

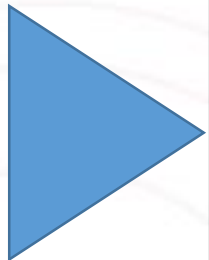


EASTERN ECONOMIC CORRIDOR OF INNOVATION
Integrate Technologies, Accelerate Innovation

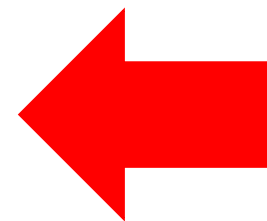
Welcome ThaiBIO Association

25th June 2019

AGENDA



07.30 – 10.00 น.	คณะผู้เยี่ยมชมเดินทางจาก สมาคมอุตสาหกรรมเทคโนโลยีชีวภาพไทย (ThaiBIO) ถึง สถาบันวิทยสิริเมธี (VISTEC) วังจันทร์วัลเลย์ ตำบลป่ายุบใน อำเภอวังจันทร์ จังหวัดระยอง
10.00 – 11.00 น.	ศ. ดร.จรัส ลิ้มตระกูล อธิการบดีสถาบันวิทยสิริเมธี หรือผู้แทน กล่าวต้อนรับ ชม วิดีทัศน์ แนะนำสถาบัน และรับฟังบรรยายโดย ศ.ดร. พิมพ์ใจ ใจเย็น คณบดีสำนัก วิชาวิทยาศาสตร์และวิศวกรรมชีวโมเลกุล (รับ snack box ในห้องประชุม)
11.00 – 12.00 น.	เยี่ยมชมสำนักวิชาต่างๆ เช่น สำนักวิชาวิทยาศาสตร์และวิศวกรรมชีวโมเลกุล ชม สถานที่โดยรอบ และขึ้นหอชมวิว VISTEC และ EECi
12.00 – 13.00 น.	รับประทานอาหาร
13.00 – 14.00 น.	รับฟังบรรยาย โครงการเขตนวัตกรรมระเบียงเศรษฐกิจภาคตะวันออก (EECi) และ แผนสิทธิประโยชน์ โดย ดร. รวิภัทร์ ผุดผ่อง ฝ่ายพัฒนาความร่วมมือเขตนวัตกรรม ระเบียงเศรษฐกิจพิเศษภาคตะวันออก (EECi) สำนักงานพัฒนาวิทยาศาสตร์และ เทคโนโลยีแห่งชาติ (สวทช.) (รับ snack box ในห้องประชุม)
14.00 – 14.30 น.	ถาม-ตอบ โดย ภาคเอกชน : EECi : VISTEC
14.30 – 17.00 น.	มอบของที่ระลึก พร้อมถ่ายภาพร่วมกัน เดินทางกลับโดยสวัสดิภาพ





EECi Overview

EECi = Eastern Economic Corridor of Innovation



**** Begin Construction on 1st March 2019 & Open by 2021**

EECi Groundbreaking Ceremony 27 February 2019



“To mark the Beginning of Thailand’s Drive towards
Stability, Prosperity and Sustainability through Science, Technology and Innovation.”

General Prayut Chan-o-cha, Prime Minister

EECi Overall Development & Zoning

COMMUNITY ZONE



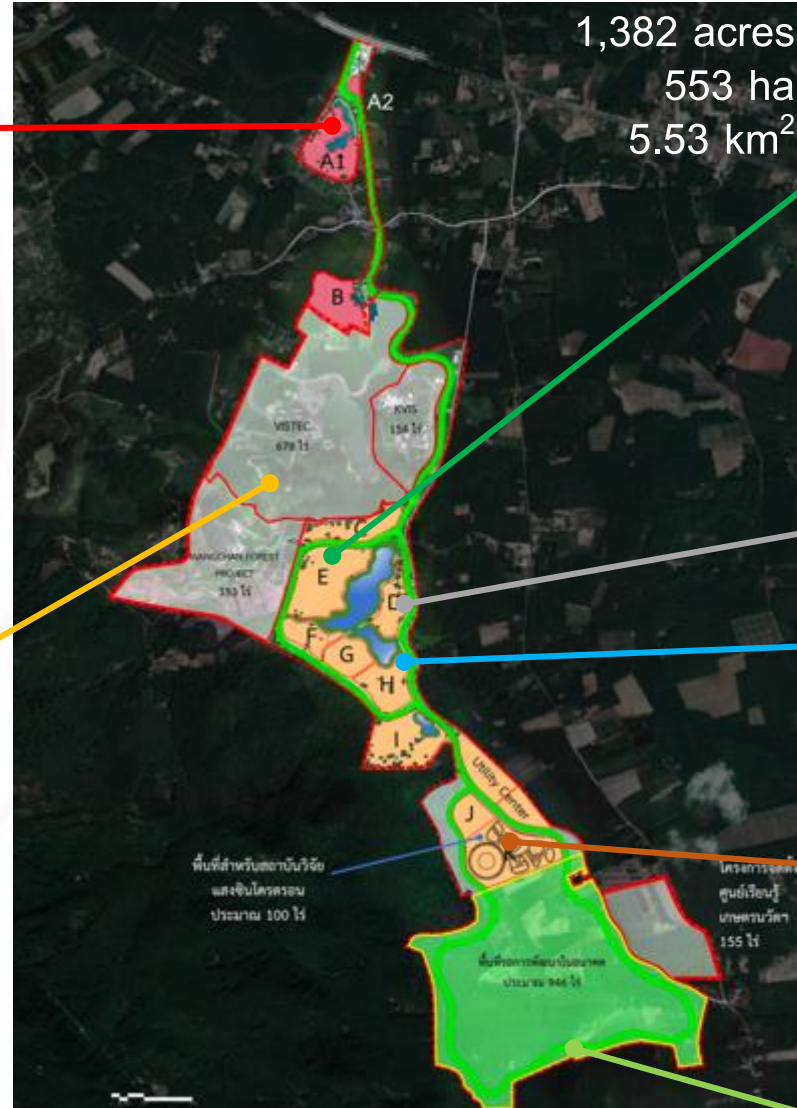
- Recreation Center (A1), Health Center (A1)
- Hotel (A1) Service Apartment (A1)
- Community Market (A2)
- Primary & Secondary Level: Inter. School (A1)

EDUCATION ZONE



- High School Level: KVIS*
- Graduate Level: VISTEC*
- Wangchan Forest Learning Center*

* *Already in Operation with ~10 Billion THB investment to-date*



INNOVATION ZONE 1

EECi Phase IA**



**** Begin Construction on 1 March 2019 & Open by 2021**

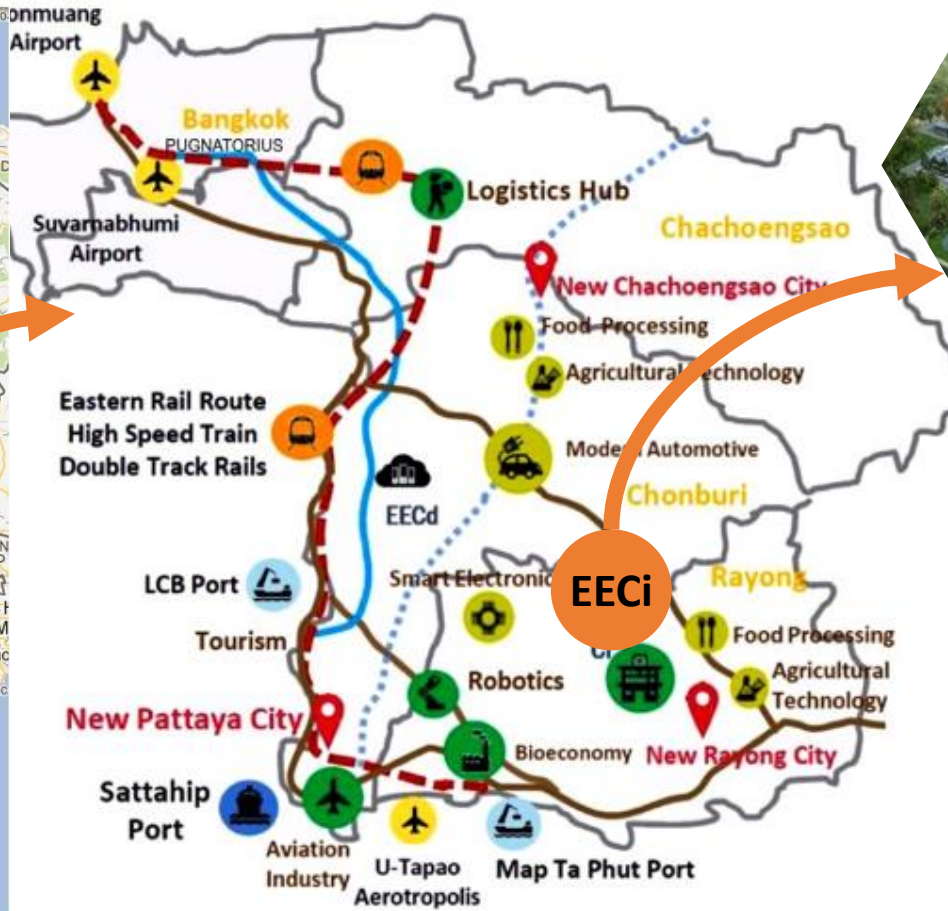
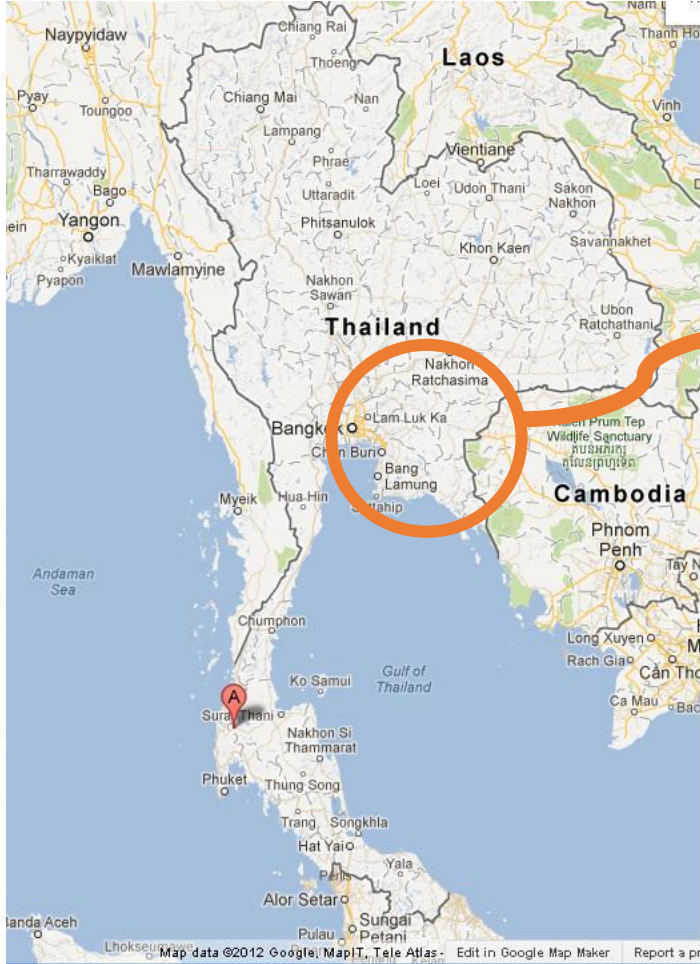
PTT Art Gallery & Energy Museum

EECi Academy



INNOVATION ZONE 2 (Future)

The Innovation Component of EEC



Wangchan Valley,
Rayong Province



High-speed Train &
Dual-track Railway



Lam-Chabang &
Map-Ta-Phut
Seaports



Smart City
Development

Industrial Estate
Development

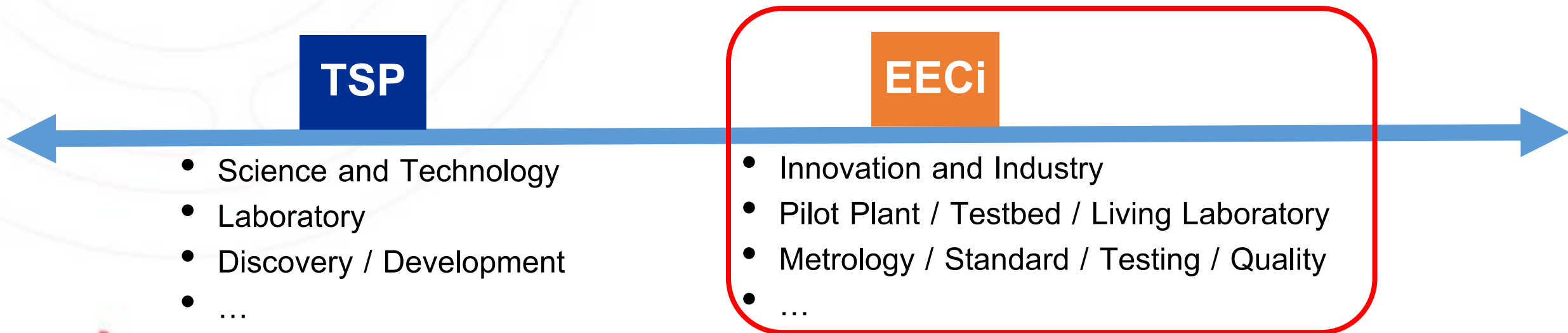
U- Tapao
International Airport

What is EECi?

EECi is a specialized “Science Park”

Science Park stimulates and manages the flow of knowledge and technology amongst universities, R&D institutions, companies and markets; it facilitates the creation and growth of innovation-based companies through incubation and spin-off processes.

EECi Positioning >> Translational Research Platform



A Platform Connecting Research & Investment Across Thailand



Northern Science Park (Chiang Mai)



Northeastern Science Park (Khon Kaen)

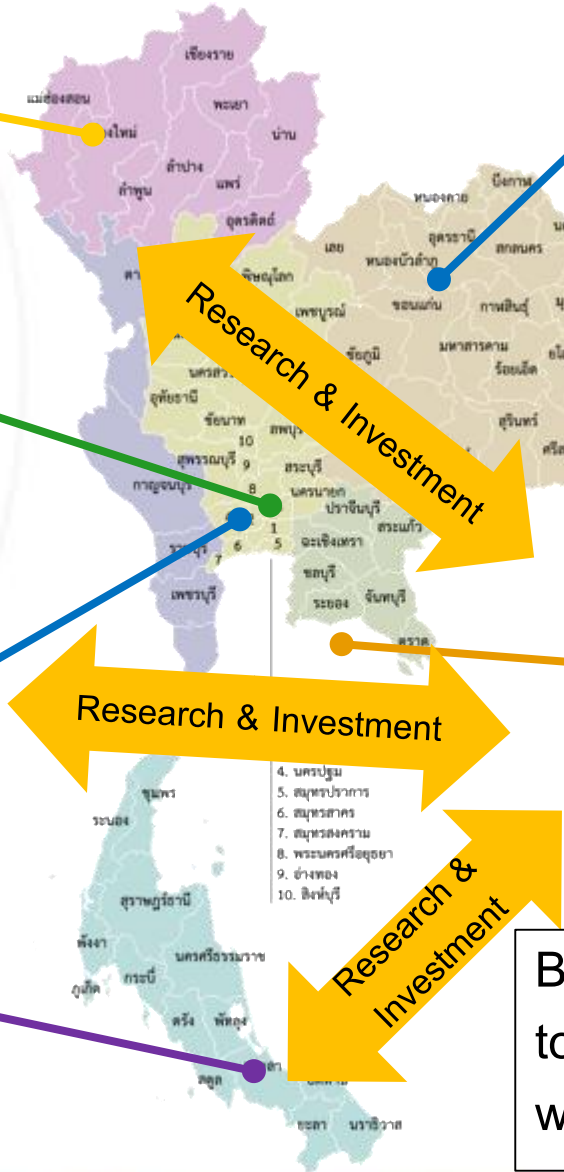


Thailand Science Park (Patum Thani)



Software Park Thailand (Nontha Buri)

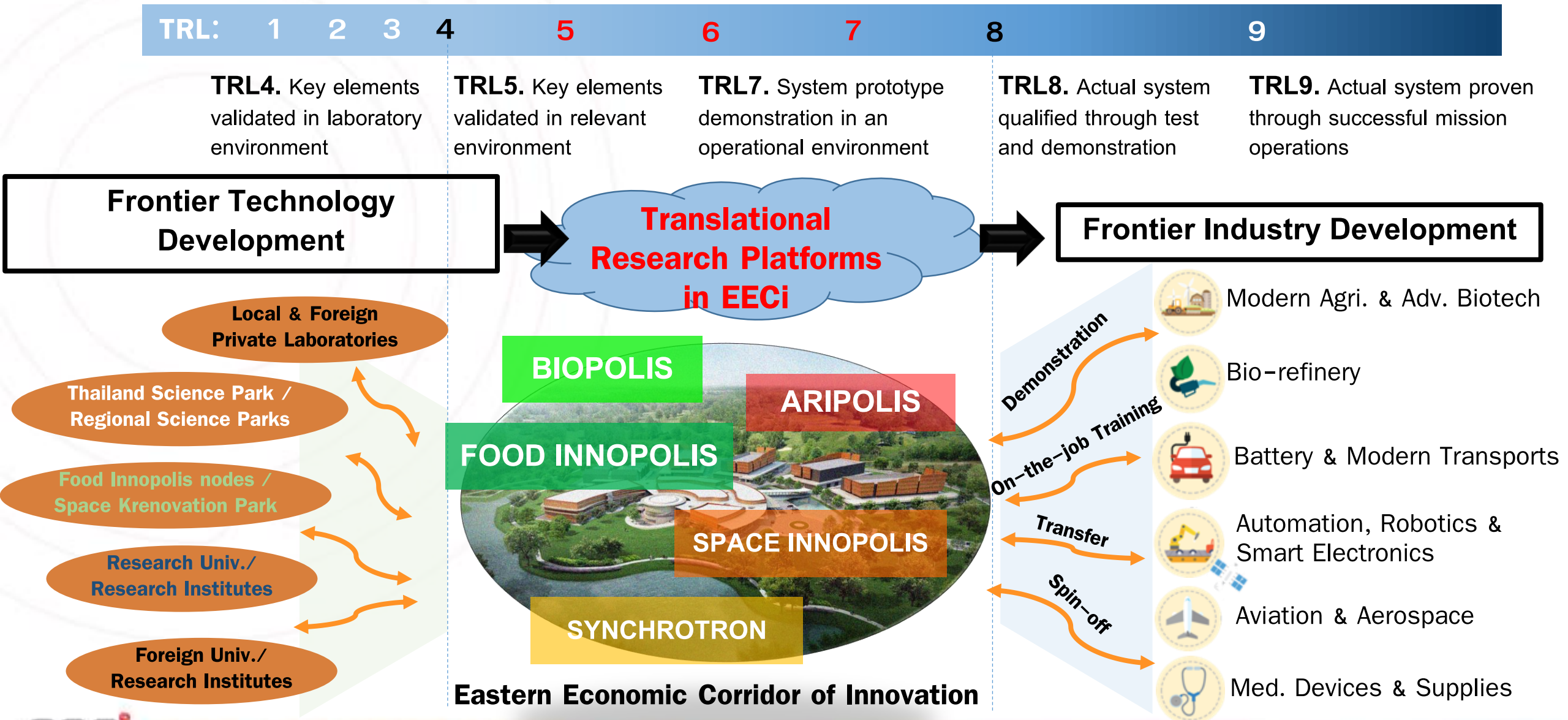
Southern Science Park (Song Kla)



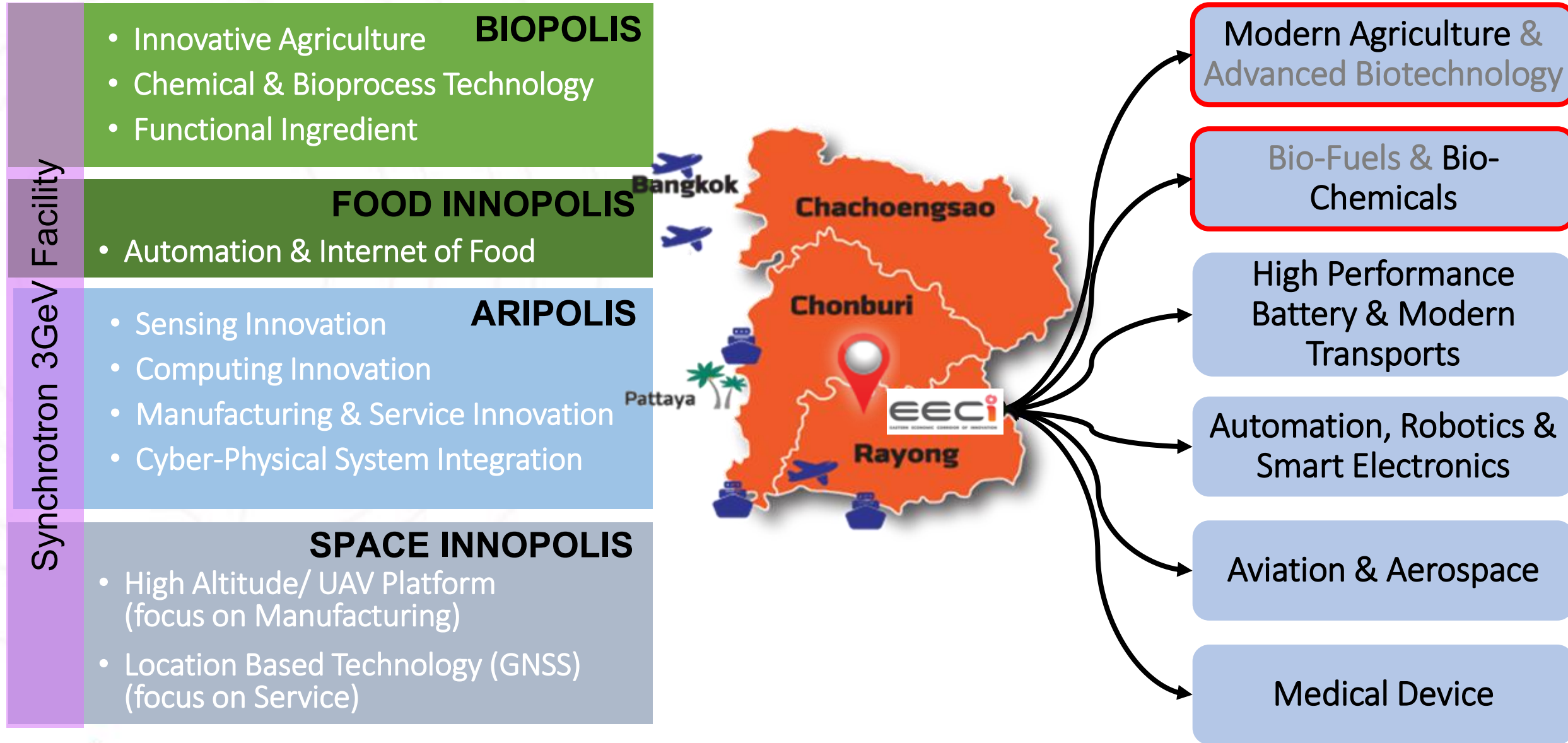
Translational Research Hub

BOI has approved EECi incentive extension to cover EECi investment in all science parks, while EECi is under construction.

EECi: A Translational Platform for Frontier Industries



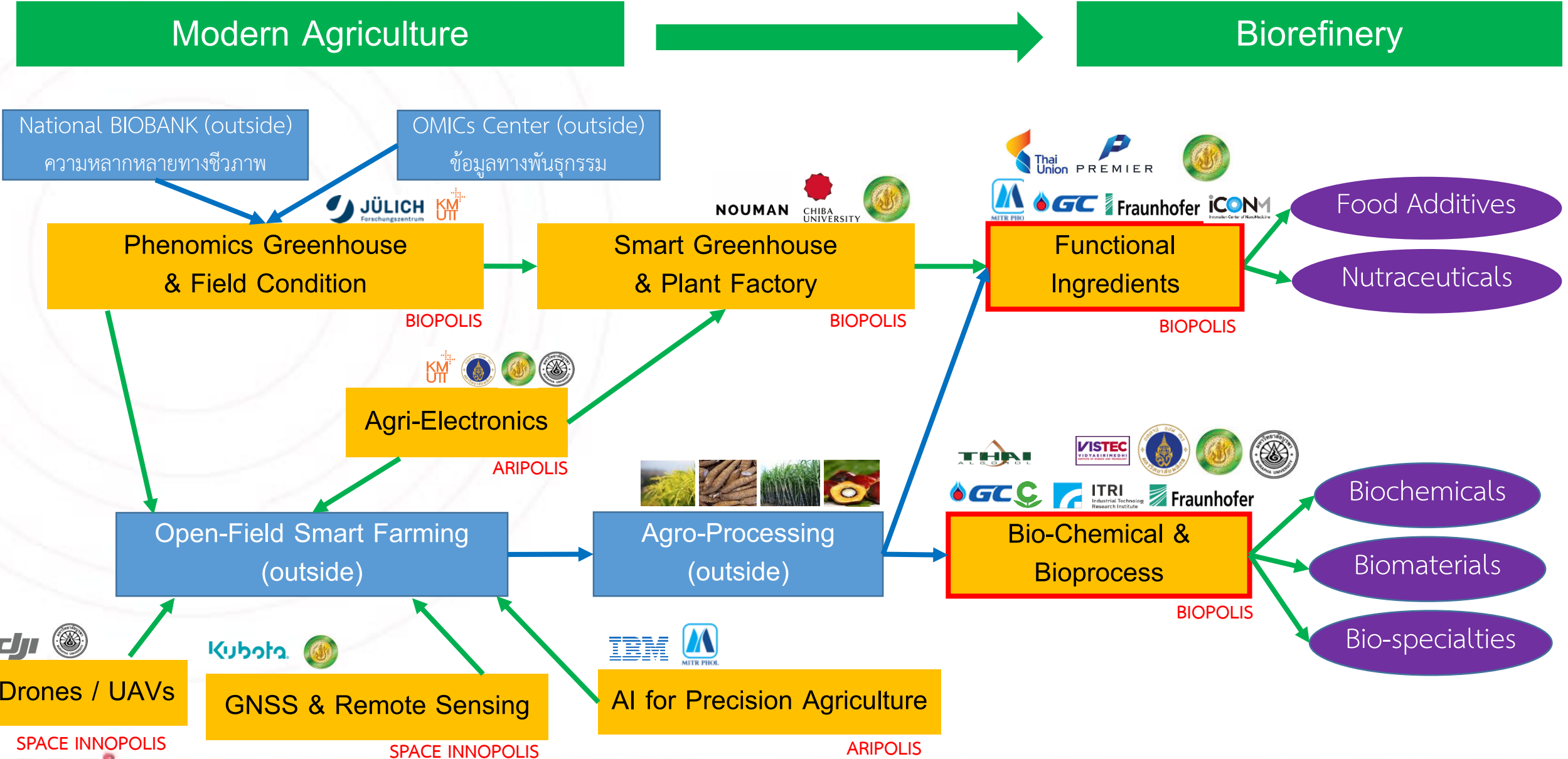
A Platform Supporting Strategic Industry Development





BIOPOLIS

Alignment of Research Investment to Support Industry Development

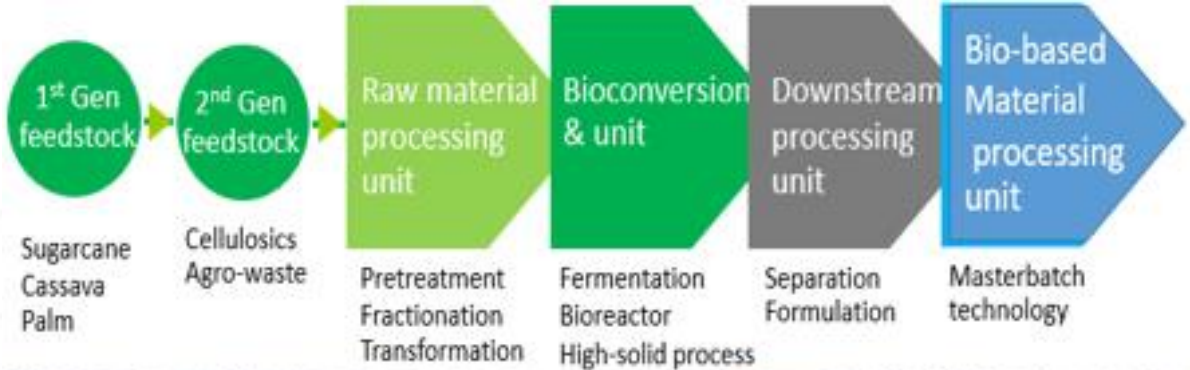


Example of Modern Agriculture & Biorefinery Infrastructure

Phenomics Greenhouse
to study response of plants
to environmental conditions



Plant Factory
to produce plants
in a controlled environment



**Biochemical
& Bioprocess
Pilot Plant
(non-GMP)**



Multipurpose Bioprocessing Facility (Fully equipped scale-up facilities)

Primary production units

- Preparation
- Fermentation/Green extraction
- Clarification

Secondary production units

- Purification
- Primary & Secondary polishing
- Concentration
- Formulation
- Finishing (packing)



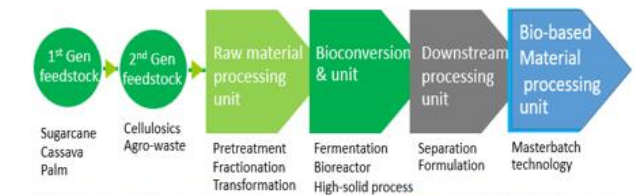
Functional Ingredient Pilot Plant (GMP)



Biorefinery Pilot plant	No. of Modules	Module function
GMP pilot facility	2	Bioprocess and Fermentation
		Green Extraction and Downstream Process
Non-GMP pilot facility	4	Biomass Pretreatment & Cellulosic Production
		Bioprocess, Fermentation and Downstream Process
		Catalyst and Fine Chemical Production
		Functional Additives for Compound and Masterbatch

Updated Progress on Modern Agriculture and Biorefinery

- ⦿ Scaled version of EECi Plant Factory opened in Thailand Science Park on 25 March 2019 with LOI from an international firm for Plant Factory investment at EECi.
- ⦿ Investment in progress for a scaled version of EECi Phenomics Greenhouse at Thailand Science Park.
- ⦿ Joint project between IBM, Mitr Phol and NSTDA piloting the use of AI to forecast crop output and disease outbreak.
- ⦿ CAAT-GISTDA-NSTDA ongoing collaboration to develop EECi UAV sandbox.
- ⦿ Ongoing preparation for biorefinery pilot plant investment with technology demonstration investment from international firms in tandem.



Multipurpose Bioprocessing Facility (Fully equipped scale-up facilities)

Primary production units

- Preparation
- Fermentation/Green extraction
- Clarification

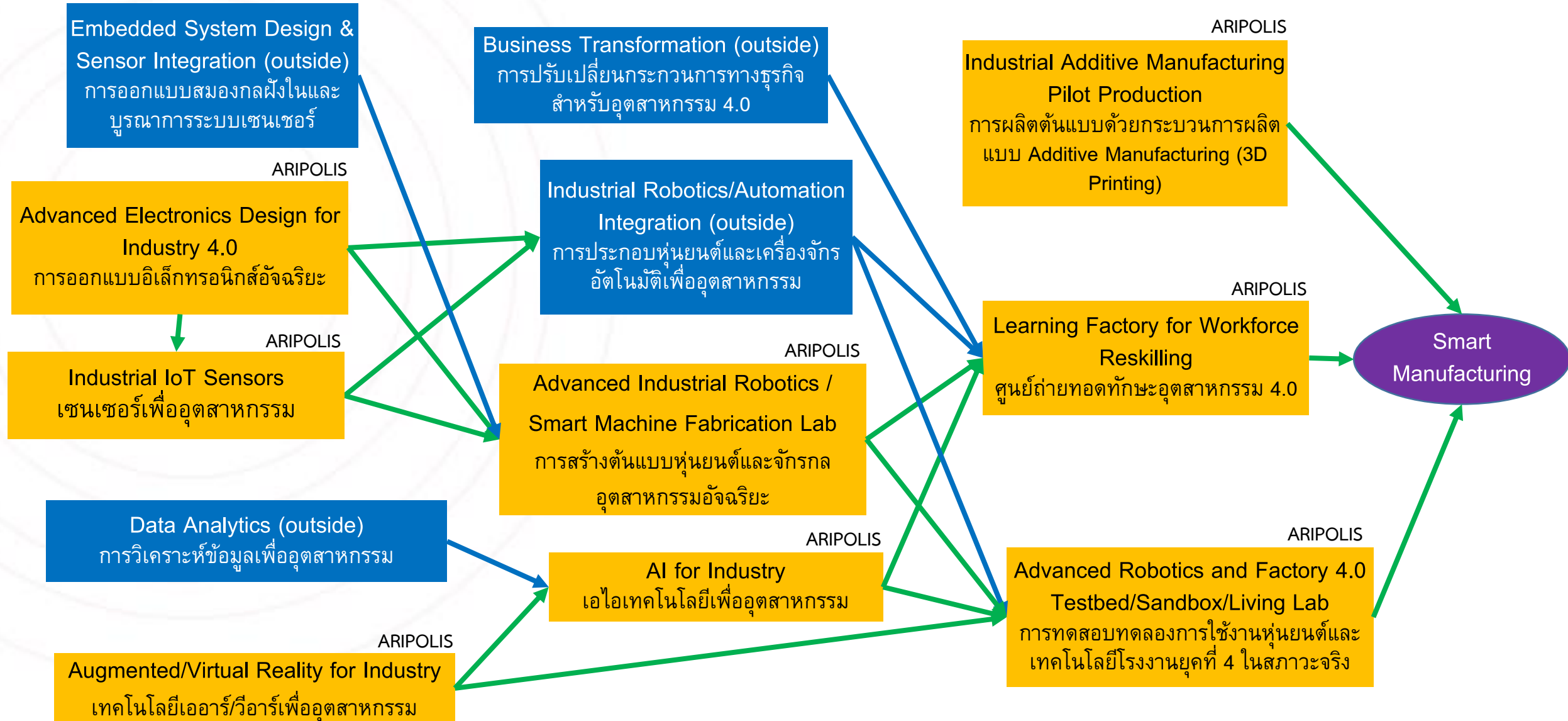
Secondary production units

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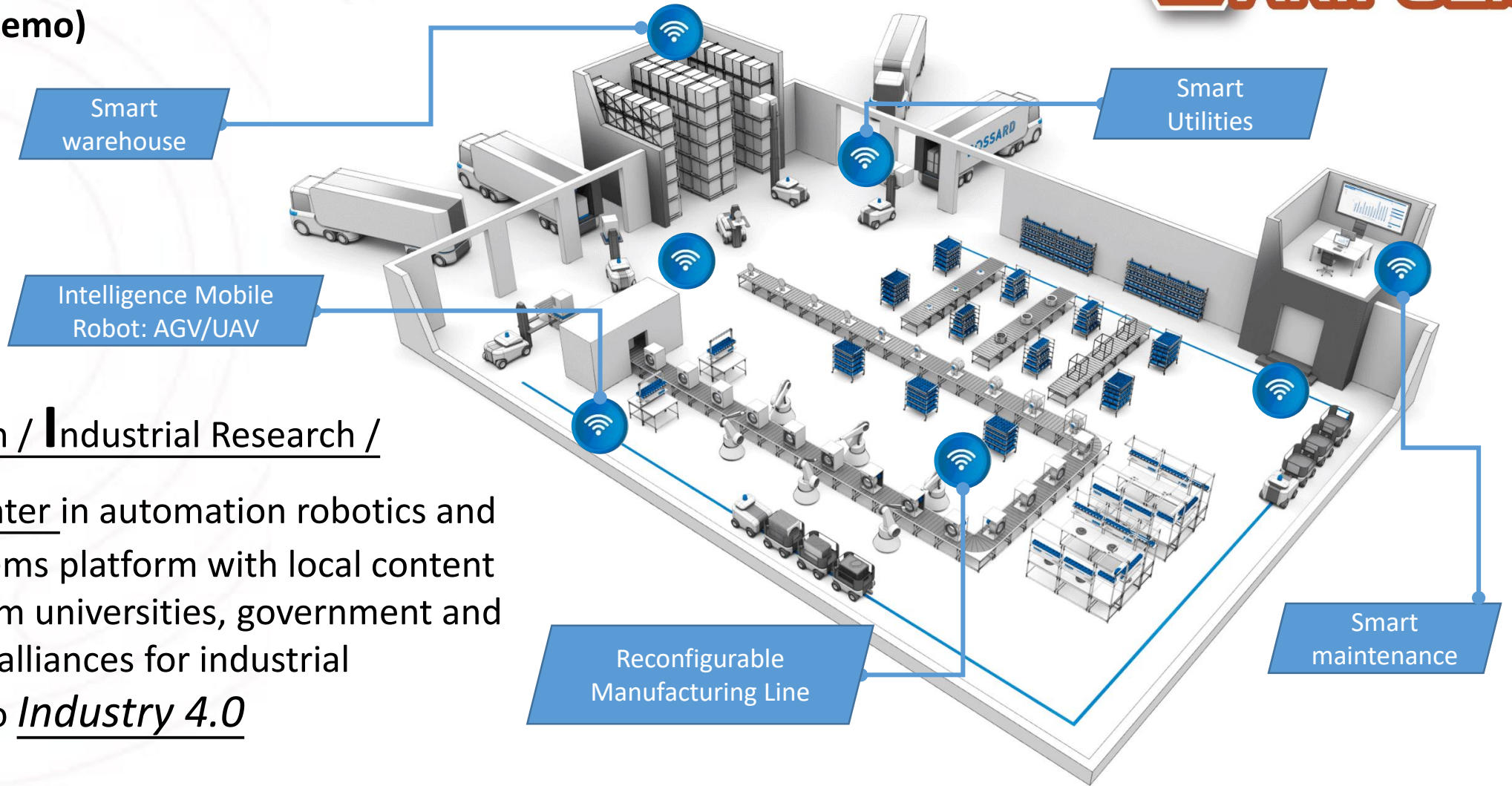


Draft Industrial Technology Roadmap for Industry 4.0



Smart Manufacturing Center Model

(Factory Line Demo)



Demonstration / Industrial Research /

Consulting Center in automation robotics and intelligent systems platform with local content innovations from universities, government and private sectors alliances for industrial development to Industry 4.0

Smart Factory

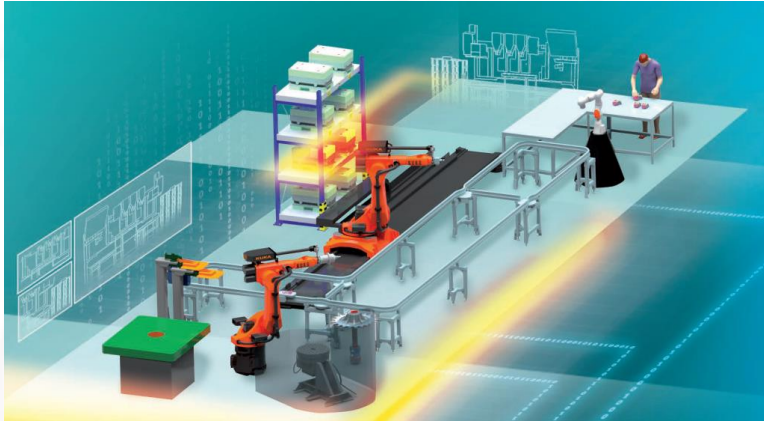
Smart Warehouse

Smart Maintenance

Smart Utilities

Sample Industry 4.0 Infrastructure

<https://www.ciirc.cvut.cz/testbed/>



Factory 4.0 Testbed
การทดสอบเทคโนโลยีโรงงานยุคที่ 4

<https://www.todayonline.com/business/new-mckinsey-centre-aims-groom-talent-advanced-technologies>



Learning Factory for Workforce Reskilling
ศูนย์ถ่ายทอดทักษะอุตสาหกรรม 4.0

<https://versoteq.com/blog/usage-ar-and-vr-within-heavy-industry>



Augmented/Virtual Reality Development for Industry
เทคโนโลยีเออาร์/วีอาร์เพื่ออุตสาหกรรม

https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=2ahUKEwi7sqHk-eTeAhUIPI8KHWOAuMQjRx6BAGBEAU&url=http%3A%2F%2Fd.digests.nhub.news%2F2018%2F02%2F14%2F00%2Fusa_en_IT.html&psig=AOvVaw0thpbtZD-STy8warK7Fo94&ust=1542871283638988



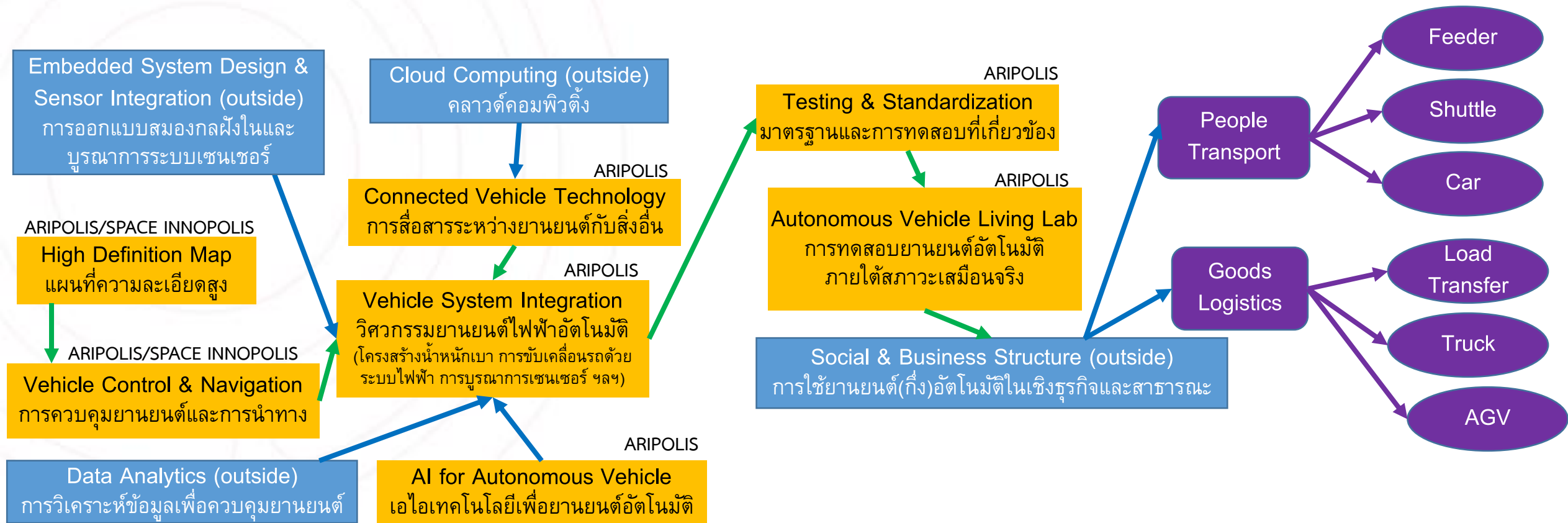
Advanced Robotics Fabrication Lab
การสร้างต้นแบบหุ่นยนต์อัจฉริยะ

<http://www.3ders.org/articles/20160210-the-20-biggest-3d-printers-in-2016.html>

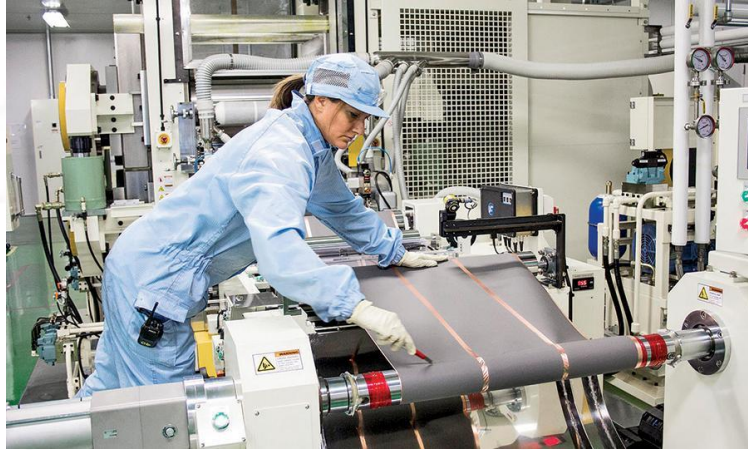


Additive Manufacturing Pilot Production
การผลิตต้นแบบด้วยกระบวนการผลิตด้วย 3D Printing

Draft Industrial Technology Roadmap for Modern Transports



High Performance Battery & Modern Transports infrastructure: Example



Battery Pilot Production

การทดลองผลิตและประกอบแบตเตอรี่



Extra Large Energy Storage Testing

การทดสอบแบตเตอรี่ขนาดใหญ่กำลังไฟสูง



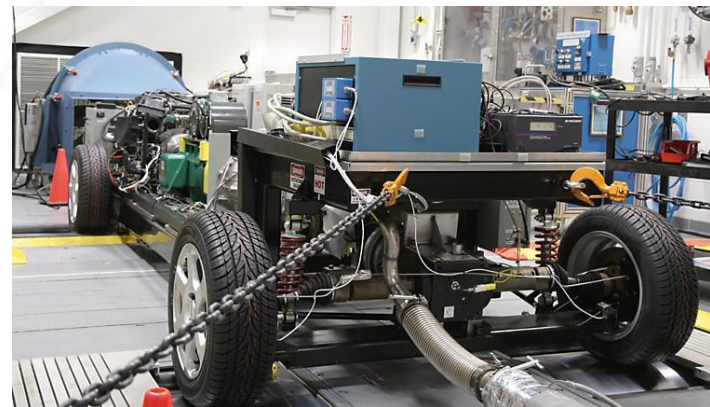
Autonomous Feeder R&D

การวิจัยระบบการขนส่งระยะใกล้



Drive Simulator

ระบบจำลองการขับขี่



Autonomous Vehicle System Integration

โรงประกอบต้นแบบยานยนต์ขับเคลื่อนอัตโนมัติ



Autonomous Vehicle Living Lab

การทดสอบยานยนต์อัตโนมัติภายใต้สภาวะเสมือนจริง



EECi Innovation Ecosystem

Emerging EECi Innovation Ecosystem

5 Startups, SMEs, SIs, Angels, VCs, & more

InnoSpace (Thailand)

CAAT
สำนักงานการบินพลเรือนแห่งประเทศไทย
The Civil Aviation Authority of Thailand

1 Smart Township



EECi
Eastern Economic Corridor of Innovation



4 Large Firms & MNCs



3 Research Institutes



2

Schools/Universities

Members of EEC*i* Ecosystem

◎ Research and Innovation Related

- Corporate Research and Innovation
- Research Institute, Center of Excellence, and Higher Educational Institute
- Quality Infrastructure

◎ Startup Related

- Incubator and Accelerator
- Startup

◎ Innovation Ecosystem Essentials

- R&I Support
- Educational and Advanced Training

◎ Supports and Quality-of-Life

- Business and Talent Support
- Special Support
- Quality of Life



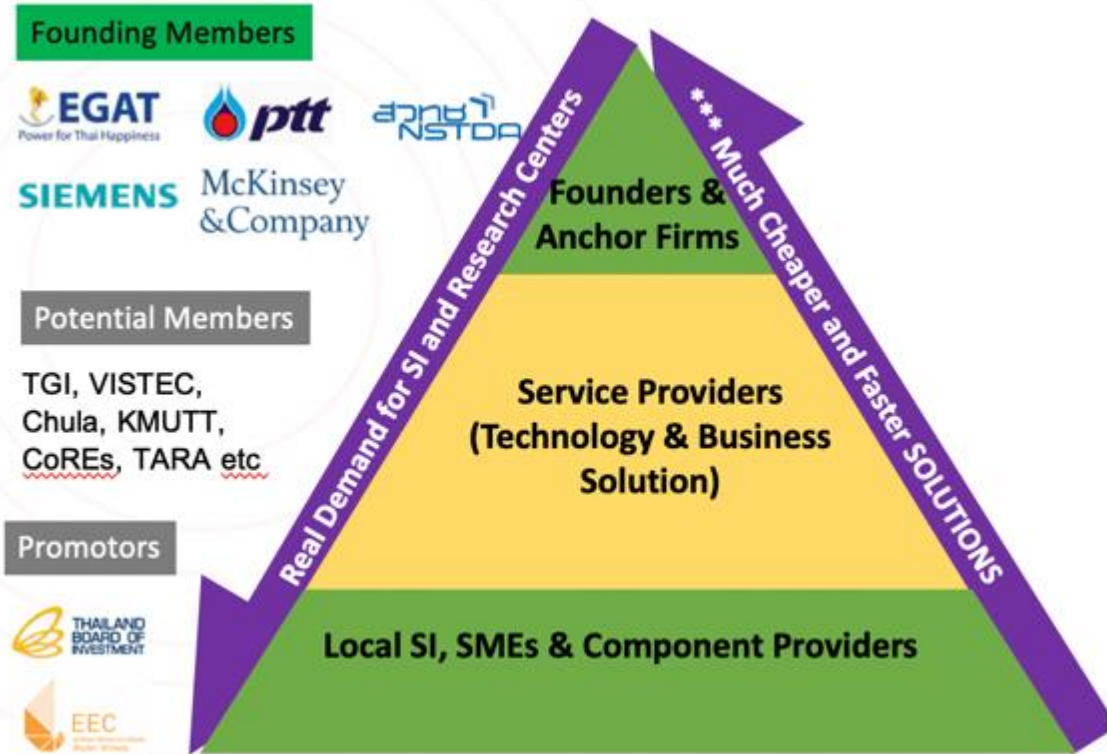
InnoSpace (Thailand)

in collaboration with 29 organizations



- **InnoSpace (Thailand)** is set up by public and private organizations to promote **“Deep Tech”** startup in Thailand.
- **InnoSpace (Thailand)** is a company that fosters Thailand government policy on building startups by linking all stakeholders in the **Startup Ecosystem**.
- **InnoSpace (Thailand)** plays role as an **Incubator**, **Accelerator** and **Investor**.
- **InnoSpace (Thailand)** seeks **fund** from the government annual budget, subsidy and capital market mechanism.
- **InnoSpace (Thailand)** fully supports **“Deep Tech startups”** and **“Industrial research”** by collaborating with Universities, Research Organizations and private sectors in an **Open Innovation** fashion.
- **InnoSpace (Thailand)**'s **hub** is located at EECi (launching pad at VISTEC then move to Innovation Cluster 1 when construction completed in 2021). It can be expanded through Science park or Startup networks.

EECi (Industry-Led) Consortia



Smart Manufacturing Consortium

2+1 / 2+2 Consortia

- Company A + NSTDA + Fraunhofer
- Company B + NSTDA + ITRI
- NSTDA + Chiba U. + Company C
- ...

Other Consortia

- Community Development Consortium (NSTDA + PTT + VISTEC)
- UAV Sandbox Development Consortium (NSTDA + GISTDA + CAAT)
- ...

Area of Engagement with Partners

- ◎ Localization of **Advanced Technology for ASEAN++ Market**
- ◎ Globalization of **Advanced Products Derived from Local Bio-resources**
- ◎ Joint Research between **Local Firm & Research Institute and International Counterparts** (2+1 / 2 + 2)
- ◎ Joint Development of **Talents**
- ◎ Shared use of “**Advanced Translational Infrastructure**”
- ◎ etc.



Privileges & Incentives



Translational
R&D Infra.



Advanced NQI



Regulatory
Sandbox



Talent
workforce



Advanced
Technology
Development
Through Open
Innovation



13 years
(maximum)
corporate
income tax
exemption



Smart Visa for
international
experts



17% flat rate
personal
income tax for
international
(and reverse
brain drain)
experts



EASTERN ECONOMIC CORRIDOR OF INNOVATION
Integrate Technologies, Achieve Innovation

THANK YOU



www.eeci.or.th