Singapore JURONG ISLAND

PRESENTATION

Distinguished Guests

29th June 2012

TAN WOOI LEONG

Vice President (Oil & Gas)

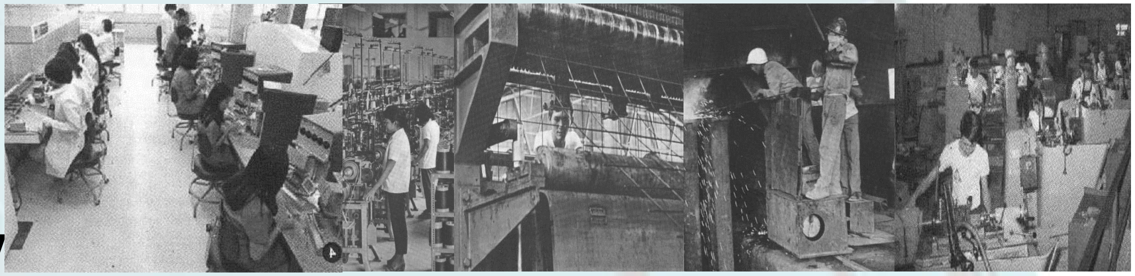
JURONG Consultants

SINGAPORE

Industrial Development Roadmap of Singapore

60s

Labour intensive industry

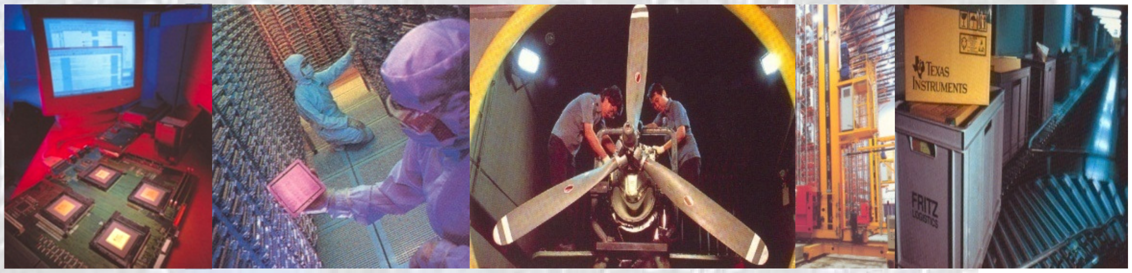


70s

Skill intensive industry

80s

Capital intensive industry



90s

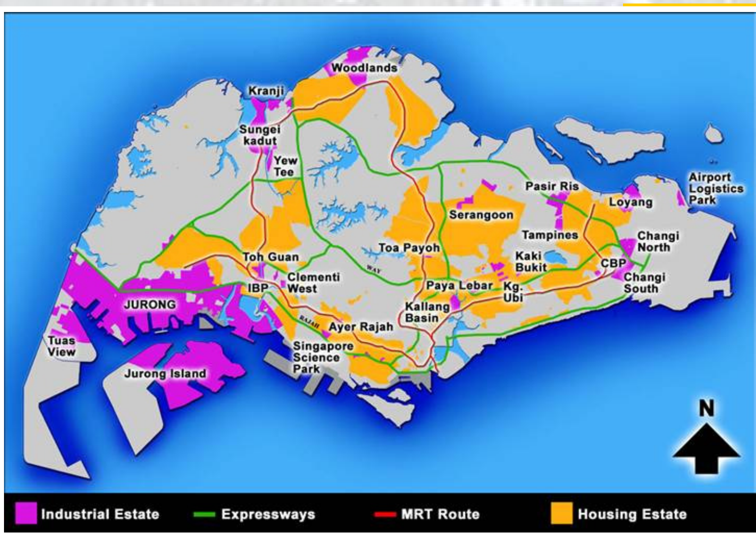
Technology intensive industry

JTC Corporation

• Participate in the national long term industrial development plan

• Plan, develop, market and manage major industrial parks in Singapore.

• Plan and develop related industrial infrastructure and facilities.



Over the last 40 years, it has developed more than

- 45 industrial parks
- 6,600 Ha of land
- 4.5 million sq m of standard factories
- 7, 000 MNCs, and local enterprises


Chinese Garden
Japanese Garden


International
Business Park


Kranji Golf Course


Woodlands Spectrum


UMCi
Wafer Fab Plant


Loyang Marine Base


Airport Logistic Park


Jurong Bird Park


Jurong Industrial Park

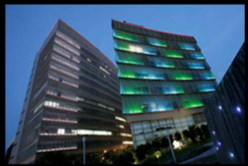

Jurong Marine Base


Tuas View Biomedical
Park

Industrial Estate
Expressways
MRT Route
Housing Estate


Changi Business Park


One-North Multimedia
IT FusionPolis


One-North
Life Sciences
Biopolis


Banyan LogisPark


Jurong Island
Petrochemical Hub


Jurong Port

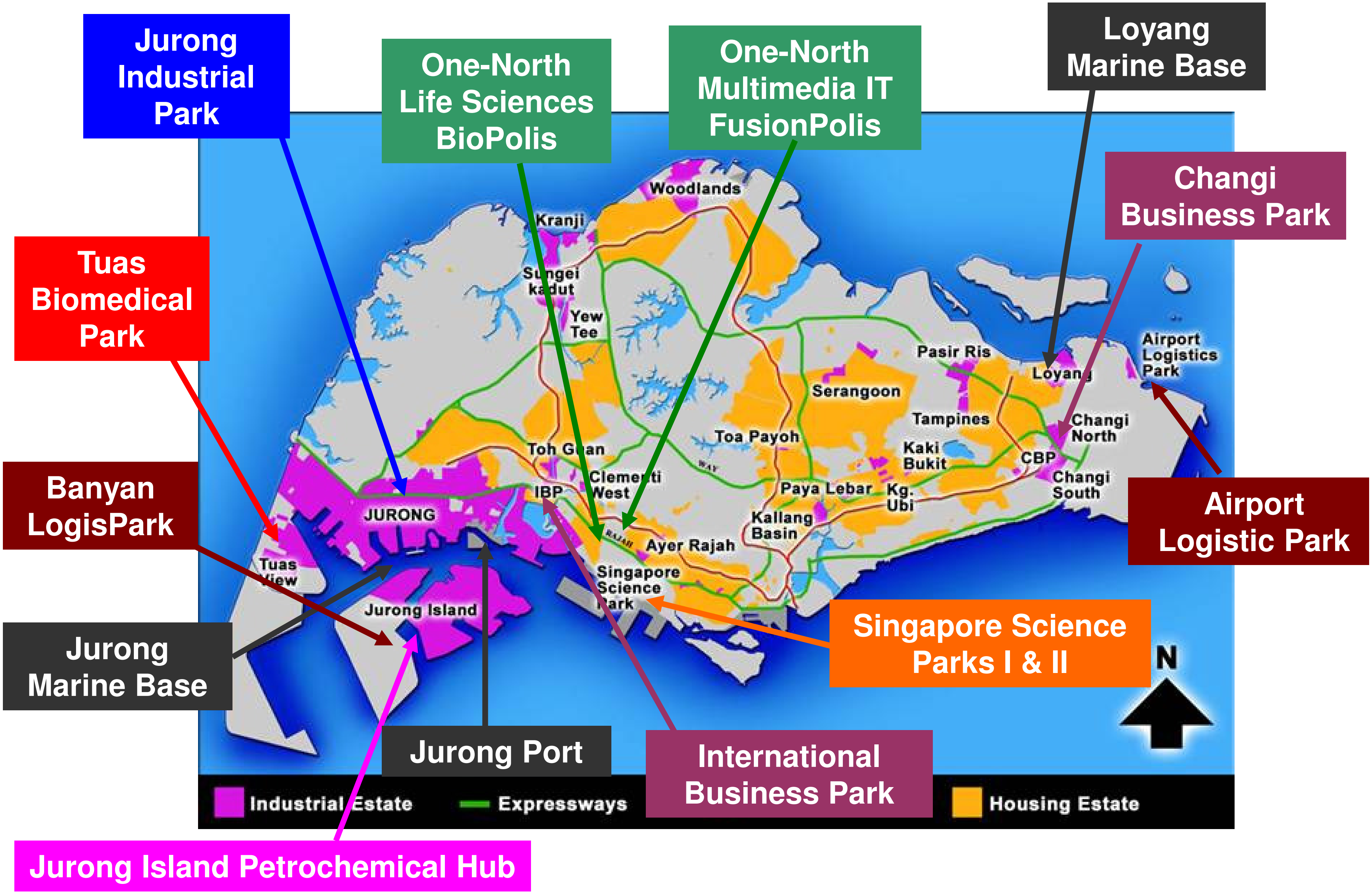

Sentosa Newater
Pipelines


Singapore
Science Parks I & II

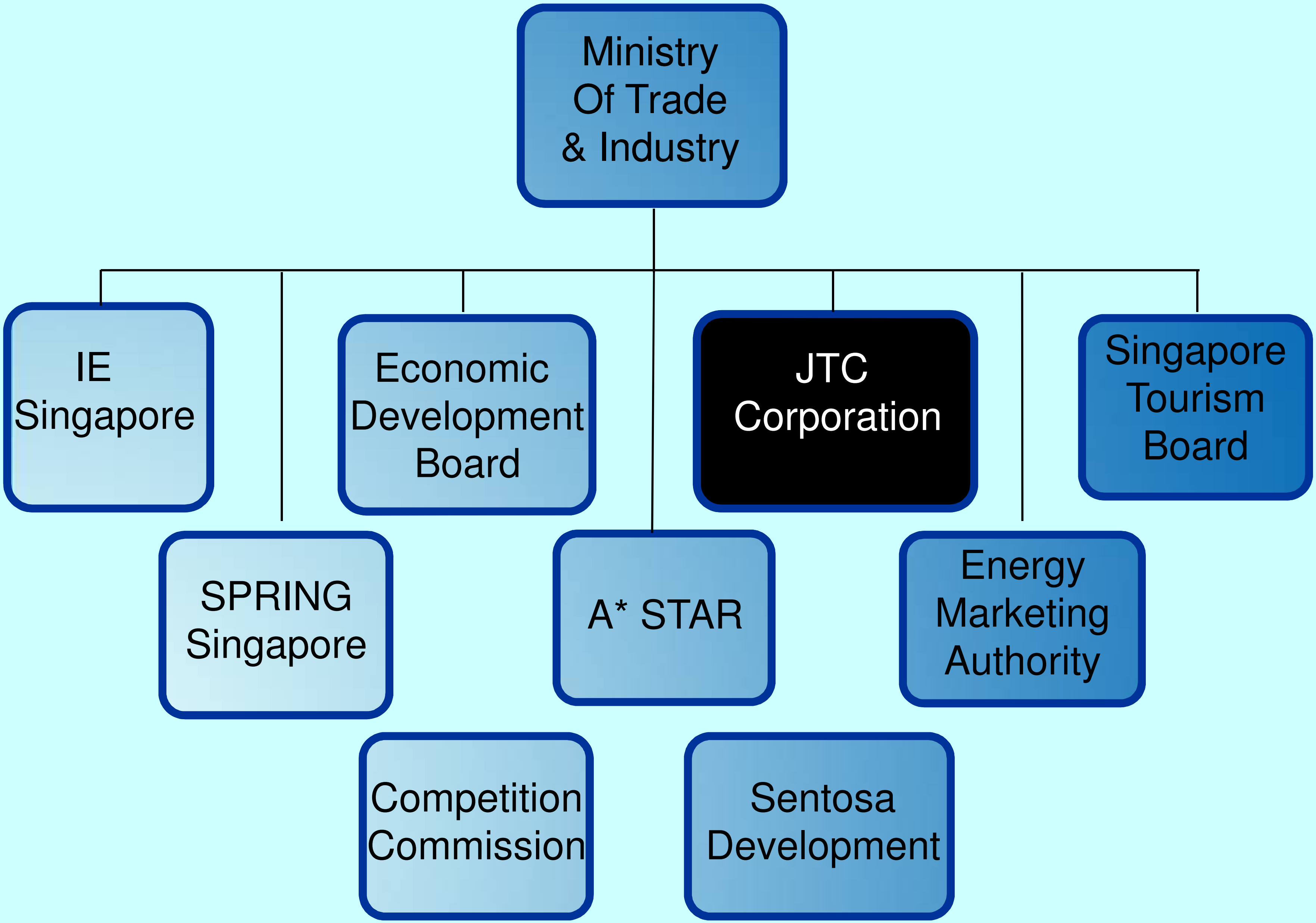

Formula One Pit Blg

JURONG INTERNATIONAL

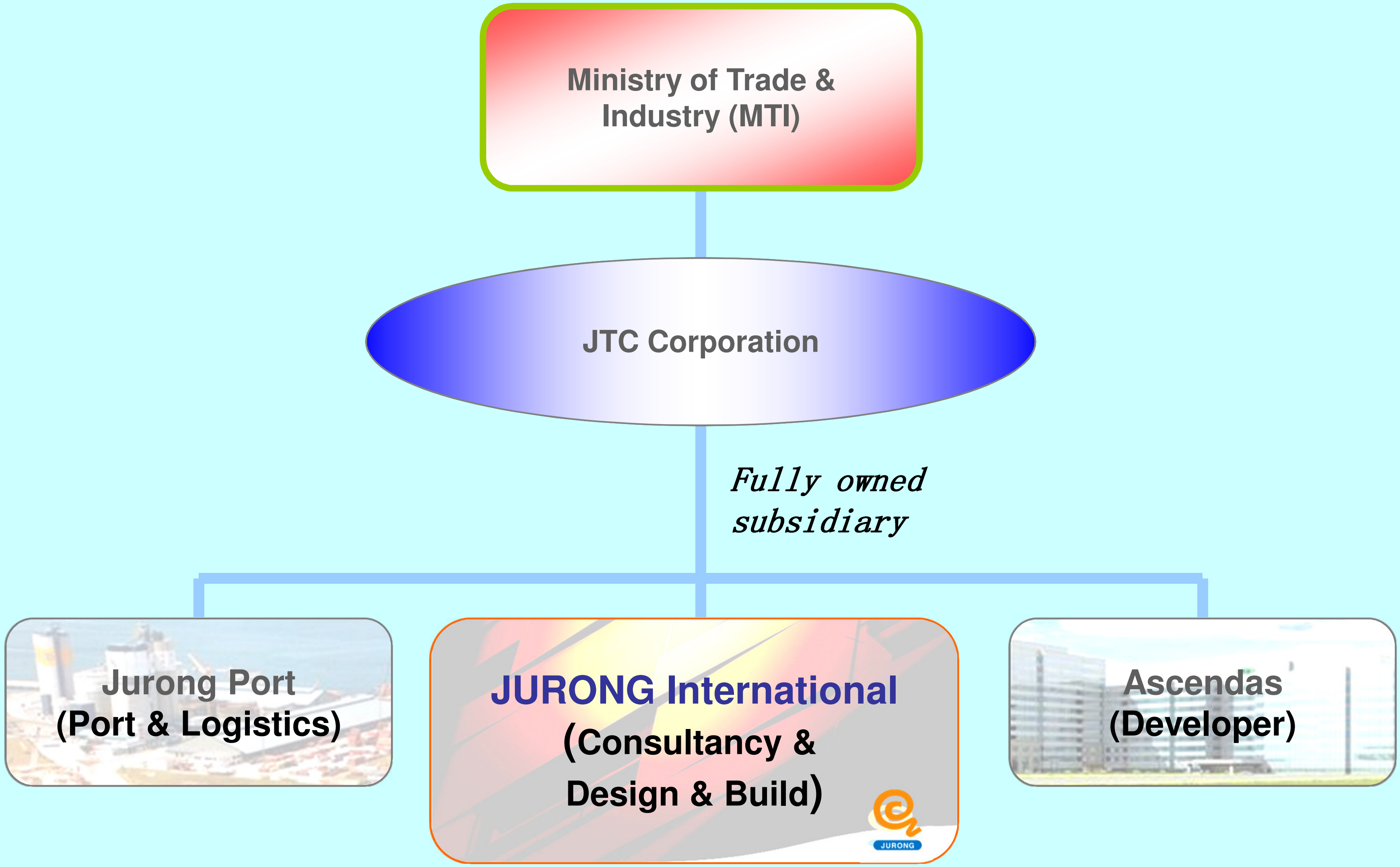
INDUSTRIAL SPECIALISATION & EXPERIENCE



Organisation Structure



Organisation Structure



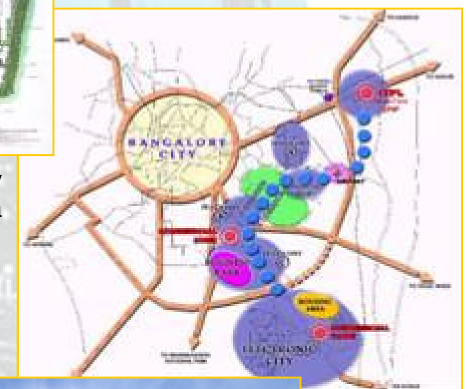
Philosophy

Philosophy

We believe our core values as professionals mirror the values of our customers. We strive to provide our customers with :-

- **Design Excellence**
- **Focus on Results**
- **Passion for Market Leadership**
- **Teamwork**
- **Integrity**

Gurgaon Technology Park, India

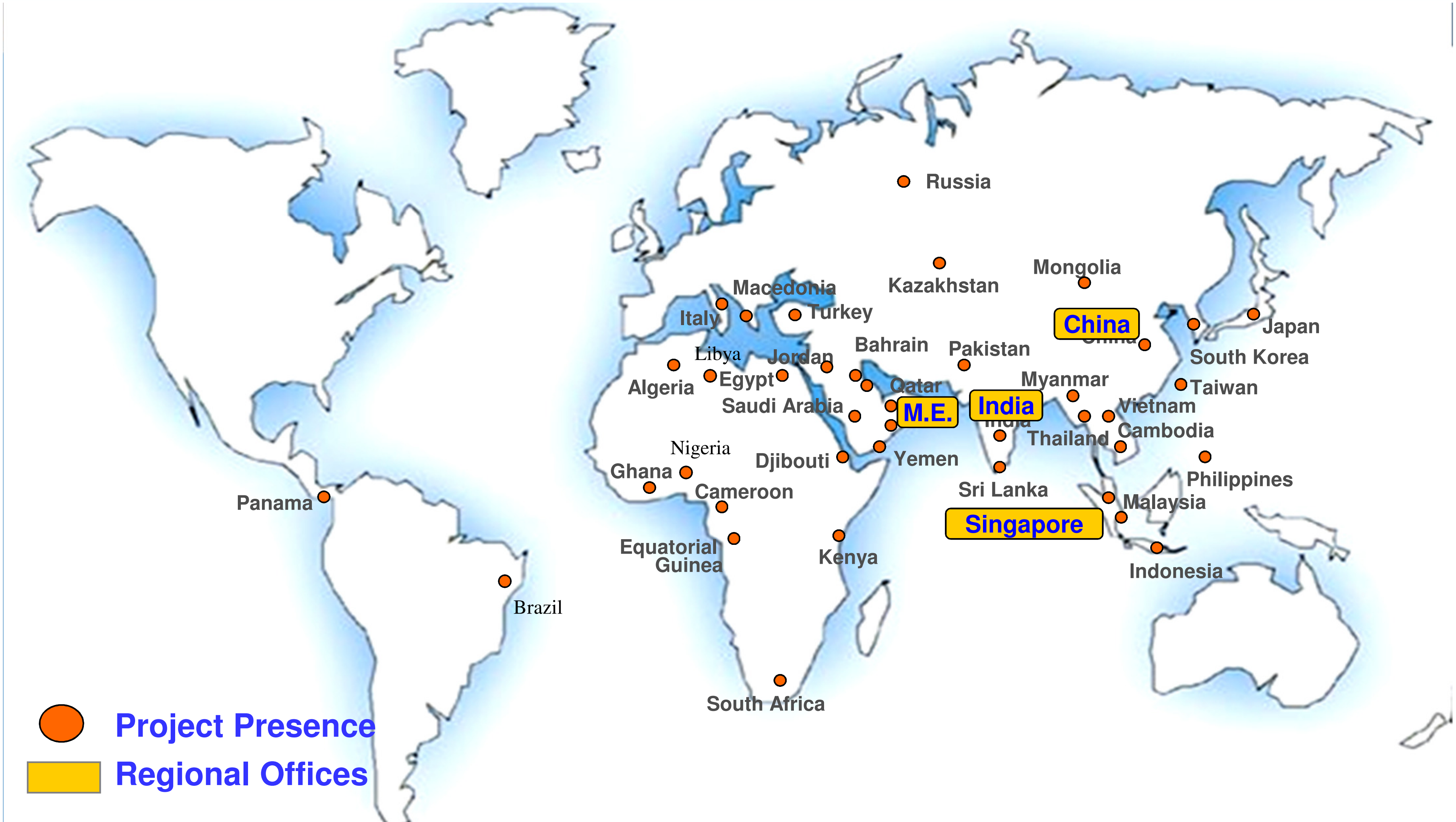


IT Corridor, India

IBM, Singapore

The JTC Summit, Singapore

Our Global Footprint

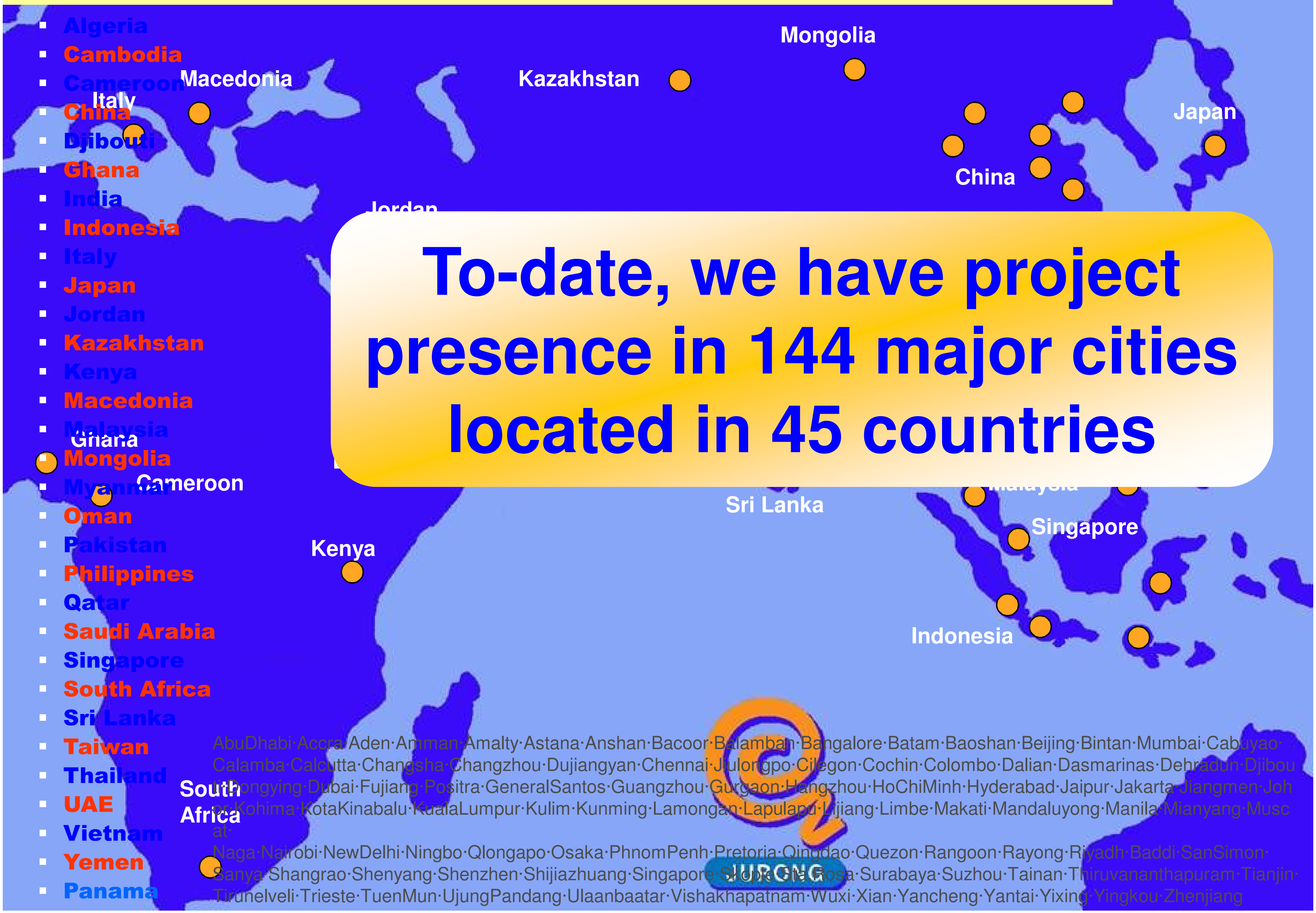


To-date, we have projects in 145 major cities located in 44 countries

OUR PROJECT PRESENCE….

Updated as at 23 Jun 06

- Algeria
- Cambodia
- Cameroon
- China
- Djibouti
- Ghana
- India
- Indonesia
- Italy
- Japan
- Jordan
- Kazakhstan
- Kenya
- Macedonia
- Malaysia
- Mongolia
- Myanmar
- Oman
- Pakistan
- Philippines
- Qatar
- Saudi Arabia
- Singapore
- South Africa
- Sri Lanka
- Taiwan
- Thailand
- UAE
- Vietnam
- Yemen
- Panama



To-date, we have project presence in 144 major cities located in 45 countries

AbuDhabi·Accra·Aden·Amman·Amalty·Astana·Anshan·Bacoor·Balamban·Bangalore·Batam·Baoshan·Beijing·Bintan·Mumbai·Cabuyao·Calamba·Calcutta·Changsha·Changzhou·Dujiangyan·Chennai·Jiulongpo·Cilegon·Cochin·Colombo·Dalian·Dasmarinas·Dehradun·Djibouti·Dongying·Dubai·Fujiang·Positra·GeneralSantos·Guangzhou·Gurgaon·Hangzhou·HoChiMinh·Hyderabad·Jaipur·Jakarta·Jiangmen·Johor·Kohima·KotaKinabalu·KualaLumpur·Kulim·Kunming·Lamongan·Lapulapu·Lijiang·Limbe·Makati·Mandaluyong·Manila·Mianyang·Muscat·Naga·Nairobi·NewDelhi·Ningbo·Qlongapo·Osaka·PhnomPenh·Pretoria·Qingdao·Quezon·Rangoon·Rayong·Riyadh·Baddi·SanSimon·Sanya·Shangrao·Shenyang·Shenzhen·Shijiazhuang·Singapore·Skopje·Sta Rosa·Surabaya·Suzhou·Tainan·Thiruvananthapuram·Tianjin·Tirunelveli·Trieste·TuenMun·UjungPandang·Ulaanbaatar·Vishakhapatnam·Wuxi·Xian·Yancheng·Yantai·Yixing·Yingkou·Zhenjiang

Our Expertise in Oil & Gas & Petrochemical Services

Oil & Gas Capabilities

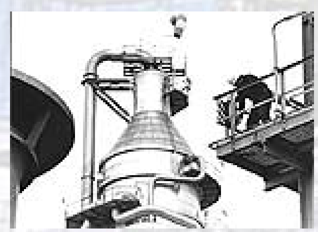
- Master Planning & Positioning Studies
- Physical Development Master Plan
- Feasibility Study/ Strategic Studies
- Conceptual Design
- Cost Estimate
- Front - End Design
- Detailed Engineering
- Preparing of Bidding Documents
  - Contract Negotiation
  - Project Evaluation
- Procurement
- Project Management
  - Project Control
- Construction Services
- Commissioning, Start-up & Training
- Operation

Highlight of Track Records

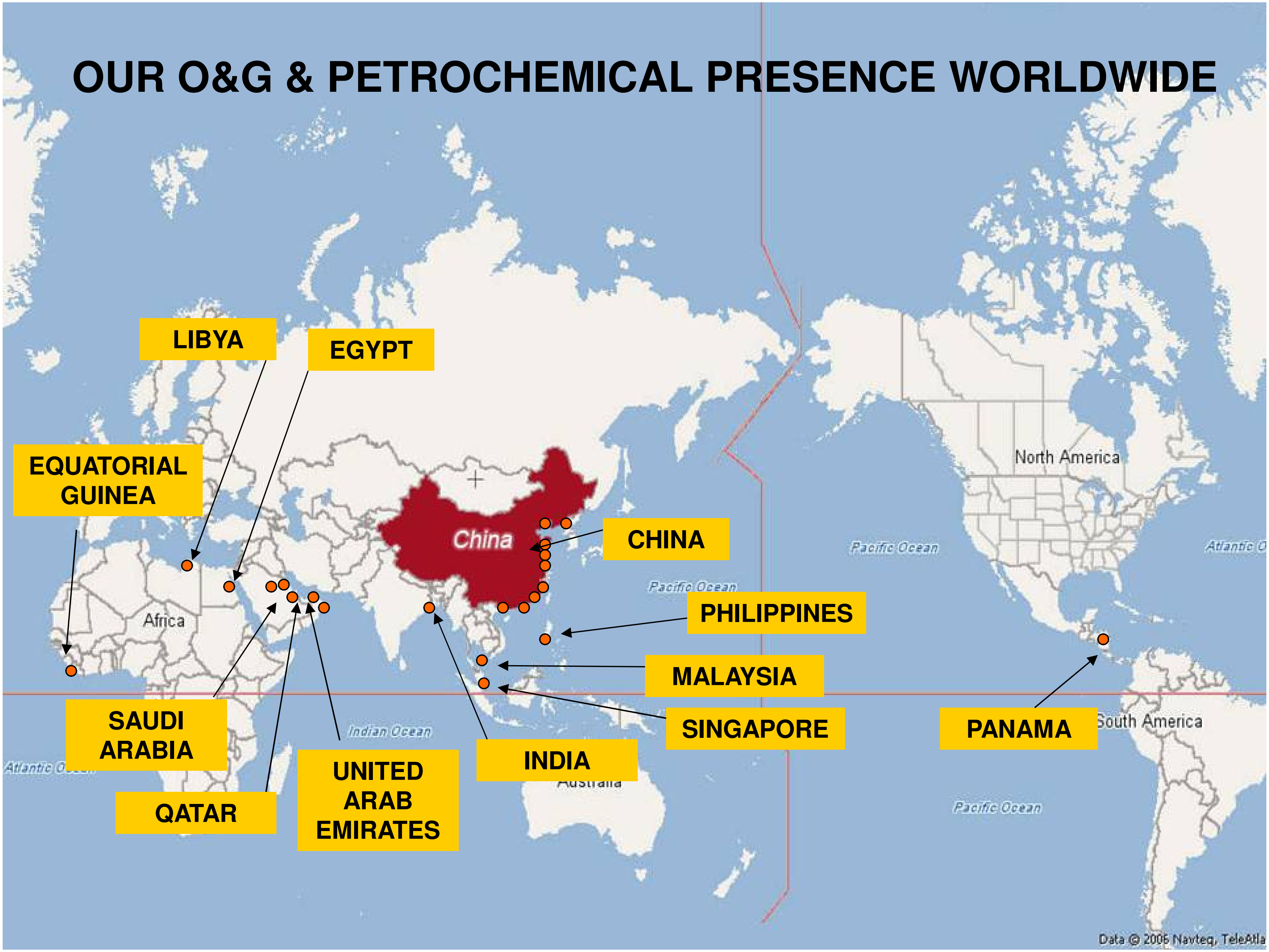



Energy / Oil & Gas / Petrochemical / Port

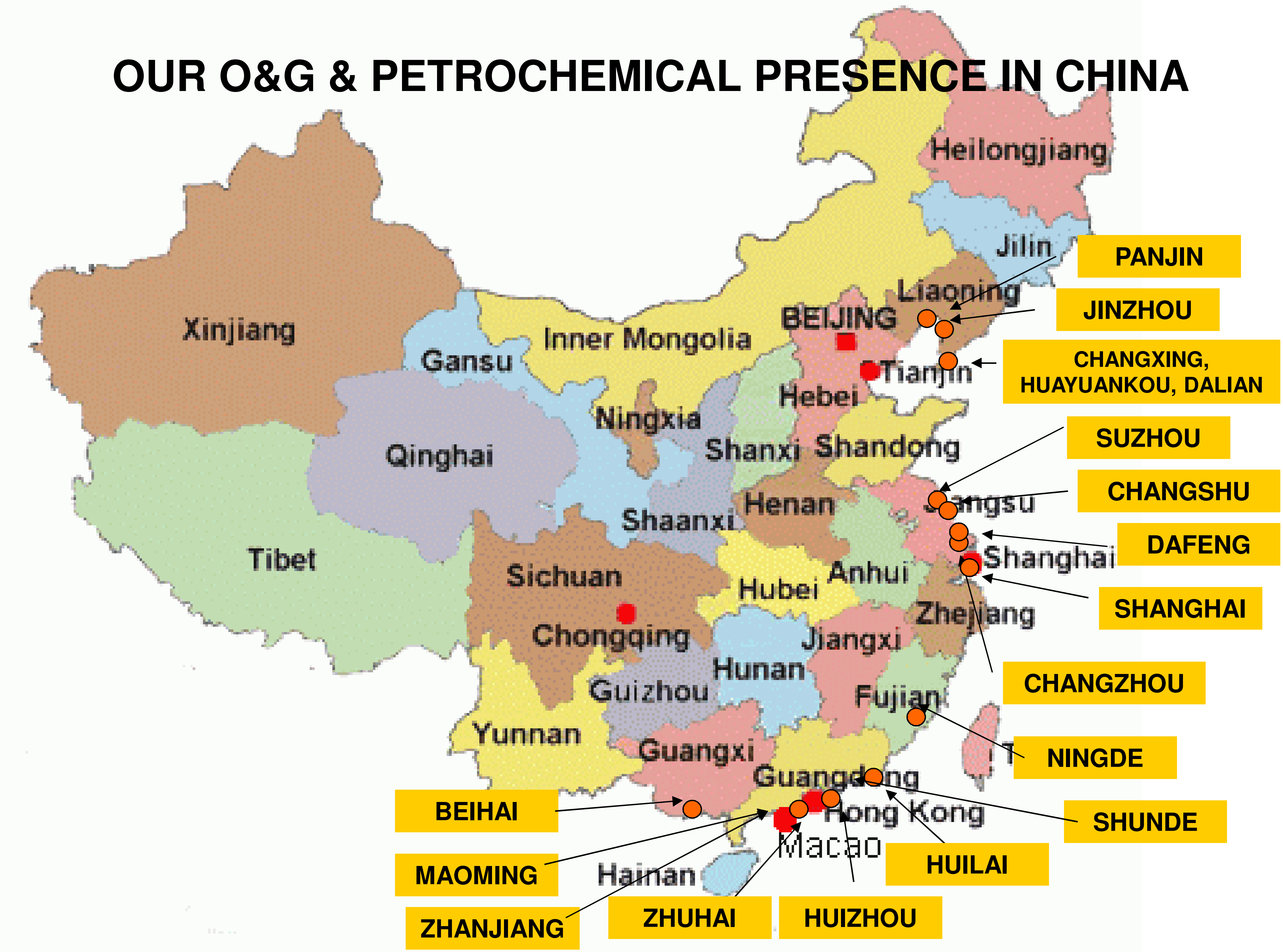





OUR O&G & PETROCHEMICAL PRESENCE WORLDWIDE



OUR O&G & PETROCHEMICAL PRESENCE IN CHINA



FROM
PLANNING
TO
IMPLEMENTATION

World Scale Petrochemical Hub

Chemicals

Oil and Gas
- Among the top 3 oil refining centres in the world
- Among the top 3 oil trading hubs in the world
- Asia's Oil Product Pricing Centre

Petrochemicals
- Among the top 10 petrochemical hubs in the world
- Among the top 5 bulk liquids ports in the world

Specialty Chemicals
- Asia's hub for lubes additives
- World's #1 for marine coatings for ship repair and maintenance
- Home to 8 of world's top 9 flavours and fragrances companies

Marine
- 70% world marketshare for floating production storage offloading (FPSO) platform conversions
- 70% world marketshare for jack-up rigs
- 20% world marketshare for ship repairs

Oilfield Equipment
- Among the top 3 global centres for oil & gas (O&G) equipment manufacturing and servicing
- Asia's #1 by production volumes for 6 of top 10 O&G equipment players

- "Swing" center for oil refineries
- 1961 – Shell 1st refinery started
- 1962 – Maruzen Toyo refinery (Pasir Panjang)
- 1963 – Mobil 1st refinery started
- 1968 – Esso 1st refinery started
- 1969 – SPC 1st refinery started (Amoco, CPC, DBS)
- 1979 – SPC renamed as SRC (BP, Caltex, SPC)
- 1999 – Esso and Mobil merge
- 2000 – Shell and PCS 1st condensate splitter
- 2009 – 1.3 million bpd (3rd largest refining center in the world)

History & Milestones – Petrochemicals

- 1984 – Sumitomo Chemicals, Japanese Govt and Singapore Govt (EDB) formed 1st PCS complex
  - High density polyethylene (Philips Petroleum, Sumitomo, Singapore Govt)
  - The Polyolefin Company (Sumitomo & Singapore Govt.)
  - Acetylene black (Denka & Singapore Govt.)
  - Ethylene Glycols (Shell, Mitsubishi, Sumitomo, others)
- 1990 – Dupont Adipic acid plant
- 1995 – Celanese VAM plant
- 1996 – Sumitomo MMA and Acrylic
- 1997 – Teijin Polycarbonate
- 1997 – Chevron Oronite
- 1999 – Mitsui Chemicals Phenol Plant
- 1997 – Ellba styrene monomer/ propylene oxide (BASF & Shell)
- 1997 - PCS complex II commissioned
- 2002 – Exxon Mobil cracker
- 2005 – Ciba antioxidant plant
- 2006 – Shell Ethylene cracker

Jurong Industrial Park, Singapore

- Total Land Use：

  Jurong Island: 32km²

  Jurong Industrial Park: 45.5km²

- Integrated Industrial Park：

  Refinery, Petrochemical、Port、Ships/Rigs Building, Manufacturing、Logistics、Biomedical Pharmaceutical、Residential, Recreation etc

Jurong Island Petrochemical Hub, Singapore

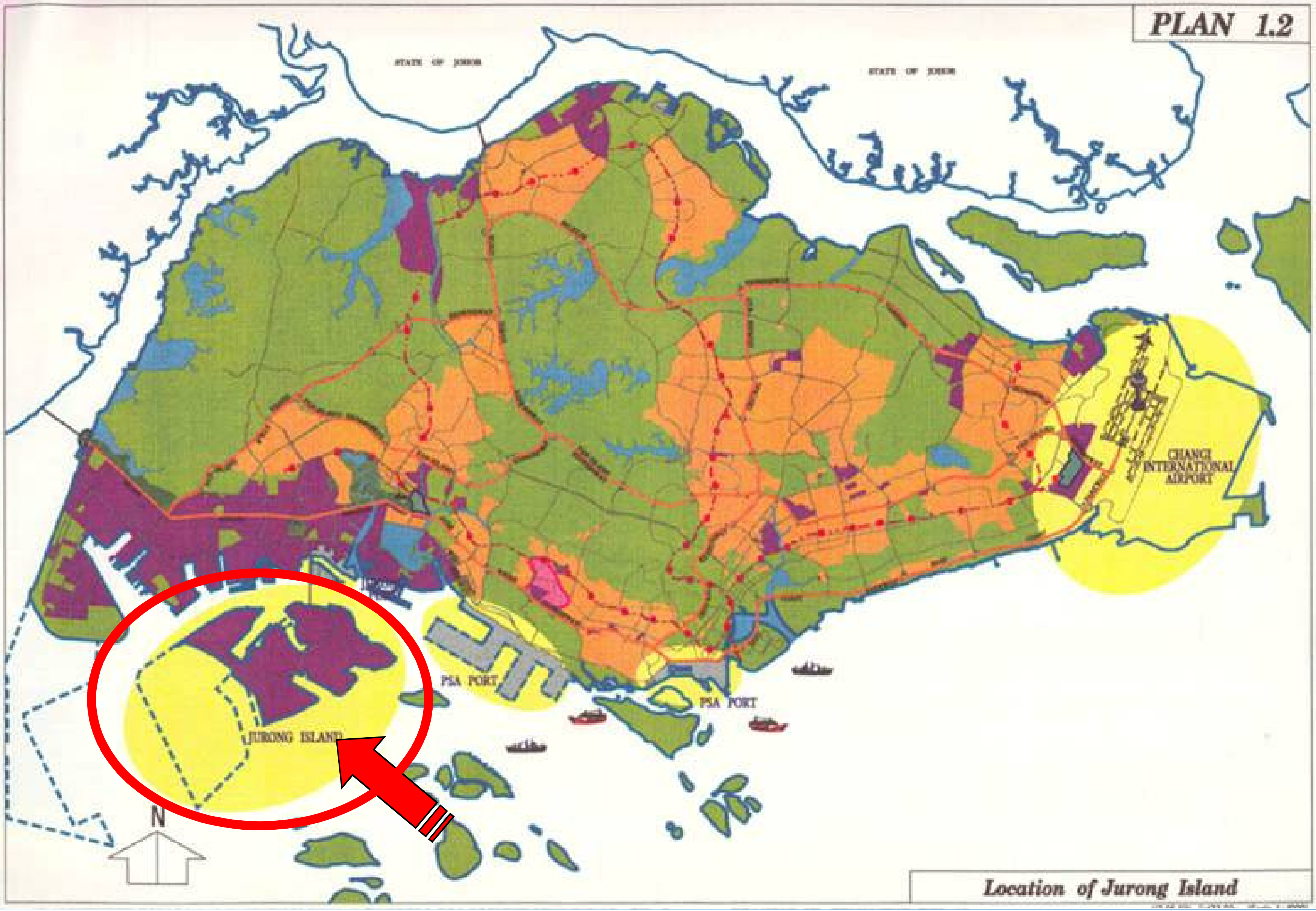
One of the World's Top Petrochemical Hubs

Appointed as government agent for the development of Jurong Island

- Master Planning
- Reclamation
- Infrastructure provision
- Landscaping
- Utilities and amenities provision
- Overall coordinator of all developmental and infrastructure works on Jurong Island
- Facilitator for all potential investors to Jurong Island

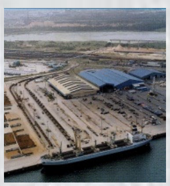
LOCATION OF JURONG ISLAND

PLAN 1.2



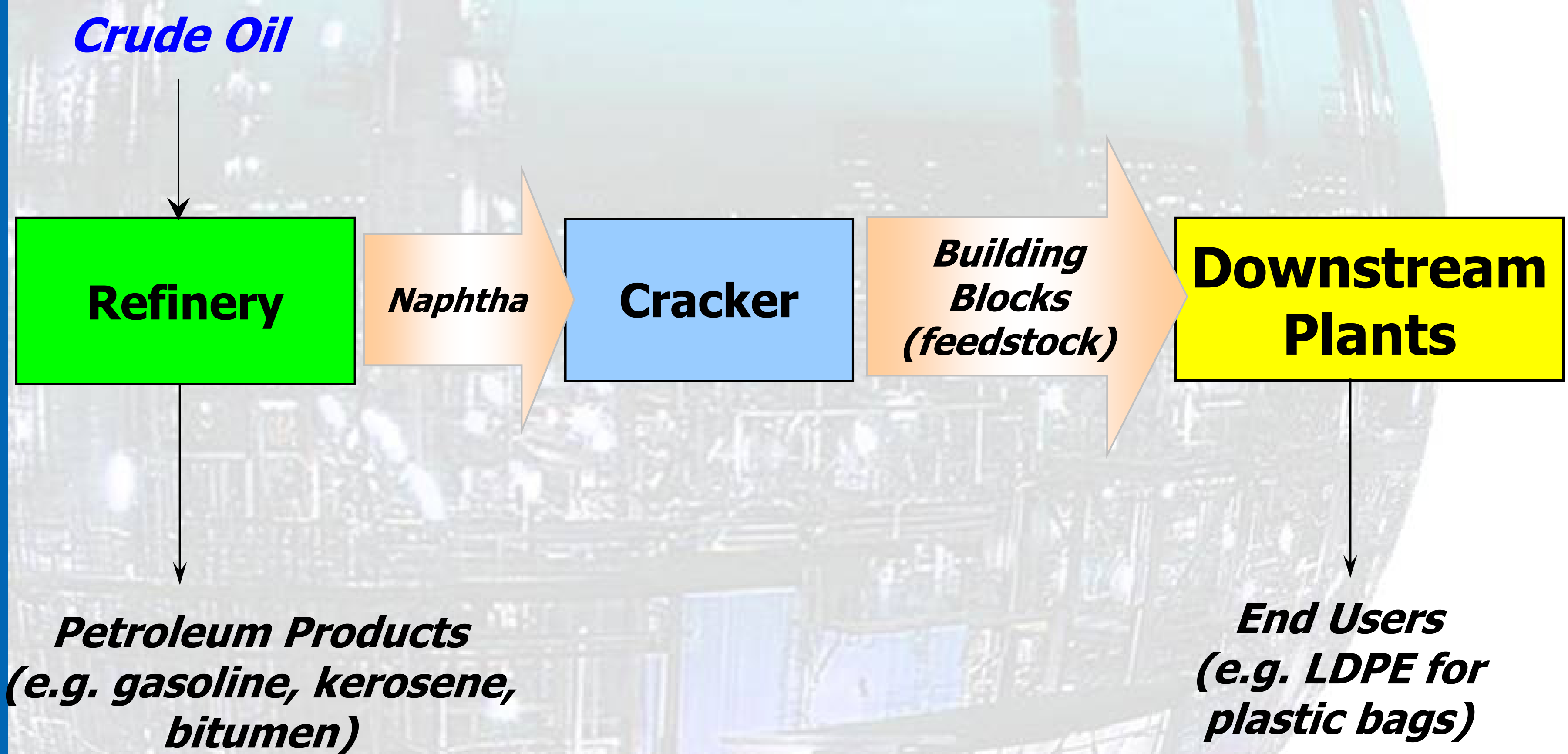
Location of Jurong Island

WHY JURONG ISLAND ? INDUSTRY 21

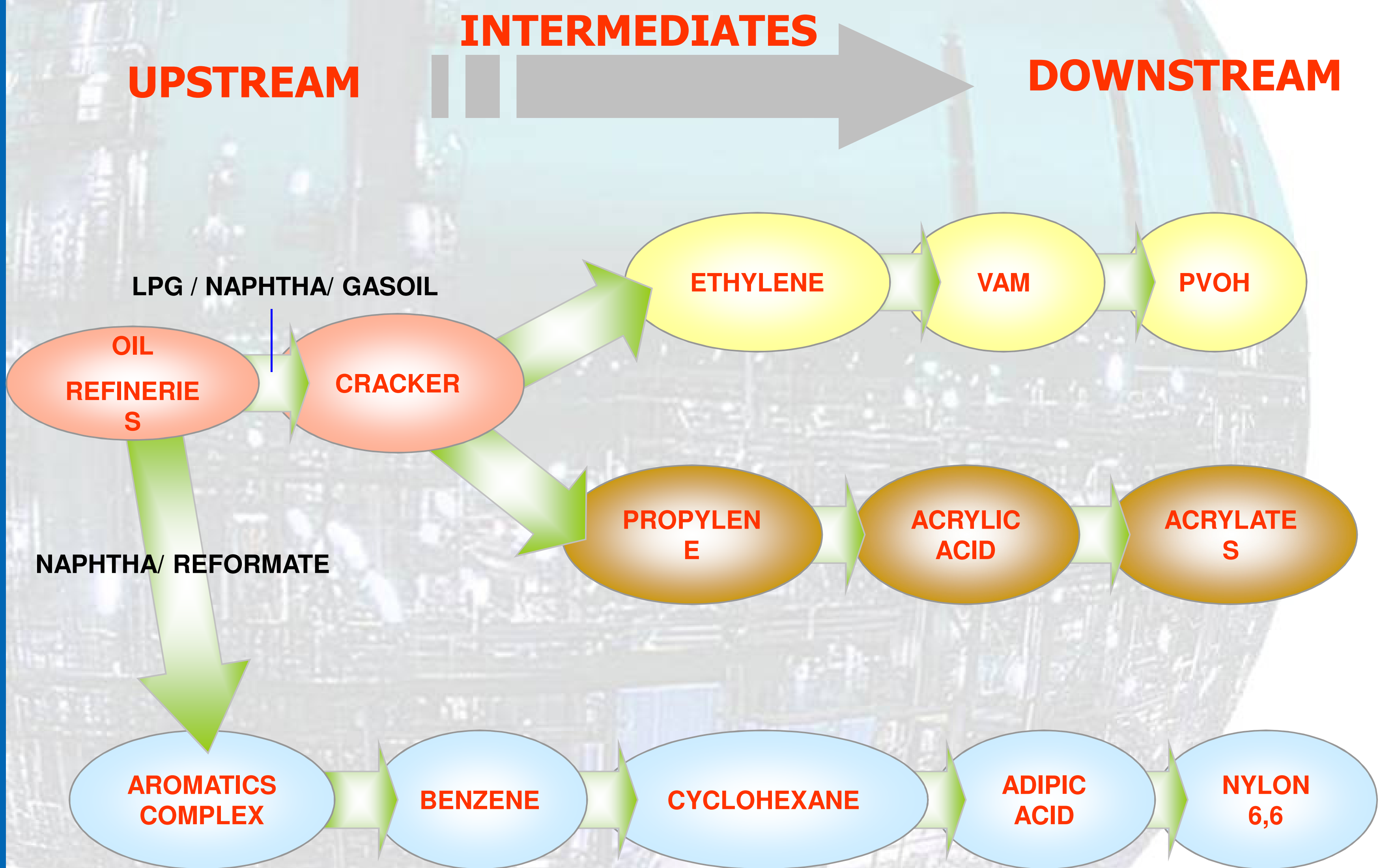


1. World-class hub for the petroleum and petrochemical industry with an output of S$75 billion by Year 2010
2. Industry Integration
3. Develop knowledge-driven manufacturing and exportable services which will constitute 40% of overall manufacturing output

BASIC PETROCHEMICAL CHAIN



DEEP INTEGRATION ACROSS CHEMISTRY CHAINS



PLANNING AND CONCEPT

PLANNING & CONCEPT

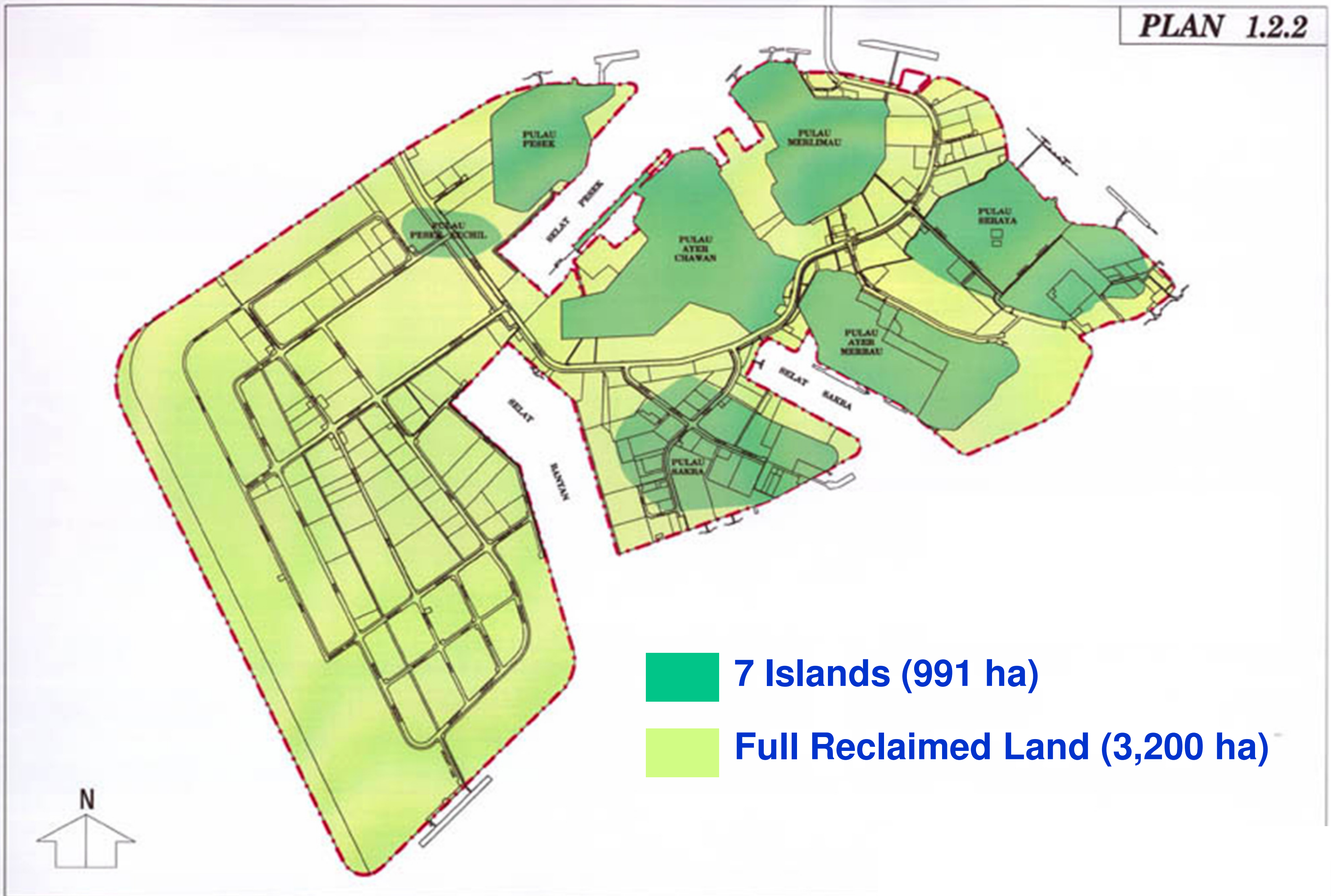
150 companies

5 crackers

30,000 workers

Total estimated investment of USD$25 billions

PLANNING & CONCEPT

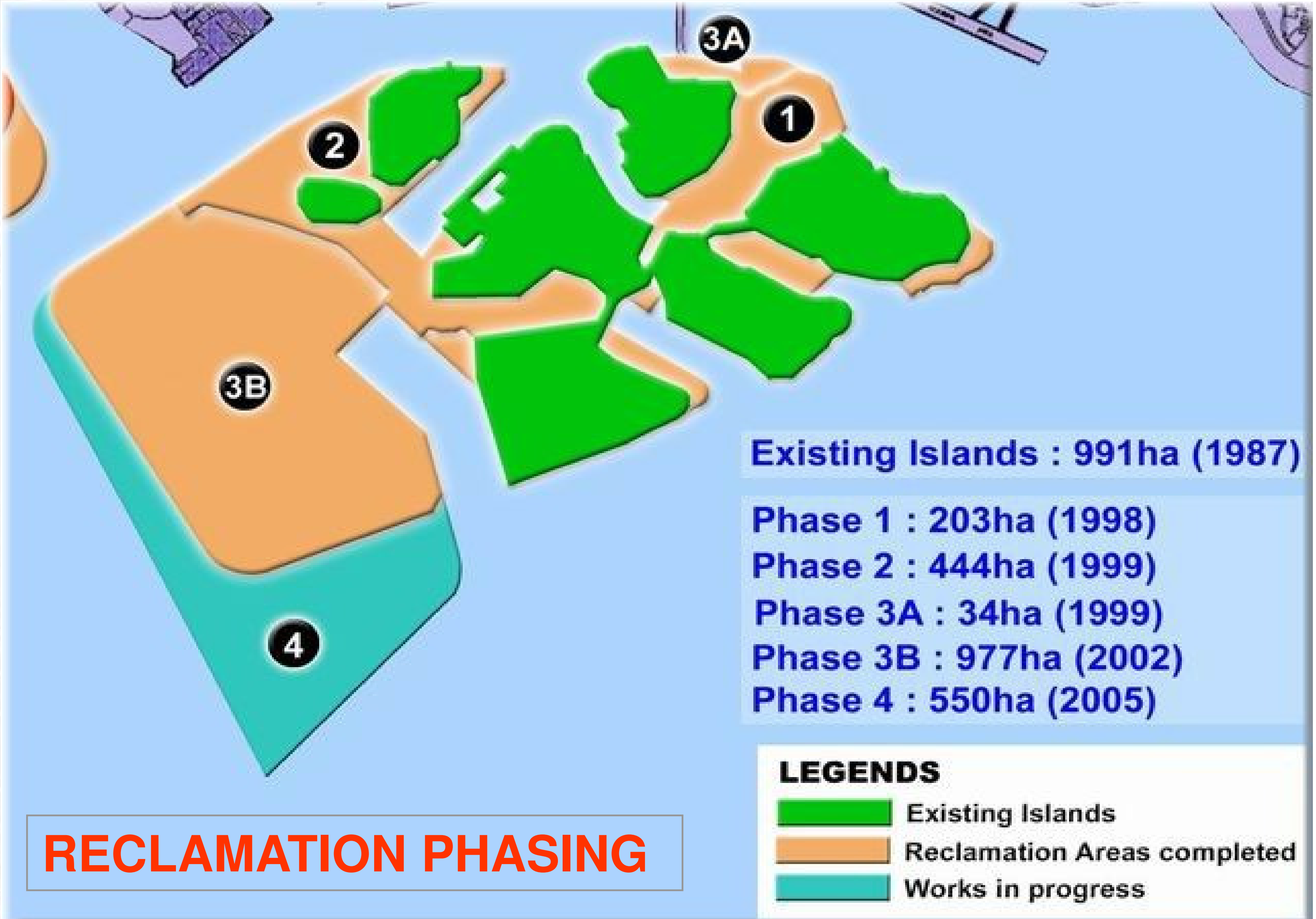


Five Cluster Development:

1. Petroleum / Petrochemical Upstreams
2. Petrochemical Intermediates
3. Performance Materials
4. Specialty Chemical
5. Bio & Consumer Chemical

RECLAMATION WORKS

RECLAMATION WORKS

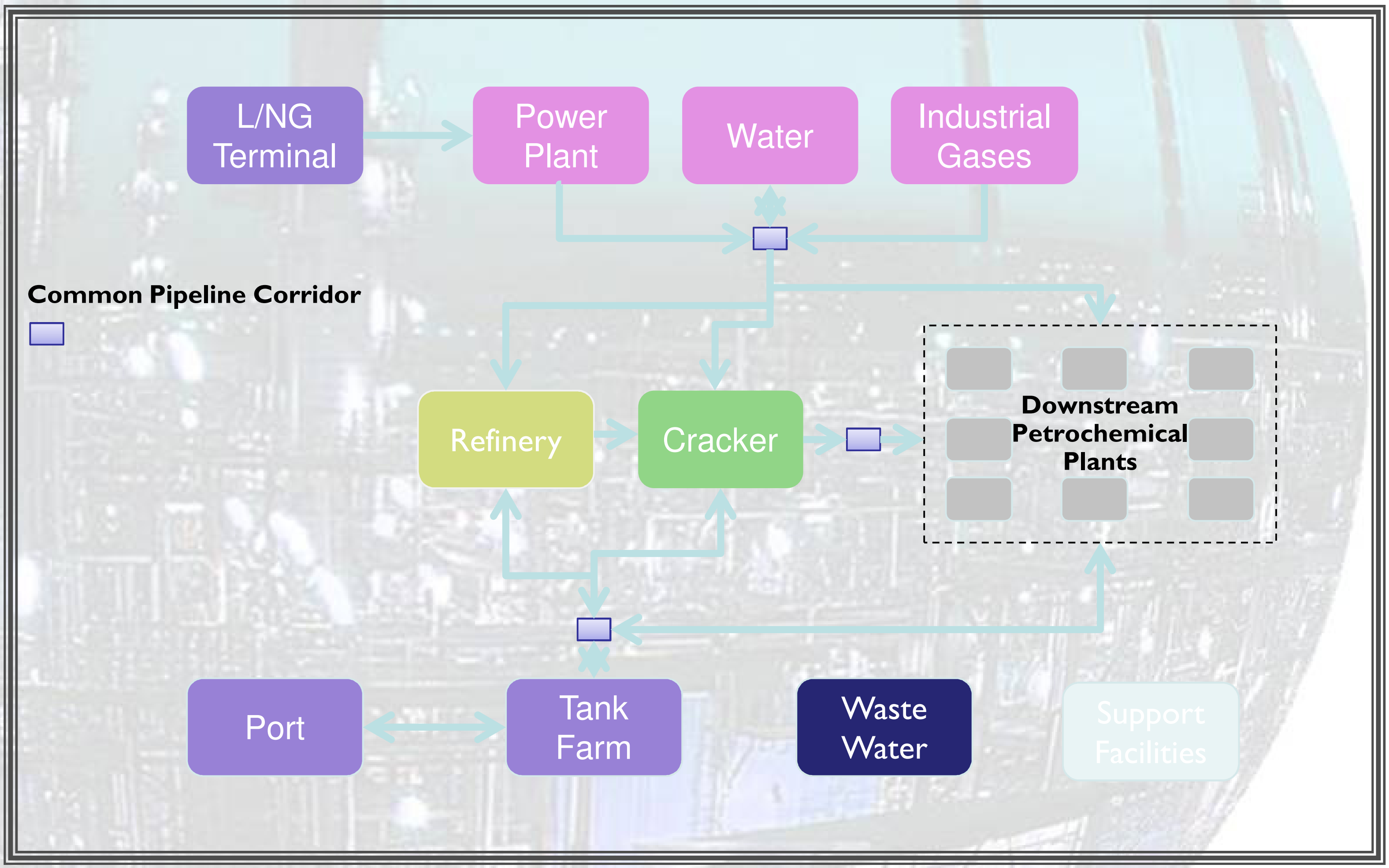


RECLAMATION WORKS

- **Four reclamation projects > USD$ 4.20 billion**
- **Total area of 3,500 ha to be reclaimed**

INFRASTRUCTURE INTEGRATION

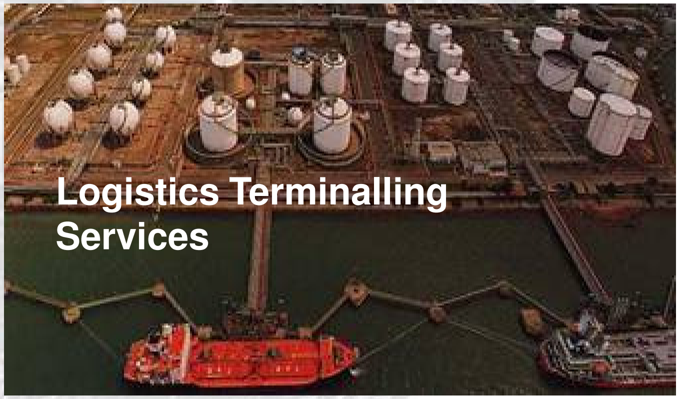
Integrated Oil/ Petrochemical/ Energy Park



INFRASTRUCTURE INTEGRATION

World Class Infrastructure

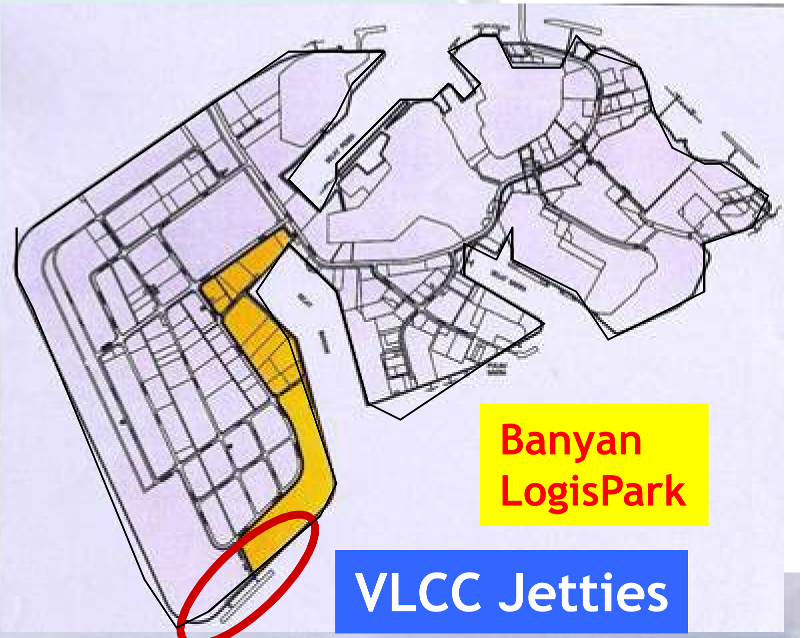
- Common Pipelines and Linkages
- Shared services - supporting industries like utilities, terminalling, tankages, maintenance centres, pipelines
- Comprehensive supporting services and infrastructure



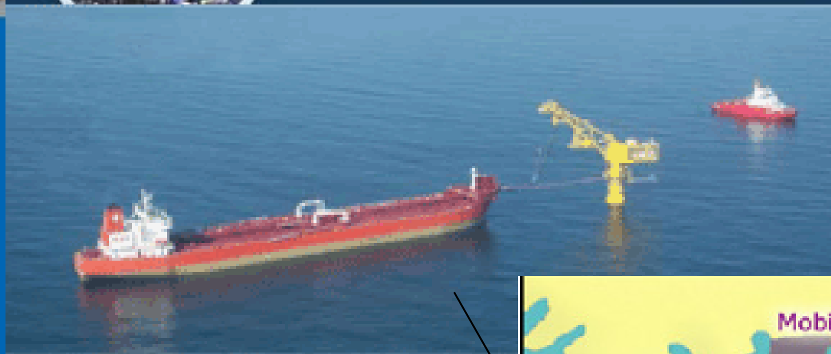
INFRASTRUCTURE INTEGRATION

Banyan LogisPark

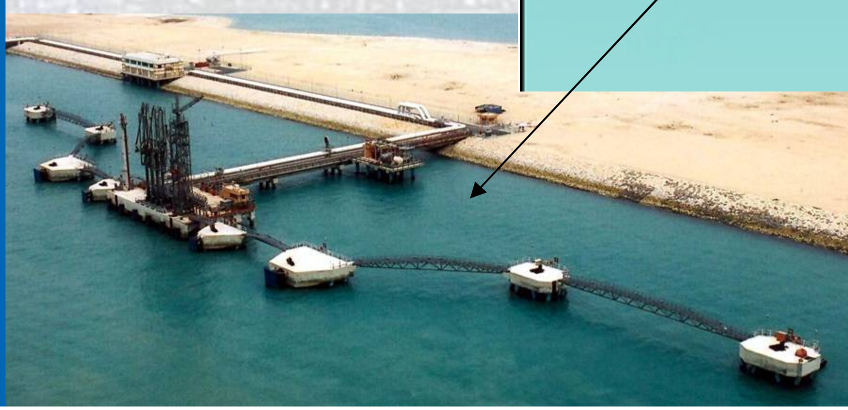
Area : 80 ha of land
Features : Berths & Jetties



INFRASTRUCTURE INTEGRATION



SPMs for Refineries (SRC & Exxon Mobil)



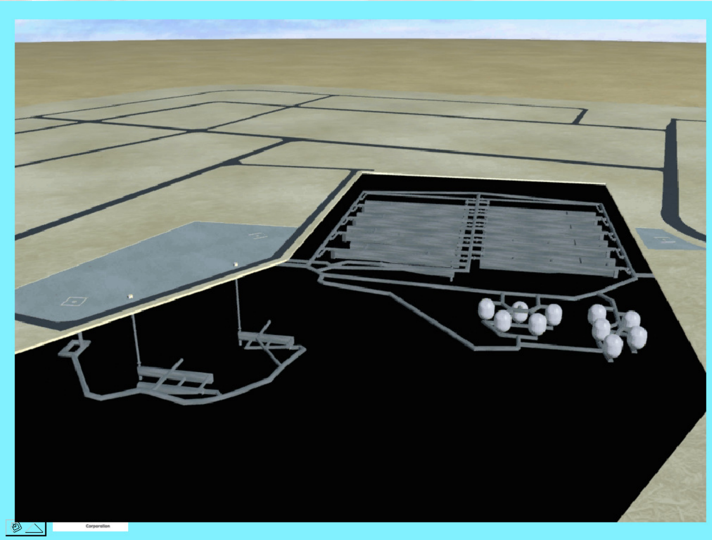
Conversion to VLCCs for Refineries (SRC & Exxon Mobil)

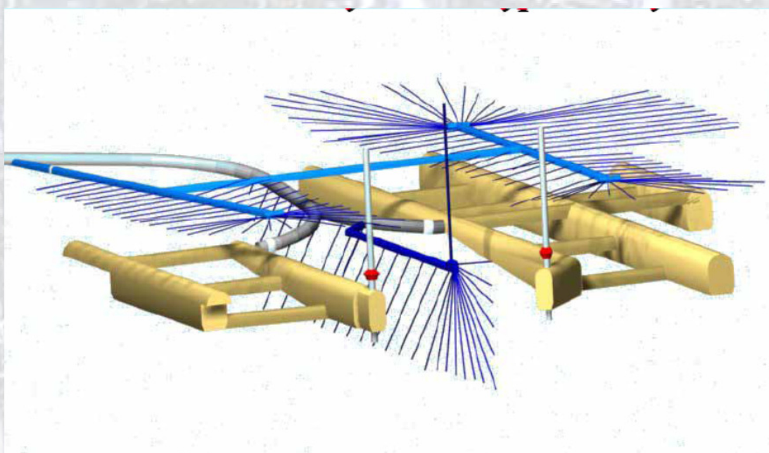
INFRASTRUCTURE INTEGRATION

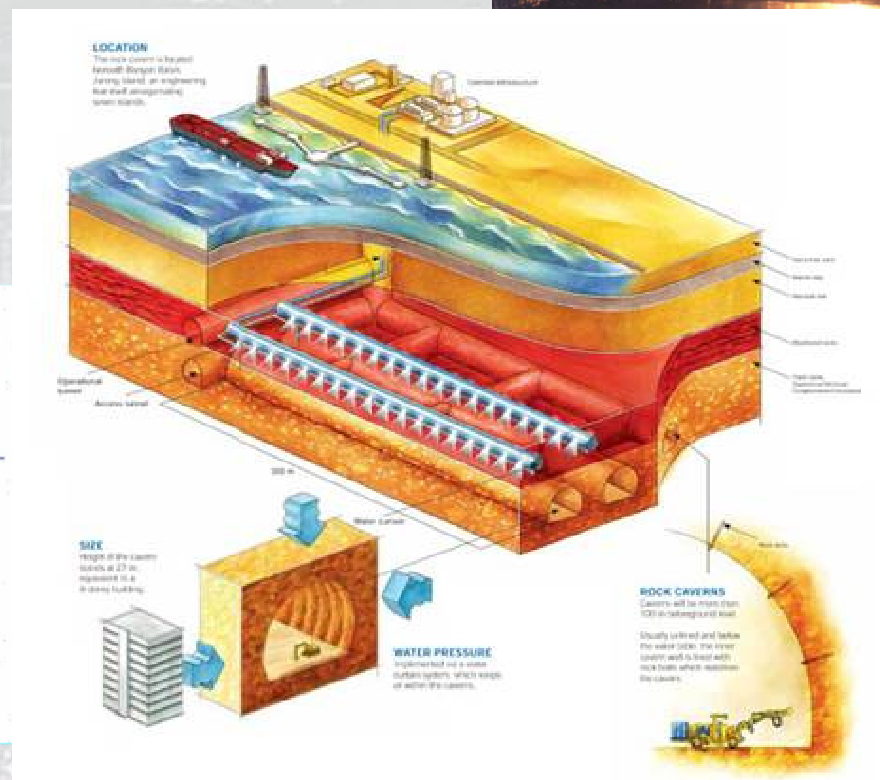
VLCC Jetties for tankers of
Loading: 80k to 320k DWT
Length: 190 to 355 metres

Alternative Oil & Gas Storage Facilities

Underground Hydrocarbon Storage Caverns in Jurong island







AMENITIES INTEGRATION

Manpower Development

Security

Safety

R&D

It’s not just business…

Amenity Facilities

Cactus Garden

Amenity Centre

Dragon Boat Race

ACHIEVEMENTS

UPSTREAM

REFINERY

SRC

Shell

ExxonMobil

CRACKER

PCS

ExxonMobil

INTERMEDIATES & DOWNSTREAM

Chevron

Celanese Singapore Pte. Ltd.

SUMITOMO CHEMICAL SINGAPORE PTE LTD

DuPont Singapore

EASTMAN

DENKA

Croda

TEIJIN GROUP

POVAL ASIA

SERAYA CHEMICALS

LONZA Polymers and Additives

MITSUI TOATSU CHEMICALS (ASIA) LTD

MTK CHEMICALS PTE LTD

SUPPORTING

AIR PRODUCTS

Vopak

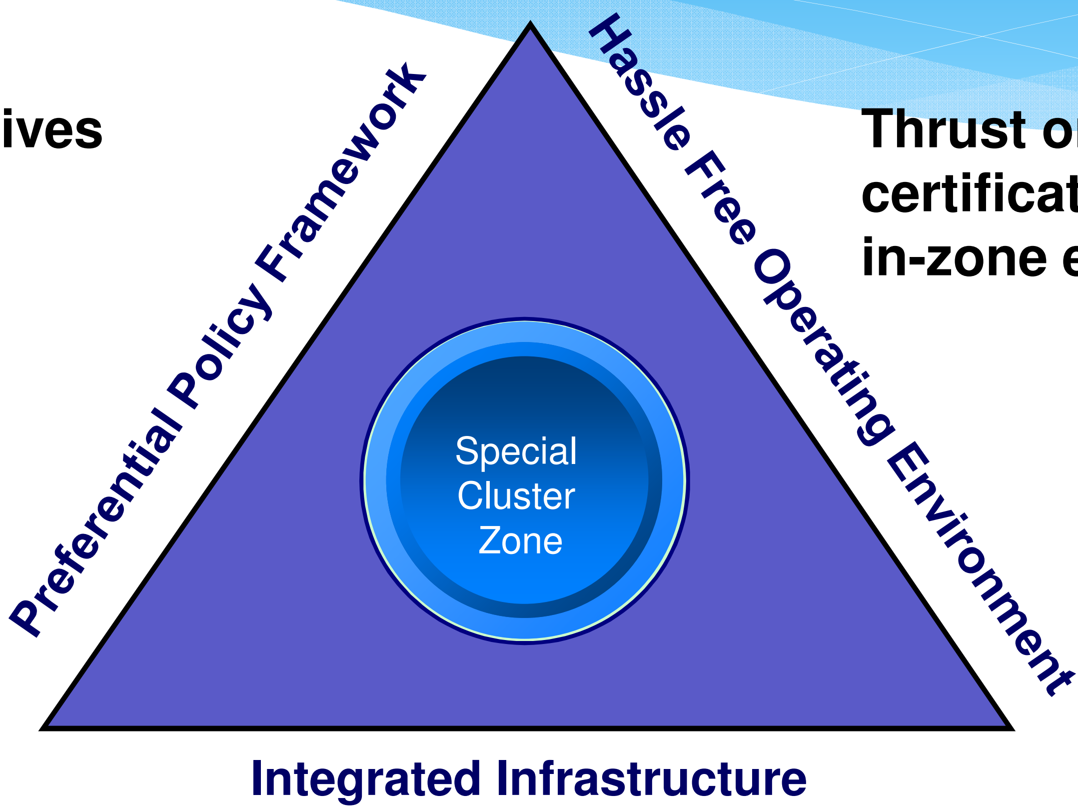
SOXAL 星氣

CHEMICAL INDUSTRIES (FAR EAST) LIMITED

SUT

Critical Success Factors

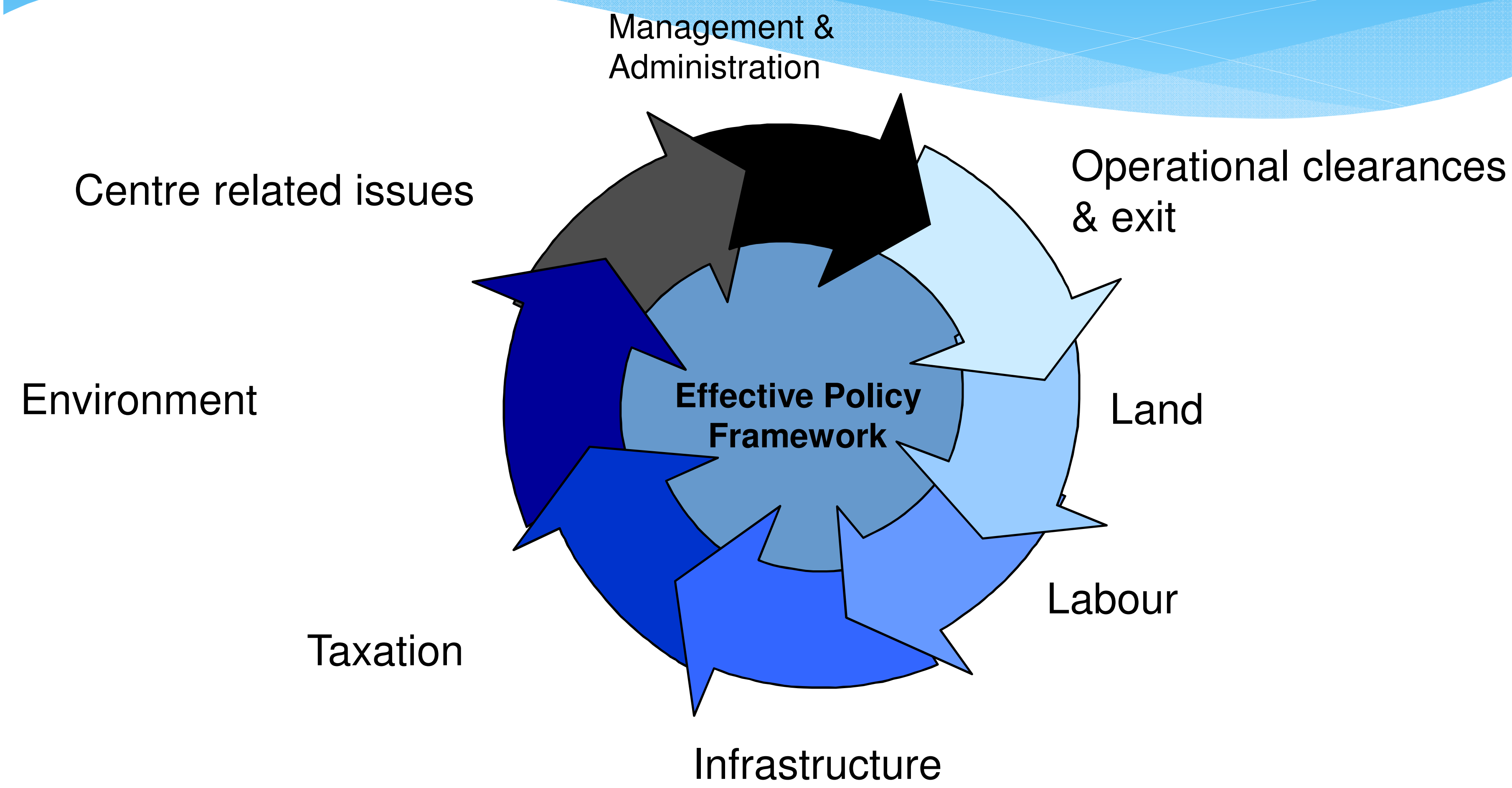
Fiscal incentives & regulatory benefits



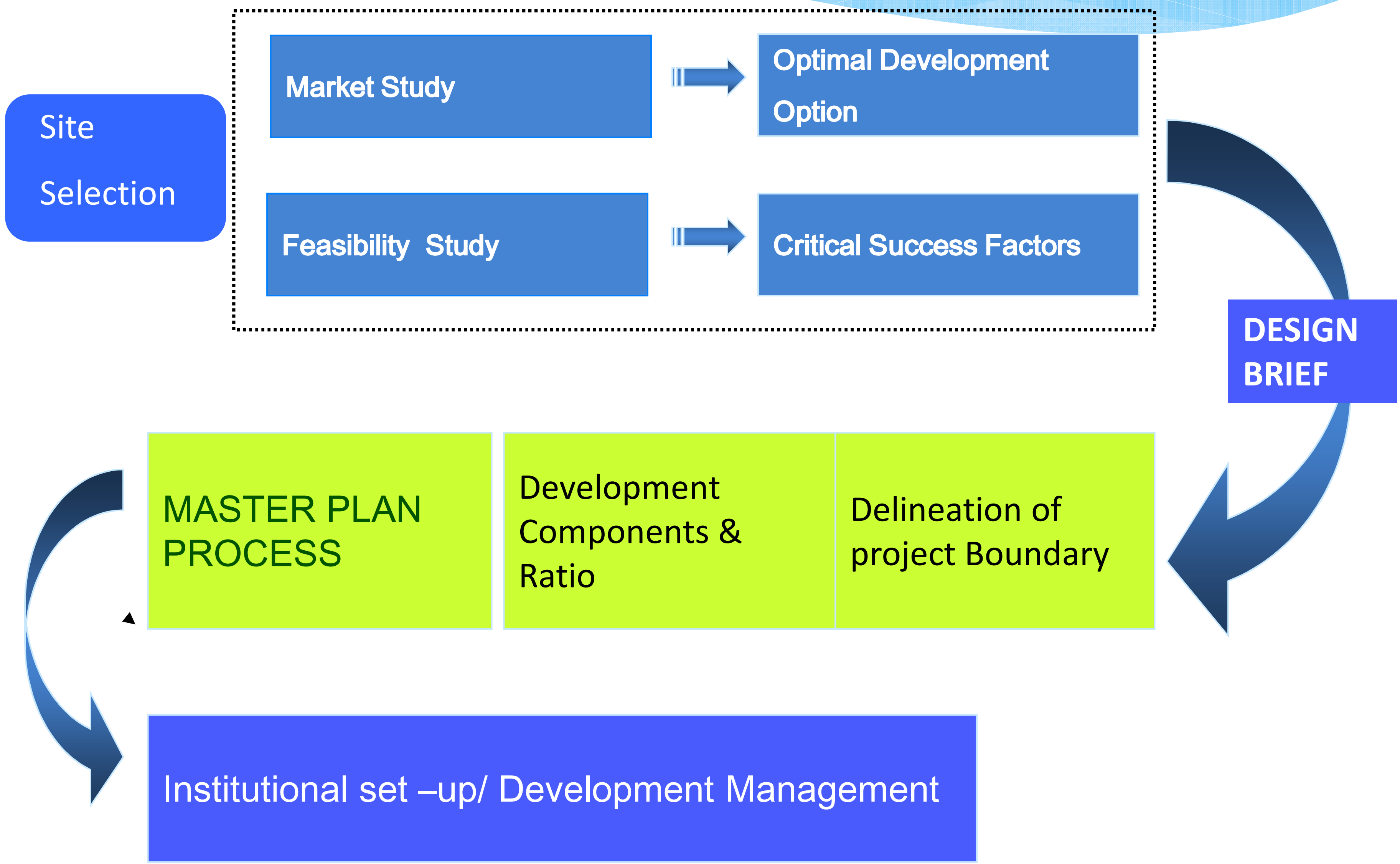
Thrust on self-certification & in-zone empowerment

Self-contained & Self-managed

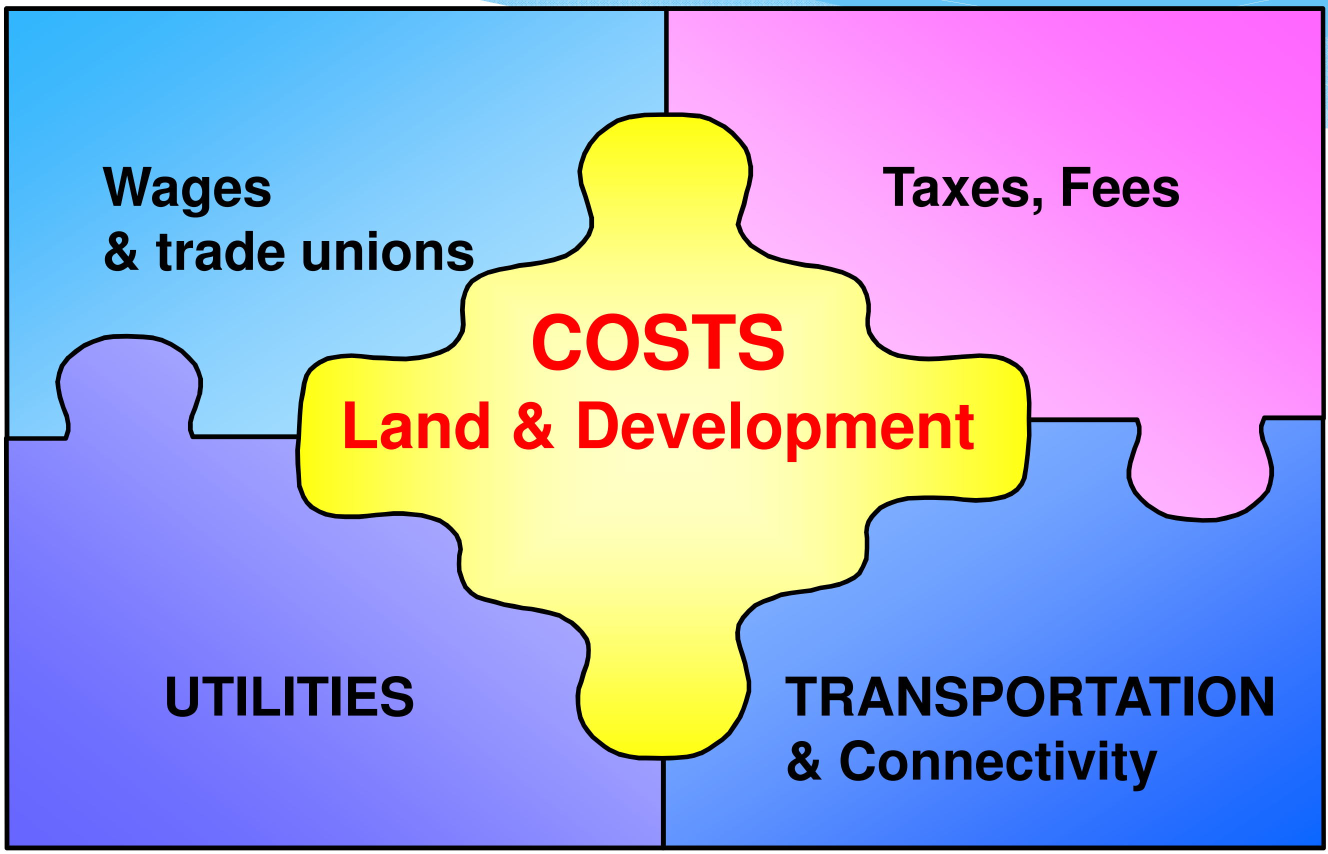
Regulatory Considerations



Methodology for the Development Process



Feasibility study and site selection



- Investments decisions are driven by profit motives

Master Planning Process [The steps]

City/Regional/ Town Planning

- Sociologists
- Development Economists
- Geographers
- Political Scientists
- City/Town Planners

Economic Planning / Market Study

- Development Economists
- Real Estate Analysts
- Financial Analysts
- Industry Analysts

Physical Planning

- Town Planners
- Transport Planners
- Urban Designers
- Architects/ Landscape Architects
- Civil Engineers
- Other specialists e.g. Power, IT, Water, EIA

Development Guide Plan

- Town Planners
- Transport Planners
- Urban Designers
- Architects/ Landscape Architects
- Civil Engineers
- Other specialists e.g. Power, IT, Water, EIA

Development Planning Guidelines

- Town Planners
- Transport Planners
- Urban Designers
- Architects/ Landscape Architects
- Civil Engineers
- Other specialists e.g. Power, IT, Water, EIA

Thank You

http://www.jurong.com

JURONG