Use of Cloud for the Public Sector Information (PSI) Portal

Cloud Experience Sharing

Office of the Government Chief Information Officer

December 2013

What is PSI

Data and pictures on weather, traffic, population, economics, locations, etc.

Generated and possessed by the Government and public sector

PSI in Hong Kong

Widely available

Scattered

Non-reusable

Data.One

Free of Charge / Royalty

Commercial Re-use: YES!

Machine Readable: YES!

資料一線通
DATA·ONE

data.one.gov.hk

15 Categories, Hundreds of Datasets

Law and Order
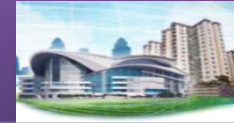
News and Information

Buildings

Marine

Image Resources

Geo-referenced Public Facilities Data

Property Market Statistics
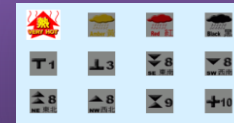
Public Transport

Traffic Data

Population Census

Weather Data

Air Pollution Indices

Food / Environment / Hygiene data

Water Quality Data

Charitable Fund-Raising Activities

Use of PSI Traffic Information

Real-time Traffic Images

Challenges

- 180 locations in Hong Kong
- Real time update every 2 minutes
- Image of about 20KB each
- Serving unknown demand
- Real-time vs Out-dated information
- Round the clock availability
- Be available in 4 months
- Little funding
- Limited technical manpower

Hurdles

Options of dissemination

Government infrastructure and systems

Government's Standing Offer Agreement on data centre services

What hinder the feasibility

Uploading of snapshot image over the Internet

Cost for one-off development and on-going maintenance

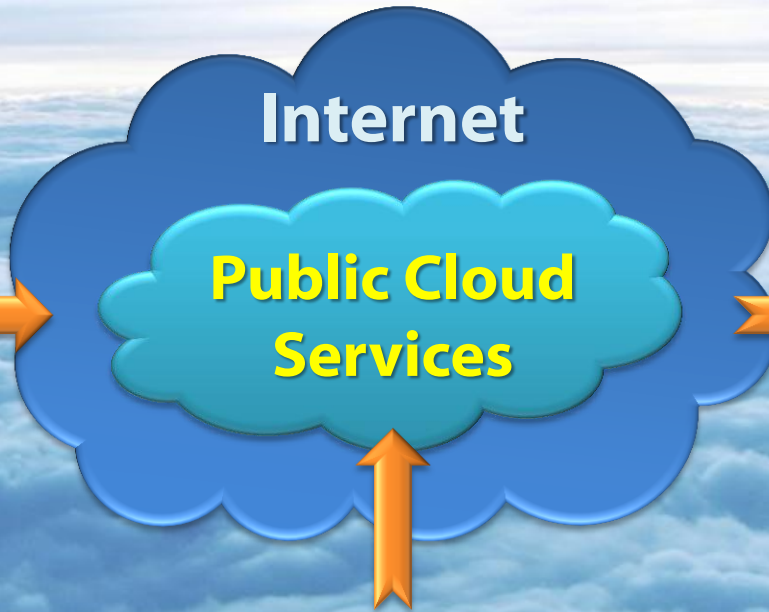**Development time and required technical skill**

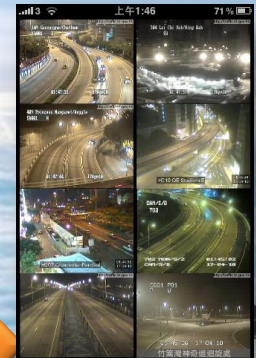**Monitoring of service**

Solution

Internet

Public Cloud Services

Images from the Transport Department

Configure and Administer by Government Staff

Display in Citizens' Browsers, Mobile apps, etc.

2-Phase Implementation

Phase One (from the March 2011 launch to January 2012)

- Ran on a **PaaS** platform
- Built with Python + data-store service from the cloud vendor
- The evaluation & implementation took about 3 man months by one staff

Phase Two (January 2012 onwards)

- Runs on an **IaaS** platform
- Built with Apache + scripts
- Conversion from Phase One required rewrite
- The migration took about 2 man months by one staff

In House or Public Cloud?

In-house Hosting

Pros:
- More control on availability
- More control on data security
- No concern on vendor lock-in
- No Gap between services offered and requirements

Public Cloud Hosting

Pros:
- Low CAPEX costs
- Better scalability
- Faster setup time
- Less TCO, in general
- Less in-house support staff needed

Cons:
- Lack of de facto standards on provision of cloud service

Benefits Enjoyed from Public Cloud Services

Meet the ever-changing and unpredictable demand for especially traffic snapshot images and related real-time figures
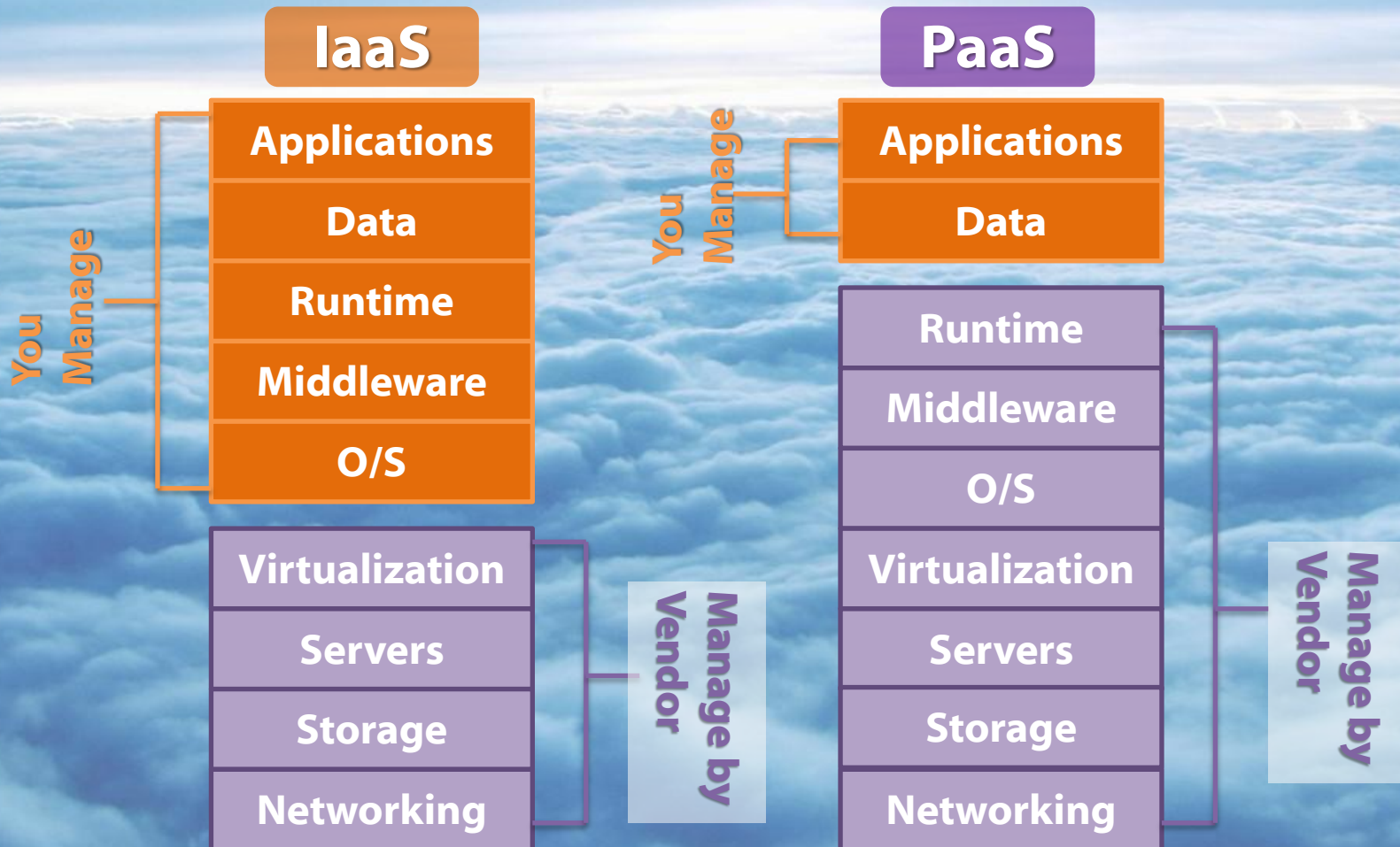
Worry free for guessing and arranging capacity

High availability of over 99.99%

Cost of around $100 per day, pay-as-you-go

Agile on service development and deployment

?aaS Difference

IaaS

Applications
Data
Runtime
Middleware
O/S

You Manage

Virtualization
Servers
Storage
Networking

Manage by Vendor

PaaS

Applications
Data

You Manage

Runtime
Middleware
O/S
Virtualization
Servers
Storage
Networking

Manage by Vendor

?aaS Considerations

IaaS

Pros:
- Less vendor lock-in
- More control
- Easier to migrate (to 3rd party IaaS or to Gov't network)
- Cheaper

PaaS

Pros:
- Less technical
- Shorter development time
- Less maintenance

Take Home Messages

Prices of Public Cloud Services may Change

- Mostly decrease over time, but no guarantee

Geographical Presence of Public Cloud Services Matters

- For example, hosting in Hong Kong vs hosting in Singapore – 10x network performance difference for HK users

In-house Infrastructure and Public Cloud Services may Complement Each Other

- Consider in terms of requirements on scalability, security, cost, etc.

Migration out of a PaaS may not be Straight Forward

- Be careful of vendor lock-in

Take Home Messages

Consider Degree of Vendor Lock-in

- **Make sure there is an easy way to export raw data**
- **Try to setup a software layer to facilitate migration instead of directly using the vendor specific API features**

Consider Data Sensitivity

- **Think twice before putting sensitive data on public cloud services**

Compare the Service Level Agreements (SLA)

- **Differences in definition of "downtime"**
- **Differences in uptime guarantee (annual vs monthly)**
- **Differences in downtime compensation**