

4th Annual Public Policy Conference
Preparing for the Fourth Industrial Revolution
Philippine Institute for Development Studies
19 September 2018

Building Globally-Linked Manufacturing-and-R&D Science & Technology Innovation Ecosystems in the Philippines:

**An Indispensable Step Toward
Inclusive National Development and
to Preparing for the Fourth Industrial Revolution**

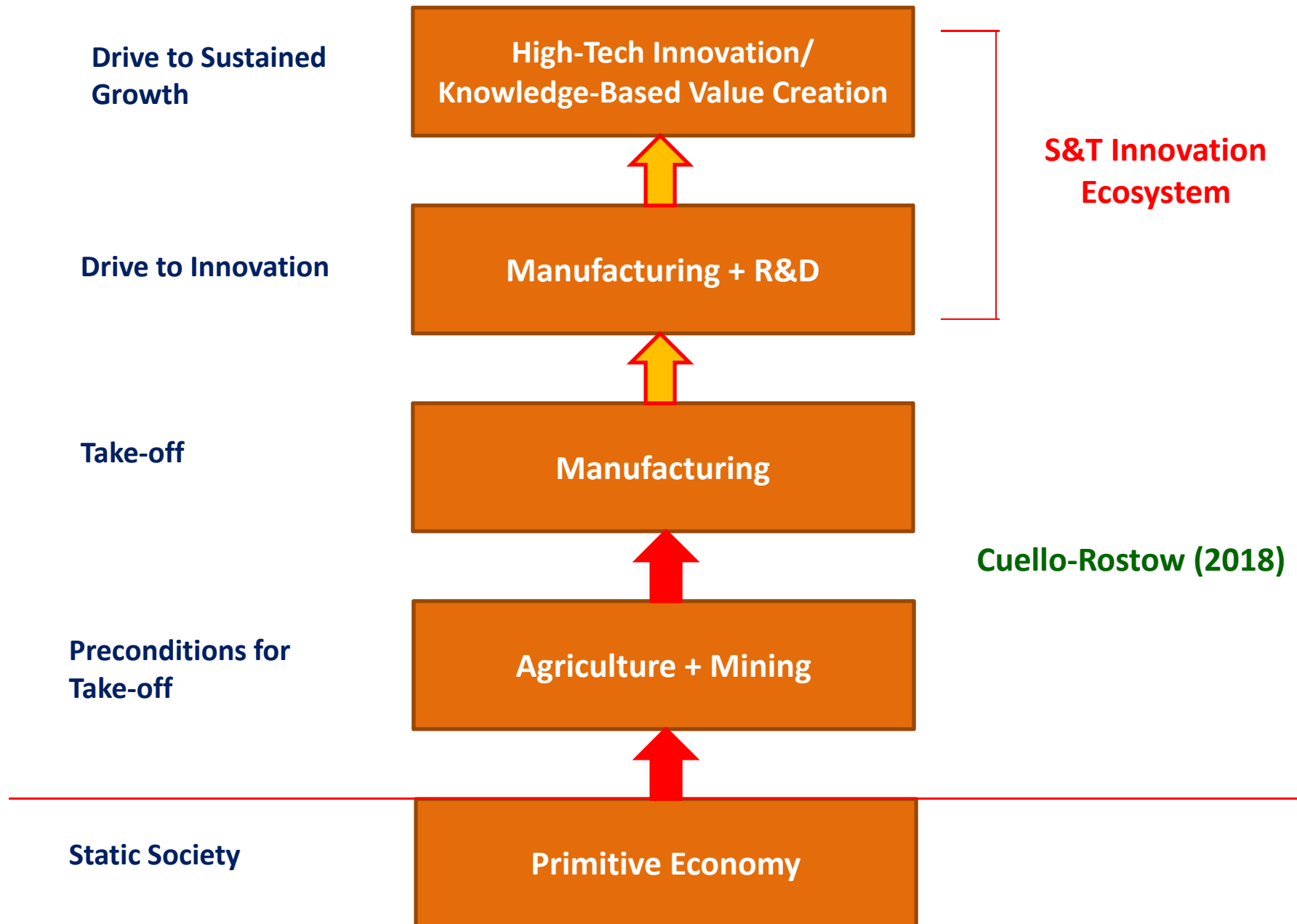
Prof. Joel L. Cuello, Ph.D.



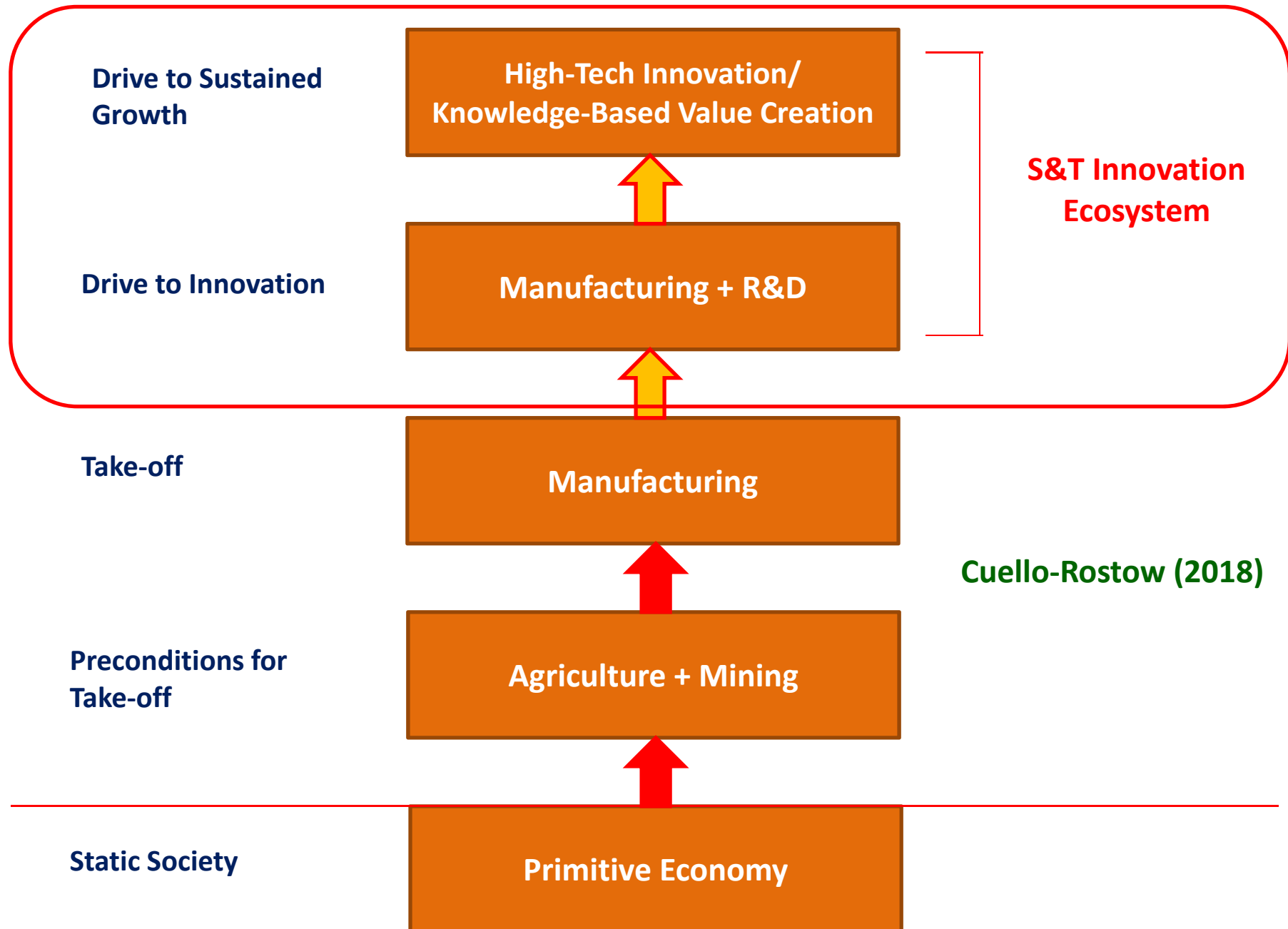
Two Challenges for the PH

- **Inclusive National Development**
- **Preparing for the Fourth Industrial Revolution**

Five Steps of Economic Development in the 21st Century



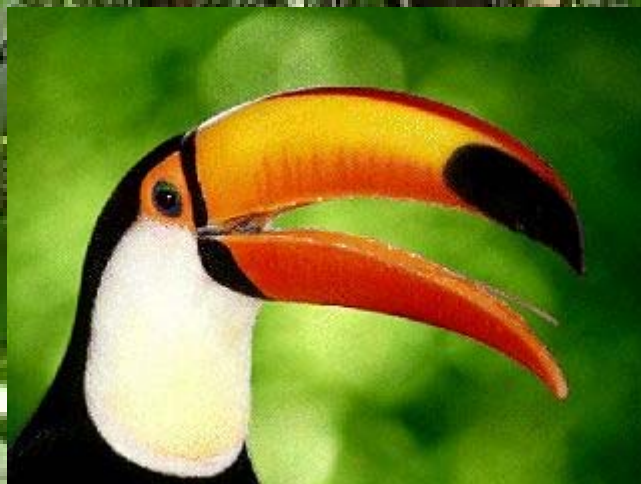
Five Steps of Economic Development in the 21st Century



What is an S&T Innovation Ecosystem?



A tropical rainforest is an ecosystem



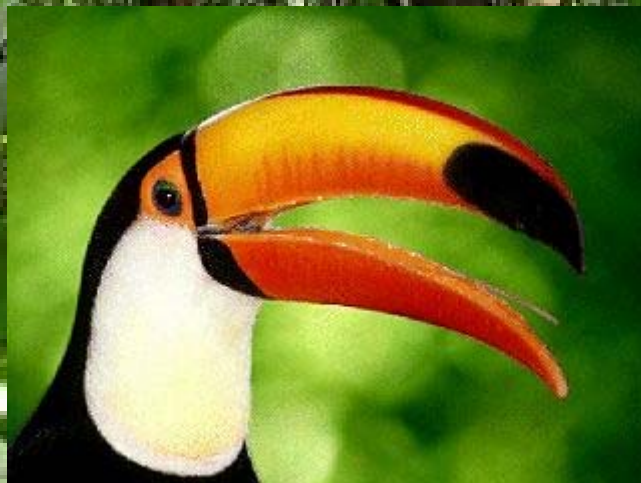


A tropical rainforest is a dynamic and interactive environment that produces and sustains a rich variety of species, which constitutes the innovation of the rainforest ecosystem.





**Soil, Sunlight, Rain, Temperature, Humidity,
Habitats, other Species**



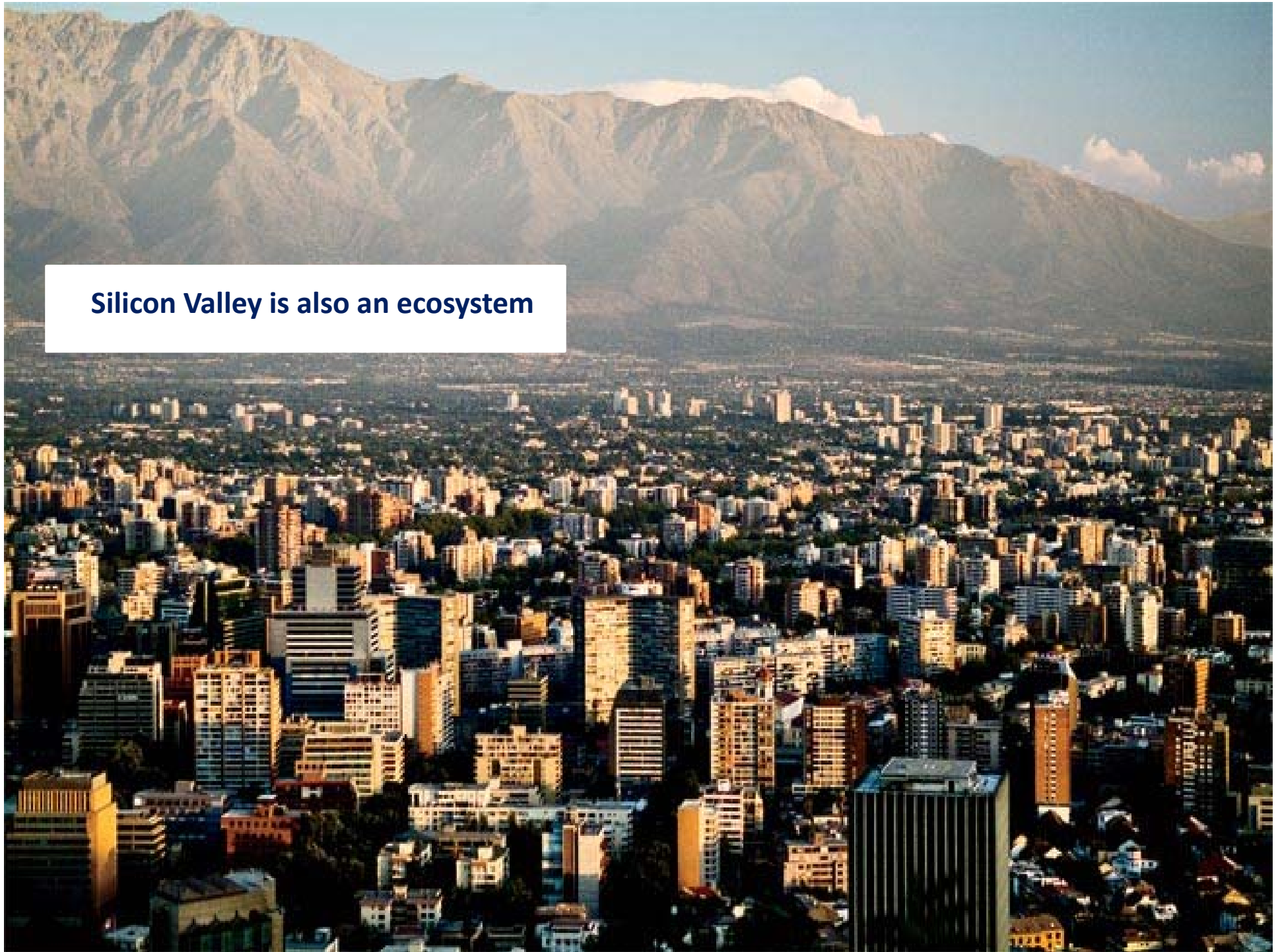
A Tale of Two Ecosystems

Tropical Rainforest Ecosystem

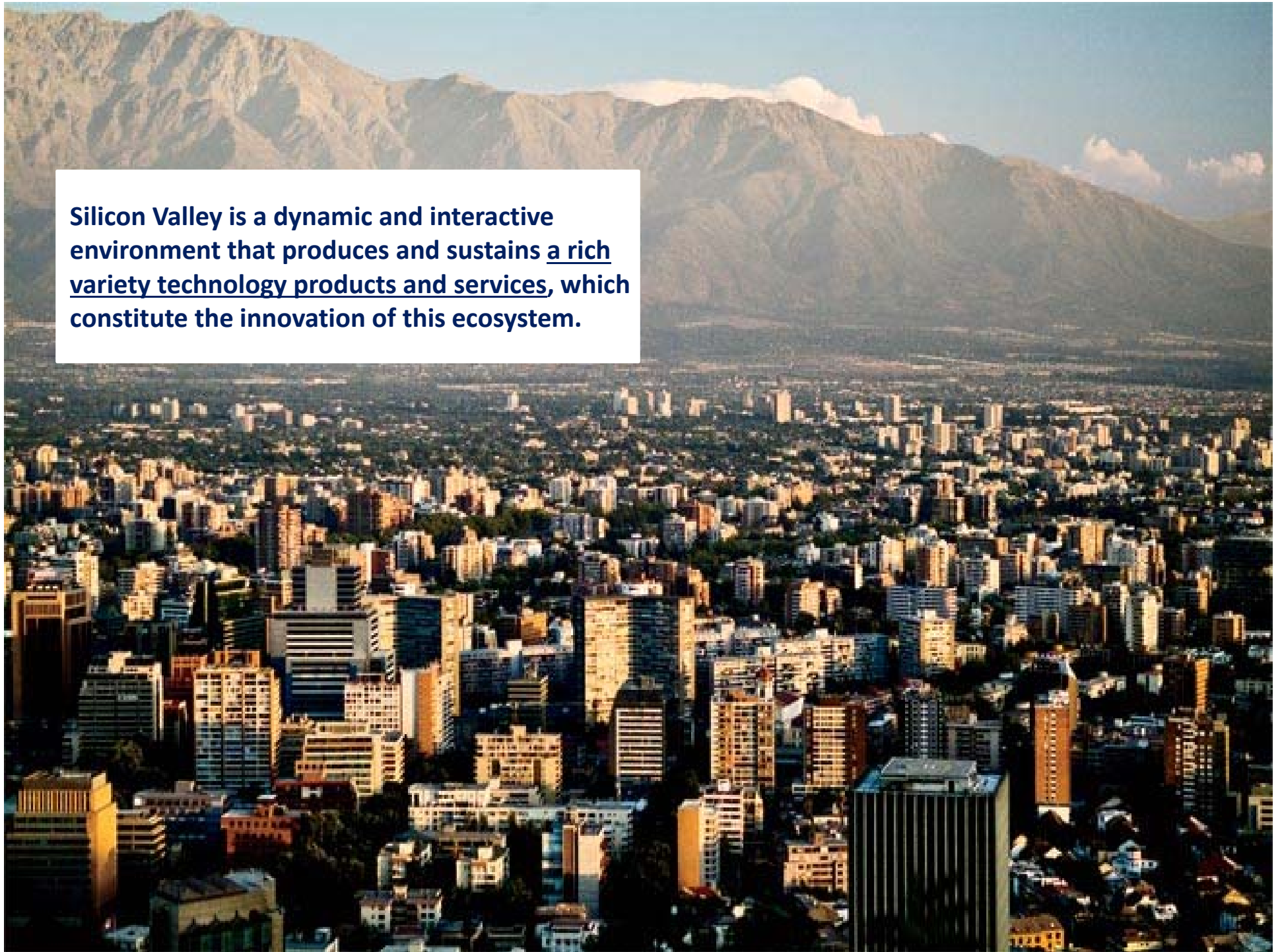


Innovation: **Rich Variety of
Species**

Silicon Valley is also an ecosystem



Silicon Valley is a dynamic and interactive environment that produces and sustains a rich variety technology products and services, which constitute the innovation of this ecosystem.



An aerial photograph of a densely populated city, likely Santiago, Chile, with a vast mountain range in the background. The city is filled with numerous high-rise buildings and residential structures. The mountains in the background are rugged and partially covered with snow or light-colored rock. A white rectangular box is overlaid on the left side of the image, containing text.

**Companies, Universities, Researchers,
Engineers, Students, Investors, Government,
Research Centers, Global Partners, etc.**

A Tale of Two Ecosystems

Tropical Rainforest Ecosystem



Innovation: **Rich Variety of Species**

STE Innovation Ecosystem



Rich Variety of STE products and services

Why the Philippines Needs an S&T Innovation Ecosystem?

**Because government spending in S&T is
a deliberate business investment**

Science is a business for the people

Hence, there must be a Return on Investment



Economic Growth and National Competitiveness

National Investment in S&T



S&T Capacity Building

+

S&T Innovation Readiness



Economic Growth and National Competitiveness

Economic Growth and National Competitiveness



Local S&T jobs
Technology advancements
Foreign Direct investments
Research funding
Public-private partnerships
Academic-business partnerships
Student-professional contacts
Global partnerships, etc.

Why the Philippines Needs an S&T Innovation Ecosystem?

National Investment in STE



S&T Capacity Building

+

S&T Innovation Readiness



Missing Link

Economic Growth and National Competitiveness

National Investment in S&T



S&T Capacity Building



S&T Innovation Readiness



S&T Innovation Ecosystem

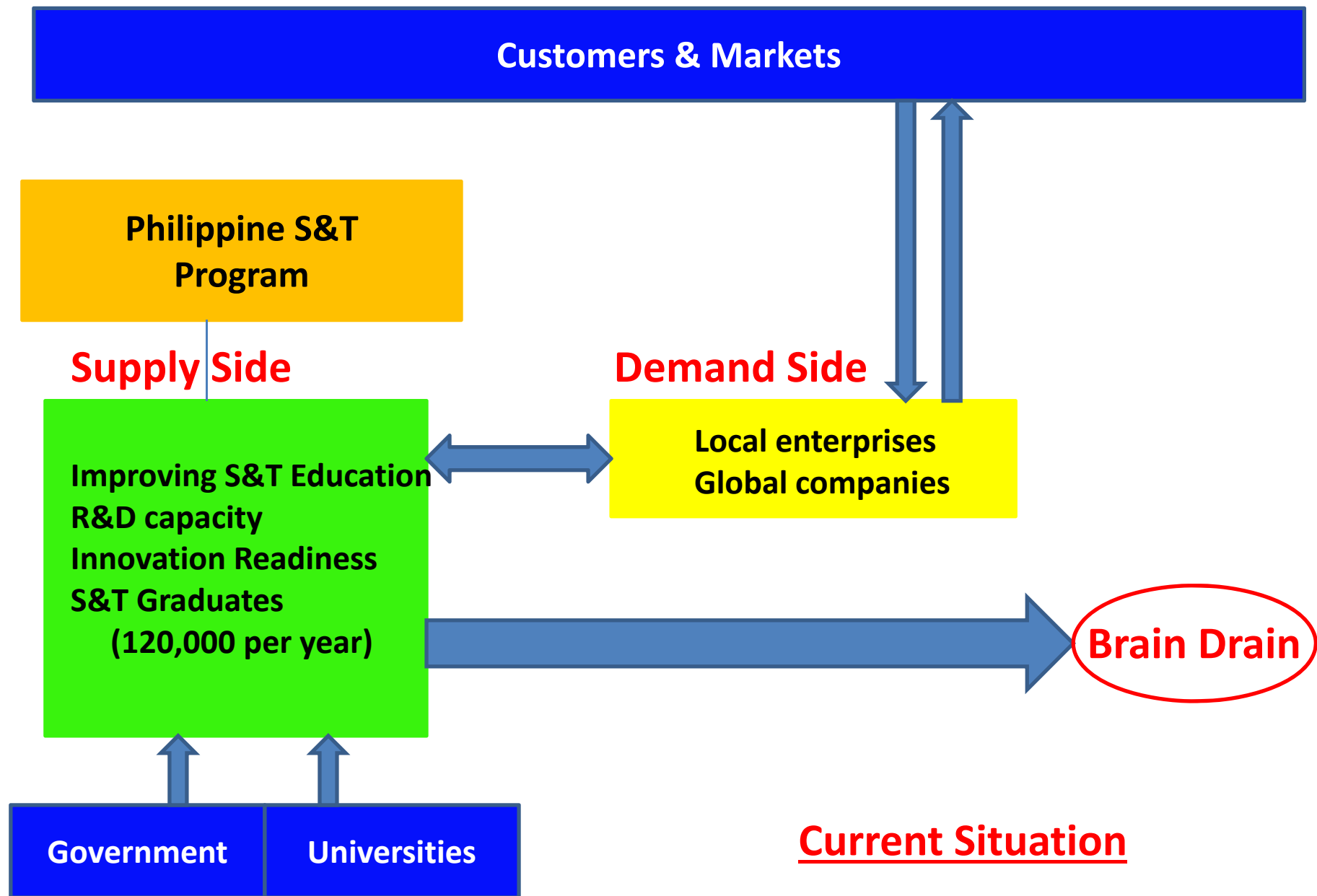
**Missing Link
connecting
S&T investment
to economic
growth and
competitiveness**

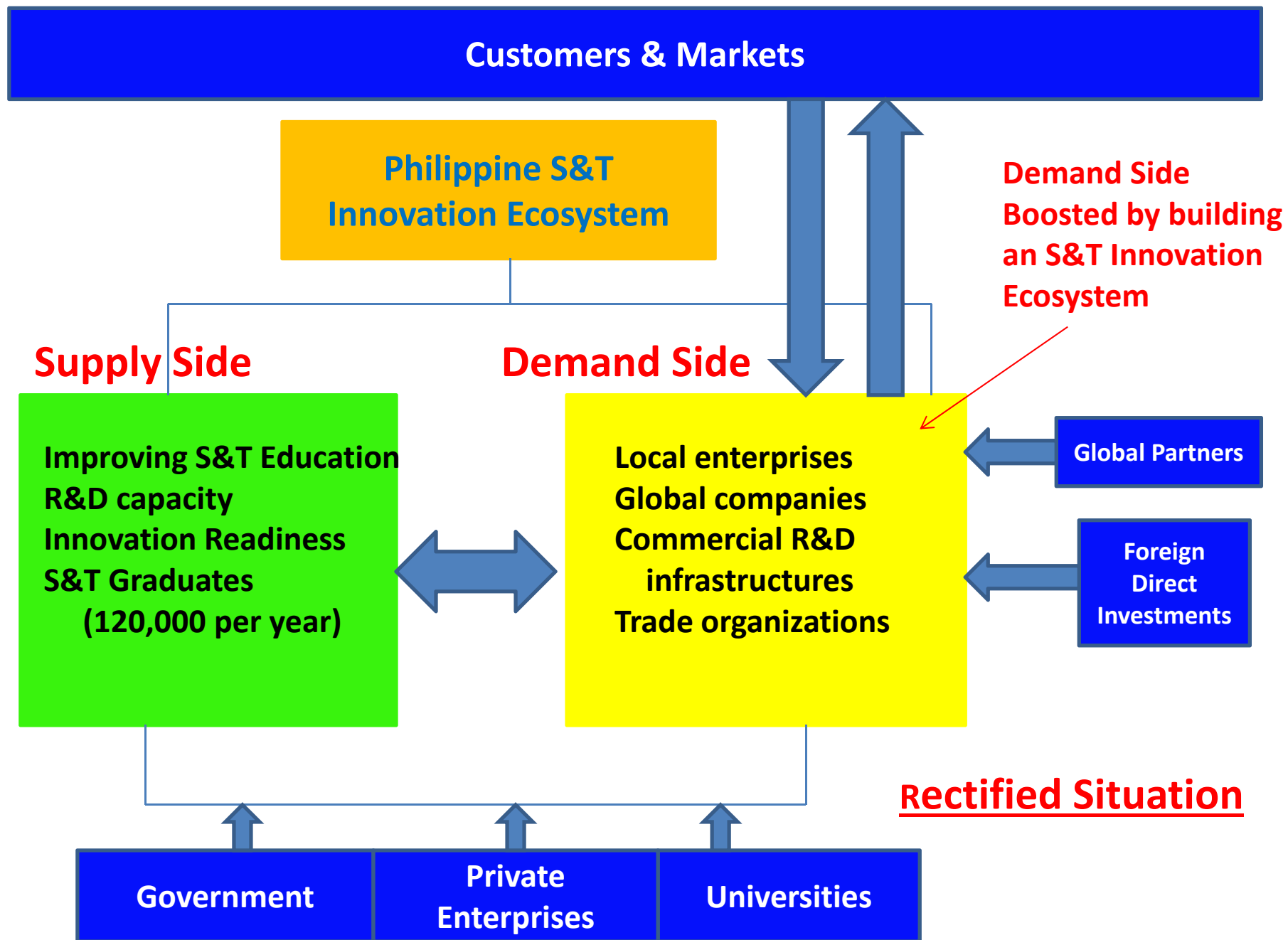
A thin red arrow pointing from the text 'Missing Link...' to the 'S&T Innovation Ecosystem' oval.

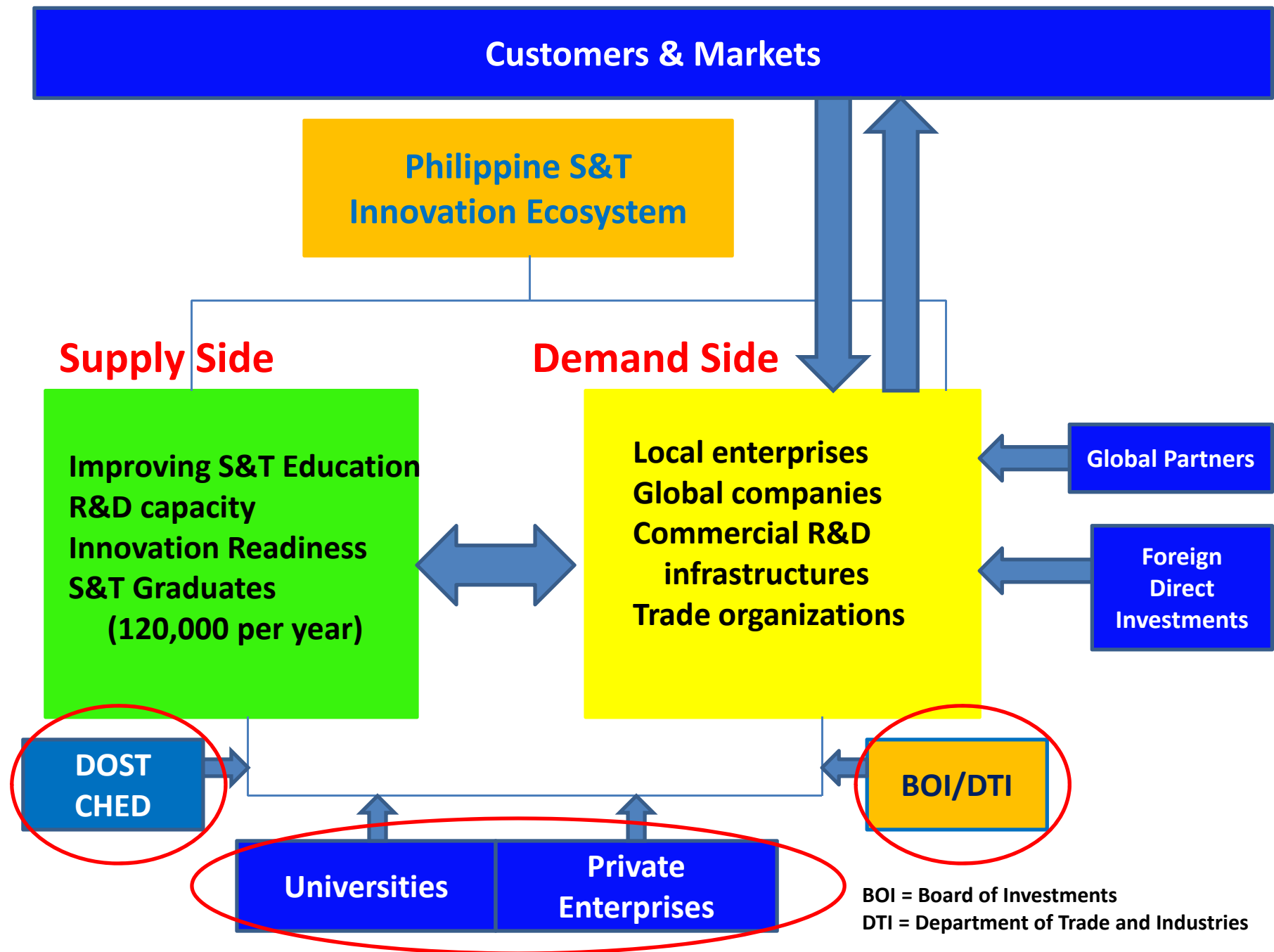
Economic Growth and National Competitiveness

Why the Philippines Needs an S&T Innovation Ecosystem?

Supply and Demand Perspective







DOST = Department of Science and Technology

CHED = Commission on Higher Education

Silicon Valley Innovation Ecosystem Architecture Profile

Customers & Markets

Silicon Valley Innovation Ecosystem

Semiconductor Chips Cluster

Intel

AMD

Smart Gadgets Cluster

Apple
Inc.

Samsung
Electronics

Other

Software & Internet Cluster

Google

Facebook

Health & Biomedical Cluster

Amgen

Genentech

Government

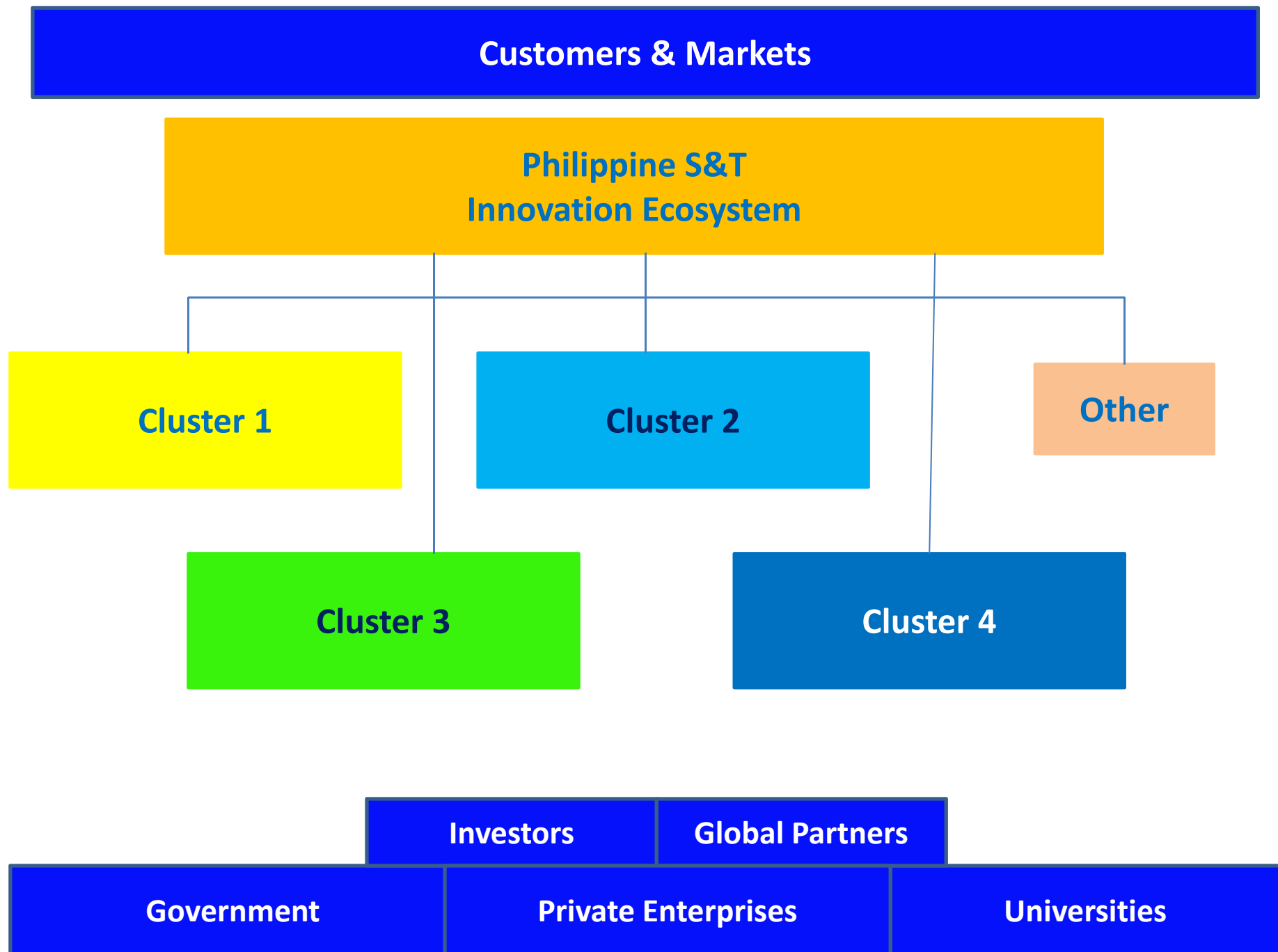
Private
Enterprises

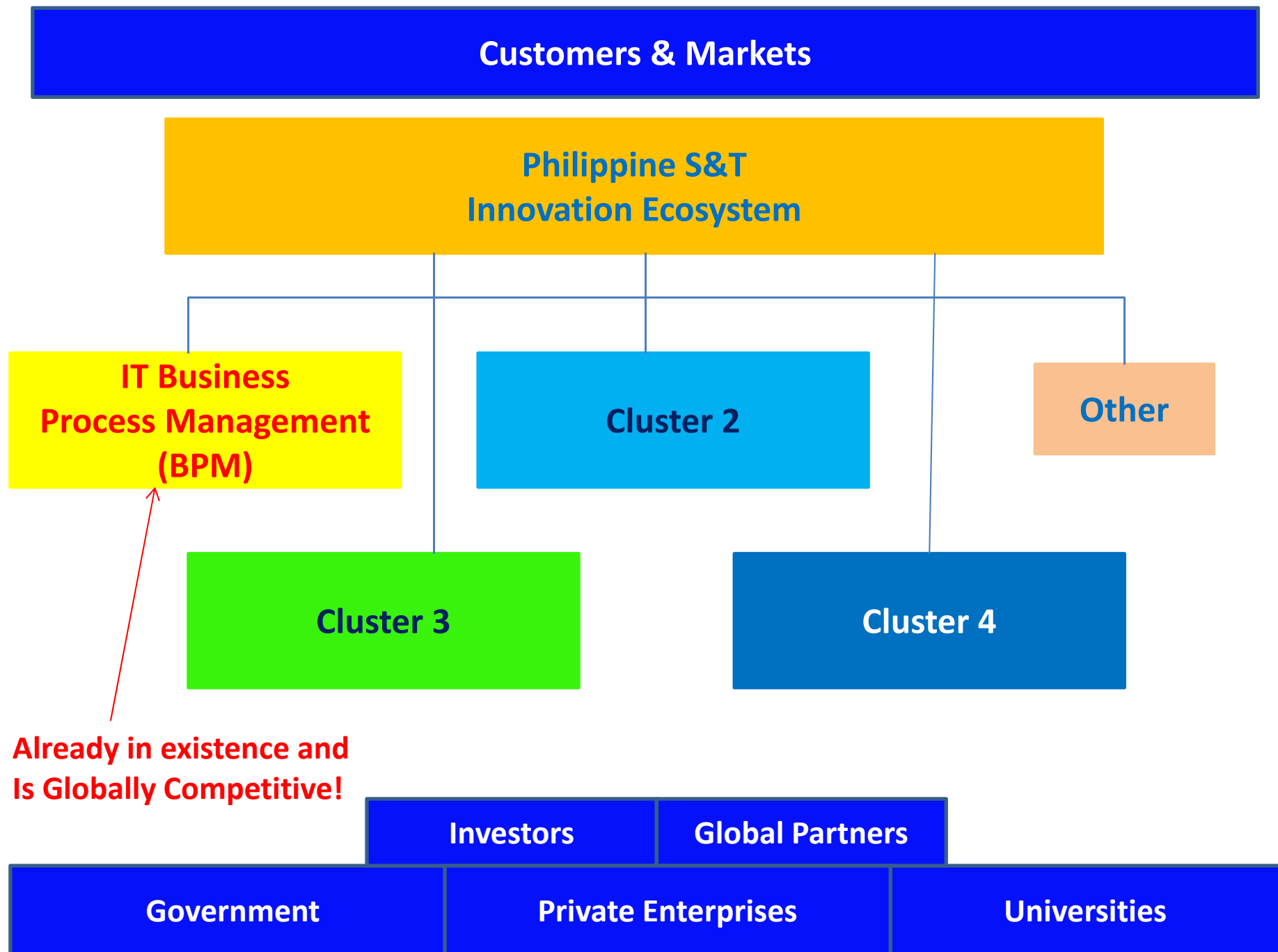
Investors

Universities

Global Partners

How would a Philippine S&T Innovation
Ecosystem look like?





Customers & Markets

Philippine IT BPM Innovation Sub-Clusters

**Call Center (Voice-Based)
Cluster**

**#1 in the World in Revenues
in past three years**

**Finance, Logistics &
Accounting
Cluster**

Other

**Software Development
& Animation Cluster**

**Legal & Medical
Transcription
Cluster**

Investors

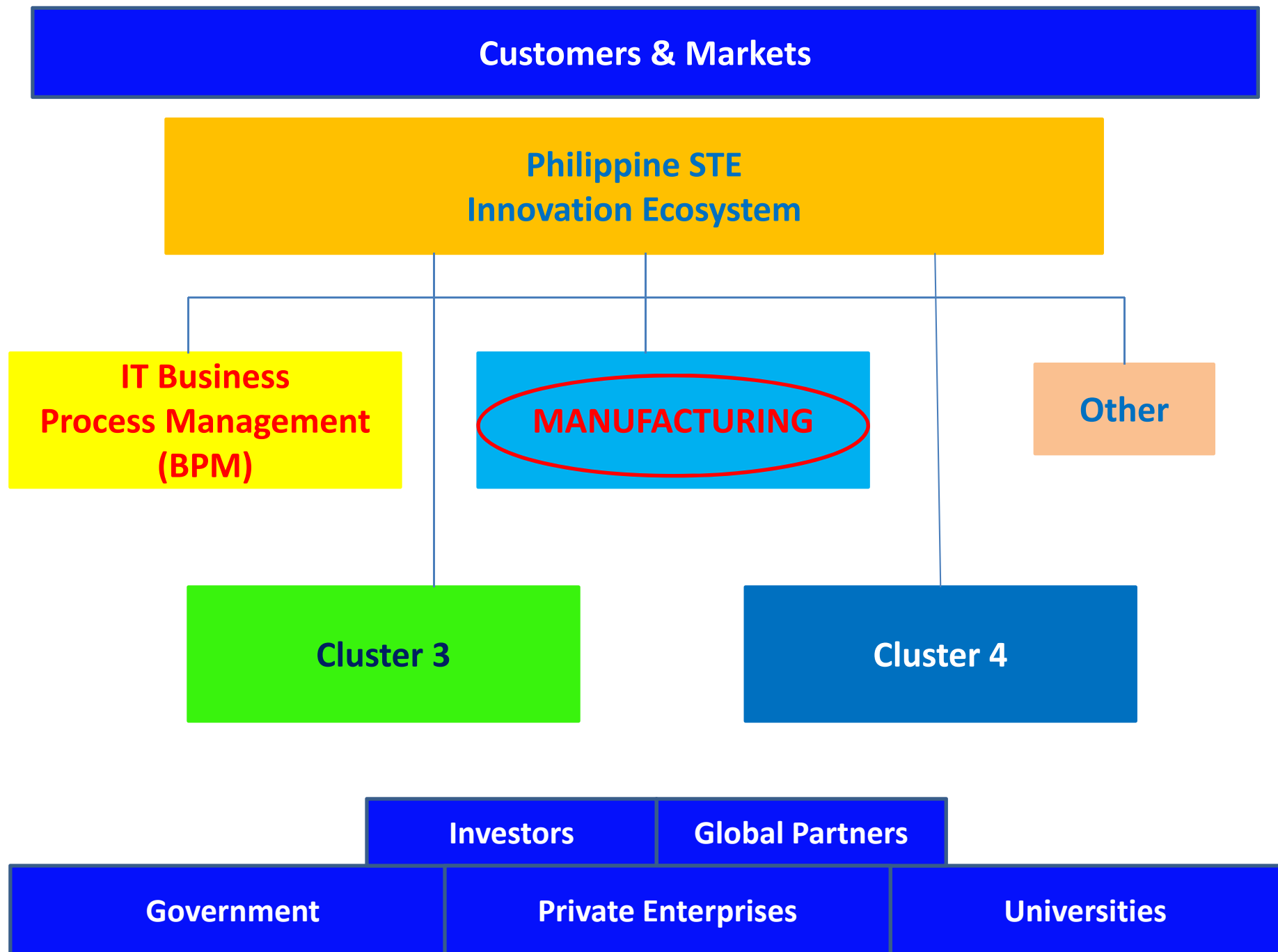
Global Partners

Universities

Government

Private Enterprises

Emerging S&T Innovation Clusters in the Philippines

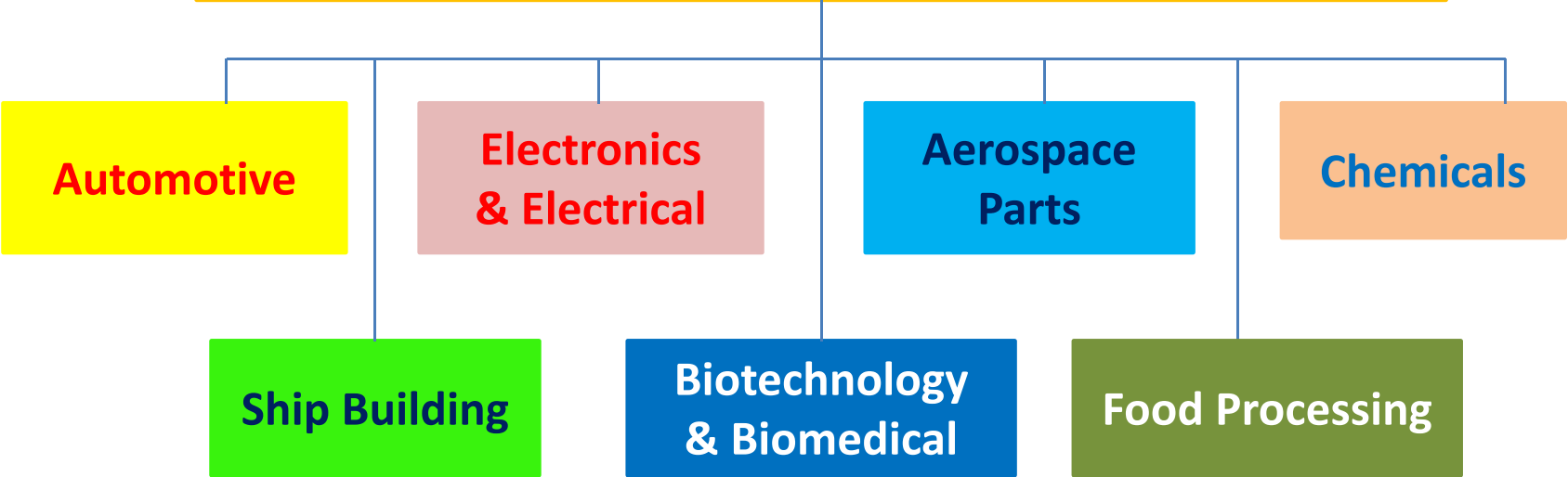


DTI

- **Industry Roadmaps Initiatives 2012**
- **Industry Development Council 2014**
- **Manufacturing Resurgence Program**
 - increase sector's contribution to 30% by 2025
 - contribute 15% of country's total employment by 2025

Customers & Markets

Philippine S&T Manufacturing Sub-Clusters

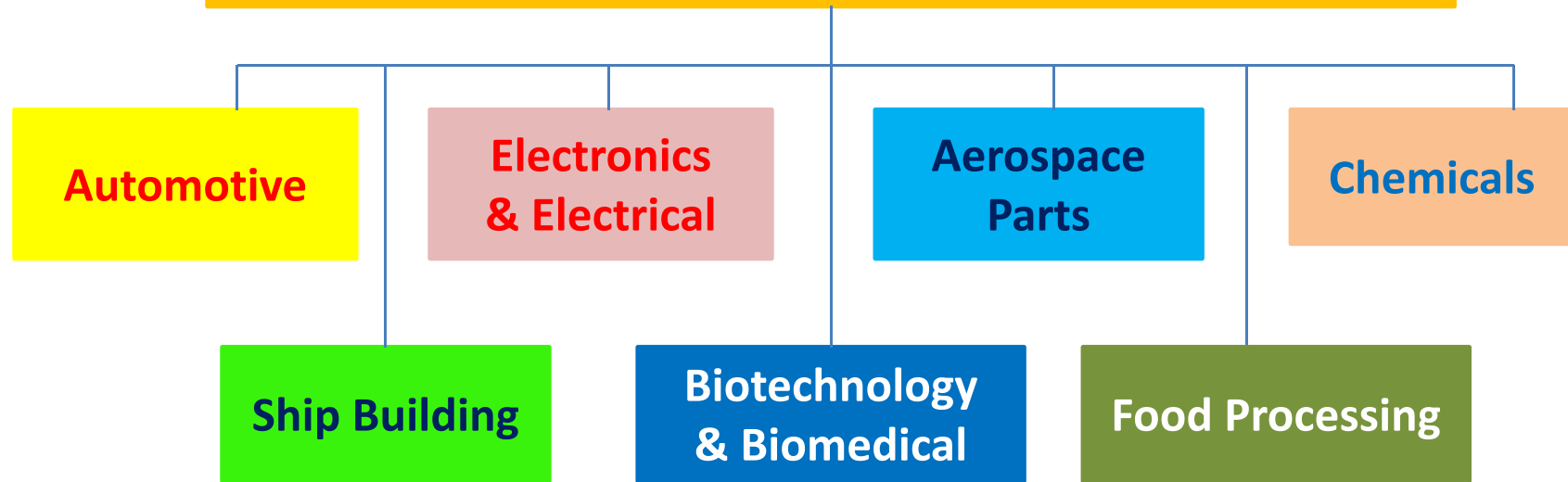


Investors Global Partners Universities

Government Private Enterprises

Customers & Markets

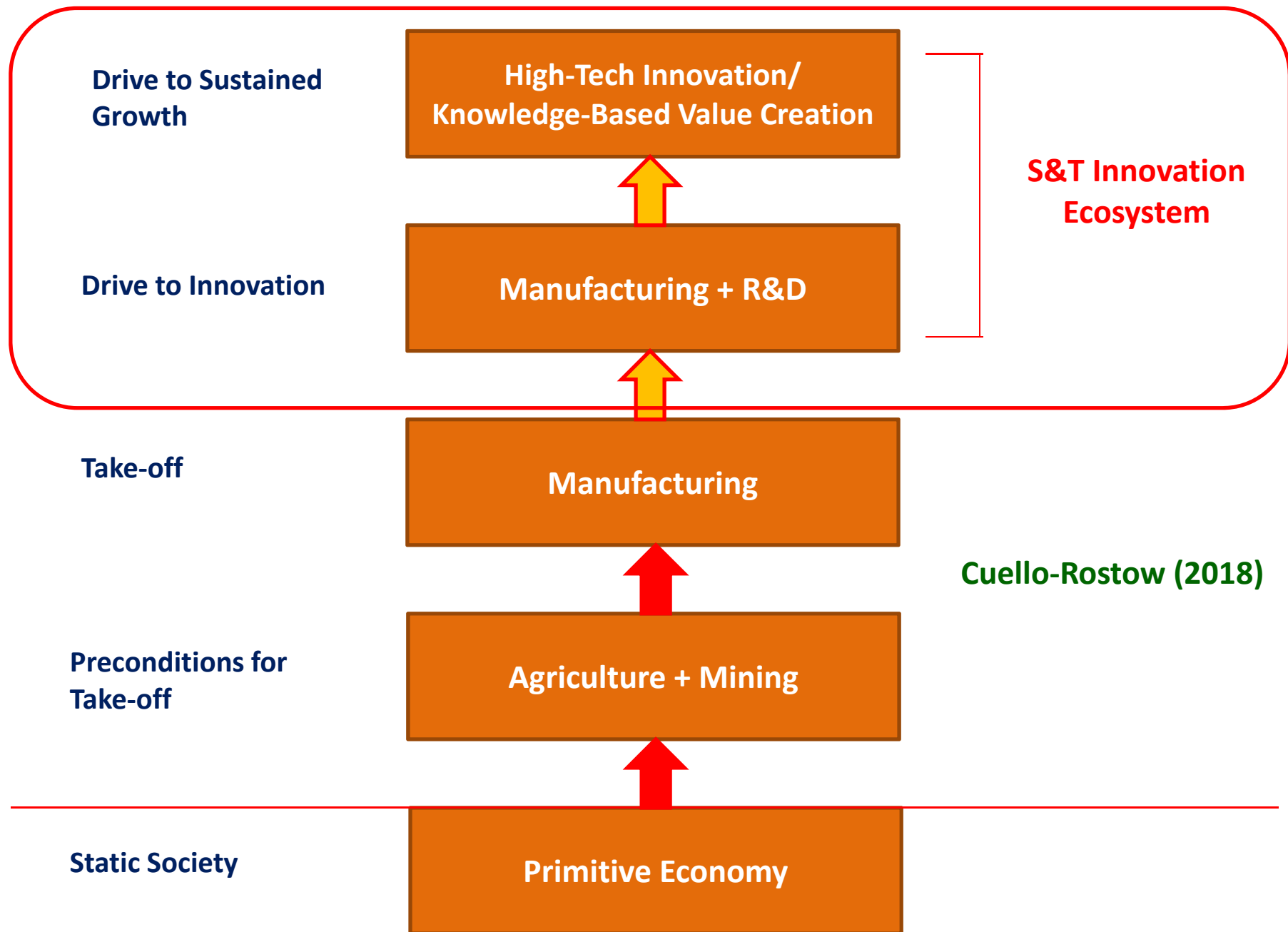
Philippine S&T Manufacturing Sub-Clusters



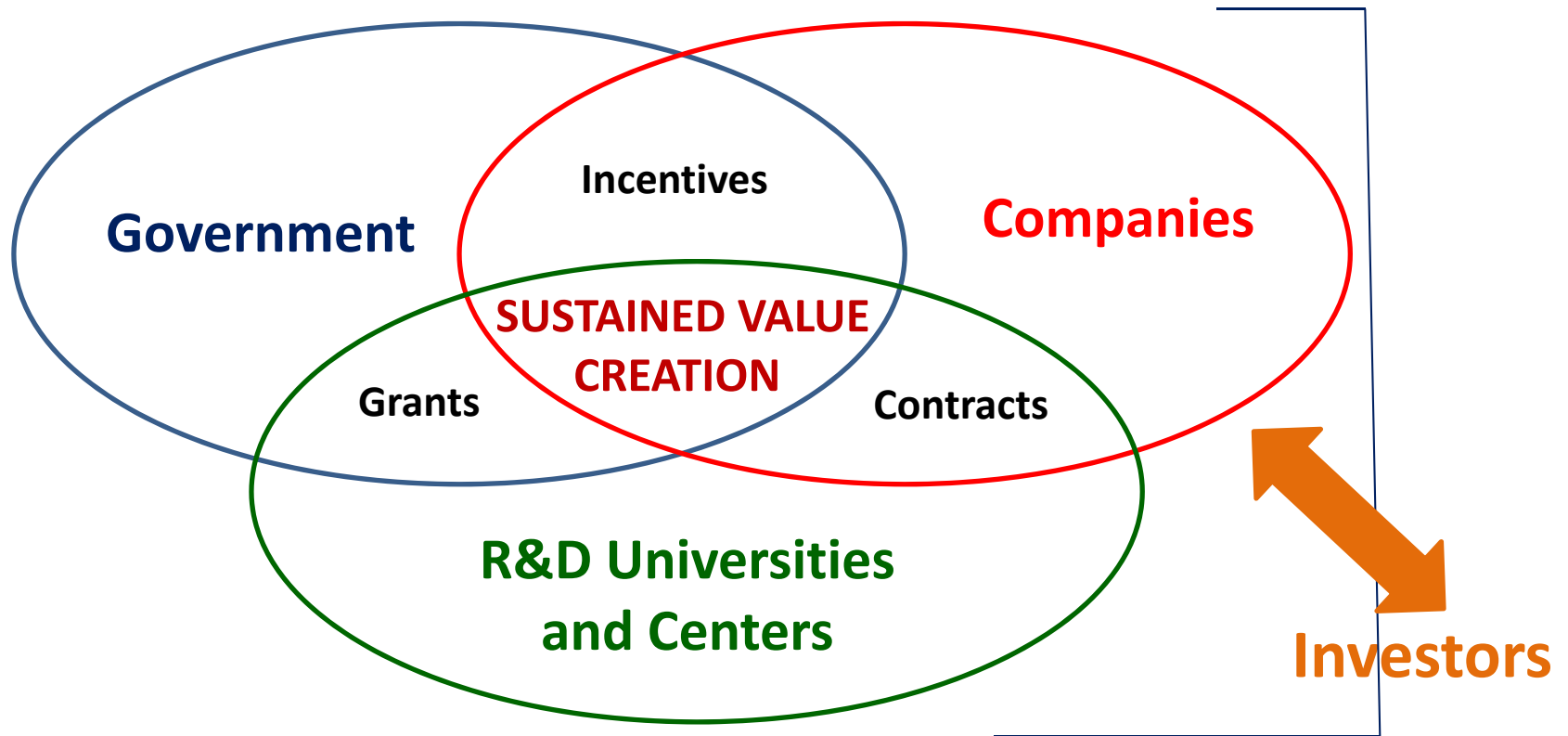
Crucial Key: MANUFACTURING + R&D



Five Steps of Economic Development in the 21st Century

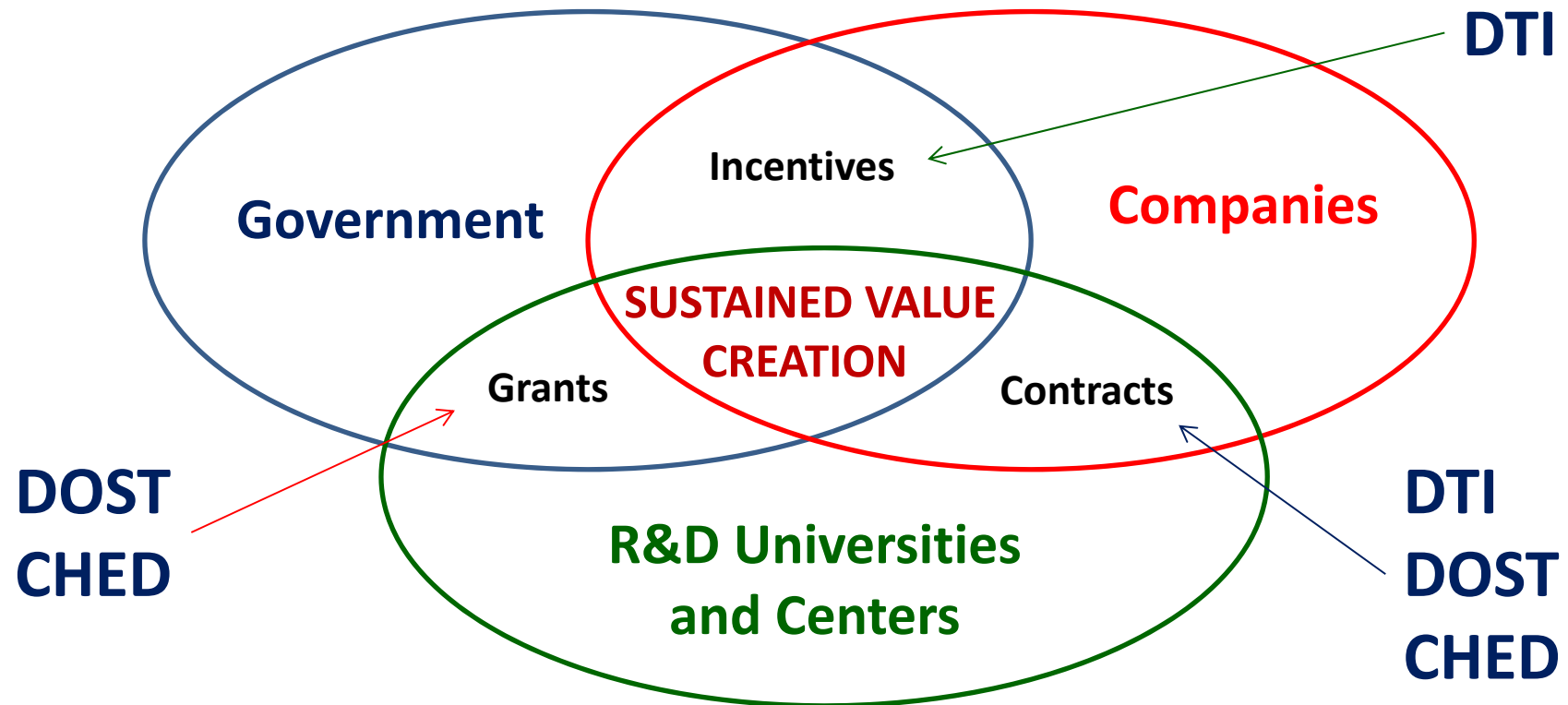


The Ecosystem Strategy for Sustained Innovation



Government-Industry-University Nexus

Critical Need for Government Coordination

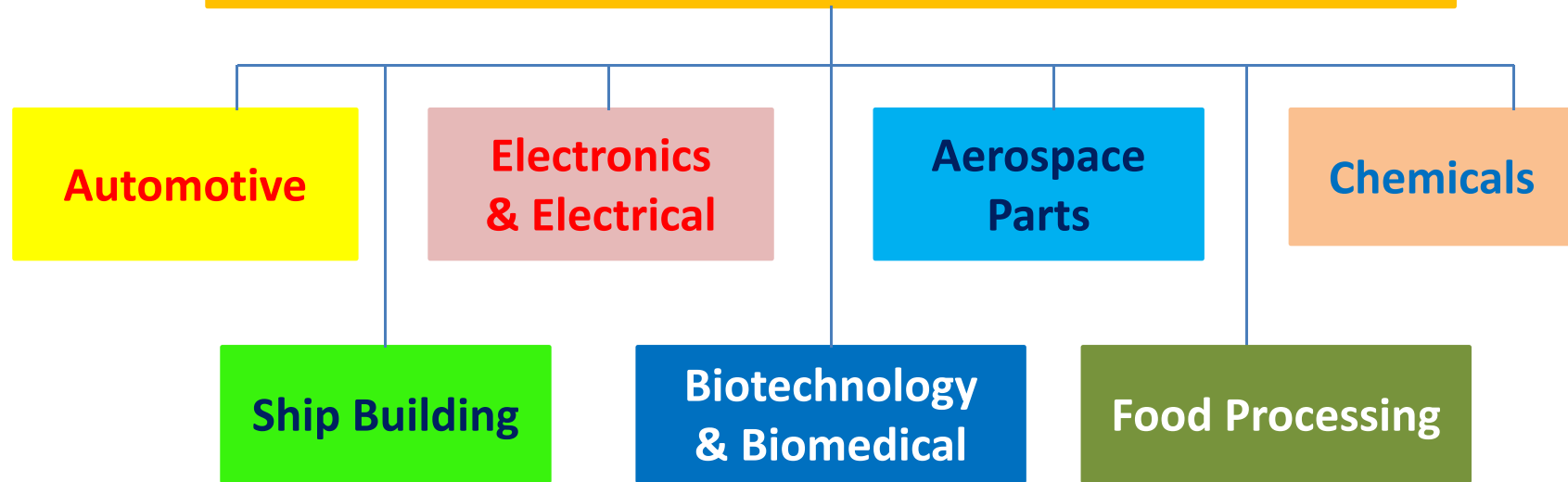


Government-Industry-University Nexus

**PH requires a deepened
cooperation among
DTI/BOI, DOST, CHED and
Research Universities and
Institutions**

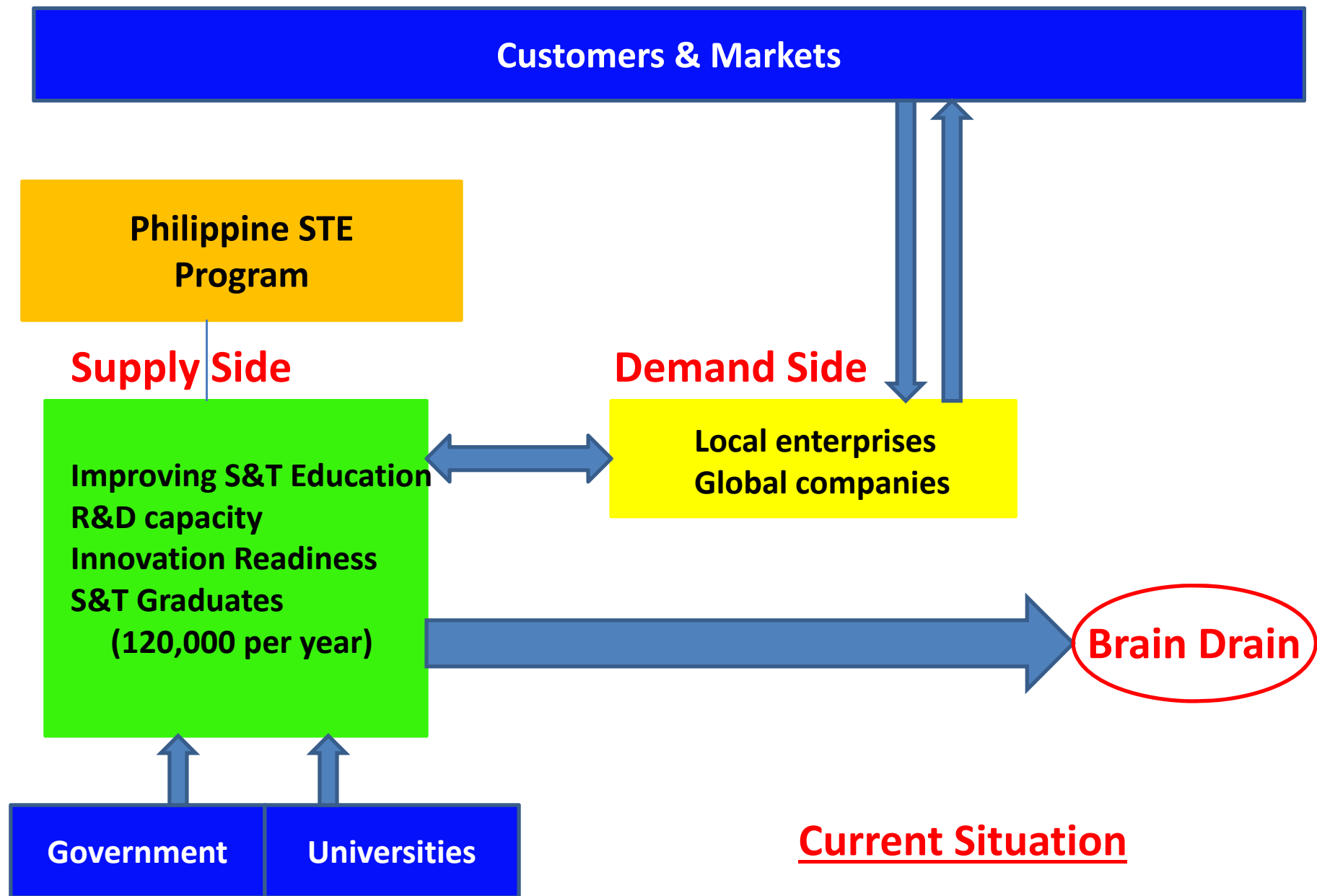
Customers & Markets

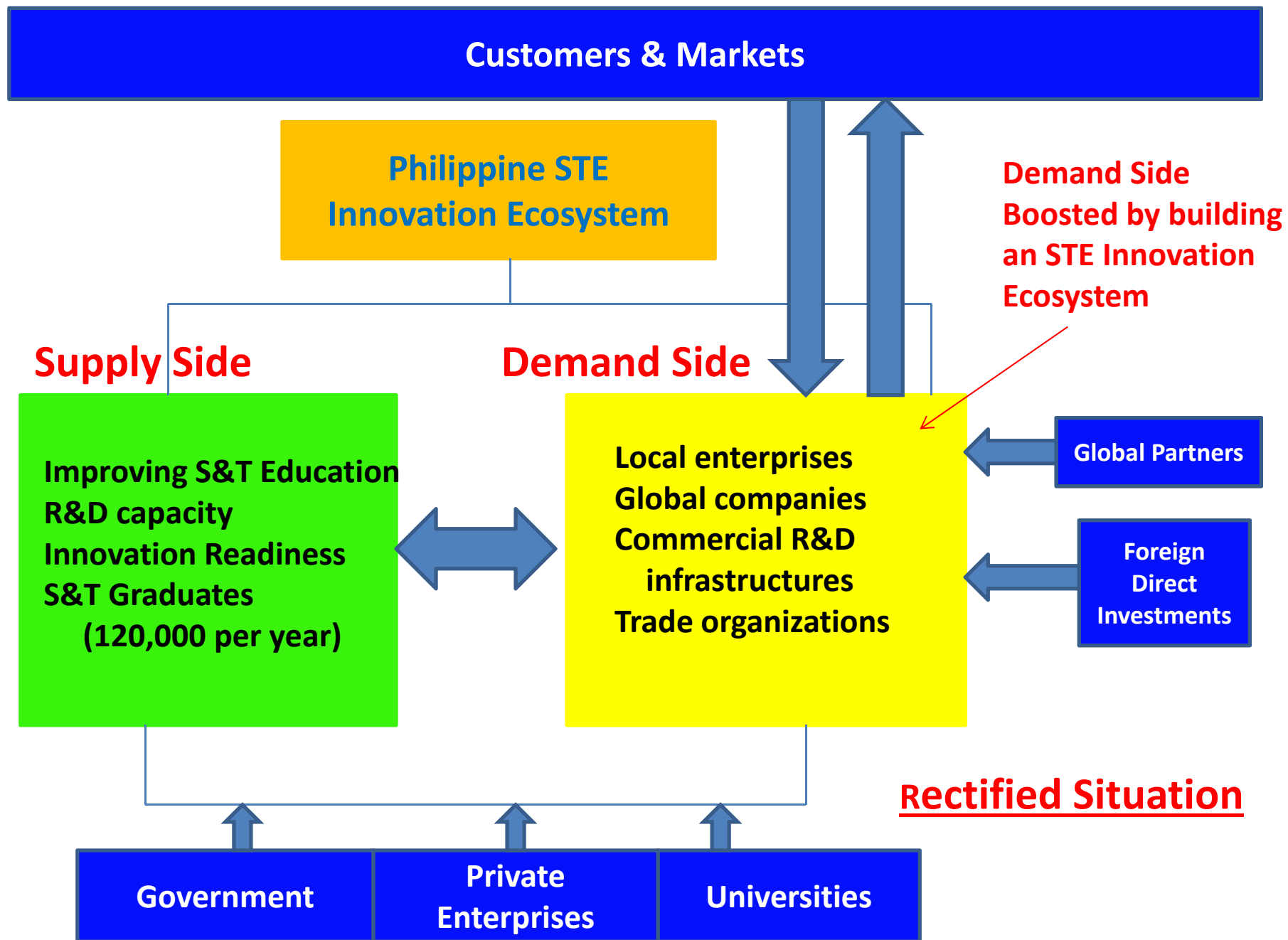
Philippine S&T Manufacturing Sub-Clusters



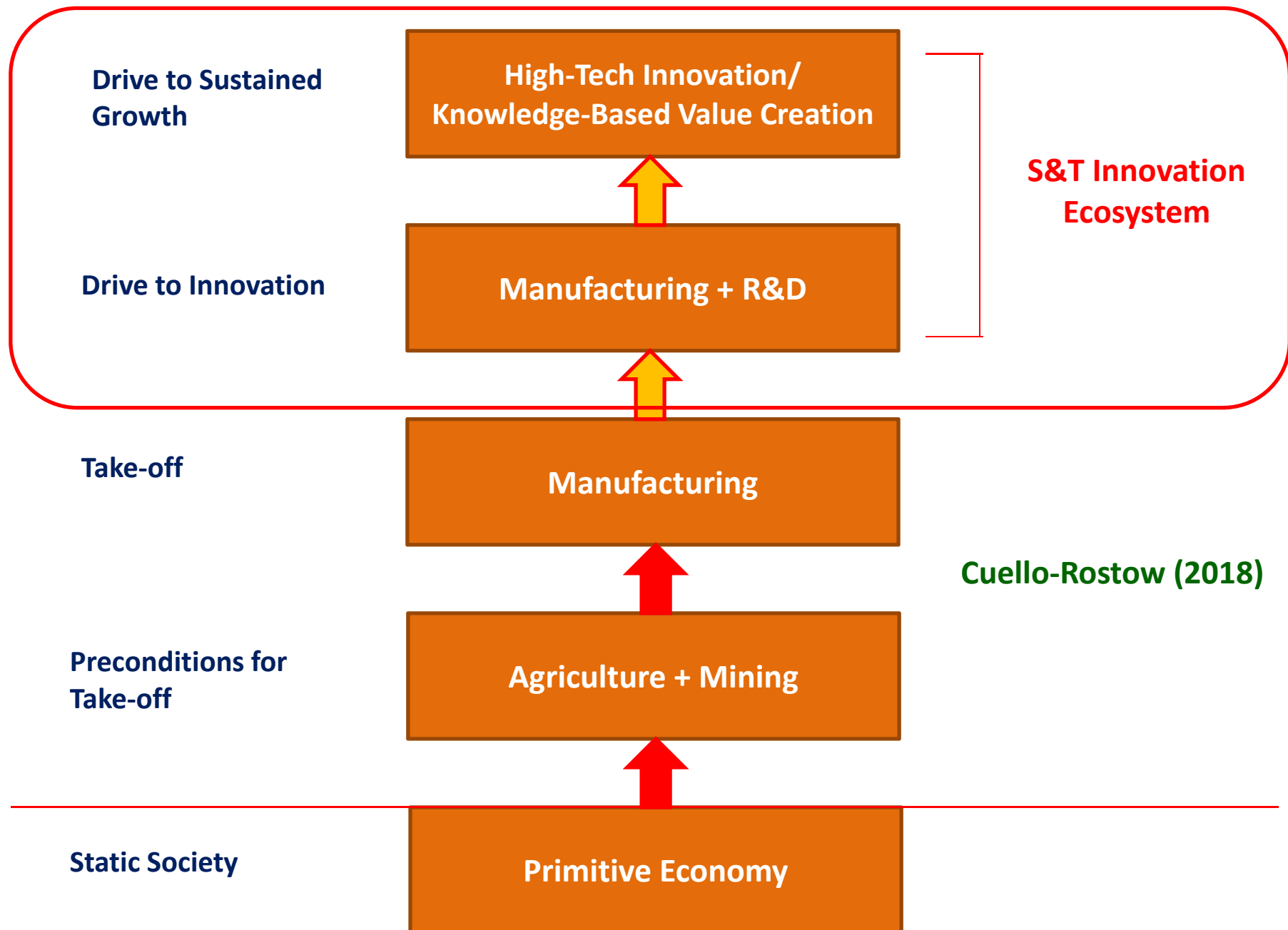
Crucial Key: MANUFACTURING + R&D







Five Steps of Economic Development in the 21st Century





ISRAEL

Tel Aviv, Israel
5 July 2018





Zvi Herman
LR Group
Ministry of Foreign Affairs
Ministry of Agriculture

453

שוהם
شوهم
Shoham

קריית שדה
תעופה
مجمع المطار

Airport
City

TERMINAL X
REAL TIME FASHION
24H DELIVERY

TERMINAL X

Airport City Innovation Zone
Tel Aviv, Israel







Unilever



Israel Innovation Authority

רשות החדשנות
Israel Innovation
Authority

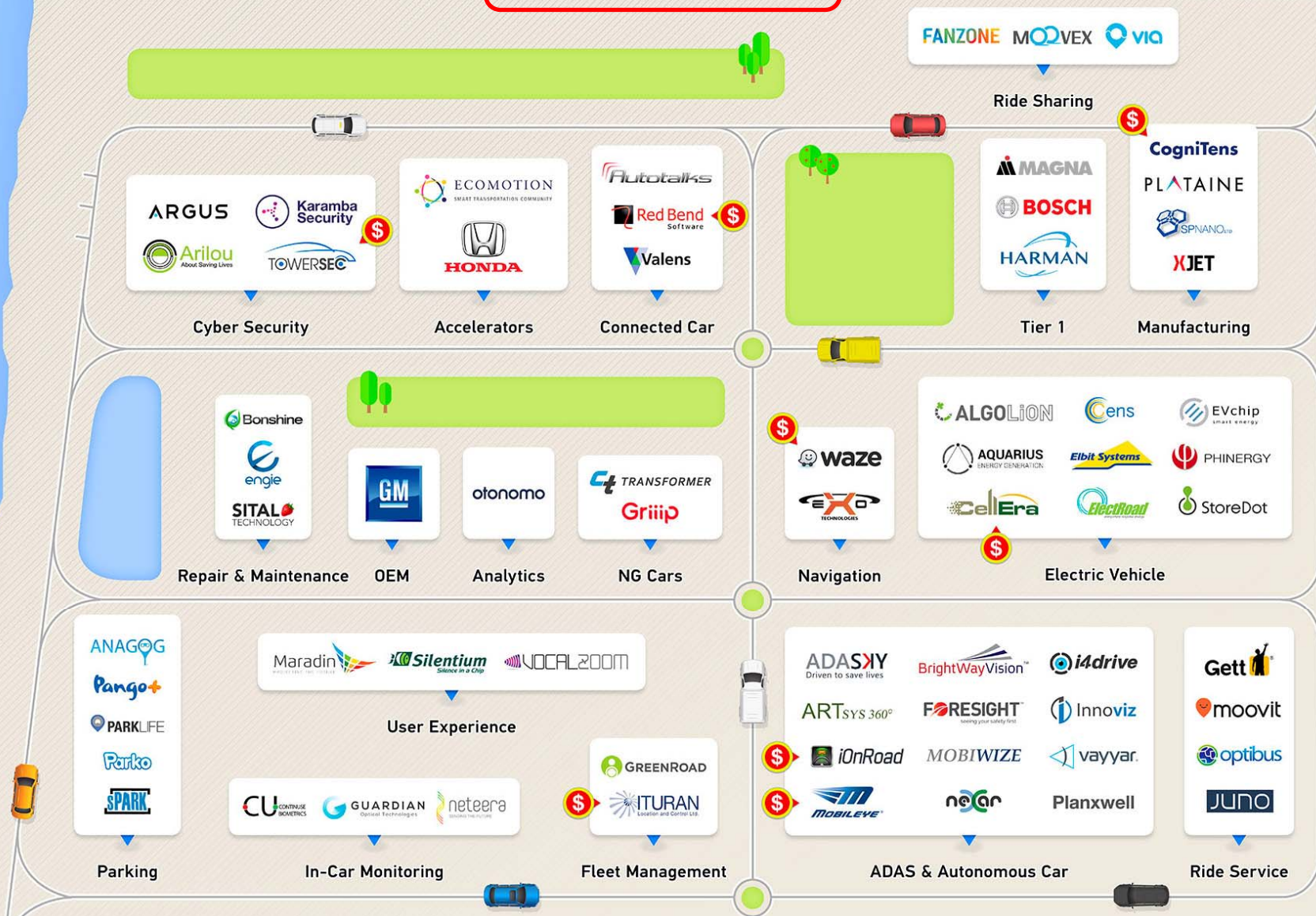
דיל טוב

שלט זה
בקרוב אצלך!

*5625

3 Examples of Israeli Innovation Sectors

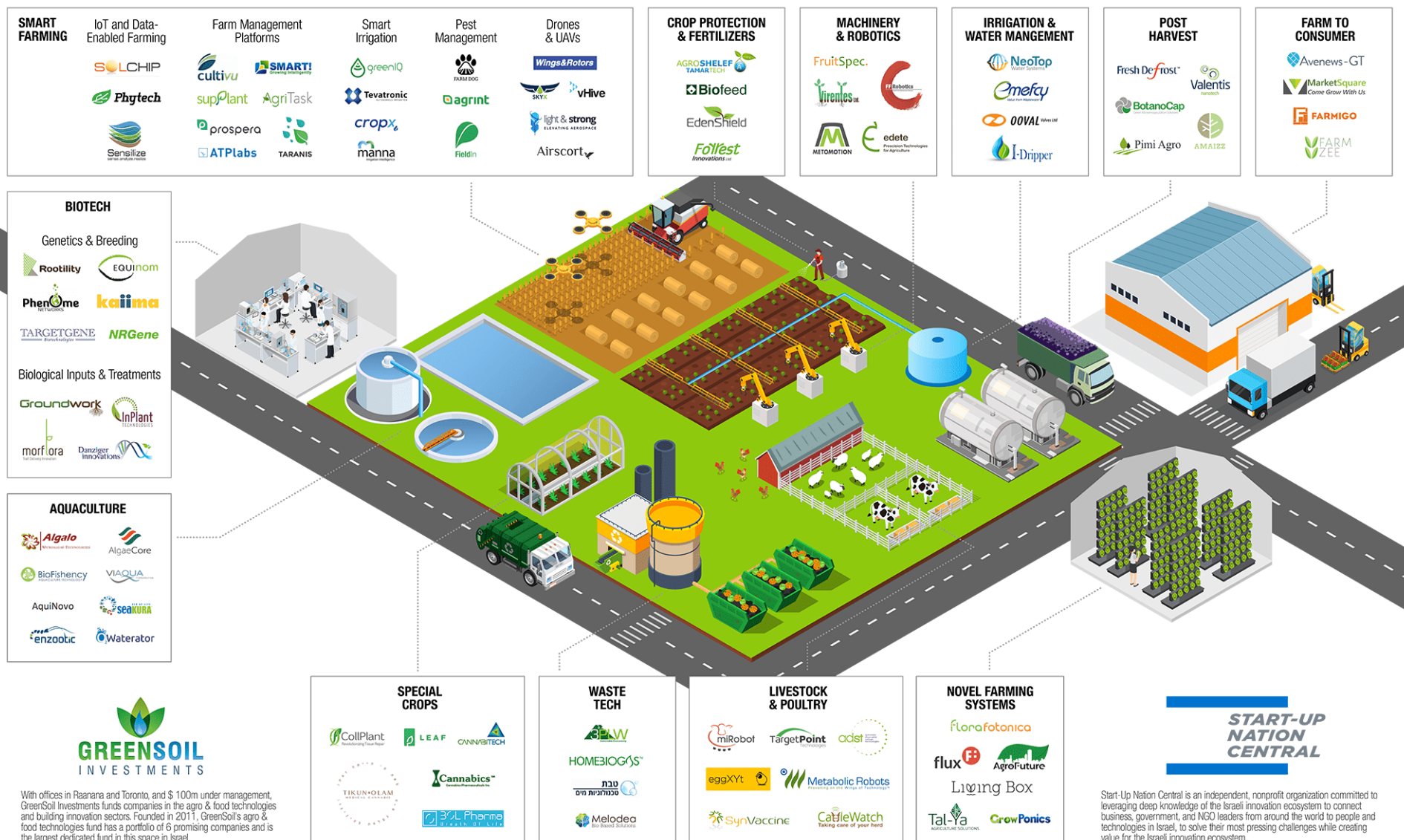
ISRAEL STARTUPS - AUTOMOTIVE 2.0



* This map lists companies that have raised > \$100k companies that were acquired / IPO

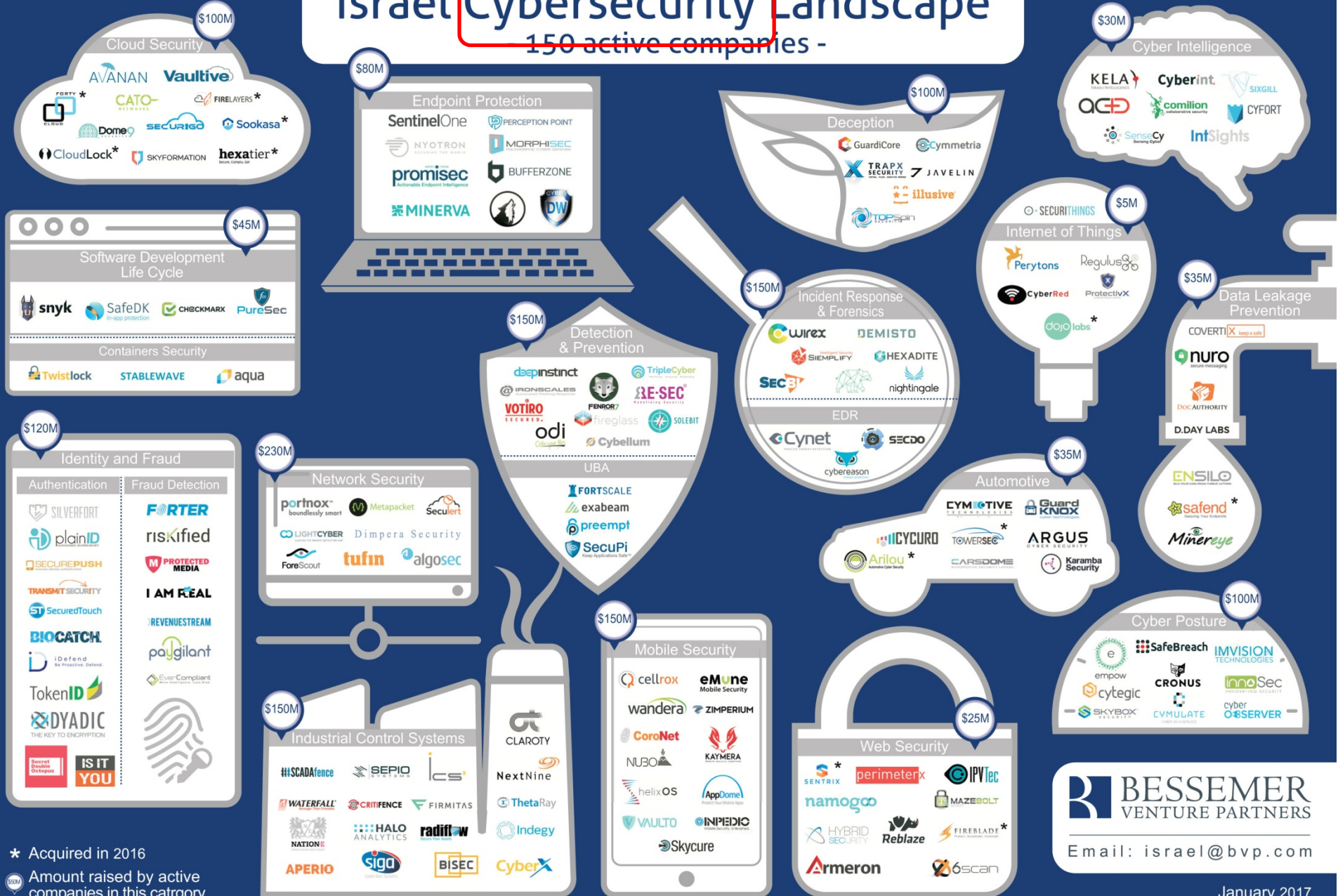
ISRAELI INNOVATION: PUTTING THE TECH IN AGRITECH

ISRAEL HAS 400+ AGRITECH START-UPS AND COMPANIES. 50% OF THEM WERE FOUNDED IN THE LAST FEW YEARS
Here's a selection of AgriTech companies from Israel's diverse ecosystem. Start-Up Nation Finder™ is your gateway to Israeli AgriTech Innovation



Israel Cybersecurity Landscape

150 active companies -



* Acquired in 2016

Amount raised by active companies in this category

BESSEMER
VENTURE PARTNERS

Email: israel@bvp.com

January 2017

How the Israeli Government Maintains Focus on Building S&T Innovation Ecosystems



(Formerly the Office of the Chief Scientist and MATIMOP)

NEWS AND EVENTS



28/05/2018

South Korea and Japan's Largest Corporations - Toyota, Hyundai, Yaskawa,

21/05/2018

Have you already Tried your Personalized Health Suit?

15/05/2018

Sharing the Risks of Israel's Numerous Life Science Opportunities

28/03/2018

NYSEDA and Israel Innovation Authority Announce Agreement to Support

SEARCH

Search

HIGHLIGHTS

Call for Proposals

Israel - Zhejiang, China

Zhejiang (China)-Israel Industrial R&D Program - 4th Call for Proposals

Deadline for 1st phase submission: June 15, 2018

Deadline for 2nd phase submission: July 15, 2018

[Read more >>>](#)

Open to all technological sectors

[About the Israel Innovation Authority](#)

The Israel Innovation Authority, formerly known as the Office of the Chief Scientist of the Ministry of Economy (& MATIMOP), is an independent and impartial public entity that operates for the benefit of the Israeli innovation ecosystem and Israeli economy as a whole. Its role is to nurture and develop Israeli innovation resources, while creating and strengthening the



Israel - Georgia Collaborative Industry Innovation Program -



Shanghai-Israel R&D Cooperation Program 6th Call for Proposa



The Israel-Florida Innovation Alliance - First Call for Prop



Zhejiang (China)-Israel Industrial R&D Program - 4th Call fo



Sharing the Risks of Israel's Numerous Life Science Opportun

Palestine



West Bank, Palestine









United Nations Office for the Coordination of Humanitarian Affairs
occupied Palestinian territory
West Bank: Area C Map

February 2011

Border

- International Border
- Green Line

Israeli Unilaterally Declared
Municipal Area of Jerusalem¹

1. In 1967, Israel occupied the West Bank and unilaterally annexed to its territory 70.5 km² of the occupied area

Barrier

- Constructed / Under Construction
- Planned

Oslo Agreement²

- Area (A), (B)
- Area C & Nature Reserves

Oslo Interim Agreement

- 2. Area A : Full Palestinian civil and security control
- Area B : Full Palestinian civil control and joint Israeli-Palestinian security control
- Area C : Full Israeli control over security, planning and construction



United Nations Office for the Coordination of Humanitarian Affairs
Cartography: OCHA-oPt - February 2011. Base data: OCHA, PA MoP, JRC
update 08. For comments contact <oschapt@un.org>
or Tel. +972 (02) 582-9962 <http://www.ochaopt.org>

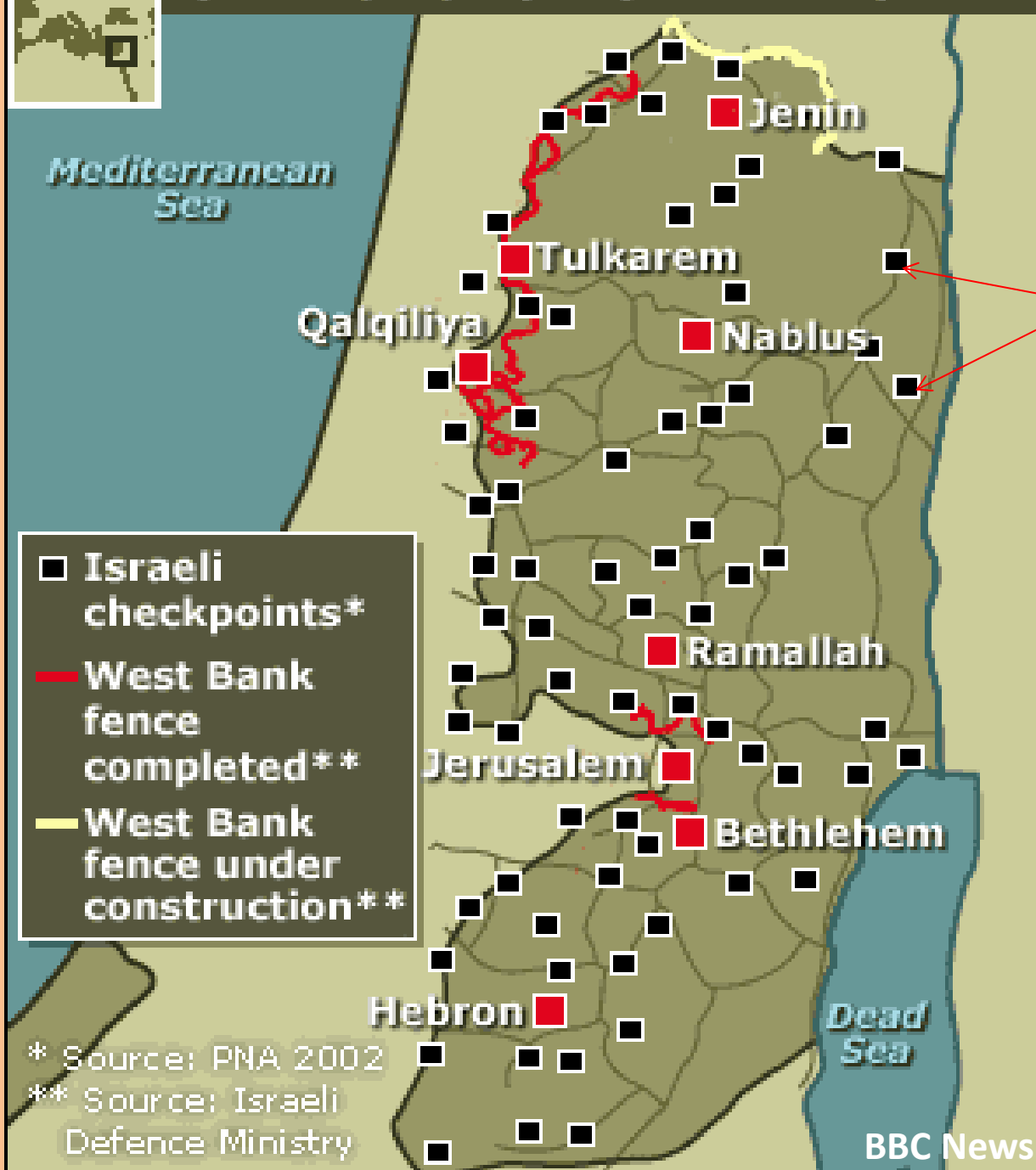


Area A
Palestinian Control

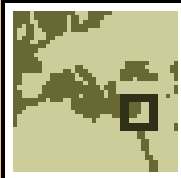
Area C
Israeli Control



ISRAELI CHECKPOINTS IN THE WEST BANK



Israeli
Military
Checkpoints

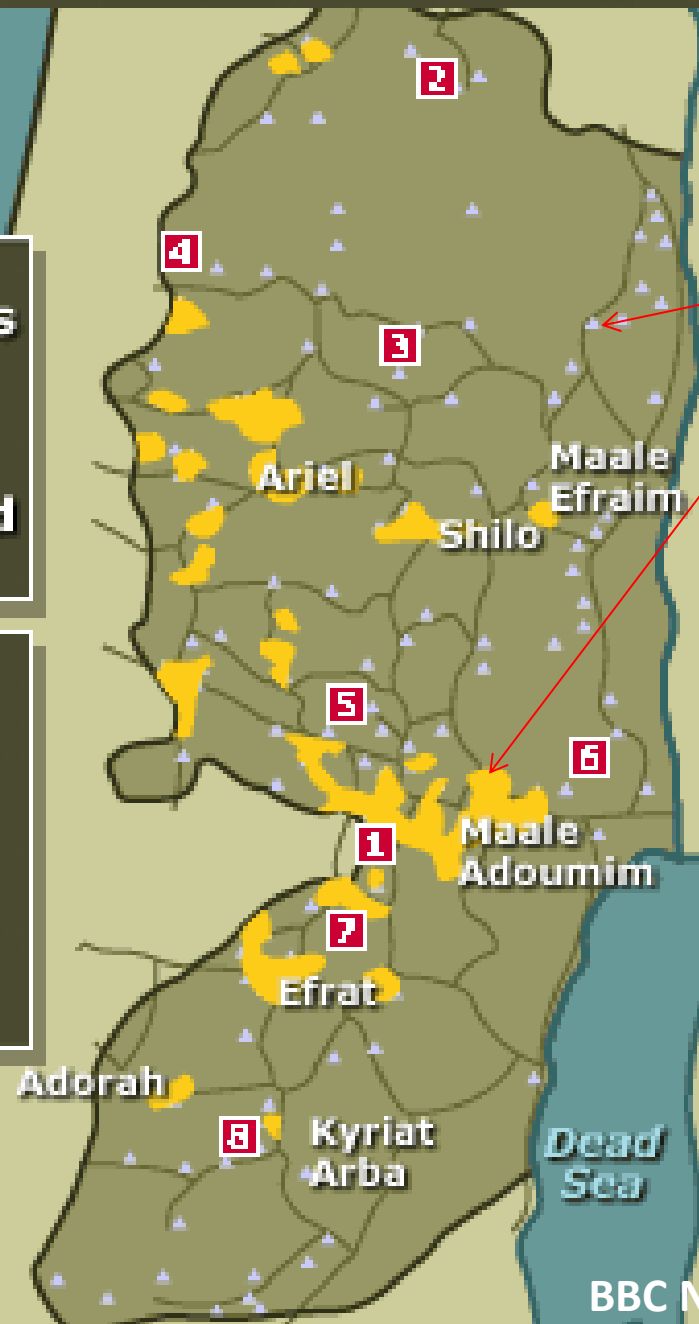


ISRAELI SETTLEMENTS IN THE WEST BANK

Mediterranean Sea

- ▲ Israeli settlements
- Settlement blocks
- Israeli constructed roads

- 1 Jerusalem
- 2 Jenin
- 3 Nablus
- 4 Tulkarm
- 5 Ramallah
- 6 Jericho
- 7 Bethlehem
- 8 Hebron



Israeli Settlements

BBC News

An Israeli Settlement
Industrial Zone
West Bank, Palestine



An Israeli Settlement
Industrial Zone
West Bank, Palestine



**An Israeli Settlement
Industrial Zone
West Bank, Palestine**



How the Palestinian Government Maintains Focus on Building S&T Innovation Ecosystems



المجلس الأعلى للإبداع و التميز
Higher Council for Innovation & Excellence

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English عربي

Be The Change





H.E. President Mahmoud Abbas
Palestine

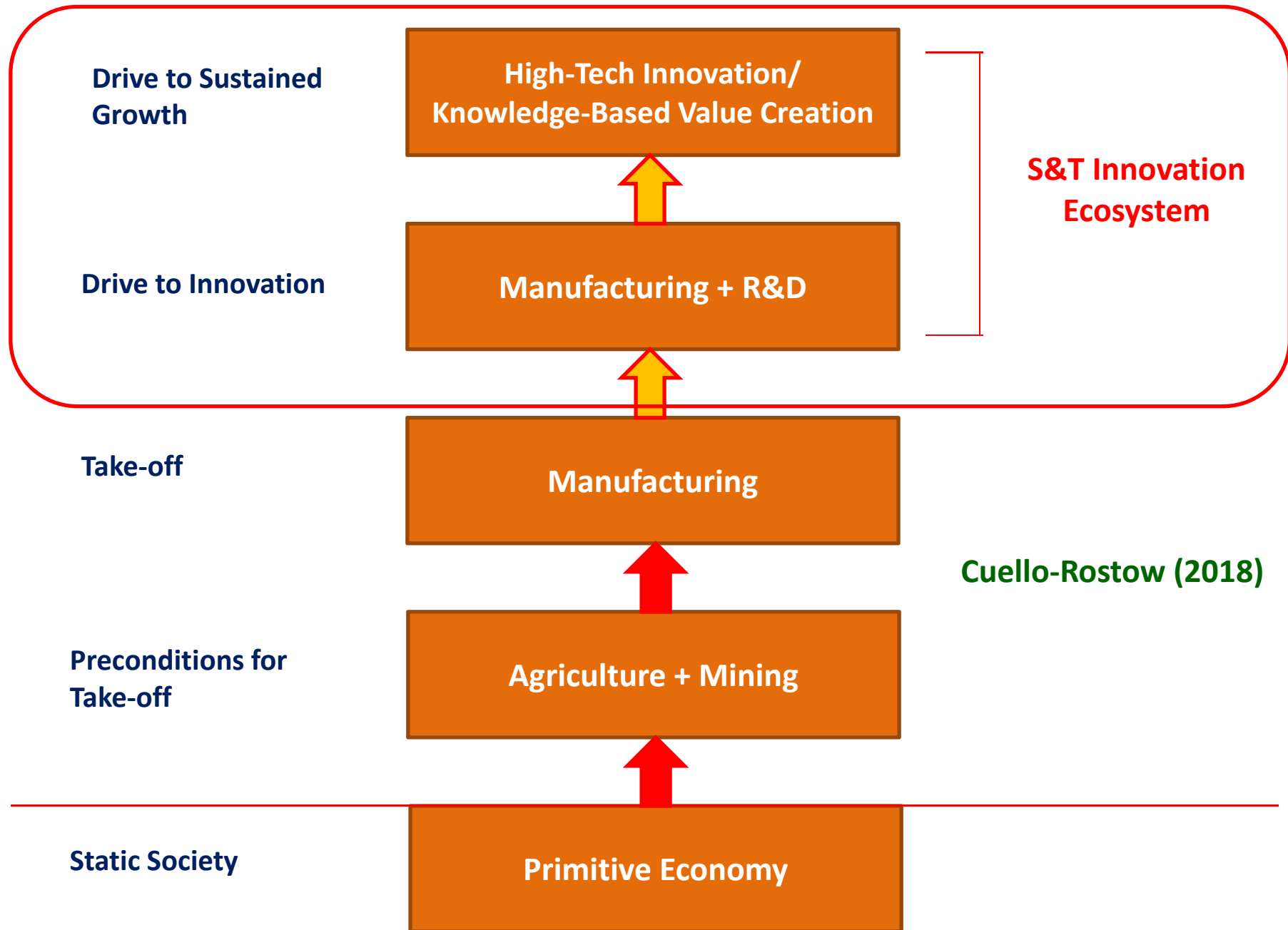
Palestine Joint Center of Excellence for Strategic Aridland Food and Bioproduction (SAFAB)

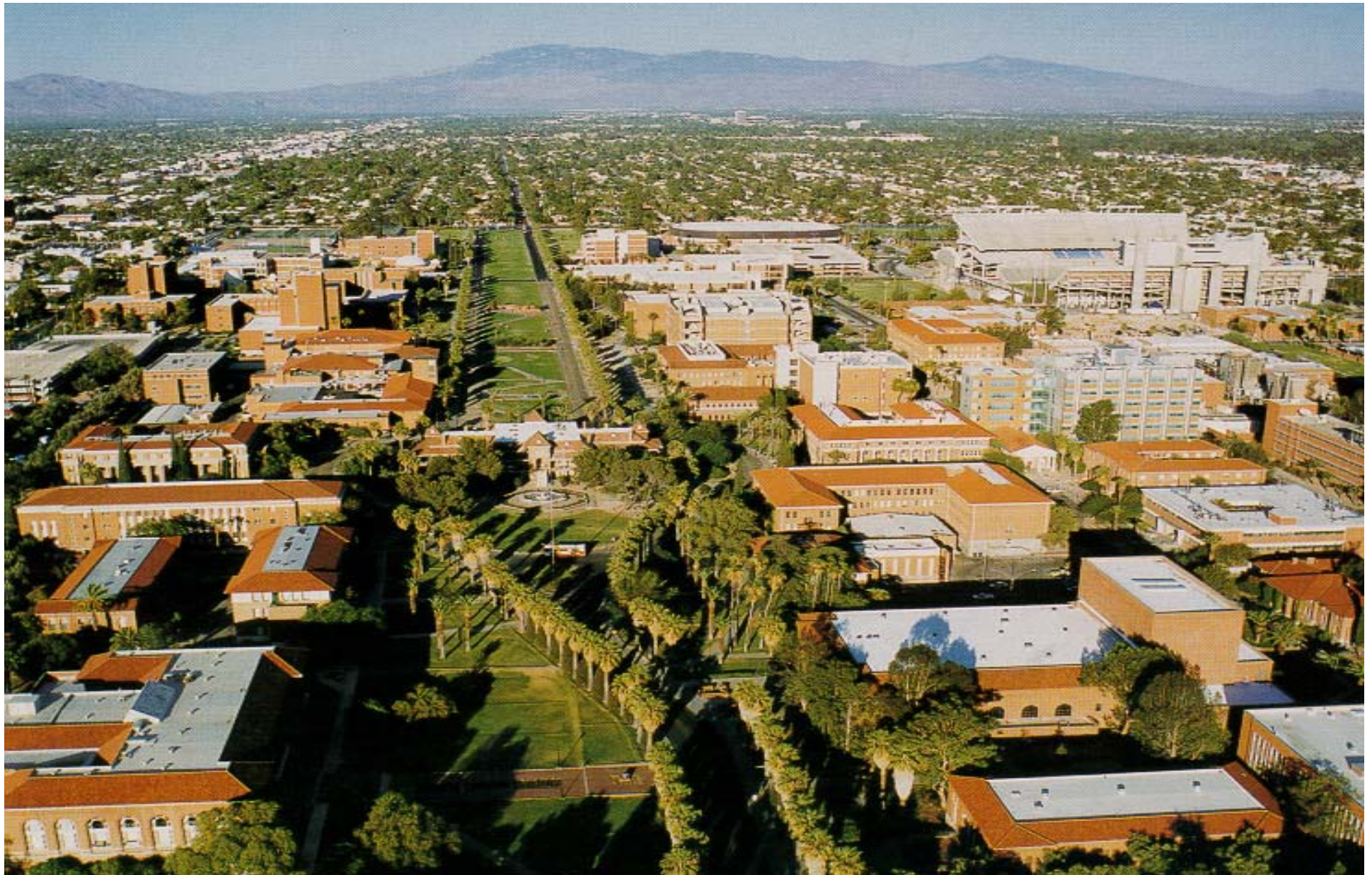
Palestine Higher Council for Innovation and Excellence (HCIE)
Al-Quds Open University (QOU)
Palestine Polytechnic University (PPU)
The University of Arizona (UA)



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cooperation among
DTI/BOI, DOST, CHED and
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Five Steps of Economic Development in the 21st Century





 THE UNIVERSITY
OF ARIZONA