

# Coordination. Collaboration. Harmonisation.

The Singapore Experience

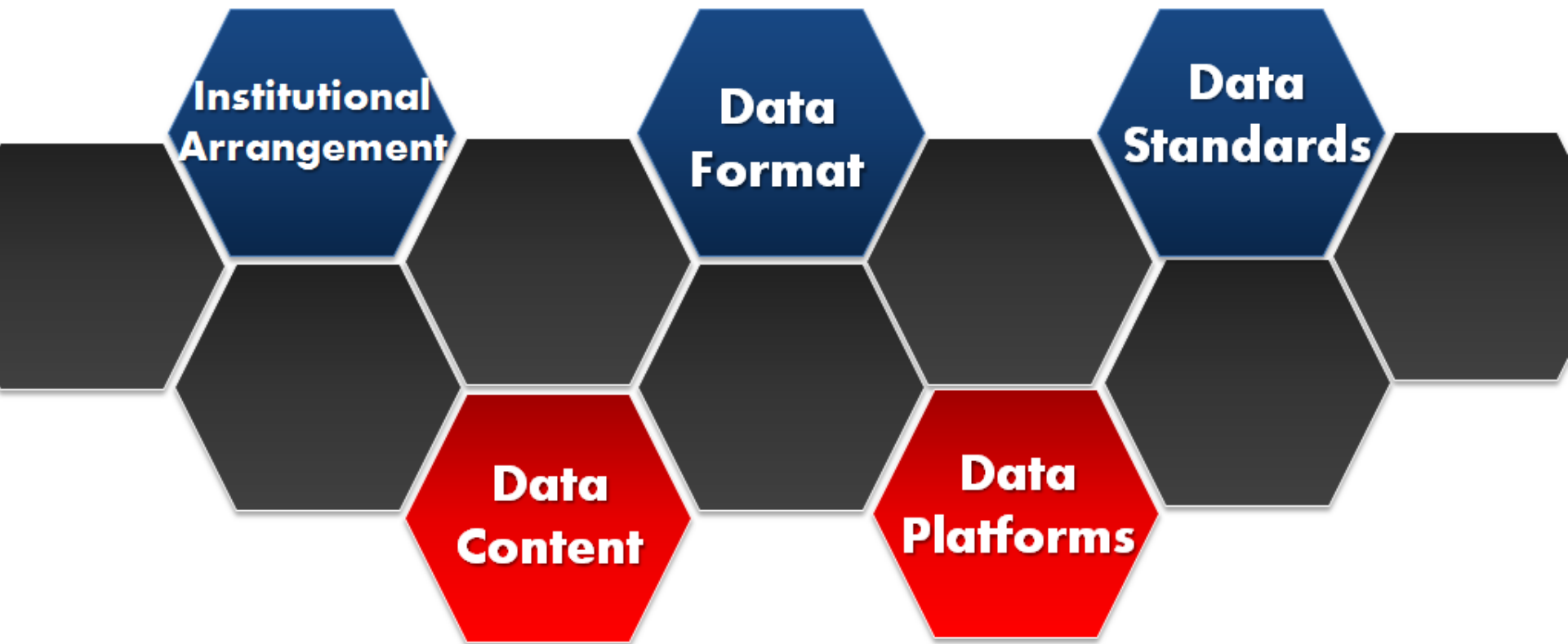


**Mr Ng Siau Yong**  
Director, GeoSpatial Division  
Singapore Land Authority

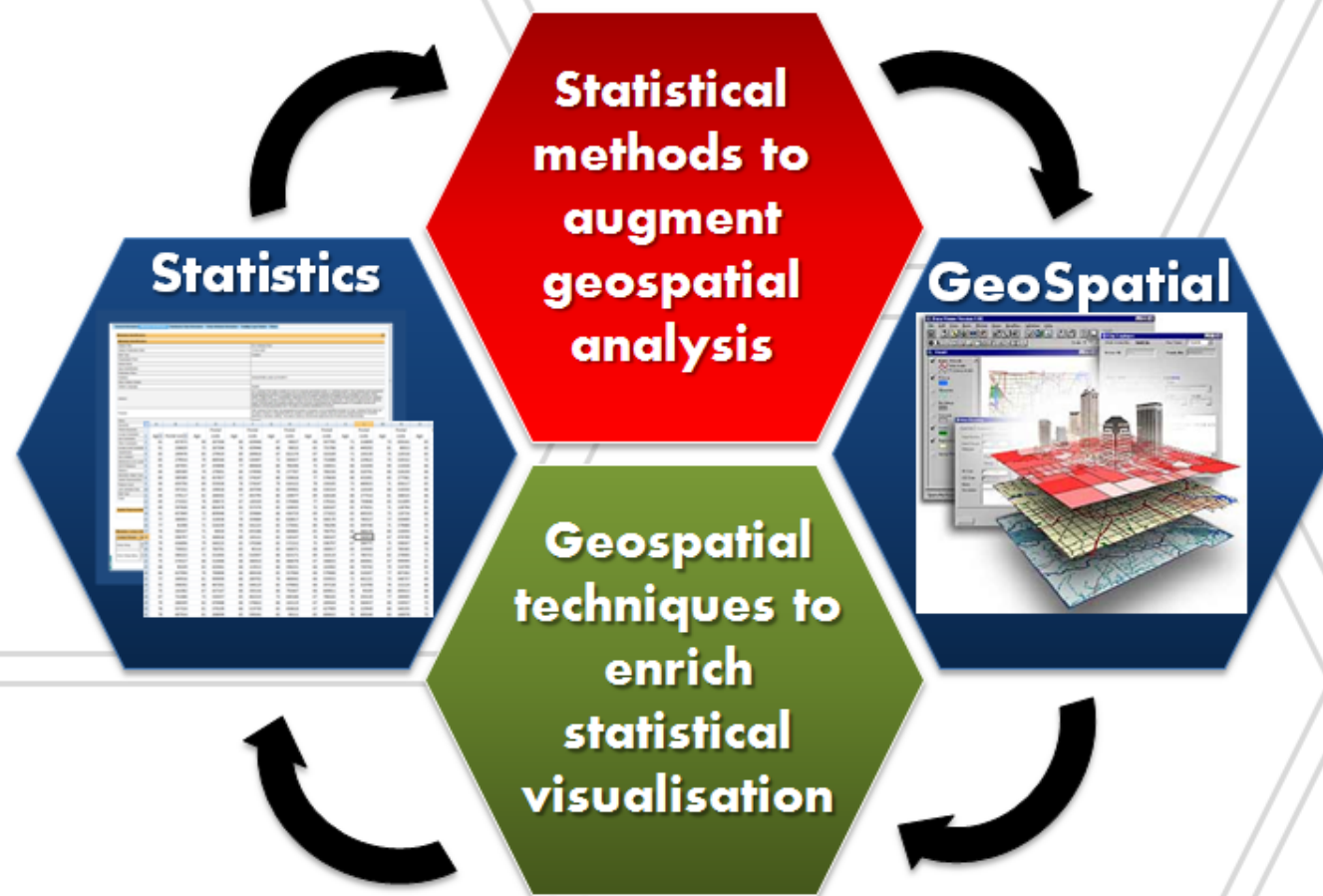


# Integration of GeoSpatial and Statistics?

*Integrate: to bring together, to unite or combine, into a whole (Dictionary.com)*



# Mutually Beneficial Collaboration



A perspective view of a dark asphalt road with white dashed lines, stretching towards a bright, glowing sunset over a vast green field. The sky is filled with soft, colorful clouds in shades of blue, orange, and yellow. The sun is low on the horizon, creating a strong lens flare effect.

# **Integration?**

# **Synergy? Desired Outcome?**

**Harmonisation**

**Collaboration**

**Coordination**

# Many Paths to the Same Destination?

**1. GeoSpatial and Statistics: institutional integration or close collaboration?**

**2. What is the desired outcome of GeoSpatial-Statistical synergy?**



Image courtesy of FreeDigitalPhotos.net

**Singapore's experience of **Coordination. Collaboration. Harmonisation.****

**Network of government agencies engaged in collaborative effort, using shared data and data platforms, to enhance policy decision making and service delivery for citizens.**

# Increasing Use of Geospatial in Singapore

*“The NEA is, as we speak, using **geospatial** analytics to manage the dengue outbreak. Others such as the SSC and NLB are similarly using geospatial analytics to plan the location of sports facilities and libraries respectively”*

Tharman Shanmugaratnam  
Deputy Prime Minister



*“There is huge potential for the use of such **geospatial** data by the private sector and the community. We live, work and play in a world marked by **geospatial** coordinates. “*

K Shanmugam  
Minister for Foreign Affairs and Law

*“Combining these (health data) with lifestyle, **geospatial**, behavioral and genotype data, will provide us with better insights...to further improve care delivery, guide policy development and enhance patient well-being”*

Gan Kim Yong  
Minister for Health



# Increasing Use of Data in Singapore

*“Government agencies, by the nature of their work, possess **valuable data** that citizens may also find useful... there is now an additional dimension, as we are beginning to see a strong wave of **citizen-initiated information** and ideas. Governments must take on the roles of a facilitator and enabler - to collaborate with the public, private and people sectors in creating new solutions, new businesses, and new wealth.”*

Teo Chee Hean  
Deputy Prime Minister and Coordinating Minister for  
National Security and Minister for Home Affairs



*“The LTA uses **data analytics**... through the mining of farecard data that allows LTA to pin-point which segments of a service are most crowded... This has helped LTA to plan for the introduction of Peak Period Short Services which has eased over-crowding on certain services.”*

Josephine Teo  
Senior Minister of State for Finance and Transport

*“Insights gained from this (sensor) **data** would enable us to better anticipate citizens’ needs and help in better delivery of services”*

Yaacob Ibrahim  
Minister for Communications and Information



# Developing Singapore's Data Coordination and Governance

1980s

Uncoordinated Bilateral Arrangements



1990s – 2000

1. Land Data Hub



2. People Hub



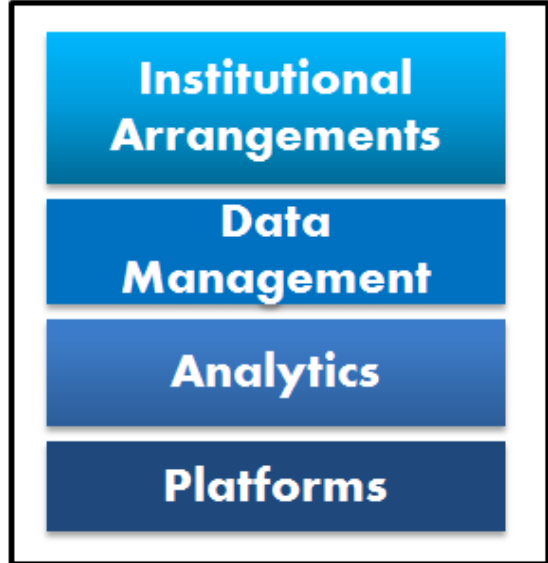
3. Business Hub



Mid 2000s



**SG SPACE**  
Whole-of-Government  
Coordination



Linking  
of Hubs





# Project Synergy

Identifying new childcare center locations using geo-coded business data, property rental prices, socio-demographic data and childcare centers, visualise and model using GIS.



# Developing Singapore's Data Coordination and Governance

## Government Data Steering Committee

(26 Ministries and Agencies)

Champion data sharing

Drive WOG data policies

Arbitrate data disputes

### SG-SPACE

#### Coordinating Committee

(GeoSpatial)

Facilitate data sharing

Develop geo-standards and policies

Drive capacity building

### \*Government Data

#### Coordinating Committee

(Statistics and Textual)



SLA-IDA



SLA-IDA

SG-DATA

DOS-IDA

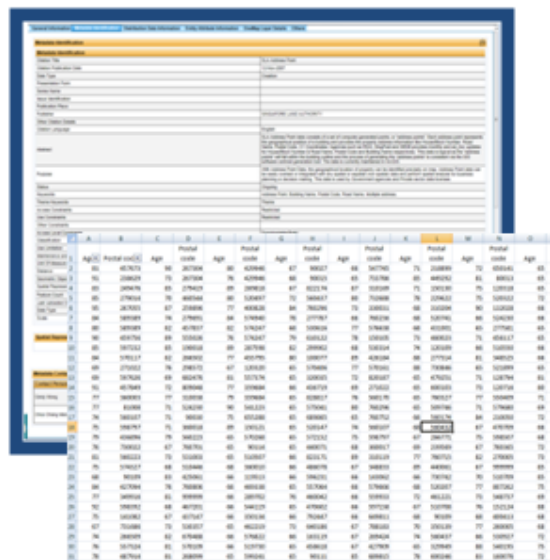


MOF-IDA

# Using GIS to M-A-P Libraries Data

## 40 million rows of data

- 30,000,000 loans
- 8,000,000 titles
- 2,000,000 patrons



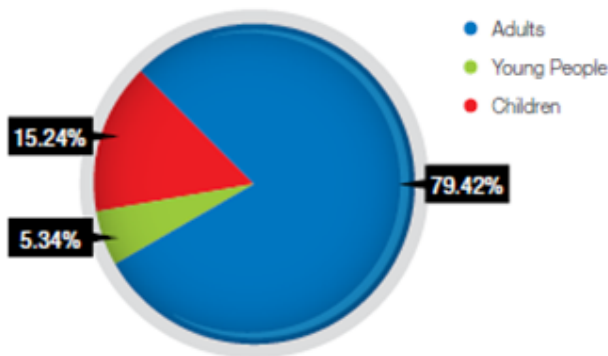
| Name of Library              | Notes | FY2009    | FY2010    |
|------------------------------|-------|-----------|-----------|
| Ang Mo Kio Public Library    |       | 1,428,132 | 1,308,939 |
| Bishan Public Library        |       | 2,097,912 | 2,133,587 |
| Bedok Public Library         |       | 2,281,356 | 2,097,573 |
| Bukit Batok Public Library   |       | 1,150,550 | 1,122,371 |
| Bukit Merah Public Library   |       | 874,836   | 829,236   |
| Bukit Panjang Public Library |       | 1,216,707 | 1,213,891 |

## Cumulative Loan Statistics

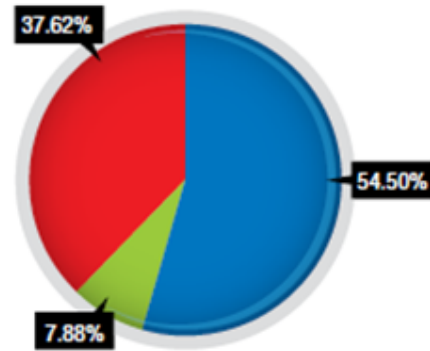
### Financial Year Ending



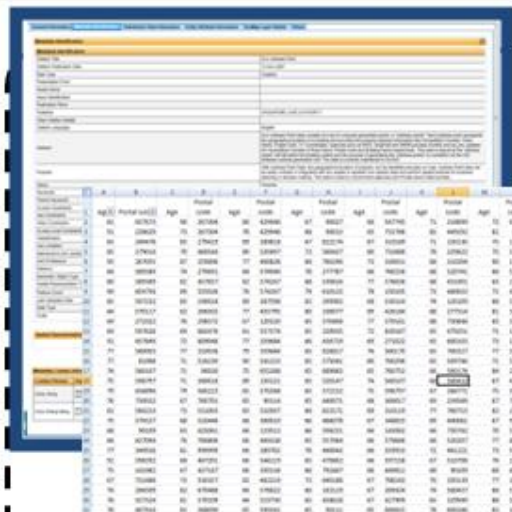
No. of Chinese Titles By Age Group



No. of Malay Titles By Age Group



# Using GIS to M-A-P Libraries Data



| Age | Postal | Age | Postal | Age | Postal | Age | Postal | Age | Postal | Age | Postal | Age | Postal | Age | Postal |
|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|
| 30  | 10000  | 30  | 10000  | 30  | 10000  | 30  | 10000  | 30  | 10000  | 30  | 10000  | 30  | 10000  | 30  | 10000  |
| 30  | 10000  | 30  | 10000  | 30  | 10000  | 30  | 10000  | 30  | 10000  | 30  | 10000  | 30  | 10000  | 30  | 10000  |
| 30  | 10000  | 30  | 10000  | 30  | 10000  | 30  | 10000  | 30  | 10000  | 30  | 10000  | 30  | 10000  | 30  | 10000  |
| 30  | 10000  | 30  | 10000  | 30  | 10000  | 30  | 10000  | 30  | 10000  | 30  | 10000  | 30  | 10000  | 30  | 10000  |

## NLB Data

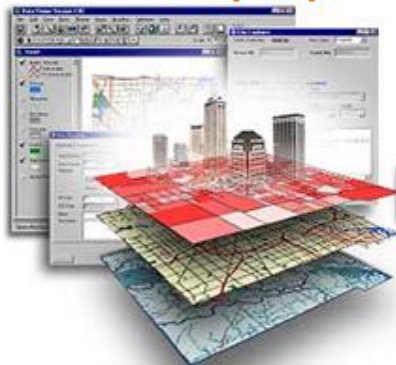
3 years worth of data

120 million (40x3) rows  
of data



Other  
Agency  
Sources

M(AP)



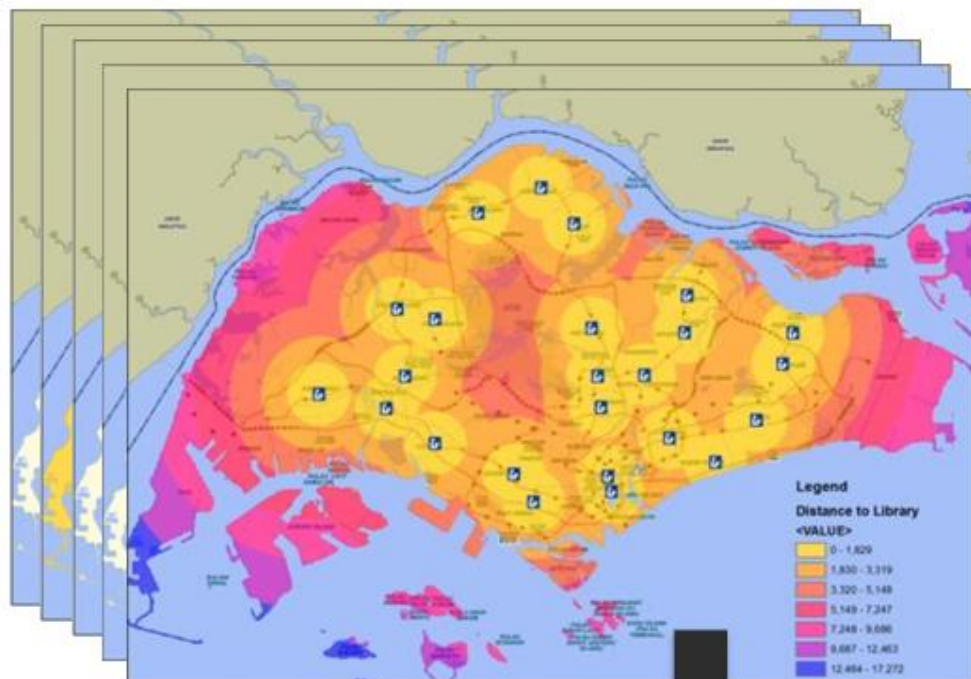
A(NALYSE)



P(REDICT)

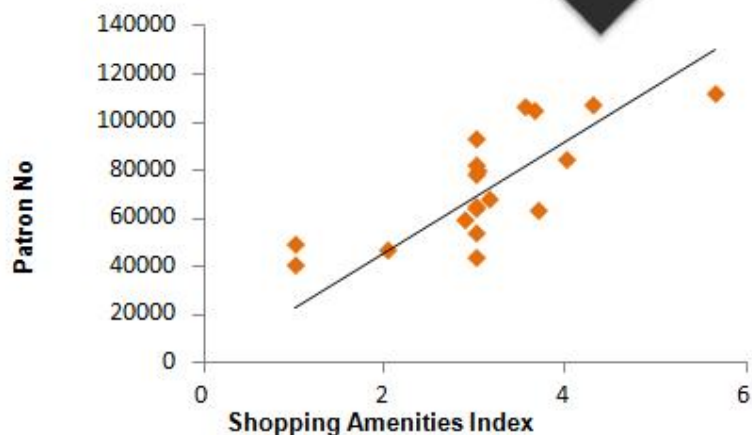


# Using GIS to M-A-P Libraries Data



## Location Factors

1. Population
2. Shopping Amenities
3. Public Transport Accessibility
4. No of Schools Nearby
5. Distance between Libraries



# Analytics and Applications Collaboration

15-agency  
Collaboration



Analyse land and  
properties at risk

Geo  
Community

Slope Hazard  
Repository  
and Analysis  
System



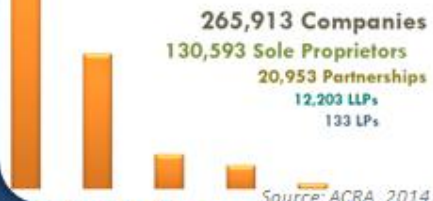
Modeling  
variables

Collaborative  
geo-statistical  
platform for  
agencies to  
analyse and  
mitigate slope  
failures

# Applications Collaboration

**Business & Census Geo Data**

Live Business Entities as at 28 February 2014



**ACRA Company and Business Data**

Table of Content

| Layer Name                          | Actions  |
|-------------------------------------|--|
| ACRA Company (483447) Scale: 10000  | [Icons for search, info, refresh, delete, add] |
| ACRA Business (793422) Scale: 10000 | [Icons for search, info, refresh, delete, add] |

View Attribute Data - Features within visible extent

| Company name   | Effective date of company | Num |
|--|---------------------------|-----|
| SHUN CHEONG STEAM NAVIGATION COMPANY (SINGAPORE) PRIVATE LIMITED |                           | 0   |
| SINGAPORE EXPORT MOTORS SENDER IAN BERHAD                        |                           | 0   |
| CHALESON INTERNATIONAL (S) PRIVATE LIMITED                       |                           | 0   |
| PG INDUSTRIES PTE LTD  | 19891130                  | 0   |

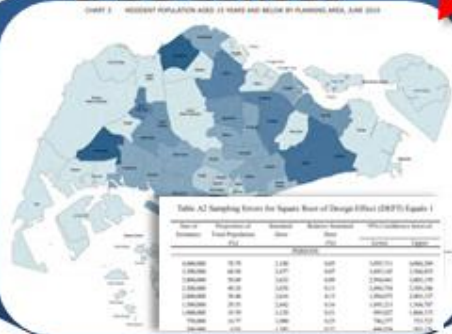
ACRA Company(1 to 447) [Previous] [Next] [Export-CSV]

**Geocoded Data**

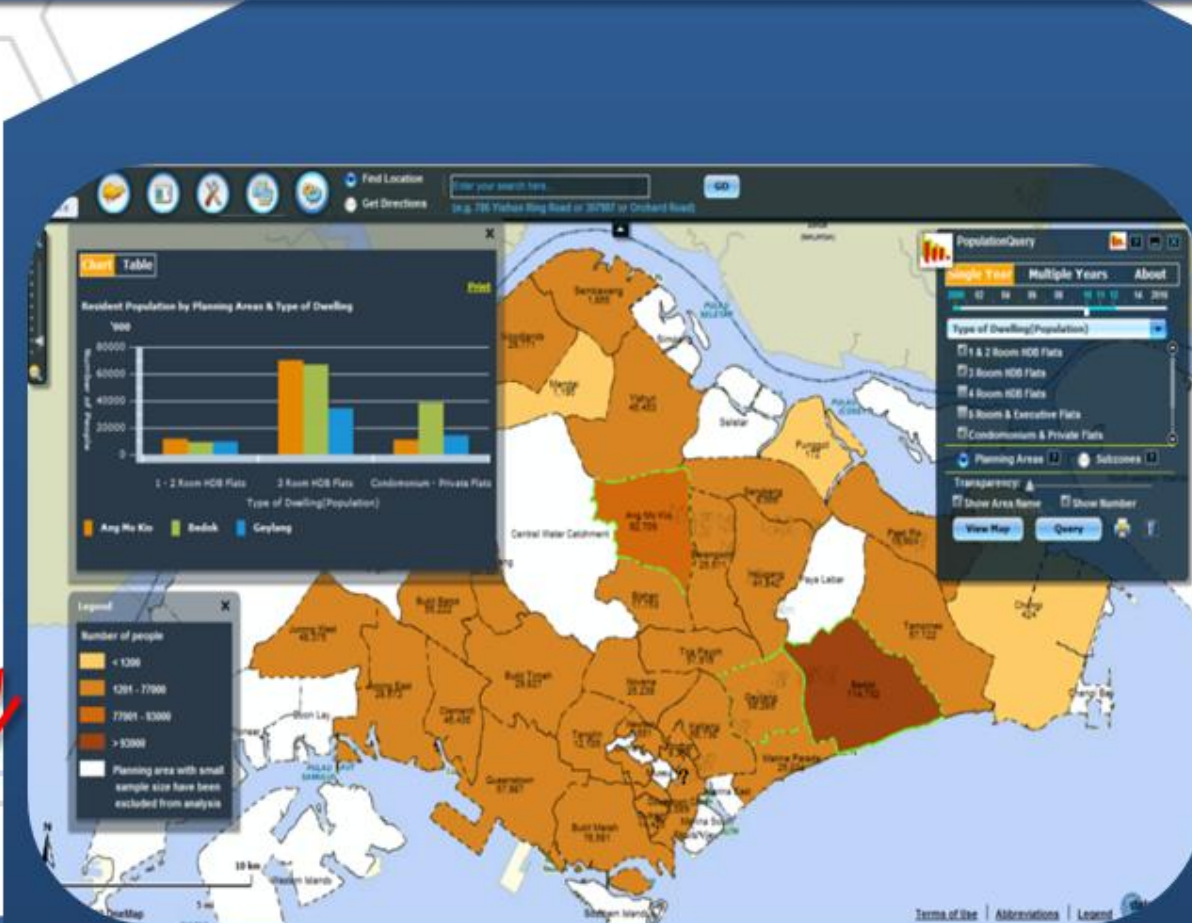
# Applications Collaboration

**Business & Census Geo Data**

**DOS Census**



Source: DOS, 2010



**Census by Planning Area**



# Applications Collaboration

## Visualise:

22 categories of census data

## Analyse:

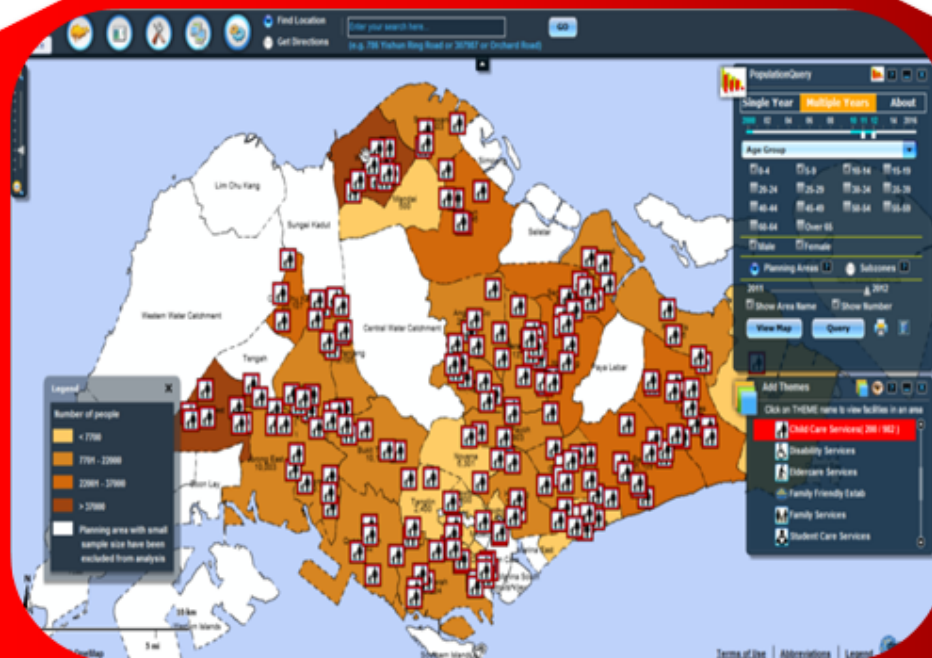
In conjunction with OneMap thematic data

Population Query on OneMap



## Compare datasets:

- By planning areas and planning subzones
- By year



Free service for public to access published, authoritative statistical data of Singapore's population.

# Multi-Agency Geo-Statistical Harmonisation

**Common Geo Boundaries**

**Harmonisation between People Hub, DOS, SLA**

**Map fine-grained data**



**Support micro-level planning**

**Socio-Demographic Data**  
Population figures.  
Gender. Ethnicity.  
Age. Income. Car Ownership. Education.

**Common administrative boundaries for data aggregation**

**Geo-Boundaries**

5 Planning Regions,  
55 Planning Area,  
300+ Planning Subzone,  
500+ Transport Planning Zone,  
1100+ Sub Transport Planning Zone,  
11,000+ ADZ

# Smart Nation Singapore

*“We will make Singapore a Smart Nation: enabling safer, cleaner and greener urban living, more transport options, better care for the elderly at home; more responsive public services and more opportunities for citizen engagement”*

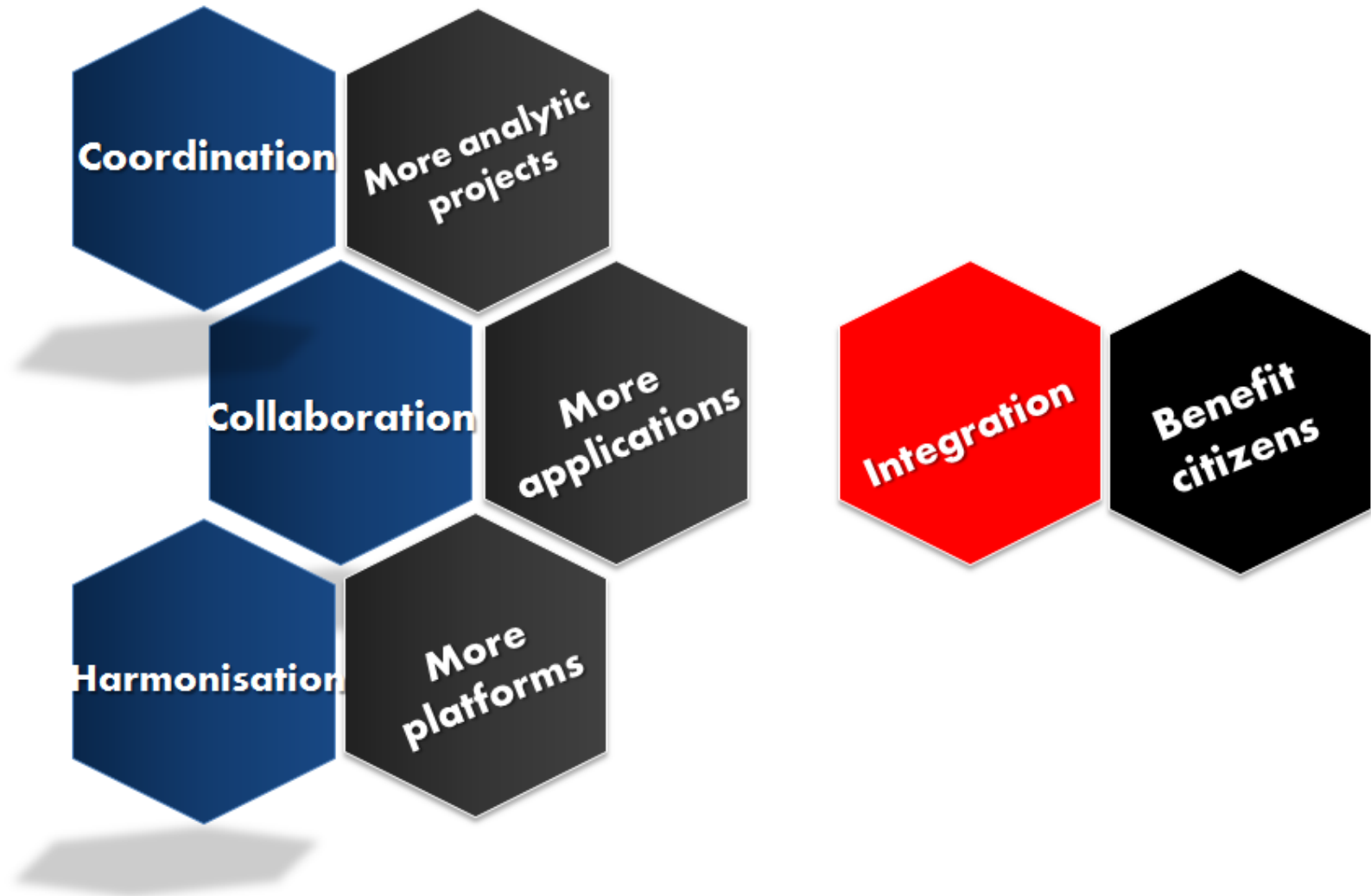
Dr Tony Tan  
President of Singapore



# Synergistic Data for Smart Singapore



# The Way Forward



# Let's Uncover the Hidden Opportunities



**Thank you.**

**Mr Ng Siau Yong**  
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**Director, GeoSpatial Division**  
**Singapore Land Authority**