Cybersecurity Innovation Ecosystems

A Global Comparative Study

Presented by:

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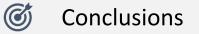
Outline

MIT Methodology

Cyber Innovation Ecosystems

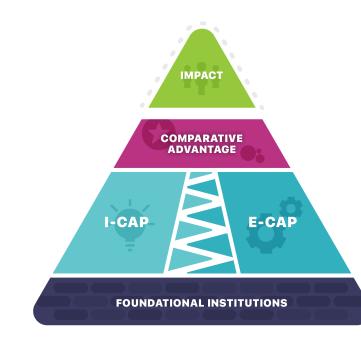
Summary of Global EPIC

- Results of Indexes applied to Global EPIC
- Q Next Steps: a new Global EPIC Index

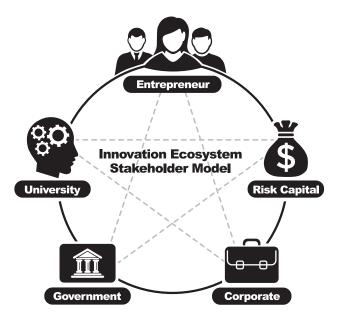


MIT systematically assesses general iEcosystems, based on 5 key <u>Stakeholders</u>* and their <u>System</u>...

(*This MIT approach goes beyond the usual stakeholders of the 'triple helix' (ie Government, Industry and Academia) to add two other key players.)



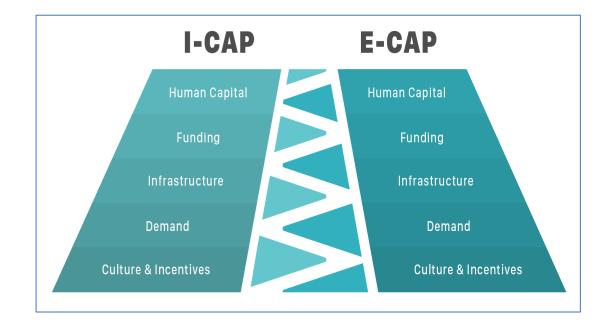
https://innovation.mit.edu/assets/ Assessing-iEcosystems-V2-Final.pdf



https://innovation.mit.edu/assets/MIT-Stakeholder-Framework_Innovation-Ecosystems.pdf

...separating out inputs (which most Indexes mix) into Innovation & Entrepreneurship Capacities.

(This MIT research approach allows a new assessment of iEcosystems which complements existing general Indexes like GEM, GEDI and Bloomberg.)





Welcome to Innovation Ecosystems at MIT

Our work on innovation ecosystems is part of an on-going project through the MIT Lab for Innovation Science and Policy project to build a deeper understanding of the system and dynamics of innovation and the ecosystems in which it seems best to thrive.

Learn More

WebApp: <u>https://innovationecosystems.mit.edu</u>

https://innovation.mit.edu/assets/ Assessing-iEcosystems-V2-Final.pdf MIT Innovation-Driven Entrepreneurship (IDE) as an economic driver – but also for cyber?

- MIT has studied 'innovationdriven entrepreneurship' for several years, and why it tends to cluster in certain places which are identifiable as 'innovation ecosystems' (iEcosystems), implying the world of innovation is not flat.
- In 2019, MIT's Innovation Initiative (MITii) co-hosted a seminar to explore whether the general phenomenon of such clustering (in multistakeholder ecosystems) also applied to cybersecurity...

 ...in the summary report (link below), the seminar participants concluded:-

"Innovation ecosystems ... provide an important lens to understand the specific case of innovation in cybersecurity..."

 hence the start of this new joint work with Global EPIC.

https://innovation.mit.edu/assets/Enhancing-Cybersecurity-The-Role-of-Innovation-Ecosystems.pdf

Cybersecurity and Economic Development Every country must demonstrate to the world that it is a trusted participant in the digital economy.

Digital security must be a measure of economic strength and not just military readiness.

Global EPIC

Founded in 2017 by cybersecurity innovation ecosystem leaders in Israel, UK, US, and Canada.

Mission: Create a network of cybersecurity ecosystems that creates a benefit to the global economy, while adding value to local economies.

Specifically, Global EPIC organized to:

Provide transparent comparative ecosystem **data**;

Create a **community** of peer mentors advancing their own ecosystem;

Develop and advance the **methodologies** associated with the growth of the cyber digital ecosystem.

Brussels, Belgium	Bengaluru, India	The Hague, Netherlands	Ankara, Turkey	Maryland, US
Ottawa, Canada	Dublin, Ireland	Lagos, Nigeria	Belfast, UK	Boston, US
New Brunswick, Canada	Beer Sheva, Israel	Krakow, Poland	London, UK	Tallinn, Estonia
Surrey, Canada	Torino, Italy	Bilbao, Spain	Wales, UK	Helsinki, Finland
San Jose, Costa Rica	Tokyo, Japan	Copenhagen, Denmark	San Diego, California, US	New York City, New York, US
Alps Region, France	Nairobi, Kenya	Taipei, Taiwan	Indiana, US	Canberra, Australia

GLOBAL EPIC MEMBERS

GLOBAL EPIC
BY THE
NUMBERS

Regional or National Hub	Regional: 16	National: 14	
Fiscal Agent	Government: 5	Academia: 8	Industry: 10
Startup/Scaleup Program	Yes: 13	No: 7	
Year Organized (speaks to maturity of the ecosystem)	2018-2020: 8	2016-2017: 10	2015/earlier: 12
International Corporate Business Partners (named)	0-5: 16 (9/15 None)	6-10: 6	10+: 8
Primary Funding Source (financial sustainability model)	Government: 16	Grants: 9	Dues: 5
International Conferences	Yes: 17	No: 13	
Government to Government Agreements	Yes: 9	None: 21	

GE Members' "Tech Thrust" Areas

ACADEMIA	GOVERNMENT	INDUSTRY
 Connected devices Training Threat sharing Network security Finance Smart cities Healthcare Transportation Data privacy Cryptography Industrial controls Security intelligence Secure mobility Critical infrastructure Public safety Secure by design software/ Embedded security 	 Public Safety Training/ Talent Compliance/ Policy Advanced manufacturing Smart energy Digital health Food tech 	 IoT - Connected Devices Application Security Embedded Security Security Management Robotics Microelectronics Al/ Big Data Smart mobility Compliance and risk Critical infrastructure Advanced manufacturing Fintech Public safety Smart Cities Forensics National Security Digital DNA 5G Quantum technologies Smart home security Maritime Space, aerospace

10 INTERNATIONAL INDEXES: 7 FROM MITII ASSESSMENT, 3 ADDED FOR GLOBAL EPIC'S EVALUATION Innovation-focused Indexes (from MITii assessment)

- Global Competitiveness Index (GCI)
- Bloomberg Innovation Index
- Global Innovation Index (GII)
- European Innovation Scoreboard

Entrepreneurship-focused Indexes (from MITii assessment)

- Global Entrepreneurship Monitor (GEM)
- Global Entrepreneurship & Development Institute
- Startup Genome

Cybersecurity Indexes (accounts for 3 categories in ranking)

- Stockholm International Peace Research Institute (SIPRI) Military Spending: % GDP
- Global Cybersecurity Index (GCI)
- UNESCO: R&D professionals % population

GE Survey using 10 Indexes: Initial Results

(in any Index) +	Top 10 ranked (in any Index) + all 5 categories ranked	(in any Index) +	• • •	(in any Index) +	-	All 5 categories ranked (not top 10)	
US	Canada		Ireland	Estonia	Taiwan	Italy	Costa Rica
UK	Australia		Belgium	Finland		Poland	Kenya
Israel	Spain					Turkey	Nigeria
France	Japan						
Netherlands	India						
Denmark							

WHO IS MISSING?

Potential GE ecosystems, according to Index Survey	
S. Korea	I, E, \$, C, R&D
Singapore	I, \$, C, R&D
Norway	I, E, C, R&D
Luxembourg	I, E, C, R&D
Switzerland	I, E, R&D
Germany	I, E, R&D
Sweden	I, E, R&D
Austria	I, E, R&D

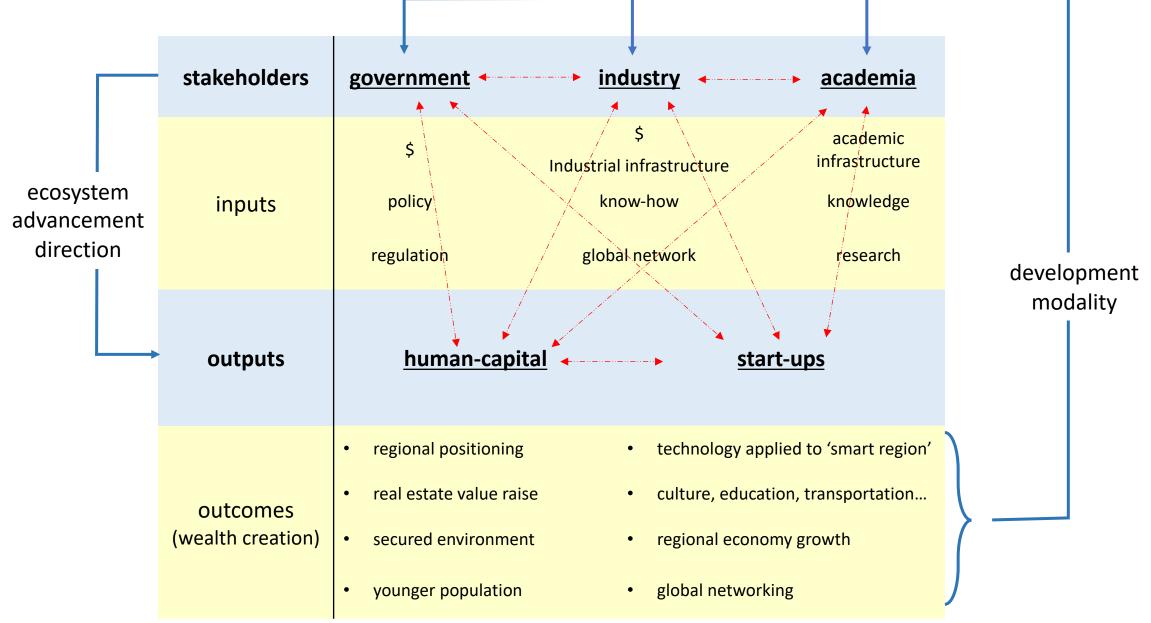
Going Further: Global EPIC Index

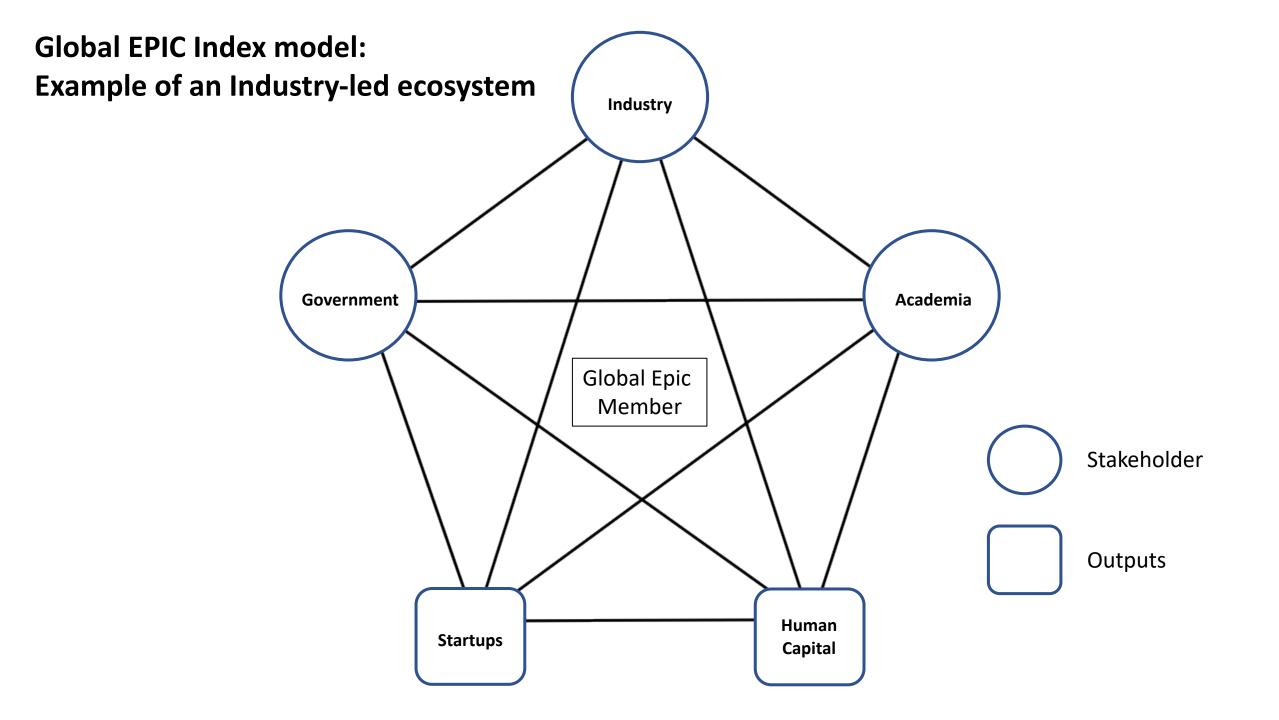
- Building on this initial evaluation of cyber ecosystems (based on MIT's general ecosystem approach), Global EPIC will develop an index for cybersecurity ecosystems, which will be a new evaluation and strategic planning tool.
- Based on its evaluation model, Global EPIC will identify the strengths of, and the opportunities for, the key players in cyber ecosystems.

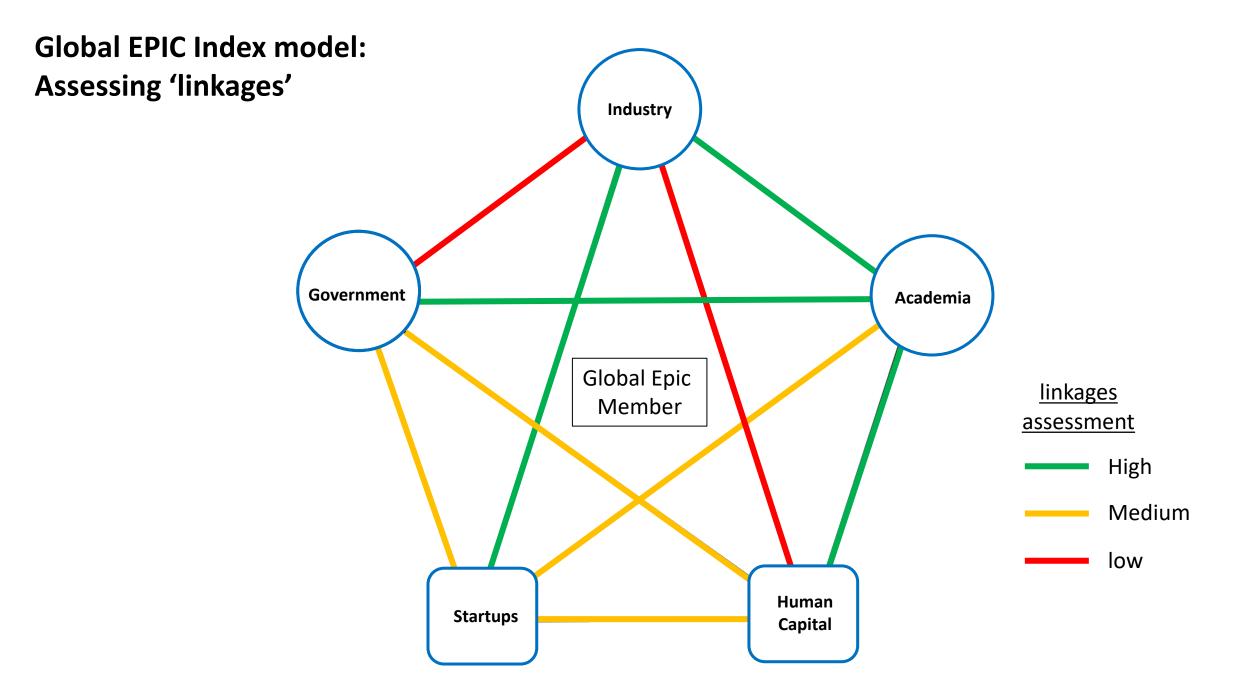
Academia
 # Startups from University # Students enrolled in cyber degree programs # Graduates from cyber degree programs # Events \$ Corporate/industry sponsorships for R&D \$ Research dollars secured from all sources

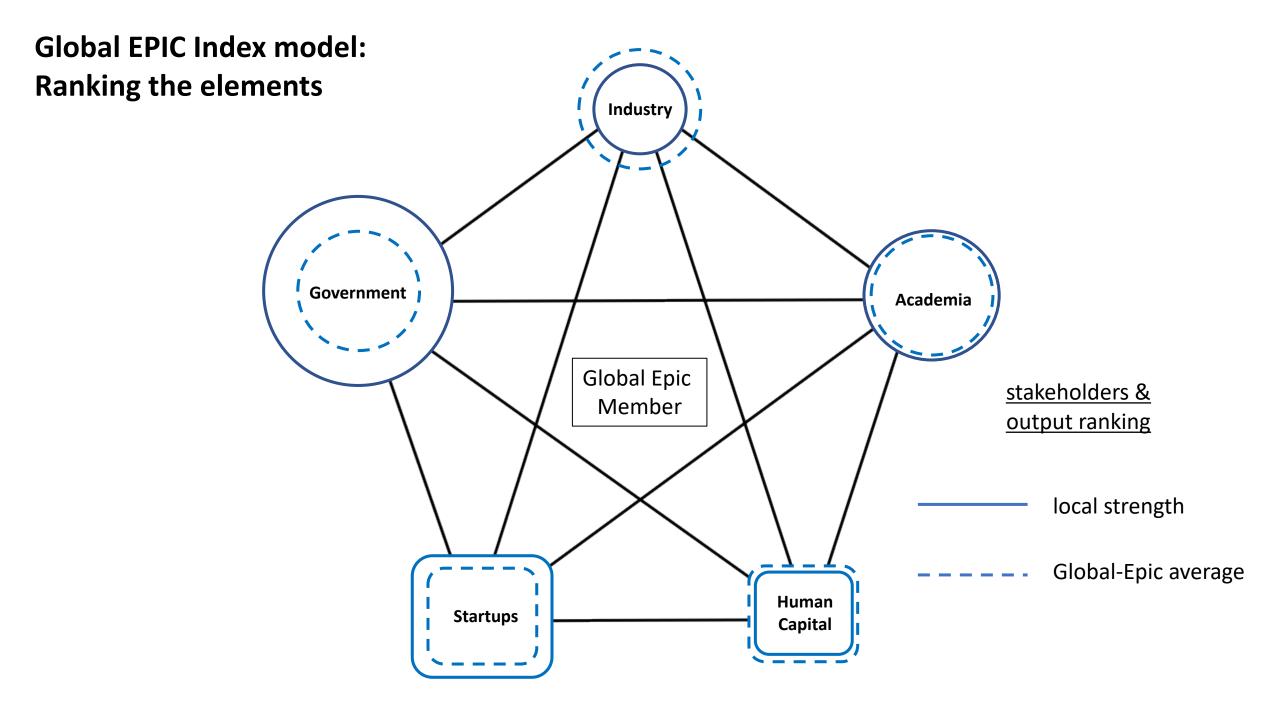
KEY PERFORMANCE INDICATORS (KPI) FOR CYBER-FOCUSED ECOSYSTEMS

Global EPIC Model



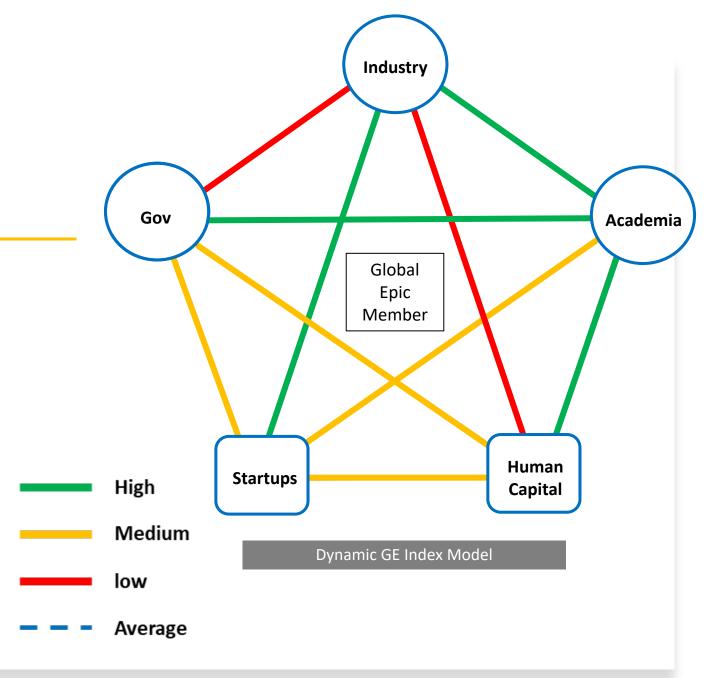






GLOBAL EPIC INDEX

- Holistic quantitative assessment
- Experience based questionnaire
- Apples to Apples reference
- Sustainability and Scalability scale
- Self diagnostic tool
- Driven enhancement-workplan
- Complementary to existing indexes



Conclusions

- Globally recognized indexes can be a roadmap to building a network of ecosystems.
- Human leadership is critical to building a global network of ecosystems.
- Each ecosystem is built on a solid foundation of local subject matter experts. This can be indexed by specialty.
- Investments must be made in human capital and innovation, at all levels, in order to secure a robust digital economy:
 - Israel's global leadership demonstrates this quite effectively.
- Developing countries can strategically benchmark their own growth against KPI's from more developed countries with similar characteristics.