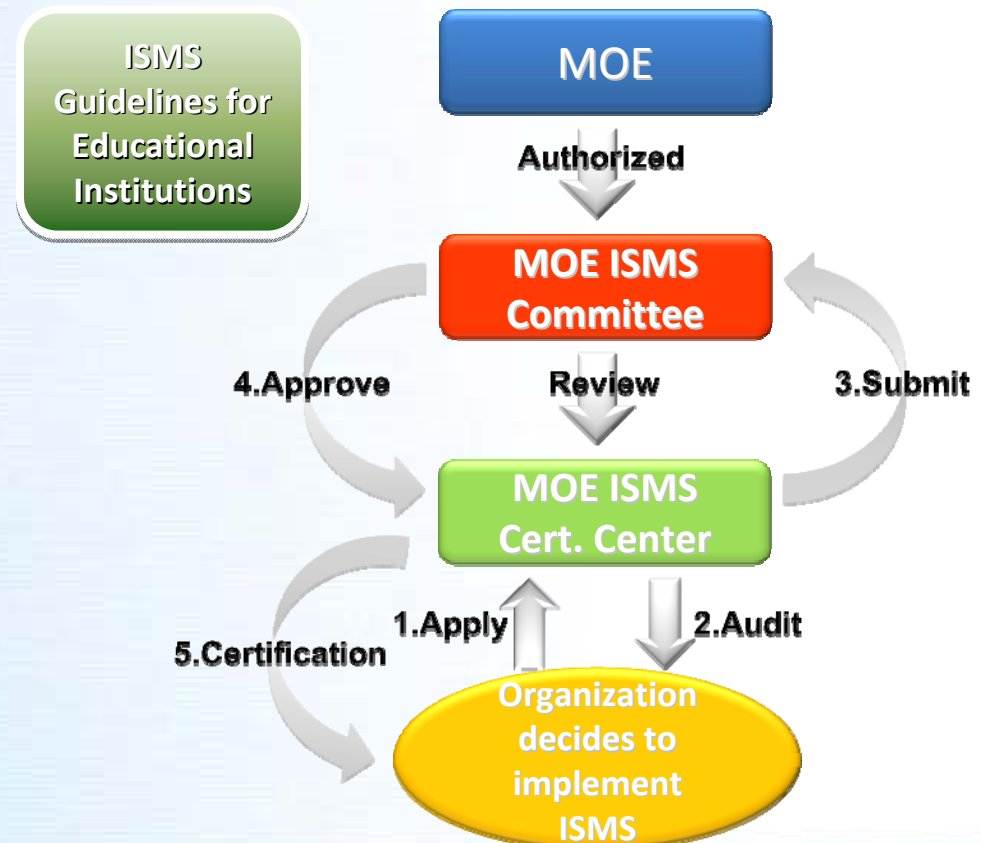


II. Current Situation(3/15)

2.ISMS in Educational System

- Design the ISMS guidelines for educational institutions, taking into consideration of factors of priority, emergency and available resources.

- Promulgate ISMS guidelines for educational institutions
- Establish ISMS Certification Center for Educational Institutions
- Assist educational institutions to get ISMS certification
- Help 13 regional centers and 25 county/city centers implement ISMS





II. Current Situation(4/15)

Executive Yuan's National Information Security Committee —Information security responsibility levels

Program \ Levels	Defense Longitude	ISMS Promotion	Audit	IS Personnel Training	Professional Certification	Detecting Website Weakness
A	NSOC direct defense/ SOC by self or outsourcing, IDS, firewall, antivirus, mail filtering	Third-party certification	Internal auditing twice per year at least	1. (3,6,18,3 hours) per year at least 2. Info. and info. security persons pass evaluation	Maintain at least 2 IS prof. Certificate	Twice per year
B	SOC (optional), IDS, firewall, antivirus, mail filtering	Third-party certification	Internal auditing once per year at least	1.(3,6,18,3 hours) per year at least 2. Info. and info. security persons pass evaluation	Maintain at least 1 IS prof. certificate	Twice per year
C	Firewall, antivirus, mail filtering	Set up self promotion team for operation	Self review	(2,6,12,3 hours) per year at least	IS professional training	Once per year
D	Firewall, antivirus, mail filtering	Promote ISMS concept	self review	(1,4,8,2 hours) per year	IS prof. training	Once per year



II. Current Situation(5/15)

Responsibility levels in Academic Division

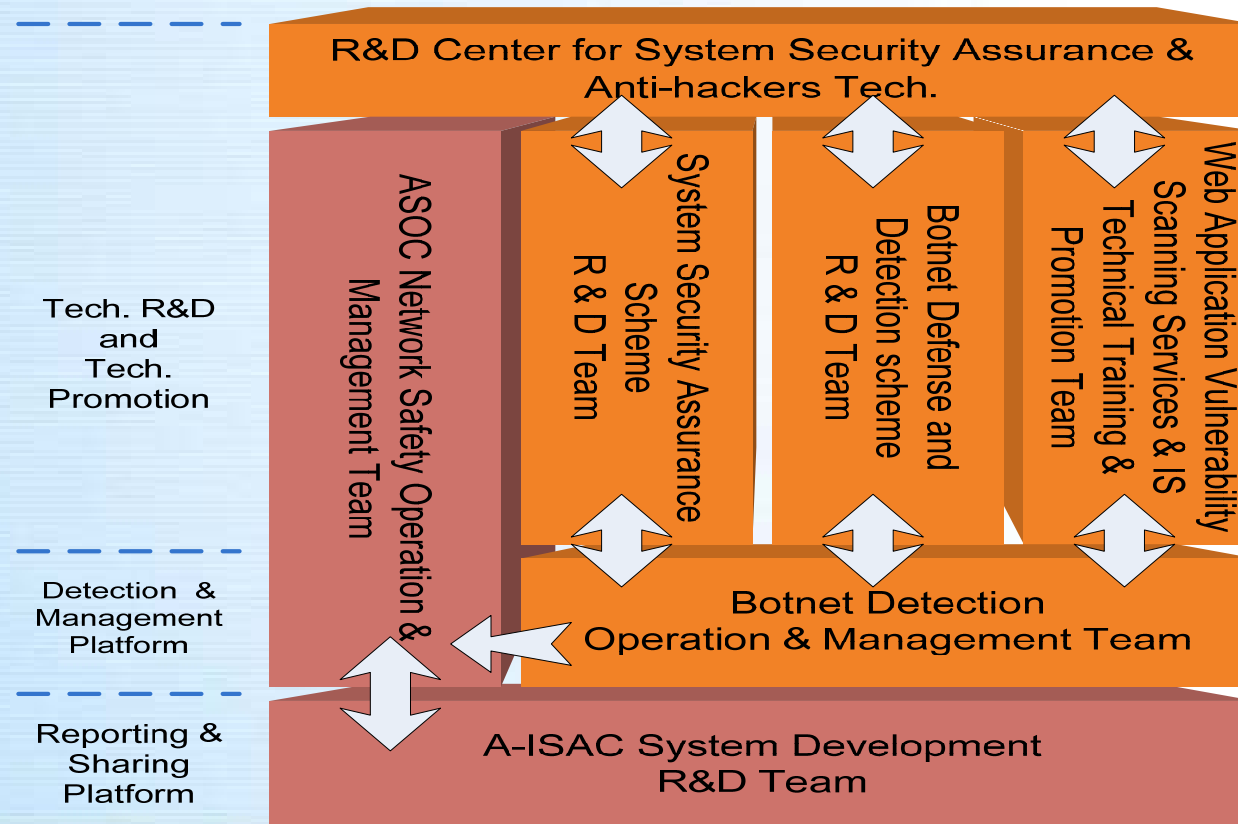
Level	Institutions	
Level A important & critical	<ul style="list-style-type: none"> • Educational authority (MOE) • Teaching hospitals (NTU and NCKU hospitals) 	3 units
Level B critical	<ul style="list-style-type: none"> • 88 universities • 5 permanent admission exam. agencies • 13 TANet regional network centers • 25 county/city network centers • Yang-ming Univ. Hospital 	132units
Level C important	<ul style="list-style-type: none"> • 46 colleges of technology and 17 junior colleges • 24 MOE affiliated agencies 	87units
Level D general	<ul style="list-style-type: none"> • 471 senior high schools • 3,387 elementary and junior high schools 	3858units



II. Current Situation(6/15)

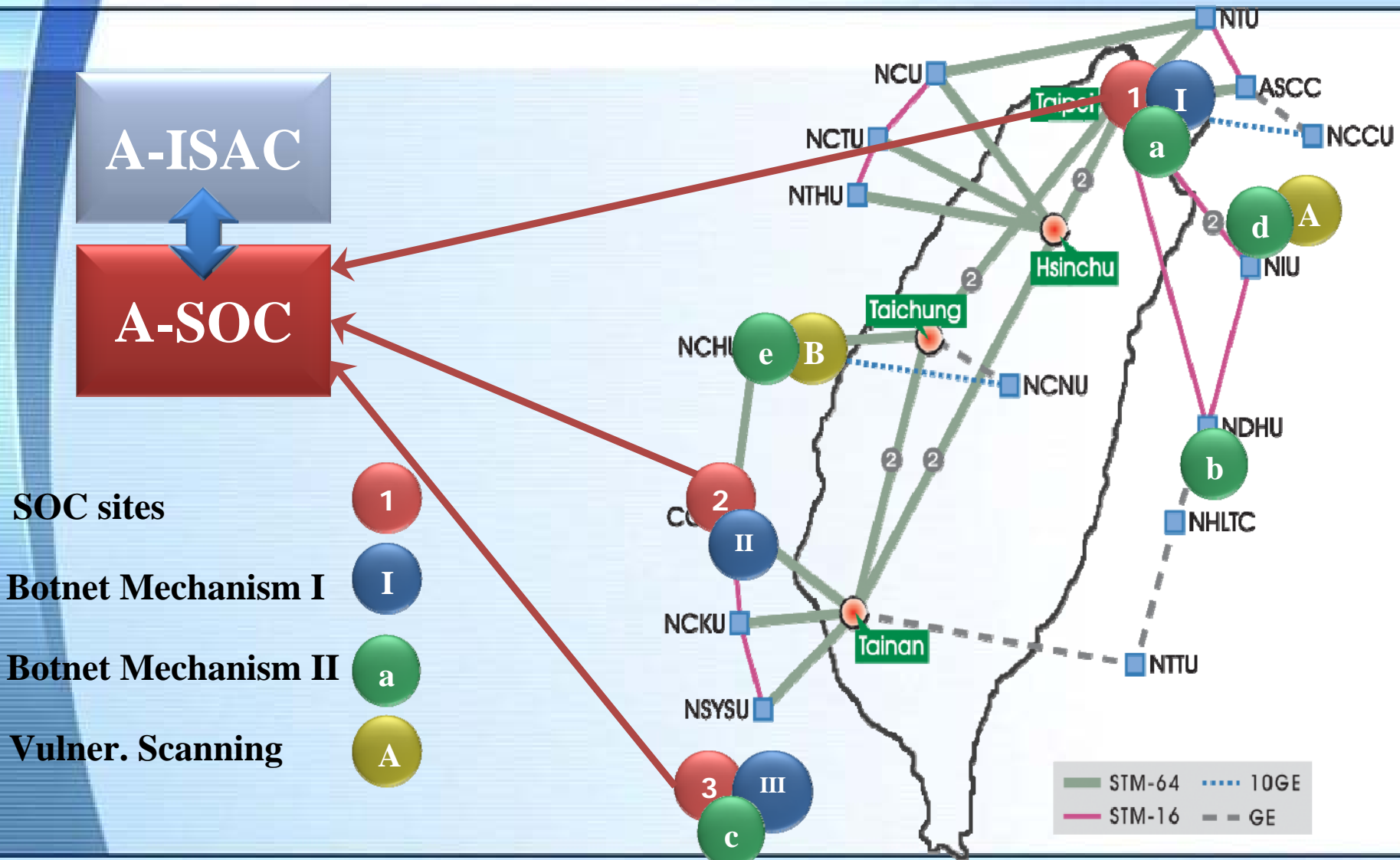
3. Construction of a Secure Environment

Establish information security system in region & county/city network centers in stages, and to complete the whole system in 4 years





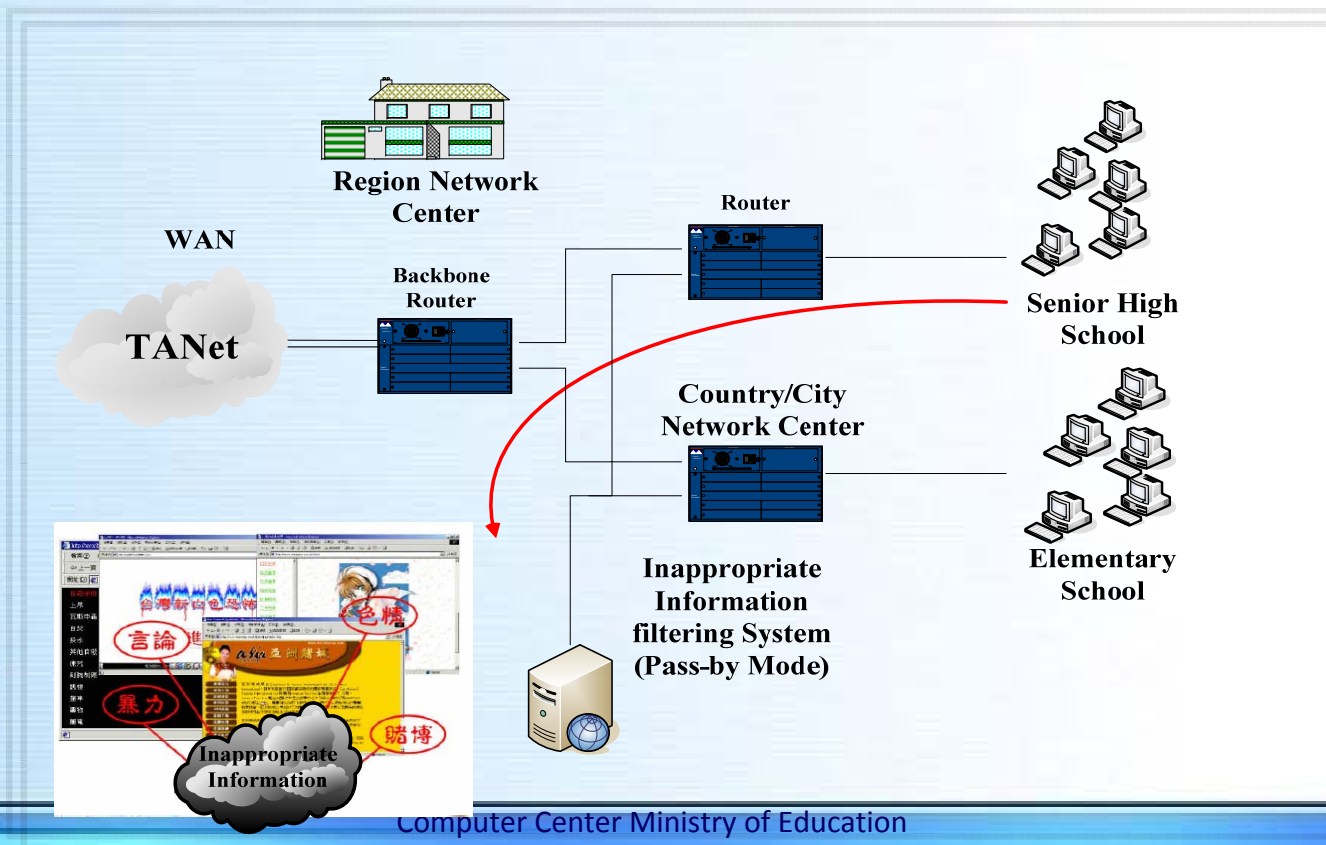
II. Current Situation(7/15) Botnet & ISAC first year(2008)



II. Current Situation(8/15)

4. Defending against Inappropriate Information

- Establish in all 25 county/city network centers
- Establish statistics system
- Establish complaint and appeal mechanism
- Establish exclusive website for inappropriate information

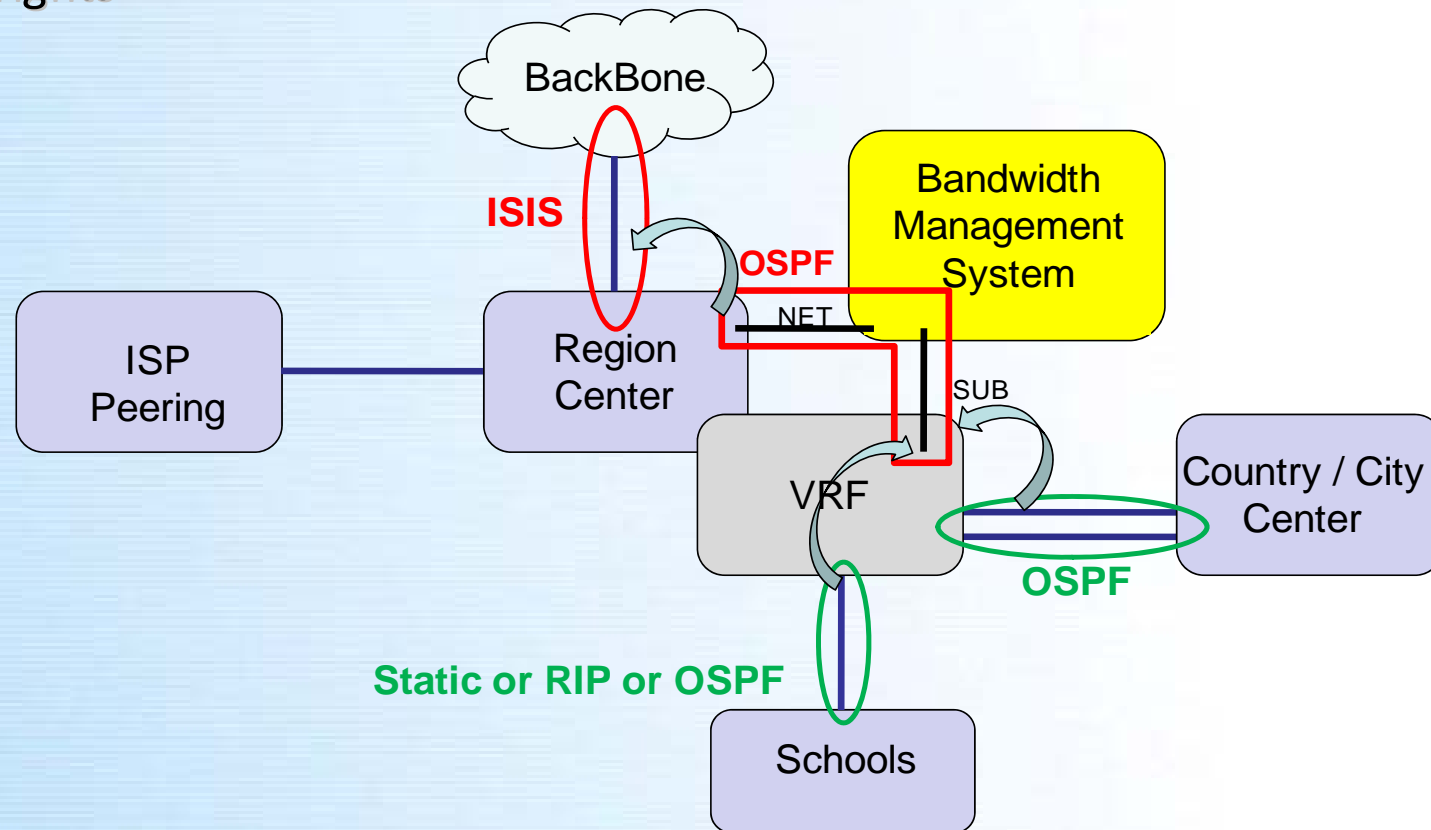




II. Current Situation(9/15)

5.The Management of P2P Bandwidth

- Established P2P bandwidth management system
- Effectively implement measures to protect the intellectual property rights





II. Current Situation(10/15)

6.The Promotion of Information Literacy and Ethics(1)

➤ Programs of Information Literacy and Ethics

1. Establish website for network literacy and awareness (<http://www.eteacher.edu.tw/>)
2. Provide Information application digital curricula for teachers of elementary and secondary schools
3. Include the introduction and promotion of the knowledge in curricula of senior high schools
4. Develop information digital materials for information general education program in colleges and universities



II. Current Situation(11/15)

6.The Promotion of Information Literacy and Ethics(2)

➤ 1. Establish network literacy and knowledge website

- Establish digital teaching and learning materials for network literacy
- Establish themes of writing on websites
- Establish database of network professionals , academics and seed teachers
- Establish digital teaching and learning materials for network literacy
- Establish network and channels for dealing with network usage related issues
- Hold information literacy seminars for teachers (respectively in northern, central, southern and east regions)
- Demonstration of network literacy website (including Understanding kid's Internet world: Chapter Internet literacy for parents, etc.)
- Develop indicators for the evaluation of network literacy
- Teaching database covers 8 themes: Internet overview, online social network, online trade, internet security, internet addiction, internet legal issues, internet literacy and digital life/study. In total, 32 animated teaching materials have been completed and categorized as senior high schools, junior schools, and elementary schools.





II. Current Situation(12/15)

6.The Promotion of Information Literacy and Ethics(3)

- **2. Develop information application digital curricula for teachers of elementary and high schools**
 - **Develop curriculum and contents for digital learning**
 - information literacy: develop materials for teachers, principals/ directors, and counselors.
 - Incorporation of information into teaching: digital teaching resources application and sharing, incorporation of information technology into teaching methods and planning, Sci-tech media selection and application models
 - Information technology: develop digital teaching materials(basics and advance), develop and apply digital teaching materials
 - **The materials should be lively and easy to learn. Multiple environmental simulations and case-study curricula will be adopted. In the future, digital learning related curricula will be offered and teachers could be trained through digital learning channels**



II. Current Situation(13/15)

6.The Promotion of Information Literacy and Ethics(4)

➤ 3.Including into school curricula

▪ Senior high school curricula

- In accordance with 2009 curricula guidelines publicized on Jan 24,2008,“Information Technology Fundamentals”is a core course with 2-4 credits
- The main contents of Theme 6 ,Information technology & Human Society, are :
 - Using computers and physical and mental health
 - Information ethics and morality
 - Information related legal issues
- Total teaching hours : 2 to 4 hours. The new guidelines will be effective in 2010 academic year for students of the first year in senior high schools.



II. Current Situation(14/15)

6.The Promotion of Information Literacy and Ethics(5)

- **4. Development, promotion and application of digital teaching materials for IC general education program in colleges and universities**
 - **Curricula in colleges and universities**
 - Planning the development of digital teaching materials for general education in colleges and universities
 - Developing digital contents for curricula in information literacy and ethics, and information laws, etc.,
 - Adopting CC authorization, to allow materials developed could be used by all colleges and universities and to be included in curricula
 - The learning includes subjects of information literacy, Information recognition & reading, information & society, information ethics, information laws
 - teaching university students to learn correct computer & Internet usage, participate in more activities away from the Internet, identify life goals, cultivate ability of introspection and understand information legal issues



II. Current Situation(15/15)

7.Information Security Education Program

- Since 2006, MOE has funded colleges and universities to develop **Information Security Education Program** and to cultivate IS professionals through formal education:

	2006	2007	2008
Institutions funded		14	27
Courses offered	115	141	244
Students taking courses	4,846	6,749	10,185
Students taking IS general education program	1,542	2,263	3,312
Students earned IS education certificate	0	19	110

- Help students procured **256** certifications of **ISO27001LAC, ISO20000LAC, EC Council Security5, and BS 25999 LA.**
- Among students receiving IS educational certificates , about **73%** continue studies or go for military service, about **61%** work in information security related industry.



III. Trends & Future Development (1/6)

- **Information Security and Management Policies**
 - Insufficient funding and human resources of schools
 - Through the establishment of ISMS seed schools we can overcome this problem, and to effectively promote a comprehensive ISMS.
 - Established the “**Information Security Certification Center for Educational Institutions**” to help educational institutions procure certification.
 - We mainly focus on the introduction of ISMS in B Level institutions (e.g. universities). In the future, we will implement the system in all levels of schools.
 - Starting 2008, the MOE established in region networks a **Vulnerability Scanning Platform** for website to prevent information leakage.
 - We will also enact **Information Security Operation Guidelines** governing servers of online services and student record registration of all levels of admission examination systems, and provide consultation services for information protection and defense.



III. Trends & Future Development (2/6)

International Trends of Promote ISMS

資料來源：<http://www.iso27001certificates.com/>
(Version 191 June 2009, Total:5693)

- In the top three countries of ISO27001 certifications
- About 96% are business organizations



Schools or Government Organizations that certified by ISO27001 are currently rare worldwide.

ISO 27001 is not the only solution of ISMS!

Country	Units
NO.1 Japan	3191
NO.2 India	454
NO.3 UK	402
NO.4 Taiwan	325

6 units in Japan have been certified :

- Kokugakuin University
- Kyoto University (Graduate School of Medicine, School of Public Health, Department of Healthcare Economics and Quality Management)
- Nihon Fukushi University Educational Group
- Utsunomiya University (Media Network Center)
- Waseda University (Media Network Center)
- Yamaguchi University (Media and Information Technology Center)

2 units in UK have been certified :

- University of Gloucestershire
- Specialist Schools and Academies Trust

0 units in India have been certified



III. Trends & Future Development (3/6)

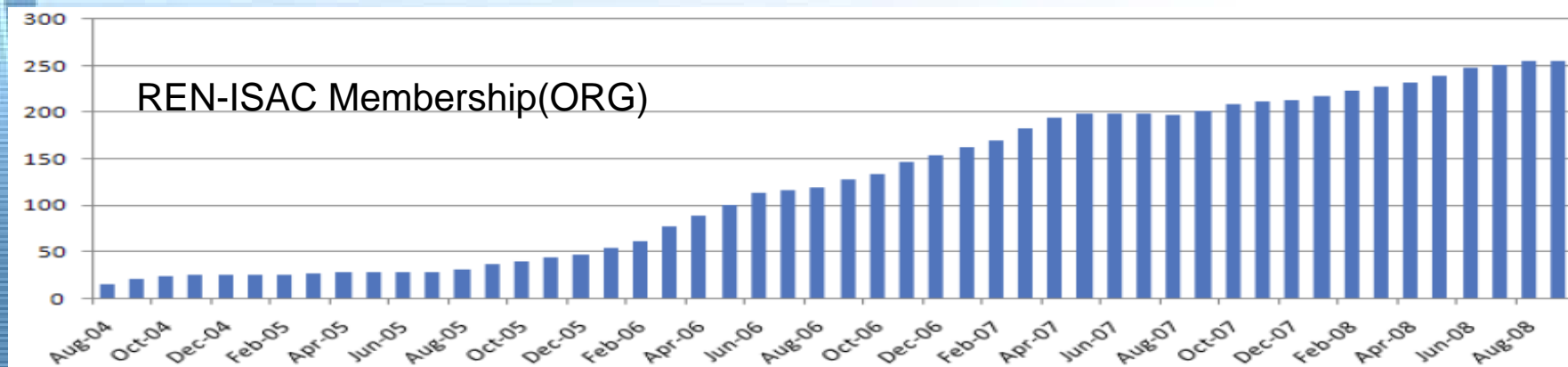
- **Information Security and Defense Technology**
 - Starting 2008, We will implement the projects of
 - "Establishment of Academic Information Security Sharing and Analysis Center (**ISAC**)", and
 - "Research and Development on the MOE System Security and Malicious Software Program Detection Technology (**Botnet**)".
 - In the future, we will establish the **ISAC as the center** to combine the capabilities of the region and county network centers
 - Integrate the security operation center (SOC), website vulnerability scanning system, Botnet defense system, Inappropriate information screening as well as reporting and emergency response mechanisms
 - Achieve a multi-level longitudinal defense



III. Trends & Future Development (4/6)

International Trends of Promote ISAC

- **REN-ISAC (International, although focused on U.S.)**
- **(Research and Education Networking Information Sharing and Analysis Center)**
- **an integral part of the higher education strategy to improve network security by providing timely warning and response to cyber threat and vulnerabilities, improving awareness, and improving communications.**
- **Information is gathered from instrumentation, constituents, network engineers, DHS, other sector ISACs, other network security organizations, and vendors.**





III. Trends & Future Development (5/6)

- **Promote Information Literacy and Cultivate Manpower**
 - Promotes the awareness of information security knowledge to enhance information security literacy for all people
 - Promotes its “information security education program” in higher educational institutions to help students learn the theories and practices
 - Procure information security professional certificates
 - Offer a practical training environment for students who complete the information security education program

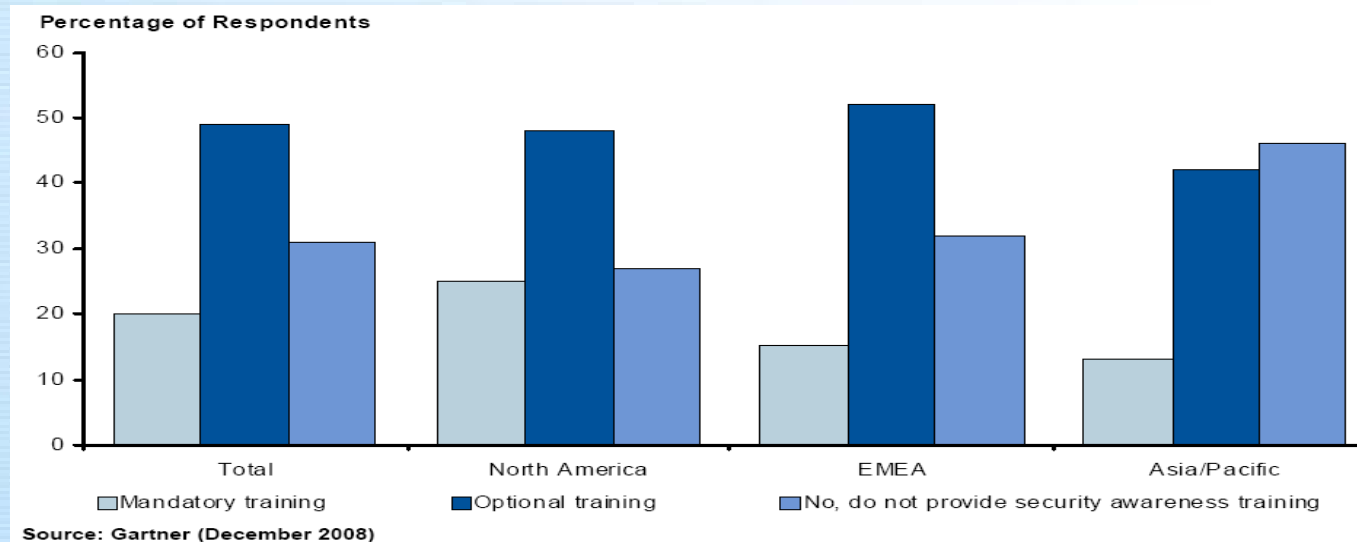


III. Trends & Future Development (6/6)

International Trends of Security Awareness

- **Provide Training Sessions on Security Awareness**
 - **Mandatory training is currently rare**
 - **Optional training does not reach more than 50% of senior managers**

Gartner 2008 Higher Education Security Survey





IV. Strategies-Overview(1/3)

Strategies



Policy



Environment



Education

Action Plans

Promote Information Security Management System within Educational Systems

Promote Concept of Personal Information Protection and Prevent Information Leakage

Establish Security Monitoring and Sharing Mechanisms in the Educational Systems

Establish a TANet Information Security Response Center

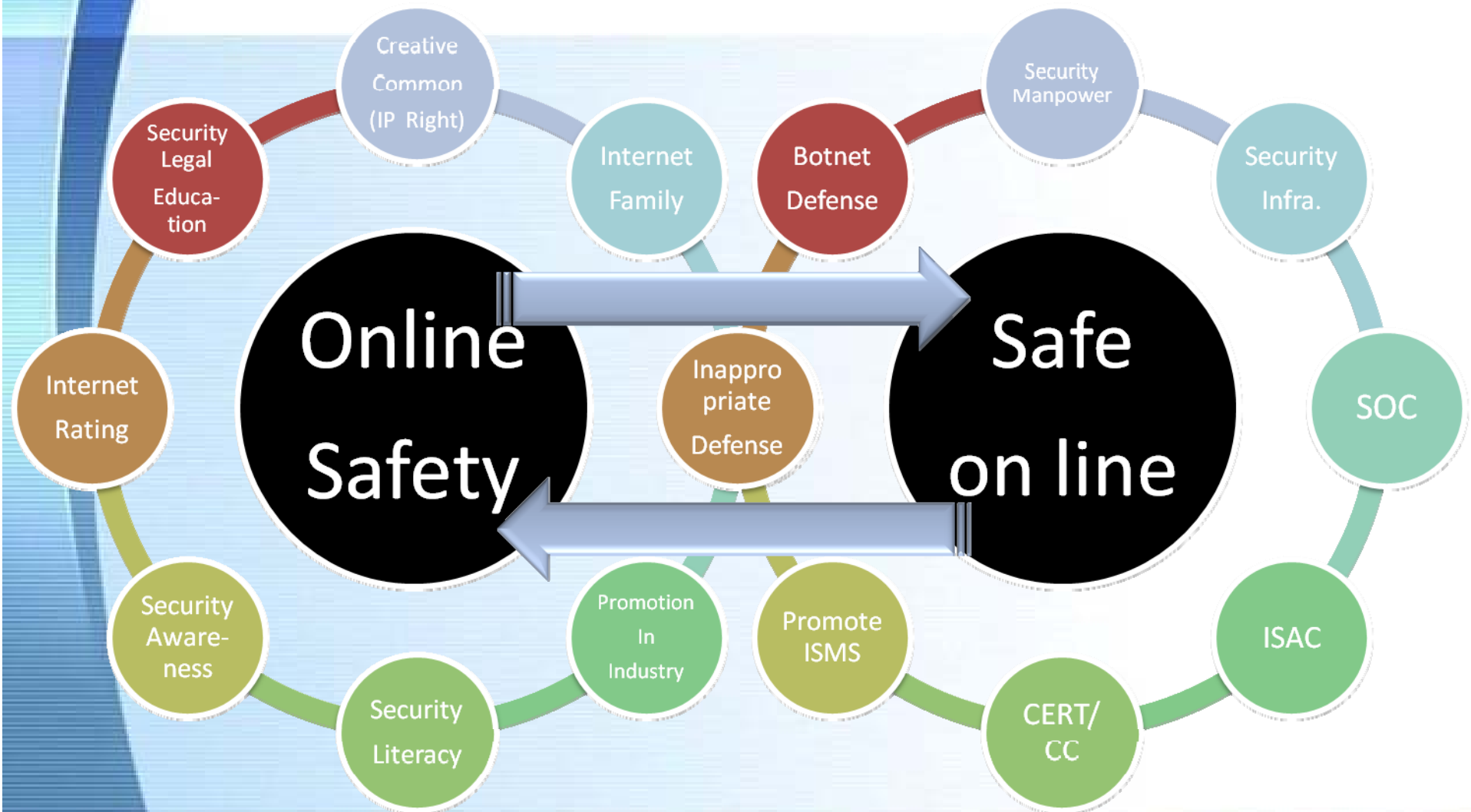
Implement Information Security Literacy in the Educational Systems

Cultivate Information Security Professionals



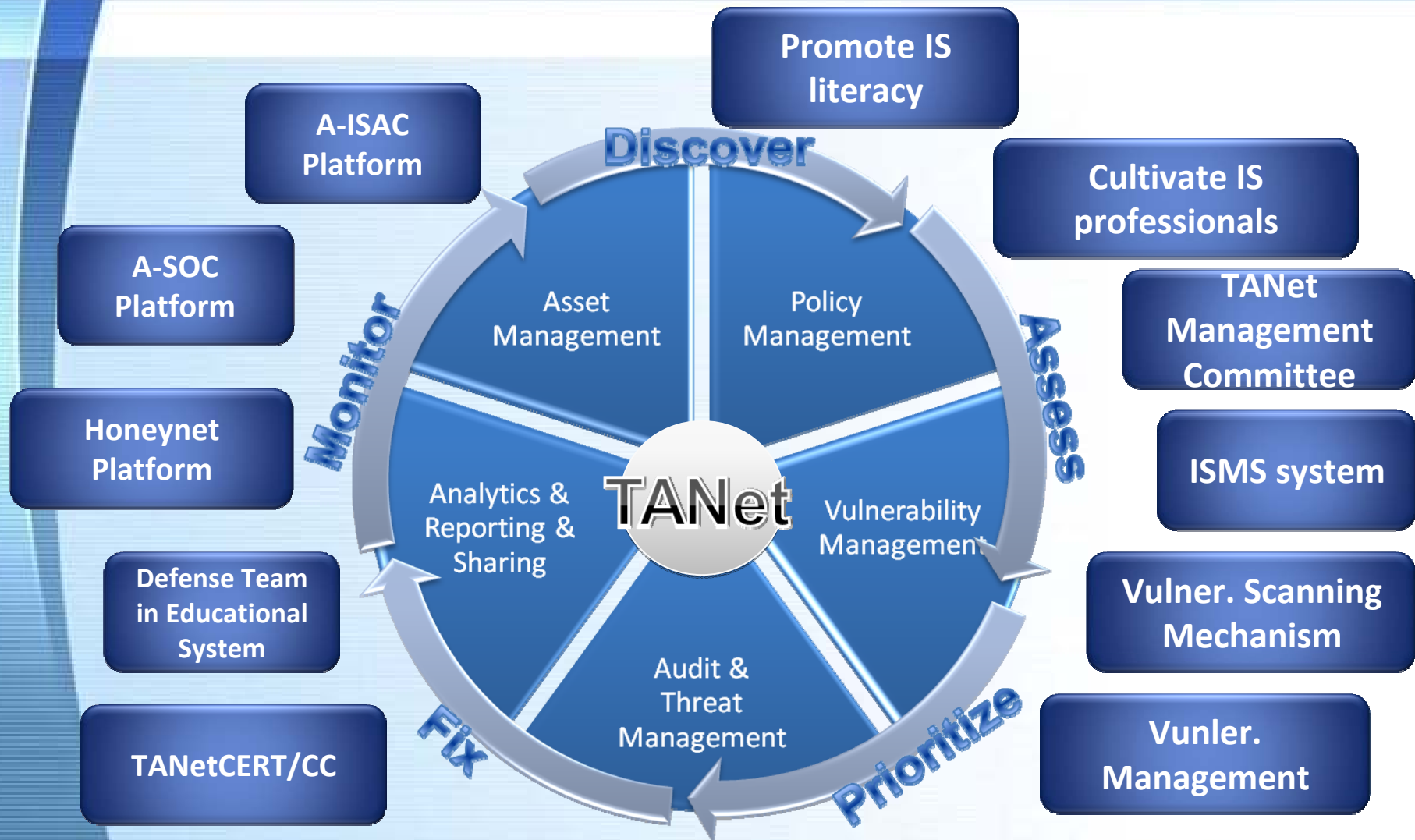
IV. Strategies(2/3)

“Online safety” (awareness education) and
“Safe on line” (safe environment)





IV. Strategies-Functional Aspect(3/3)





V. Action Plans(1/7)



➤ 1. Promote Information Security Management System (ISMS) within Educational System

Action Plans	Expected KPI				Description
	2010	2011	2012	2013	
1. Promulgate guidelines for ISMS in educational institutions	100%	100%	100%	100%	Organizing committee to promulgate guidelines for ISMS in educational institutions
2. Establish Information Security Certification Center	100%	100%	100%	100%	Establish Information Security Certification Center for educational institutions
3. Introduce ISMS to Levels A&B	60%	100%	100%	100%	Universities (135 units)
4. Introduce ISMS to Levels C&D	10%	20%	30%	50%	(Senior high schools (558 units)
5. Promote ISMS concept	25%	50%	75%	100%	Promote ISMS concept in elementary and junior high schools



V. Action Plans(2/7)



➤ 2. Promote Concept of Personal Information Protection and Prevent Information Leakage

Action Plans	Expected KPI				Description
	2010	2011	2012	2013	
1. Promote personal information protection	25%	50%	75%	100%	Incorporate personal information protection into information literacy promotion activities for public
2. Establish “Web Application Vulnerability Scanning Platforms”	60%	80%	90%	100%	Establish “Web Application Vulnerability Scanning Platforms for Educational Institutions” in 13 regional networks
3. Offer recommendations and security services	25%	50%	75%	100%	Offer recommendations and security services for junior high school basic abilities examination, unified technical and vocational college admission examination, and university admission examination
4. Promulgate information security operation guidelines	25%	50%	75%	100%	Provide guidelines governing servers of network services and student record registration on systems of junior high school basic abilities examination, unified technical and vocational college admission examination, and university admission examination



V. Action Plans(3/7)



➤ 3. Establish Security Monitoring and Sharing Mechanisms in the Educational System

Action Plans	Expected KPI				Description
	2010	2011	2012	2013	
1. Raise manpower and skills in region & county centers	50%	100%	100%	100%	At least 1 IS worker and 1 IS certification in region & county network centers
2. Establish A-SOC& A-ISAC	6	9	14	14	Establish A-SOC and A-ISAC operation team and operation points in MOE and 13 regions
3.Botnet Defense	10%	20%	30%	40%	Reduce 10% Botnet Zombies per year
4. Strengthen hardware facilities in region centers	25%	50%	75%	100%	Support 13 regional centers to strengthen hardware facilities and invite specialists for consultation
5. R&D automatic exchange mechanism for county/city centers	25%	50%	75%	100%	Support academic and research units to work with industry in developing automation schemes (mini SOC)

V. Action Plans(4/7)



➤ 4. Establish a TAnet Information Security Reporting and Emergency Response Center

Action Plans	Expected KPI				Description
	2010	2011	2012	2013	
1. Establish TAnetCERT operation system	50%	100%	100%	100%	<ol style="list-style-type: none"> 1. Establish TAnet Computer Emergency Response Team (TAnetCERT) 2. Provide information security consultation and support for educational institutions 3. Provide forecast and warning scheme for information security incidents 4. Promote information security exchange and cooperation with international information security organizations (e.g. REN-ISAC 、FIRST 、CERT/CC)



V. Action Plans(5/7)

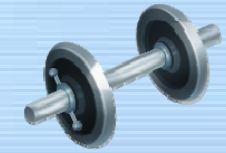


➤ 5. Implement Information Security Literacy in the Educational System

Action Plans	Expected KPI				Description
	2010	2011	2012	2013	
1. Public literacy programs	25%	50%	75%	100%	10 promotion programs annually by each government department
2. "Info. Sec. Management and usage" Course	25%	50%	75%	100%	Develop curriculums and training 360 seed teachers. Promote courses for staff and students annually.
3. Promotion in elementary & junior high schools	200,000 persons	400,000 persons	600,000 persons	800,000 persons	The expected target is 200,000 persons per year
4. Training for seed teachers of elementary and junior high schools	5,000 persons	10,000 persons	15,000 persons	20,000 persons	Support county/city to conduct training for IS literacy seed teachers of elementary and junior schools, targeting 5,000 persons annually
5. Senior high curricula	25%	50%	75%	100%	Integrate IS literacy in senior high curricula
6. Educational programs in colleges	25%	50%	75%	100%	Include IS literacy general education program in colleges



V. Action Plans(6/7)



➤ 6. Cultivate Information Security Professionals

Action Plans	Expected KPI				Description
	2010	2011	2012	2013	
1. Promote IS Education Program	30	30	35	35	support 30-35 colleges' IS general education annually
2. Assist to procure IS certification	200	400	600	800	Assist to get 200 IS-related certificates annually (include Education Program)
3. Provide practical training environment	35	70	105	140	Provide 35 practical training environments annually
4. Cultivate lead auditors for ISMS	25	50	75	100	Establish Auditing system, and cultivate 100 ISMS auditors and 10 lead auditors
5. Establish TANet IS Promotion Center	25%	50%	75%	100%	<ol style="list-style-type: none">1. Plan overall and systematic promotion activities, for long-term operation and effective planning purposes.2. Hold IS seminars/study camps3. Establish IS defense team in educational system



V. Action Plans(7/7) - Expected Budget

Unit: Thousand NT Dollars

Programs	2010	2011	2012	2013	Total
1.Promote ISMS in Educational Institutions	10,000	10,000	10,000	10,000	40,000
2. Raise Manpower and Skills in Region & County Centers	45,600	45,600	45,600	45,600	182,400
3. Establish A-SOC& A-ISAC	80,000	80,000	80,000	50,000	290,000
4. R&D Automatic Exchange Mechanism for County & City Centers	12,000	20,000	20,000	10,000	62,000
5.Establish Vulner. Scanning Mechanism	15,000	15,000	15,000	20,000	65,000
6. Establish TANetCERT	8,000	8,000	8,000	8,000	32,000
7. Public Literacy Programs	70,000	70,000	70,000	70,000	280,000
8. Establish TANet IS Promotion Center	8,000	8,000	8,000	8,000	32,000
9. Assist to procure IS Certification	20,000	20,000	20,000	20,000	80,000
10. Provide Practical Training Environment	14,175	14,175	14,175	14,175	56,700
Total Budget	282,775	290,775	290,775	255,775	1,120,100



VI. Discussions(1/3)



- **How to effectively implement information security policies in educational system?**
- ✓ Establish information security team in **TANet Management Committee**
 - ✓ Develop Taiwan's **own** information security certification system
 - ✓ Establish **TANet Information Security Certification Center**
 - ✓ Implement ISMS for educational institutions in all levels of schools
 - ✓ Promote the concept of personal information protection and prevent information leakage



VI. Discussions(2/3)



➤ How to strengthen information security environment in educational system?

- ✓ Information environment in educational system involves a vast connected units and is featuring **complexity, diversity** and **openness**
- ✓ How to promote domestic security product in educational system?
- ✓ How to assist domestic companies developing self-owned security product and technologies?
- ✓ The MOE is striving to promote information security. Efforts will be made for systematic planning, in order to integrate available resources and to ensure the security of academic and educational networks
- ✓ Establish and strengthen **the Academic Information Sharing and Analysis Center (A-ISAC)** and to integrate the strengths of region and county network centers to establish a unified multi-level and longitudinal defense



VI. Discussions(3/3)



- **How to implement information security literacy in the educational system and cultivate information security manpower?**
 - ✓ Promote information security literacy and awareness among all people through coordinated efforts of all government departments concerned
 - ✓ Promote information security awareness activities on campuses and raise information literacy within educational system
 - ✓ Plan a comprehensive system for information security education
 - ✓ Cultivate information security professionals and lay the foundation for the development of information security in the educational system



Thank You!