Request for Information (RFI)

Connected Games Delivery Infrastructure

IDA (RFI)-015

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REQUEST FOR INFORMATION (RFI)

Connected Games Delivery Infrastructure

Introduction

1. In June 2006, the Infocomm Development Authority (IDA) launched Singapore's 10 year infocomm master plan called the "Intelligent Nation 2015" or "In twenty-fifteen", to chart the innovative use of infocomm technologies in the various economic clusters. iN2015 is guided by three main themes, which are Innovation, Integration and Internationalisation.

2. Under the iN2015 master plan for Digital Media & Entertainment (DME), the IDA's vision is to establish Singapore as a digital media and entertainment capital offering innovative content, services and technologies to the world.

3. One of the key recommendations to achieve this goal is to provide technologies, platforms and infrastructure for media and entertainment companies to process, manage and distribute DME content and services.

4. Towards this objective, IDA proposes establishing a Connected Games Delivery Infrastructure in Singapore. This would "level-up" Singapore's capabilities as a regional online PC games hub to include other platforms such as console and handheld games. The Connected Games Delivery Infrastructure concept will help to anchor Singapore as the home for Connected Games deployment platforms, and lead the transformation of the region towards Connected Gaming.

5. For background information on Connected Games, please refer to Annex A. For more information on the Connected Games Delivery Infrastructure concept and scenarios, please refer to Annex B.

6. Prospective industry players are invited by the IDA to submit information relevant for building on the concept of the Connected Games Delivery Infrastructure. These proposals will help IDA to obtain information in which it can best develop an industry implementation framework for Singapore to realise a Connected Games Delivery Infrastructure.

Submission of Information

7. This RFI is a mechanism for gathering information and concept proposals for the Connected Games Delivery Infrastructure. It does not constitute a procurement process, nor does it create any binding obligations on IDA.

8. The submission, in addition to the information requested in Annex C, should contain the following details:
   a. Name of Company
   b. Nature of Business
   c. Contact Person(s)
   d. Designation(s)
   e. Designated Email(s)
   f. Contact Number(s)
   g. Facsimile Number(s)
   h. Current services offered to general marketplace.

Confidentiality of Information

9. The IDA encourages submission of original ideas and will respect confidentiality on proprietary and commercially sensitive information. Companies are to state which parts of the information are proprietary/ commercially sensitive information.

10. However, there may be instances where the ideas or information is already residing with the IDA, overlap with ideas or information submitted by other companies, or are already available in the public domain. In such cases, the ideas will not be considered as proprietary and the IDA reserves the right to use them.

Variation

11. The IDA reserves the right to update and/ or modify content contained within Annex B: Connected Games Delivery Infrastructure Concept including “Information Requested”. Such updates and modifications may be issued as *Corrigendum*.

Format of Submission

12. Information must be submitted in English and written in a clear and concise manner.

13. Interested parties are requested to submit in soft copy and in Microsoft Word format.

14. The submission should be typed single-spaced with Arial font size 12. Please leave space for margin of 2.5cm on the left and right, top and bottom.

Closing Date of Submission

15. The closing date of the submission is 31st August 2007 at 1700hrs. Please send all submissions to **IDA_CGDI@ida.gov.sg** prior to the closing date.

Enquiries

16. All enquiries regarding this request should be sent to **IDA_CGDI@ida.gov.sg**.

ANNEX A: Background of Connected Games

Introduction

1. The global video games market, according to PricewaterhouseCoopers (PWC), is expected to increase from US$27bn in 2005 to US$$46bn in 2010[1]. Enjoying a CAGR of 11.4%, this puts the video games market growing faster than other mainstream media sectors, such as Film (5.3%), Music (5.2%) and TV (6.6%).

2. A principal global media industry driver is digital distribution of content and services through online and wireless connectivity[2]. PWC singles out this driver as having “a significant impact on overall spending in the five segments (of filmed entertainment, recorded music, video games, electronic books, and online casino gaming), accounting for 41 percent of total growth in those areas during the next five years.”

3. This driver is especially relevant in the video games industry. As a media that is inherently digital – they are created, distributed, and consumed digitally – video games are the earliest adopters of online connectivity amongst the media clusters. Initially used to enable multiplayer capabilities, developers and publishers are using connectivity to deliver new content, functions, and services, ultimately delivering a significantly broader and more engaging interactive entertainment experience.

4. The recent success of Massively Multiplayer Online Games (MMOG), recognition of virtual worlds such as *Second Life*, and adoption of online content delivery platforms such as Valve Software’s *Steam* and Microsoft’s *Xbox Live Arcade* indicate that consumers are ready to adopt Connected Gaming content and services.

5. All of these events have largely been limited to a niche platform within the video games industry – online PC interactive entertainment – where internet access has been easily available for well over a decade. Yet, there are indications that this trend will begin to spread across the broader video games cluster. For one, this is the first time in history that all of the recently launched generation of video game consoles, either handheld or TV, come with broadband and/or wireless connectivity, out-of-the-box[3].

6. These examples herald wide-spread adoption of Connected Games across the video game cluster and suggest implications beyond the interactive entertainment sector, such as in digital media and lifestyles.

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[1] *Global Entertainment and Media Outlook 2006-2010*, PricewaterhouseCoopers LLP, Jun 2006, at 22
[2] Ibid., at 14
[3] Specifically, Microsoft’s Xbox360, Nintendo’s Wii and DS, and Sony’s PS3 and PSP.

Rise of Connected Games

Brief History of Connected Games

7. Although we have seen a recent rise of connectivity use in games, this is not a recent invention. Digital communication technologies and infrastructure have evolved – from terminal-server mainframe architecture to local area network (LAN), form satellite TV to broadband Ethernet, from wired to wireless – game console manufacturers and developers have "played" with these options to create new offerings and revenue streams, with varying degrees of success.

8. Initially, online connectivity enabled simultaneous multiplayer capabilities. However, aspects of modern multiplayer interactions – creating online avatars, moving through virtual spaces, and communicating with other players in-game – can be traced back to 1978 where Richard Bartle and Rob Trubshaw developed *MUD1* on a DEC PDP-10 in 1978[4].

9. Since then, game developers and publishers have been using connectivity to enable more sophisticated features, such as game lobbies, updates and patches, secure electronic game delivery and rental, and connecting gamers to complete online 3D communities.

Connected Games Platforms

10. One view of Connected Games can be segmented by device platforms, as follows:

Game Category	Connectivity	Device Examples	Game Examples
PC	Ethernet, Wi-Fi	PCs, Laptops, UMPCs	World of Warcraft,
Console	Ethernet, Wi-Fi	Xbox360, Wii, PS3	Halo 2, Final Fantasy XI
Handheld Console	Wi-Fi	DS, PSP	Mario Kart DS, Lumines
Wireless Mobile	Cellular, Wi-Fi,	Mobilephones, PDAs,	Bejeweled Multiplayer
Interactive TV	Cable TV	TV Set-Top-Box	Starhub's Playin'TV
Networked Arcade	Ethernet	Arcade Coin-Op Cabinets	Extreme Hunting 2

11. PC and mobile-phone games were the initial adopters of Connected Gaming as they could readily take advantage of their dial-up, internet or cell connectivity. However, today's new generation of consoles and handheld gaming devices – comprising 62% of the entire Video Game market in 2005[5] – are now equipped with broadband and wireless capabilities out-of-the-box.

12. Mobile phones have also seen strong growth and innovation in the gaming space. Initially used for game downloads, developers have begun to utilize the persistent connection through cellular coverage and other wireless options such as Wi-Fi and Bluetooth, to create compelling distractions such as head-to-head multiplayer, location-based games, and tournaments.

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[4] MUD was an acronym for Multi-User Dungeon. See Wikipedia http://en.wikipedia.org/wiki/MUD1
[5] Computed from *Global Entertainment and Media Outlook 2006-2010*, PricewaterhouseCoopers LLP, Jun 2006, at 369

13. Even traditional coin-op arcades are getting wired-up. SEGA, in collaboration with Sammy and NAMCO launched their ALL.NET service in 2004 that allows players to store personal data, compete in tournaments, download new features and advertisements, and software upgrades[6].

Recent Development Trends

14. Connected Games bring about new opportunities in the video games industry, but at the same time, there are clearly challenges in the transition. Some of these factors are as follows.

Opportunities	Challenges
New Content and Services: low-latency, high-bandwidth and always-on connectivity enables more than just multiplayer gaming – it gives access to episodic content, digitally delivers on-demand, and a gateway to virtual communities.	New Infocomm Challenges: truly scalable infrastructure, cross-platform delivery channels, high-density data centres, micropayment facilitation, and integrated development and deployment platforms are required.
New Business Models: direct B2C models such as online rental, ad-driven, and virtual-asset sales will put content creators in direct contact with their consumers allowing a more intimate and customized relationship.	Increasing Cost of Development: next-generation console development is already costly. With Connected Games, access to online-ready engines, middle-ware technologies and digital delivery platforms are increasingly costly and difficult to access.
Increasing Acceptance of Serious Games[7]: Connectivity provides compelling student-centric learning experiences, though enabling student collaborations, delivering multi-media enhanced outdoor experiences, and transporting students in to virtual worlds.	Challenges in Asia: Although promising double-digit growth, Asia is highly fragmented in terms of population, IT-literacy, e-commerce adoption, infrastructure connectivity and content regulation, among others.

Infocomm Development in Connected Games

IDA's Past Video Games Initiatives

15. Since 2004, IDA's key initiatives in the video games industry have been centered on regional deployment of online and mobile games through Singapore. This was evident in our initiatives like *Games Bazaar* (2004-2005), a test-bed online game deployment environment operated by SingTel, HP, and Playworks that provided a subsidized six-month pilot period for online game publishers, and *Games MAP* (2005-2006), a commercial four-country end-to-end deployment platform operated by Pacific Internet and Sun. Collectively, over twenty titles were deployed through these two platforms and saw the operators improving their regional game deployment capabilities.

[6] See Sega's ALL.NET http://www.segaarcade.com/video/allnet.aspx
[7] Serious Games are games for primarily non-entertainment purposes such as for learning or creating change. Early adopter segments include Education, Healthcare, Military, and Government sectors.

16. IDA also saw the need to groom and develop Game Service Providers (GSPs) who are critical players in the Connected Games value chain. Initiated by IDA, but led and managed by industry players, the Games Exchange Alliance (GXA) is an industry association committed to growing the Singapore games segment. Corporate membership presently stands at 31.

17. Lastly, IDA created international promotion platforms to create mindshare for Singapore and our game companies, and also to secure significant game development and deployment deals. Key milestones included the First IDA-GXA Singapore Games Industry Pavilions held at the Games Developers Conference (GDC 2004) and Electronic Entertainment Expos (E3 2006).

ANNEX B: Connected Games Delivery Infrastructure Concept

Description

1 The Connected Games Delivery Infrastructure (hereinafter referred to as "CGDI") is an end-to-end, shared hardware and software infrastructure that enables the hosting, management, digital distribution, and deployment of connected games and other interactive entertainment products and services. Figure 1 below illustrates the CGDI concept.

2 The physical layer of the CGDI includes Internet Data Centres (IDCs), managed hosting facilities, Content Delivery Networks (CDNs), Points of Presence (PoPs), and all hardware, software, middleware, storage and network access, in scalable, robust and optimised architectures to support the specialised requirements of connected games and interactive entertainment applications.

3 The CGDI could encompass shared services such as e-payment, Digital Rights Management (DRM), Digital Assets Management (DAM), Subscriber Management, Community Management, Security and other services to support the deployment of Connected Games.

4 The CGDI is envisioned to support connected games content and services across a variety of device platforms such as PC, console, mobile, and handheld, and may also serve cross-platforms. The CGDI may use a range of broadband and/or wireless connectivity options such as the internet, 3G, HSDPA, Wi-Fi, and WiMax.

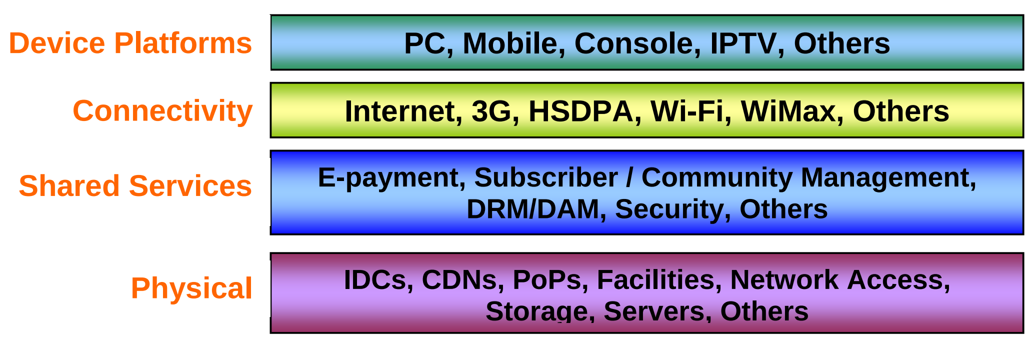


Figure 1: Connected Games Delivery Infrastructure

5 The CGDI may be characterised by the following features:

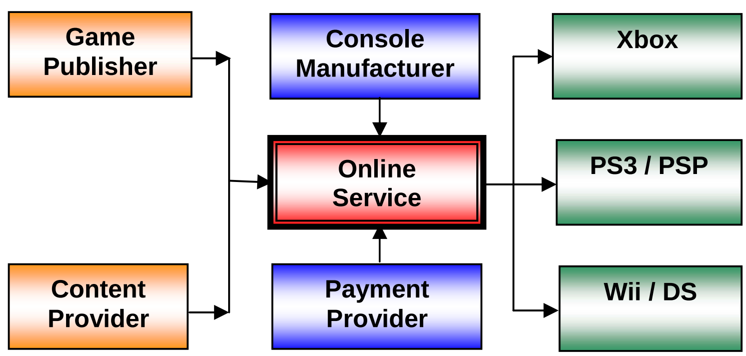
- Scalable
- Secure
- Provides end-to-end services
- Enables on-demand purchase of infrastructure and services
- Enables cross-platform compatibility
- Supports high concurrency and low latency
- Can extend beyond local market to serve regional or global markets

Scenarios

6 Below are some possible business / operating models for the CGDI in a few scenarios envisioned for the CGDI:

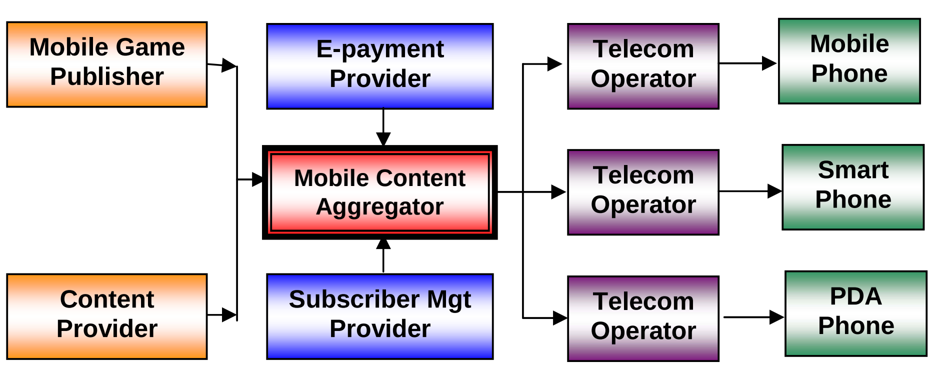
<u>Scenario 1: Console Games</u>

- A **console manufacturer** can leverage on an on-demand infrastructure which is optimised for its online service offering multiplayer games as well as downloadable digital content.
- The **online service** can be exclusive to its subscribers/members customised for its closed-access, walled-garden model.
- The console manufacturer may decide to open its online service for third-party **content providers** to use on a chargeable basis, increasing the popularity of the service as well as its revenue streams through a sub-licensing/royalty business model.



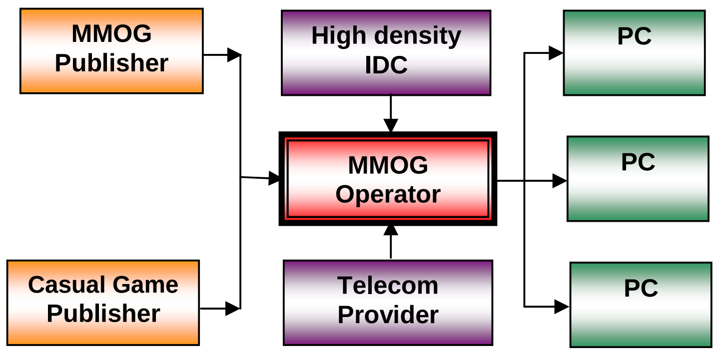
<u>Scenario 2: Mobile Games</u>

- A **mobile content aggregator** may offer an open platform which allows any **mobile game publisher** or **content provider** to deploy mobile content and services.
- The CGDI consists of game servers, **shared services** such as billing and subscriber management, as well as interfaces with **telecom operators** to distribute mobile content.
- The platform can also allow multiplayer cross-platform (PC-mobile) games to be run from the game servers.



Scenario 3: PC Massively Multiplayer Online Games (MMOGs)

- A **MMOG operator** may deploy its game operation platform for its own licensed games and as a service to other **MMOG publishers**.
- The MMOG operator can use a customised package from a **high-density IDC** which include specially cooled blade servers and bandwidth from any **telecom provider** offering optimum rates to specific countries.
- The exact amount of compute power/storage/bandwidth required can be purchased and they can be offered using a tiered pricing model.



INFORMATION REQUESTED

7 Companies are invited to comment on the proposed CGDI concept and the ideas presented.

8 This RFI also seeks to gather information in the following areas:

8.1 **POTENTIAL KEY SERVICES –** Respondents are invited to moot ideas and information on the key services or project(s) for the CGDI.

8.2 **BUSINESS / OPERATING MODEL** – As the CGDI aims to address a new market for the deployment and delivery of connected games and other interactive entertainment content and services, a viable business / operating model taking into account current and future needs will have to be worked out. Respondents are invited to provide information on viable business / operating models for the services or project(s) mooted.

8.3 **TECHNICAL MODEL** – Respondents are invited to provide information on technical model(s) that will enable the mooted service(s) and project(s) to operate in an open, scaleable, dynamic and secure manner.

8.4 **GOVERNANCE POLICIES –** In addition to business & technical considerations, governance related areas may need to be addressed. The RFI invites views regarding these areas that may be necessary to provide a conducive environment for the CGDI to thrive.

8.5 **INDUSTRY PARTICIPATION –** In order for the CGDI to be successful, industry participation across the digital media value chain (e.g. content providers, game developers, game publishers, game operators) is important to ensure that both supply and demand aspects of the CGDI are well sustained. Respondents are invited to provide information on the indicative industry partners that may participate in the mooted service(s) and project(s).

8.6 **PROJECT RESOURCES –** Respondents are invited to provide indicative information regarding resources needed to develop the mooted service(s) and project(s). The information sought includes project budgets, manpower requirements and other project resources.

8.7 **KEY PERFORMANCE INDICATORS –** Respondents are invited to provide information on key performance indicators, both quantitative and qualitative, which could be used to measure the success of the mooted service(s) and project(s).

---------------END---------------

ANNEX C: Guidelines for RFI Submission

1. **Background Information**

   Please provide the following information about yourself/your company for our record purposes.

   a. Name of Company
   b. Nature of Business
   c. Contact Person(s)
   d. Designation(s)
   e. Designated Email(s)
   f. Contact Number(s)
   g. Facsimile Number(s)
   h. Current solutions/products/services offered to the marketplace.

2. **Response to RFI**

   Respondents are invited to comment on the preliminary concept of Connected Games Delivery Infrastructure (CGDI) as outlined in Annex B and/or the areas described below. Respondents are also welcome to comment on other relevant areas pertaining to the development of CGDI. *We welcome inputs from the all related game industry players and relevant service providers.*

   For the information submitted, please cite, where applicable, the reference and source of information, and similar offerings that have been implemented or under trial by other service providers.

   a. Potential Key Services. The key service(s) or project(s) for the CGDI. For example:

      i. Content owners, game developers, game publishers, and game service providers could leverage on the CGDI to deploy their connected games and other interactive entertainment content and services in Singapore as well as to the regional markets, as illustrated from the scenarios in Annex B.

      ii. What are the services that can tap on the CGDI? What are the service specifications and potential demand?

   b. Business / Operating Model. Suitable business / operating models for the service(s) or project(s) mooted. For example:

i. Console manufacturers and mobile games aggregators may offer their proprietary infrastructure as a service to other users. The CGDI could also be provided to users on an "on-demand", utility basis at market-competitive prices. What would be commercially viable business models on the assumption of minimum government funding?

ii. What are the proposed ownership and operating models for long-term sustainability and maximum benefits to your company as well as the industry?

iii. What would be the economically feasible pricing, on the assumption that there are no government incentives?

iv. How can new customers be attracted to leverage on the CGDI?

v. How do you think the Government can support the industry in the development of the CGDI in the initial period?

c. Technical Model. Proposed technical models for the service(s) or project(s) mooted. For example:

i. What is the proposed detailed technical solution and end-to-end network architecture? What is the level of quality of service and network availability provided? How and at what level would open-access, scalability, and security be achieved in your solution?

ii. What new and innovative technologies will be used in the proposed solution? Will these be available in the next two years? These can include current solutions and prototypes that are currently not commercially available. How will the proposed solution mitigate risk of technological obsolescence and future-proof the CGDI?

iii. What are the space, power or security requirements?

iv. How is continuity ensured in the event of default by a partner?

v. What are the synergies with Singapore's next generation infocomm infrastructure framework including its wireless broadband component?

d. Governance Policies. Proposed governance policies or processes. For example:

i. Are there any structural or regulatory changes required?

ii. What are the suitable governance/regulatory frameworks or review processes?

e. Industry Participation. Your company's interest, as well as indicative industry partners that may participate in the mooted service(s) and project(s). For example:

i. Under what situation or condition will your company and indicative industry partner(s) be interested to take participate in the CGDI? In which of the following capacities (please provide more details):

   a. In the development of CGDI technologies and capabilities, as a device manufacturer, infrastructure service provider or connectivity provider;

   b. As a provider of shared services for the CGDI;

   c. As a user of the CGDI, whether a game publisher or content provider; and/or

   d. As a CGDI platform operator.

f. <u>Project Resources</u>. Project budgets, manpower requirements and other project resources required. For example:

   i. What are the estimated capital expenditure, development, and operating costs? Please indicate the scope for which the costs are quoted.

   ii. What is the implementation strategy? Is a phased approach used?

   iii. What is the estimated implementation time frame?

   iv. What is the geographical coverage for the CGDI?

g. <u>Key Performance Indicators</u>.

   i. What are the key performance indicators, both quantitative and qualitative which would be used to measure the success of the mooted service(s) and project(s)?

   ii. What are the proposed milestones and deliverables?