

# Cyber Readiness Index 1.0

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Hathaway Global Strategies, LLC

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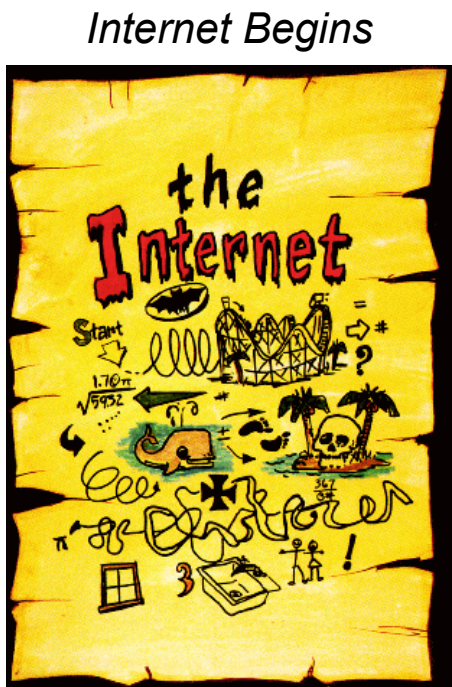
# Agenda

- ▶ Objective of Methodology
- ▶ Review of Key Concepts
  - ▶ Introduction - Innovation and Information Communications Technology (ICT) Adoption
  - ▶ Introduction - Security Challenges
  - ▶ Introduction - What is Cyber Security?
  - ▶ National Security - Protecting the Value of Investments
  - ▶ The Methodology
  - ▶ Conclusion
- ▶ Discussion

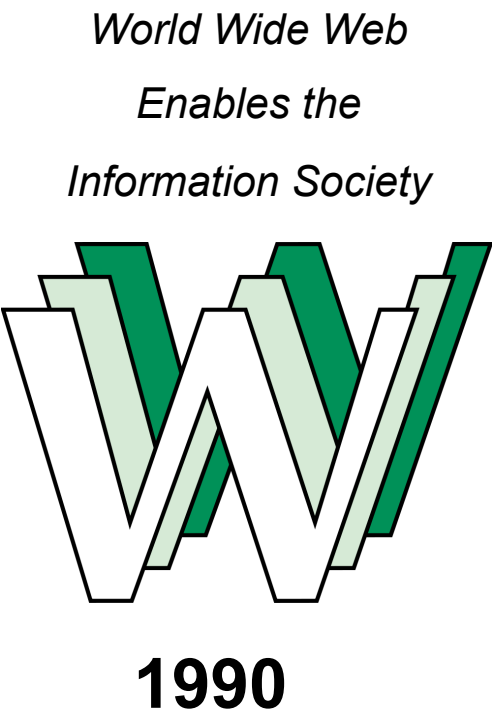
# Objective

- ▶ The Cyber Readiness Index (CRI) examines thirty-five countries that have embraced ICT and the Internet and compares their maturity and commitment to protecting those investments using an initial objective assessment of where countries stand in cyber security in five areas.
- ▶ Introduces a fresh perspective for Cybersecurity - focused on *Economic Growth*.
- ▶ Work with countries as they develop their National Strategies (Cyber and Security) to balance a national security agenda with an economic agenda.
- ▶ Update the CRI periodically; adding countries and building out sub-indices.

# Internet: Past, Present, and Future...



1969



1990



2005



2020



# ICT Combined with Direct and Ubiquitous Communications are Changing the Way We Work, Live and Play...

	Today	2020
<b>Estimated World Population</b>	7 billion people	~8 billion people
<b>Estimated Internet Population</b>	2.5 billion people; (35% of population is online)	~5 billion people; (60% of population is online)
<b>Total Number of Devices</b>	12.5 billion internet connected physical objects and devices (~6 devices per person)	50 billion internet connected physical objects and devices (~10 devices per person)
<b>ICT Contribution to the Economy</b>	~4% of GDP on average for G-20 nations	10% of worldwide GDP (and perhaps more for developing nations)

# ICT is Embedded in Every Essential Service and Part of Life - Driving Efficiency and Productivity



**Industry & Manufacturing**



**Consumer**



**Buildings**



**Energy**



**Administration**



**Food**



**Space**



**ICT**



**Water**



**Chemical**



**Healthcare**



**Citizen Safety**



**Financial Systems**

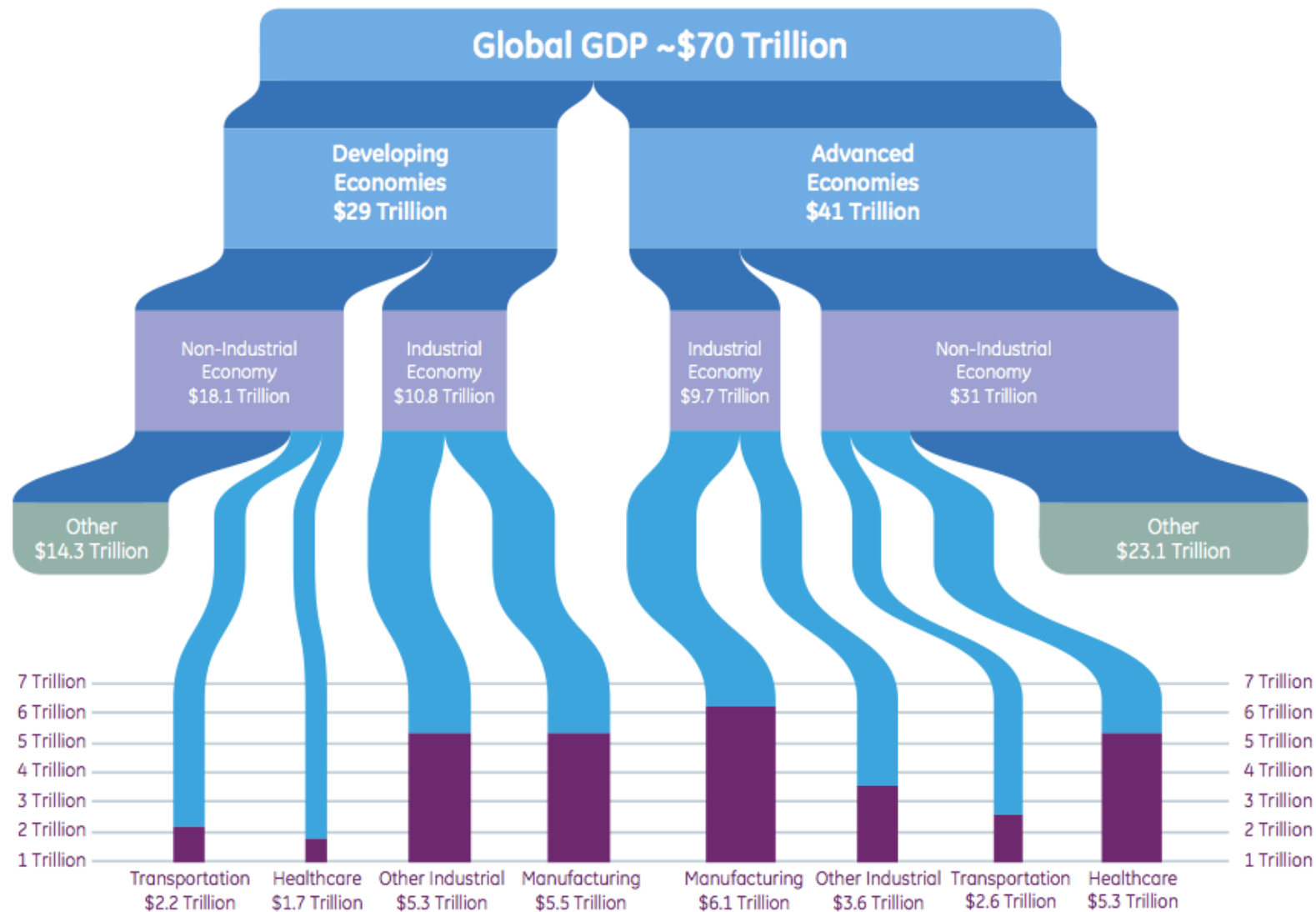


**Transport**



**Research**

# ...In fact, ICT is at the Core of the Industrial/Infrastructure Modernization Agenda

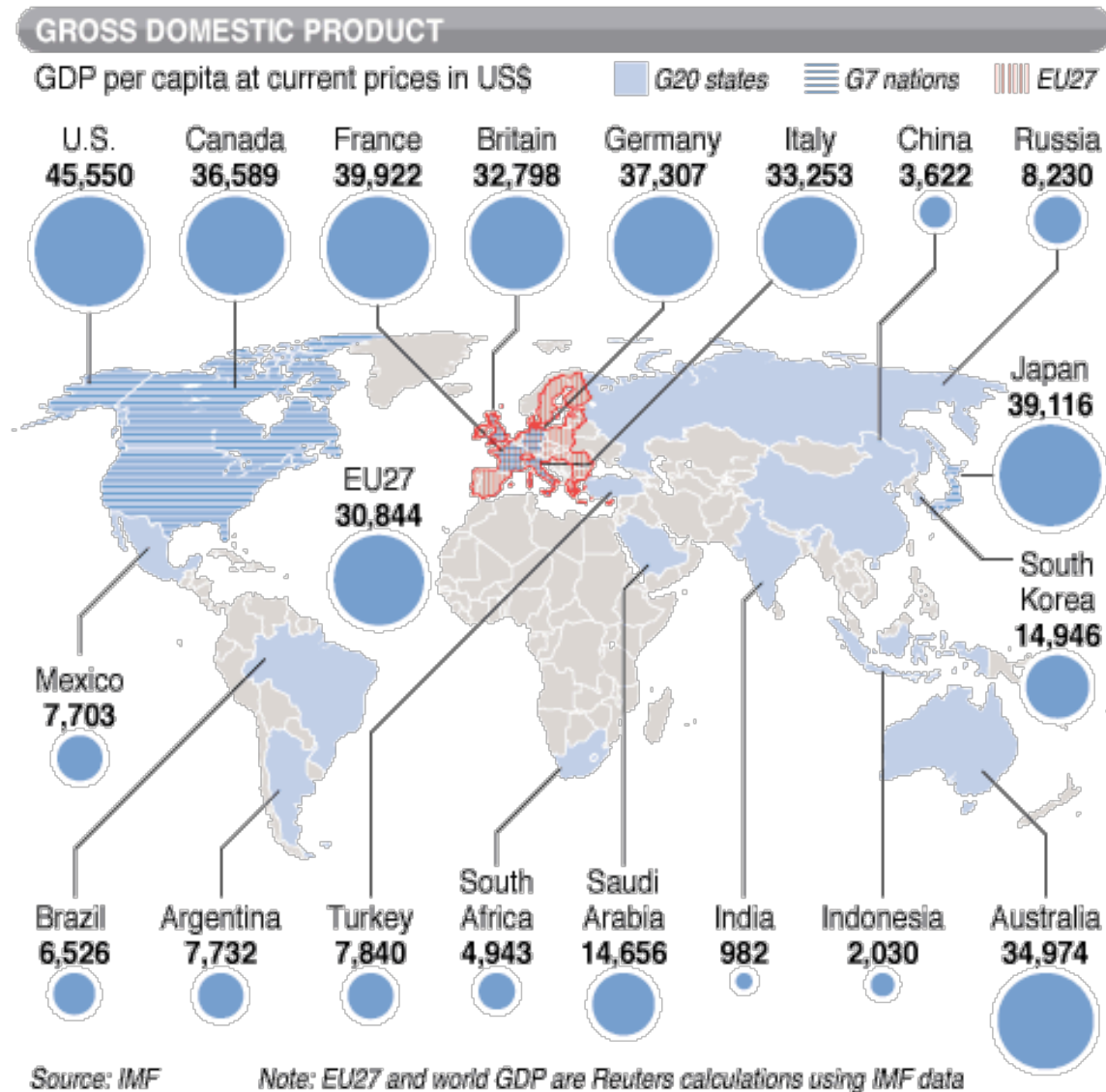


**Industrial Internet opportunity ( \$32.3 Trillion ) 46% share of global economy today**

Source: World Bank, 2011 and General Electric

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# The G-20 Nations are Leading ICT Adoption and Use and Count on ~4% in GDP Growth...



## G-20 Countries

Argentina

Australia

Brazil

Canada

China

European Union

France

Germany

India

Indonesia

Italy

Japan

Mexico

Russia

Saudi Arabia

South Africa

South Korea

Turkey

United Kingdom

United States

....and Developing Nations are Seeking Higher Returns ~+10% GDP.

# Protecting the Value of these Digital Investments is Top of Mind of Global Leaders...



COMMITTED TO  
IMPROVING THE STATE  
OF THE WORLD

“Cybersecurity is an issue that no one organization can resolve by itself,”

Alan Marcus

Senior director, head of IT and telecom industries for the WEF USA.

**WEF Ranked *Cybercrime* as #1 Technological Risk  
in 2012 and risk of *Cyber Attack* as priority concern in 2013**



Vladimir Putin  
President of Russia

“One of these is establishing international control over the Internet using the monitoring and supervisory capabilities of the International Telecommunications Union (ITU). If we are going to talk about the democratization of international relations, I think a critical sphere is information exchange and global control over such exchange.”



# Protecting the Value of these Digital Investments is Top of Mind of Global Leaders...



“Why are we all so concerned about the cyberspace? This is because our dependence on cyberspace is expanding, while cyber attacks on critical infrastructure are increasing, and threat landscape is getting worse. Whether it is connecting with suppliers, ordering goods, floating e-procurement tenders, making payments to employees and vendors, communicating within and outside of organizations, it is the cyberspace that is used to connect, do business, and reach out to the public.”

Rajendra Pawar

Chairman, CSAG Chairman, Executive Council, NASSCOM Chairman & Co-founder, NIIT Group

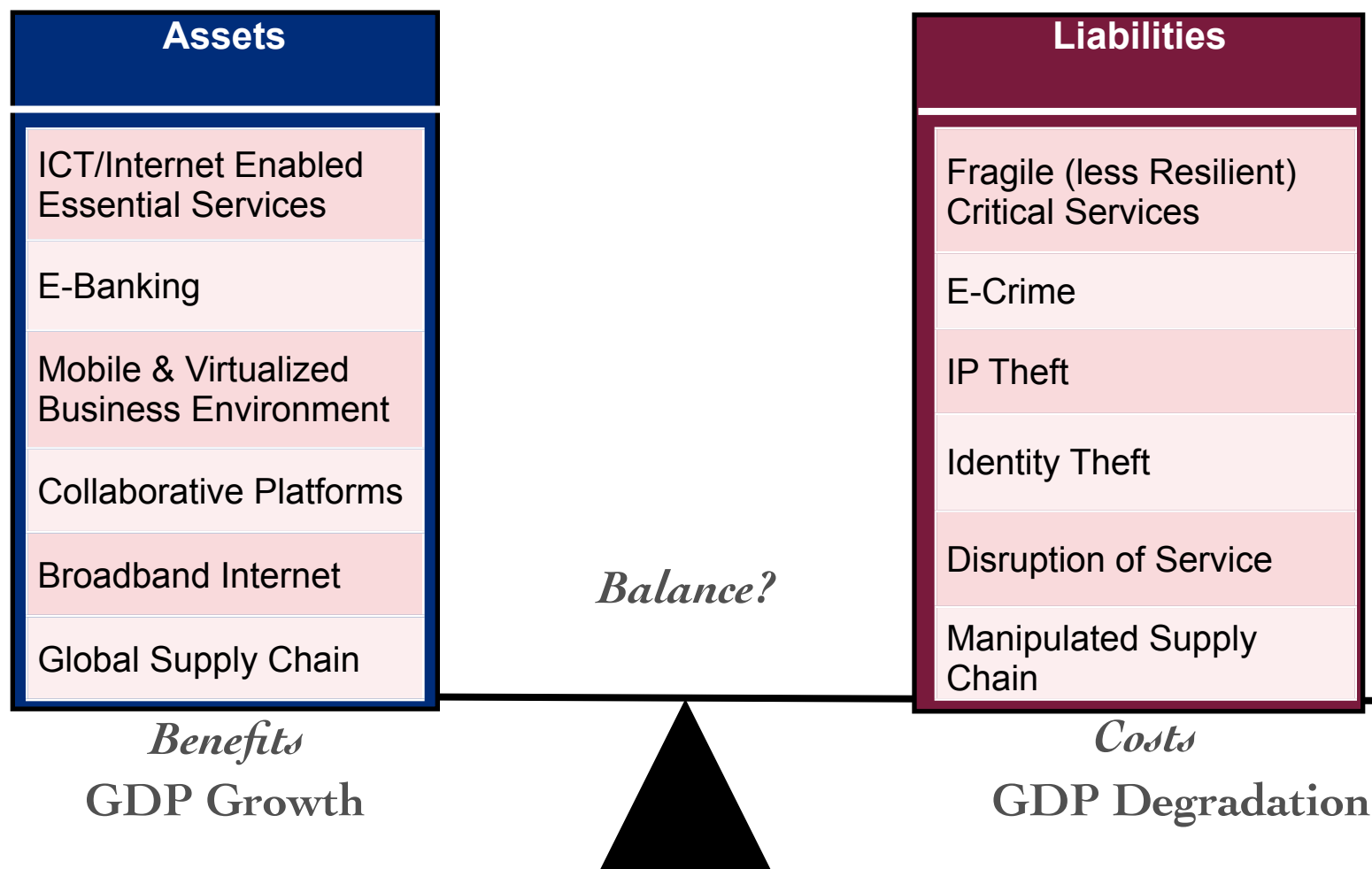
“The cyber threat is one of the most serious economic and national security challenges we face as a nation”



Barack Obama

President of the United States of America

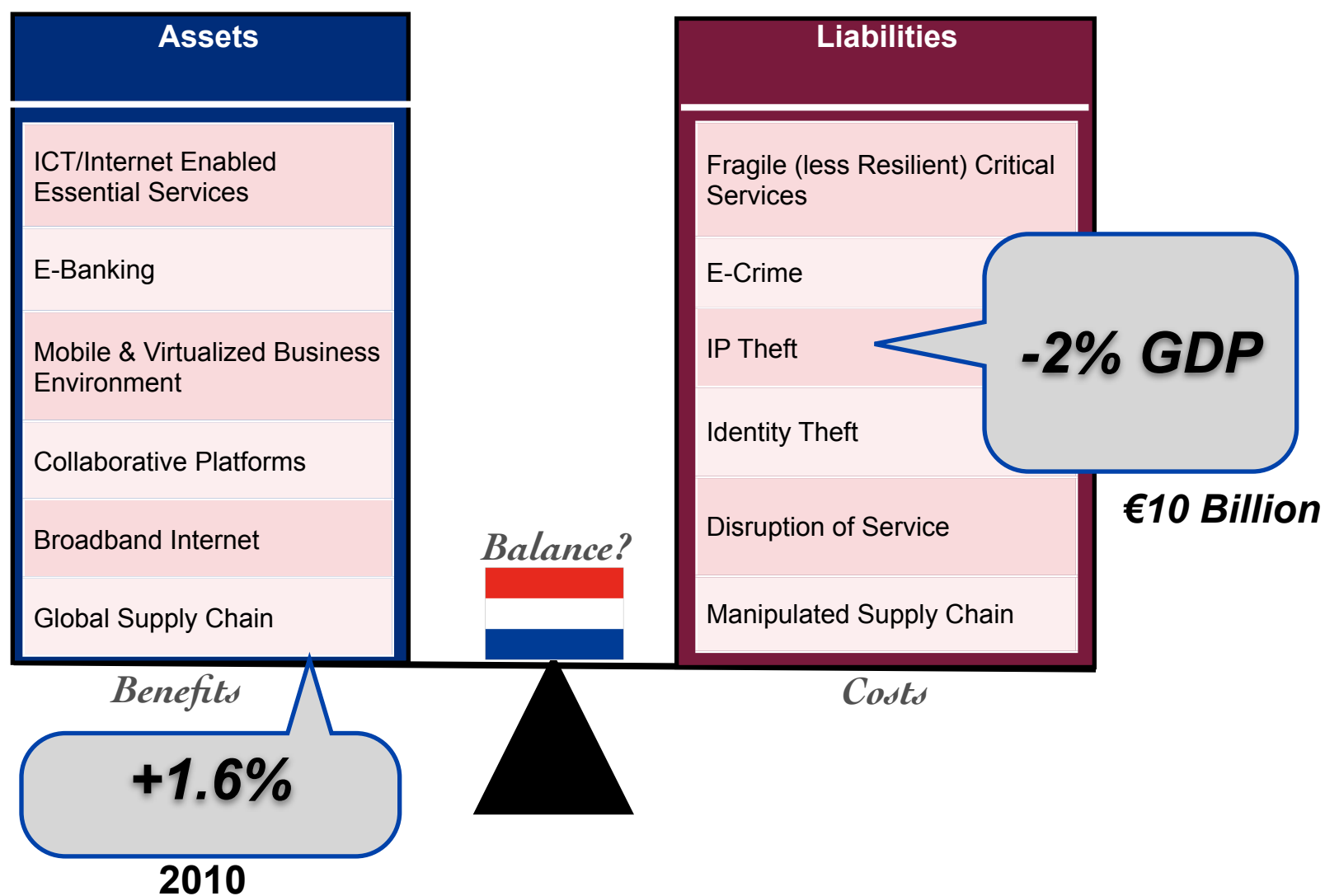
# ICT Investments May Not be Contributing to Real Growth



# Because Cyber Activities are Degrading Countries' Economic Potential

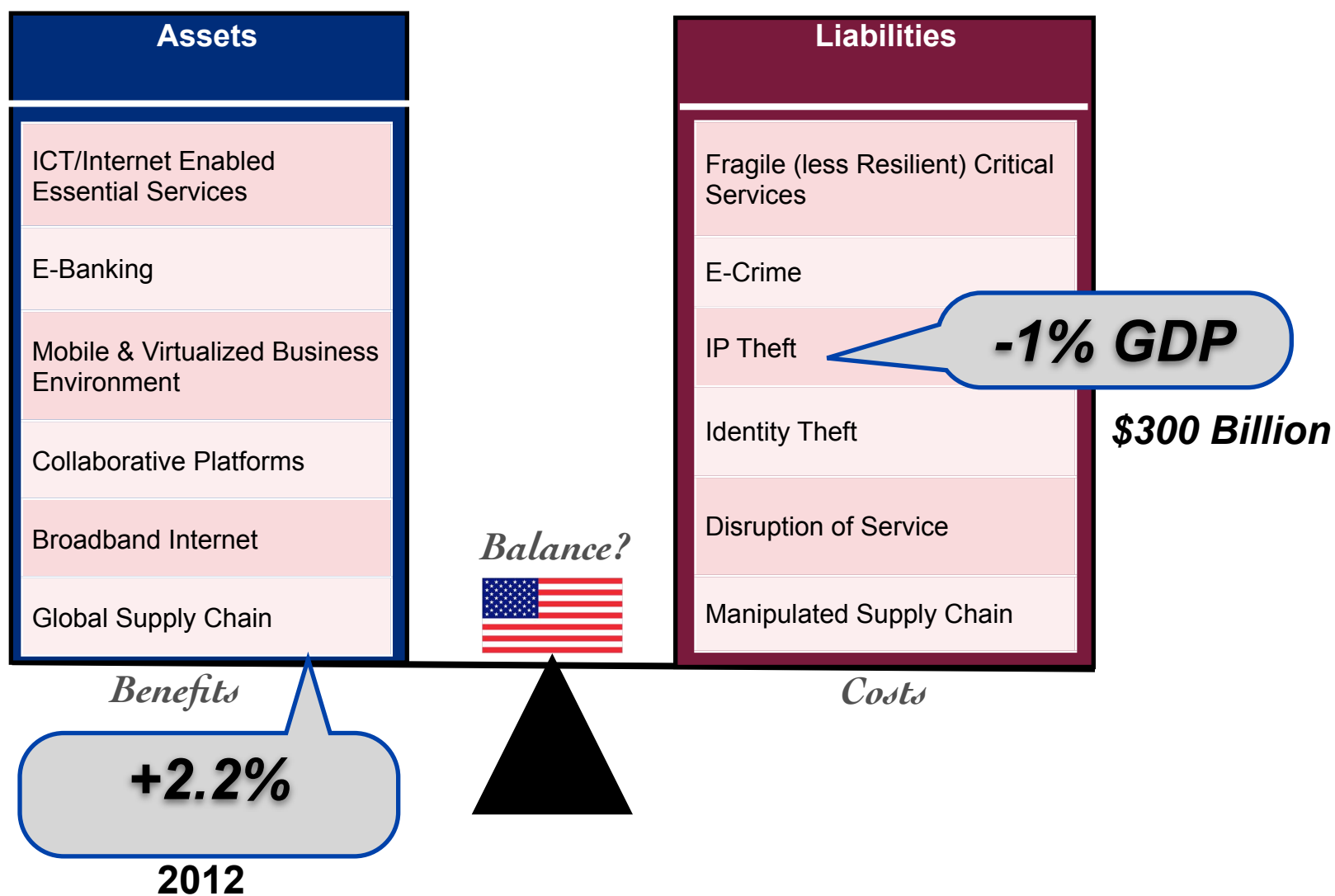
- ▶ More than 100 countries are cyber capable
- ▶ Non-state actors are also playing an increasing role in domestic and international politics
- ▶ Objectives Vary:
  - ▶ Political Activism;
  - ▶ Organized Crime;
  - ▶ Intellectual Property Theft (Industrial Espionage);
  - ▶ Espionage;
  - ▶ Disruption of Service;
  - ▶ Destruction of Property

# Case Study: The Netherlands



\* Source: [http://www.tno.nl/content.cfm?context=overtno&content=nieuwsbericht&laag1=37&laag2=69&item\\_id=2012-04-10%2011:37:10.0&Taal=2](http://www.tno.nl/content.cfm?context=overtno&content=nieuwsbericht&laag1=37&laag2=69&item_id=2012-04-10%2011:37:10.0&Taal=2)

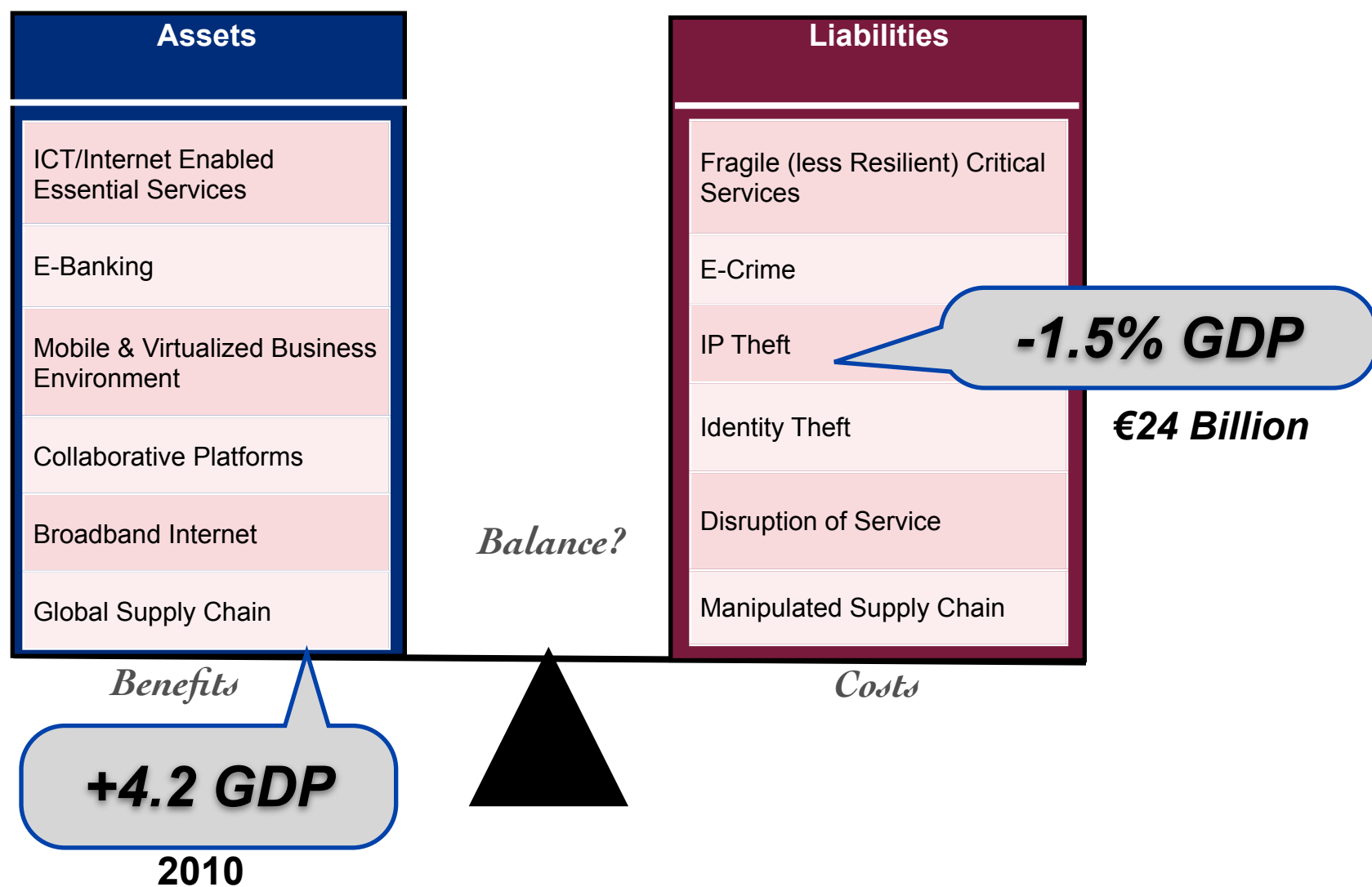
# Case Study: The United States of America



\* Source: The Commission on the Theft of American Intellectual Property by The National Bureau of Asian Research. The IP Commission Report. May 2013.



# Case Study: Germany



Source: <http://www.mcafee.com/us/resources/reports/rp-economic-impact-cybercrime.pdf>

# No Nation is Cyber Ready...

Measuring the declining gains  
may force governments to align their ICT vision  
with their security strategy  
and  
invest in the derivative value of both.

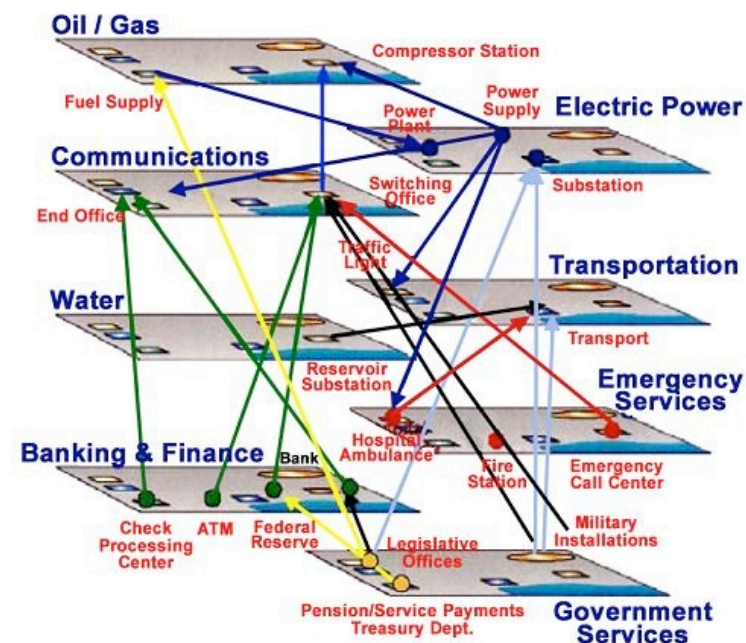
Innovation/Digital Agenda (Economic Prosperity) and the Security thereof (National Security)

# Proposal: Evaluate Cyber Readiness based on Two Sets of Investments....



## ***Economic Prosperity***

Productivity  
Efficiency  
Innovation  
Modernization

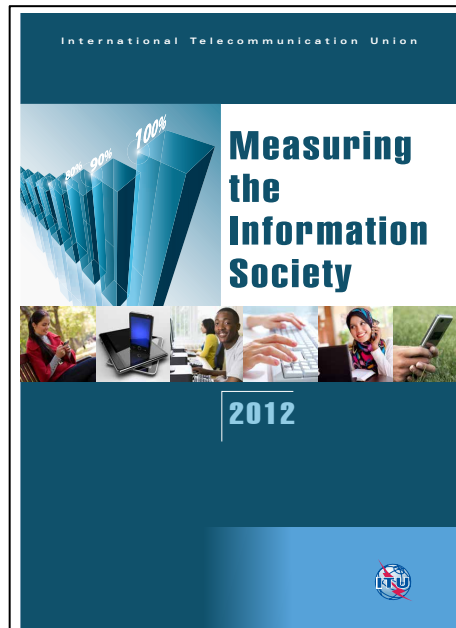


## ***National Security***

Infrastructure Protection  
Intellectual Property Protection  
Defense of Homeland  
Regime Stability

**Balance?**

# Indices Measure ICT Adoption, Digital Activity, and Advancement of Societies.....



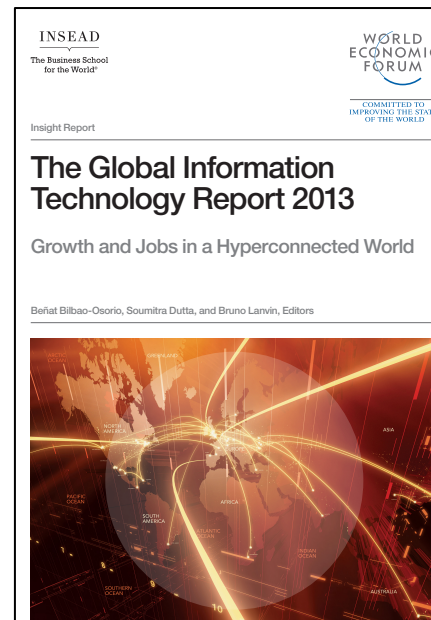
ICT  
Development  
Index

## THE INTERNET OF THINGS

"The next logical step in the technological revolution connecting people anytime, anywhere is to connect inanimate objects. This is the vision underlying the **Internet of things: anytime, anywhere, by anyone and anything**" – ITU, November 2005



Network  
Readiness  
Index



# International Telecommunications Union (ITU):

## - Measures of Development -

### *The Information Society*

- Enhanced ICT Infrastructure and access derived from evaluation of:
  - Price
  - Bandwidth
  - Speed/quality of service
  - Skills
  - Content and language
  - Applications targeted to users with limited connectivity

ICT Development Index (2013)  
2012 Ranking

1	South Korea	11	Australia
2	Sweden	12	Japan
3	Iceland	13	Switzerland
4	Denmark	14	Macau (PRC)
5	Finland	15	Singapore
6	Norway	16	New Zealand
7	Netherlands	17	United States
8	United Kingdom	18	France
9	Luxembourg	19	Germany
10	Hong Kong	20	Canada
40	Russia	121	India
62	Brazil	78	China
84	South Africa		



# World Economic Forum: Network Readiness Index

Network Readiness is divided into four subindices:

1. Environment subindex
  - Political and regulatory environment
  - Business and innovation environment
2. Readiness subindex
  - Infrastructure and digital content
  - Affordability
  - Skills
3. Usage subindex
  - Individual usage
  - Business usage
  - Government usage
4. Impact subindex
  - Economic impacts
  - Social impacts

## Networked Readiness Index (2013) 2012 Ranking

1	Finland	11	South Korea
2	Singapore	12	Canada
3	Sweden	13	Germany
4	Netherlands	14	Hong Kong
5	Norway	15	Israel
6	Switzerland	16	Luxembourg
7	United Kingdom	17	Iceland
8	Denmark	18	Australia
9	United States	19	Austria
10	Taiwan	20	New Zealand
54	Russia	68	India
60	Brazil	58	China
70	South Africa		

# No Index Measures Security

# Selection Criteria

- Identified the top 20 countries with strongest ICT Development Index
- Included the G-20, because they represent:
  - 90% of global GDP
  - 80% of international trade
  - 64% of the world's population
  - 84% of all fossil fuel emissions
  - And it includes Brazil, Russia, India, China, and South Africa
- Included the top 20 GDP countries
- Informed by the Networked Readiness Index because its methodology included other ICT attributes (e.g., environment, readiness, use, and impact)

**... 35 Countries in total....**

# 35 Countries Were Assessed...

<b>Argentina</b>	<b>India</b>	<b>Saudi Arabia</b>
<b>Australia</b>	<b>Indonesia</b>	<b>Singapore</b>
<b>Austria</b>	<b>Israel</b>	<b>South Africa</b>
<b>Brazil</b>	<b>Italy</b>	<b>South Korea</b>
<b>Canada</b>	<b>Japan</b>	<b>Spain</b>
<b>China</b>	<b>Luxembourg</b>	<b>Switzerland</b>
<b>Denmark</b>	<b>Macau</b>	<b>Sweden</b>
<b>Finland</b>	<b>Mexico</b>	<b>Taiwan</b>
<b>France</b>	<b>The Netherlands</b>	<b>Turkey</b>
<b>Germany</b>	<b>New Zealand</b>	<b>United Kingdom</b>
<b>Hong Kong</b>	<b>Norway</b>	<b>United States of America</b>
<b>Iceland</b>	<b>Russia</b>	

# For Maturity and Commitment to Protecting Their Investment in Five Areas...





# Summary Statistics











- ▶ G-20 countries expect at least 4% GDP growth based on the direct and ubiquitous access to communications and ICT adoption rate.
- ▶ Some countries lead the index with action in all categories (Australia, Canada, The Netherlands, United Kingdom, United States), yet even those countries are experiencing GDP degradation due to cyber insecurity.
- ▶ 27 of 35 countries have a Cyber Security Strategy, yet few are measuring progress and even fewer have invested in the strategy's successful outcome.
- ▶ Almost all countries have an incident response capability either through a national CERT or through the forum of incident responders (FIRST).
- ▶ 20 of 35 countries are committed by treaty to protect society from cybercrime by adopting appropriate legislation, fostering international co-operation, and combating criminal offenses, by facilitating their detection, investigation and prosecution at both the domestic and international levels.
- ▶ Few countries are investing in private-public information sharing exchanges and even fewer have aligned national R&D initiatives.

# Cyber Readiness Methodology

## Legend

Completed ✓

Not Yet ✗

ICT Development Rank		NRI Rank	GDP Rank*	National Strategy	Competent Authority	National CIRT	Crime Treaty	Info Sharing	R&D Agenda	Funding
1	South Korea 	11	15	✓	✓	✓	✗	✓		
2	Sweden 	3	21	✓	✓	✓	✗	✓		
3	Iceland 	17	121	✗	✗	✓	✓			
4	Denmark 	8	33	✗	✓	✓	✓			
5	Finland 	1	42	✓	✓	✓	✓	✓		
6	Norway 	4	23	✓	✓	✓	✓	✓		
7	Netherlands 	4	18	✓	✓	✓	✓	✓	✓	✓
8	United Kingdom 	7	6	✓	✓	✓	✓	✓	✓	✓
9	Luxembourg 	16	72	✓	✓	✓	✗	✓		
10	Hong Kong 	14	37	✗	✗	✓	✓			











\* 2012 World Bank Rating

# Cyber Readiness Methodology

## Legend

Completed ✓

Not Yet ✗

ICT Development Rank	NRI Rank	GDP Rank *	National Strategy	Competent Authority	National CIRT	Crime Treaty	Info Sharing	R&D Agenda	Funding
11 Australia 	18	12	✓	✓	✓	✓	✓	✓	✓
12 Japan 	21	3	✓	✓	✓	✓	✓	✓	
13 Switzerland 	6	20	✓	✓	✓	✓	✓	✗	✗
14 Macau, China ** 	NR	81	✓	✓	✓	✓			
15 Singapore 	2	35	✓	✓	✓	✗	✓		
16 New Zealand 	20	55	✓	✓	✓	✗	✓	✓	
17 United States 	9	1	✓	✓	✓	✓	✓	✓	✓
18 France 	26	5	✓	✓	✓	✓	✓		
19 Germany 	13	4	✓	✓	✓	✓	✓		
20 Canada 	12	11	✓	✓	✓	✓	✓	✓	✓

\* 2012 World Bank Rating

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\*\* Given credit for China's initiatives

# Cyber Readiness Methodology

## Legend

Completed ✓

Not Yet ✗

ICT Development Rank			NRI Rank	GDP Rank*	National Strategy	Competent Authority	National CIRT	Crime Treaty	Info Sharing	R&D Agenda	Funding
21	Austria		19	27	✓	✓	✓	✓	✓		
26	Israel		15	39	✓	✓	✓	✗		✓	
27	Spain ***		38	13	✓	✗	✓	✓			
30	Italy		50	9	✗	✗	✓	✓	✓	✗	✗
40	Russia		54	8	✓	✓	✓	✓			
50	Saudi Arabia		31	19	✗	✗	✗	✗			
53	Argentina		99	26	✗	✓	✓	✗			
62	Brazil		60	7	✓	✓	✓	✗	✓		
69	Turkey		45	17	✓	✗	✓	✗			
78	China		58	2	✓	✓	✓	✓			
83	Mexico		63	14	✗	✗	✓	✗			







\* 2012 World Bank Rating

\*\*\* Spain is within the top 20 of GDP; observer to G20

# Cyber Readiness Methodology

## Legend

Completed	✓
Not Yet	✗

ICT Development Rank			NRI Rank	GDP Rank*	National Strategy	Competent Authority	National CIRT	Crime Treaty	Info Sharing	R&D Agenda	Funding
84	South Africa		70	28	✓	✓	✓	✗		✗	
97	Indonesia		76	16	✓	✓	✓	✗			
121	India		68	10	✓	✓	✓	✗			
NR	Taiwan **		10	NR	✗	✗	✓	✗			
NR	European Union		NR	NR	✓		✓		✓	✓	✓
NR	NATO		NR	NR	✓		✓		✓	✓	✓

\* 2012 World Bank Rating

\*\* Taiwan is within top 20 of NRI

# Success Requires Commitment and National Resolve

- ▶ Commit limited resources in a competitive environment under extreme fiscal pressures
  - ▶ Executive Bandwidth
  - ▶ Money
  - ▶ Political Capital
  - ▶ Time
- ▶ Acknowledge that outcomes depend on a multi-stakeholder partnership
- ▶ Use the full ambit of market levers to reach desired end-state
- ▶ Recognize it is an international challenge supported by a global products and services
- ▶ Embrace the technological revolution without creating unnecessary exposure (economic or security)



# Summary

- ▶ Today, e-government, e-banking, e-health, e-learning, next generation power grids, air traffic control, and other essential services are all concentrated onto a single infrastructure
- ▶ Nations cannot afford for these infrastructures to be exposed or become fragile (Cybersecurity)
- ▶ The advantages that ICT has brought for the last 3 decades (efficiency, productivity, and GDP growth) may not outweigh the endemic unreliability and riskiness caused by the new threats
- ▶ Measuring the declining gains may force governments to align the ICT vision with their security strategy and invest in the derivative value of both: Innovation Agenda (Economic Prosperity) and the Security thereof (National Security)
- ▶ A Cyber Readiness Index can help nations navigate the digital balance sheet
  - ▶ Protecting previous ICT and Internet investments
  - ▶ Realizing the ICT dividend securely

# Summary

- We can no longer defend a status quo position
- The lack of our network resiliency coupled with a vast threat landscape to our networked infrastructure is tearing at the very fabric of our countries (threatening national security and our economic prosperity)
- Adopting a security framework and knowing cyber readiness level is essential

# Discussion

On the Ground of Intersecting Highways,  
Join Hands with Your Allies

Sun Tzu

# Back-up Slides

*“Anyone can hold the helm when the sea is calm.”*

Publilius Syrus

# Accordingly, Countries are Preparing National Cyber Security Strategies ...



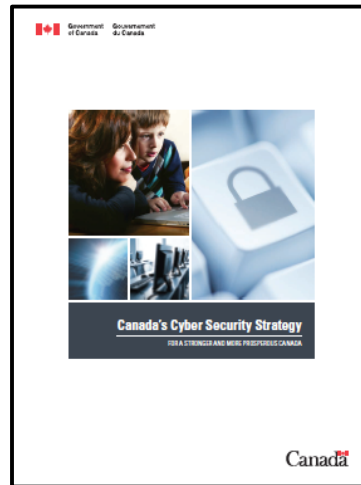
Australia



*Cyber Security Strategy for Australia (2009)*



Canada



*Canada's Cyber Security Strategy (2010)*



United Kingdom



*The UK Cyber Security Strategy (2011)*



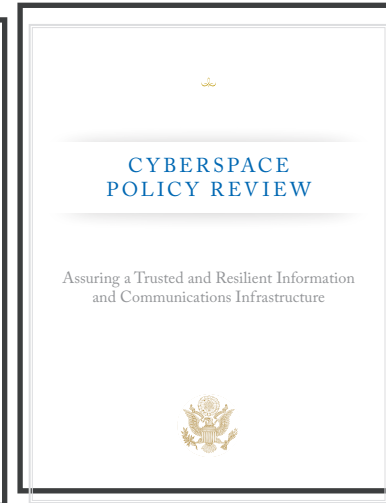
New Zealand



*New Zealand's Cyber Security Strategy (2011)*



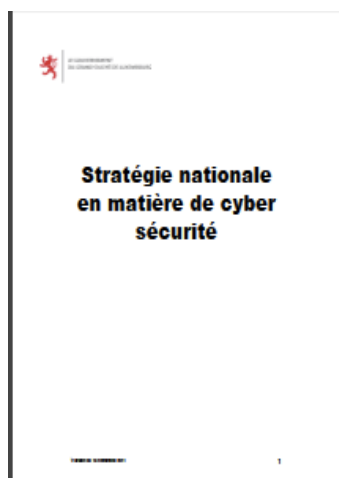
USA



*The Cyberspace Policy Review (2009)*



# Accordingly, Countries are Preparing National Cyber Security Strategies ...



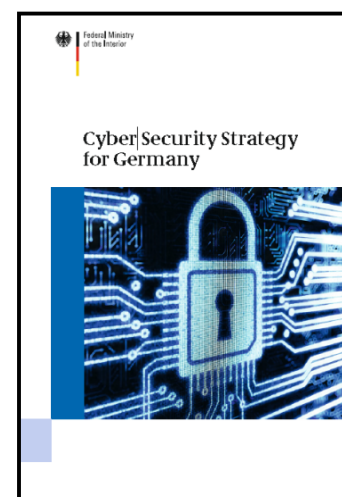
National Strategy  
for Cyber Security  
(2011)



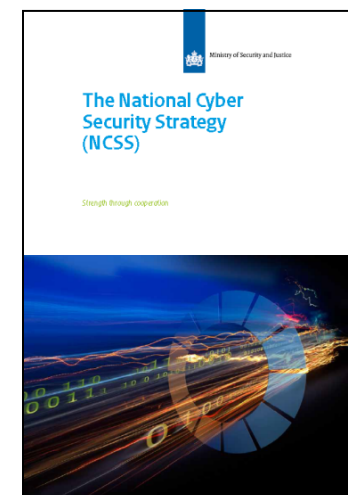
*Information Systems  
Defense and  
Security for France*  
(2011)



Spanish Security  
Strategy  
(2011)



*Cyber Security  
Strategy for  
Germany*  
(2011)



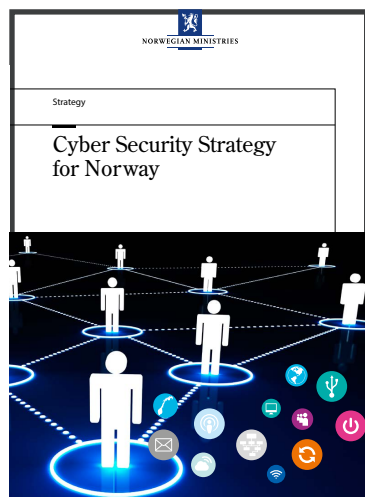
*The National Cyber  
Security Strategy  
(NCSS)*  
(2011)

***New Strategy  
Coming in  
November 2013***

# Accordingly, Countries are Preparing National Cyber Security Strategies ...



Norway



Cyber Security Strategy for Norway (2012)



Russia



Conceptual Views on the Activities of the Armed Forces of the Russian Federation in Information Space (2012)



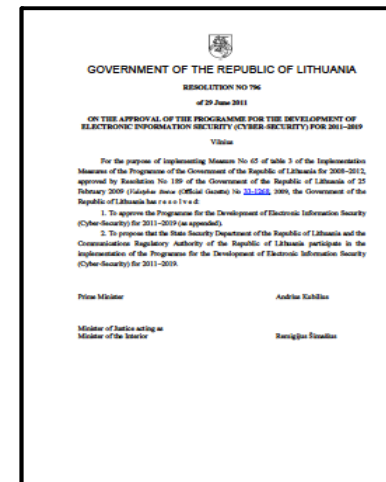
Finland



Government Resolution 24 1 2013 on Cyber Security (2013)



Lithuania



Programme for the Development of Electronic Information Security (2011)

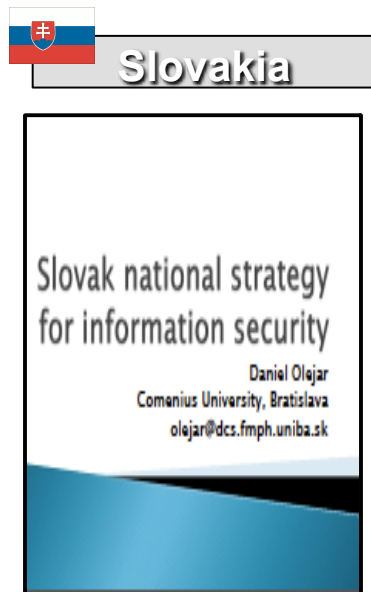


Romania

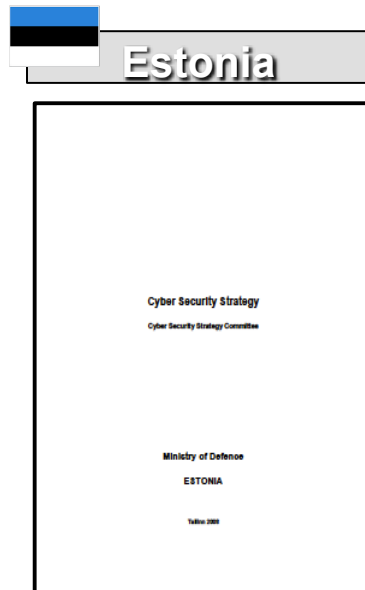


Romanian National Security Strategy (2007)

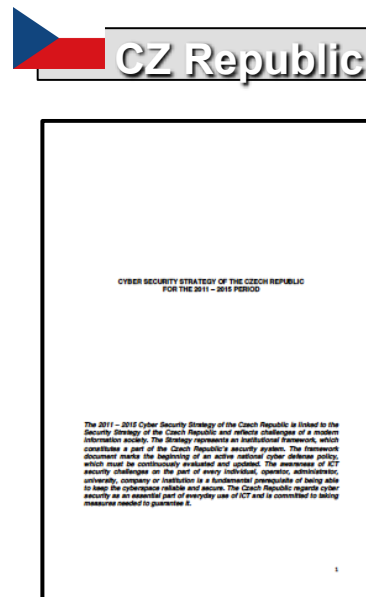
# Accordingly, Countries are Preparing National Cyber Security Strategies ...



*Slovak National Strategy for Information Security (2008)*



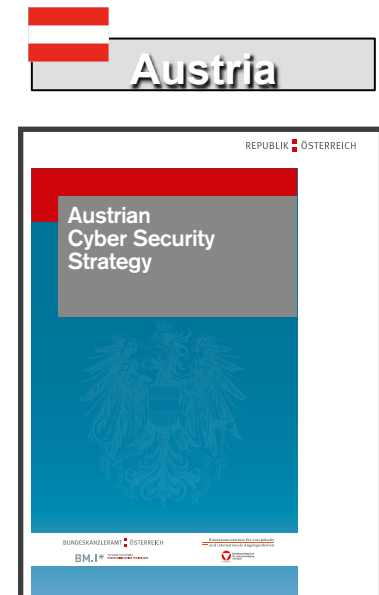
*Cyber Security Strategy Estonia (2008)*



*Cyber Security Strategy of the Czech Republic Decision 781 (2011)*



*National Strategy for Switzerland's Protection Against Cyber Risks (2012)*

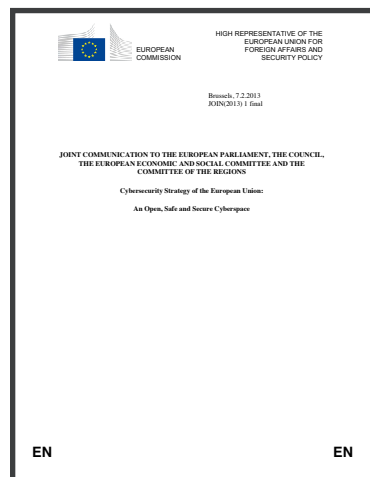


*National Cyber Security Strategy (2013); and Austria: ICT Security Strategy (2011)*

# Accordingly, Countries are Preparing National Cyber Security Strategies ...



European Union



Cybersecurity  
Strategy of the  
European Union:  
An Open, Safe, and  
Secure Cyberspace  
(2013)



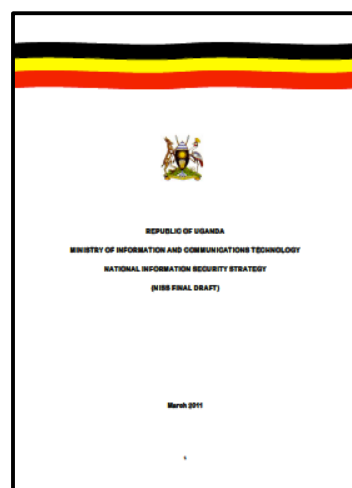
Israel

*Not Available  
on line*

Government  
Resolution 3611  
(DeFacto Cyber  
Policy)  
(2011)



Uganda



*National Information  
Security Strategy  
(2011)*



South Africa



*National Cyber Security  
Framework for South  
Africa  
(2011)*



UAE



*Information Security  
Programme Road  
Map  
(2012)*

# Accordingly, Countries are Preparing National Cyber Security Strategies ...



China



China and Cyber Security: Political, Economic, and Strategic Dimensions (2012)



Japan



Information Security Strategy for Protecting the Nation (2010)

New Strategy  
June 2013  
Not Available on line



Singapore

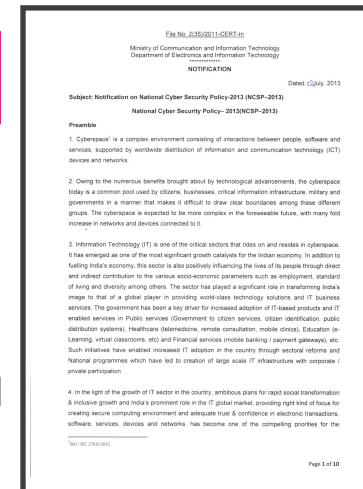


Strategy in Securing Cyberspace Singapore (2005)

New Strategy  
Coming in Fall 2013



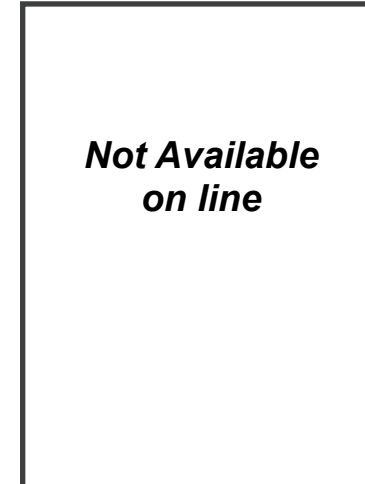
India



National Cyber Security Policy 2013 (Signed 2 July 2013)



South Korea



Cyber Security Strategy (August 2011)

# Accordingly, Countries are Preparing National Cyber Security Strategies ...



## Hungary

Government Decision No. 1139/2013 (21 March) on the National Cyber Security Strategy of Hungary

1. The Government hereby approves the National Cyber Security Strategy of Hungary laid down in Annex No. 1.
2. The Government instructs the state secretary heading the Prime Minister's Office to take the necessary action to establish the National Cyber Security Coordination Council.
3. The Government instructs the state secretary heading the Prime Minister's Office to prepare a work and action plan for implementing the tasks defined in the National Cyber Security Strategy of Hungary.
4. This decision shall come into force on the day after its publication.

Person in charge: State secretary heading the Prime Minister's Office, supported by the ministers with the relevant responsibilities and powers  
Deadline: 30 June 2013

Person in charge: State secretary heading the Prime Minister's Office, supported by the ministers with the relevant responsibilities and powers  
Deadline: 30 June 2013

Person in charge: State secretary heading the Prime Minister's Office, supported by the ministers with the relevant responsibilities and powers  
Deadline: 30 June 2013

Viktor Orbán  
Prime Minister  
(signed)

Government  
Decision No.  
1139/2013, National  
Cyber Security  
Strategy

March 2013



## Turkey

ULUSAL SİBER GÜVENLİK STRATEJİSİ VE  
2013-2014 EYLEM PLANI

### 1. GİRİŞ

Ülkemizde bilgi ve iletişim sistemlerinin kullanımı hızla yaygınlaşmakta, bilgi ve iletişim sistemleri hayatımızın her alanında önemli roller oynamaktadır. Kamu kurumları yanında enerji, su kaynakları, sağlık, ulaşım, haberleşme ve finansal hizmetler gibi kritik altyapı sektörlerinde faaliyet gösteren kurum ve kuruluşlar da bilgi ve iletişim sistemlerini yoğun olarak kullanmaktadır. Stüti edilen sistemler, verilerin güvenli kalmasını ve bütünlüğünü sağlamakla, dolayısıyla hem ilgili kurumun daha verimli çalışmasını sağlarken hem de vatandaşlarımızın yaşam standartlarını yükseltmesine katkıda bulunmaktadır.

Kurumlarımızın hizmet sunumlarında bilgi ve iletişim sistemlerini her geçen gün daha fazla kullandığımızla birlikte, bu kurumun bilgi ve iletişim sistemlerinin güvenliğini sağlamanın hem ulusal güvenliğimiz, hem de rekabet gücümüzün önemli bir boyutu haline gelmiştir. Bilgi ve iletişim sistemlerinde bulunan güvenlik zafiyetleri, bu sistemlerin hizmet dışı kalmasına veya kötüye kullanılmasına, can kaybına, büyük ölçekli ekonomik zarara, kamu düzeninin bozulmasına veya ulusal güvenliğin ihlaline neden olabilmektedir.

Siber ortamın bilginin sistemlerine ve verilerine yapılan saldırılar için azoşunluk ve inandır edilebilirlik fırsatları sunduğu bir gerçektir. Saldırı için gerekli araç ve bilgi çoğu zaman ucuz ve kolay elde edilebilir. İstenen herhangi bir yerdeki kişi veya sistemlerin kasıtlı ya da kasıtsız olarak siber saldırılara hedefi etkileri görülmektedir. Kritik altyapılara ait bilginin sistem ve verilerinin hedefi alınması ve gelişmiş siber saldırılarla kişiler tarafından finansal ve organizasyonel zararların tespiti ise neredeyse imkânsız görülmektedir. Bu durum ve özellikler siber ortamdaki risk ve tehditlerin sistematik karakterini ortaya koymakta, müdahaleyi güçleştirmektedir.

Tüm bu bilgiler ışığında, Bakanlar Kurulunca alınan 11/6/2012 tarihli ve 2012/3842 sayılı Ulusal Siber Güvenlik Çalışmalarının Yürütülmesi, Yönetilmesi ve Koordinasyonuna İlgili Kararı, 20/10/2012 tarihli ve 28447 sayılı Resmî Gazetede yayımlanarak yürürlüğe girmiştir. Söz konusu Bakanlar Kurulu Kararı uyarınca;

"Siber güvenliğin ilgili olarak alınacak önlemleri belirlemek, hazırlanan plan, program, rapor, emir, esas ve standartları onaylamak ve bunların

National  
Cybersecurity  
Strategy

June 2013

No English Translation  
Available



## Sweden

Not Available  
on line

National  
Cybersecurity  
Strategy

Forthcoming  
November 2013



## Poland



RZECZPOSPOLITA POLSKA  
MINISTERSTWO SPRAW WNEŚTRZYNCH I ADMINISTRACJI

RZĄDOWY PROGRAM  
OCHRONY CYBERPRZESTRZENI  
RZECZYPOSPOLITEJ POLSKIEJ  
NA LATA 2011-2016

Wersja 1.1

WARSZAWA  
CZERWIEC 2010

Governmental  
Program for  
Protection of  
Cyberspace for the  
Years 2011-2016

June 2010

No English Translation  
Available

## New Country

Not Available  
on line