REPORT OF RECOMMENDATIONS

GOVERNOR'S SYMPOSIUM

2017

ICT Governance – Shaping our Future

July 23, 2017

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1. Introduction

On behalf of the Symposium Committee responsible for organizing the 2017 Governor's Symposium, we hereby present a report of the highlights of the 2017 theme. The report also contains recommendations as a result of the analysis of the information presented at the symposium.

On June 23rd, 2017 His Excellency Governor Eugene Holiday hosted the sixth annual Governor's Symposium with the theme: "ICT Governance – Shaping our Future". The event was held in Cupecoy at the auditorium of the American University of the Caribbean School of Medicine (AUC). This year the symposium featured local, and regional speakers who shared their views, ideas and participated in an interactive panel discussion with the audience. The speakers addressed ICT infrastructure, innovations, threats, cybersecurity and governance issues relevant to the shaping of our future.

1.1 Approach

On April 10, 2017, His Excellency held the first meeting with the Symposium Committee. His Excellency explained his vision and goals for the event; entrusting the committee with the relevant preparations for this year's symposium. The committee members were honored to be considered for this undertaking and thanked His Excellency for the opportunity.

To execute its tasks towards the organization of the Governor's Symposium, the committee met for the first time on April 10, 2017. Meetings were held weekly on Tuesdays and if need be extra-ordinary meetings were convened by the Chair. The committee concluded its work with an evaluation of the Governor's Symposium 2017 on July 23, 2017. This report of recommendations is the result of the committee's review of the presentations delivered, panel discussion, surveys and the question and answer session with the audience.

On behalf of the Organizing Committee Governor's Symposium 2017

Ajamu Baly
Chairman of the Organizing Committee Governor's Symposium 2017

Organizing committee:

- Mr. Ajamu Baly - Chairman
- Mr. Patrick Trijsburg - Secretary
- Mrs. Emilia Connor-Thomas
- Mrs. Kathy Snijders
- Ms. Dahjanarah Philips
- Mr. Dimitri Connor
- Mr. Gerard Richardson

2. Symposium

2.1 Summary of Governor's Opening Address

The symposium was officially opened by His Excellency. In his address, His Excellency emphasizing that ICT is increasingly everywhere influencing everyone and everything highlighted the need for a National ICT Governance Agenda: the so-called GOS 21.0 or 21st century Governance Operating System. Against that backdrop, he touched on four cornerstones for the success of the GOS 21.0:

1. The establishment of a National Governance Structure, including a Chief Information Officer in Government with a public–private coordination mechanism, supported with the necessary legislation;
2. Introduction of Compulsory ICT education as a focal point of the GOS 21.0 agenda, to ensure that Sint Maarten is prepared to embrace the concept of and become a "Smart Society";
3. Upgrade of our ICT infrastructure to meet the same standards as our primary tourism markets; to ensure that visitors and residents expectations are met in terms of accessibility and speed of data transmission; and
4. Cybersecurity to protect our systems and data from cyberattacks by way of awareness, preparedness and response programs.

The Governor stated that GOS 21.0 is necessary to navigate the digital world we live in, to ensure a more effective management of our socio-economic development.

2.2 Summary of Prime Minister's Address: Government's Perspective

The Honorable Prime Minister, William Marlin emphasized and called for a rethinking and reimagining of what a future Sint Maarten should be like in terms of its use and integration of Information Technology in our everyday life.
He further illustrated how technology has impacted the daily lives of all citizens; citing the dependability on some form of technology. The Prime Minister furthermore stated that Sint Maarten must set its focus on becoming a smart city in the not too distant future. According to Andrea Caragliu and Peter Nijkamp, in a 2009 paper entitled, "Smart Cities in Europe," "A city is defined as smart when investments in human and social capital and traditional (transport) and modern (ICT) communication infrastructure fuel sustainable development and a high quality of life, with a wise management of natural resources, through participatory action". Government however, must be able to nurture and support entrepreneurial creativity. Equally essential is to marry infrastructure to the needs of the people in a way that facilitates fair and equal access to government services and that significantly reduces bureaucracy and greatly enhances participation of the citizens. Finally, such technological innovations and advances

would require robust investments; which is also a grave challenge for the Government of Sint Maarten.

2.3 Contributions

The format of the program of the day for the symposium was supported by a quick poll and extensive use of modern multimedia applications (animation, presentations, video, art and music), thus allowing the review of the theme, particularly in terms of the "ICT Governance", to be highlighted from a broad community perspective. The program was directed by Master of Ceremony, Mr. Cedric Peterson of the Department of Communication.

The quick poll which was carried out amongst guests upon their entry to the symposium consisted of the following statement and questions.

- Is Sint Maarten on the cutting edge of ICT-Technology.
- Do you think ICT has influenced your life positively?
- On a scale of 1-10 with 10 being the most positive, how does Sint Maarten compare to the USA when it comes to ICT?

Most respondents (38%) gave a neutral response when asked an opinion on whether Sint Maarten is on the cutting edge of ICT-Technology, while close to 33% disagreed and 29% agreed or strongly agreed.
Approximately 90% of the respondents agreed or strongly agreed that ICT has influenced their life positively, while close to 2% strongly disagree and roughly 8% has a neutral stance on the issue.
When asked on a scale of 1-10 with 10 being the most positive, how Sint Maarten compares to the USA when it comes to ICT, respondents rated Sint Maarten on average at a 5.
See the survey results in the appendices for the detailed results.

The speakers were as follows:

- Ms. Bernadette Lewis, Secretary-General of the Caribbean Telecommunications Union (CTU) as keynote speaker;
- Mr. Jean T. Arnell, Managing Partner of Computech as featured speaker;
- Mr. Bevil Wooding, internet strategist and the Caribbean Outreach Manager for Packet Clearing House as featured speaker; and

In addition, the students from the Sint Maarten Academy CAPE program (ICT Department) emphasized the aspect of ICT in Education. Finally, the program culminated in an interactive session during which the speakers were joined by Mr. Kendal Dupersoy, CEO TELEM Group of Companies. The purpose of the session, which was moderated by Mr. Roy Richardson, co-Founder and CEO/CTO of Aurora InfoTech, was to encourage further interaction by the panelists through curated questions presented by the moderator or by questions posed by the

audience. The results of the quick poll were also highlighted during the interactive session.
In addition to the quick poll an online evaluation survey of the symposium was held to gather meaningful and insightful information from the attendees. The feedback captured reveals that an astounding 98% of the respondents rate the topic of this year's symposium as good or very good. The day of the week, time of the day, length and location of the symposium has been rated on average as good or very good and 89% of the respondents would be interested in a follow up session on this topic.
For a complete overview of the feedback see the survey results in the appendices.

3. Recommendations

Based on the contributions of the speakers and the responses from the audience, the committee has derived a number of key recommendations.

3.1 ICT Infrastructure and Innovations

Premise: In order to unlock the structural potential of the economic opportunity afforded by ICT, as a country we need to act on a recipe of interdependent ingredients by:

1. Expanding our Economic model (how to Improve our tourism product and competitiveness by leveraging ICT);
2. Deploying fixed and mobile broadband infrastructure island-wide;
3. Developing human capital to increase learning, usage and productivity; and
4. Reforming the regulatory environment to introduce legislation and policies to support data sovereignty, electronic communications, innovation and entrepreneurship. For example: E-Government payments service through a government concierge (road tax, income tax and birth certificates etc.).

3.2 State of Cyber Security: Threats and Risks

Premise: In view of future attacks that will likely increasingly be directed to countries where diversification of the economy is evident, there must be a structural approach to addressing cyber security, further defined as follows:

1. If moving towards an ICT-enabled development, updating legislation as a matter of urgency is of paramount importance;

2. Ensure that there is appropriate legislative support to deal with the digital agenda and economy;

3. Increased participation is essential by member states in regional bodies in the area of inter-territorial, inter-country or international cooperation to collectively address cyber security issues;

4. Strengthen local capacity to secure and deal with networks as part of strategic plans;

5. Set national standards to ensure government and business alike act accordingly by setting key metrics on how key networks and applications are to be set up through: a) keeping track of trends; b) support public-private cooperation; c) launching of periodic public awareness programs to educate citizens depending on area of focus; d) involve media as much as possible to increase national awareness;

6. Encourage and train cyber personnel within institutions; and

7. Government must make the investment to develop a National Cyber Security Strategy Plan for staying cyber safe involving a multi-stakeholder approach for staying cyber safe.

3.3 Strategic ICT Governance

Premise: Government must be aware of the instigators of change, technology as the new revolution that is chipping away at the traditional ways of doing business and forms of governance (i.e. social media).

Embrace technology to achieve ICT's full potential for a citizen-centric seamless governance that is faster, smarter, cheaper and transparent through:

1. Efficient and effective service delivery to citizens;
2. Consistent input and delivery channels i.e. through government portals;
3. ICT can enable streamlined, secured and a transparent process; and
4. Integration of information across all government agencies.

Leveraging ICT's Potential in the Ecosystem by means of:

1. Leading by example in the ICT journey;
2. Consultation/communication with internal and external stakeholders to encourage ICT;
3. Leadership through inspiration to be part of the ICT-revolution;
4. Develop skills in people; and
5. Change in mindset to embrace the global ICT-revolution.

Leveraging ICT's Potential in the process through:

1. Articulating challenges;
2. Formulating policies defining objectives (i.e. supportive legislative and regulatory framework;
3. Developing appropriate programs and activities;
4. Implementing plans (to evaluate and monitor impact of ICT program/activities);

5. Enlisting a Champion (i.e. a lead country in the cause for ICT sustainability); and
6. Engaging stakeholders.

Leveraging ICT's Potential through benchmarking for the Internet of Things (IoT) by:

1. Effective decision-making and planning;
2. Building metrics for monitoring and measuring progress;
3. Enabling development of best practices;
4. Evaluation of utility, costs and societal benefits and impact; and
5. Enabling comparisons.

4. Conclusion

The main objective of the sixth annual Governor's Symposium held on Friday June 23, 2017, was to promote through presentations, videos and interactive dialogue, a collective understanding on the subject of ICT Governance specifically on Sint Maarten. The annual Governor's Symposium is considered to be a supportive platform for all invited stakeholders - government, civil society and the private sector - to focus, raise awareness and, function as a catalyst for best practices within the community of Sint Maarten.

The organizing committee of the Governor's Symposium 2017 sought to address in its recommendations the most relevant points that will require consideration and attention from the Government of Sint Maarten and respective stakeholders.

The members of committee are grateful to the various speakers for their valuable input and thanks the symposium attendees and the public for their contributions and varied reactions. As a committee we express the hope that the recommendations provided in this report will serve as a basis, for further implementation via the policy and decision makers and to ensure that as a country we continue to bring pertinent issues to the forefront through awareness and other educational forum to the community of Sint Maarten.

The committee members would hereby like to express their sincere appreciation to His Excellency, Governor Eugene Holiday for the opportunity to serve and play a role in bringing awareness to Sint Maarten through this symposium. It has truly been an honor, and we thank you for placing this confidence in us.

On behalf of the
Organizing Committee Governor's Symposium 2017

Mr. Ajamu Baly
Chairman

Mr. Patrick Trijsburg
Secretary

Appendices

- Opening Address - H.E. Governor Eugene Holiday.
- Presentation: ICT Infrastructure and Innovations.
- Presentation: State of Cyber Security: Threats and Risks.
- Presentation: Strategic ICT Governance.

Cornerstones for our 21st Century ICT Agenda – GOS 21.0

An Urgent Imperative

Opening Address

By The Governor of Sint Maarten

His Excellency drs. Eugene B. Holiday

Delivered at the

6th Annual Governor's Symposium 2017

"ICT GOVERNANCE SHAPING OUR FUTURE"

June 23, 2017

Ladies and Gentlemen,

Good Morning,

It is with great pleasure that I bid you welcome to the sixth annual Governor's Symposium. I hereby, also on behalf of Marie-Louise, extend a special welcome to my Colleagues the Governor of Aruba, Mr. Alfonso Boekhoudt and the Governor of Curacao Mrs. Lucille George-Wout as well as to Her Husband Mr. Herman George. It is good to have you here participating in this Governor's Symposium.

Ladies and Gentlemen,

I am very pleased to see so many persons from a broad cross section of our community in attendance.

The goal of this s*ixth* annual Governor's Symposium is to increase awareness of the importance, and of the risks involved in, ICT. My intention is to contribute to the further development of an ICT-governance agenda towards the shaping of our nation's future. At this symposium regional and national speakers and panelist will speak and interact with you on developments in ICT with a focus on infrastructure, innovations, threats, security and governance each from their own perspective. It is my hope that you will have an enjoyable and fruitful symposium.

I believe that this topic is important because of the potential of ICT actions today to affect and/or spur national growth tomorrow. The potential of ICT is embedded in the fact that increasingly ICT is everywhere, influencing everyone and everything and at the same time highly vulnerable. To put this into perspective it should be noted that it is not that long ago that ICT's role in our life was hardly noticeable. I say this based on the following highlights in my personal experiences with ICT:

a) In 1982, during my first year in university, I used a computer for the first time, it was a cumbersome main frame computer;
b) In 1987 I started working and used my first desktop computer. A quick glance shows us how different these devices were compared to today's computer devices;
c) In 1994 I used my first mobile phone, which is a world removed from today's mobile phone; and
d) In 1997 I opened my first email account on my desktop computer.
e) Fast forward to today, I have multiple online accounts – an amazon account, a Netflix account, a Facebook account, to name a few, all connected to my mobile devices.

Ladies and gentlemen,

Over a span of 35 years, and primarily during the last 20 years, ICT has in effect transformed and continues to transform our lives. As I said, ICT is increasingly everywhere and influencing everyone and everything:

a) there are people who practically live online[1];
b) our mobile phones have evolved into computers on the go.
c) our vehicles are increasingly computers on wheels;
d) our medical devices are software driven computers; and
e) these and other devices are becoming increasingly interconnected via the internet.

It is estimated that by 2020, 4 billion people will be connected, using more than 25 million applications, transmitting in excess of 50 trillion gigabytes of data, representing 4 trillion US dollars' worth of business. In short the transition to the "*Internet of Things"* where everyone and everything will be interconnected, is upon us and we cannot afford to fall behind.

Our 21st century digital reality, has changed the way we interact and behave and, with that, our expectations. There is as a result a need for a National ICT Governance Agenda: GOS 21.0; which stands for 21st century Governance Operating System. GOS 21.0 is necessary to navigate the digital world we live in, to ensure a more effective management of our socio-economic development.

Considering the bandwidth allotted to me to communicate my message I shall, touch briefly on what I view as four cornerstones of the GOS 21.0 agenda.

First, the success of our GOS 21.0 agenda will depend on the establishment of a national governance structure, as an integral part of the agenda, anchored in legislation. Core elements of which should include a Chief Information Officer in government and a coordination mechanism with broad-based public – private participation to develop and oversee the implementation of the agenda.

Second, to leverage the opportunities of ICT, it is imperative that mandatory ICT education is established as a focal point of the GOS 21.0 agenda. This to ensure that we, in addition to being consumers, become producers of ICT services. The need for this is to ensure that Sint Maarten

[1] I experienced the evolution of our society into a more digital society. A society where we chat-on online, make friends online, bank online, shop online, study online, source our information online and store our data online in the cloud.

become a “smart society” catering to the needs of our population and the visitors that drive our economy.

Third, the digital society has changed the way we interact and behave and, with that, our expectations. As a tourist economy our ICT infrastructure must meet the same standards as our main tourist markets. This to ensure that we meet travelers’ expectations, anytime, anywhere and in real time. Access and the speed of transmission of data and information over the internet are key to this new, interconnected world. The growth of our tourism economy and thus our livelihood depends on it. GOS 21.0 therefore calls for a sound ICT Infrastructure Plan. Such a plan should facilitate continued upgrades and expansion, of for example our fiber optic network, to meet residents and tourists demand for high-speed broadband and wireless access.

And fourth, the numerous media reports, ranging from the hacking of bank accounts, to the disruption of elections or ransomware attacks on our government systems, underscore the need to protect our systems and data. As a result cybersecurity – in terms of awareness, preparedness, and response programs – must be one of the cornerstones of our GOS 21.0 agenda.

Ladies and Gentlemen,

Former president Barack Obama in speaking about the importance of ICT stated and I quote: “The Internet is not a luxury, it is a necessity”. Unquote. It is therefore, in my opinion, an ongoing and urgent imperative to invest in an affordable, reliable and safe ICT infrastructure to power our community in the digital age.

Ladies and gentlemen,
By heeding this urgent imperative in a concerted public-private effort to develop and implement our GOS 21.0 Agenda we stand to participate and benefit in the vast educational, health care and socio-economic opportunities of the digital era.

On the flip side we run the risk of being hacked and becoming disconnected from the rest of the world only to be plunged into cyber darkness.

Ladies and Gentlemen,

I hereby, emphasizing the imperative of an ICT Governance agenda GOS 21.0 to shape our future, declare this symposium *OPEN.*

ICT Infrastructure and Innovations.


6.0 mi
summary
59:56
743 cals
2592 cals
day
12:14p
4:21a
7h09m
summary
3h04m
4h05m
3x
24min13s

Global Digital Snapshot

Internet Penetration Rates

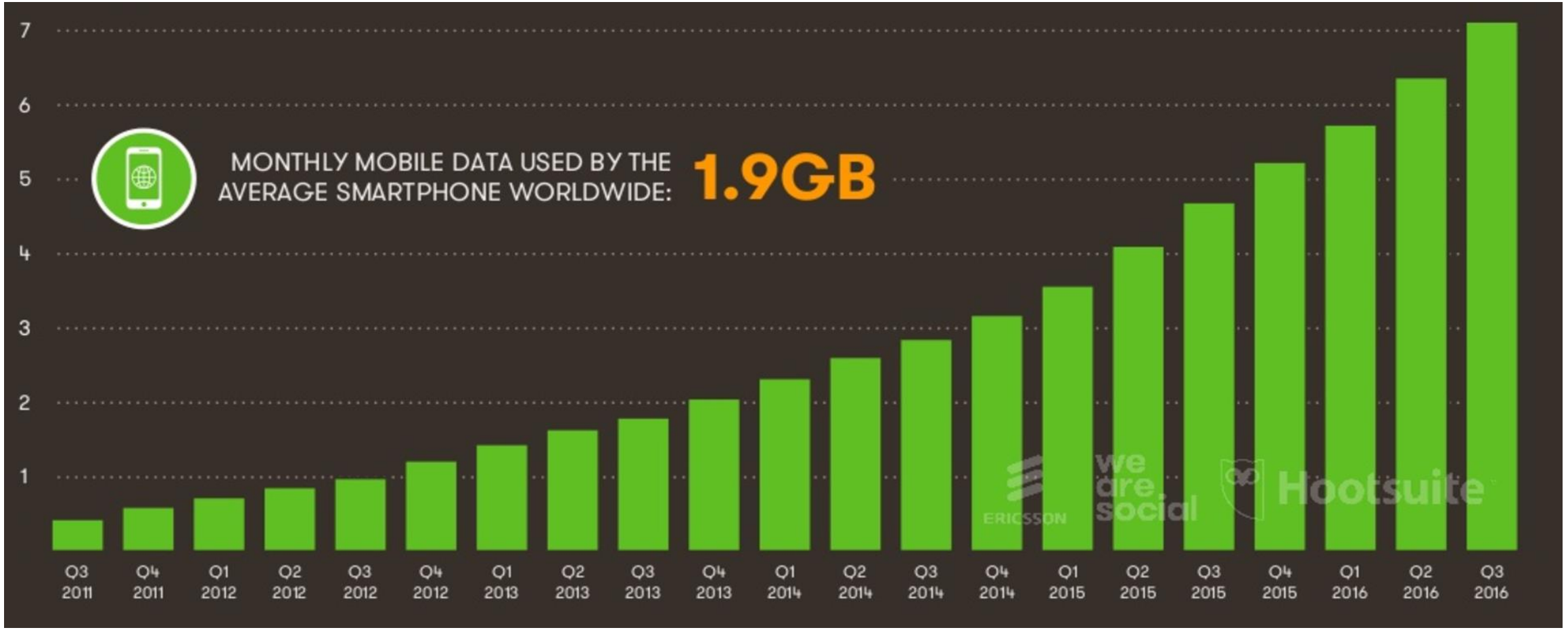
HIGHEST INTERNET PENETRATION

#	HIGHEST PENETRATION	%	USERS
01	UNITED ARAB EMIRATES	99%	9,200,000
02	ICELAND	98%	327,046
03	NORWAY	97%	5,167,573
04	LUXEMBOURG	97%	564,706
05	DENMARK	96%	5,492,085
06	BERMUDA	96%	59,231
07	ANDORRA	96%	65,913
08	NETHERLANDS	95%	16,200,000
09	BAHRAIN	93%	1,316,045
10	JAPAN	93%	117,767,216

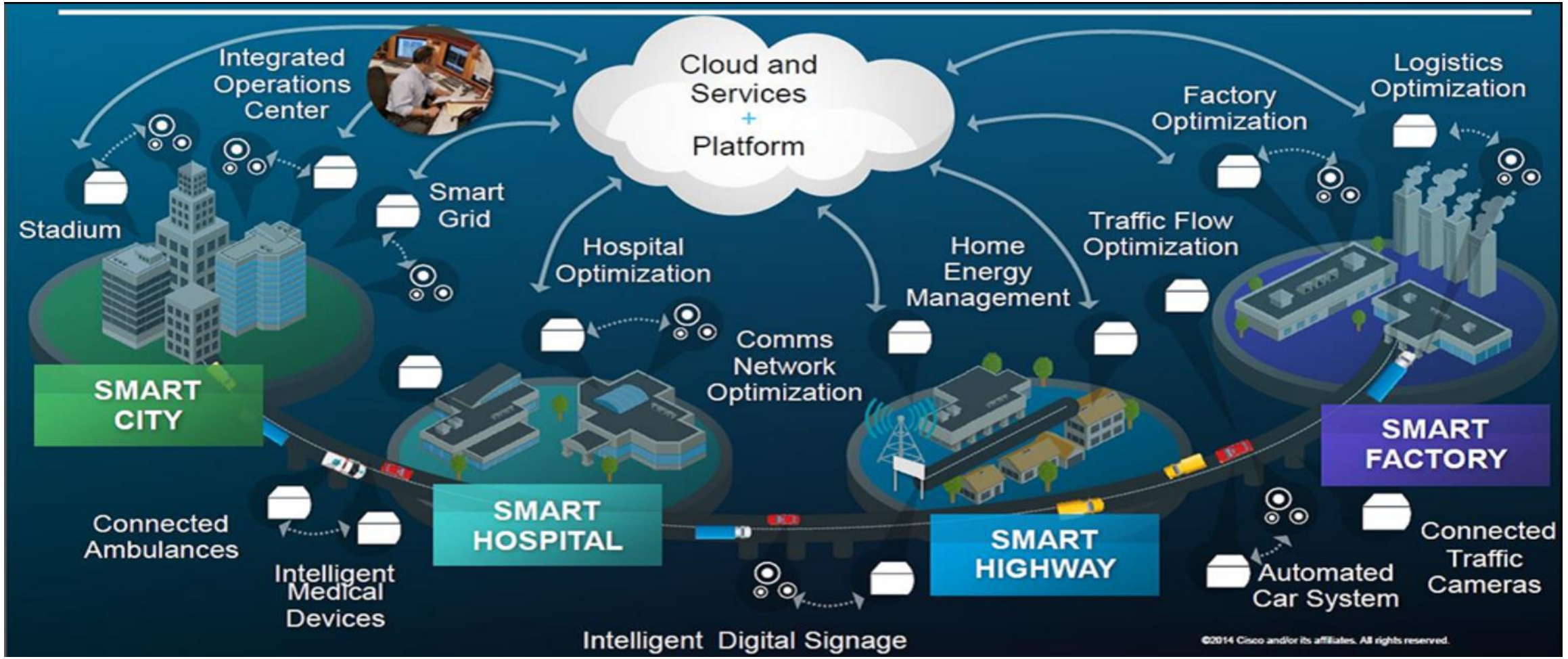
LOWEST INTERNET PENETRATION

#	LOWEST PENETRATION	%	USERS
213	NORTH KOREA	0.1%	16,000
212	ERITREA	1%	67,000
211	NIGER	2%	469,331
210	CHAD	3%	397,740
209	DEM. REP. OF THE CONGO	4%	3,101,210
208	CENTRAL AFRICAN REPUBLIC	5%	230,384
207	GUINEA-BISSAU	5%	90,000
206	BURUNDI	5%	571,515
205	WESTERN SAHARA	5%	29,000
204	SIERRA LEONE	6%	370,000

Global Mobile Data Growth



ICT Industry



Fourth Industrial Revolution

WORLD ECONOMIC FORUM
COMMITTED TO IMPROVING THE STATE OF THE WORLD

Navigating the next industrial revolution

Revolution	Year	Information
 1	1784	Steam, water, mechanical production equipment
 2	1870	Division of labour, electricity, mass production
 3	1969	Electronics, IT, automated production
 4	?	Cyber-physical systems

1. Expanding Our Economic Model

Tourism Industry Challenges and Technology Trends

Challenges	
Social Challenges	***Market Challenges***

• Population Ageing
• Environmental Changes
• Polarization of wealth
• Globalisation
  ○ Sustainability
  ○ Mobility
  ○ Digitalization
  ○ Internationalization
	• More competitors
	• Diversification of products/services
	• New destinations
	• Building Smart destinations
	• New distribution model
	• Brand creation (place identity)
	• Knowing customer expectations
	• Personalization of products/services

Technology Trends	
• New mobile technologies • Internet of things • Cloud Computing • Cross platform and network technologies • New materials (grapheme, etc.)	• Big data technologies • Mobility and tracking technologies • New smart devices (glasses, watches) • New social media tools • New sensors (NFC, RFID)

Source: UN report on Improving Competitiveness in Tourism through ICT innovation

Technology Innovation to drive Tourism

PRE-TRIP

Destination Image and Marketing

Social Listening

Destination and POI Apps

Online reservations

Government concierge

STAY

Immigration kiosks

Destination and POI Apps

WIFI

Mobile payments

Mobile Check In

Use artifical intelligence and augmented reality for local attractions

Improving destination sustainability

POST-TRIP

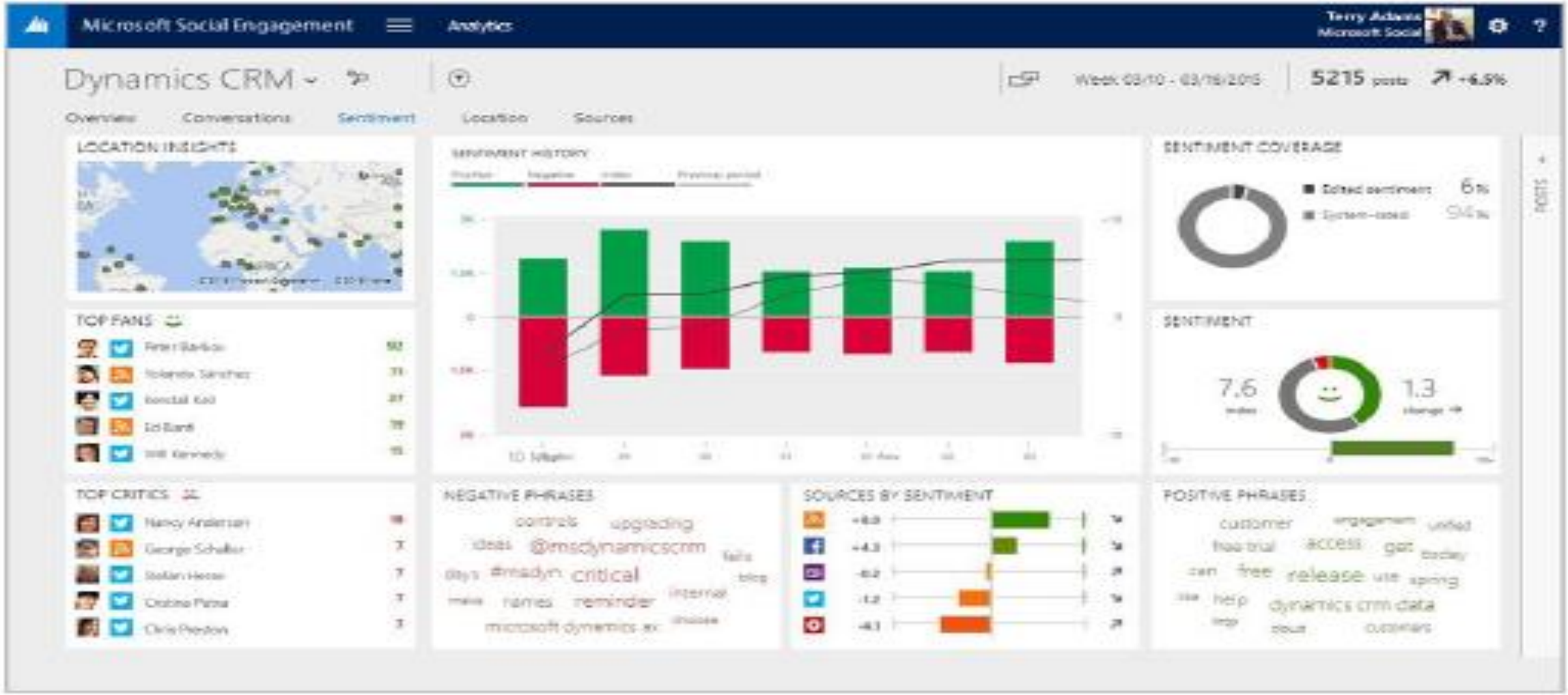
Reviews

Loyalty programs

Complimentary products and services

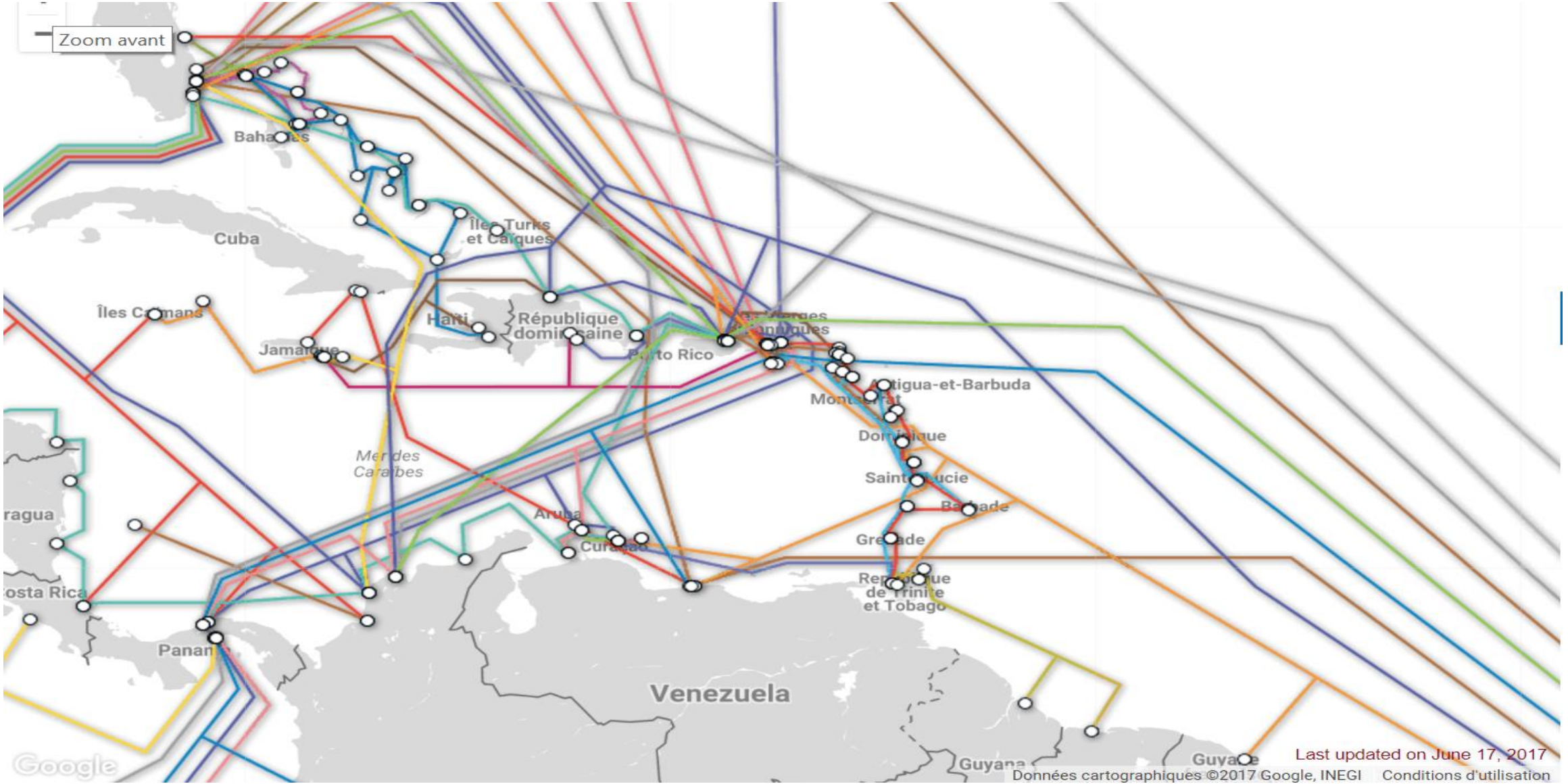
Up sell/Cross sell

Social Listening
(Social media + Data mining)



2. Deploying Broadband Infrastructure

ICT Infrastructure – Inbound Capacity



Internet Speeds and Pricing

Country	Lowest d/l speed		Highest d/l speed	
	Speed/bps	Price/USD	Speed/bps	Price/USD
Anguilla	2 M	$ 39.98	48 M	$ 128.82
Antigua & Barbuda	1 M	$ 47.48	2 M	$ 62.20
Aruba	256 k	$ 27.37	24 M	$ 55.31
Bahamas	8 M	$ 29.99	70 M	$ 124.75
Barbados	15 M	$ 32.50	1 G	$ 297.50
Belize	256 k	$ 12.52	16 M	$ 350.44
BVI	4 M	$ 99.00	48 M	$ 228.85
Cayman Is.	1 M	$ 60.98	300 M	$ 303.66
Curacao	6 M	$ 32.89	100 M	$ 177.65
Dominica	2 M	$ 27.83	50 M	$ 84.29
Grenada	12 M	$ 29.26	100 M	$ 128.46
Guyana	256 k	$ 29.09	10 M	$ 72.63
Jamaica	1 M	$ 18.99	200 M	$ 121.23
St. Kitts & Nevis	6 M	$ 36.44	48 M	$ 128.46
St. Lucia	2 M	$ 33.49	100 M	$ 126.98
St Vincent & Grenadines	2 M	$ 33.44	100 M	$ 126.98
Trinidad & Tobago	1 M	$ 21.87	240 M	$ 105.03
Turks & Caicos Is.	6 M	$ 69.00	50 M	$ 209.99

Source:

ICT Pulse – 2016 Internet speeds and Pricing in the Caribbean

3. Developing Human Capital

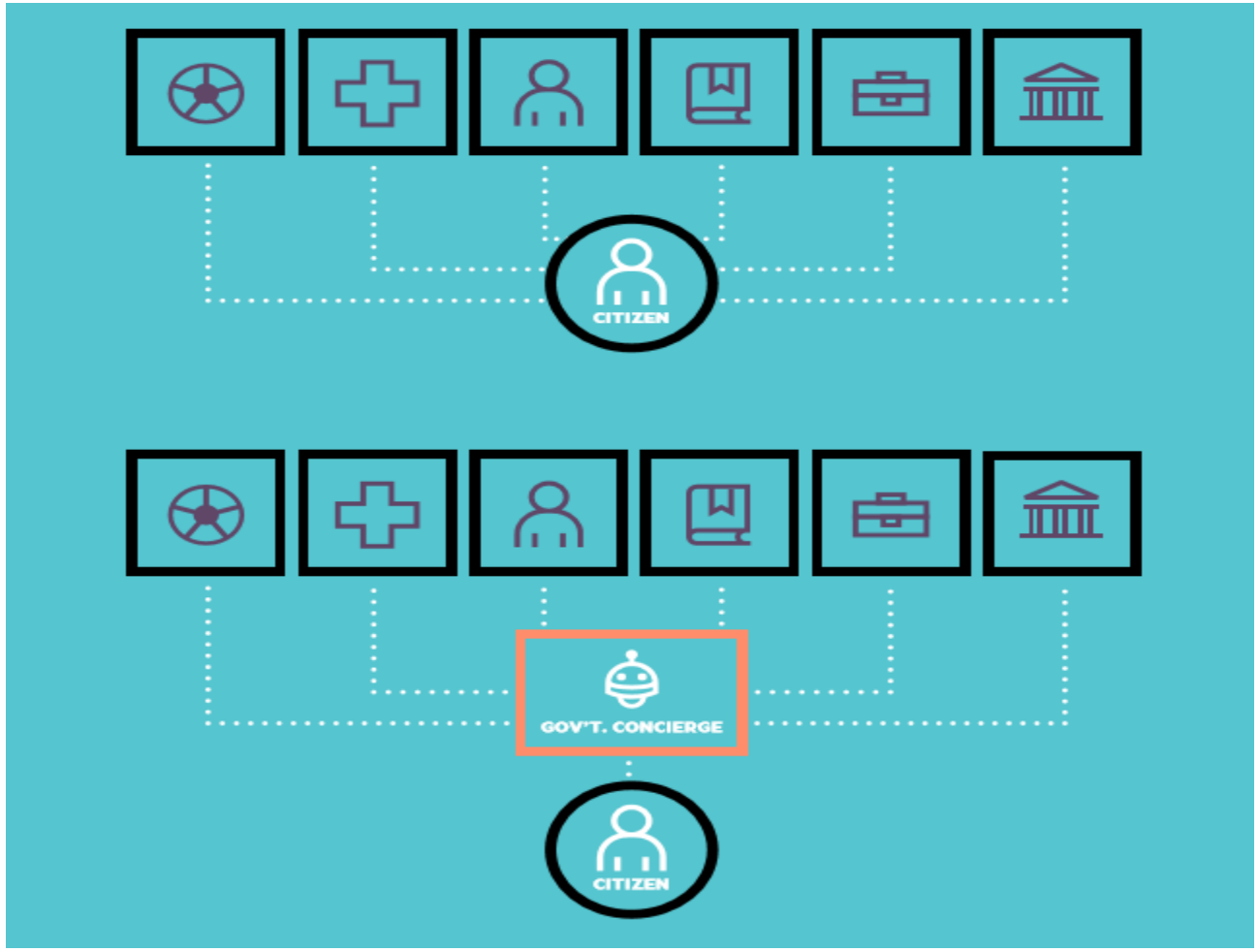
Training and Skills Development

Caribbean Tourism Administrations should design and provide adequate and up to date training and skills to young tourism professionals and workers in the tourist and leisure industries, in areas such as new ICT solutions and the new digital economy. Including programmes designed to increase the use of Enterprise Resource Planning (ERP), Customer Relationship Management (CRM) applications and e-invoicing, among other tools that have been shown to contribute to greater productivity.

Source: UN report on Technological Innovation for Competitiveness in Tourism Sector in the Caribbean

4. Building the Institutional Capability

4. Building The Institutional Capability (E-Government)

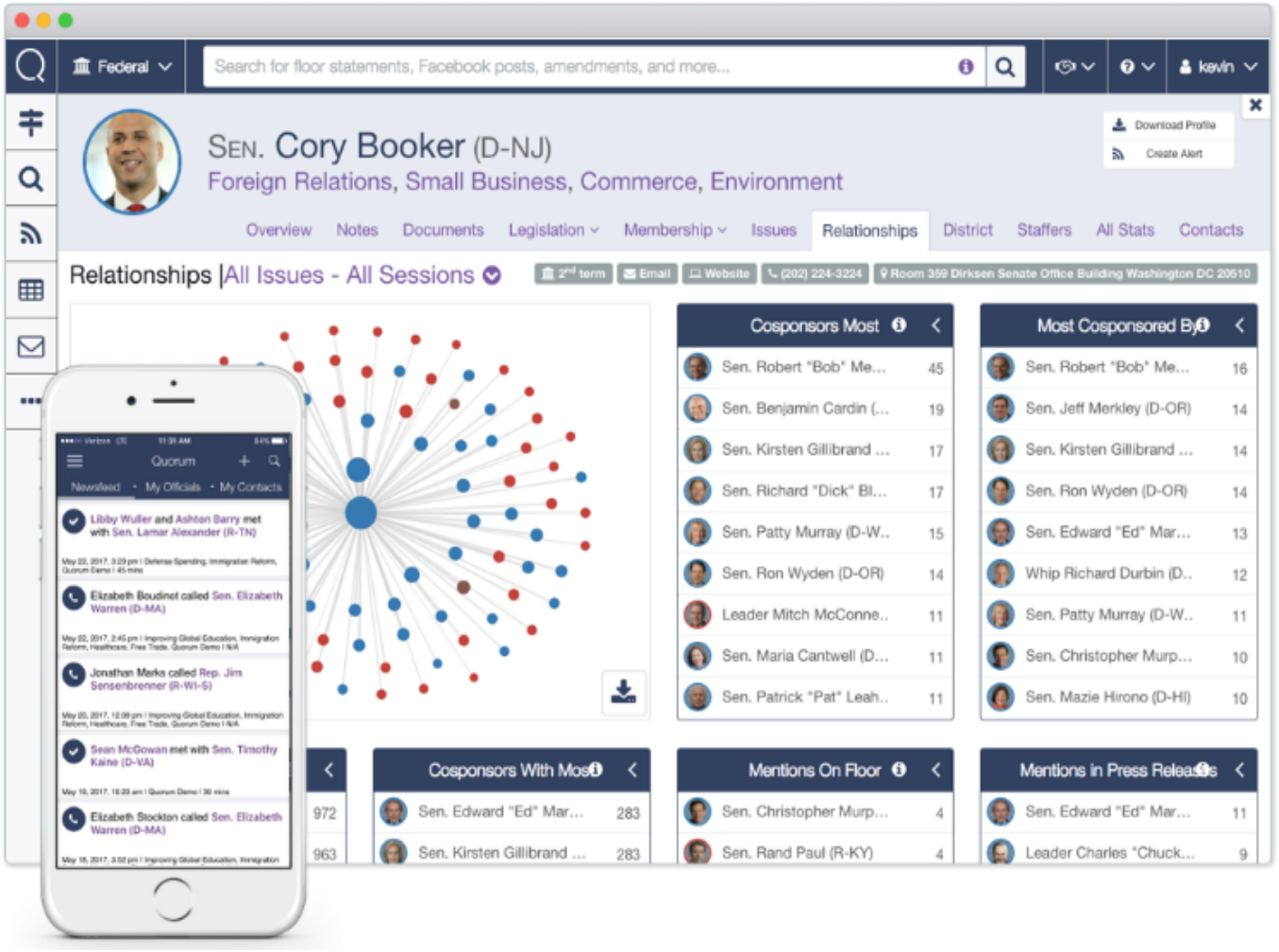


PROCESS INTEGRATION

Currently, citizens in much of the world interact with government agencies/departments on a one-to-one basis. The agencies do not share information, requiring citizens to maintain individual records with each of them.

In the future, citizens will interact with all government agencies via a government concierge which will marshal data across agencies.

4. Building The Institutional Capability (Open Data)



The World's Most Comprehensive Database of Legislative Information

Make sure you never miss a mention of your issues or organization by elected and appointed officials in their bills, tweets, Facebook posts, YouTube videos, press releases, floor statements, emails to constituents, and more.

Source: Quorum.us

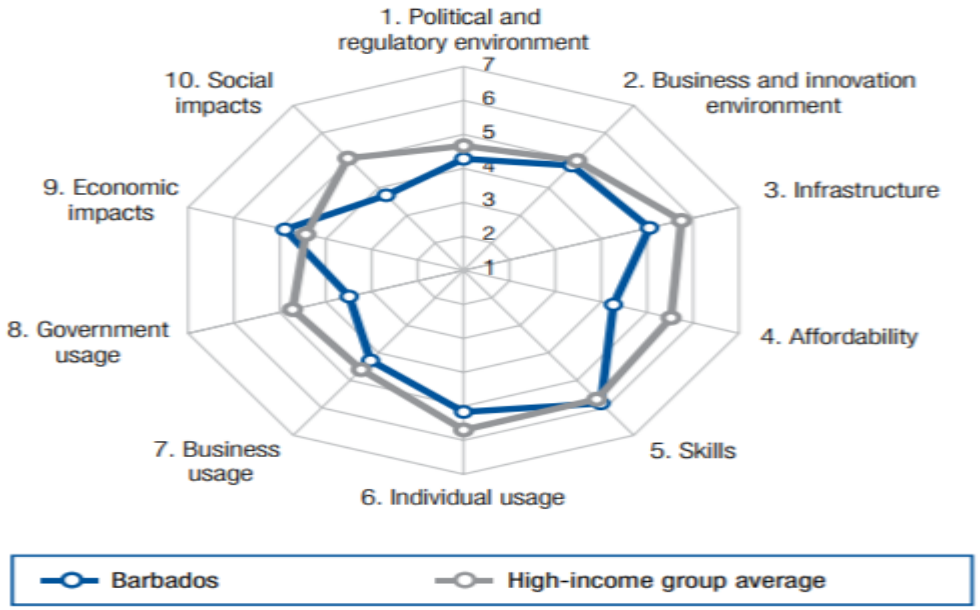
Measuring The Impact of ICT

Measuring The Impact of ICT

Large disparity amongts income groups

Barbados

	Rank (out of 143)	Value (1–7)
Networked Readiness Index 2015	**39**	**4.6**
Networked Readiness Index 2014 (out of 148)	55	4.2
Networked Readiness Index 2013 (out of 144)	39	4.5
A. Environment subindex	**37**	**4.5**
1st pillar: Political and regulatory environment	37	4.3
2nd pillar: Business and innovation environment	40	4.8
B. Readiness subindex	**55**	**5.0**
3rd pillar: Infrastructure	38	5.0
4th pillar: Affordability	100	4.3
5th pillar: Skills	20	5.8
C. Usage subindex	**43**	**4.3**
6th pillar: Individual usage	40	5.2
7th pillar: Business usage	30	4.3
8th pillar: Government usage	101	3.5
D. Impact subindex	**37**	**4.3**
9th pillar: Economic impacts	19	4.9
10th pillar: Social impacts	86	3.7



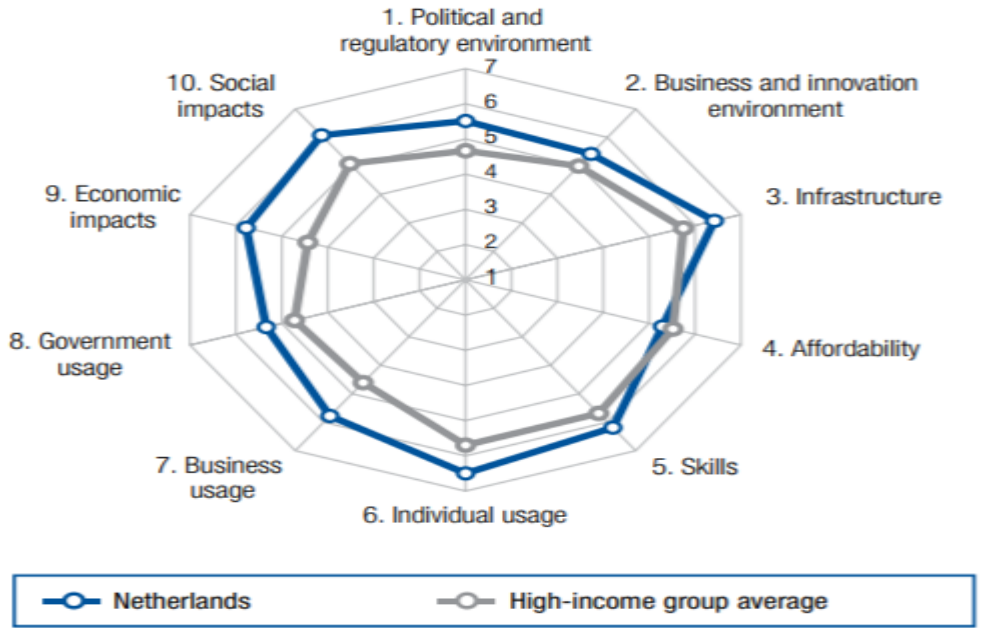
Source: World Economic Forum Global Network Readiness Report (2015)

Measuring The Impact of ICT

Strong Business usage, Economic & Social impact

Netherlands

	Rank (out of 143)	Value (1–7)
Networked Readiness Index 2015	**4**	**5.8**
Networked Readiness Index 2014 (out of 148)	4	5.8
Networked Readiness Index 2013 (out of 144)	4	5.8
A. Environment subindex	**7**	**5.5**
1st pillar: Political and regulatory environment	7	5.5
2nd pillar: Business and innovation environment	8	5.4
B. Readiness subindex	**18**	**6.0**
3rd pillar: Infrastructure	14	6.4
4th pillar: Affordability	72	5.3
5th pillar: Skills	6	6.2
C. Usage subindex	**5**	**5.9**
6th pillar: Individual usage	7	6.5
7th pillar: Business usage	6	5.8
8th pillar: Government usage	13	5.3
D. Impact subindex	**2**	**5.9**
9th pillar: Economic impacts	5	5.8
10th pillar: Social impacts	3	6.1



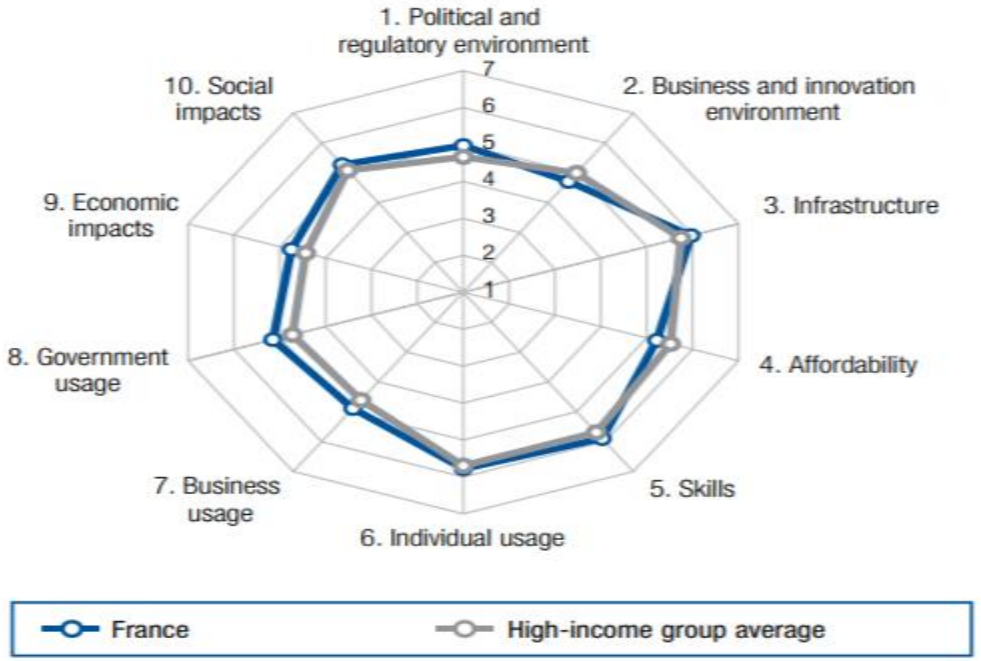
Source: World Economic Forum Global Network Readiness Report (2015)

Measuring The Impact of ICT

Low disparity across income groups

France

	Rank (out of 143)	Value (1–7)
Networked Readiness Index 2015	**26**	**5.2**
Networked Readiness Index 2014 (out of 148)	25	5.1
Networked Readiness Index 2013 (out of 144)	26	5.1
A. Environment subindex	**26**	**4.8**
1st pillar: Political and regulatory environment	25	5.0
2nd pillar: Business and innovation environment	45	4.7
B. Readiness subindex	**26**	**5.7**
3rd pillar: Infrastructure	24	6.0
4th pillar: Affordability	73	5.2
5th pillar: Skills	14	5.9
C. Usage subindex	**24**	**5.3**
6th pillar: Individual usage	24	5.8
7th pillar: Business usage	20	4.9
8th pillar: Government usage	18	5.1
D. Impact subindex	**23**	**5.0**
9th pillar: Economic impacts	22	4.7
10th pillar: Social impacts	25	5.3



Source: World Economic Forum Global Network Readiness Report (2015)

Final Thoughts

In order to unlock the structural potential of the economic opportunity afforded by ICT, we need to act on a recipe of interdependent ingredients by Expanding *our Economic model,* *Deploying* *Broadband Infrastructure,* *Developing* *human capital and* *Reforming* *the regulatory environment to introduce legislation and policies to support data sovereignty, electronic communications, innovation and entrepreneurship.*

PCH
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Securing National Development

STATE OF THE CYBER SECURITY

GLOBAL TRENDS, REGIONAL AND LOCAL IMPLICATIONS

Bevil Wooding
Chief Knowledge Officer, Congress WBN
Internet Strategist, Packet Clearing House

GOVERNOR'S SYMPOSIUM

THE DIGITAL WORLD

GOVERNOR'S SYMPOSIUM

- **Explosion of Online Devices**
- **Explosion of Online Users**
- **Explosion of Online Data**

Dark Side To Digital Progress

GOVERNOR'S SYMPOSIUM

The Perfect Weapon: How Russian Cyberpower Invaded the U.S.

CYBER RISK | Thu May 19, 2016 | 1:57pm EDT

Bangladesh Bank official's computer was hacked to carry out $81 million heist: diplomat

TalkTalk hit with record £400k fine over cyber-attack

POLITICS SPECIAL REPORTS | Thu Mar 10, 2016 | 4:51pm EST

How a hacker's typo helped stop a billion dollar bank heist

"**There are only two types of companies**:
Those that have been hacked,
and those that will be."

Robert Mueller
FBI Director, 2012

THE THREAT IS REAL

The cost of cybercrime could reach $6 trillion by 2021 (global annual cybercrime costs has been estimated $3 trillion in 2015).

INDY/TECH

TENS OF MILLIONS OF HACKED GMAIL AND YAHOO EMAIL ACCOUNTS ARE BEING SOLD ON THE DARK WEB

Hospitals are hit with 88% of all ransomware attacks

Written by Max Green | July 27, 2016 | Print | Email

Cybercrime Is Now More Profitable Than The Drug Trade


WHY ARE THINGS BAD?
Alamy

LACK OF AWARENESS

INSUFFICIENT COORDINATION

OSTRICH SYNDROME

TALENT SHORTAGE

GOVERNOR'S SYMPOSIUM

BE AFRAID..BUT ALSO BE INFORMED

Understanding

The Power of the Dark Side

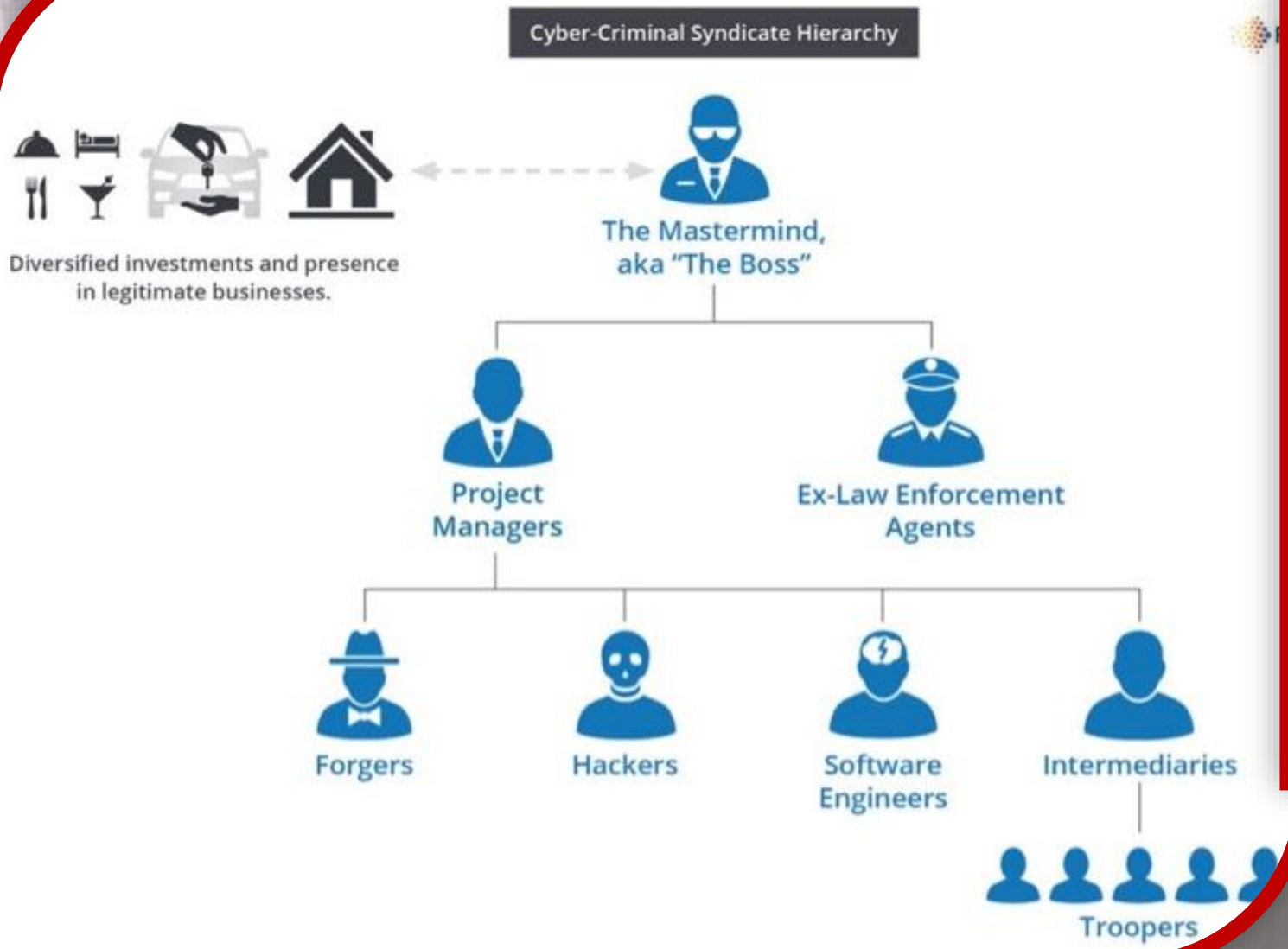
POWERFUL DARK SIDE FORCES

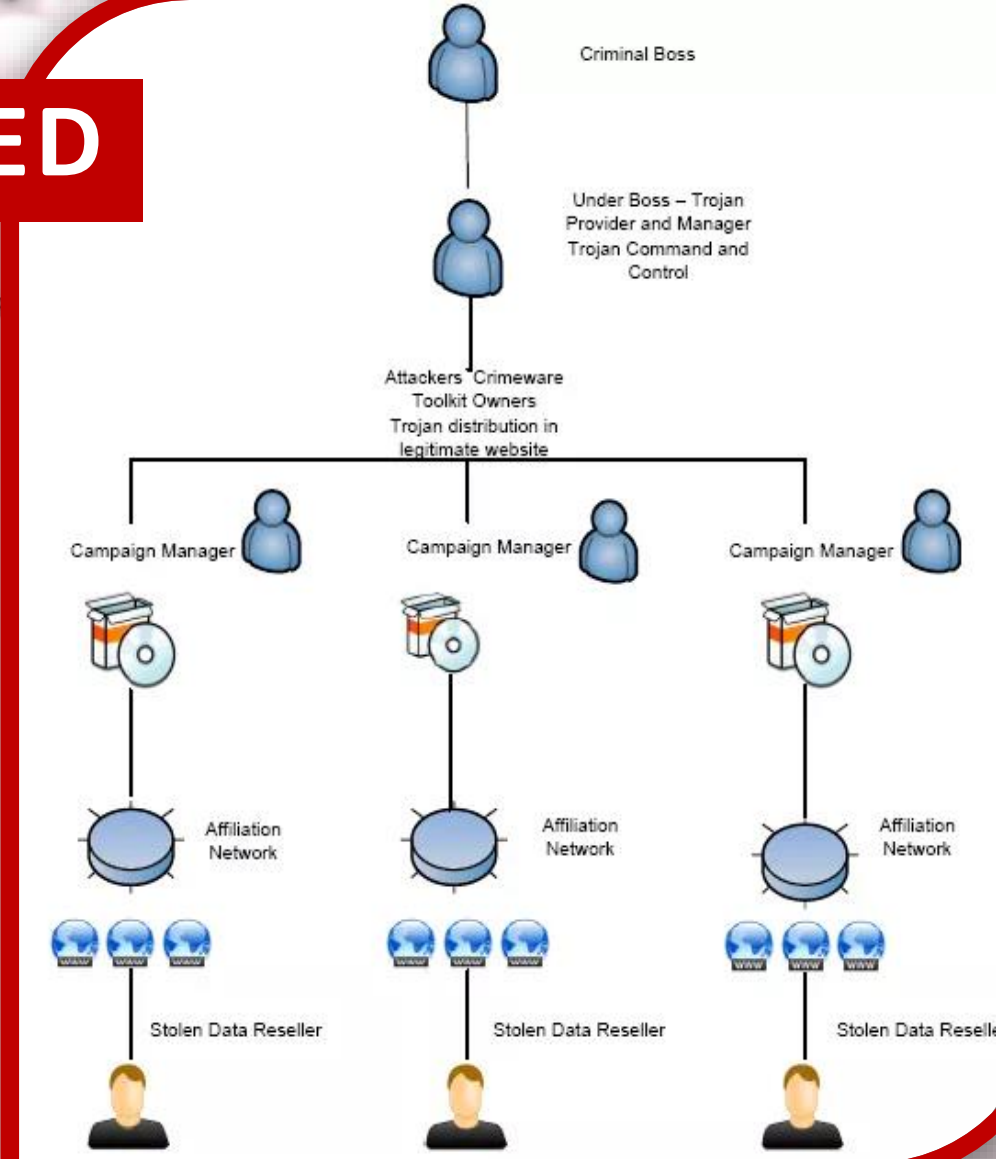
Today's Cyber Criminals are:

- Highly **ORGANZED**
- Highly **MOTIVATED**
- Highly **RESOURCED**

and Highly **EFFECTIVE!**

THE DARK SIDE IS SOPHISTICATED





POWERFUL DARK SIDE FORCES

Cybercriminals

- Broad-based and targeted
- Financially motivated
- Getting more sophisticated

Hactivists

- Targeted and destructive
- Unpredictable motivations
- Generally less sophisticated

Nation-States

- Targeted and multi-stage
- Motivated by data collection
- Highly sophisticated with endless resources

Insiders

- Targeted and destructive
- Unpredictable motivations
- Sophistication varies

2013 - TARGET

Target says up to 70 million more customers were hit by December data breach

2014 - SONY

Sony cyber attack linked to North Korean government hackers, FBI says

2015 - OPM

OPM government data breach impacted 21.5 million

2017 – WannaCry Ransomwear

Major cyber attack disrupts internet service across the WORLD!

2013 - TARGET

- Russian Crime Syndicate;
  17 yr old wrote the malware
- Compromised via a Third-Party Vendor (HVAC)
- Easy Reconnaissance;
  Ignored Initial Alerts
- Internal Infrastructure Used Against Themselves

Target says up to 70 million more customers were hit by December data breach

53.7 million – The income that hackers likely generated from the sale of 2 million cards stolen from Target and sold at the mid-range price of $26.85 (the median price between $18.00 and $35.70).

Faltering Target Parts Ways With Chief

Target Data Breach Price Tag: $252 Million and Counting

2014 - SONY

- GUARDIANS OF PEACE (North Korean Government)
- Internally Everything Destroyed; Whole World Saw Emails & Sensitive Information
- Most of the Company Had Too Much Access; Passwords were stored in files named ‘Passwords’
- Warning Signs were Ignored

Five Sony films, including the new and unreleased version of Annie, turned up on illegal file-sharing sites and were downloaded up to a million times. Brad Pitt's Fury, which had already hit cinema screens, was also shared.

Sony Executive and Producer Apologize for Leaked Emails

A whole host of Sony's private [illegible] to the public, including bosses' salaries and employees' social [illegible]

Strings of confidential emails between Sony workers have also been circulated and proved to be the most sensitive and embarrassing leaks.

The emails revealed that:

- Female film stars including Amy Adams and Jennifer Lawrence were paid less than their male co-stars.
- Sony executive Amy Pascal made jokes about black-themed movies that might be among President Obama's favourites.
- Angelina Jolie was branded a "minimally talented spoiled brat" in a private email from producer Scott Rudin.
- George Clooney lost sleep over bad reviews for The Monuments Men and emailed Pascal to say: "I've let you all down. Not my intention. I apologize. I've just lost touch… Who knew?"

2015 - OPM

- Chinese Government
- Compromised Using Defense Contractor's Credentials
- Encryption is great, but it doesn't stop those who have passwords or credentials
- Data Stolen During Holiday When Staffing was Light.

INSIDE THE CYBERATTACK THAT SHOCKED THE US GOVERNMENT

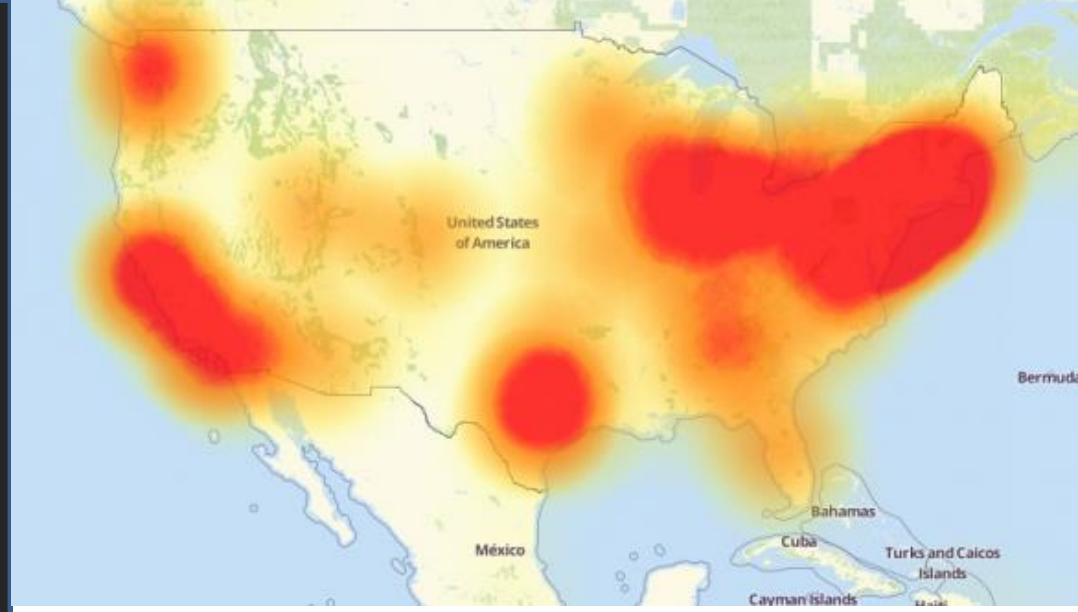
Hacking of Government Computers Exposed 21.5 Million People

OPM data can include everything from lie detector results to notes about whether an applicant engages in risky sexual behavior.

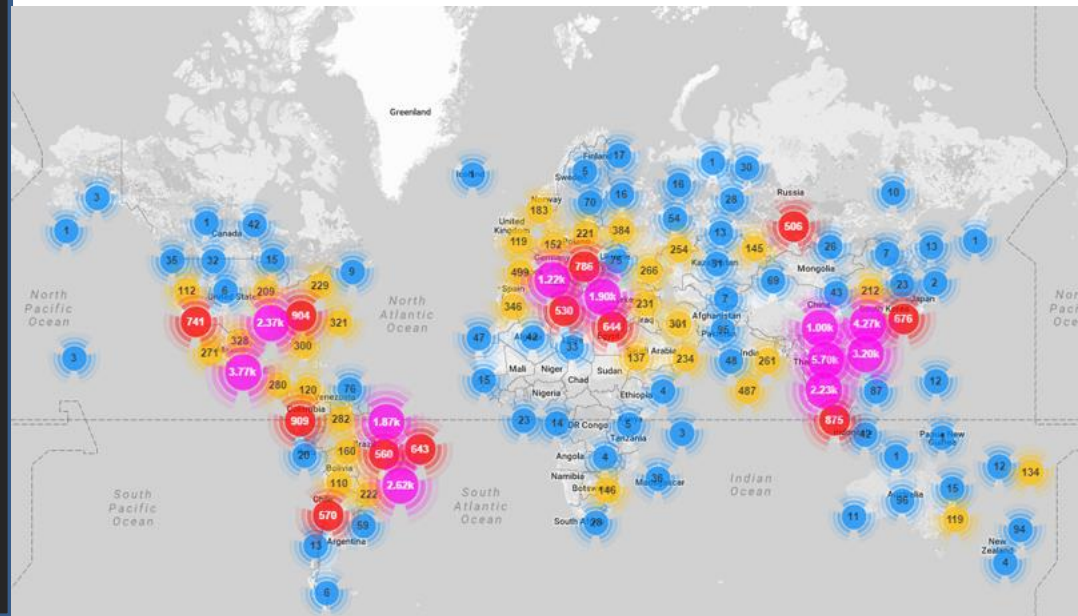
OPM Director Katherine Archuleta Resigns After Federal Data Breach Affects 25 Million Americans

2016 – DYN DNS

- Hackers - For Profit or Other Motive?
- Millions of Compromised Digital Video Cameras
- Unpatched IoT Devices
- Plenty of Individuals, Companies, and Vendors to Blame!



Major cyber attack disrupts internet service across Europe and US



2017 - WannaCry

- Hackers - Unknown
- Ransom message asking for approx. $300. Increase to $600 after 3 days. After 7 days, files destroyed
- Estimated > 200,000 victims WORLDWIDE


T’S NOW EASIER TO BE ON
THE DARK SIDE

PUBLICLY AVAILABLE TOOLS

KALI BY OFFENSIVE SECURITY

Blog Downloads Training Documentation Community About Us

Our Most Advanced Penetration Testing Distribution, Ever.

GitHub, Inc. [US] https://github.com/rapid7/metasploit-framework

Metasploit build passing code climate 2.7

The Metasploit Framework is released under a BSD-style license. See COPYING for more details.

The latest version of this software is available from: https://metasploit.com

Bug tracking and development information can be found at: https://github.com/rapid7/metasploit-framework

New bugs and feature requests should be directed to: http://r-7.co/MSF-BUGv1

API documentation for writing modules can be found at: https://rapid7.github.io/metasploit-framework/api

Questions and suggestions can be sent to: https://lists.sourceforge.net/lists/listinfo/metasploit-hackers

Installing

Generally, you should use the free installer, which contains all of the dependencies and will get you up and running with a few clicks. See the Dev Environment Setup if you'd like to deal with dependencies on your own.

Using Metasploit

Metasploit can do all sorts of things. The first thing you'll want to do is start `msfconsole`, but after that, you'll probably be best served by reading Metasploit Unleashed, the great community resources, or the wiki.

WikiLeaks Leaks News About Partners

Vault 7: CIA Hacking Tools Revealed

Shadow Brokers' Swan Song: A Sale of Hacking Tools for Windows

Leaked NSA Hacking Tools Being Used to Hack Thousands of Vulnerable Windows PCs

Saturday, April 22, 2017 Swati Khandelwal

OUTSOURCING & CAPACITY BUILDING

GOVERNOR'S SYMPOSIUM

-A-Hacker - Hire a hack... (3) #JKT48CYBERTEAM - Go... whoami@system:~$

ent-A-Hacker - Hire a hacker for every job you can imagine, from DDOS to completely ruining people or destroy reputation of a company or individual - Tor Browser

ookmarks Tools Help

fzdthnwkez.onion

Rent-A-Hacker

Products FAQs Register

Rent-A-Hacker

Experienced hacker offering his services!
(Illegal) Hacking and social engineering is my bussiness since i was 16 years old, never had a real job so i had the time to get really good at hacking and i made a good amount of money last +-20 years.
I have worked for other people before, now im also offering my services for everyone with enough cash here.

Prices:
Im not doing this to make a few bucks here and there, im not from some crappy eastern europe country and happy to scan people for 50 euro.
Im a proffessional computer expert who could earn 50-100 euro an hour with a legal job.
So stop reading if you dont have a serious problem worth spending some cash at.
Prices depend alot on the problem you want me to solve, but minimum amount for smaller jobs is 200 euro.
You can pay me anonymously using Bitcoin.

Technical skills:
- Web (HTML, PHP, SQL, APACHE)
- C/C++, Assembler, Delphi
- 0day Exploits, Highly personalized trojans, Bots, DDOS
- Spear Phishing Attacks to get accounts from selected targets
- Basically anything a hacker needs to be successfull, if i dont know it, ill learn it very fast
- Anonymity: noone will ever find out who i am.

Social Engineering skills:
- Very good written and spoken (phone calls) english and german.
- If i cant hack something technically ill make phone calls or write emails to the target to get the needed information, i hav had people make things you wouldnt belive really often.
- Alot of experience with security practices inside big corporations

HOW DO I PHISH? – ADVANCED EMAIL PHISHING TACTICS

Author: zeknox Posted In Phishing On: 2013/01/30 Comments: 19

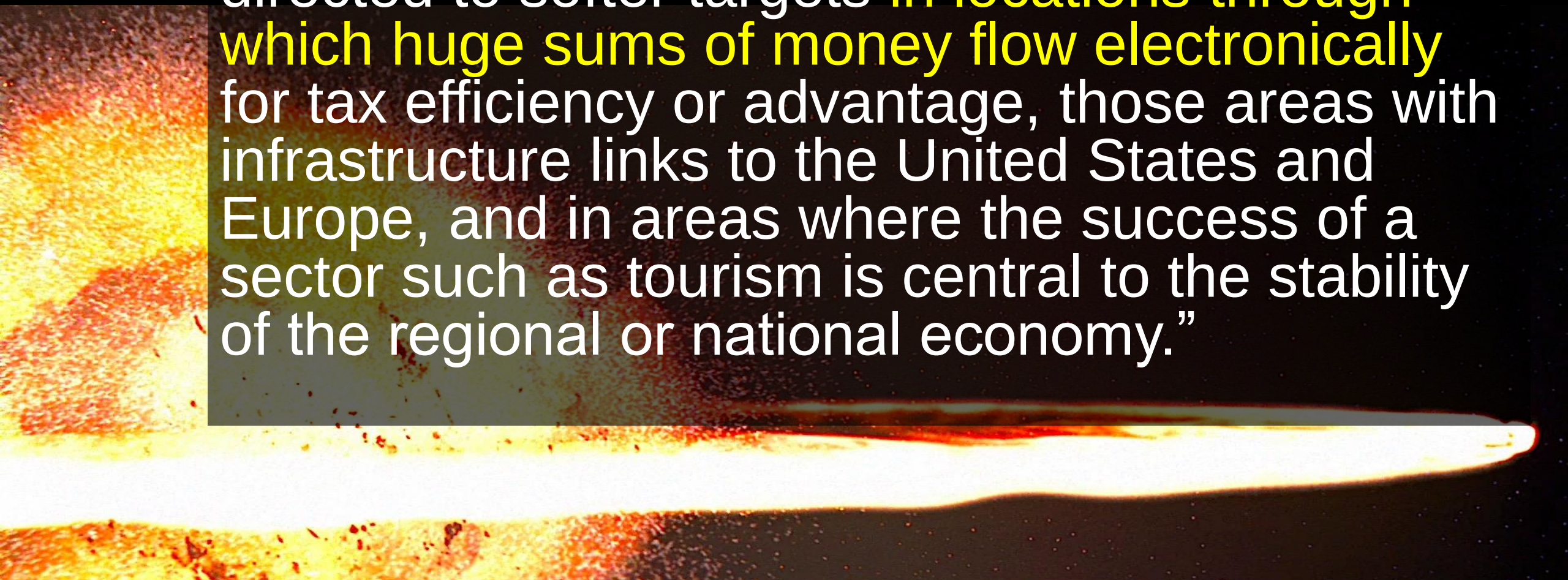
I'm often times asked how I perform email email phishing attacks. Email phishing attacks are very compelling, and unique to each situation. The process of creating a successful email phishing campaign is very methodical, and most of the time and effort goes up front into the planning phase.

Understanding that good security is a multilayer approach and we will have many layers of security that could potentially destroy our email phishing campaign. Some of these layers may include Email Gateway Spam Filters, Outlook 'Junk Email' Filters, Host based Antivirus, Intrusion Prevention Systems, Web Proxy Servers, Egress filtering, and the list goes on and on.

Now that we know some of the most common security layers we will encounter, lets walk through some of them to see how they can be bypassed. Some of these methodologies were adopted from Brav0Hax and purehate's email phishing talks. Huge shutout to those guys and the work they've done for the infosec community. If you haven't seen their email phishing presentation it will answer alot of questions you may have, check it out here.

WHAT COMES NEXT … NO ONE KNOWS

"Future attacks will likely increasingly be directed to softer targets in locations through which huge sums of money flow electronically for tax efficiency or advantage, those areas with infrastructure links to the United States and Europe, and in areas where the success of a sector such as tourism is central to the stability of the regional or national economy."



A Tipping Point Looms

"As **attacks** continue or **worsen in frequency and sophistication** and focus not just on disrupting critical infrastructure but also compromising key information that could be used in the future, **defenders may soon find themselves short in terms of the support necessary to stave off threats**. The lack of funding and an **unmet desire for government leadership** in this area leaves defenders feeling increasingly left on their own."

Organization of American States

FORTUNATELY…ALL IS NOT LOST

RESISTANCE IS NOT FUTILE

While there is no silver bullet solution with cyber security, a structured, coordinated, multi-stakeholder approach can make a big difference.

HOW CAN GOVERNMENTS I

- UPDATE LEGISLAT
- PARTICIPATE IN REGIONAL B
- STRENGTHEN LOCAL CAP
- SET NATIONAL STANDA

GOVERNOR'S SYMPOSIUM

HOW CAN INDUSTRY H

TRACK THE TREND L

SUPORT PUBLIC-PRIVATE COOPE

LAUNCH AWARENESS PROG

ENCOURAGE AND TRAIN CYBER E

GOVERNOR'S SYMPOSIUM

Make the Investment. Develop a National Cyber Security Strategy. TAKE ACTION!

"despite hard pressed budgets, national cyber security needs to be seen as just as important as physical security and treated as core cost for governments."

...IT's WORTH IT

PCH
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Securing National Development

THANK YOU

STATE OF THE CYBER SECURITY: GLOBAL TRENDS, REGIONAL AND LOCAL IMPLICATIONS

Bevil Wooding

Chief Knowledge Officer, Congress WBN
Internet Strategist, Packet Clearing House

@bevilwooding

www.pch,net

GOVERNOR'S SYMPOSIUM

About the Presenter

BEVIL M. WOODING

Internet Strategist, Packet Clearing House

Mr. Wooding is an an Internet Strategist for Packet Clearing House, a US-based non-profit research institute. He is also the Executive Director of the Caribbean Network Operators Group

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Twitter/Linked: @bevilwooding

www.pch.net

GOVERNOR'S SYMPOSIUM

Strategic ICT Governance

Bernadette Lewis
Secretary General
Caribbean Telecommunications Union
23rd June 2017

History

1989

- Established by CARICOM HoG to support the development of the Caribbean Telecommun-ications Sector

1990

Inaugurated to address

- Policy
- Coordination
- Representation
- Capacity Building
- Industry Watch

2003

Defined new strategic direction

- Relevance
- Innovation
- Collaboration
- Service

2004

- Mandate widened to ICT
- Membership Expanded to all Caribbean States, the Private Sector and Civil Society

Mission

To create an environment in partnership with members to optimize returns from ICT resources for the benefit of stakeholders

Members

Anguilla
Antigua/Barbuda
Bahamas
Barbados
Belize
British Virgin Is.
Cayman Is.
Cuba
Dominica

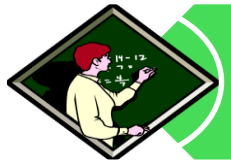
Grenada
Guyana
Jamaica
Montserrat
St Kitts/Nevis
St Lucia
St Maarten
St Vincent & Grenadines
Suriname
Trinidad & Tobago
Turks and Caicos

American Registry of Internet Numbers (ARIN) * Bureau Telecommunicatie en Post (Curacao)
Dauphin Telecom * Digicel (Trinidad & Tobago) * Eastern Caribbean Telecommunications Authority
International Amateur Radio Union (Region2) *Internet Corporation of Assigned Names and Numbers (ICANN)
Internet Society (ISOC) * Latin American and the Caribbean
Puerto Rico Regulatory Board
Telecommunications Authority of
Trinidad and Tobago

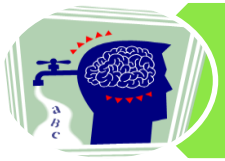
Mandate

Harmonised ICT Policy Formulation

Regional ICT Project Coordination



ICT Capacity Development



Advice on ICT issues

Caribbean Representation

Industry Watch

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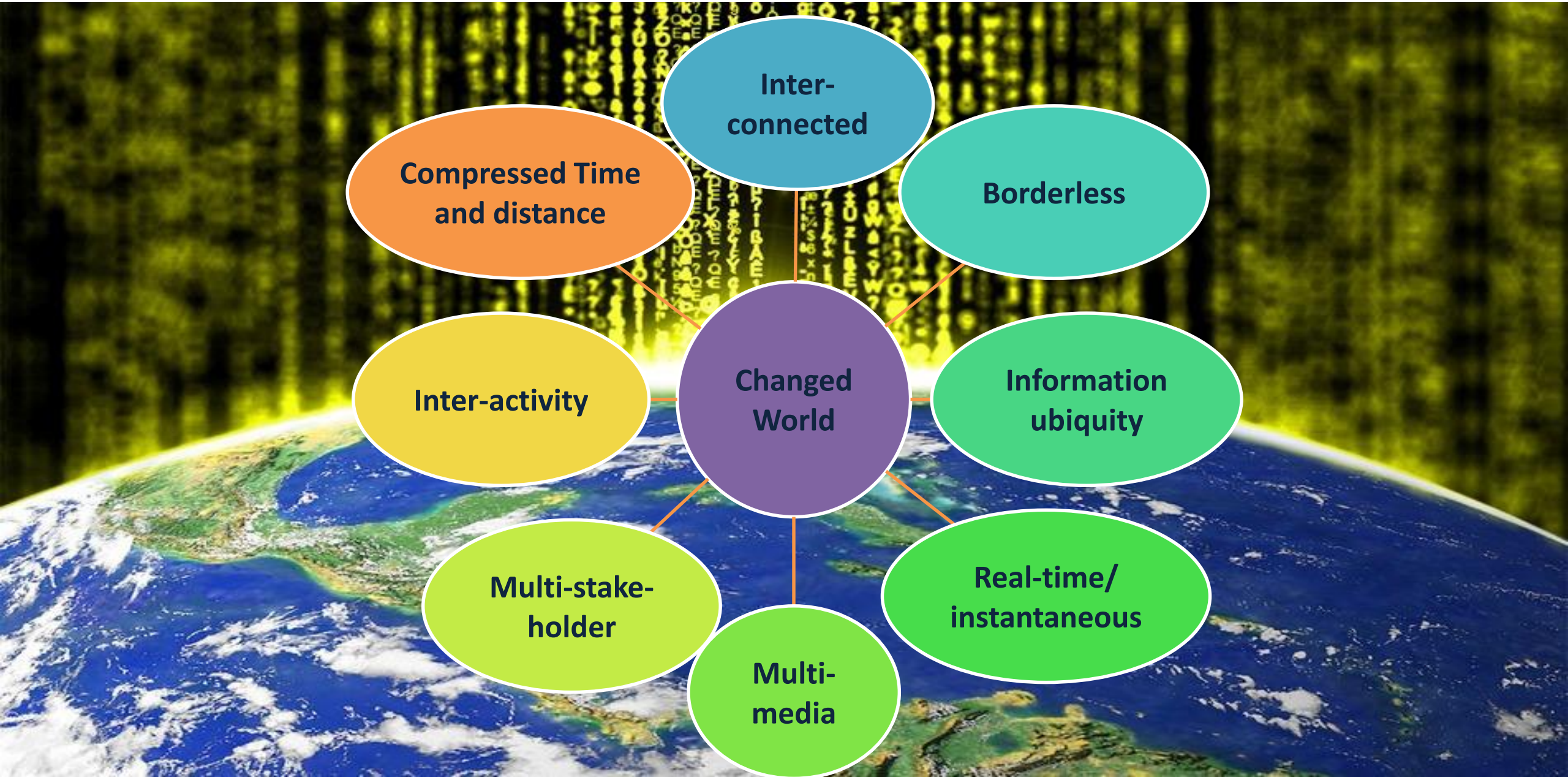
The World has changed…

Because of the rapid and relentless evolution of information and communication technologies

Features of the Changed World



Instigators of the change

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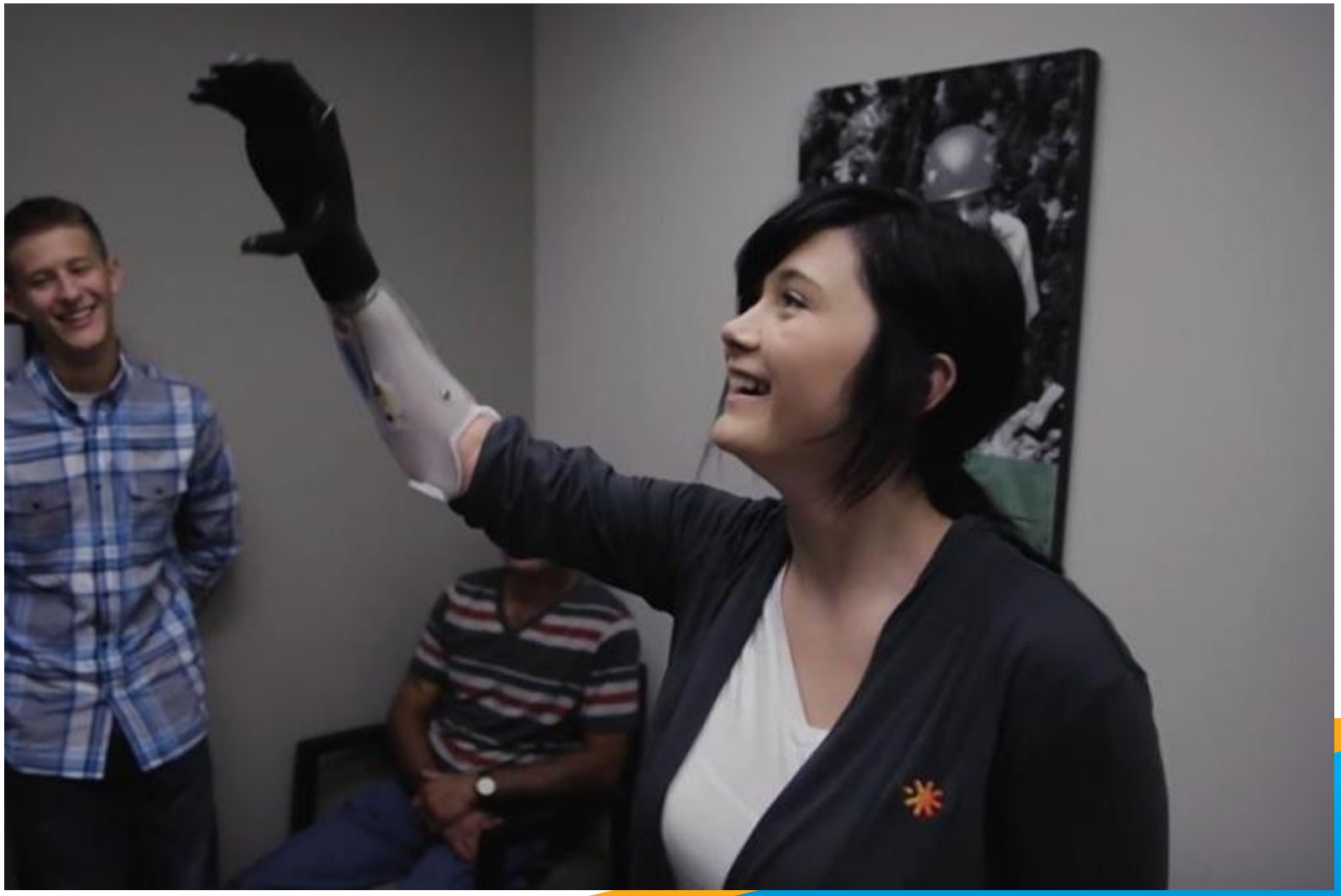
Because the world has changed…

Torri was born without a right hand. Her closest friends started a twitter campaign called #HandforTorri that got the attention of a Bionic Company that could help.



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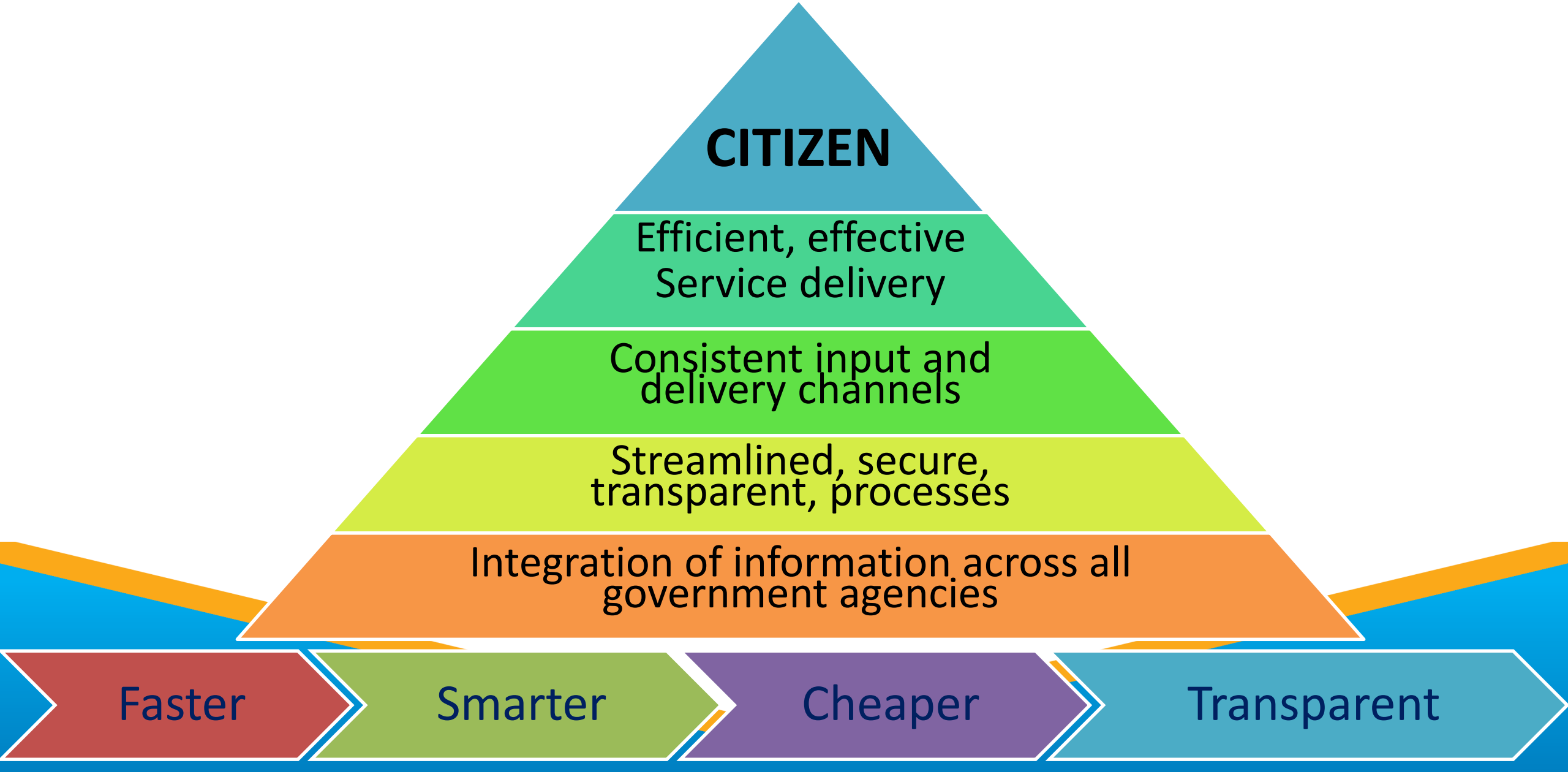
Organisations that do not respond appropriately…

GOVERNOR'S SYMPOSIUM

ICT's Potential for Citizen-Centric Seamless Governance



If you have invested in ICT…

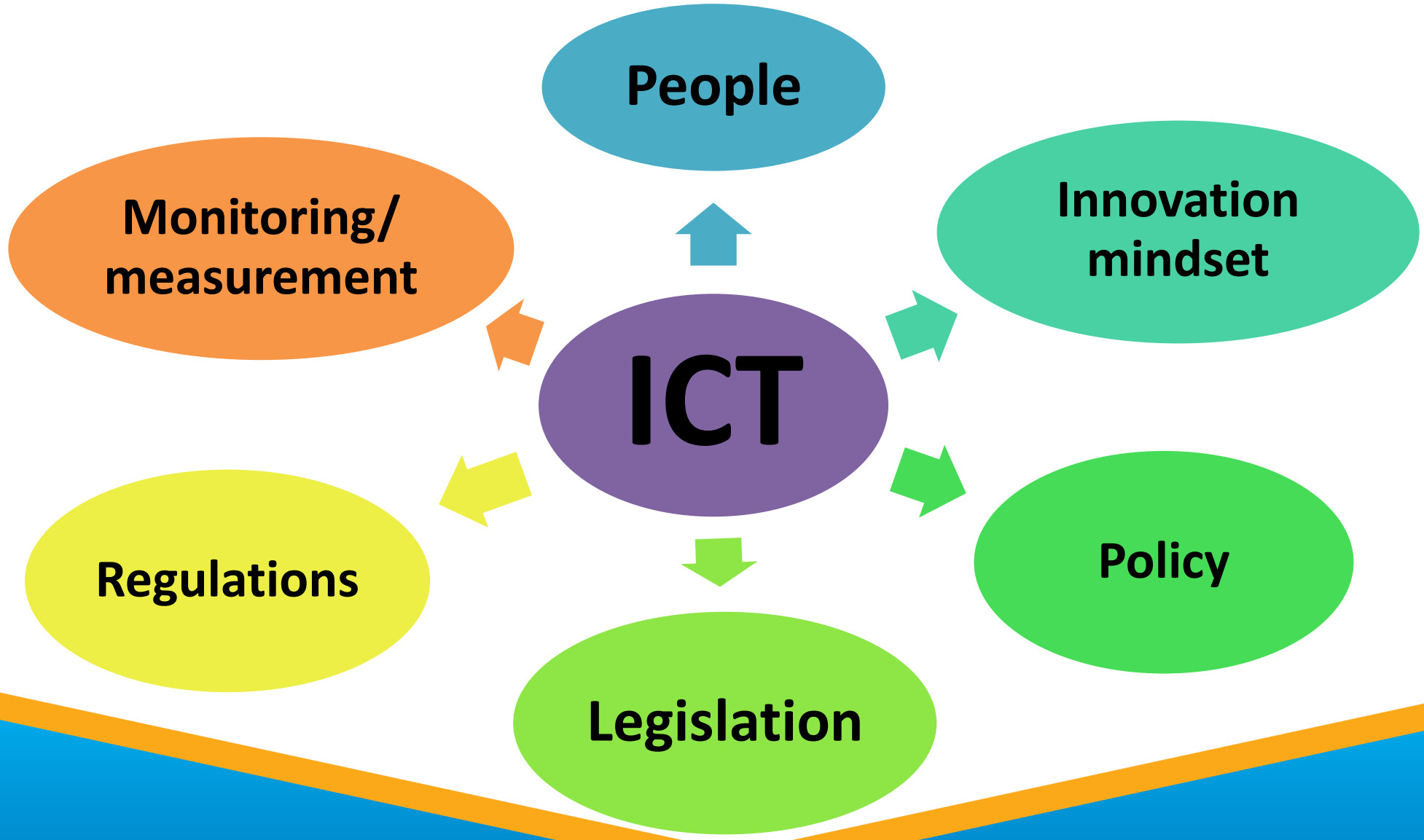
1. Have you achieved the citizen-centric seamless government?

2. Are you realizing the full potential of your investment?

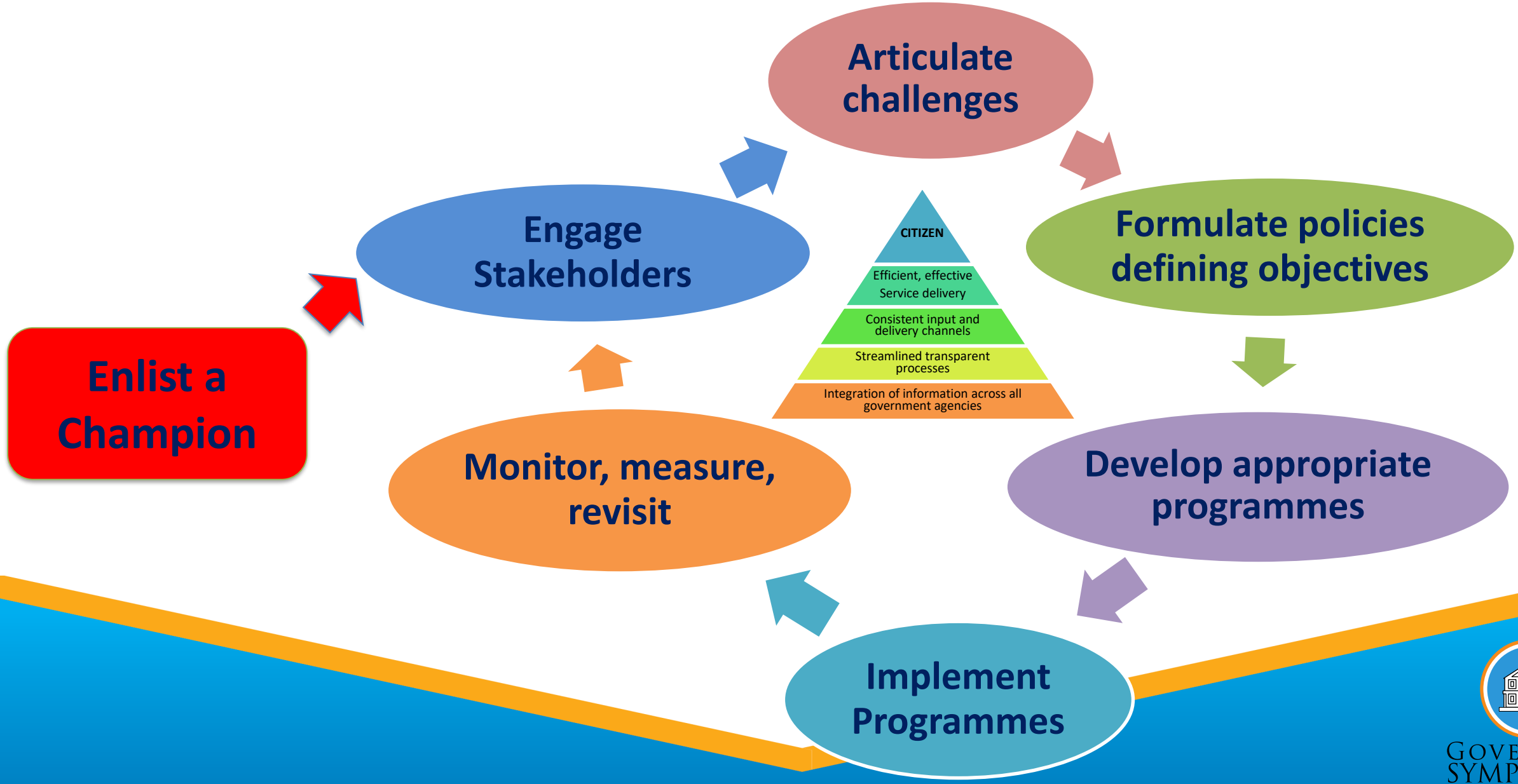
Challenges to leveraging ICT's Potential

- Lack of Leadership
- Insufficient engagement of stakeholders
- Poor communication
- Inability to articulate the problems
- Little research capability and insufficient research
- Insufficient timely evidence (data)
- Lack of expertise
- Archaic systems and processes

Leveraging ICT's Potential: The Ecosystem



Leveraging ICT's Potential: The proewss



GOVERNOR'S SYMPOSIUM

Development is not conferred…
It is something we must do for ourselves, therefore we must

THINK

PLAN

ACT

GOVERNOR'S SYMPOSIUM

Thank You

We are at your service

http://www.ctu.int

GOVERNOR'S SYMPOSIUM