

# Thailand 4.0

**Thriving in the 21st Century  
through  
Security, Prosperity & Sustainability**

# Seeking for the New Economic Model



**A Nation of Maker**



**Design in Innovation**



**Made in China 2025**

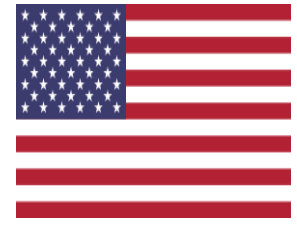


**Smart Nation**



**Creative Economy**

# A Nation of Maker



## White House Maker Faire

- 3 D Printer
- Laser Cutter
- CNC Router



- Nation of Makers Initiative
- Nation Week of Making
- Maker Movement

# Design in Innovation



- **Cool Britannia**



- **Create UK**



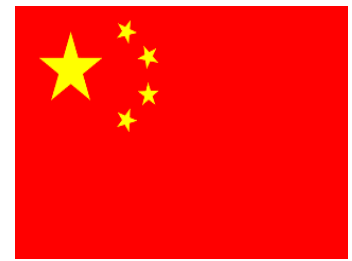
- **Innovate UK**



- **Digital Economy Strategy**

- **Design in Innovation Strategy**

# Made in China 2025



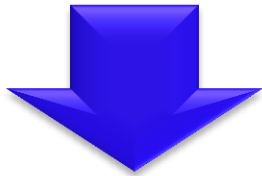
## 10 Target Industries

- New IT
- Numerical Control Tools & Robotics
- Aerospace Equipment
- Ocean Engineering Equipment & Hi-Tech Ships
- Railway Equipment
- Energy Saving & New Energy Vehicles
- Power Equipment
- New Materials
- Biological Medicine & Medical Devices
- Agricultural Machinery

# Smart Nation



- **Intelligent Nation 2015**



- **Smart Nation**



- **Media Ecosystem**
- **Tech Innovation Hub**

# Korean Economy

1960-1980

Driven By  
Government

1990-2000

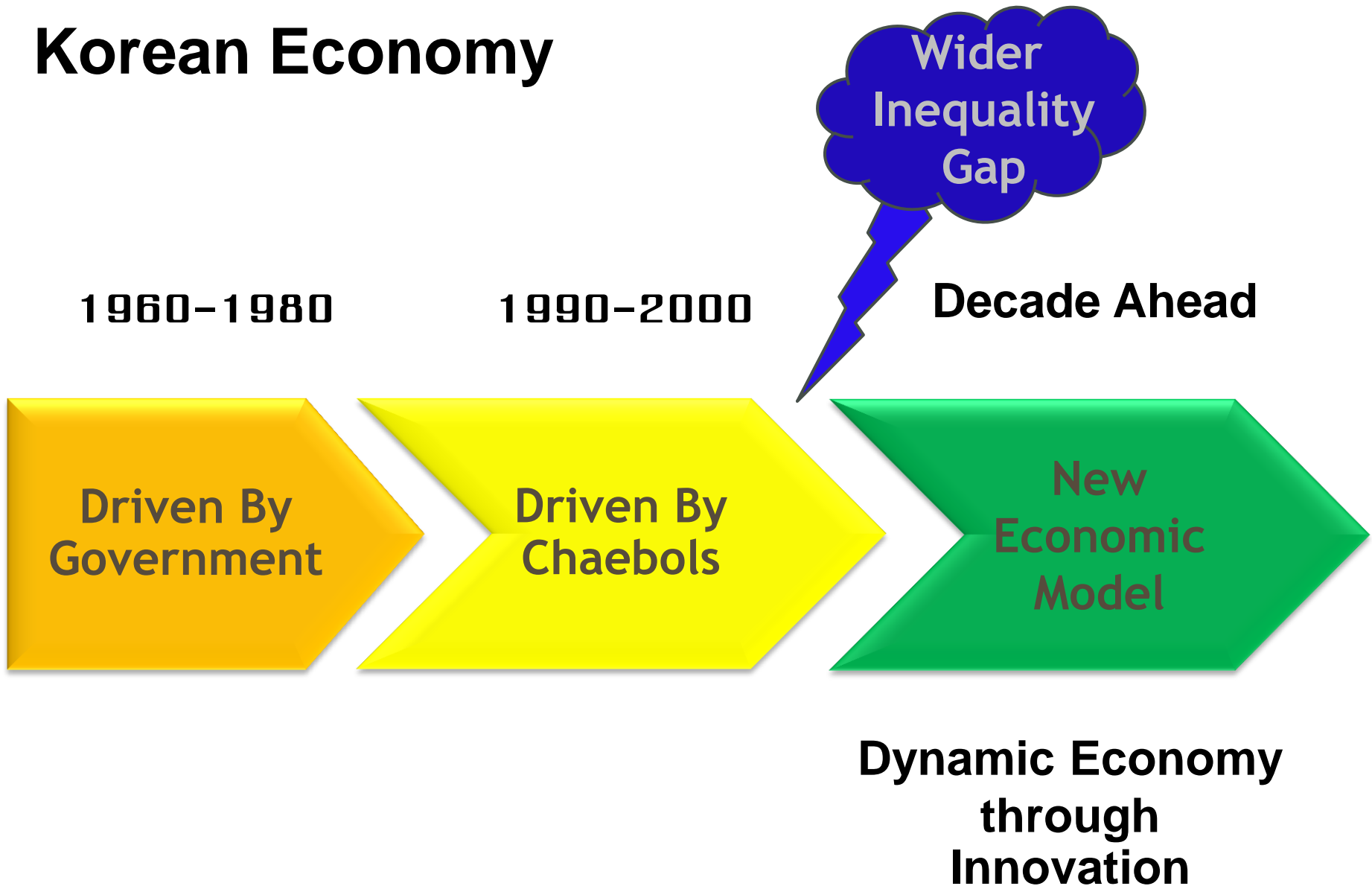
Driven By  
Chaebols

Decade Ahead

Wider  
Inequality  
Gap

New  
Economic  
Model

Dynamic Economy  
through  
Innovation



# 18 Centers of Creative Economy & Innovation

Chaebols



Central  
Government



Local  
Government



- New Industries
- New Startups



# Creative Economy

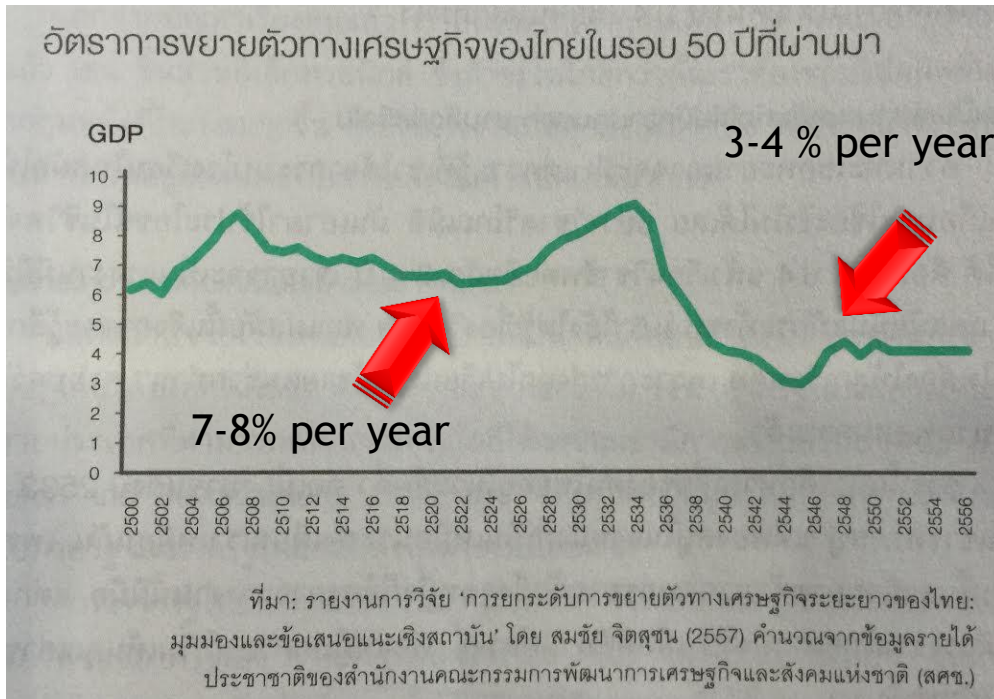


## 18 Centers of Creative Economy & Innovation

Location & Theme

| Region                | Theme & specialty   | Corporation in charge    |
|-----------------------|---|--------------------------|
| Seoul                 | Culture & lifestyle   | CJ                       |
| Incheon               | Logistics industries, aviation  | Hanjin                   |
| Gyeonggi              | IT-based convergence industries   | KT                       |
| Chungnam              | Clean energy, agriculture as the 5th industry                                 | Hanhwa                   |
| Daejeon               | Global venture business   | SK Telecom               |
| Sejong <sup>[1]</sup> | ICT-based agriculture   | SK Telecom               |
| Chungbuk              | Bio & beauty, environment-friendly energy industry                            | LG                       |
| Jeonbuk               | Carbon-related industries, traditional culture                                | Hyosung                  |
| Jeonnam               | Bio-chemical, new materials and convergence-oriented agro-fishery             | GS                       |
| Gwangju               | Motor vehicle-related start-up and common people-oriented innovation platform | Hyundai Motors           |
| Gyeongbuk             | Smart factory innovation, convergence type culture and agriculture            | Samsung                  |
| Daegu                 | Fashion, machinery and automobile parts, traditional industries               | Samsung                  |
| Ulsan                 | Ship-building & marine plant, medical automation industry                     | Hyundai Heavy Industries |
| Gyeongnam             | Machinery manufacturing innovation  | Doosan                   |
| Busan                 | Global distribution, Film and video-oriented ecology, IoT-based smart city    | Lotte                    |
| Gangwon               | Big data, crowd sourcing tourism, health care and smart farm                  | Naver                    |
| Jeju                  | Smart tourism platform, electric car and renewable energy                     | Daum-Kakao               |

# Thailand's Scenario



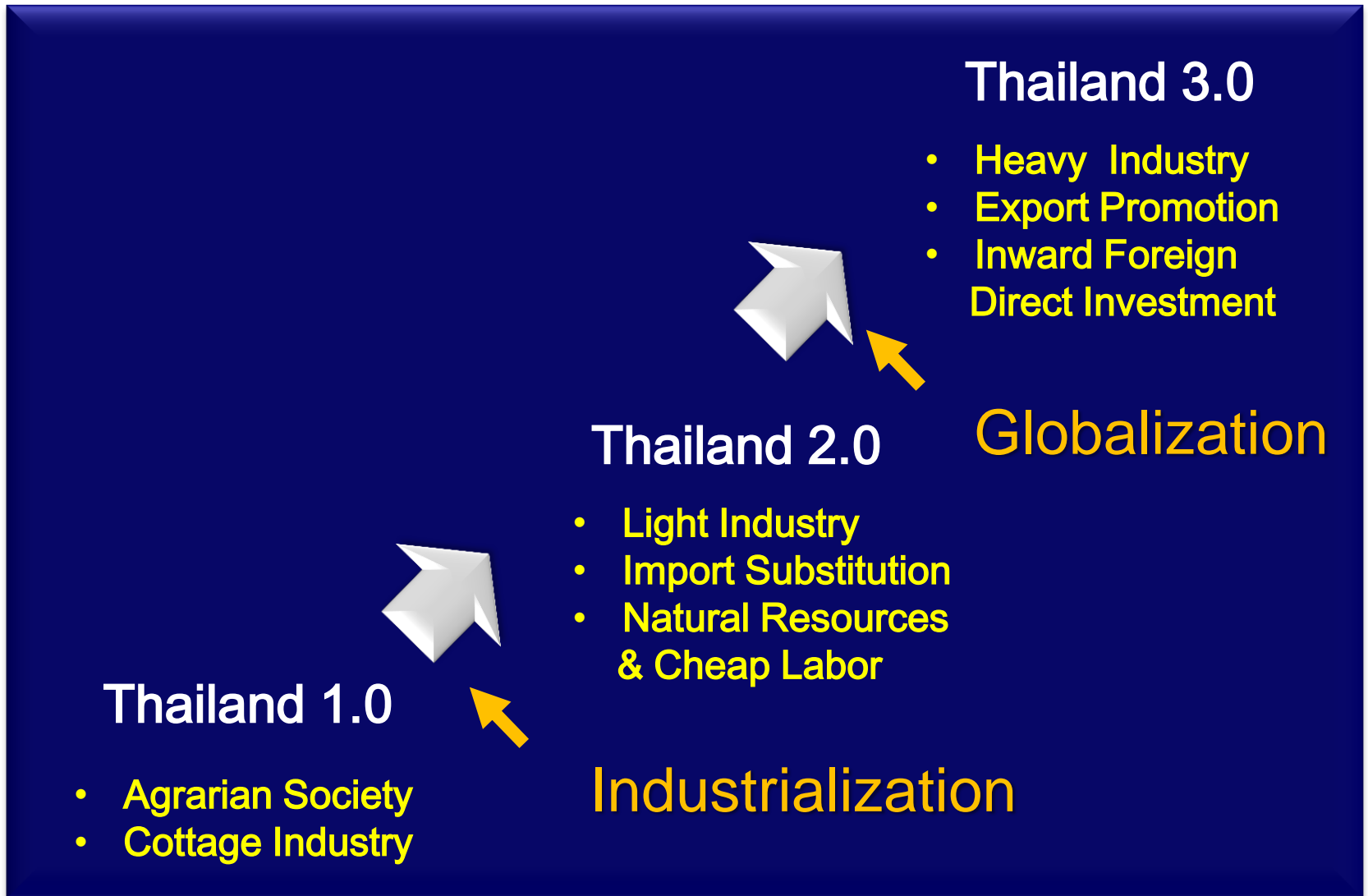
Middle  
Income  
Trap

High  
Income  
Country

Lost  
Decades

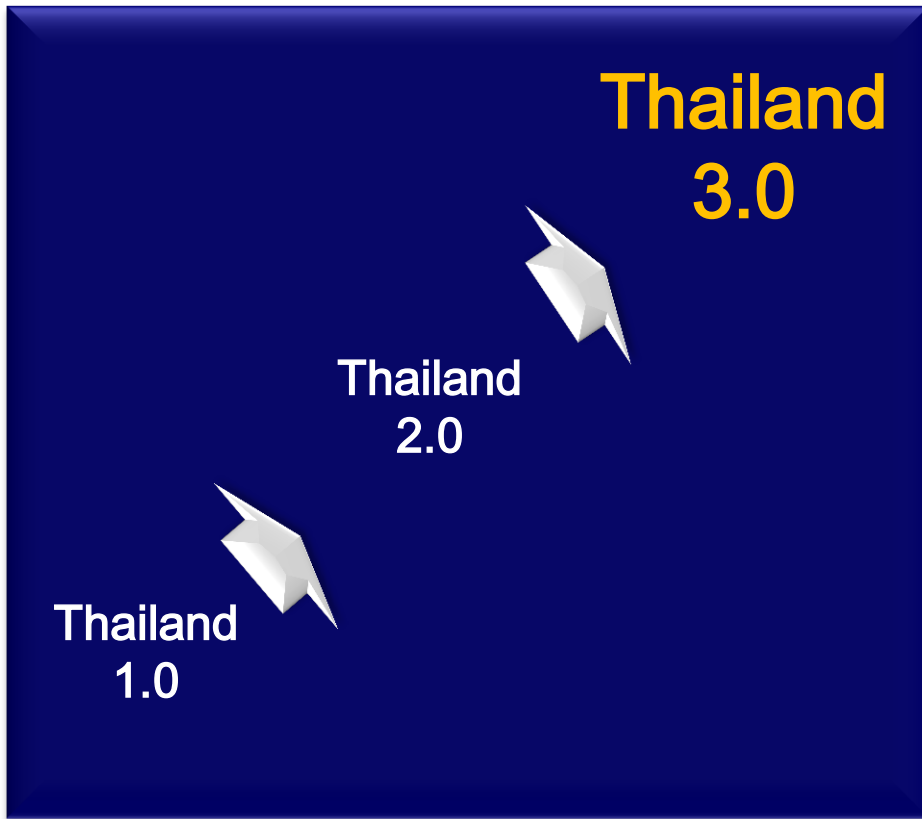
# Thailand's Path to Development

The Wealth of Nation



# Systemic Challenges Facing Thailand 3.0

The Wealth of Nation



## Systemic Challenges

Imbalance Trap

Inequality Trap

Middle Income Trap

# Thailand's Path to Development

The Wealth of Nation

Thailand 1.0  
Agriculture



Thailand 2.0  
Light Industry



Thailand 3.0  
Heavy Industry



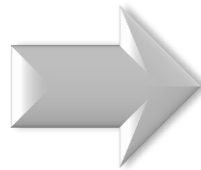
Thailand 4.0

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# Thailand 4.0:

## Transforming towards the Value-Based Economy

**More for Less**



**Less for More**

- **Commodities**

- **Industries**

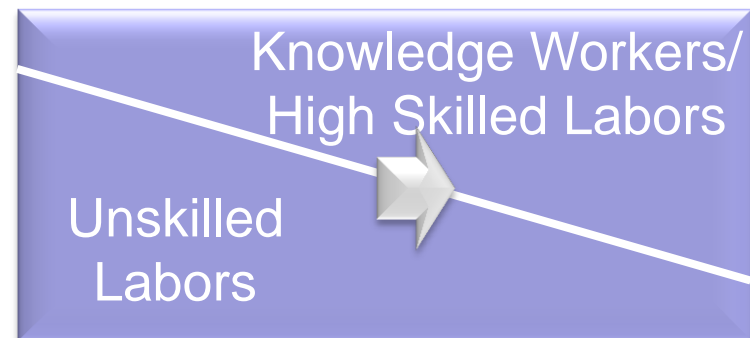
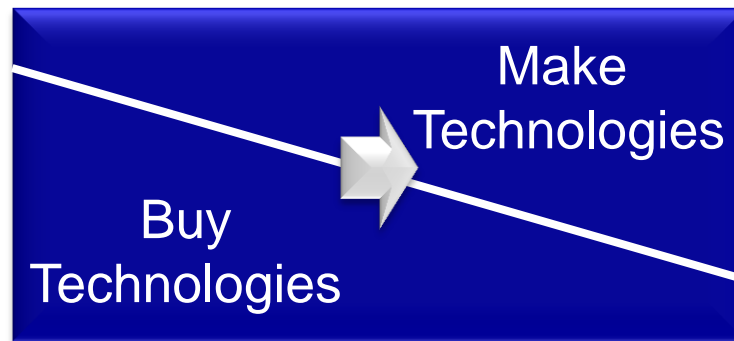
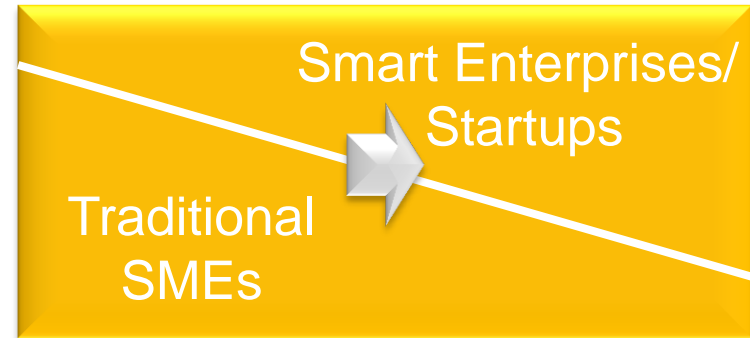
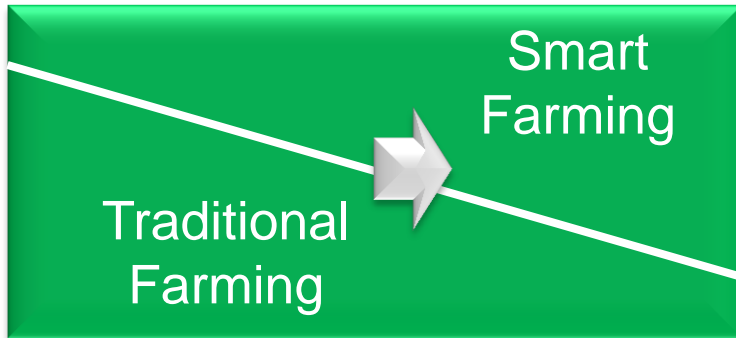
- **Trade in Goods**

- **Innovation**

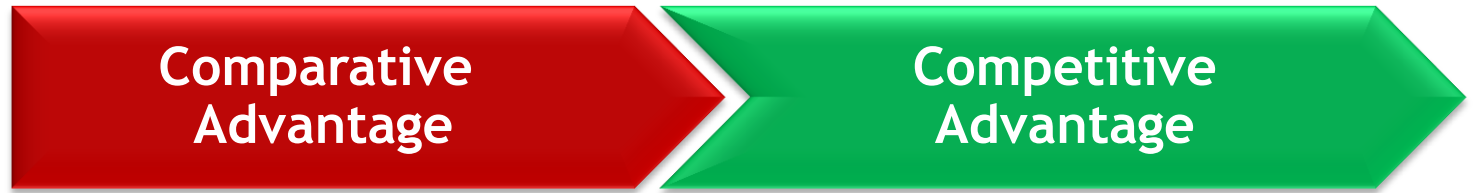
- **Technology & Creativity**

- **Trade in Services**

# Transformative Shifts



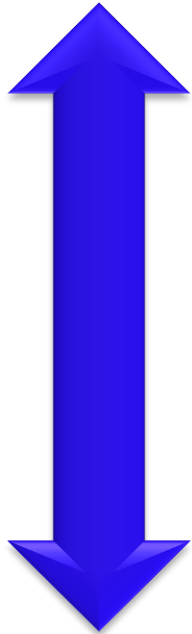
# Thailand 4.0: New Engines of Growth



**Nature**

**Bio-Diversity**

- Food Agriculture & Bio-tech
- Health, Wellness & Bio-Med



- Smart Devices, Robotics & Mechatronics

**Cultural Diversity**

- Digital, IoT & Embedded Technology

**Culture**

- Creative, Culture & High Value Services



## **New Technology**

- **Bio-tech**

- **Bio-Med**

- **Mechatronics**

- **Embedded Technology**

- **Service Design & Technology**

## **New Industry**

- **Food & Agriculture**

- **Health & Wellness**

- **Smart Devices & Robotics**

- **Digital & IOT**

- **Creative, Culture & High Value Services**

## **Enterprise**

- **Agri-tech**
- **Foodtech**

- **Healthtech**

- **Robotech**

- **Fintech**
- **Edtech**
- **E-Marketplace**
- **E-Commerce**
- **Service Enhancing**

- **Designtech**
- **Lifestyle Business**
- **Traveltech**

Examples

# Agriculture&Food

**Smart Foods**  
**Smart Ingredients:**  
Products and value chain

**Smart Agriculture:**  
Premium quality under  
climate change and aging  
society

**Advanced Agriculture Technology  
Provider:**  
Seed, feed, vaccine, machinery and other technologies for  
small holders

# Agriculture & Food Innovation Hubs

## Northern Agri&Food Innopolis

- Smart farm
- Dairy products
- Functional food

## Central - University Food Innopolis

- Functional food
- Food for ageing

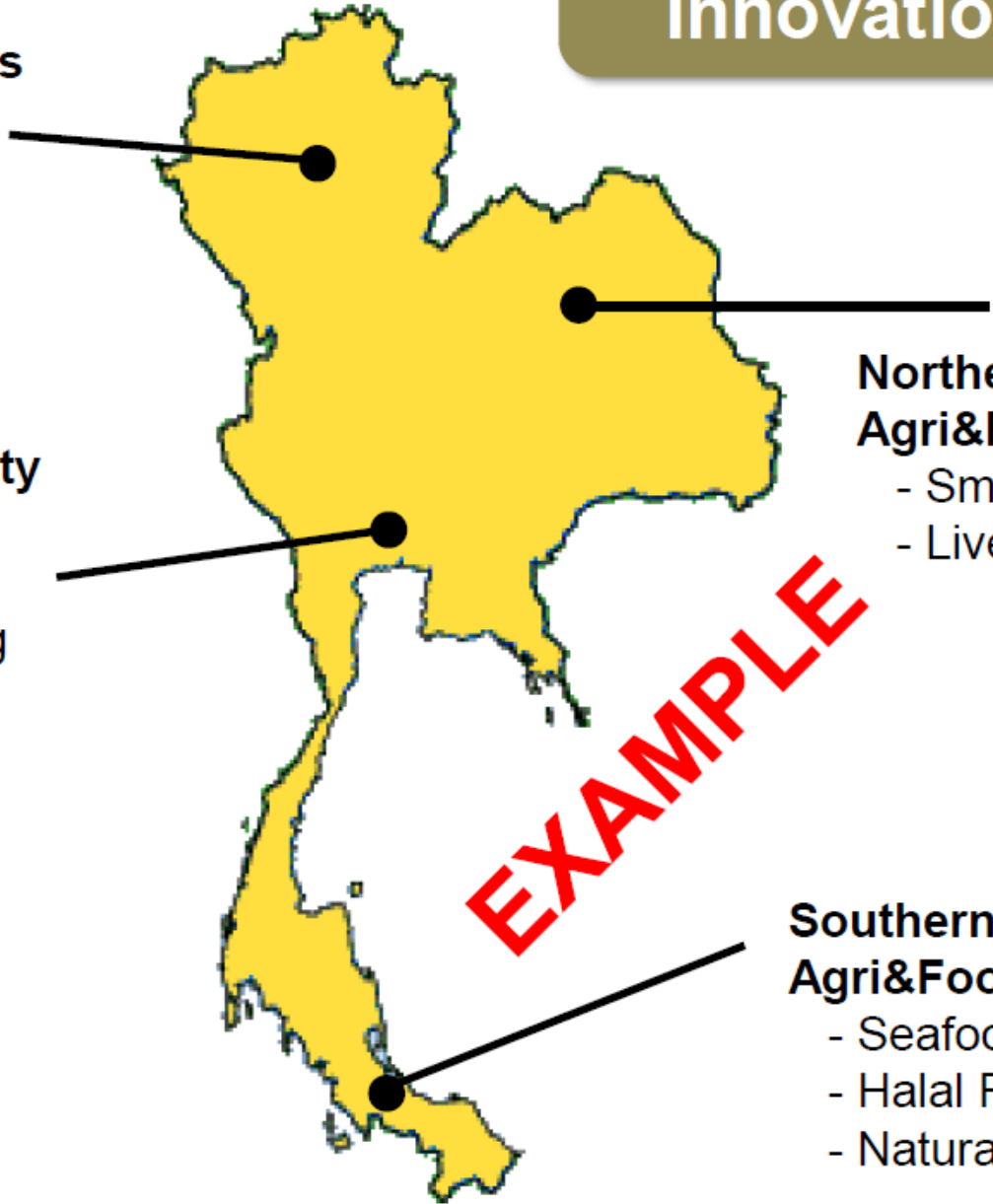
## Northeastern Agri&Food Innopolis

- Smart farm
- Livestock

## Southern Agri&Food Innopolis

- Seafood
- Halal Food
- Natural Rubber

|                         |
|-------------------------|
| R&D Labs                |
| Pilot Plants            |
| Incubator & Accelerator |
| Services                |

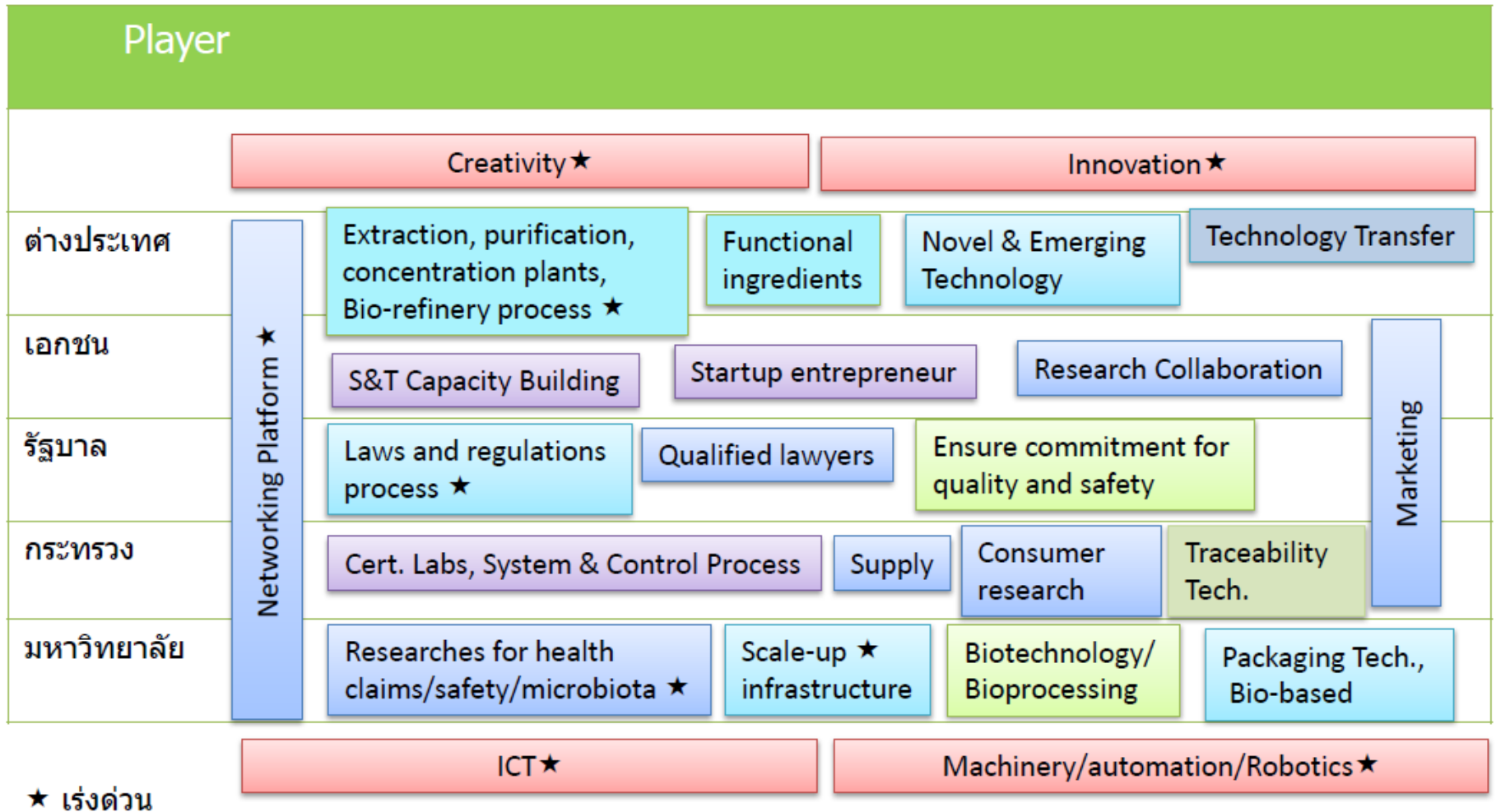


# แนวทางดำเนินการ















- **ใช้มหาวิทยาลัยเป็นฐาน** เพราะบุคลากรด้าน R&D ส่วนใหญ่อยู่ในมหาวิทยาลัย ให้มีการทำงานเป็นเครือข่ายของมหาวิทยาลัย อาจใช้รูปแบบของ RUN (Research University Network) แต่เพิ่มมหาวิทยาลัยเข้าร่วม โดยเบื้องต้นเริ่มจากมหาวิทยาลัยในกลุ่ม ทปอ. 27 มหาวิทยาลัย และมหาวิทยาลัยเอกชนที่มีศักยภาพ
- **ดึงมหาวิทยาลัยต่างประเทศ** ที่มีชื่อเสียงในด้านนี้มาร่วม
- **ดึงภาคเอกชน** ในพื้นที่มาลงทุนโดยใช้กลไกที่มีอยู่แล้วมาสนับสนุน เช่น Supercluster/Cluster/เขตพัฒนาเศรษฐกิจพิเศษ/การเกิด Food Innopolis ระยะที่ 2/อุทยานวิทยาศาสตร์ภูมิภาค
- **ดึงสถาบันการเงิน** และการลงทุนในรูปแบบต่าง ๆ มาต่อยอดนวัตกรรม
- **รัฐสนับสนุนโครงสร้างพื้นฐานที่จำเป็น**
- ความเชี่ยวชาญของแต่ละศูนย์จะต้อง **สอดคล้องกับการพัฒนาพื้นที่** เพื่อให้มีชีวิตความเป็นอยู่ที่ดีขึ้น จาก R -> D -> I

# Key Components

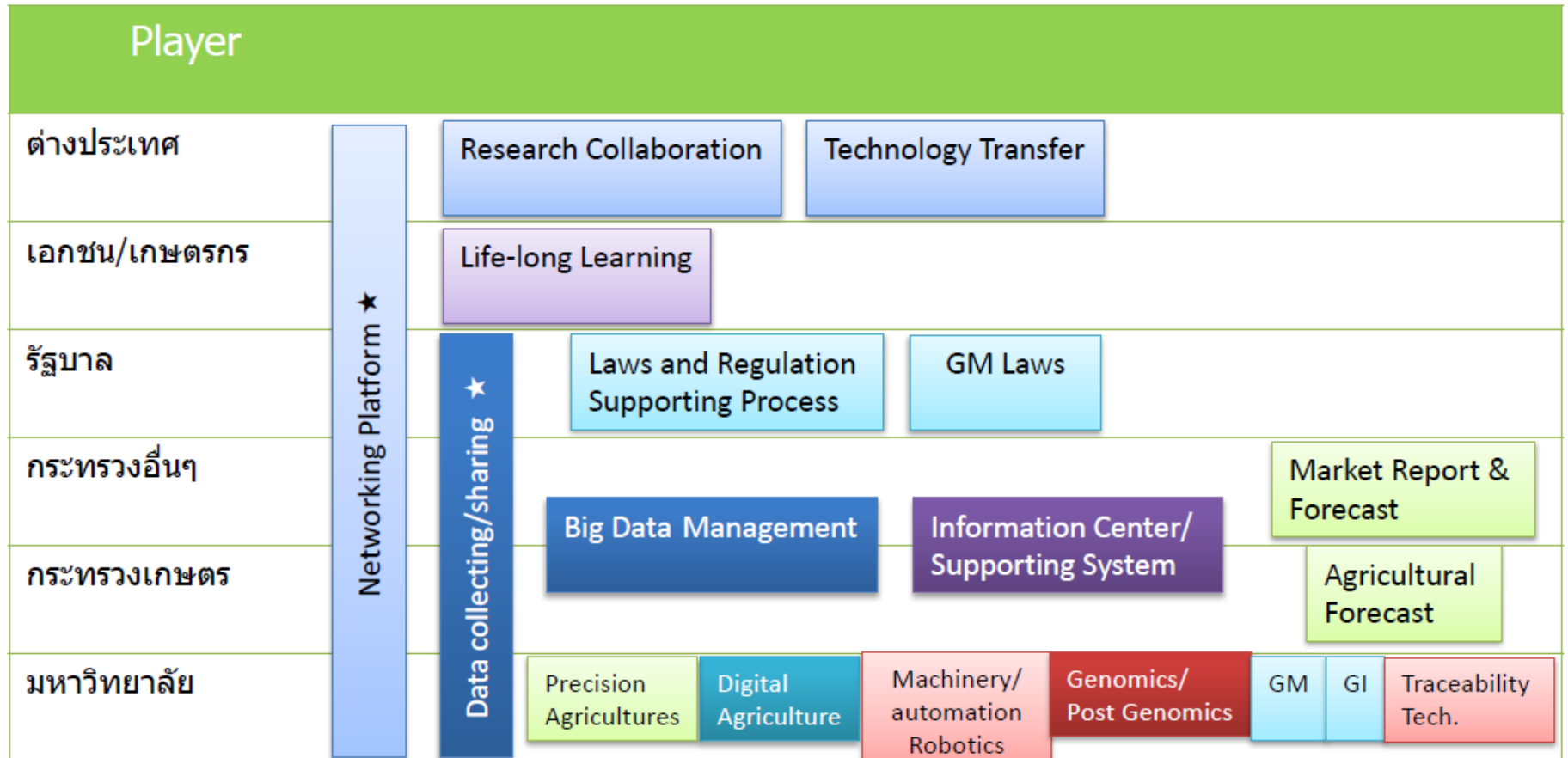
Smart Foods, Smart Ingredients:  
Products and value chain



## Technology Readiness: Smart Foods, Smart Ingredients

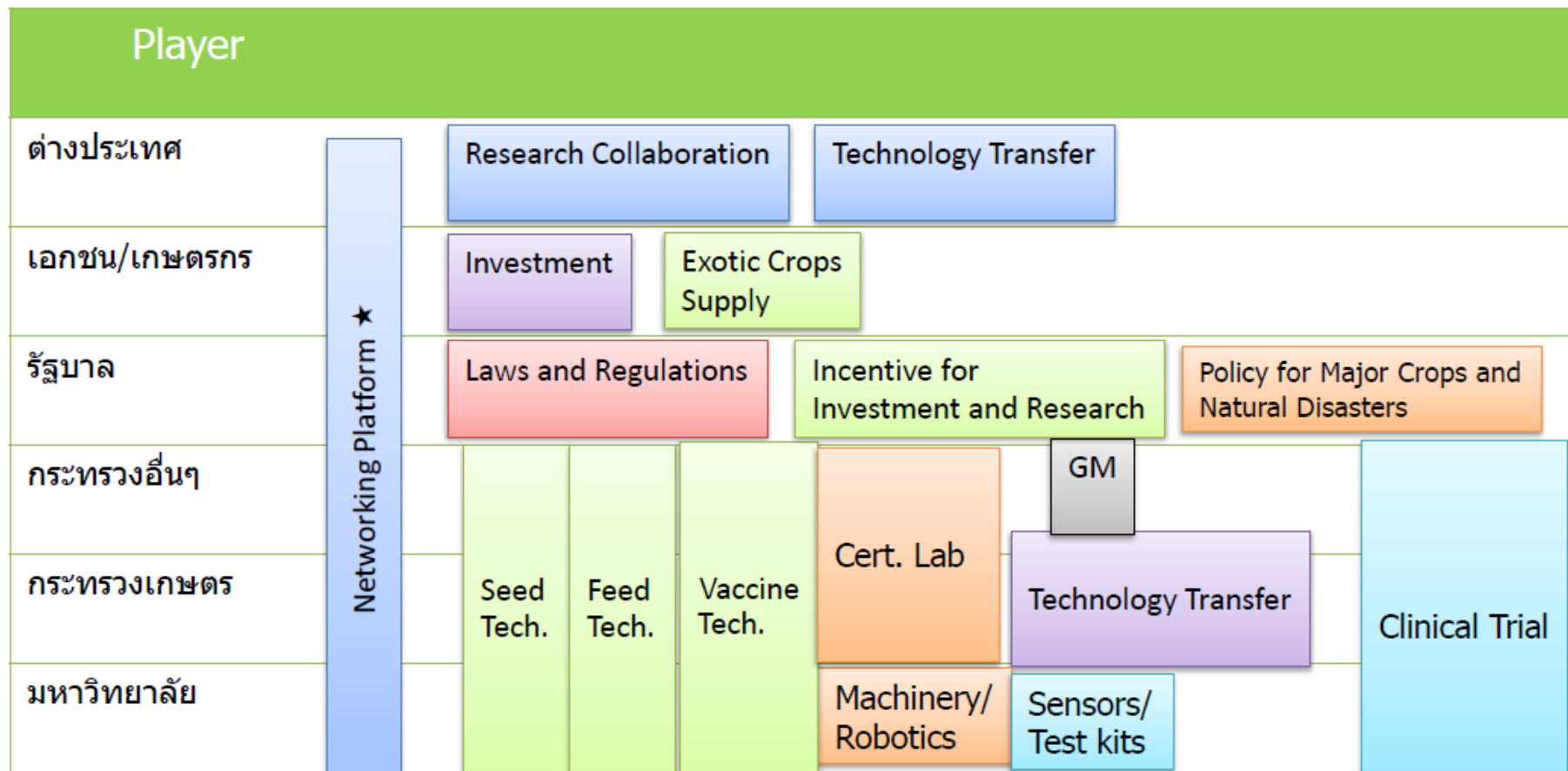
| Technology  | Potential   | Readiness   | Technology Missing Link                                      |
|---|---|---|--|
| Microwave assisted processing                         |    |    | Design of specific parameters                                |
| High pressure processing                              |    |    | Machine building and specific parameters                     |
| Encapsulation and controlled-released for health food |    |    | Design for specific product and scale up run                 |
| Gut-microbiota research for health                    |    |    | Instruments investment and research discipline collaboration |
| Bio-based materials for packaging                     |   |   | Scale up production  |
| Food automation system, machinery and sensor          |  |  | Collaboration of ICT, engineering and food processing        |
| Biomass and bio-refinery for bioprocessing            |  |  | Infrastructure, enzyme technology for specific processes     |

# Smart Agriculture: Premium quality under climate change and aging society



★ เร่งด่วน













## Advanced Agriculture Technology Provider: Seed, feed, vaccine, machinery and other technologies for small holders









★ เร่งด่วน



## Technology Readiness: Agriculture Technology and Bio-technology (1)

| Technology   | Potential   | Readiness   | Technology Missing Link  |
|--|---|---|--|
| Genetic (Plants & Animals) and genomic technologies                                |    |    | การปรับปรุงพันธุ์พืชและสัตว์เศรษฐกิจที่ปรับตัวและให้ผลผลิตได้ดีและมีคุณภาพสูงในเขตร้อน |
| Agricultural precision technologies  |    |    |  |
| Feed and fertilization technologies  |    |    | ปุ๋ยสั่งตัด ชุดวิเคราะห์ดิน โปรแกรมคำนวณสูตรอาหาร                                      |
| Water and irrigation technologies  |    |    |  |
| Housing and environmental control technologies                                     |   |   |  |
| Plant and animal protections, vaccination, insect and disease control technologies |  |  |  |

## Technology Readiness: Agriculture Technology and Bio-technology (1)

| Technology                               | Potential   | Readiness   | Technology Missing Link |
|--|---|---|-------------------------|
| Farm machinery and robotics technologies |  |  |                         |
| Post harvesting technologies             |  |  |                         |
| Agricultural Transportation technologies |  |  |                         |
|  |   |   |                         |
|  |   |   |                         |
|  |   |   |                         |

Examples

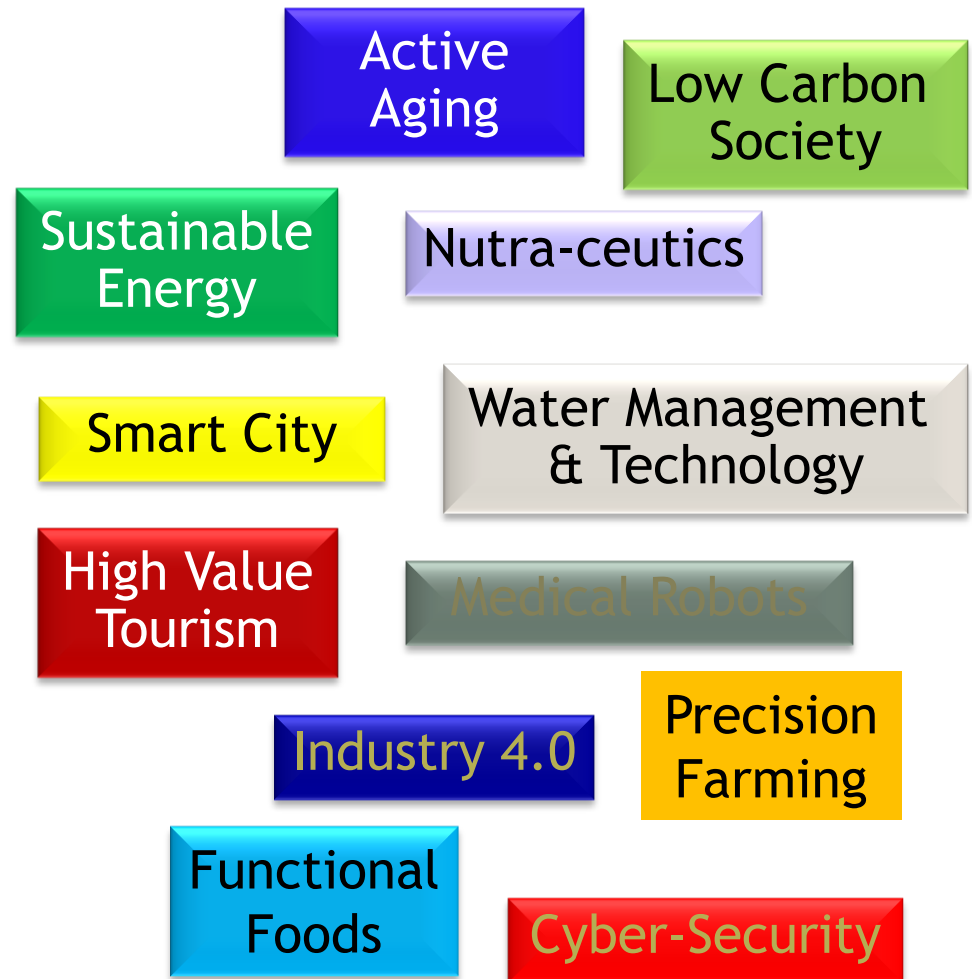
| New Growth Engine   | Private Sector        | Financial Institution | Local Leading University/ Research Institution  | Global Leading University/ Research Institution  | Govt. Support |
|---|-----------------------|-----------------------|---|--|---------------|
| <ul style="list-style-type: none"><li>Food, Agriculture &amp; Bio-tech</li></ul>            | อิสระ, CP, อีรพงศ์    | GSB                   | <ul style="list-style-type: none"><li>- ม.เกษตร</li><li>- ม.สงขลารา</li></ul>                                       | <ul style="list-style-type: none"><li>- Wageningen</li><li>- UC Davis</li><li>- Cornell</li></ul>  |               |
| <ul style="list-style-type: none"><li>Health, Wellness &amp; Bio-Med</li></ul>              | ปณต สหพัฒน            | BBL                   | <ul style="list-style-type: none"><li>- ม.มหิดล</li><li>- ม.เชียงใหม่</li><li>- จุฬาร</li><li>- ม.ขอนแก่น</li></ul> |  |               |
| <ul style="list-style-type: none"><li>Smart Devices, Robotics &amp; Mechatronics</li></ul>  | กานต์ ประเสริฐ        | KTB TMB               | <ul style="list-style-type: none"><li>- พระจอมเกล้า ธนบุรี</li><li>- จุฬาร</li><li>- สรรนารี</li></ul>              |  |               |
| <ul style="list-style-type: none"><li>Digital, IoT &amp; Embedded Technology</li></ul>      | ศุภชัย ศุภจี          | SCB                   | <ul style="list-style-type: none"><li>- พระจอมเกล้าลาดกระบัง</li><li>- จุฬาร</li></ul>                              | <ul style="list-style-type: none"><li>- MIT Media Lab</li><li>- Stanford Startup Garage</li></ul>  |               |
| <ul style="list-style-type: none"><li>Creative, Culture &amp; High Value Services</li></ul> | ฐาปน วีระศักดิ์กันตนา | KBANK                 | <ul style="list-style-type: none"><li>- ม.กรุงเทพ</li><li>- ม.ศิลปากร</li><li>- TCDC</li></ul>                      | <ul style="list-style-type: none"><li>- KOCCA</li><li>- KIDP</li><li>- Stanford D School</li></ul> |               |

# Emerging Priorities for Innovations

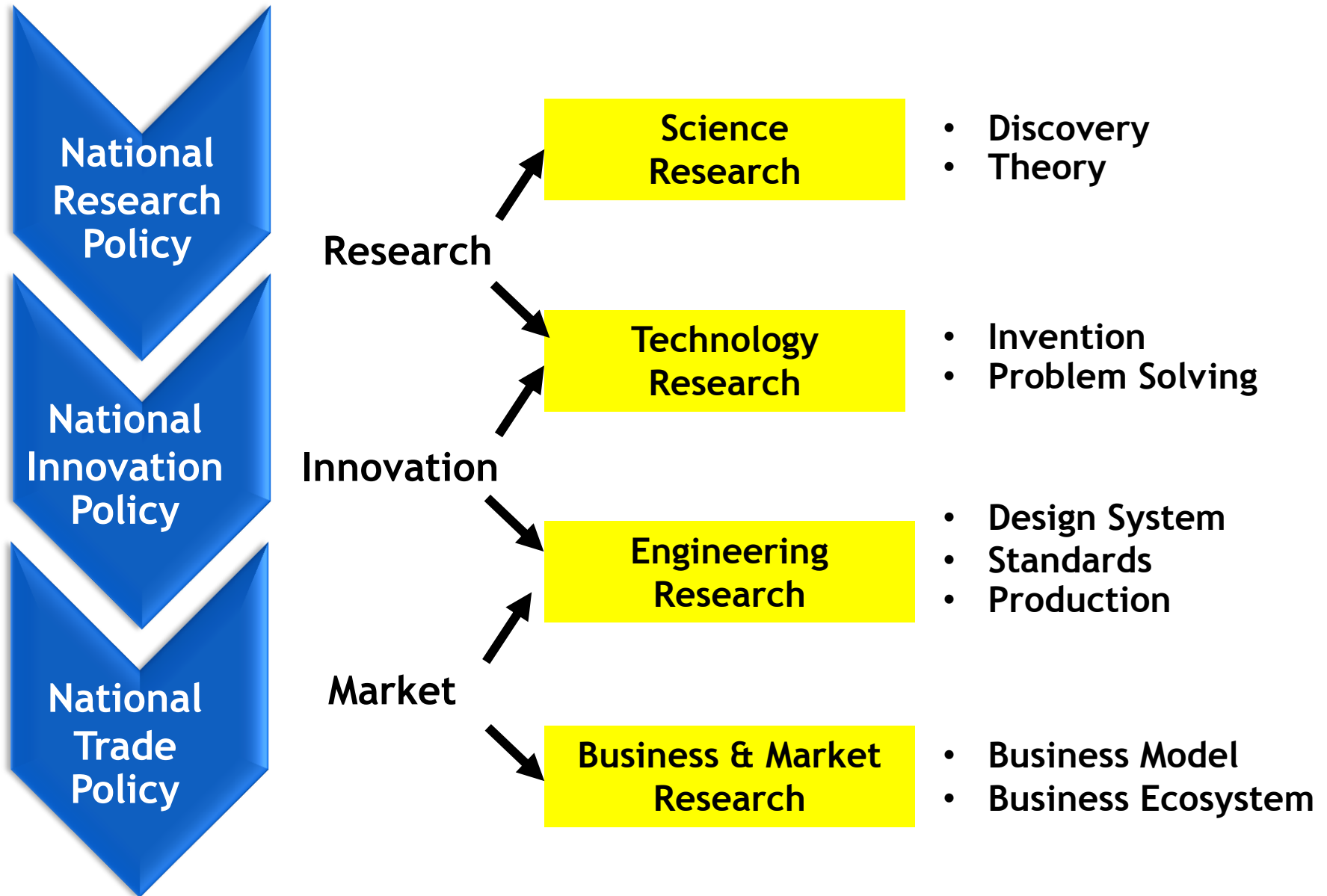
## New Engines of Growth

- Food, Agriculture & Bio-tech
- Health, Wellness & Bio-Med
- Smart Devices, Robotics & Mechatronics
- Digital, IoT & Embedded Technology
- Creative, Culture & High Value Services

## National Agenda/Global Agenda



# The National Wealth Creation Strategy



# Bridging National Competitiveness with Global Connectivity

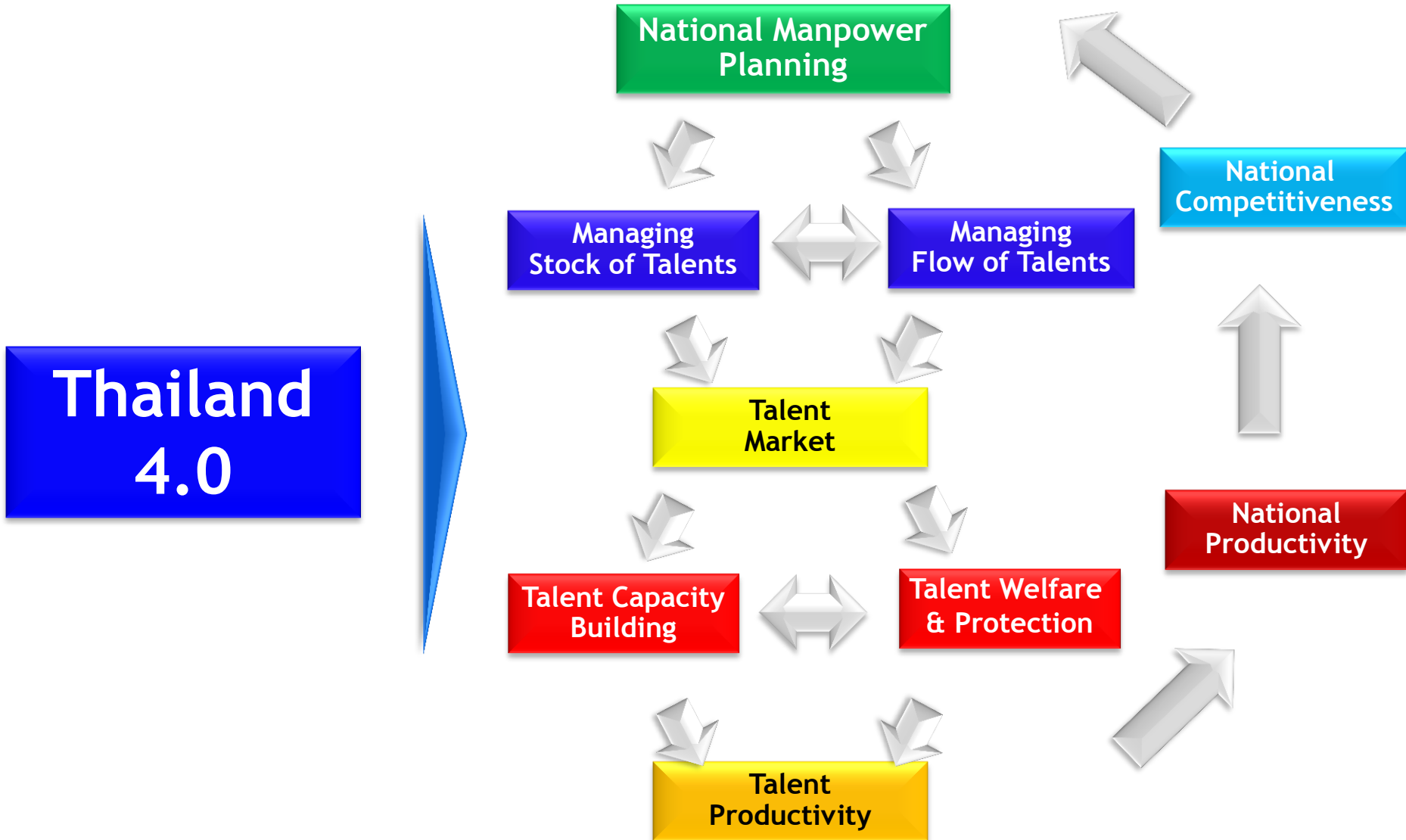


- Smart Farmers
- Smart Enterprises & Startups
- Competitive Talents
- Productive Labor Forces

- 5 Key Technologies
- 5 Targeted Industry Clusters
- Special Economic Zone
- Regional Head Quarter

- Digital Platform
- Logistic Hub

# Thailand 4.0 & National Human Capital Development



# Thailand 4.0 & Learning Society Creation

## Purposeful Learning

- Standardized
- Duty-Driven



- Personalized
- Passion-Driven

## Generative Learning

- Fact-Based
- Passive Learning
- Transmitting



- Idea-Based
- Active Learning
- Mentoring

## Mindful Learning

- Individual Creating
- Competing Incentive



- Common Creating
- Sharing Incentive

## Result-Based Learning

- Theory
- Lecture
- Completion Credit



- Theory in Practice
- Project/Assignment/Workshop
- Achievement Credit



# Thai Citizen 4.0

**Purposeful  
Learning**

**Generative  
Learning**

**Mindful  
Learning**

**Result-Based  
Learning**

- **A Self-directed Learner**
- **An Active Citizen**
- **An Engaged Contributor**
- **A Social Innovator**

# Fundamental Logics of Thailand 4.0

# Thailand 4.0 : Key Attributes

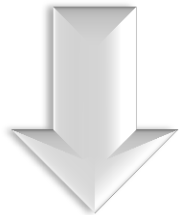
- People-Centric
- Governance-Focused
- Building Common Ground
- Achieving Common Goal

# Thailand 4.0: People-Centric

## Thailand 3.0 “People for Growth”

Investing in  
Human Capacity

Factor of  
Production

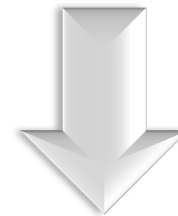


Economic  
Growth

## Thailand 4.0 “Growth for People”

Economic  
Growth

Enabling  
Environment

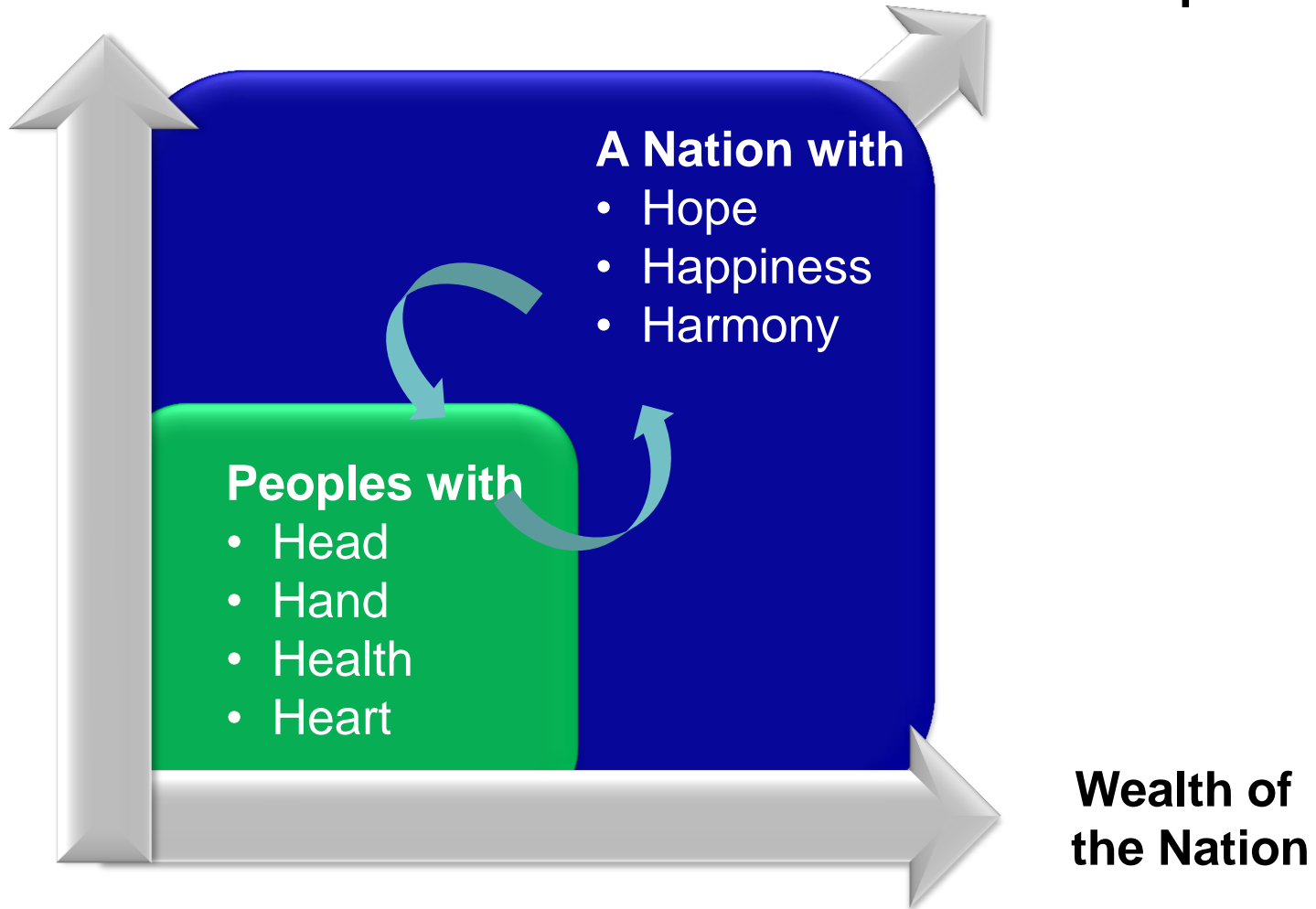


Unleashing  
Human Potential

# Thailand 4.0:

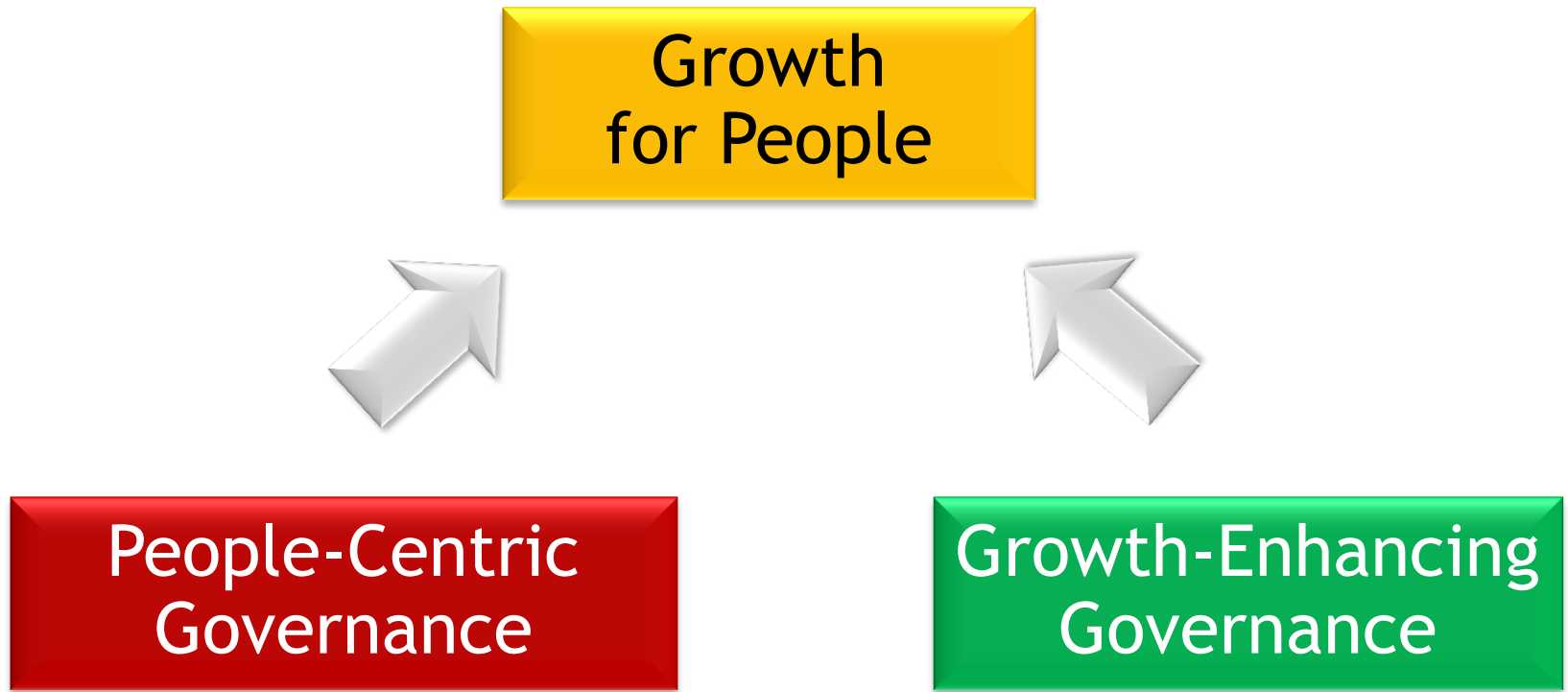
**People  
Well-beings**

**Sustainable  
Development**



**People Well-beings X Wealth of the Nation = Sustainable Development**

# Thailand 4.0: Governance-Focused



# Thailand 4.0: Building Common Ground



# Thailand 4.0: Achieving Common Goal





# Thailand 4.0: Bridging Divides, Thriving Together

