

Grid Services Provisioning Call-For-Collaboration

Public Briefing

30 November 2007

Vision

- > Today every enterprise & office is equipped with electricity, water & sewage as utilities.
- > One day, every enterprise & office will come equipped with computing as a utility.

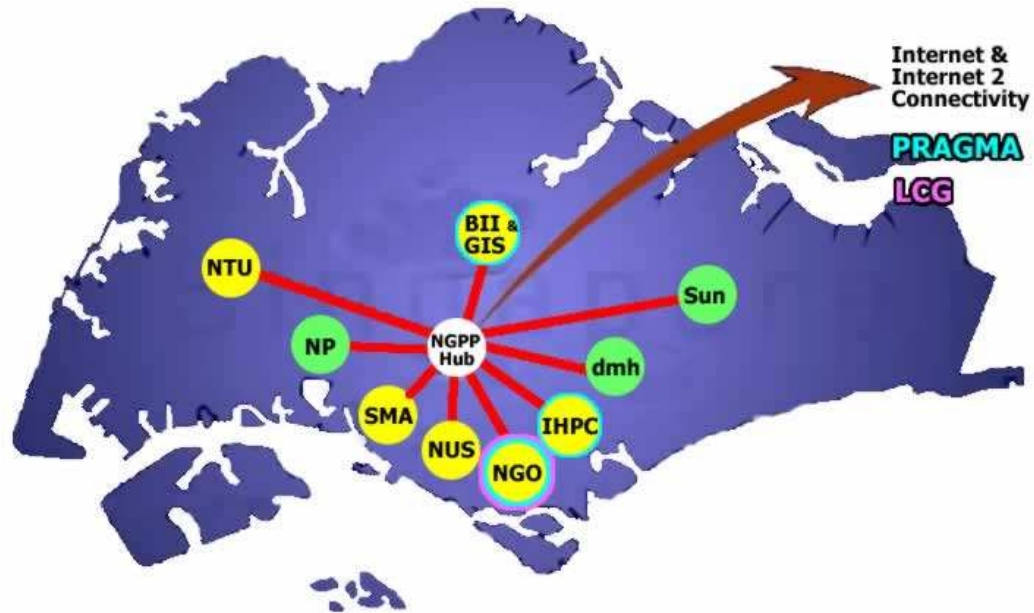
Relevance to iN2015 Master Plan

- > Infocomm Infrastructure, Services and Technology Development (IISTD) Sub-committee
 - Proposed establishing an Infocomm Resource Marketplace (IRM) that would allow businesses & companies to share, buy & sell infocomm resources such as software, computing & storage resources on an “on demand” basis
 - The flexibility would enable new business delivery models & encourage innovation of infocomm services

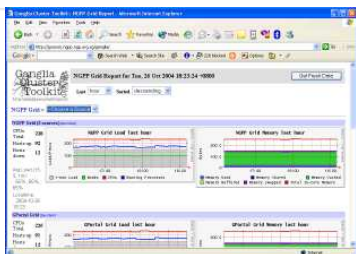
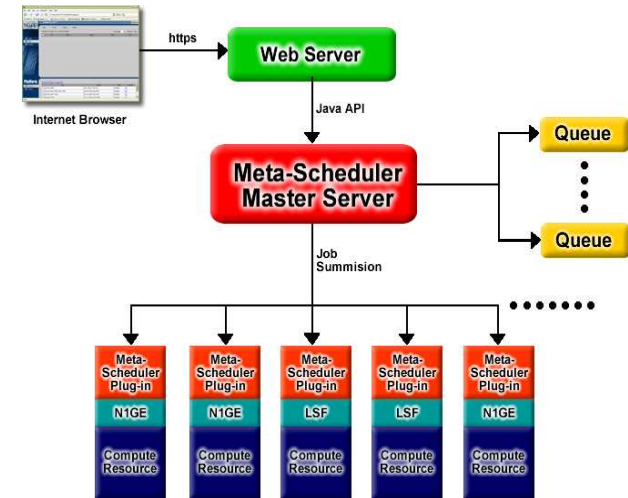
National Grid Pilot Platform

NGpp

SINGAPORE



NGPP Meta-Scheduler



Netrust
Certification
Authority

NG Operations Centre

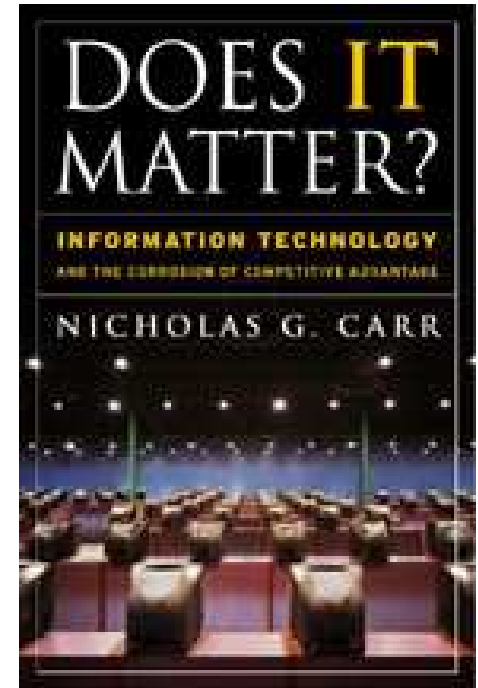


The End of Corporate Computing

> MIT Sloan Management Review (Spring 2005)

- Examines the supply side i.e., how the technology industry will be organised to supply IT to companies
- Shows how the wastefulness of the current, fragmented model of IT supply is unsustainable

> 'CEOs and managers in general want to think hard about the information. They don't care about the machinery.'



Cost Drivers

> Overbuilding of IT assets

- Leading to low level of capacity utilisation
 - Servers: 10 – 35%
 - Desktops: 5 – 10%
 - Storage: 40 – 50%
 - Software applications: Acute diseconomies in upfront expenditures & on-going costs/fees

> Needs

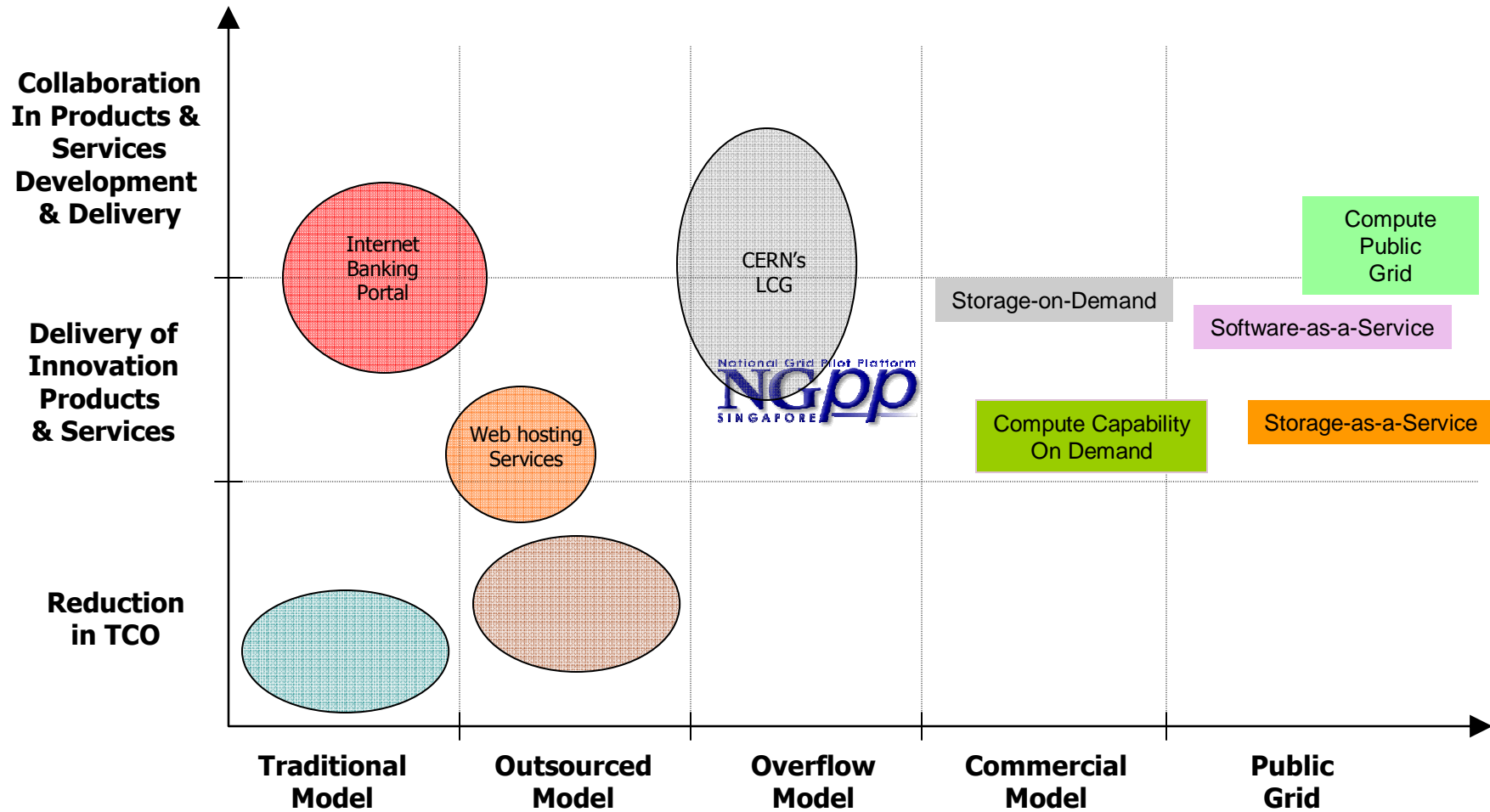
- A viable, large-scale utility model
- Efficient marketplaces, like commodity futures, for selling IT services
- Standardised metering & billing infrastructure in place to enable IT utility marketplaces

> A big chunk of what we do in the IT business (e.g., running networks & application systems, & installing & supporting packaged software) is necessary but no longer strategic to most organisations. Because we have gotten so good at these things, they have become commoditised.

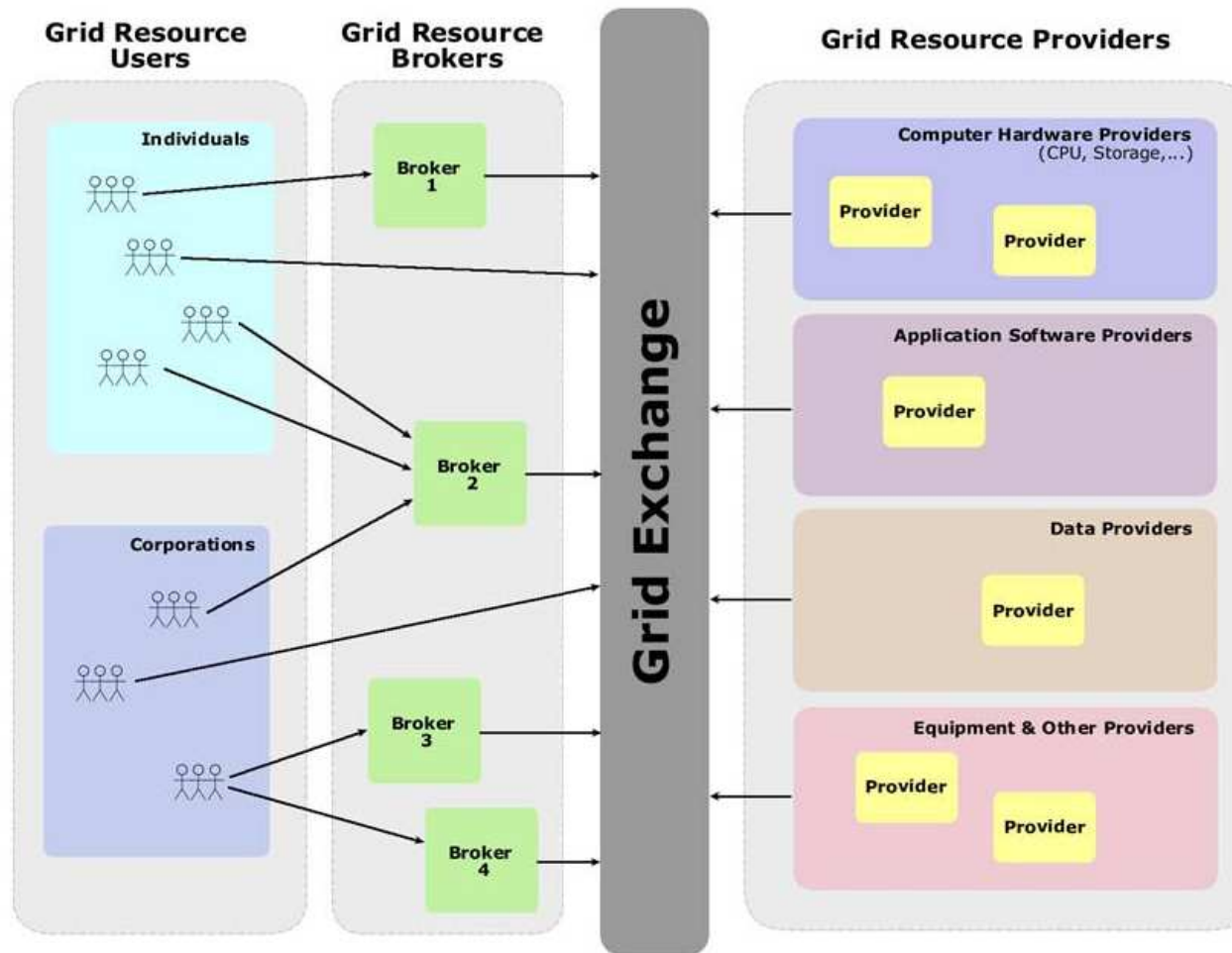
> Power consumption

- Hardware getting cheaper, power usage getting higher
- An increasing cost element for powering machines & cooling them

Resource Provisioning Spectrum

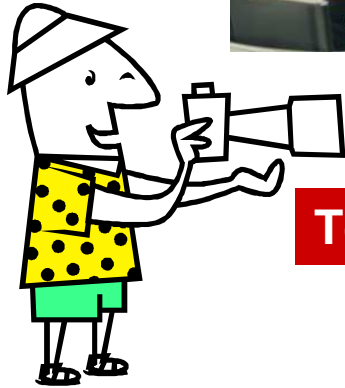


Grid Services Provisioning



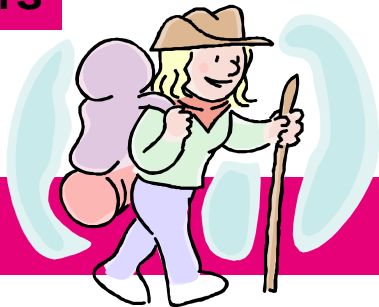
Analogy – Hotels

Business Travelers



Tourists

Backpackers



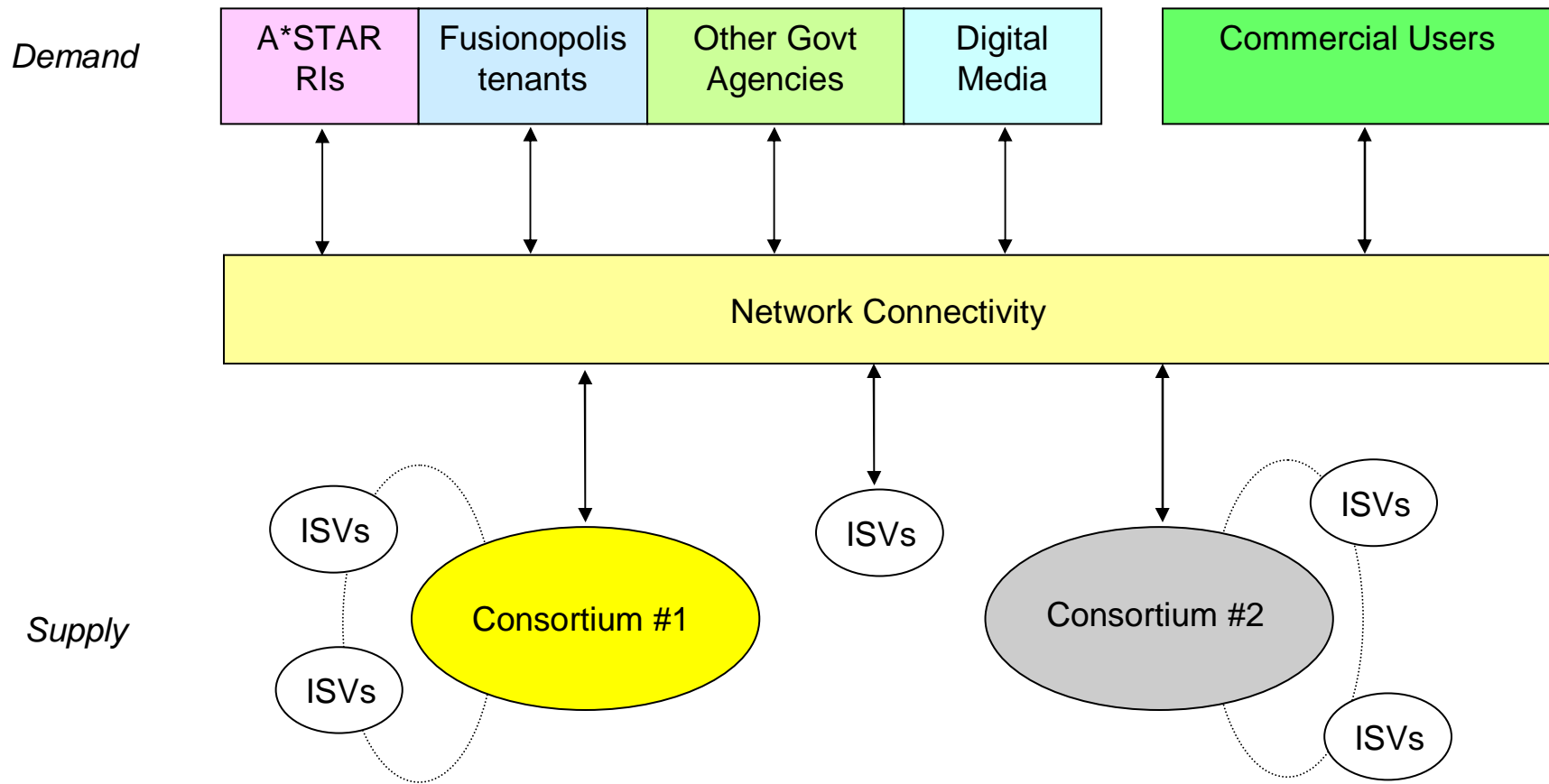
Resorts,
6-star Hotels



Motels, Hostels,
Bed & Breakfast



Realising the GSPs



Benefits to Users

- > Little upfront capital investment tied down with (depreciating) hardware & (obsolescing) software
 - Positive impact on balance sheet with shift from Capex to Opex
- > Improved price for performance
- > Improved flexibility, agility & time-to-market
- > Improved robustness
- > Improved scalability

Objectives of CFC

- > Accelerate deployment of software, hardware & storage utility provisioning for users in public & private sectors on a utility basis
- > Catalyse demand for utility model
- > Develop ISV ecosystem that enables SaaS to flourish

Strategic Objectives

- > Enable Infocomm infrastructure development for vertical clusters
 - Work with GRPs to attract ISVs to deploy software on base infrastructure
 - iN2015 verticals
 - digital media, life sciences, manufacturing, financial services, retail & tourism, education, government
- > Establish Singapore as a Shared Services Hub
- > Enable local users, especially SMEs, to exploit SaaS for HR, finance, IT & other admin functions

Categories & SLAs

- > Compute Grids
- > Storage Grids
- > ISV Ecosystem

Service Level Agreements

- > Basic Service
 - Provided at lowest possible cost to encourage take-up in Year 1
 - Offered without conditions requiring user to subscribe to other services
 - Available for 3 years from commencement of commercial services
- > Premium Service
- > Academic Service

Approach - 1

> Mini Public Private Partnership (PPP)

- Not a procurement by tender
- CFC specs describe desired outcomes
- Design-Build-Own-Operate model
- May have more than 1 GSPs
 - Depends on quality of proposals

Approach - 2

> Government

- Fund by buying up to 40% of a successful GSP's capacity
 - GSP to supply an agreed base-load amount
 - Government to ensure that base-load amount will be consumed

Major Differentiations

- > CPUs & storage are given
- > ISV Ecosystem
 - No. of ISVs
 - ISVs relevant to Singapore market
- > SLA
 - Basic, Premium & Academic
- > Variety of platforms supported
 - Windows, Linux, Unix (AIX, HP UX, Solaris), Windows

CFC Timeline & Milestones

DATE	EVENT
23 November 2007 (Fri)	Announcement of CFC
28 November 2007 (Wed)	Last Day of Registration for Public Briefing
30 November 2007 (Fri)	Public Briefing
03 December 2007 (Mon)	Last Day of Registration for Networking Session
05 December 2007 (Wed)	Networking Session
13 Dec 2007 (Thu)	Last Day of Registration for User Consultation Session
17 Dec 2007 (Mon)	User Consultation Session
1 February 2008 (Fri)	Last Day for Enquiries
4 February 2008 (Mon)	Proposal Submission Date
From 5 February 2008	Shortlisting & Evaluation will take place before IDA announces the award of the CFC

Grid Market Hub (GMH)

- > Serves as backbone of Infocomm Resource Marketplace for all users & suppliers of Grid resources & services
- > CFC requires all GSPs to interconnect to GMH in the future
- > Grid Exchange
 - Nerve centre that facilitates sale & purchase of Grid resources
 - Enables demand & supply to determine pricing of Grid resources

National Grid Centre (NGC)

> One-stop shop that will:

- Work with GSPs & ISVs
- Provide manpower to help grid-enable enterprise applications
- Lower the costs & barriers to adoption of utility computing
- Raise competency & skills levels
- Allow subsidised or free access to Grid resources for specific periods
- Provide facility to conduct trials, proof-of-concepts, & prototyping

End