

Building Trust in Digital World

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ITU

Bangkok, Thailand
4-6 September 2019

Threats to Critical National Infrastructure-I

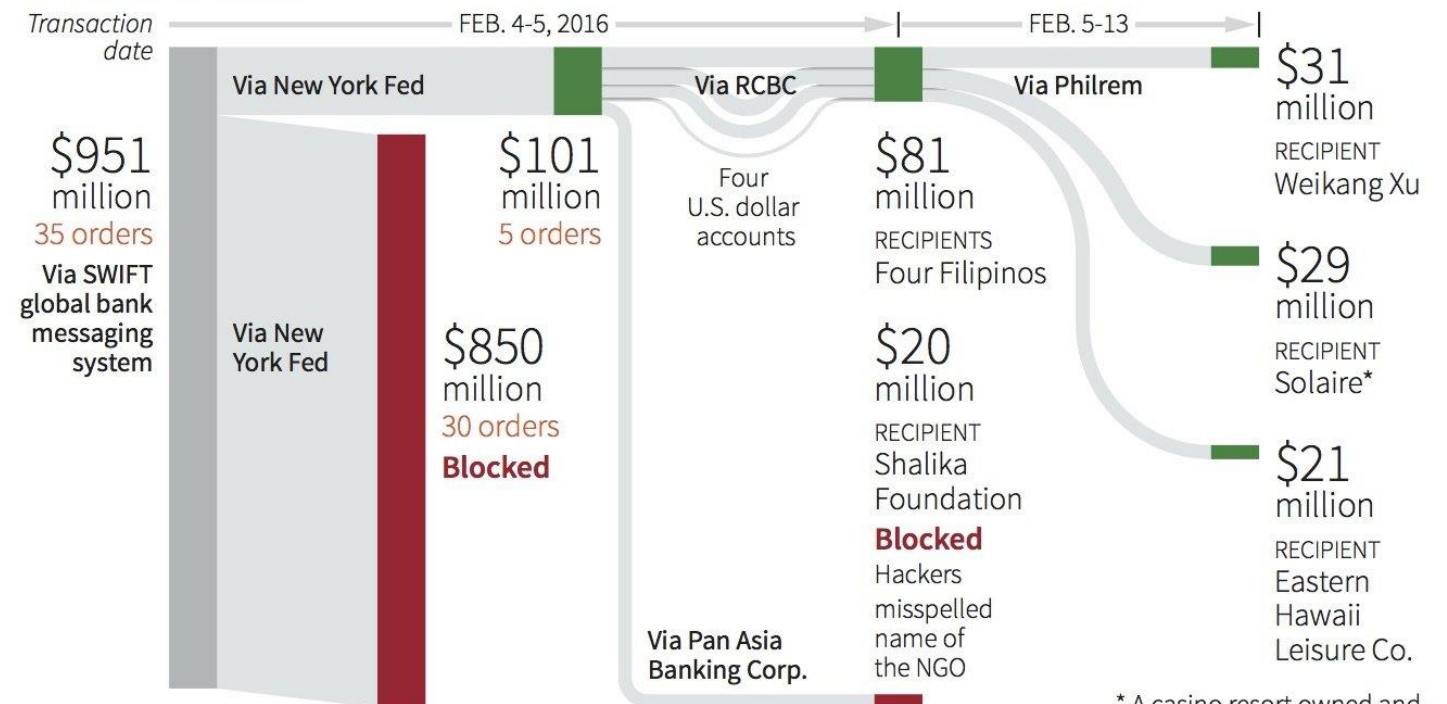


Bangladesh Bank
4 February 2016

Bangladesh Bank heist

In one of the largest cyber heists in history, hackers ordered the Federal Reserve Bank of New York to transfer \$81 million from Bangladesh Bank to accounts in the Philippines.

THE MONEY TRAIL



Sources: Philippines Court of Appeals documents; Reuters

W. Foo, 31/03/2016

* A casino resort owned and operated by Bloomberry Resorts

REUTERS

Threats to Critical National Infrastructure-II

WannaCry Ransomware May 2017

The screenshot shows the homepage of the East and North Hertfordshire NHS Trust. A large blue banner at the top center reads: "We're currently experiencing significant problems with our IT and telephone network". Below this, it states: "Which we're trying to resolve as soon as possible" and "This means that people will have difficulty phoning us for the time being – please bear with us. Apologies for any inconvenience." The website has a navigation bar with links: Patients & Visitors, GPs & Professionals, Member Area, Our Hospitals, About The Trust, Get Involved, and News & Media. On the left, there's a section for "Our Hospitals" listing Hertford County, Lister, Mount Vernon Cancer Centre, and New QEII. Below that is a CareQuality Commission rating for "Requires Improvement" dated 5 April 2016. At the bottom left, there are "Quick Links" for A&E, Visiting times, Appointment changes, Maternity services, and Work for us. The main content area also features sections for "Our Services", "Work for us", and "Why Choose Us?" with accompanying images and text.

East and North Hertfordshire **NHS**
NHS Trust

Patients & Visitors | GPs & Professionals | Member Area | Our Hospitals | About The Trust | Get Involved | News & Media

You are here: **SEARCH**

Our Hospitals

- ▶ Hertford County
- ▶ Lister
- ▶ Mount Vernon Cancer Centre
- ▶ New QEII

CareQuality Commission

East and North Hertfordshire NHS Trust
CQC overall rating

Requires Improvement

5 April 2016

[See the report >](#)

Quick Links

- ▶ A&E / Emergency department
- ▶ Visiting times
- ▶ Cancel/change your appointment
- ▶ Maternity services liaison committee
- ▶ Work for us

We're currently experiencing significant problems with our IT and telephone network

Which we're trying to resolve as soon as possible

This means that people will have difficulty phoning us for the time being – please bear with us. Apologies for any inconvenience.

Our Services

Our staff work hard to deliver the best quality of care to all our patients in the wide range of services we offer.

- ▶ A-Z of services
- ▶ Blood tests
- ▶ Maternity
- ▶ Outpatient appointments
- ▶ Radiology

Work for us

Our Trust has an exciting future. Be part of something special - join our team.

Find out more about working for us or view our latest vacancies.

We also have a dedicated page just for our nursing and midwifery vacancies.

Why Choose Us?

We provide good quality healthcare to our local community and beyond.

- ▶ Good transport links
- ▶ Improving patient experience

The screenshot shows the Belfast Telegraph Digital website. The headline reads: "NHS cyber attack: Ransomware hackers force hospitals across England to divert emergency patients as incident spreads to Scotland". The website has a navigation bar with links: HOME, NEWS, SPORT, BUSINESS, ENTERTAINMENT, LIFE, CARS, OPINION, and TRA. Below the navigation bar, there's a section for "Northern Ireland" with links to UK & World, Brexit, Technology, Jobs, Food, Drink and Hospitality, and Agri. The article is categorized under "Home > Business > Technology".

Belfast Telegraph DIGITAL

HOME | NEWS | SPORT | **BUSINESS** | ENTERTAINMENT | LIFE | CARS | OPINION | TRA

Northern Ireland | UK & World | Brexit | [Technology](#) | Jobs | Food, Drink and Hospitality | Agri

Home > Business > Technology

NHS cyber attack: Ransomware hackers force hospitals across England to divert emergency patients as incident spreads to Scotland

Threats to Critical National Infrastructure-III

Kiev's power grid December 2016



BBC Sign in News Sport Weather Shop Earth Travel

NEWS

Home Video World UK Business Tech Science Magazine Entertainment & Arts

Technology

Ukraine power cut 'was cyber-attack'

11 January 2017 | Technology [f](#) [t](#) [b](#) [e](#) [Share](#)

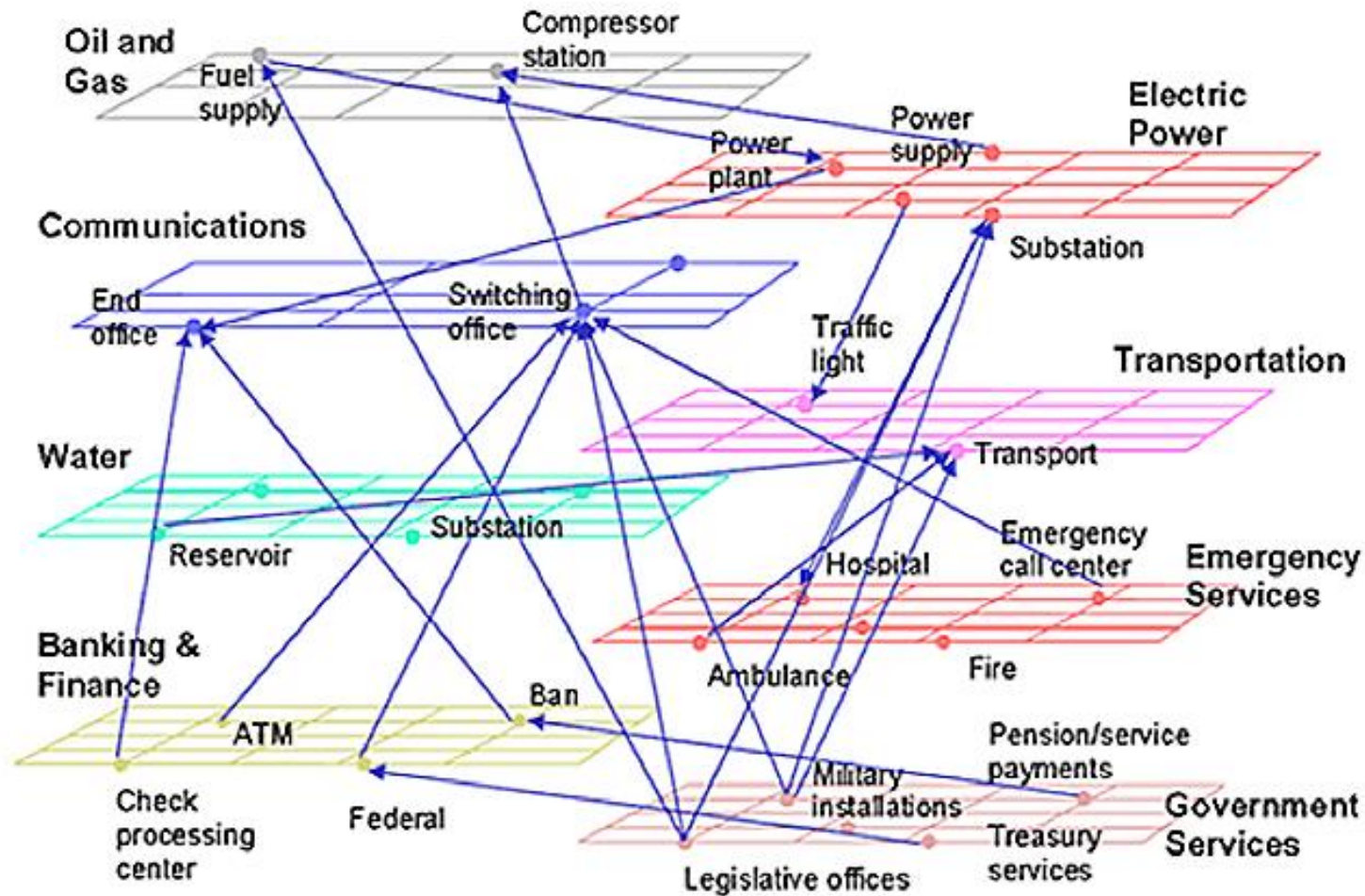


Ukraine's energy grid has been attacked twice by hackers

A power cut that hit part of the Ukrainian capital, Kiev, in December has been judged a cyber-attack by researchers investigating the incident.

The blackout lasted just over an hour and started just before midnight on 17 December.

Interconnected Nature of Critical Infrastructure



Cascade effect

Cybercrime : Cost to Global Economy?



Money

International +

Markets

Economy

Companies

Tech

Autos

India

Video

Natural disasters caused \$175 billion in damage in 2016

by Charles Riley @CRrileyCNN

🕒 January 4, 2017: 7:45 AM ET

Cybercrime costs the global economy \$450 billion: CEO

Luke Graham | @LukeWGraham

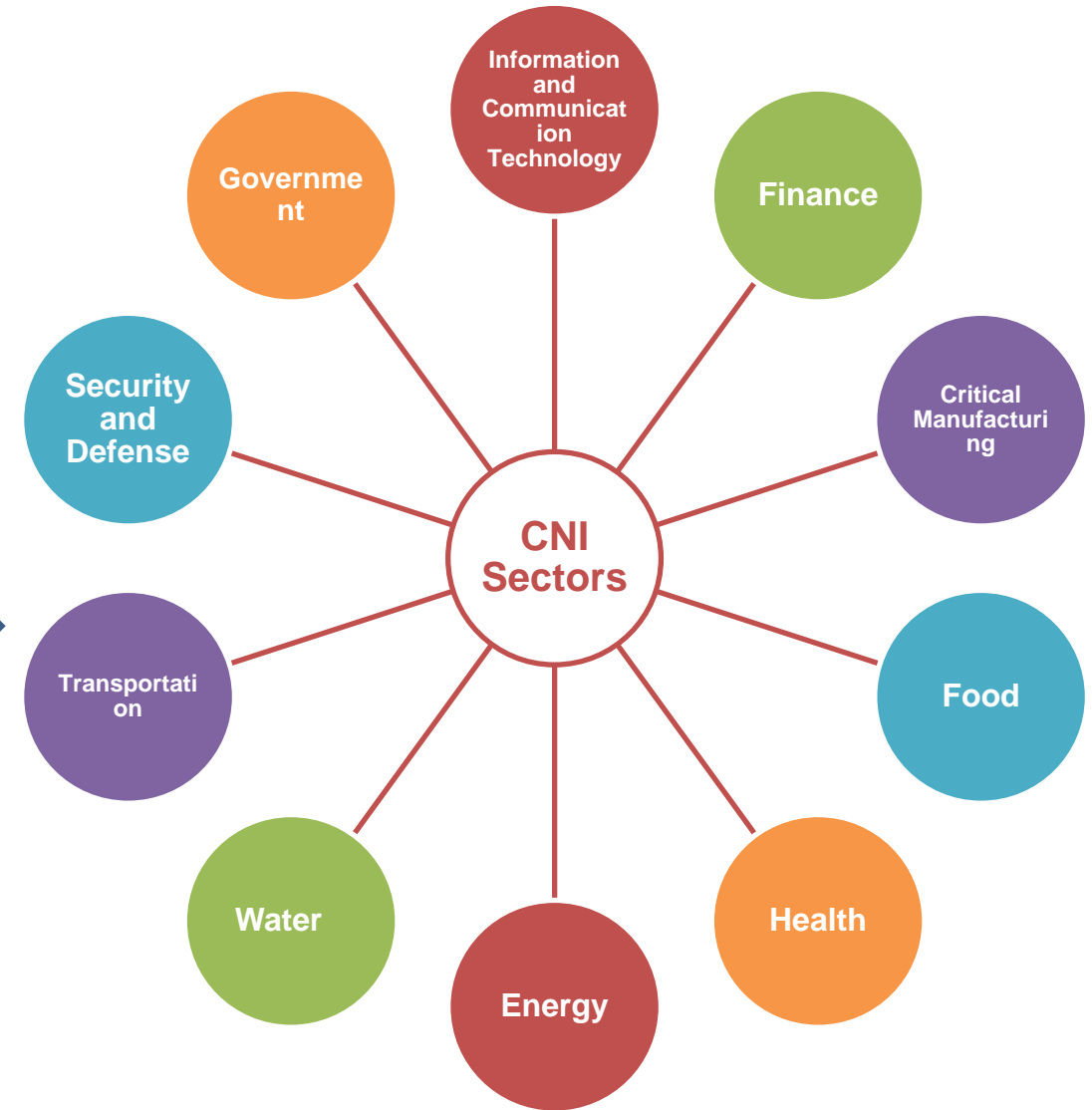
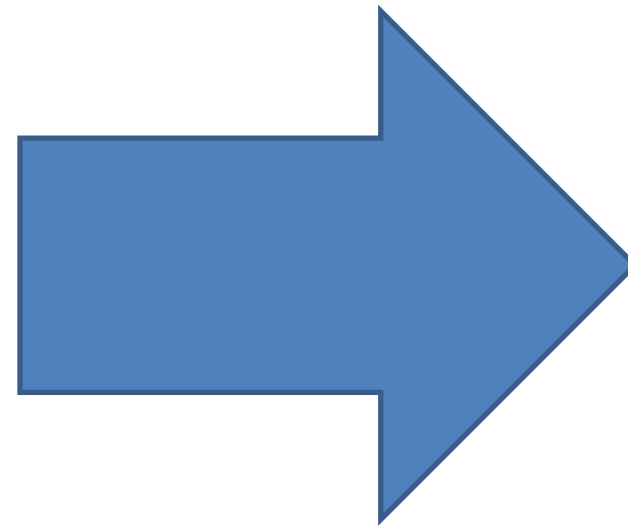
Published 10:00 AM ET Tue, 7 Feb 2017



In 2016 "cybercrime cost the global economy over \$450 billion, over 2 billion personal records were stolen and in the U.S. alone over 100 million Americans had their medical records stolen," said Steve Langan, chief executive at Hiscox Insurance, told CNBC.

Critical National Infrastructure Sectors

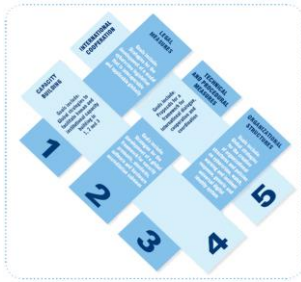
In General, we can identify 10 Critical National Infrastructure sectors :



ITU Mandate on Cybersecurity

2003 – 2005

WSIS entrusted ITU as sole facilitator for WSIS Action Line C5 -
“**Building Confidence and Security in the use of ICTs**”



2007

Global Cybersecurity Agenda (GCA) was launched by ITU
Secretary General
GCA is a **framework for international cooperation in cybersecurity**

2008 to date

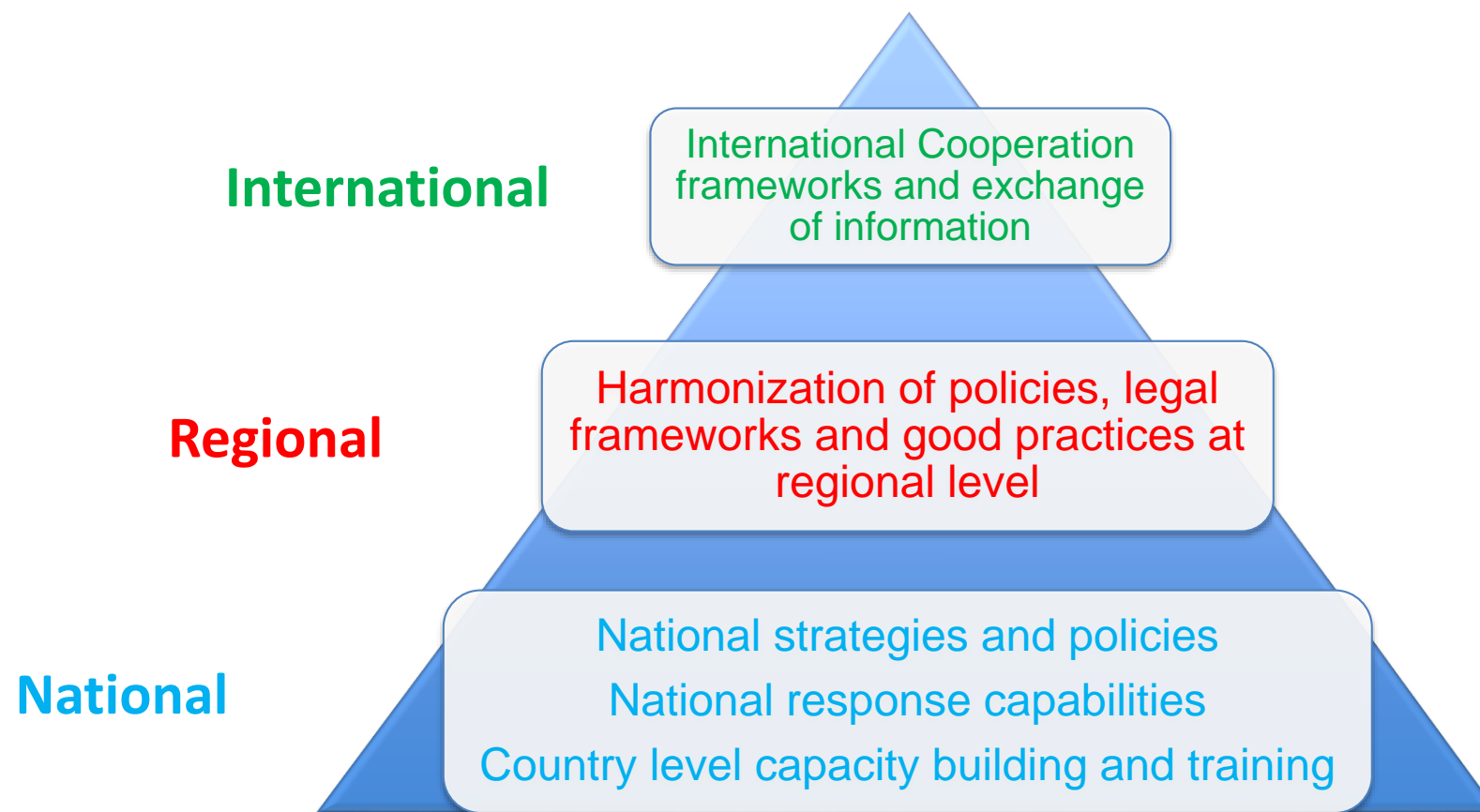
ITU Membership endorsed the GCA as the ITU-wide
strategy on international cooperation.



Building confidence and security in the use of ICTs is widely present in **PP and Conferences'** resolutions. In particular WTSA 12, PP 10 and WTDC 10 produced Resolutions (WTSA 12 Res 50, 52, 58, PP Res 130, 174, 179, 181 and WTDC 45 and 69) which touch on the most relevant ICT security related issues, from legal to policy, to technical and organization measures.

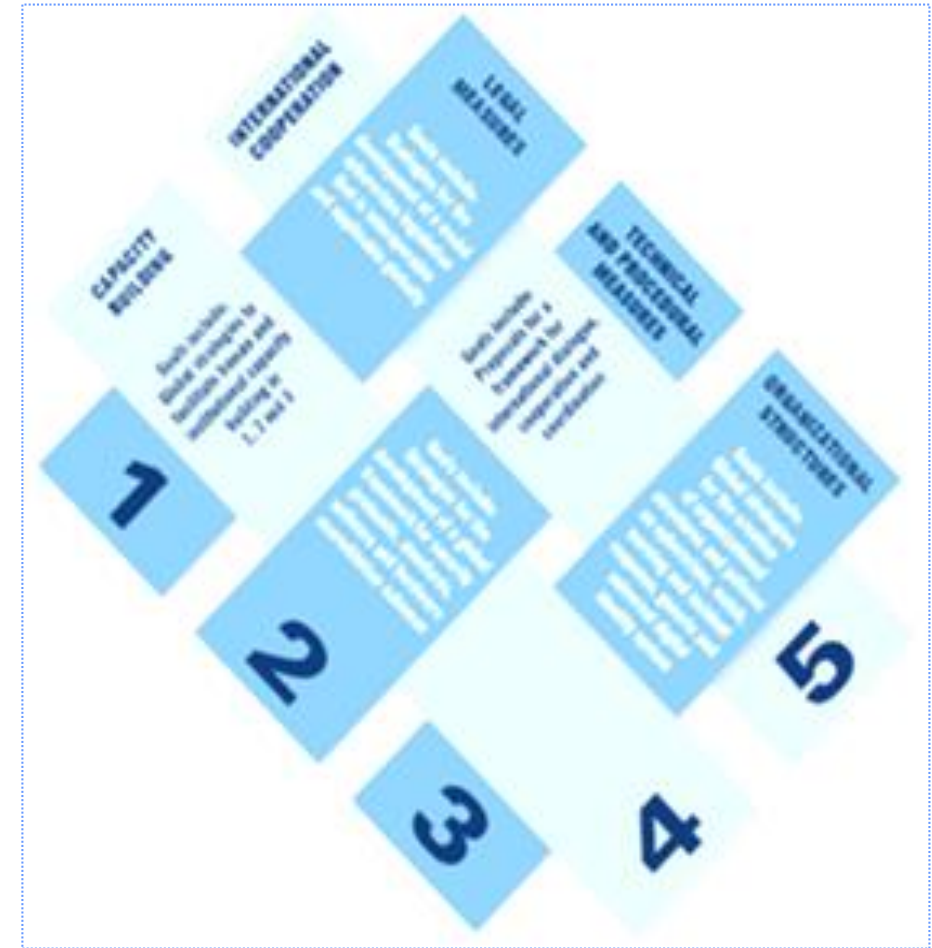
Coordinated Response

Need for a multi-level response to the cybersecurity challenges



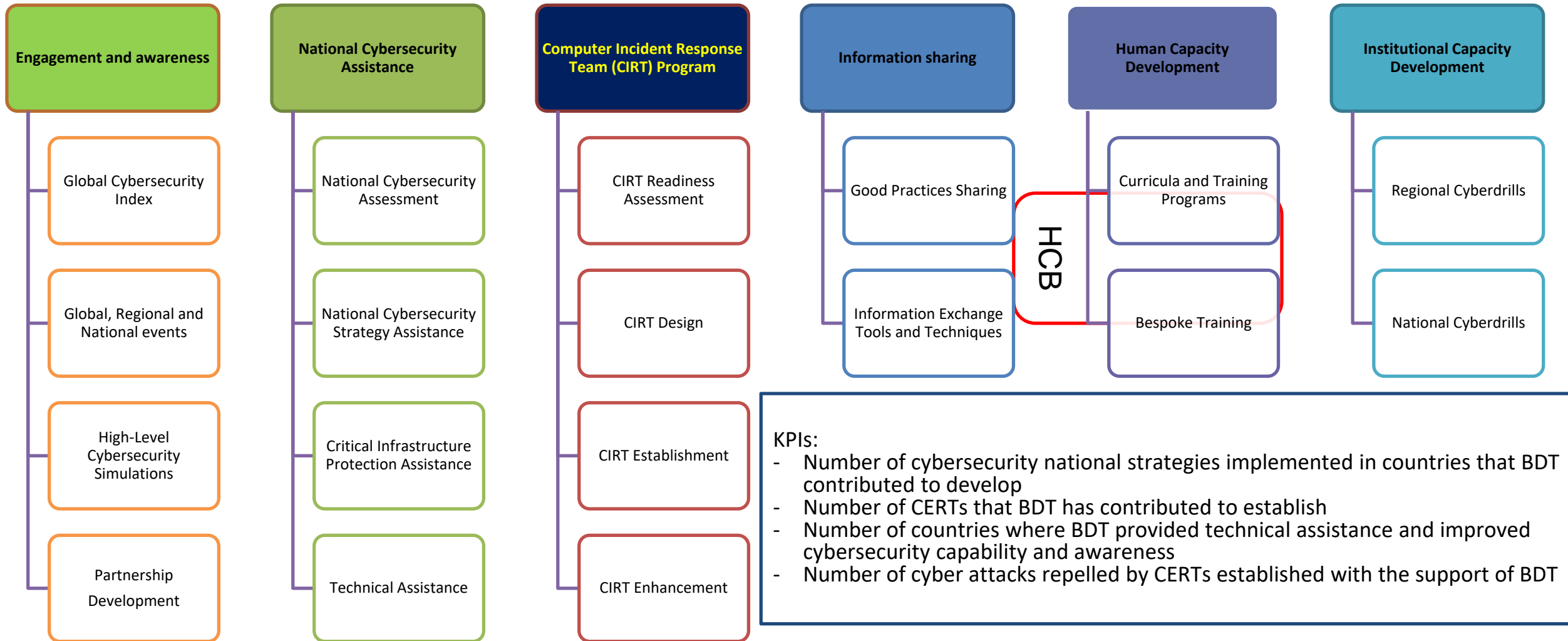
Global Cybersecurity Agenda (GCA)

- GCA is designed for cooperation and efficiency, encouraging collaboration with and between all relevant partners, and building on existing initiatives to avoid duplicating efforts.
- GCA builds upon five pillars:
 1. Legal Measures
 2. Technical and Procedural Measures
 3. Organizational Structure
 4. Capacity Building
 5. International Cooperation
- Since its launch, GCA has attracted the support and recognition of leaders and cybersecurity experts around the world.



Cybersecurity Services Catalogue

Service Areas – Services

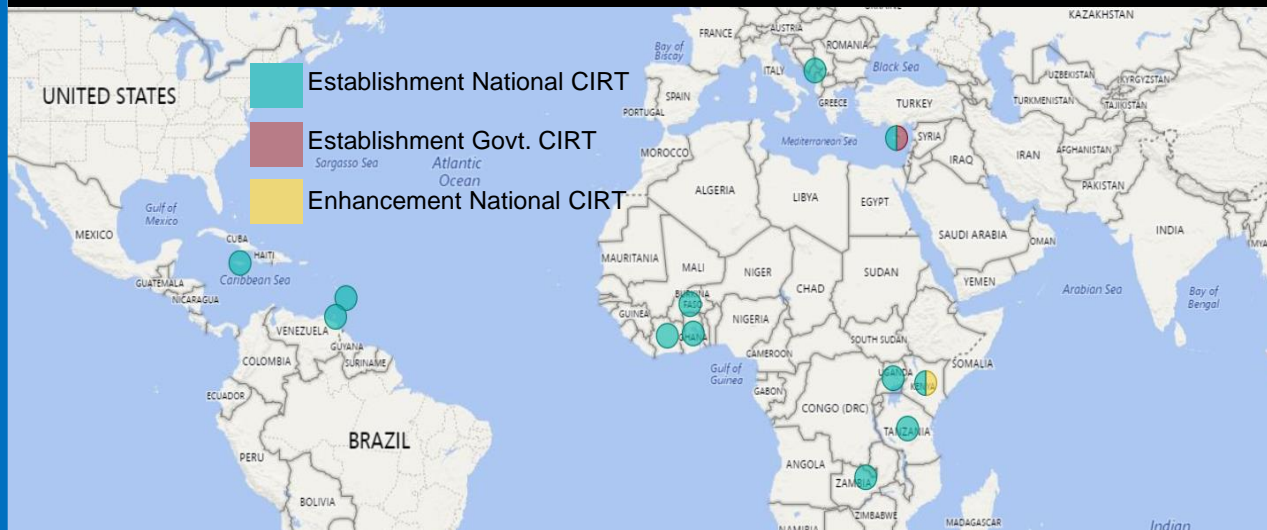


CIRT Services

75 CIRT READINESS ASSESSMENTS

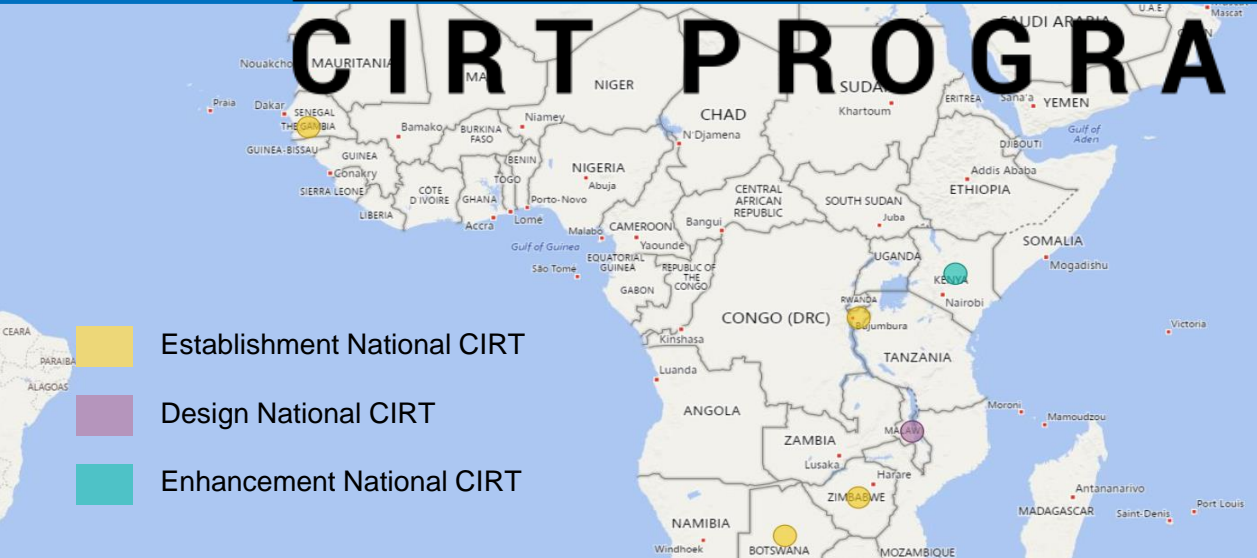


13 CIRT ESTABLISHMENT + 1 ENHANCEMENT



SCALE-UP & DELIVER MORE

CIRT PROGRAMME EXAMPLE



CIRT ESTABLISHMENT IN 2019



CIRT ESTABLISHMENT- INTERESTS

National CERT/CIRT/CSIRT globally and per region

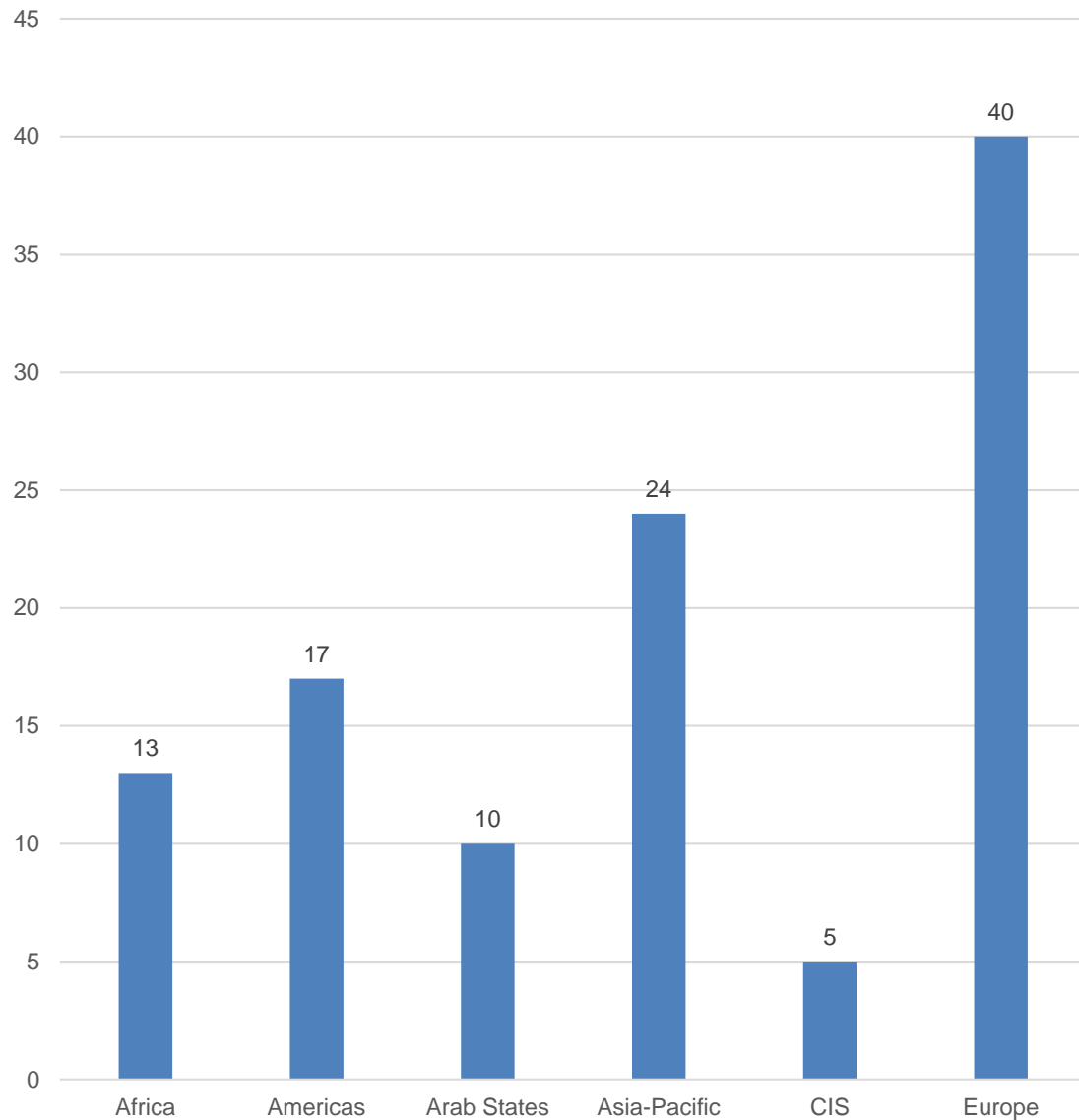
Global percentage of national CERTS around the world



Member States with a national CERT



Number of CIRT activities around the world

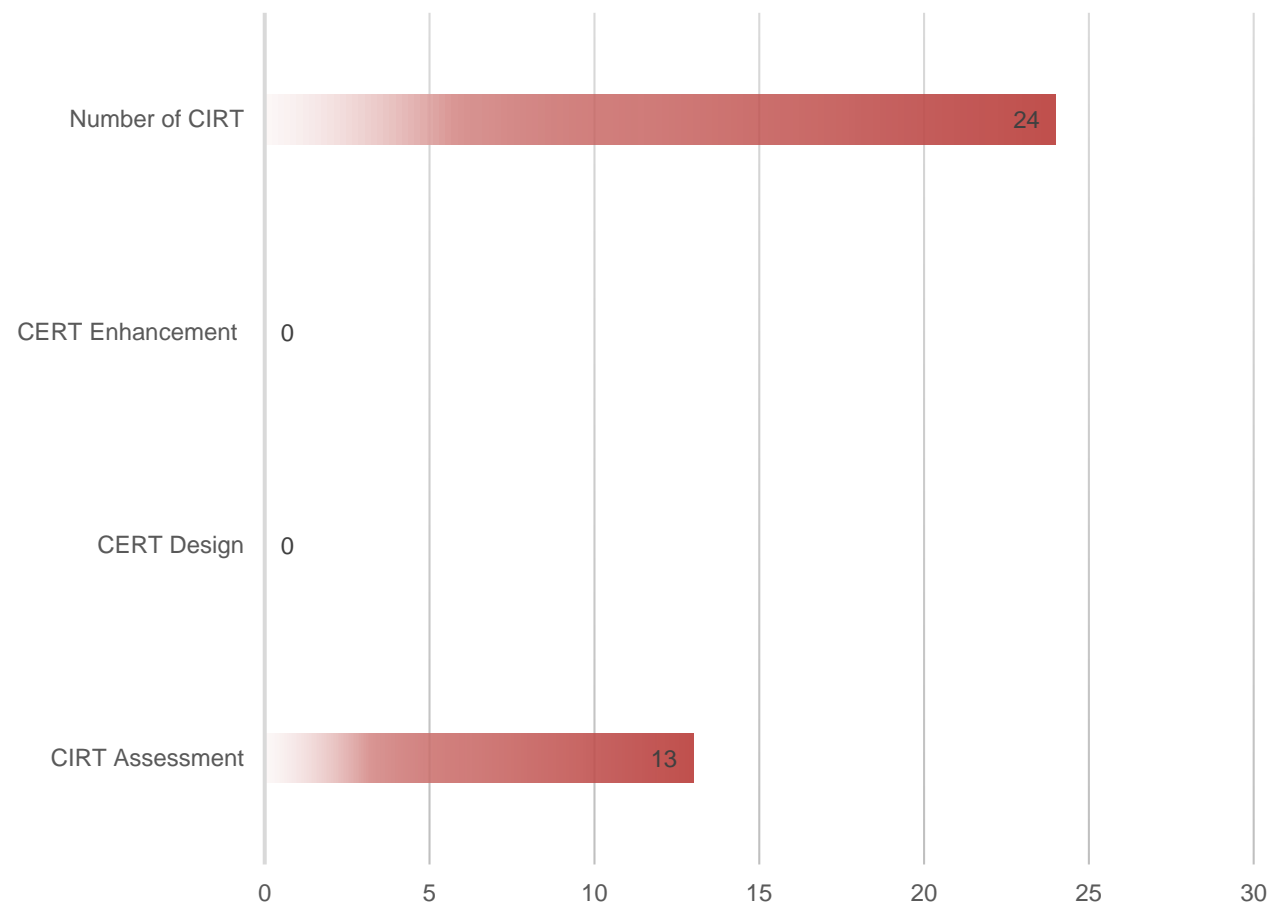


CIRTs in Asia-Pacific:

Afghanistan, Australia, Bangladesh, Brunei Darussalam, Cambodia, China, India, Indonesia, Iran, Japan, Laos, Malaysia, Myanmar, New Zealand, Pakistan, Papua New Guinea, Philippines, Republic of Korea, Singapore, Sri Lanka, Thailand, Tonga, Vanuatu, Viet Nam



Good Practices: An analysis of the Asia-Pacific CIRT establishment



13 CIRT assessment done by ITU in Asia-Pacific :

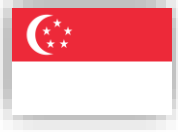
Afghanistan, Bangladesh, Bhutan, Cambodia, Fiji, Laos, Maldives, Myanmar, Nepal, Samoa, Tonga, Vanuatu, Vietnam



EXAMPLES OF SOME CYBERSECURITY BEST PRACTICES IN THE REGION



Japan: The National centre of Incident is building an information sharing system among public-private sectors. The Japan National Institute of Information and Communications Technology has established a National Cyber Training Center that has developed many projects, such as CYDER, CYBER COLOSSEO and SecHack 365 (a security innovator training programme for young talents).



Singapore: The Cybersecurity Agency of Singapore (CSA), in partnership with InfoComm Media Development Authority (IMDA), launched the Cyber Security Associates and Technologists (CSAT) programme to encourage industry to train fresh and mid-career professionals in ICT or STEM (Science, Technology, Engineering and Mathematics) for cybersecurity roles through structured on-the-job training and courses.



Mongolia: The Government started a feasibility study to establish a CERT and an IT security audit system for Mongolia. The feasibility study project aims to identify the status of the cybersecurity environment such as the organization/manpower, ICT infrastructure, legal environment and standards, IT security/auditing process, and to investigate a development plan. In addition, this project aims to make a proposal for the To-Be Model of a Mongolia CERT.



Malaysia: The National Cyber Drill (X-Maya) is testing and improving the technical skills of CNII IT personnel to handle cyber incidents. The Coordinated Malware Eradication and Remediation Project (CMERP) has implemented a pilot project to tackle malware threats at the national level.

Global Cybersecurity Index (GCI)

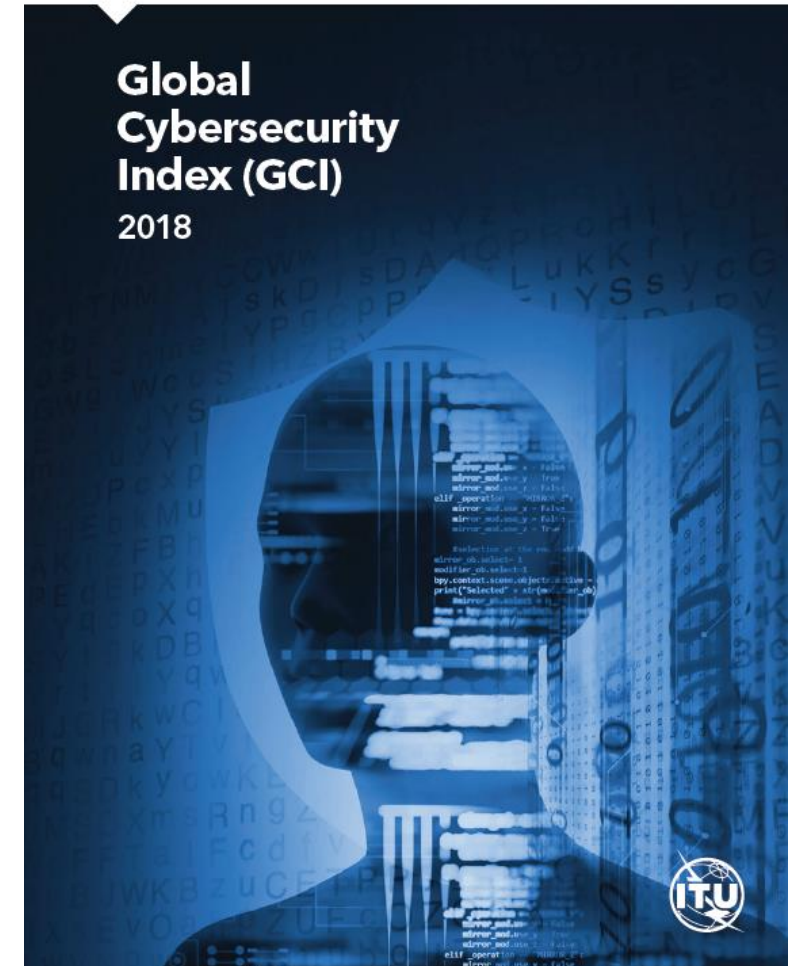
What is GCI ...

GCI is a composite index combining 25 indicators into one benchmark measure to monitor and compare the level of ITU Member States' ***cybersecurity commitment*** with regard to the five pillars identified by the High-Level Experts and endorsed by the GCA.

“GCI is a capacity building tool, to support countries to improve their national cybersecurity”

Studies & research

ITU Publications



Background

- GCIv1 – the 1st iteration of the GCI has started in 2013-2014 period -**105** countries responded
- GCIv2 – the 2nd iteration covered 2016-2017 period – **134** countries responded
- **GCIv3 – 3rd iteration started in March 2018 – 137 countries as of today**

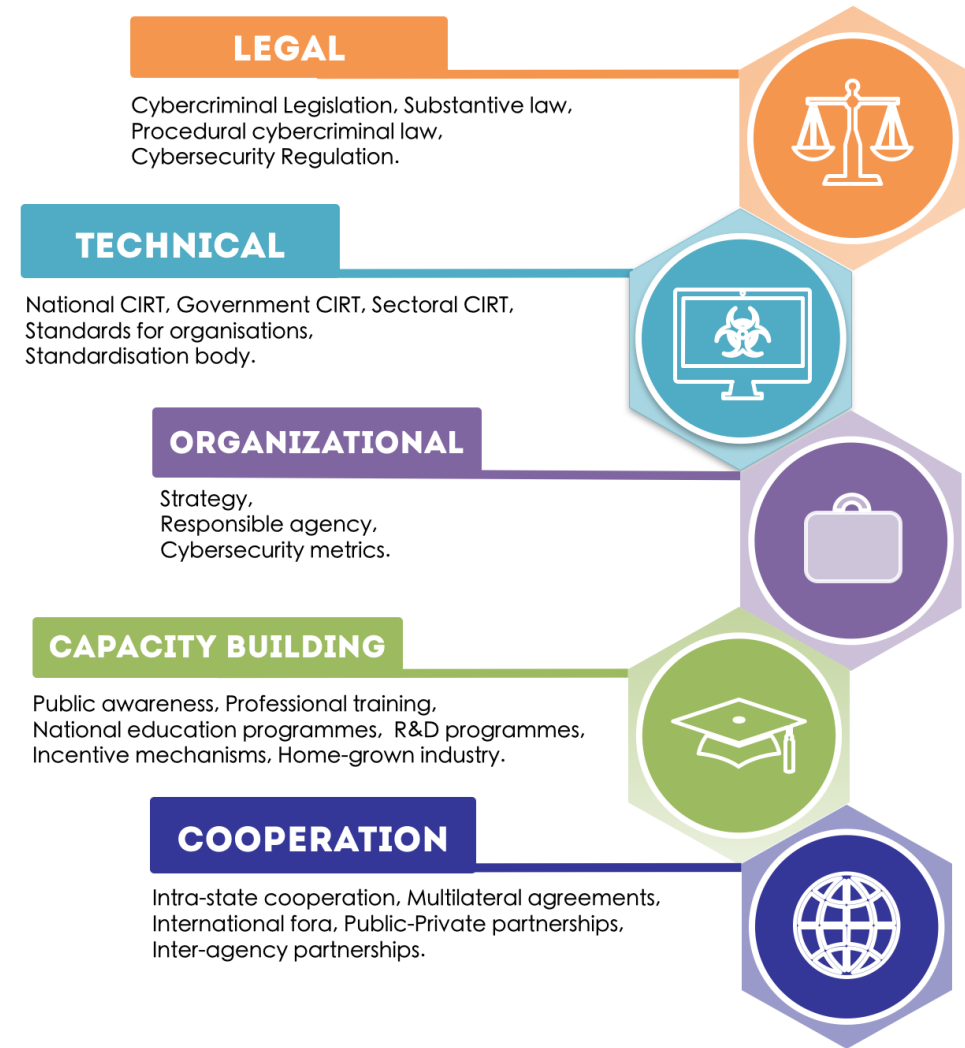


All iterations include primary research in order to provide global coverage of the 194 Member States

GCI overall approach

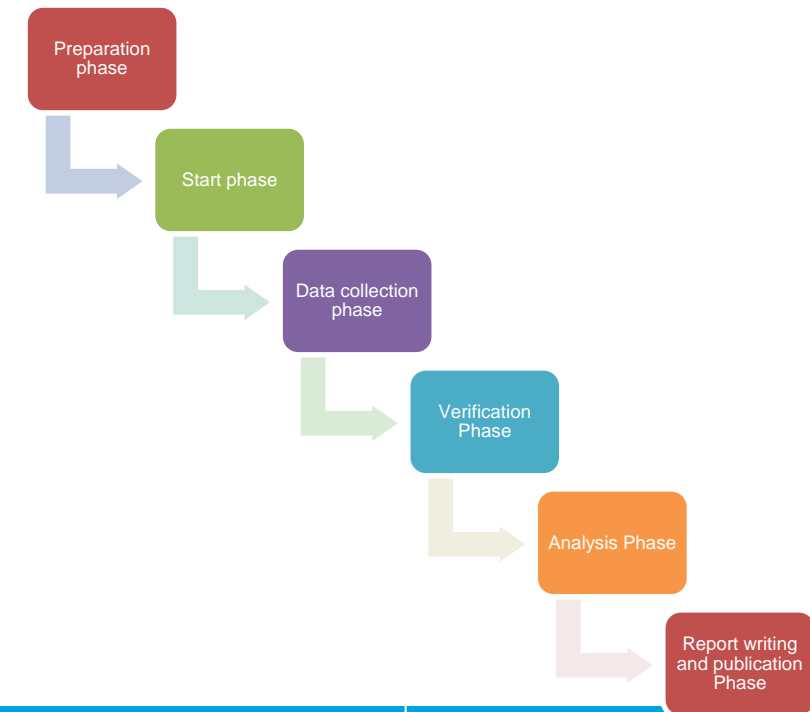
The GCIv3 includes 25 indicators and 50 questions. The indicators used to calculate the GCI were selected on the basis of the following criteria:

- relevance to the five GCA (Global Cybersecurity Agenda) pillars and in contributing towards the main GCI objectives and conceptual framework;
- data availability and quality;
- possibility of cross verification through secondary data.



How it functions. Main steps.

- **Preparation phase**
 - Elaboration of the survey in collaboration with experts and partners
 - Development of online survey system
 - Preparation of supporting documentation (guides, conceptual framework, letters etc.)
 - Announcement on the ITU website
- **Start phase**
 - Informing/invitation Member States via official letter from the BDT Director to Administrations (Responsible Ministry, organization, agency...)
 - Collection of contact details of Focal Point(s) assigned by the Administration
 - Contacting FPs and providing access to the online survey together with all necessary documents and instructions
 - Technical Support
- **Data collection phase**
 - Filling the questionnaire (FPs provide data, links, supporting documents etc.)
 - Collection of data from open sources for non-respondents (ITU helps Member States to appear in the Report)
- **Verification Phase**
 - ITU specialists verify all provided data and contact FPs for more details if needed.
 - ITU shares the verified data with FPs
- **Analysis Phase**
 - Analysis of all collected data (for respondents and non-respondents).
 - Ranking. Preparation of comparison charts, maps, tables and other statistical elements.
 - Illustrative practices extraction.
- **Report writing and publication Phase**
 - Elaboration of the GCI Report
 - Publication on the ITU website and printing
 - Official launch and informing Member States
 - Follow-up



Score calculation



Panel of Expert Score Sheet									
GLOBAL CYBERSECURITY INDEX 2018									
	%	Points total allowed	Points total awarded	Sub sub Dimension score	%	Points total allowed	Points total awarded	Sub sub sub Dimension score	%
2.8. Child online protection?					0				
3. Is there a legislation or regulation related to the containment or curbing of spam?	0								
2. TECHNICAL MEASURES									
1. Is there a CIRT, CSIRT or CERT?	0	60	0						
1.1. Is there a national CIRT, CSIRT or CERT?					0	30	0		
1.1.1. Does the above CIRT, CSIRT or CERT conduct continuous cybersecurity exercise?									40
1.1.2. Is the above CIRT, CSIRT or CERT affiliated with FIRST?									0
1.1.3. Is the above CIRT, CSIRT or CERT affiliated with Regional CERTS (APCERT, ICCERT, FRICACERT, TFCCERT)?									0
1.1.4. Is the above CIRT, CSIRT or CERT affiliated with any other CERT Associations?									0
1.2. Is there a government CIRT, CSIRT or CERT?					0				
1.2.1. Does the above CIRT, CSIRT or CERT conduct continuous cybersecurity exercise?									40
1.2.2. Is the above CIRT, CSIRT or CERT affiliated with FIRST?									0
1.2.3. Is the above CIRT, CSIRT or CERT affiliated with regional CERTS (APCERT, ICCERT, FRICACERT, TFCCERT)?									0
1.2.4. Is the above CIRT, CSIRT or CERT affiliated with any other CERT Associations?									0
1.3. Is there a sectorial CIRT, CSIRT or CERT?					0				
1.3.1. Does the above CIRT, CSIRT or CERT conduct continuous cybersecurity exercise?									40
1.3.2. Is the above CIRT, CSIRT or CERT affiliated with FIRST?									0
1.3.3. Is the above CIRT, CSIRT or CERT affiliated with regional CERTS (APCERT, ICCERT, FRICACERT, TFCCERT)?									0
1.3.4. Is the above CIRT, CSIRT or CERT affiliated with any other CERT Associations?									0
1.4. Is there any framework for the implementation of cybersecurity standards?	0								
1.5. Is there any framework for the implementation of cybersecurity standards in the private sector?					0	20	0		

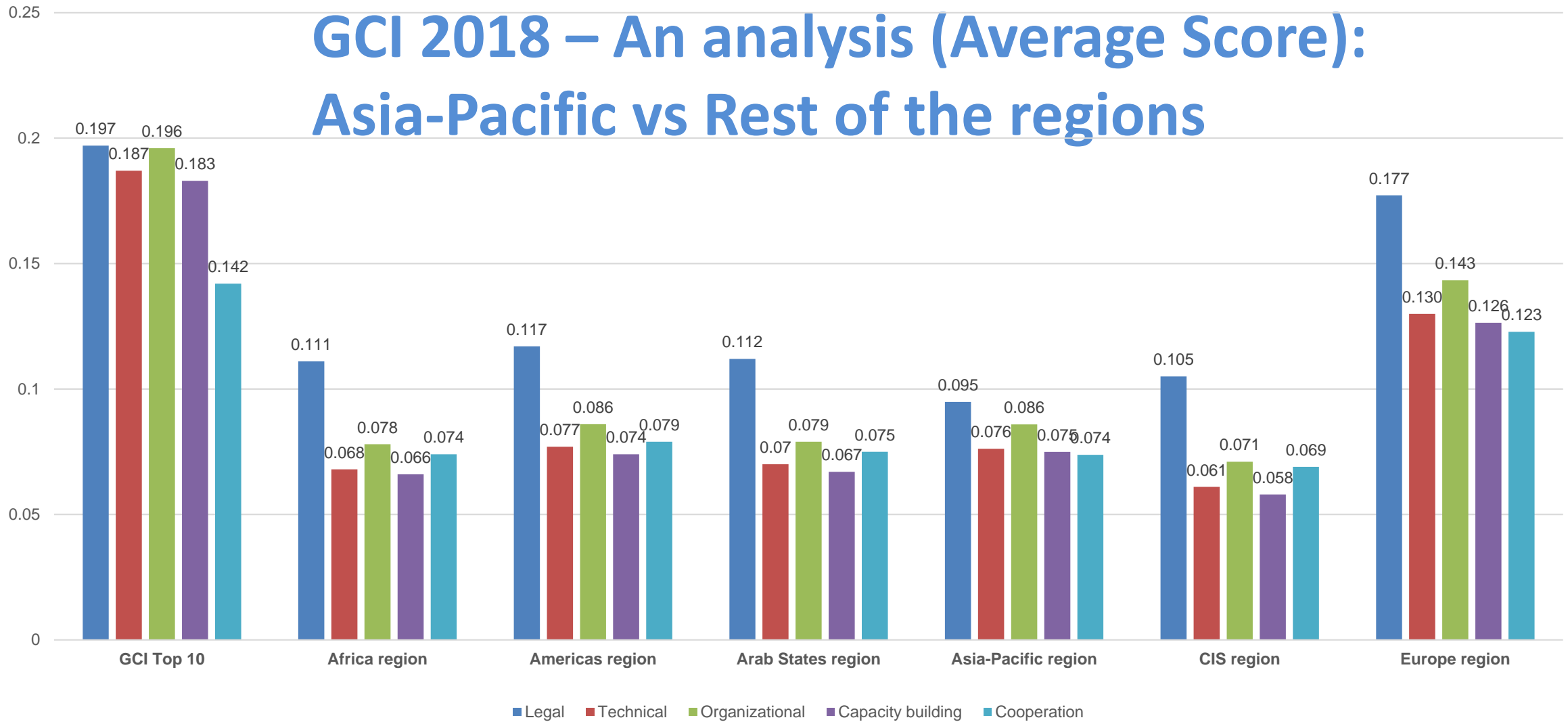
GCI most committed countries globally in 2018

In 2018, only three regions are represented with countries having the most level of commitment: six countries from the Europe region, three from the Asia-Pacific region, and two from the Americas region

Table 4 shows countries that scored well in the legal and organizational pillars reaching a peak score of 20 (0.200). Almost all countries mentioned above show low commitment in the cooperation pillar, with Lithuania scoring only 0.155

Rank	Member States	GCI Score	Legal	Technical	Organizational	Capacity building	Cooperation
1	United Kingdom	0.931	0.200	0.191	0.200	0.189	0.151
2	United States of America	0.926	0.200	0.184	0.200	0.191	0.151
3	France	0.918	0.200	0.193	0.200	0.186	0.139
4	Lithuania	0.908	0.200	0.168	0.200	0.185	0.155
5	Estonia	0.905	0.200	0.195	0.186	0.170	0.153
6	Singapore	0.898	0.200	0.186	0.192	0.195	0.125
7	Spain	0.896	0.200	0.180	0.200	0.168	0.148
8	Malaysia	0.893	0.179	0.196	0.200	0.198	0.120
9	Norway	0.892	0.191	0.196	0.177	0.185	0.143
10	Canada	0.892	0.195	0.189	0.200	0.172	0.137
11	Australia	0.890	0.200	0.174	0.200	0.176	0.139

GCI 2018 – An analysis (Average Score): Asia-Pacific vs Rest of the regions



Cyberdrills

Regional Cyberdrills -Objectives



1	Enhancing cybersecurity capacity and capabilities through regional collaborations and cooperation;
2	Enhancing the awareness and the capability of countries to participate and to contribute to the development and deployment of a strategy of defeating a cyber threat;
3	Strengthening international cooperation between Member States to ensure continued collective efforts against cyber threats;
4	Enhancing Member States' and incident response capabilities and communication;
5	Assisting Member States to develop and implement operational procedures to respond better to various cyber incidents, identify improvements for future planning CIRT processes and operational procedures

Regional Cyberdrills - Programme

1

Days 1 and 2 are dedicated to the organization of capacity building sessions, case studies or other themes-related training requirements, as well as COP-related issues, etc.

2

Day 3 is a conference day that includes presentations and panel discussions on current issues, latest assessment and current and emerging trends in cybersecurity threats and solutions.

3

Days 4 and 5 are structured around scenarios that consist of several incidents involving the most common types of attacks and possible resolutions.

ITU Asia-Pacific and CIS Inter-Regional Cyberdrill

Date : 23-27 September 2019, Kuala Lumpur, Malaysia

Hosted by



MINISTRY OF COMMUNICATIONS
AND MULTIMEDIA MALAYSIA

The Ministry of
Communications and
Multimedia Malaysia



The National Cyber
Security Agency Malaysia



Child Online Protection (COP)

Online Threats to Children



Child Online Protection (COP) Initiative

The COP Initiative aims at bringing together partners from all sectors of the global community to ensure a safe and secure online experience for children everywhere.

Objectives

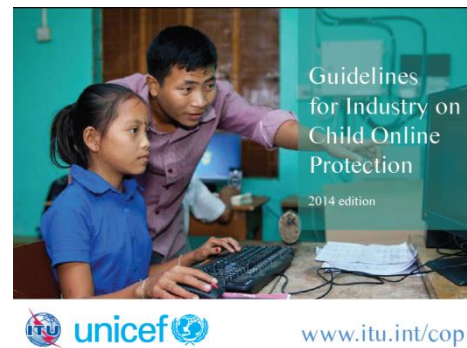
- Identify risks and vulnerabilities to children in cyberspace;
- Create awareness of the risks and issues through multiple channels;
- Develop practical tools to help governments, organizations and educators minimize risk; and
- Share knowledge and experience while facilitating international strategic partnership to define and implement concrete initiatives

COP Five Strategic Pillars



- COP high-level deliverables across the five strategic pillars are designed to be achieved by ITU and COP members in collaboration.
 - Legal Measures
 - Technical & Procedural Measures
 - Organizational Structures
 - Capacity Building
 - International Cooperation
- It is designed to transform the COP Guidelines into concrete activities by leveraging the active support provided by COP partners.

4 Set of COP Guidelines



- Developed in cooperation with COP partners, is the first set of guidelines addressing different stakeholders. [Available in the six UN languages](http://www.itu.int/cop)

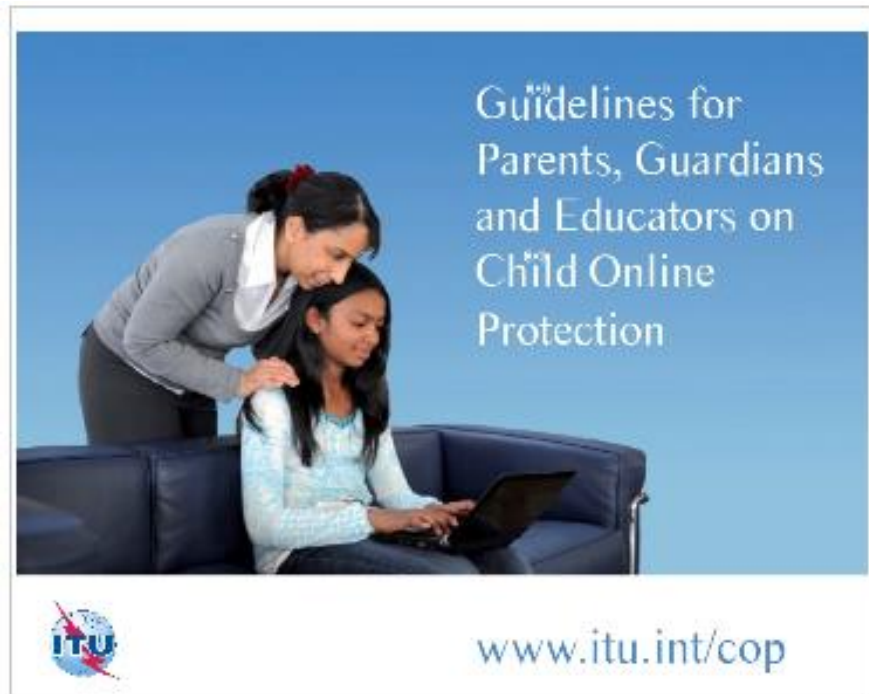
Update version **COP Guidelines for Children**



Children and young people need to be aware of risks online. The guidelines advise them on possible harmful activities online, such as bullying and harassment, identity theft, and online abuse. The guidelines also include advice to children seeing and experiencing harmful and illegal content online, or young people being exposed to grooming for sexual purposes, the production, distribution and collection of child abuse material.

Update version

COP Guidelines for Parents, Guardians and Educators



Research shows that more and more children are connecting to the Internet using game consoles and mobile devices, yet many adults are not even aware that these activities include internet connectivity. The guidelines for parents, guardians and educators provide recommendations on what they can do to make their child's online experience a positive one.

COP Guidelines for Policy Makers



The guidelines for policy makers will help individual countries plan for their strategies for child online protection in the short, medium and longer term. In order to formulate a national strategy focusing on online child safety, policy makers need to consider a range of strategies, including establishing a legal framework; developing law enforcement capabilities; putting in place appropriate resources and reporting mechanisms; and providing education and awareness resources.

New COP Guidelines for Industry



The updated guidelines for Industry on Child Online Protection provide advice on how the ICT industry can help promote safety for children using the Internet or any technologies or devices that can connect to it. An online platform of COP case studies from the broader ICT Industry further complements the content of these Guidelines.

5 key areas for protecting and promoting children's rights in the online environment

Policies and management processes

Integrate children's rights in **policies and management processes**

Child sexual abuse content

Develop processes for handling child sexual abuse content

Safer and age appropriate environment

Develop **safer and age appropriate** online environments

Educate children, parents and teachers

Educate children, parents and teachers on children's safety

Promote positive use of ICTS

Promote digital technology as a mode to further **good citizenship**

Purpose of the Guidelines is to provide:

- ✓ A blueprint that can be adapted locally for various industry players
- ✓ Establish a benchmark for recommended actions
- ✓ Guidance on identifying, prevent and mitigating risks
- ✓ Guidance on supporting children's rights

ITU Work on Child Online Protection in Asia-Pacific

- ITU Regional Workshop , Vanuatu
- Partners : CTO, Regulator, OGCIO
- Outcome: COP Guidelines for Vanuatu
- COP Guidelines for Brunei : 2014
- COP Awareness in Nepal (2015)
- COP ongoing work in Philippines , Bhutan, Kiribati (2018)



COP Activities with ASEAN (2016-18)

ASEAN Strategy Framework on Child Online Protection

- Survey and its findings presented at the ITU-ASEAN Forum on COP (Sep 2016; Manila, Philippines)
- ITU-ASEAN Forum/workshops on Child Online Protection
 - ✓ Manila, Philippines, Sept. 2016
 - ✓ Jakarta, Indonesia, March 2018
 - ✓ Nay Pyi Taw, Myanmar, December 2018
- Framework finalized and will be shared with ASEAN
- ITU Paper for ASEAN on “Improving child online protection measures in ASEAN: Partnering with industry”

Child Sexual Abuse Domestic Legislation Summary

Country	Expressly criminalizes 'child pornography'	Clear definition of 'child pornography'	Criminalizes simple possession	Reporting obligation for ISPs	Criminalizes sexual grooming
Brunei Darussalam	✓	✓	✓	X	✓
Cambodia	✓	✓	X	X	X
Indonesia	✓	X	✓	X	X
Lao PDR	✓	X	X	X	X
Malaysia	✓	✓	✓	X	✓
Myanmar	✓	X	X	X	X
Philippines	✓	✓	✓	✓	✓
Singapore	✓	X	✓	X	✓
Thailand	✓	✓	✓	X	X
Vietnam	✓	X	X	X	X

3D Multiuser Virtual Learning Environment to increase awareness about online risks for children

- The prototype will have different scenarios where a child is confronted with a cyber abuse situation by a predator approaching the child via social media
- The game shows an island with different kinds of games for children. Once they are engaged, they will be confronted by a social media screen insert, offering interesting challenges by a K-Pop star lookalike.
- The child will be represented by a child avatar
- <https://www.youtube.com/watch?v=SymYlZq5v1k&feature=youtu.be>

Conclusions

- While it will never be possible to completely remove all risks, drawing together an effective policies and practices, infrastructure & technology, awareness and communication can do a great deal to help.
- Cybersecurity and Critical National Information Infrastructure requiring political will and commitment to have clear National Cybersecurity Strategy , Cyber Crime Legislation , Child Online Protection, establishment / strengthening the CIRTs/ regular national / regional Cyber Drills
- Human and institutional capacity building critical to understand and take reactive / proactive response to address cyberthreats
- International cooperation, based on a multi-stakeholder approach, is the key and by working together with ITU and its partners, together we can realize Safe and Secure Cyber-space!

ITU : I Thank U