

High Value Added Industry by Aerotropolis Network



Dr. Shintaro Ishijima


Chairperson of Asia Professional Education Network

President of Advanced Institute of Industrial Technology



APEN & ICBM

- ▶ APEN: Asia Professional Education Network
 - ▶ Established June 6th 2011
 - ▶ Members
 - ▶ Board Members: 14 leading universities from 10 ASEAN member states, China, India, Korea and Japan
 - ▶ A Platform for the university-industry-government cooperation
- ▶ ICBM: Industrial Community Building Measures
 - ▶ Industrial Human Resource Development
 - ▶ SMEs' Network Development
 - ▶ Community Finance



High Value Added Industry over Asia-Africa

- Need to focus on high value added industry
 - Medical Industry, Nursing –care Industry, Information Industry, Robotics, Automobile Industry, Aerospace Industry, and so on.
- Need of high speed interaction between industry and market
 - Horizontal integration
 - One-off items manufacturing: 3D Printer
- Industry4.0plus: Global Smart Value Chain
 - industry 4.0+institutional connectivity + high speed distribution
 - CPPS (Cyber Physical Production System) on IoT



Unbundling and global value chain

- Unbundling of a multinational company into functional units
 - R&D Laboratories, Factories, Maintenance center, Sales station, Call Center, Head Quarter, and so on.
- Each unit will be embedded into a global value chain with conventional local companies.
 - Motor assembly factory
 - Local company: metal processing, injection molding, painting, software development and so on
- The unbundled units and conventional local companies will create a Local Industrial Community(Industrial Cluster)



GIN2.0

-Trend of Global Industrial Network-

- Global Industrial Network based on Local Industrial Communities
 - From multinational enterprise model to local industrial community model
 - ICT driven global value chain
 - Business Platform which produces new businesses
- Speed of logistics and Connectivity of industrial communities
 - Backbone logistics: Air transportation
 - Airport city with local industrial communities: Aerotropolis (Dr. John D. Kasarda)
 - Common dealing procedures, secured IoT system, etc.



GIN2.0 in Africa

- GIN2.0 will take various topological figures in each area.
 - Geographic feature
 - Population density
 - Market
- Aerotropolis Network in Africa
 - Huge continent 30,221,532 km²
 - Sparse in population 30.51/km²
 - Big population 1 billion



Location of Industrial community

- Optimal location for the industrial community
 - Conditions: tax system, labor cost, industry accumulation, logistics, infrastructure and so on.
- Industry accumulation: Industrial cluster
 - SEZ: Industrial park, science park and so on
- Accessibility to the professional human resources
 - Professional school system, Vocational school system
- Accessibility to the Market



Examples of high value added business by the speedy logistics

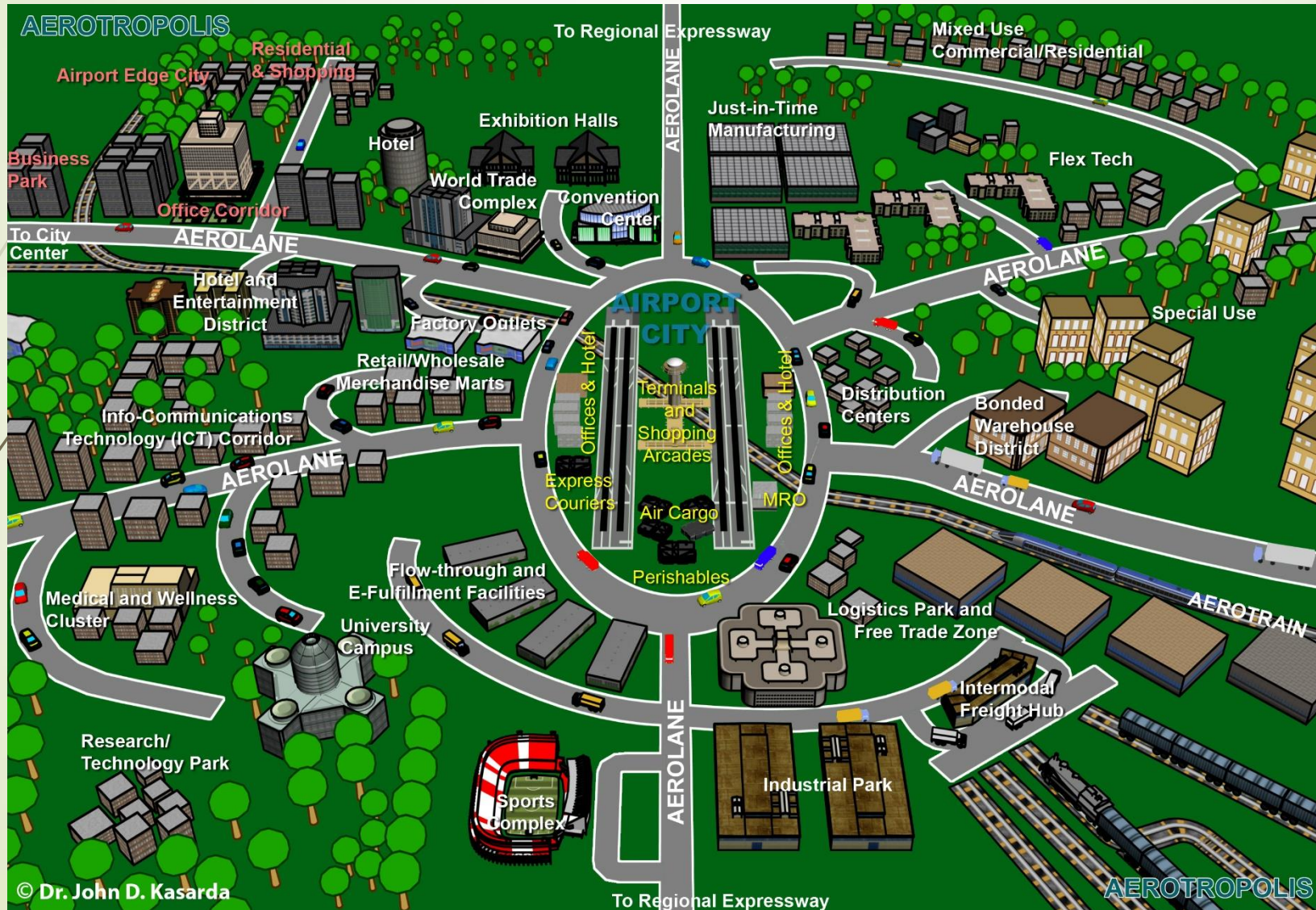
- ▶ Japanese delivery company, “Kuroneko Yamato”
 - ▶ By using air transportation, they can deliver the goods to ASEAN countries from Japan by the next day (within 24 hours).
 - ▶ This commodity delivery system makes it possible to provide Japanese fresh agricultural commodities to ASEAN markets.
- ▶ Market for sea foods in Haneda airport
 - ▶ They convey the processed fishes caught in the morning at Japanese sea to Malaysian Japanese sushi restaurant within 1 day.
- ▶ Idea of flying factories
 - ▶ A factory in the airplane and airport
- ▶ “High value added” does not necessarily mean “High Tech”



Aerotropolis

- ▶ Aerotropolis
 - ▶ A city around the airport with industrial clusters
- ▶ The airport will provide the city with high speed global logistics
- ▶ Mobility of the human resources will be very high among aerotropolises
- ▶ Hub Aerotropolis
 - ▶ Conventional Big Airport: Tokyo International Airport, Soekarno Hatta International Airport, O.R.Tambo International Airport

Image of an Aerotropolis by Dr.J.D.Kasarda



<https://nabilalaras.wordpress.com/2014/10/04/aerotropolis-dan-pengembangan-bandara-kertajati/>



Compact Aerotropolis

- ▶ Compact Aerotropolis
 - ▶ Local Airport cities (97 airports in Japan)
 - ▶ Specially designed aerotropolis for the industrial community
- ▶ Expected facilities of each aerotropolis
 - ▶ MRO & FBO
 - ▶ Airport management
 - ▶ Residence for business people
 - ▶ High value added industry
 - ▶ Human Resource Development



Global Smart Value Chain by the Aerotropolis Network (GSAN)

- ▶ Global Intelligent Value Chain over Asia and Africa
 - ▶ Highly secured IoT
 - ▶ High Speed Logistics by air transportation
- ▶ Horizontal integration of manufacturing and market
- ▶ GIN2.0
 - ▶ Industrial Community Based Global Industrial Network
 - ▶ Conduce to not exploitative but equitable economical prosperity



A Candidate for the Aerotropolis Industry over Asia and Africa

- ▶ One of the biggest research topics of APEN
- ▶ Human resources, first !
- ▶ One Candidate: Air-Industry
 - ▶ Manufacturing
 - ▶ A Motor car : 30,000parts
 - ▶ An airplane: 3,000,000parts
 - ▶ Many kinds of rim parts (high value added products)



Air Service Industry

- ▶ Every airport needs MRO & FBO
- ▶ FBO(Fixed Base Operations)
 - ▶ Every services at airport
 - ▶ Aircraft Fueling Service
 - ▶ Aircraft Flight operations
 - ▶ Aircraft Maintenance operations, ramp services, hangar services, etc.
 - ▶ Many kinds of ground services
- ▶ MRO (Maintenance, Repair, Overhaul)
 - ▶ Technology oriented business
 - ▶ Big business scale (2.5 times of OEM aircraft manufacturing business)




Businesses to establish GSAN

- Infrastructure building for the aerotropolis
 - Airport construction/management
 - Energy, water, road network, waste processing, and so on.
 - Building industrial clusters
 - Study the present status of industries
 - High speed & highly secure information network
 - Building IoT over Africa and Asia Industries
 - Human resource development
- 



Problems to be solved

- Institutional Connectivity
 - Physical connectivity
 - People to People connectivity
 - Standardization for CPS
 - Global airspace management
 - Economic Partnership Agreement
 - New technologies like unmanned air transportation
 - Others
- 



Professional Education System over Asia-Africa

- ▶ Human Resource is the first.
 - ▶ Invite the African Universities to APEN
- ▶ Start the professional education in Africa
 - ▶ Extend the Japanese “Kosen” system to Africa
 - ▶ “Kosen” is a unique professional school providing 5 years consistent professional education from 15 years old.
 - ▶ Systematize the vocational schools
- ▶ Promote the industrial communities around the airports
 - ▶ Aeronautical industry, medical industry, mechanical industry
 - ▶ Service industry including software, games, tourism, etc.



APEN's Contribution

- ▶ Establish standard professional school system over Asia and Africa
 - ▶ JAIF Multiversity Project of APEN
 - ▶ Consultancy to establish a “Kosen type school”
 - ▶ Curriculum development for global MRO engineers
- ▶ Establish Credibility Index for SMEs
 - ▶ JAIF CIS Project
 - ▶ Index to improve the SME, to find the partner, to make finance, etc.
- ▶ Establish SME finance system
 - ▶ Community finance : “Shinkin” bank system
- ▶ Consultancy for the promotion of air industry



Thank you for your attention !

