



# Intellectual Capital for Communities in the Knowledge Economy

Nations, Regions, Cities and Emerging Communities

## **How Singapore dynamically manages its intellectual capital**

Johnson Paul, NLB, Singapore

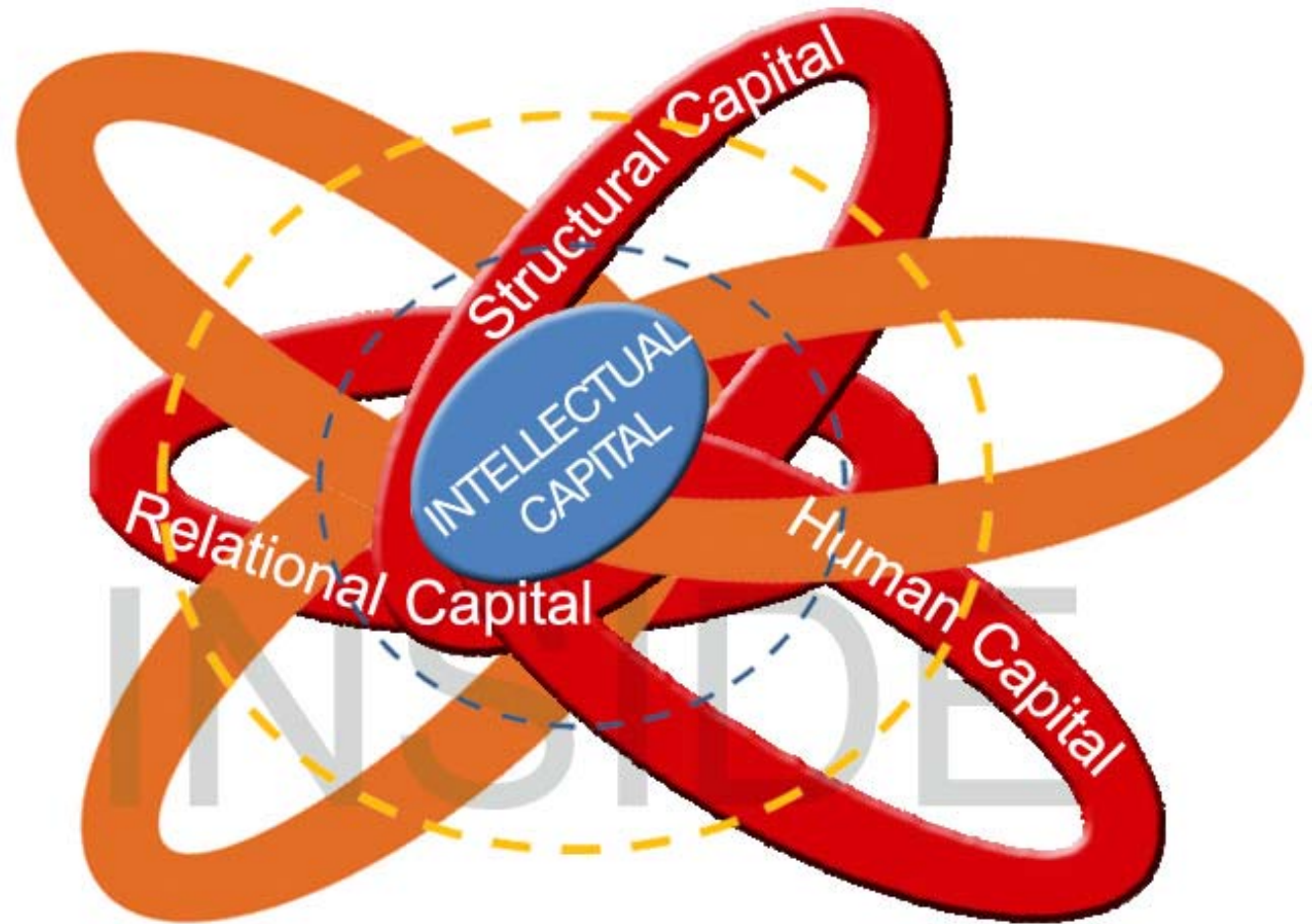
DYNAMIC CAPABILITIES



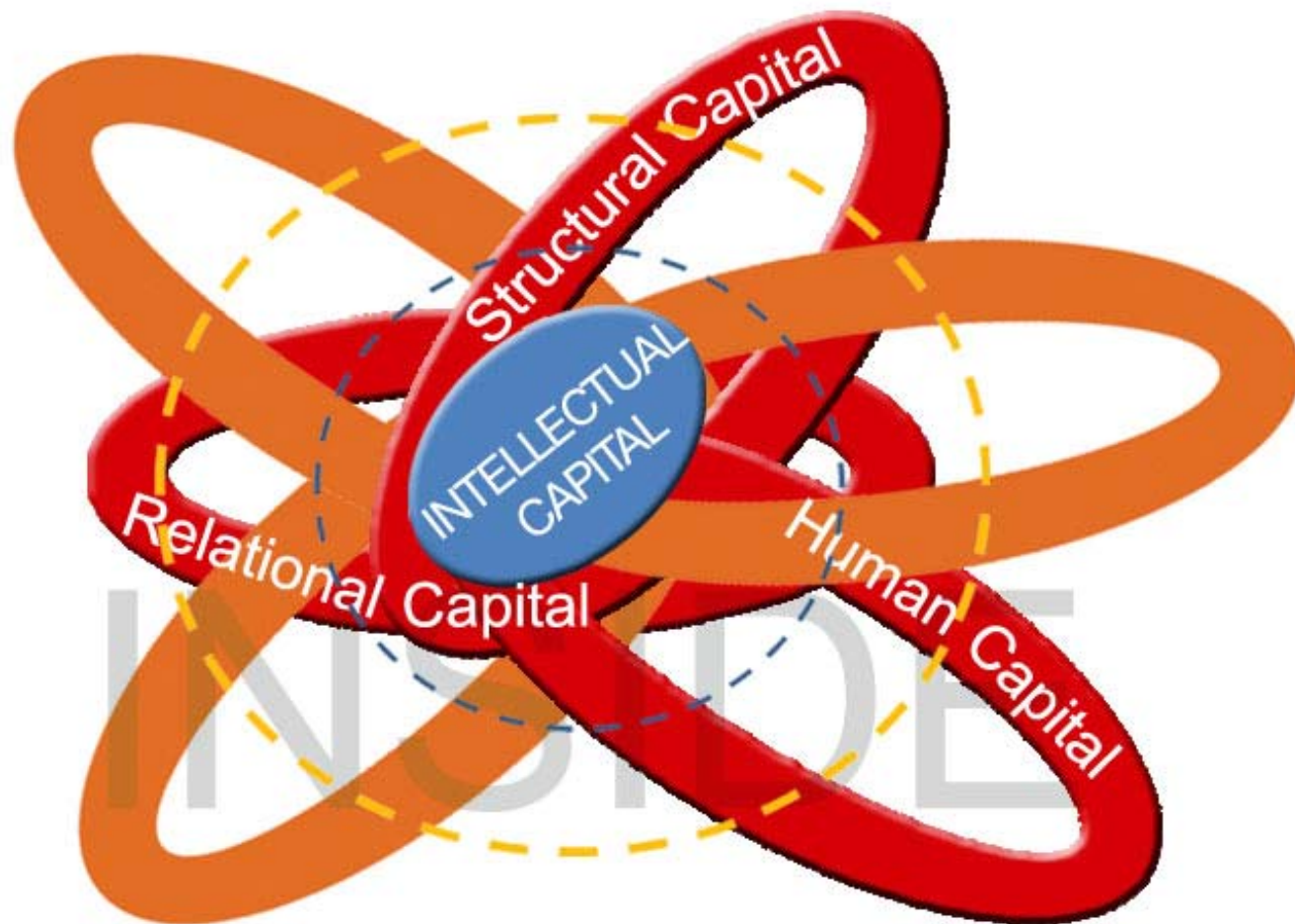
**UNIVERSITÉ  
PARIS-SUD 11**

**WORLD BANK INSTITUTE**

*Promoting knowledge and learning for a better world*



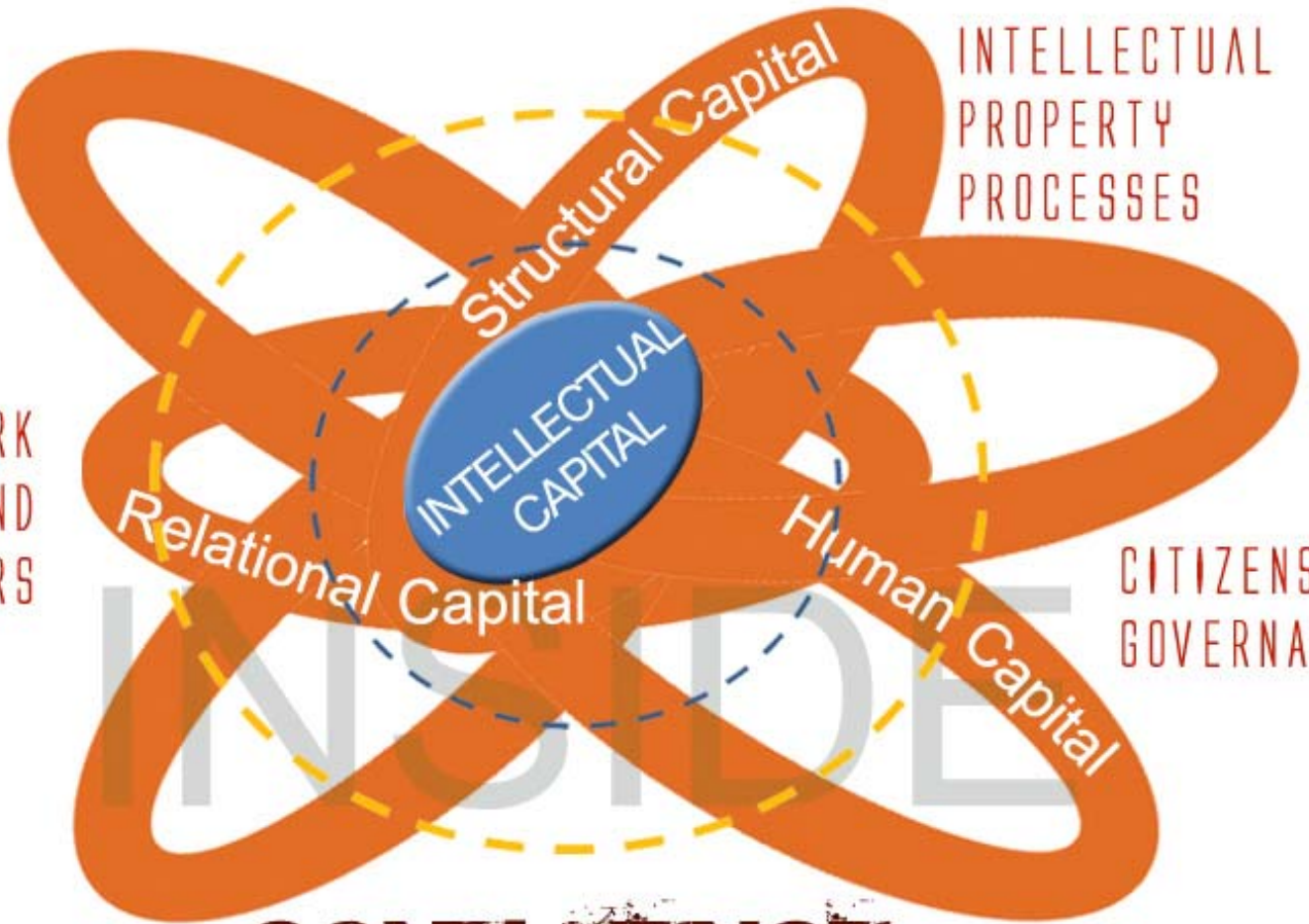
KNOWLEDGE IS LIKE LIGHT. WEIGHTLESS AND INTANGIBLE, IT CAN EASILY TRAVEL THE WORLD, ENLIGHTENING THE LIVES OF PEOPLE EVERYWHERE. YET BILLIONS OF PEOPLE STILL LIVE IN THE DARKNESS OF POVERTY — UNNECESSARILY. (KFD, 1998: 1)



Thirty spokes are united around the hub of a wheel, but the usefulness of the wheel depends on the space where nothing exists.  
Clay is molded into a vessel, but the usefulness of the vessel depends on the space where nothing exists.  
Doors and windows are cut out of the walls of a house, and the usefulness of the house depends on the space where nothing exists.

THEREFORE TAKE ADVANTAGE OF WHAT EXISTS, AND USE WHAT DOES NOT EXIST.

Lao-tzu



INTELLECTUAL  
PROPERTY  
PROCESSES

NETWORK  
BRAND  
CUSTOMERS

CITIZENS  
GOVERNANCE

# INSIDE

## CONFLUENCE

### NATIONAL INTELLECTUAL CAPITAL

# STRAITS LEGACY

**DYNAMISM  
BUILT ON REGIONAL  
AND GLOBAL  
CONNECTIVITY**



# TRANSFORMATION OF THE ECONOMY

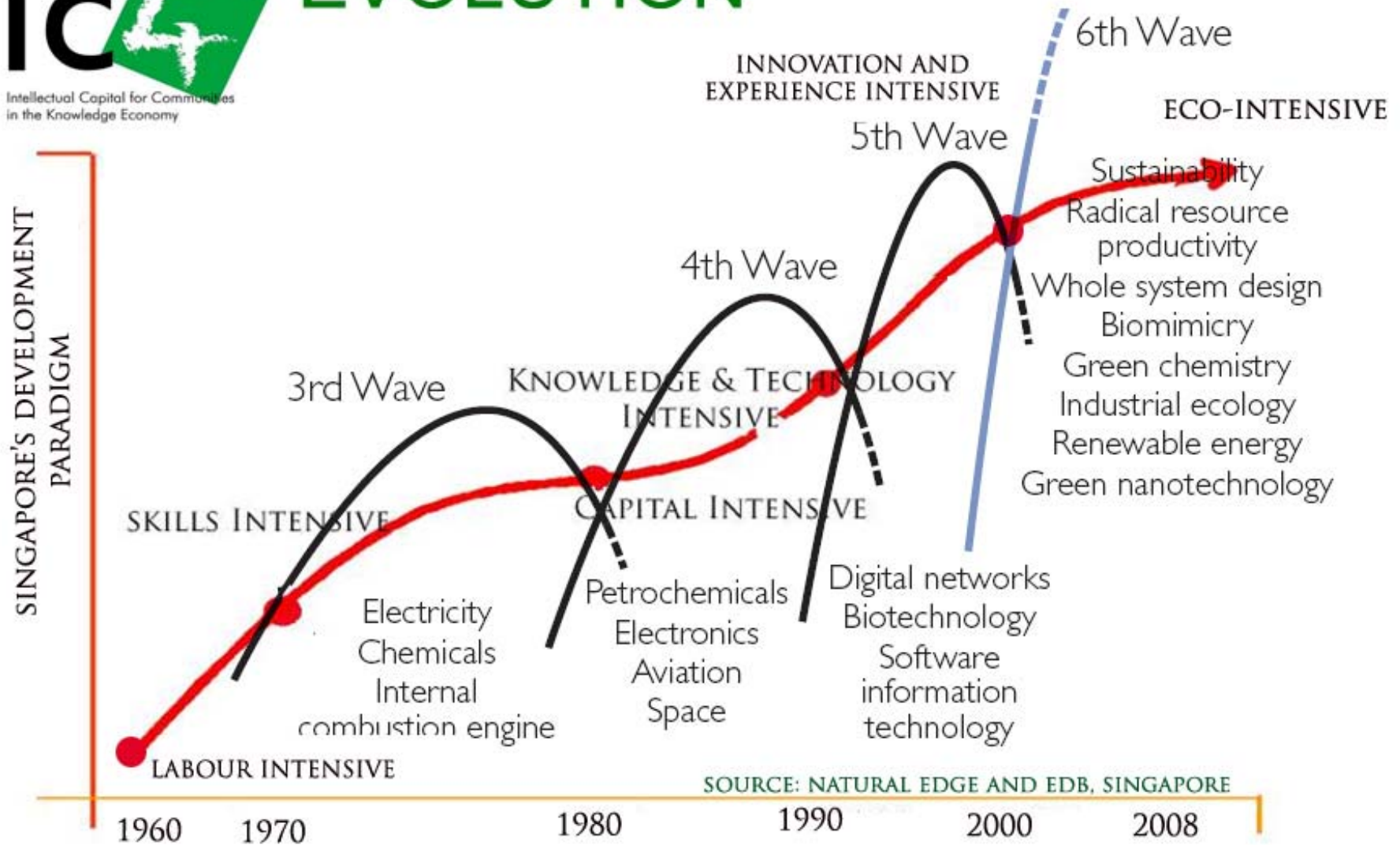


**2005 GDP =**  
**US\$118 billion/S\$194 billion**

Real GDP Growth in 2005 = 6.4%  
 GDP Growth Estimate for 2006 = 6.5% - 7.5%



# EVOLUTION



# STRUCTURAL CAPITAL

Knowledge Intensity that creates new IP

Processes that brings your idea to the market efficiently

...by connecting through **Singapore...**

**WORLD-CLASS** logistic service providers from the US, Europe and Asia provide high value-added, knowledge-intensive integrated logistic services. These include:

**Physical**

- Regional distribution & warehouse-managed inventory
- Port/terminal & configuration
- Autumn and repair

**Information**

- Business continuity & data hosting
- Multiplatform technical call centre
- IT & e-commerce development

**Foundational**

- Trade financing
- Account localisation
- Exchanges

**Solutions Development**

- Research & development
- Planning, engineering & optimization
- Integration, implementation & execution

**The results?**

- Create innovative business models
- Enhance supply chain visibility
- Reduce supply chain complexity
- Optimize cost efficiency
- Improve profit margins and cash flow



**DEDICATED INFRASTRUCTURE** fully supports the diverse, complex and customised supply chain requirements of various industries. Providing hassle-free, quick turnaround capabilities contribute to the growth of transportation and high value-added logistic services for the region.

• **Airport Logistics Park of Singapore (ALPS)**, consisting of 26 hectares of Free Trade Zone (FTZ) at Changi Airport, is dedicated to fast turnaround, fast response air logistic operations.

• **Ranney Logistics Park**, consisting of 90 hectares of land on Jurong Island, is dedicated to transportation and breakbulk operations for bulk liquid petroleum and petrochemical products supporting manufacturers in Singapore and within the Asian chemical industry.

**GLOBALLY CONNECTED** - in reach of 2.8 billion people within a 3 hour flight radius.

- **Connected by air**
  - Via 80 airlines, with 140 city links
  - With 3,200 weekly flights
- **Connected by sea**
  - Via 400 shipping lines to 700 ports
  - 20% of world's transportation cargo passes through Singapore
- **Connected by IT**
  - Singapore has more than 21 Tbps of submarine cables connecting to over 30 countries.



## BASIC FACTS

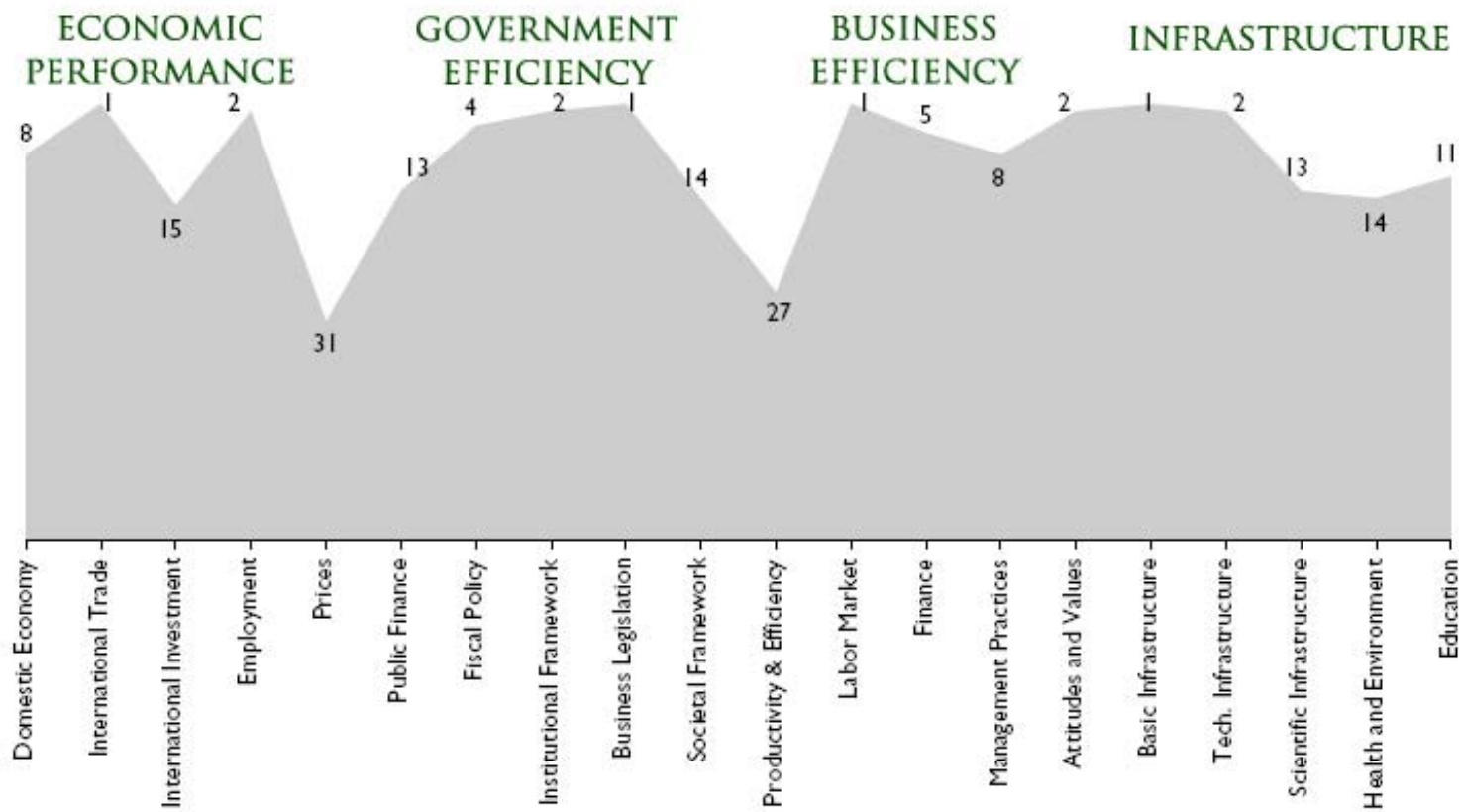
Rank

Capital	Singapore	
Land area (km <sup>2</sup> '000)	0.7 (2006)	-
Exchange rate (per \$)	1.59 (2006)	-
Population (millions)	4.48 (2006)	47
GDP (\$ billions)	132.2 (2006)	41
GDP (PPP) per capita (\$)	30,992 (2006)	18
Real GDP growth (%)	7.9 (2006)	7
Consumer Price Inflation (%)	1.0 (2006)	3
Unemployment rate (%)	2.7 (2006)	3
Labor force (millions)	2.59 (2006)	45
Current Account Balance (%)	27.5 (2006)	1
Direct Investment		
Stocks Inward (\$ billions)	186.9 (2005)	16
Flows Inward (% of GDP)	18.3 (2006)	3



## COMPETITIVENESS LANDSCAPE

SOURCE: GLOBAL COMPETITIVENESS REPORT, 2007



# OVERALL STRENGTHS

## Economic Efficiency

1.2.08	Exports of goods	Percentage of GDP	1
1.2.18	Trade to GDP ratio	(Exports + Imports) / (2 x GDP)	1
1.2.02	Current account balance	Percentage of GDP	1
1.2.11	Exports of commercial services	Percentage of GDP	2
1.3.06	Direct investment flows inward	Percentage of GDP	3

## Government Efficiency

### Strengths

2.3.09	Adaptability of government policy to changes in the economy is high	(Survey)	1
2.3.10	Government decisions are effectively implemented	(Survey)	1
2.4.16	Ease of doing business is supported by regulations	(Survey)	1
2.3.14	Bureaucracy does not hinder business activity	(Survey)	1
2.3.11	Political parties do understand today's economic challenges	(Survey)	1

## Business Efficiency

3.5.06	The value system in your economy supports competitiveness	(Survey)	1
3.5.05	The need for economic and social reforms is generally well understood	(Survey)	1
3.2.20	Foreign high-skilled people are attracted to your country's business environment	(Survey)	1
3.2.06	Labor relations are generally productive	(Survey)	1
3.4.03	Credibility of managers in society is strong	(Survey)	1

## Infrastructure

4.3.13	Science in schools is sufficiently emphasized	(Survey)	1
4.3.14	Youth interest in science is strong	(Survey)	1
4.4.19	Environmental laws and compliance do not hinder the competitiveness of businesses	(Survey)	1
4.1.14	Maintenance and development of infrastructure are adequately planned and financed	(Survey)	1
4.1.03	Urbanization of cities supports business development	(Survey)	1

# SCIENCE AND TECHNOLOGY SCORECARD

IMD/2007				WEF/2007			
Technological Infrastructure		Scientific Infrastructure		Business Sophistication		Innovation	
1	USA	1	USA	1	Germany	1	USA
2	<b>Singapore</b>	2	Japan	2	Switzerland	2	Switzerland
3	Hong Kong	3	Germany	3	Japan	3	Finland
4	Denmark	4	Switzerland	4	Sweden	4	Japan
5	Israel	5	Sweden	5	Austria	5	Israel
6	Korea	<b>6</b>	<b>Taiwan</b>	6	Demark	6	Sweden
7	Sweden	7	Korea	7	USA	7	Germany
8	Germany	9	Israel	9	Korea	8	Korea
13	Finland	11	Finland	14	Taiwan	9	Taiwan
15	Taiwan	13	<b>Singapore</b>	16	<b>Singapore</b>	11	<b>Singapore</b>
27	China	15	China	57	China	38	China

Source: The World Competitiveness Yearbook 2007 (IMD), The Global Competitiveness Report 2007-2008 (WEF)

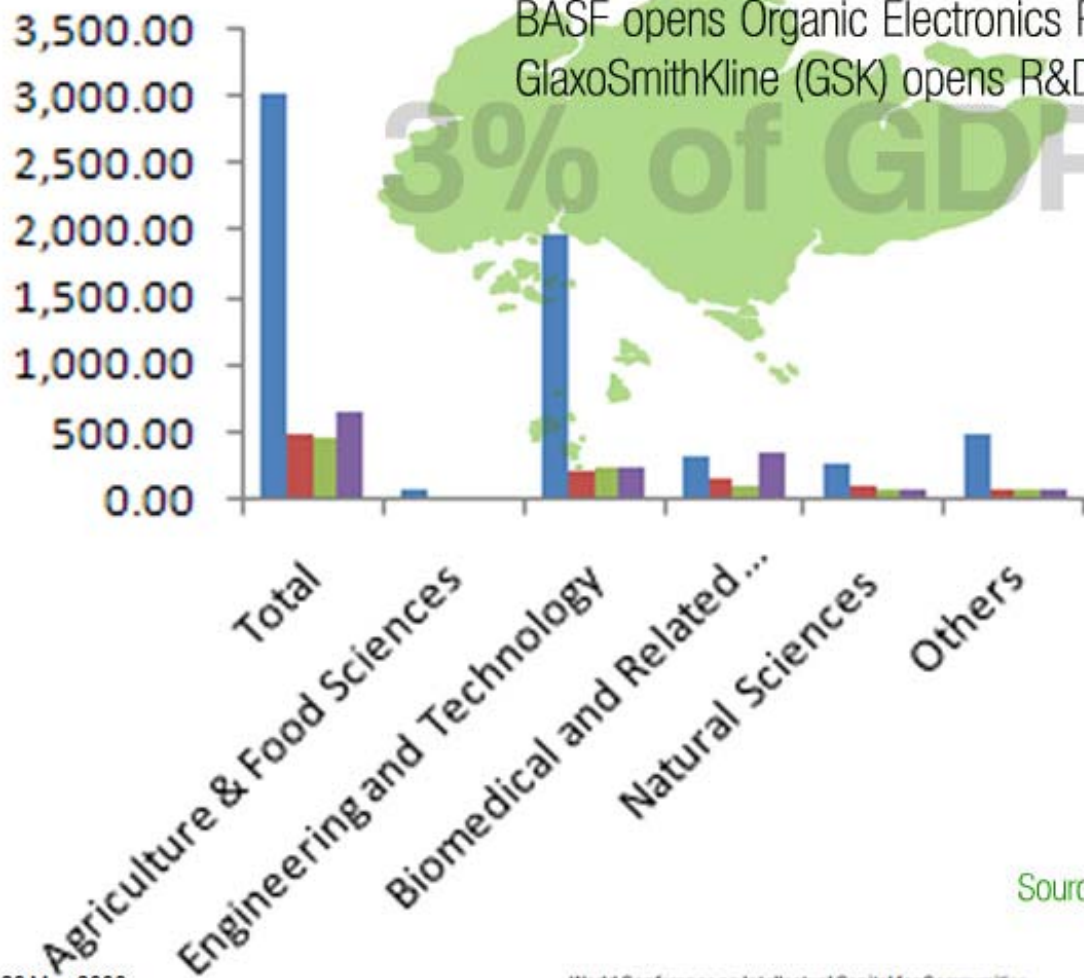
# R&D Expenditure

\$13.5b in Research Funding (2006-2010)

Xilinx puts R&D team in Spore - Jan 2007

BASF opens Organic Electronics R&D -May 2007

GlaxoSmithKline (GSK) opens R&D pilot plant - Mar 2008



**4.6b FY05**

- Private Sector
- Higher Education Sector
- Govt Sector
- Public Research Institutes

Source: Yearbook of Statistics, 2007

# Comprehensive National Framework

MARCH 2008

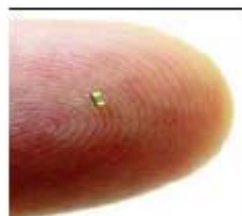
The Research, Innovation and Enterprise Council (RIEC) approved the **National Framework for Innovation and Enterprise** to grow innovation and entrepreneurship in Singapore, especially academic entrepreneurship in the institutes of higher learning.

- The RIEC endorsed several programmes to strengthen Singapore's research capabilities, including two new Research Centres of Excellence and the development plan for Campus for Research Excellence And Technological Enterprise (CREATE) to house research centres from top universities in the world.
- Three strategic research programmes—Biomedical Sciences Translational and Clinical Research, Environmental and Water Technologies (Clean Water and Clean Energy), and Interactive and Digital Media made remarkable progress in 2007
- Inaugural awards for the Competitive Research Programme Funding Scheme and NRF Research Fellowship were introduced in 2007
- The RIEC approved more than S\$1 billion to support these initiatives for strengthening research, and growing innovation and enterprise.

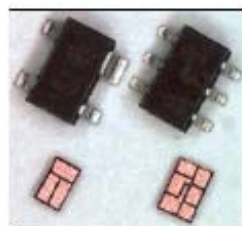
# STRUCTURAL CAPITAL

## PUBLICLY FUNDED R&D INSTITUTIONS

**>350 Research Scientists and Engineers in the electronics related RIs**



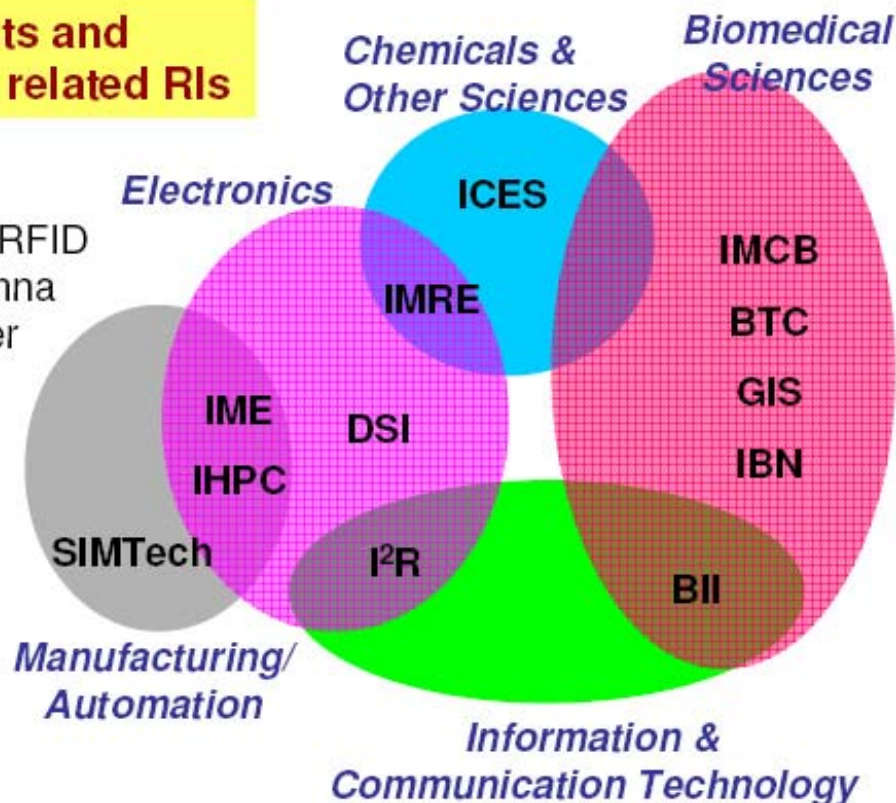
World's first integrated read/write RFID tag with on-chip antenna and passive RF power



ULTHIMO - joint packaging development w/ Philips Electronics



IC on flexible substrate



[www.sedb.com](http://www.sedb.com)

- An **Innovation Fund** (managed by an Enterprise Board) ■ **Enterprise Support Structures** for start-ups (proof-of-concept studies, technology incubator progs)
- **Translational R&D Grant** (commercialisation of R&D outputs) ■ **Innovation Voucher Scheme** (SME's to purchase R&D licenses from resesarch institutions)
- **Innovation Policy Centre** for Govt and Industry ■ **National Framework for Intellectual Property Principles** for publicly funded R&D

## 17 R&D CENTRES

A\*STAR COMPUTATIONAL RESOURCE CENTRE  
BIOINFORMATICS INSTITUTE  
BIOPROCESSING TECHNOLOGY INSTITUTE  
DATA STORAGE INSTITUTE  
GENOME INSTITUTE OF SINGAPORE  
INSTITUTE FOR INFOCOMM RESEARCH  
INSTITUTE OF BIOENGINEERING & NANOTECHNOLOGY  
INSTITUTE OF CHEMICAL & ENGINEERING SCIENCES  
INSTITUTE OF HIGH PERFORMANCE COMPUTING  
INSTITUTE OF MATERIALS RESEARCH AND ENGINEERING  
INSTITUTE OF MEDICAL BIOLOGY  
INSTITUTE OF MICROELECTRONICS  
INSTITUTE OF MOLECULAR AND CELL BIOLOGY  
SINGAPORE GENERAL HOSPITAL  
SINGAPORE INSTITUTE FOR CLINICAL SCIENCES  
SINGAPORE INSTITUTE OF MANUFACTURING TECHNOLOGY  
TAN TOCK SENG HOSPITAL





## BENCH TO BEDSIDE AND MARKETPLACE

### EFFICIENCY IN DISCOVERY

The Economic Development Board (EDB) brought in **S\$932 million** (\$686 million) of investments in fixed assets and **S\$245 million** (\$180 million) in total business spending for the biomedical sciences industry in 2007

Since the year 2000, when the biomedical sciences initiative was launched in the island country, manufacturing output has expanded fourfold from S\$6.3 billion (\$ 4.64 billion) to S\$24 billion (\$17.67 billion) in 2007 at a Compounded Annual Growth Rate (CAGR) of 21%. Value-Added also increased by more than threefold from S\$3.8 billion (\$ 2.80 billion) in 2000 to exceed S\$13 billion (\$ 9.57 billion) in 2007. Employment doubled from 5,880 to more than 11,500 over the same period.

SOURCE: BIOSPECTRUM "Singapore brings in S\$ 932 mn BMS investments in fixed assets"  
Narayan Kulkarni , April 16, 2008, Asian Edition.

"Singapore continues to draw leading scientists and invest in research infrastructure to build on an established foundation. It is also making headway in translational and clinical research (TCR). Over the past year, key research and training institutes as well as the first TCR flagship programme in gastric cancer were established. The government has committed over S\$300 million in new research facilities. TCR will be a key launch-pad for the next phase of the sector's growth, as we work with the industry to develop new solutions for the Asian market."

Mr Beh Kian Teik, Deputy Director, EDB

## SCIENTIFIC PRODUCTIVITY BIBLIOMETRIC ANALYSIS

The data showed that Singapore's scientific productivity proportion, as a proportion of the world's output, continued to rise at a rate that far exceeded the overall world growth rate. In fact, Singapore's output increased by some 72% from 2000 to 2007

The bibliometric analysis also showed that Singapore, with an R&D expenditure of approximately US\$3.1 billion in 2006, generated publications at a rate of 0.3 publications per researcher. This ratio is higher than that of both China and Japan who had spent significantly more money on R&D in the same time period.

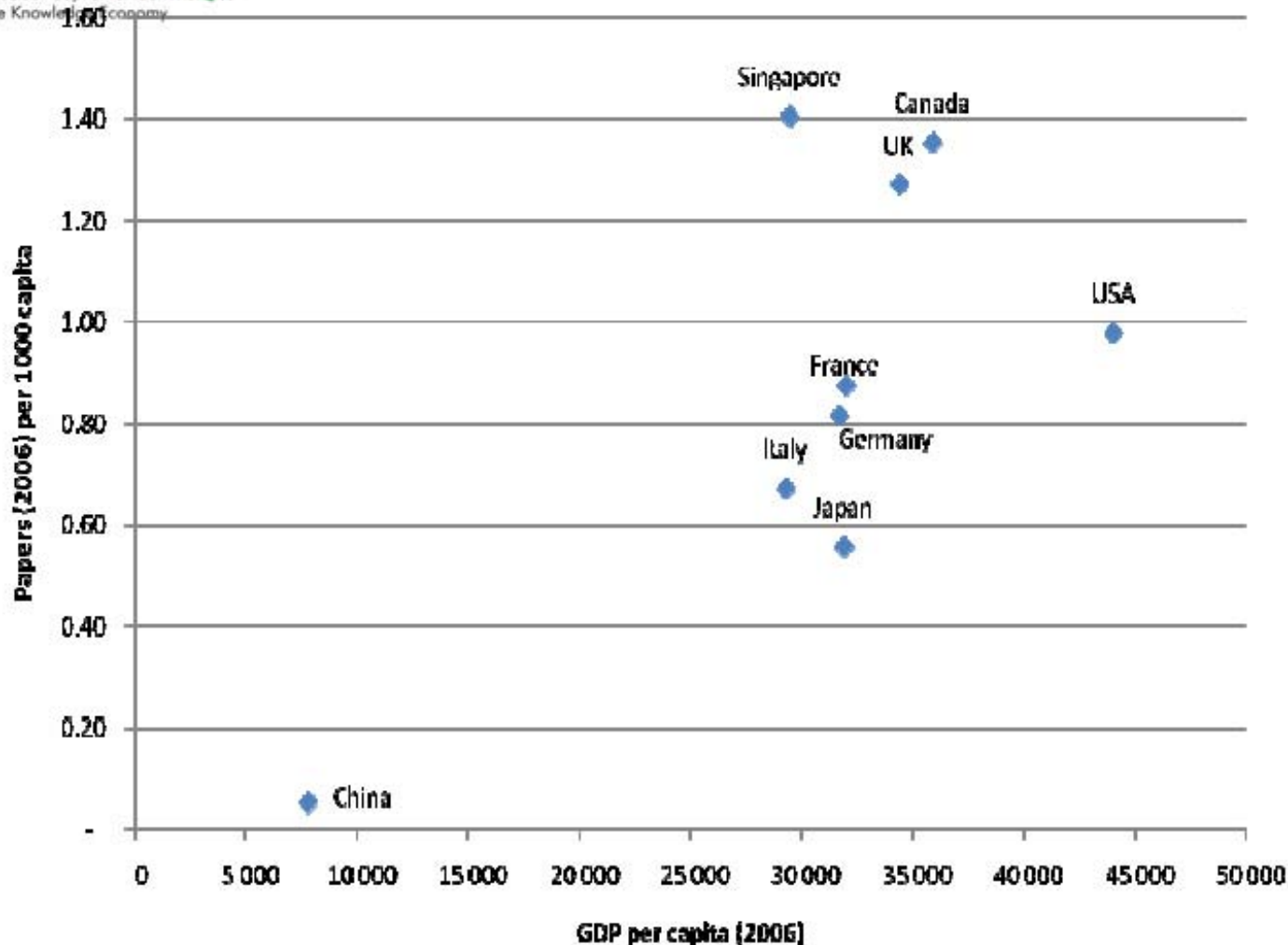
The number of publications by Singapore researchers in high impact journals had also increased year on year indicating that publishing activity in Singapore continues to take on a more external and outward-looking focus. International collaboration is increasing in intensity and Singaporean researchers are now publishing high quality research material with more countries. The international research status of Singapore is rising hence presenting more opportunity for further improvements to be made in publication quality through global partnerships.



Intellectual Capital for Communities  
in the Knowledge Economy

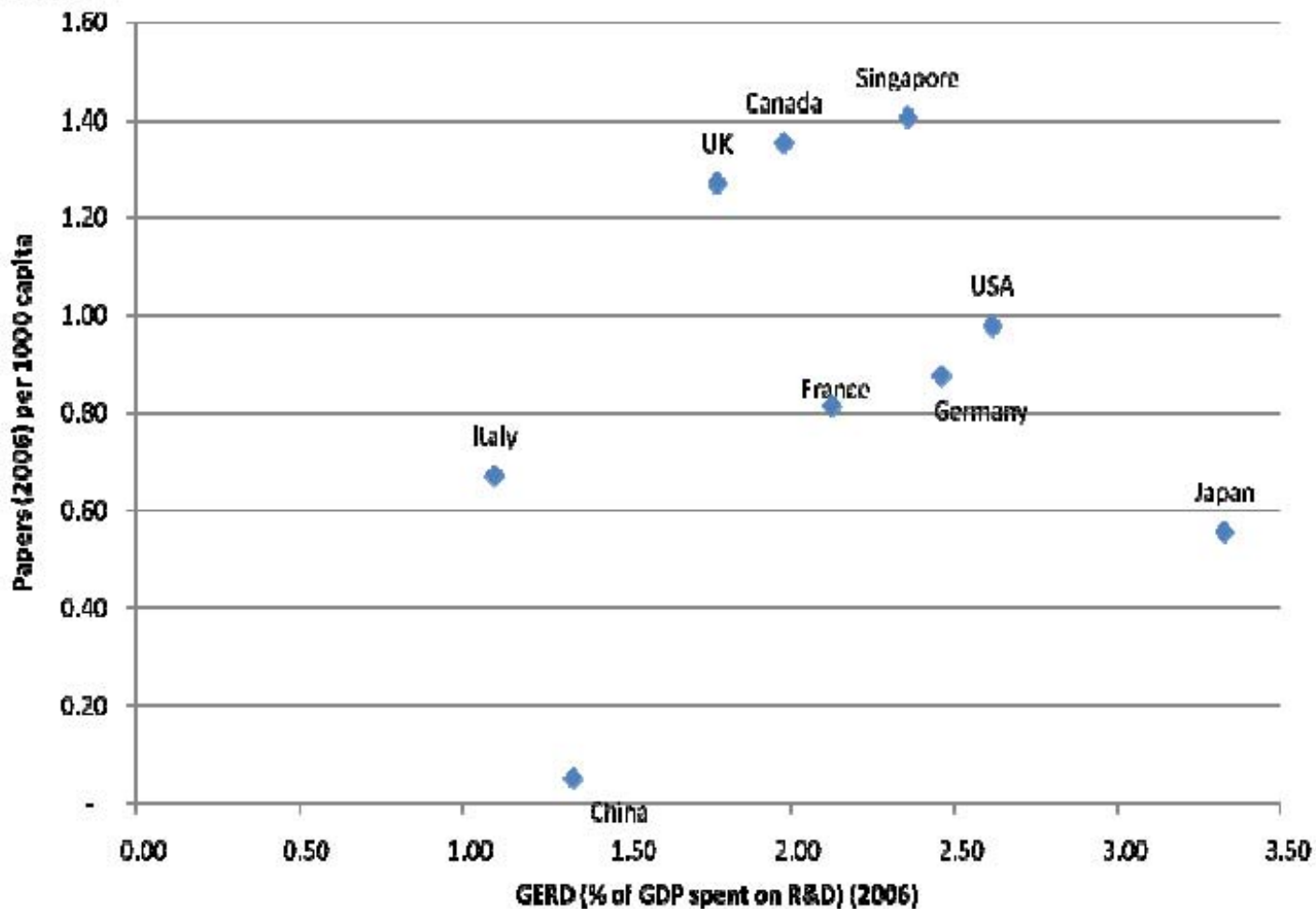
# SCIENTIFIC PRODUCTIVITY

## PAPERS PER CAPITA VS GDP PER CAPITA



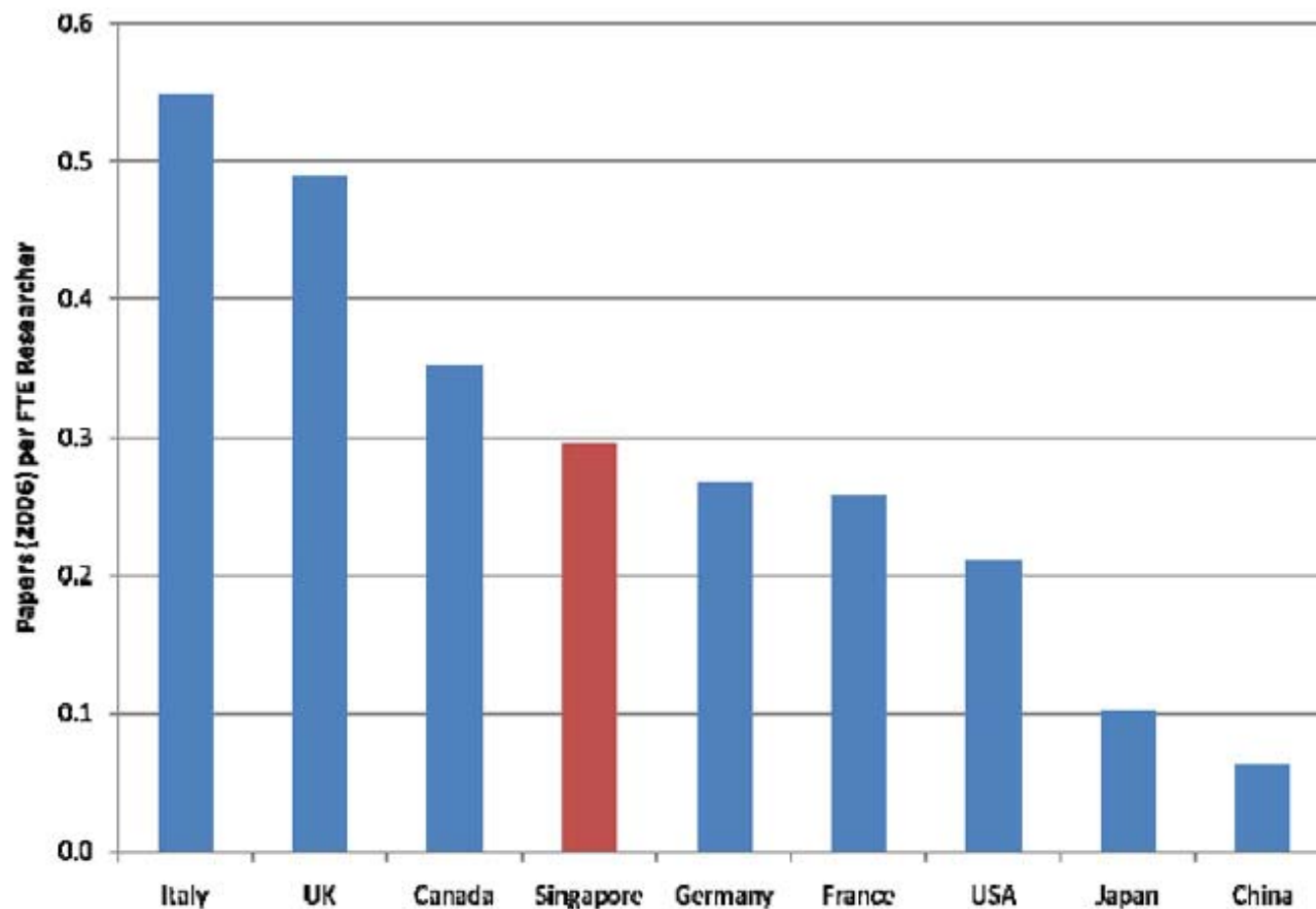
# SCIENTIFIC PRODUCTIVITY

## PAPERS PER CAPITA VS GERD (% GDP SPENT ON R&D)



# SCIENTIFIC PRODUCTIVITY

## PAPERS PER YEAR PER FTE RESEARCHER



# SCIENTIFIC PRODUCTIVITY

## PATENT FILINGS

### NUS ENTREPRENEURSHIP CENTRE STUDY

The study found that Singapore emerged tops in the region with an index of **0.94 for patents granted between 1994 and 2004** - higher than Germany (0.62) and Ireland (0.89). Regionally, Japan came in second at 0.91 and Taiwan third at 0.79. Comparatively, the US had a relative citation index of 1.21 in the same period. Singapore's strong showing could be explained by the fact that many patents here are linked with MNCs, and by the country's historical strength in electronics.

The study also found that between 1996 and 2004 Singapore was ranked second in the region based on a **technological impact index**, which measures the proportion of patents that are 'high-impact', in that they are among the top 5 per cent of the most highly-cited patents in their respective technology class. Singapore scored 1.78 on the index, behind the Philippines which scored 1.88.

In terms of **patents per million**, Singapore had 105.3 patents per million population as of 2005, placing it third in the region after Japan (253.1 patents) and Taiwan (269.6). Between 2001 and 2005, **53.15 per cent of patents were foreign-owned**, compared with 4 per cent in Japan and 9.9 per cent in Korea.

Singapore patents also had a high percentage of **co-inventorship**, with **32.5 per cent** of patents here between 1996 and 2004 being co-invented with foreign inventors.

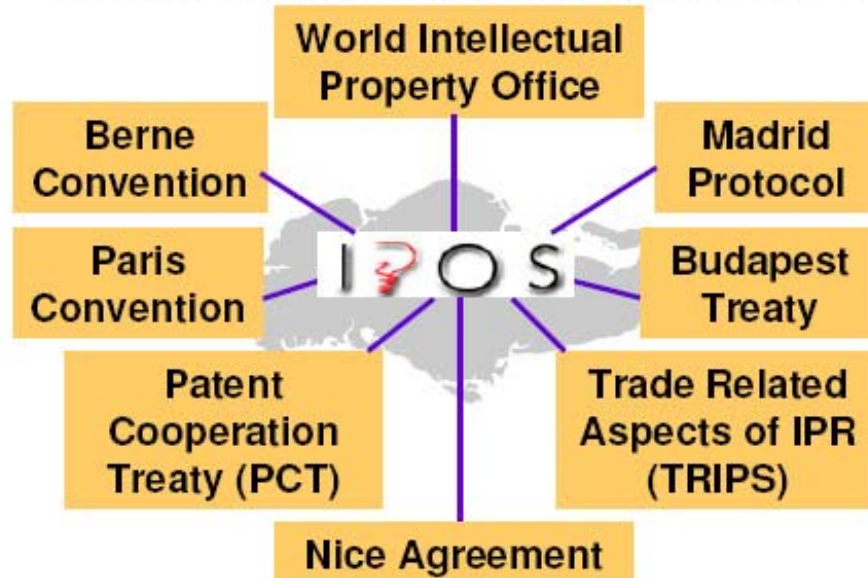
SOURCE: Business Times - 22 Aug 2006, S'pore Patents Are Tops In Asia-Pac: Study Pleasant surprise over quality of country's innovations by Daniel Buenas

## Intelleigen World IP Index

Ranking	Country	Total Score
1	United States	6.84
2	Japan	4.71
3	Singapore	4.03
4	India	- 0.30
5	China	- 3.25



**Signatory to major treaties and conventions**



IPOS - Intellectual Property Office of Singapore  
[www.ipos.gov.sg](http://www.ipos.gov.sg)

**Lowest IPR risks in Asia for three consecutive years (2002-2004)**

Source: Political & Economic Risk Consultancy (PERC)

<b>Country in Asia</b>	<b>Best IPR</b>
Singapore	1
Japan	2
Hong Kong	3
Taiwan	4
Malaysia	5
Philippines	6

World IP body sets up  
 Asia-Pac office in S'pore

**Layout-designs of Integrated Circuits Act**

- Prevents copying and commercial exploitation of an original layout-design of an IC
- IC is protected for 10 yrs (if first used commercially within 5 yrs of creation), or 15 yrs after creation if otherwise



# STRUCTURAL CAPITAL HUB FOR REGIONAL **INNOVATION**



## FOREIGN TALENT, ETHNIC FUSION, CULTURAL METROPOLIS

**WORLD-CLASS** logistics service providers from the US, Europe and Asia provide high value-added, knowledge-intensive integrated logistics services. These include:

**Physical**

- Regional distribution & warehouse management
- Procurement & configuration
- Autumn and repair

**Information**

- Business continuity & data hosting
- Multiplatform technical call centre
- IT & e-commerce development

**Foundational**

- Trade financing
- Account localisation
- Exchanges

**Solutions Development**

- Research & development
- Planning, engineering & optimization
- Integration, implementation & execution

**The results?**

- Create innovative business models
- Enhance supply chain visibility
- Reduce supply chain complexity
- Optimize cost efficiency
- Improve profit margins and cash flow



**DEDICATED INFRASTRUCTURE** fully supports the diverse, complex and customised supply chain requirements of various industries. Providing hassle-free, quick turnaround capabilities contribute to the growth of transportation and high value-added logistics services for the region.

• **Airport Logistics Park of Singapore (ALPS)**, consisting of 26 hectares of Free Trade Zone (FTZ) at Chang Airport, is dedicated to fast turnaround, fast response air logistic operations.

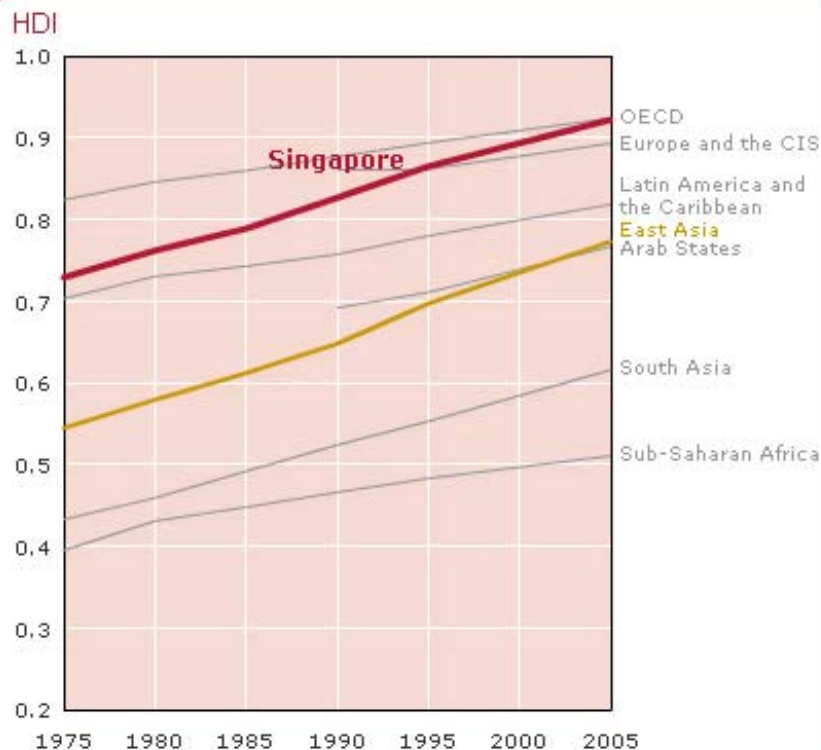
• **Raffles Logistics Park**, consisting of 90 hectares of land on Jurong Island, is dedicated to transportation and breakbulk operations for bulk liquid petroleum and petrochemical products supporting manufacturers in Singapore and within the Asian chemical industry.

**GLOBALLY CONNECTED** - in reach of 2.8 billion people within a 7 hour flight radius.

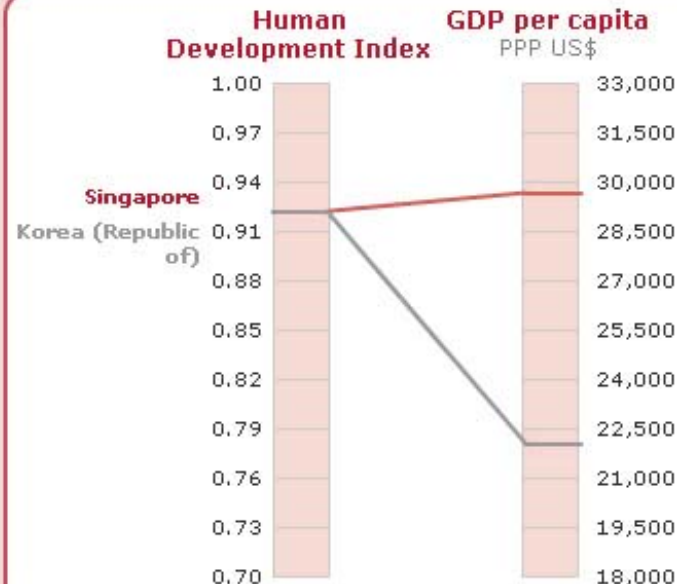
- **Connected by air**
  - Via 80 airlines, with 140 city links
  - With 3,200 weekly flights
- **Connected by sea**
  - Via 400 shipping lines to 700 ports
  - 20% of world's transportation cargo passes through Singapore
- **Connected by IT**
  - Singapore has more than 21 Tbps of submarine cables connecting to over 30 countries.

# HUMAN CAPITAL

Human Development Index (0.922, 25th out of 177 Countries)  
2008 Quality of Life Index (58 out of 192 countries ranked)



Source: Indicator Table 2 - HDR 2007/2008



HDI and GDP data refers to 2005 as reported in the 2007/2008 Report.

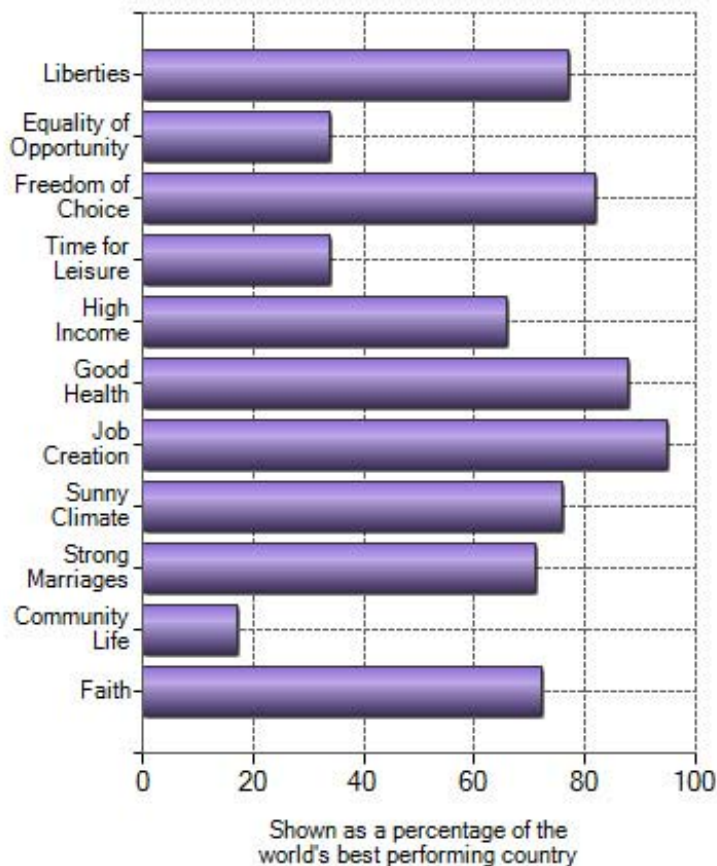
Life Expectancy at Birth 79.4 years  
Adult Literacy 92.5 %  
Gross Enrolment Ratio 87.3 %  
(schools)

# HUMAN CAPITAL

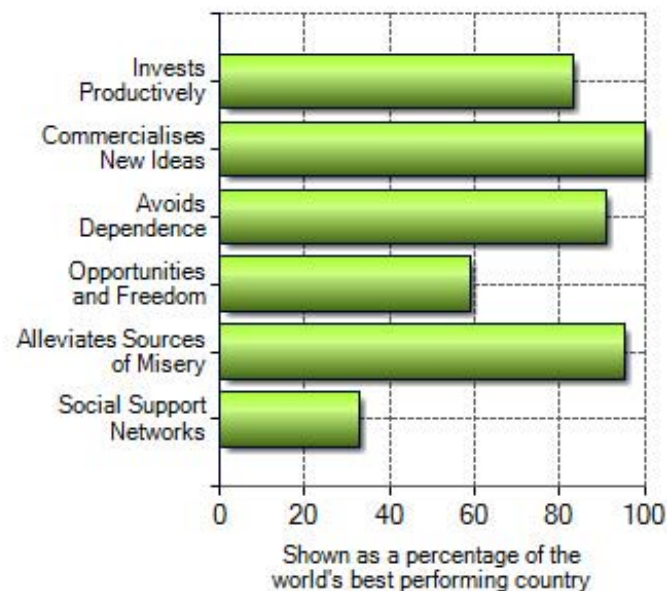
## 2007 Legatum Prosperity Index

Singapore ranks the highest of any non-western country,  
at 12th place in the Index, tied with the Netherlands.

### Life Satisfaction Scorecard



### Prosperity Scorecard



# HUMAN CAPITAL

## DEMOGRAPHIC TRENDS 2000-2007

	NUMBER ('000)				PERCENT OF POPULATION				AVERAGE ANNUAL GROWTH (%)			
	2007*	2005	2000	1990	2007*	2005	2000	1990	2005-2007*	1990-2005	2000-2005	1990-2000
Resident population	3,675	3,554	3,263	2,736	78.5	81.7	81.2	89.8	1.7	1.8	1.7	1.8
Citizens	—	3,113	2,973	2,623	—	71.5	74	86.1	—	1.1	0.9	1.3
Permanent residents	—	441	290	112	—	10.1	7.2	3.7	—	9.6	8.7	10
Non-resident population	1,006	798	755	311	21.5	18.3	18.8	10.2	12.2	6.5	1.1	9.3
Total population	4,681	4,351	4,018	3,047	100	100	100	100	3.7	2.4	1.6	2.8
Foreign population	—	1,239	1,045	423	—	28.5	26	13.9	—	7.4	3.5	9.5

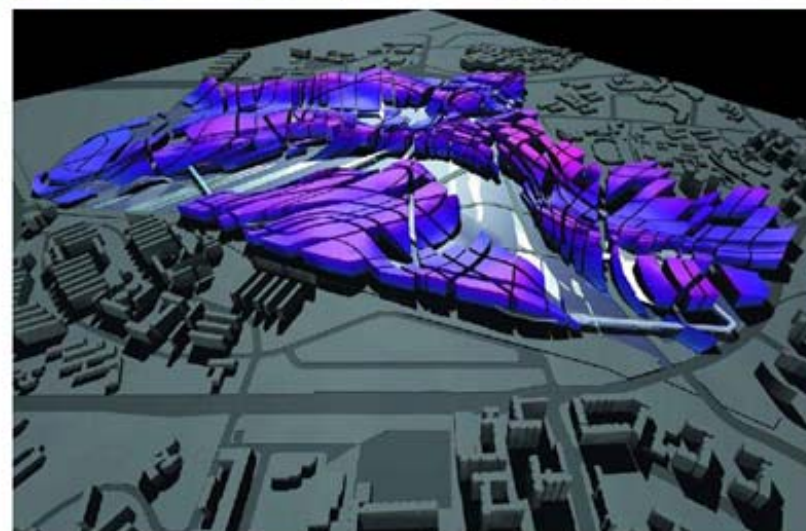


\* Population Trends 2007, Singapore Department of Statistics for 2007 related figures; Singapore Department of Statistics, Demographic Trends, General Household Survey 2005, Koh Ai Tee et al, Singapore Economy in the 21st Century: Issues and Strategies, 2002. Full-time series for permanent residents and citizens are not available.

# HUMAN CAPITAL

REDEFINING WORK, LIVE, LEARN & PLAY

Multicultural Unity - education, housing and social projects



- multi-use allocation
- community convergence
- green



# HUMAN CAPITAL

REDEFINING WORK, LIVE, LEARN & PLAY

Multicultural Unity - education, housing and social projects



casino, artscience museum  
shoppingmall hotel





# HUMAN CAPITAL

REDEFINING WORK, PLAY,  
LIVE AND LEARN

## GARDENS BY THE BAY







# HUMAN CAPITAL

REDEFINING WORK, LIVE, LEARN & PLAY

Multicultural Unity - education, housing and social projects

Intellectual Capital for Communities  
in the Knowledge Economy



Old Supreme Court



“  
hello,  
youth olympic games!  
— singapore  
”

F1 Singapore Grand Prix Track Layout



# HUMAN CAPITAL

REDEFINING WORK, LIVE, LEARN & PLAY

Multicultural Unity - education, housing and social projects



Lifestyle • Art • Recreation

# HUMAN CAPITAL

REDEFINING WORK, LIVE, LEARN & PLAY

Multicultural Unity - education, housing and social projects

design studios, design retailing



Haji Lane, Kampung Glam  
 Ang Siang Hill, Chinatown

# HUMAN CAPITAL

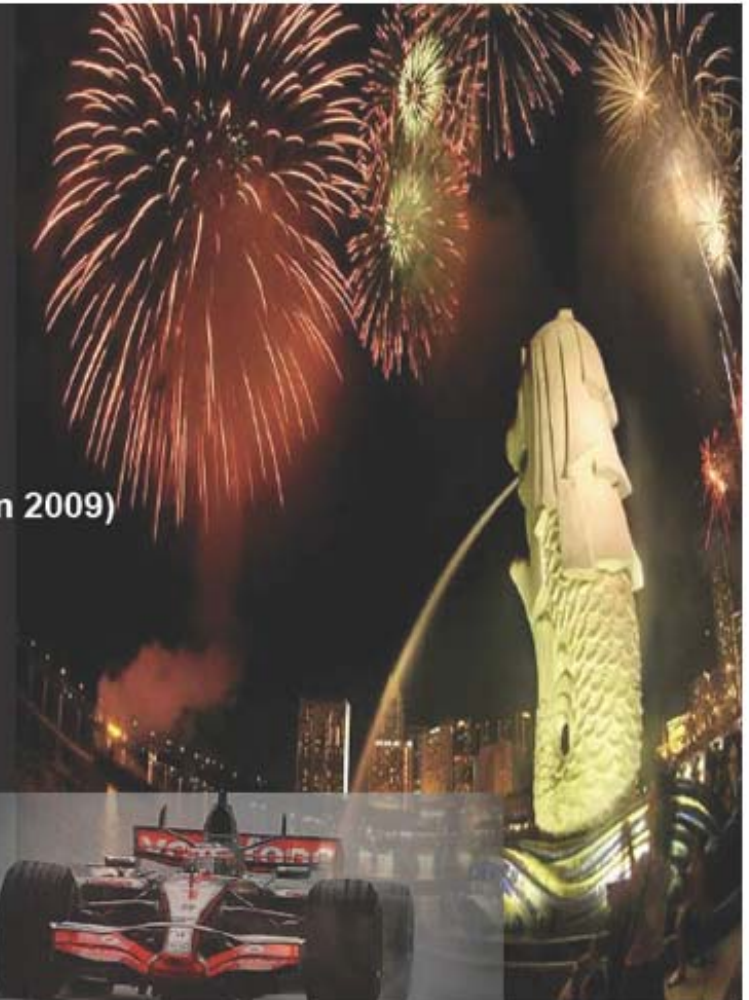
REDEFINING WORK, LIVE, LEARN & PLAY

Multicultural Unity - education, housing and social projects

cityofglobalevents

## Events

- :: Singapore **Design** Festival
- :: Singapore **Arts** Festival
- :: Asian **Media** Festival
- :: Singapore **Fashion** Week
- :: Singapore **Art** Biennale
- :: **Formula One** Night Race (from 2008)
- :: Singapore **Architecture** Biennial (from 2009)
- :: World of **Music** and **Dance**
- :: Mosaic **Jazz** Festival
- :: World **Gourmet** Summit
- :: World **EFFIE** Festival (from 2008)
- :: Beyond: **Creative Industries** Summit
- :: **MTV** Asia Awards
- :: Red Dot: **Design Concept**
- :: Global **Brand** Forum
- :: Changi Air Show



# HUMAN CAPITAL

## GLOBAL SCHOOLHOUSE - REDEFINING LEARN

### Local Universities and Polytechnics

11,000 degree & diploma engineering graduates annually



### Global School House

150,000 international students by 2012



Graduate programme in Engineering Materials



Singapore-MIT Alliance for graduate programmes



Singapore Campus



Medical Research Centre

### Emphasizing semiconductor-related studies including chip design



**TUM-NTU Joint Master of Science program in Integrated Circuit design**  
World Conference on Intellectual Capital for Communities

Table 6.1

Some results of the surveys  
 based on the WIPO *Guide* <sup>12</sup>

Country	Creative Industries contribution to GDP (%)	Creative Industries % of employment
United States	11.12	8.49
Singapore	5.70	5.80
Canada	4.50	5.55
Latvia	4.00	4.50
Hungary	6.67	7.10
Philippines	4.92	11.10
Russian Federation	6.06	7.30
Mexico	4.77	11.01
Croatia	4.42	4.23
Lebanon	4.75	4.49
Jamaica	5.10	3.03
Bulgaria	3.42	4.31

Source: WIPO.

Chart 6.1

Contribution of the creative Industries to GDP

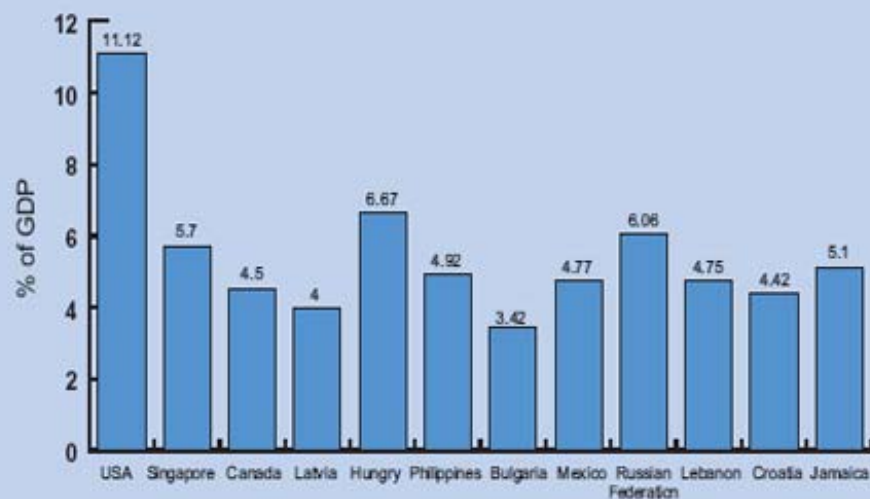
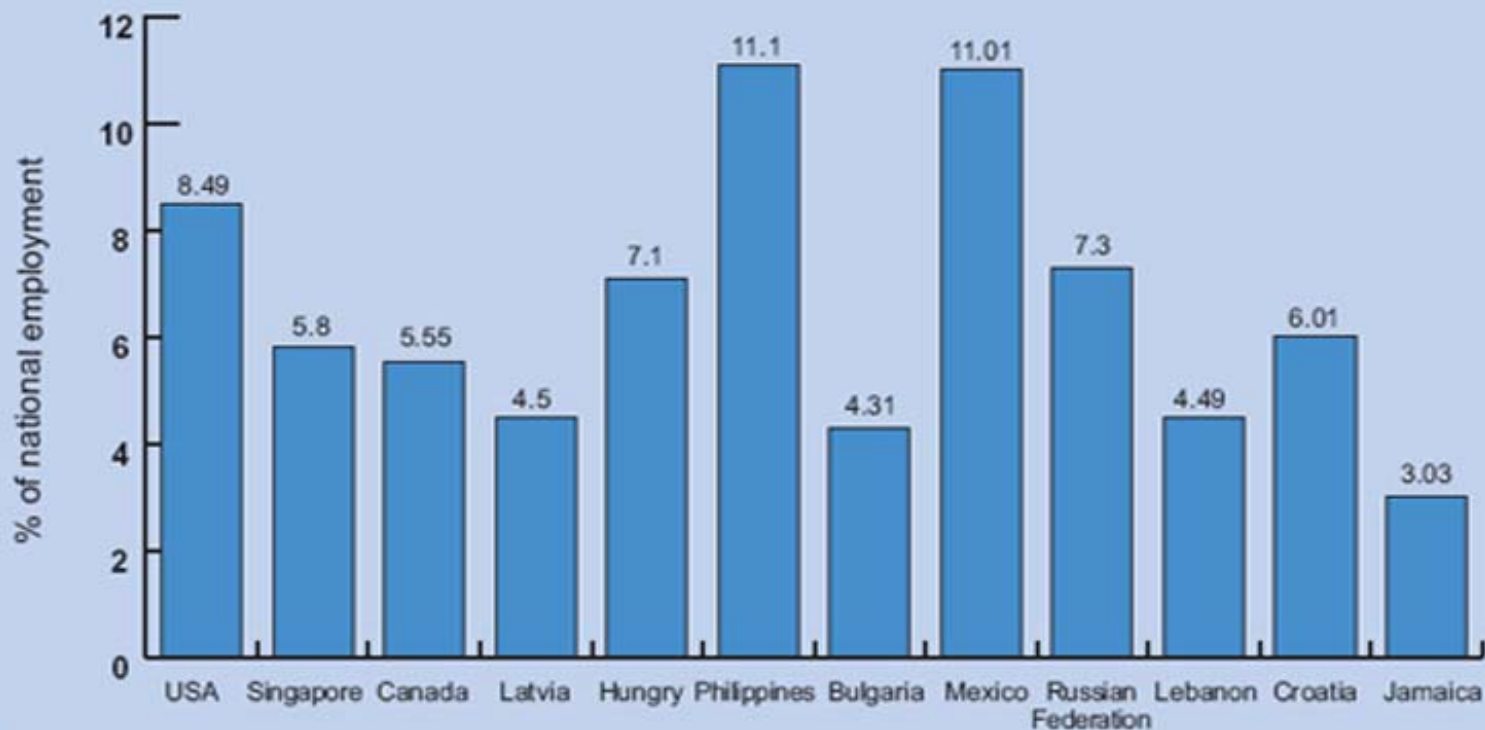


Chart 6.3

Contribution of the creative industries to national employment

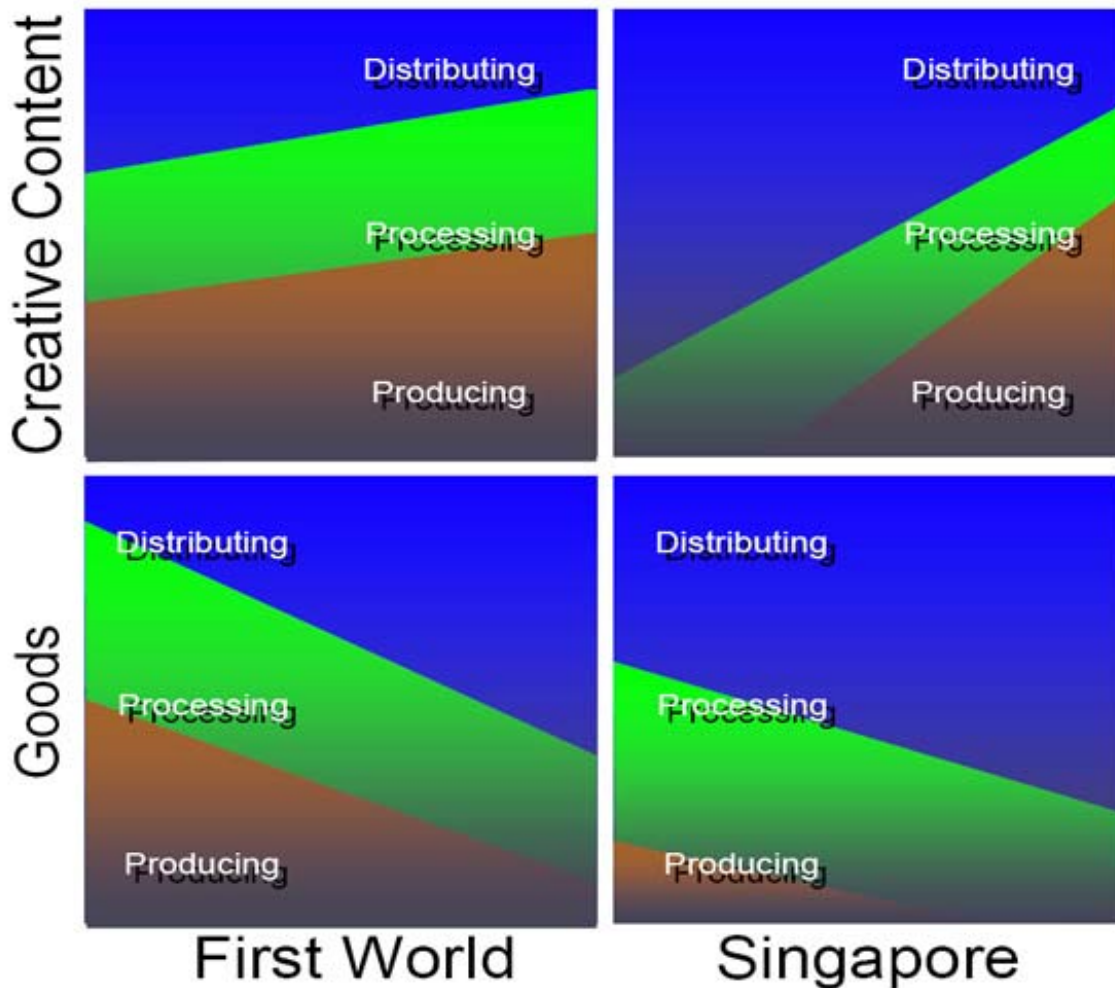




Intellectual Capital for Communities  
in the Knowledge Economy

# HUMAN CAPITAL

## CREATIVE GOODS/CONTENT DISTRIBUTION HUB





# HUMAN CAPITAL

## CREATIVE EXPORTS

Table 5.8

Creative goods: Top 10 exporters among developing economies, 2005

Rank	Exporter	Value (in millions of \$) 2005	Market share (%) 2005	Growth rate (%) 2000-2005
1	China	61,360	18.29	17.6
2	China, SAR of Hong Kong	27,677	8.25	0.8
3	India	8,155	2.43	21.1
4	Turkey	5,081	1.51	18.3
5	Thailand	4,323	1.29	5.1
6	Mexico	4,271	1.27	0.5
7	Malaysia	3,233	0.96	7.8
8	Singapore	3,067	0.91	17.5
9	Republic of Korea	2,942	0.88	2.8
10	Indonesia	2,833	0.84	0.1

Source: UNCTAD.

Table 5.25

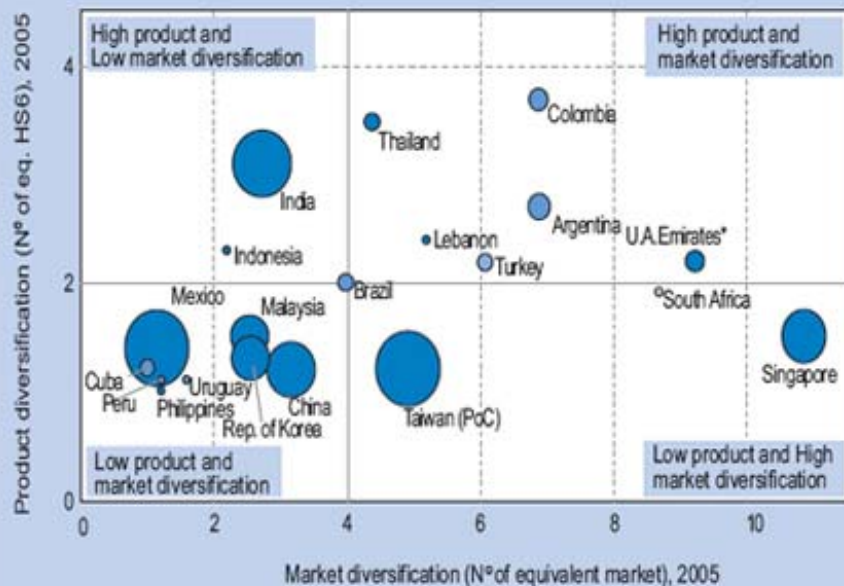
New media: Top 10 exporters among developing economies, 2005

Rank	Developing economy	Value (in millions of \$) 2005	Market share (%) 2005	Growth rate (%) 2000-2005
1	China	3,940	32.74	59.7
2	China, SAR of Hong Kong	1,020	8.47	44.2
3	Singapore	193	1.60	38.8
4	Republic of Korea	100	0.83	6.3
5	Taiwan Province of China	77	0.64	0.7
6	Mexico	65	0.54	-16.8
7	India	46	0.38	-34.4
8	Thailand	15	0.12	53.6
9	Turkey	9	0.08	40.2
10	Malaysia	8	0.06	-8.8

Source: UNCTAD.

## MUSIC

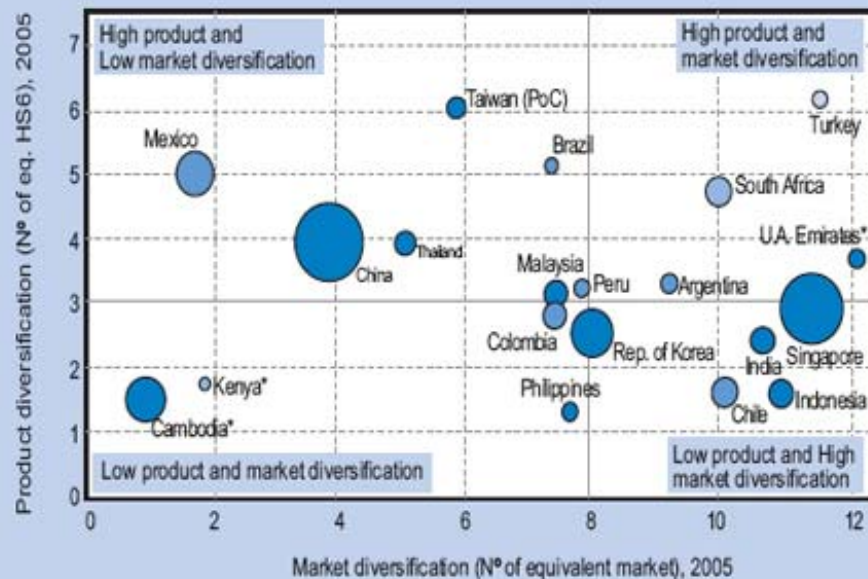
Chart 5.11 Music: Market and product diversification of developing economies



Source: ITC CountryMap.  
The size of the bubble is proportional to total country exports in 2005.

## PUBLISHING

Chart 5.17 Publishing and printed media: Market and product diversification of developing economies



Source: ITC CountryMap.  
The size of the bubble is proportional to total country exports in 2005.





HUMAN CAPITAL

INFORMATION ACCESS-KNOWLEDGE DIFFUSION

Intellectual Capital for Communities  
in the Knowledge Economy

National Library 1

Community Libraries 19

Children's Community Libraries (CCL) 2

School/Academic Libraries 4

Special/Government Libraries 13

+1 Mobile Library

**42** *Libraries*

Regional Libraries 3

# HUMAN CAPITAL KNOWLEDGE DIFFUSION (FROM CRADLE TO THE GRAVEYARD)



3 7 12 18 21 30 35 40 45 50 55 60 65 70 75 80

Lee Kong Chian Reference Library

Regional Libraries

Community Libraries

CCL's

JC

University

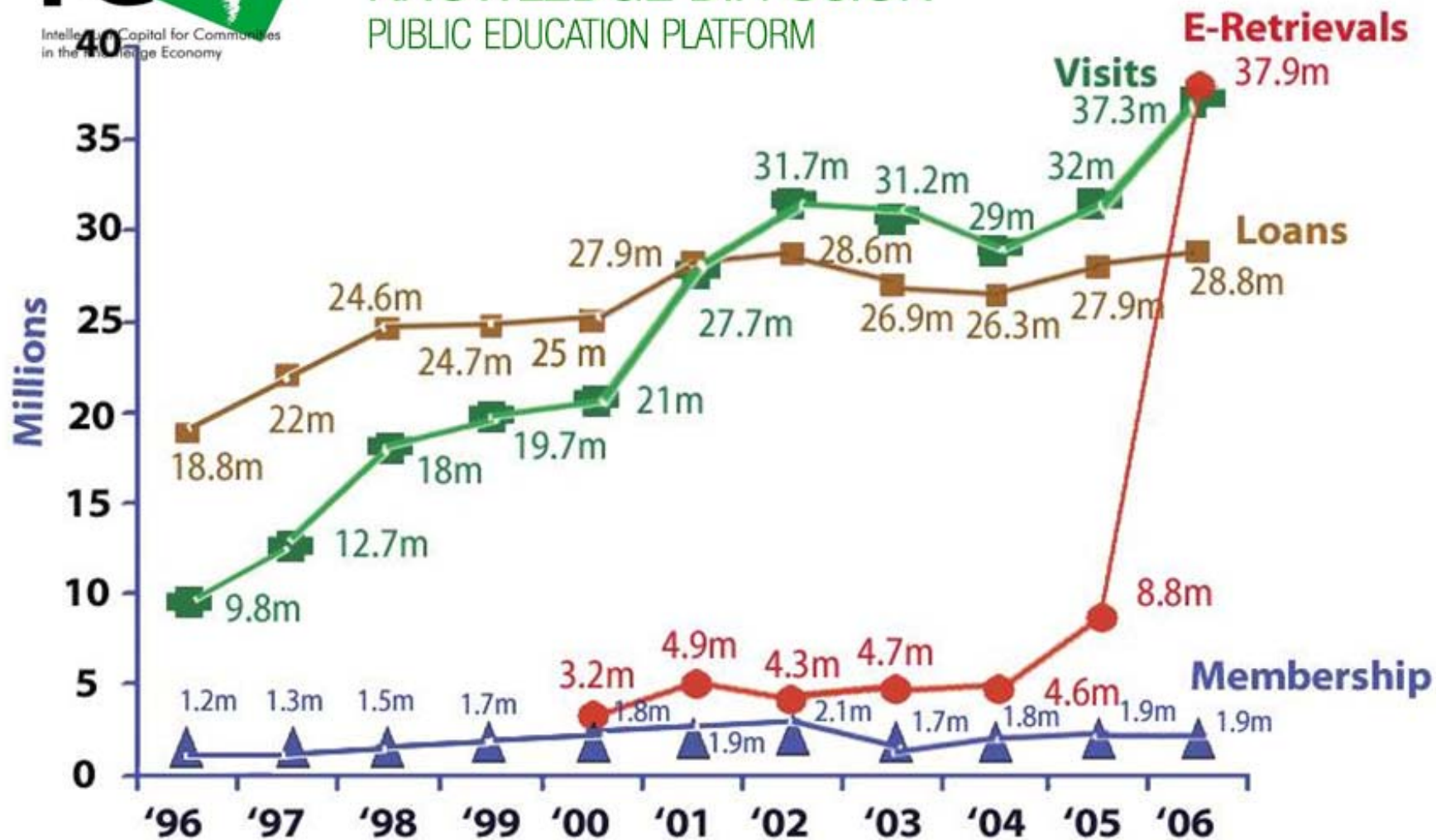
Government Libraries

Statutory Board Libraries



Intellectual Capital for Communities  
in the Knowledge Economy

# HUMAN CAPITAL KNOWLEDGE DIFFUSION PUBLIC EDUCATION PLATFORM



### Cluster Governance

(sub-political arena that enables reflexive  
and inclusive decision making)

### Leadership for Diversity and Flexibility

(feminine collaborative leadership  
supporting diverse understanding  
of values, knowledge, experience  
and opinions)

### Partnership Formation

(Institutional Innovation and  
knowledge development by  
multistakeholder partnerships  
with open and reciprocal communication  
systems)

# RELATIONAL CAPITAL GLOBAL ENTROPOLIS, IDENTITY CAPITAL

## NETWORK, BRAND, CUSTOMERS

**WORLD-CLASS** logistics service providers from the US, Europe and Asia provide high value-added, knowledge-intensive integrated logistic services. These include:

**Physical**

- Regional distribution & warehouse-managed inventory
- Procurement & configuration
- Autumn and repair

**Information**

- Business continuity & data hosting
- Multiplatform technical call centre
- IT & e-commerce development

**Financial**

- Trade financing
- Account receivable
- Exchanges

**Solutions Development**

- Research & development
- Planning, engineering & optimization
- Integration, implementation & execution

**The results?**

- Create innovative business models
- Enhance supply chain visibility
- Reduce supply chain complexity
- Optimize cost efficiency
- Improve profit margins and cash flow



**DEDICATED INFRASTRUCTURE** fully supports the diverse, complex and customized supply chain requirements of various industries. Providing hassle-free, quick turnaround capabilities contribute to the growth of transportation and high value-added logistic services for the region.

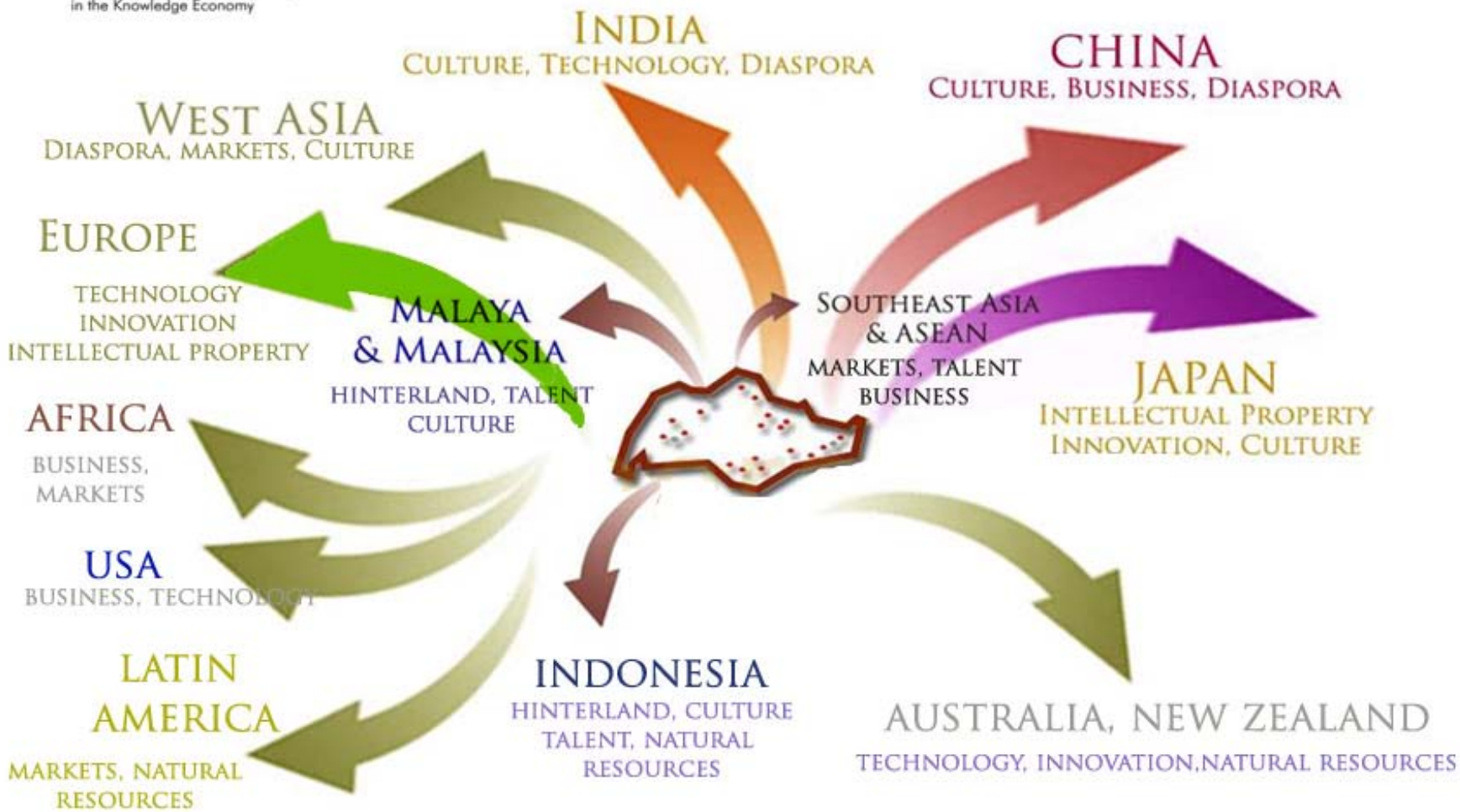
- **Airport Logistics Park of Singapore (ALPS)**, consisting of 26 hectares of Free Trade Zone (FTZ) at Changi Airport, is dedicated to fast turnaround, fast response air logistic operations.
- **Raffles Quay**, consisting of 90 hectares of land on Raffles Island, is dedicated to transshipment and breakbulk operations for bulk liquid petroleum and petrochemical products supporting manufacturers in Singapore and within the Asian chemical industry.

**GLOBALLY CONNECTED** - in reach of 2.8 billion people within a 3 hour flight radius.

- **Connected by air**
  - Via 80 airlines, with 140 city links
  - With 3,200 weekly flights
- **Connected by sea**
  - Via 400 shipping lines to 700 ports
  - 20% of world's transshipment cargo passes through Singapore
- **Connected by IT**
  - Singapore has more than 21 Tbps of submarine cables connecting to over 30 countries.



# RELATIONAL CAPITAL WORLD.SG GLOBAL FOOTPRINT





# RELATIONAL CAPITAL

Intellectual Capital for Communities  
in the Knowledge Economy

MICA Building



Creative People  
Gracious Community  
Connected Singapore

Architecture, Design, Arts, Sports, Planning

## SINGAPORE SEASON LONDON 2005

25 FEBRUARY - 5 APRIL 2005

www.singaporeseason.com



Intellectual Property Office Singapore



agents  
**change**  
CONFIDENT  
explorer

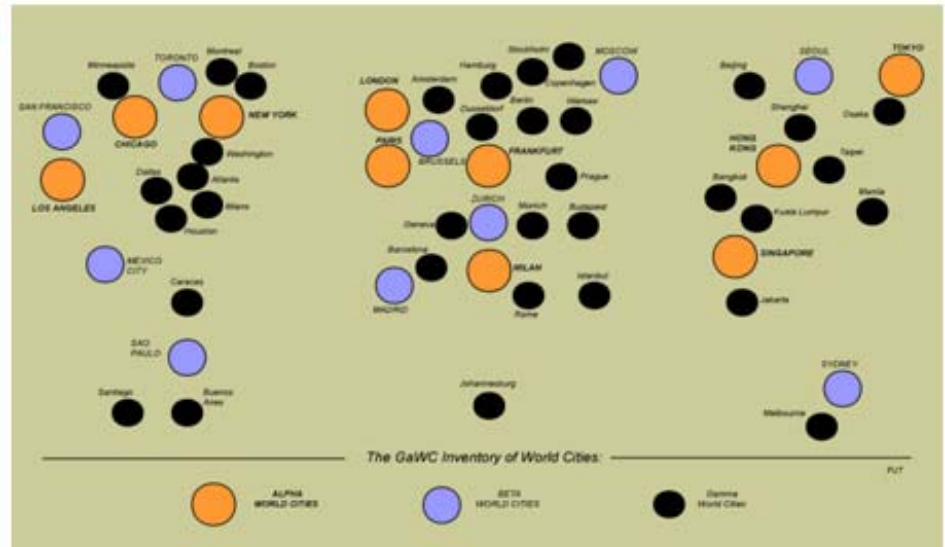
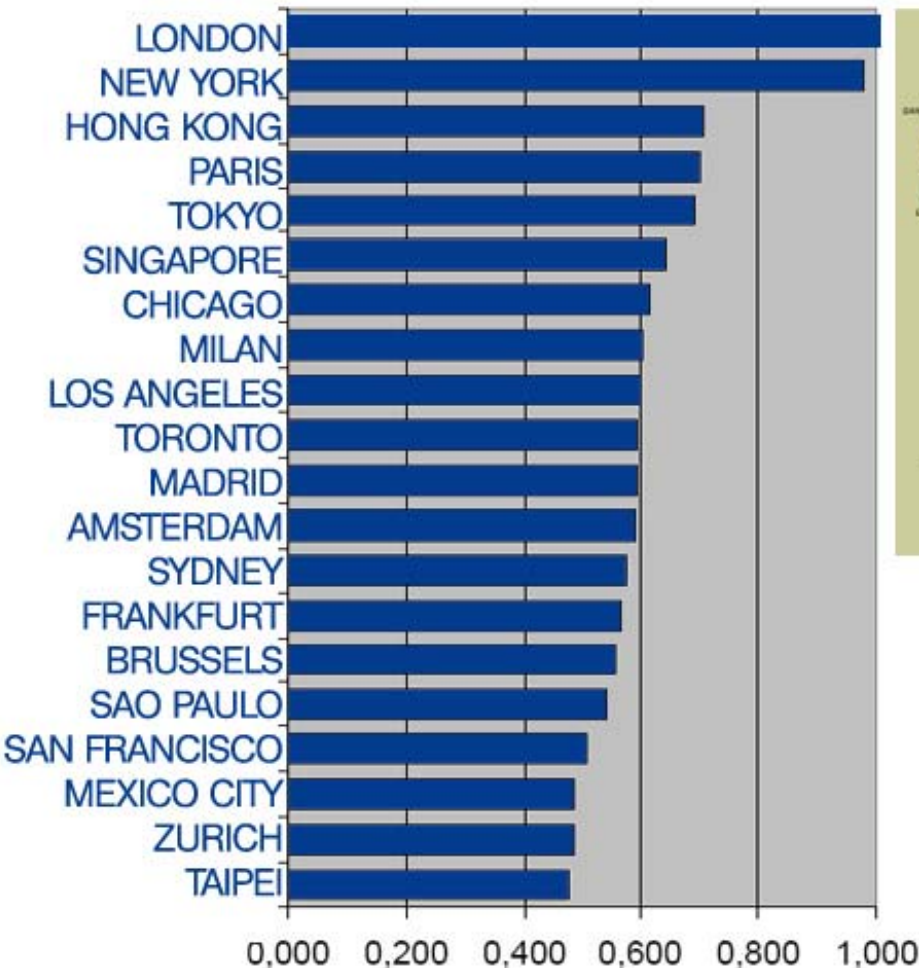
## SINGAPORE BRAND

- Trust
- Knowledge
- Connectedness

# RELATIONAL CAPITAL

## NETWORKS - GLOBAL NETWORK CONNECTIVITY

LONDON= 1 (2001)
















### ALPHA CITY IN TERMS OF INTERCONNECTEDNESS

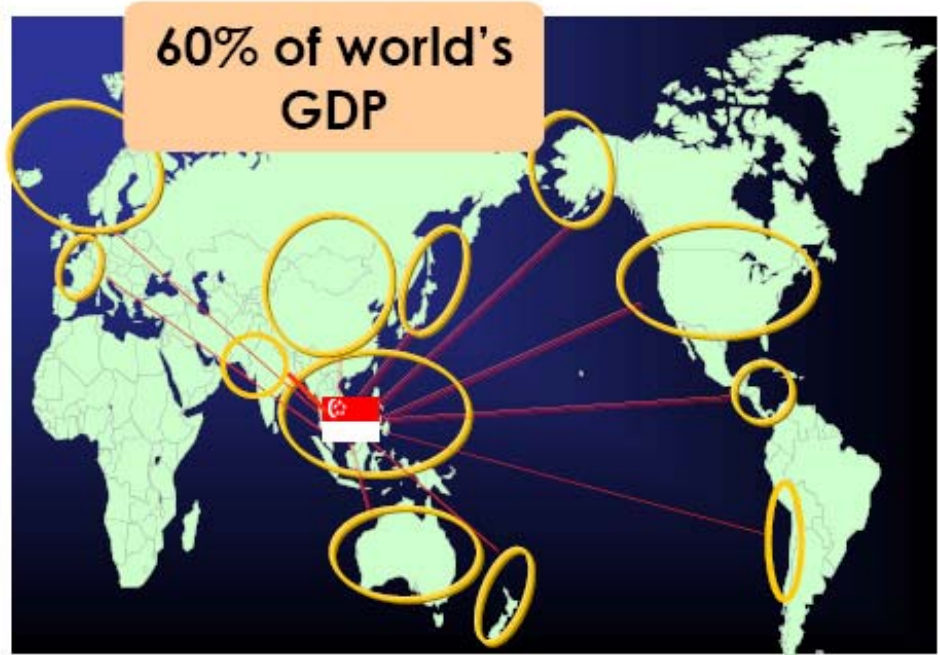
#### SINGAPORE

Most over-linked city: Beijing (0.044)  
 Most under-linked city: Auckland (-0.039)  
 Specificity of hinterworld: 0.016

BEIJING MOL - Guangzhou  
 GUANGZHOU MOL - Ho Chin Minh City  
 HO CHIN MINH CITY MOL - Guangzhou

**FTAs Concluded/  
 In Force**

 ASEAN	 Australia	 NZ	 US
 India	 Japan	 Korea	 Panama
 Chile- NZ- Bruni	 Qatar	 Jordan	
 EFTA	 ASEAN-China (Goods)		



**FTAs under negotiation**

 ASEAN-Korea	 ASEAN-Japan	 Kuwait	 Peru	 Pakistan
		 ASEAN-Australia-NZ	 ASEAN-India	

# RELATIONAL CAPITAL

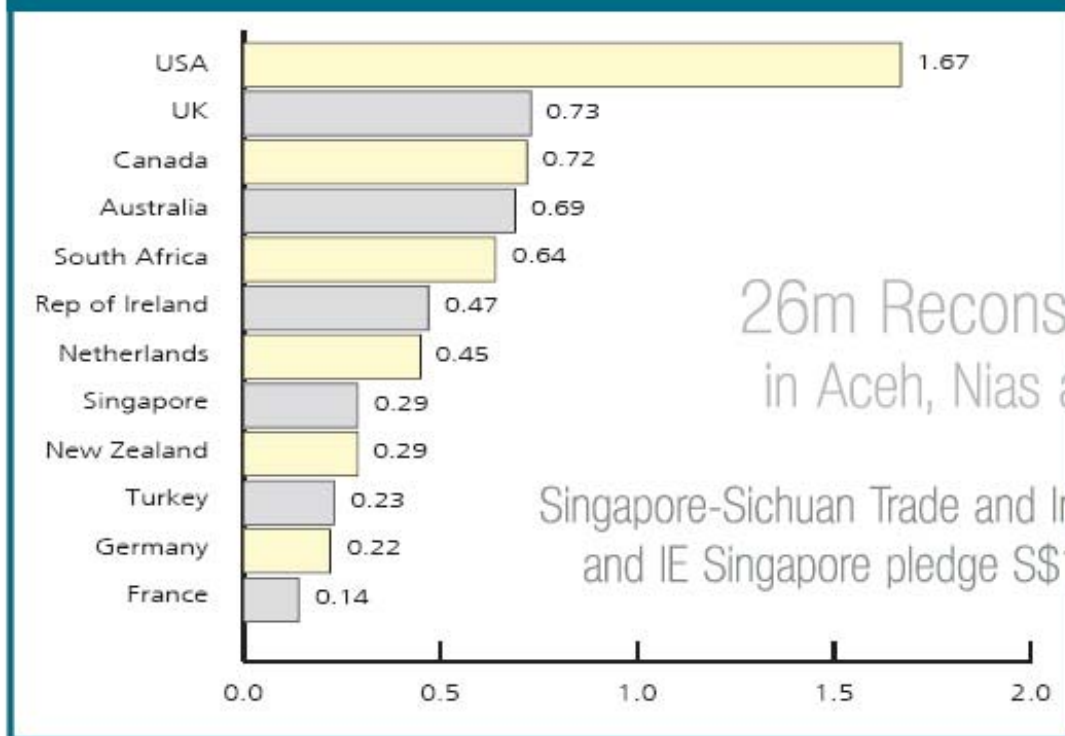
## DIASPORA, GLOBAL ENTREPOLIS



Global Indian Business Networks  
Global Chinese Business Networks

# RELATIONAL CAPITAL "LION HEART"

Figure 2 National giving levels shown as a % of GDP



26m Reconstruction Projects  
in Aceh, Nias after 2004 Tsunami

Singapore-Sichuan Trade and Investment Committee  
and IE Singapore pledge S\$1m for relief efforts

Sources: World Bank WDI 2005:

**Temasek Foundation**

15m given in the first year



# RELATIONAL CAPITAL CUSTOMERS

**FROM** TO

VALUE-ADD SERVICES **TO VALUE INNOVATION**

VALUE IN PRODUCTS AND SERVICES **TO VALUE IN BRANDS, ICONS, IP**

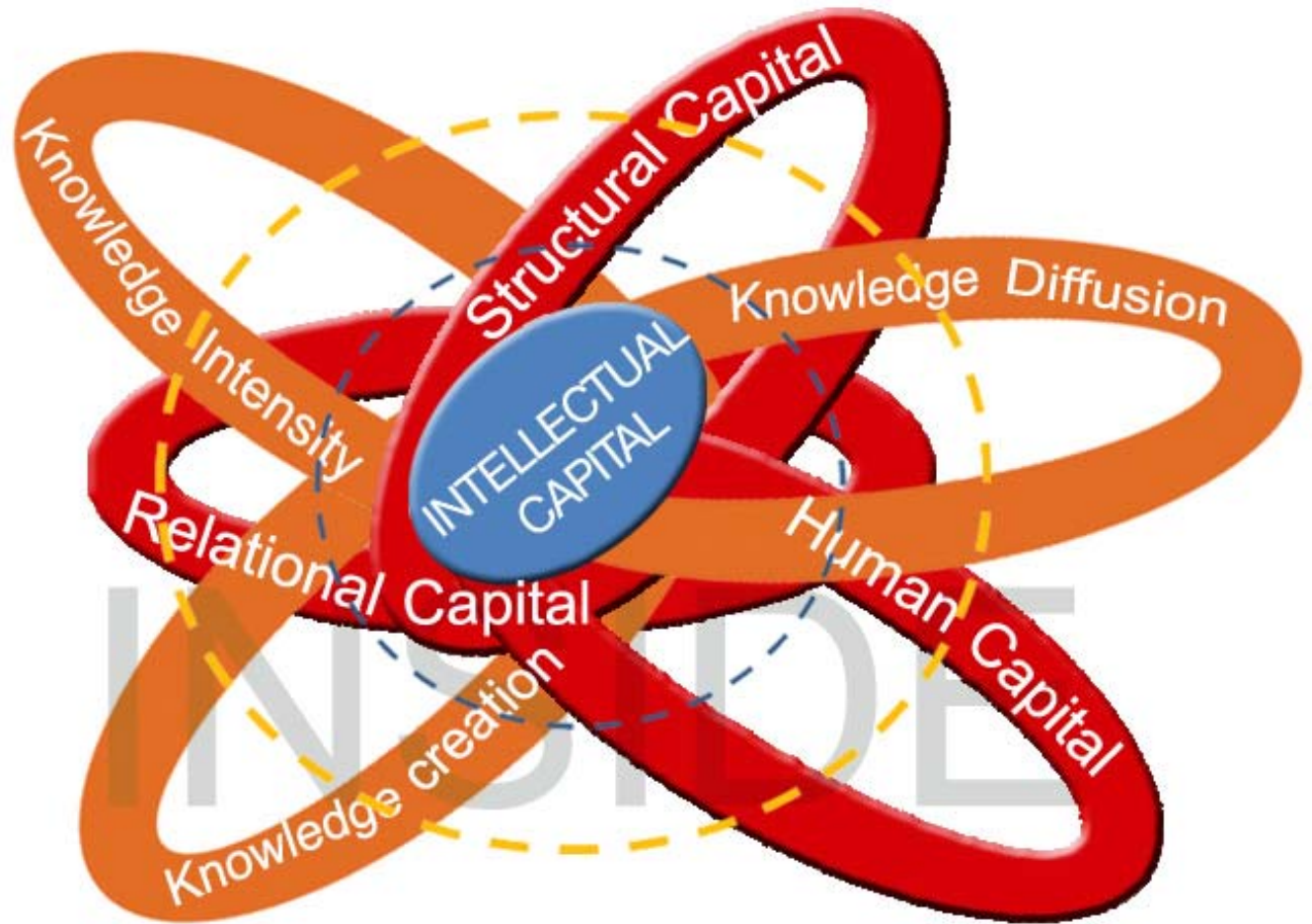
FUNCTION, FORM, USABILITY **TO INTERNATIONAL & GLOBAL ISSUES**

SPECIALISED EXPERTISE **TO INTER-DISCIPLINARY CONVERGENCE**

TRADING PORT AND FINANCIAL HUB **TO WORLD DESIGN CITY**

IDENTITY **CREATORS**  
**GAME** CHANGERS  
globally integrated enterprises  
**catalysts**

20 **MILLION** SINGAPOREANS



# CONCLUSION

CONNECTIVITY-MOBILITY-TRANSFORMATION