



CALL FOR COLLABORATION

ON

LOCATION-BASED SERVICES

21 FEB 2003

WITH SUPPORT
FROM



NATIONAL HERITAGE BOARD



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1.0 INTRODUCTION

This Call For Collaboration (CFC) represents part of a series of Calls for Collaboration under IDA's Wired with Wireless Programme. The Location-Based Services (LBS) CFC, supported by the Singapore Economic Development Board (EDB), Land Transport Authority (LTA), National Heritage Board (NHB), Singapore Land Authority (SLA) and Singapore Tourism Board (STB), seeks to bring together relevant parties to develop and implement LBS.

The target audience for this CFC are content providers, technology providers, application developers, wireless device manufacturers, service providers and user companies such as logistic and motoring companies.

2.0 BACKGROUND

Over the last few years, Singapore has seen a dramatic increase in the use of mobile phones. The mobile device has become a pervasive device that follows a user wherever he or she goes, allowing the user, to communicate anytime, anywhere. With the advances made in the field of wireless and the availability of location determination platforms, it is possible to geographically locate the position of a mobile device. This introduces a plethora of a new set of applications, known as "Location Based Services" (LBS), which can benefit the end users and create new opportunities for enterprises.

LBS are services that exploit knowledge about where an information device is located. By providing the location-specific context, LBS can enhance the value of current wireless applications and enable an array of new revenue-generating location-centric services, such as mobile location-based yellow pages that allow users to have access to personalised and localised information.

Based on various estimates by international marketing survey groups, the market size (year 2002) for LBS ranges between US\$2 billion and US\$2.5 billion. Allied Business Intelligence has projected that worldwide revenues in LBS will exceed US\$40 billion by 2006. Analysys has independently projected these figures to rise from US\$2 billion in 2001 to US\$18.5 billion in 2006.

For the LBS market to flourish, a complex ecosystem of players involving content providers, technology providers, service providers etc is required. Through the CFC platform, industry players could collaborate with other relevant industry players and potentially leverage on the content inputs such as map, traffic and heritage data from the supporting public agencies (LTA, NHB, SLA), to develop and trial LBS. To share the associated risks and investment costs, IDA is prepared to co-fund the initial investments necessary to undertake promising LBS development and pilot projects.

3.0 OBJECTIVES

This CFC seeks to achieve the following objectives:

- a) Facilitate the exchange of ideas and possibilities between content providers, application developers, technology providers, wireless device manufacturers, service providers and user companies;
- b) Encourage the development, trial and pilot of innovative and/or collaborative location based services with long-term commercial viability in the scope in section 4; and
- c) Spur the adoption of LBS, thereby supporting the growth of the wireless data services industry

The selected Participants may, subject to such terms and conditions as specified by IDA, benefit from disbursement grants supporting selected costs incurred during the trial. Selected Participants may also be able to jointly market the developed LBS with IDA upon the successful completion of their projects.

4.0 SCOPE

The scope of this CFC will be limited to the development and pilot of LBS. As a guide, the proposed projects should fall within one of the five categories listed in sub-sections 4.1 to 4.5. The specific examples provided in each sub-sections are merely illustrations and are by no means exhaustive. Participants may propose projects that fall into more than one category as long as they indicate the dominant category of their project proposal. Participants are to seek the advice of IDA, should they intend to submit applications beyond the scope of this CFC.

4.1 Information and Navigation Services

These are services that exploit the geographical location of an individual on the move to provide personalised and localised information. The services will draw information and content from various sources and databases, refine and filter them according to the users' preferences, geographical location and time, or to the set of applications that the user has subscribed to. By combining location attributes with user preferences, it will be possible to personalise and optimise the user experience that is delivered.

- Example 1: Mobile Tourist and Heritage Guide.

A tourist can pull information on points of interest (POI) such as heritage sites, shopping malls, tourist attractions, restaurants, medical facilities, entertainment venues which are in his or her proximity. Alternatively, relevant information, configured to the user preferences, could be pushed to the tourist. The mobile phone could also allow the tourist to transact while on the move e.g. place automatic bookings for taxis, book concert tickets etc.

- Example 2: Consumer location-based shopping guide.

Users entering a shopping area with an electronic list of brands, features, or model numbers of the products they wish to purchase can receive information from nearby stores that carry the products corresponding to these shopping lists. Naturally, buyers could also obtain navigational directions to the store.

- Example 3: Real time navigation service.

This service will provide subscribers with accurate real-time traffic information and intelligently route the user from a location to another. The same service could provide pedestrians and drivers updates of the latest incidents, Electronic Road Pricing prices and show on a map, places of interests and entertainment venues along the suggested routes.

4.2 Resource Management Services

These are services that enable or enhance resource management and telemetry. Such services could simplify the management of dispatch, field data collection, landmark data entry and asset recovery workflows by tracking and communicating with key assets. The tracking of resources need not be confined to the outdoors. Indoors, technologies such as wireless LAN could be used for positioning within a pre-defined premise. Through the deployment of resource management services, users can increase their productivity, and reduce loss and damage of goods and assets.

- Example 1: Warehouse assets tracking

Scanning barcodes attached to products and subassemblies have been used for years to track where things are. By using advanced indoor positioning techniques, assets within a pre-defined location such as a warehouse could be localized and tracked more easily. This helps to prevent thefts and loss of assets.

- Example 2: Telemetric services

The state of health of a mobile asset could be monitored real-time around the clock. With such services, car insurers could offer multi-tiered pricing structures based on willingness to accept monitoring, and auto-manufacturers could better manage inventories.

4.3 Safety and Emergency services

LBS could offer individuals and enterprises a valuable means of increasing safety and security. Such services can be both *consumer-* or enterprise-focused, and can apply to both in-vehicle and out-of-vehicle (i.e. on-foot) scenarios. This category of services essentially cater to the security needs for people, such as for family members or friends to be kept informed of one another's whereabouts.

- Example 1: Personal Emergency Service.

By offering the ability to locate a person in emergency situations, mobile location can be used to monitor sick elderly or young kids. GPS and other mobile location technologies, coupled with health-monitoring sensors, can help improve the monitoring of patients, especially those with chronic diseases, by notifying their family members and related health authorities of their whereabouts should their health signals fall below certain thresholds.

- Example 2: Car emergency service

Roadside assistance can be offered if the customer's car breaks down. LBS will provide users with more speedy roadside assistance by determining the location of their cars easily during such incidents. The same service could also help to locate car within seconds, hence, providing safety and fighting theft.

4.4 Community-based Applications

LBS can enhance or change the way communities interact. It could allow friends, family members, and office workers communicate within communities for interests and unlock new opportunities for messaging.

- Example 1: Location-based instant messaging

The combination of location, presence, profile and other instant messaging parameters will help to better connect communities. Users in the same physical space, such as a shopping complex, museums or stadium could communicate with other users. The service can be further enhanced by technologies such as MMS or J2ME, which provide richer channels for data communications.

4.5 Wireless Entertainment

This category targets any wireless entertainment service that makes use of location attributes to enhance its offerings to the users. Location will help to further propel the growth of entertainment services and add a new dimension for games developer to come out with more creative and addictive games for users. Location-based entertainment potentially blends reality with fiction and creates augmented gaming environments where real and virtual content may be mixed, and social communication necessary for a game scenario is not hindered.

- Example 1: Nation-wide scavenger hunt

By exploiting the knowledge of the geographical location of the participants of a scavenger hunt competition, the service can draw information and content from various sources and databases to drop clues and hints to the participants or launch new challenges to the participants. The same service can be used to enhance learning during school excursions to the zoo, museums, heritage trails, etc.

5.0 IMPORTANT CONSIDERATIONS FOR PARTICIPANT(S)

5.1 Prerequisites for Participant(s)

The minimum prerequisites for Participants in this CFC are as follows:

- a) The consortium must consist of at least one Singapore-based enterprise or organisation;

- b) The proposed project must be developed or implemented in Singapore;
- c) The proposed project must exploit the knowledge of where the information user device is located and involve the use of wireless data technologies;
- d) The proposed project must include all necessary partners to implement a complete solution.

5.2 Strategic Collaboration

Participants are encouraged to find their own business partners capable of delivering a total solution. Single companies that meet the scope and requirements of the CFC may also submit proposals for the CFC. However, multi-party collaboration is strongly encouraged and will be viewed favourably.

5.3 Working with IDA's partner agencies

In this Call For Collaboration, LTA, NHB, SLA and STB may be potential content providers for various participating consortia. The types of content that these agencies may potentially provide as well as their points of contacts are available in the Annexes. For participants who are interested to collaborate with these agencies, please refer to the Annexes for more information.

5.4 Appointment of a Consortium Lead

For the purpose of project management, if the proposed project involves multiple parties, it is required that a consortium lead be appointed to manage the team and the project, and to liaise with IDA. The name and contact details of the primary contact within the lead partner must be clearly stated on the cover page of the proposal. The roles and responsibilities of every Participant must be clearly specified.

5.5 Project Submission Forms

It is important that the Participants duly fill up all the sections of the "Location-Based Services Call For Collaboration" **Project Submission Form**. The forms are available for download from IDA's website (www.ida.gov.sg). Please read section 7 for details on submission process and deadlines.

5.6 Disbursement of Grants

The Evaluation Committee appointed by the IDA will evaluate short-listed proposals submitted by the Participant(s). Selected projects will qualify for co-funding by the IDA, subjected to such terms and conditions specified by IDA. The amount of initial aid and project funding will be determined upon assessment of the impact and scope of the project.

6.0 SELECTION PROCESS AND TIME LINE

6.1 Time line of Events

Date	Milestone
21 Feb 2003 (Fri)	Launch of CFC
4 Mar 2003 (Tue)	Public briefing
24 Mar 2003 (Mon)	Last day for registration for networking session
28 Mar 2003 (Fri)	Networking session
29 May 2003 (Thu)	Last day for enquiries before final proposal submission
30 May 2003 (Fri)	Final proposal submission
6 Jun 2003 (Fri)	Preliminary shortlist
Mid Jun 2003	Presentations of short-listed projects to Evaluation Committee
Jul 2003	Award of projects

6.2 Public Briefing

Interested parties are invited to attend the LBS CFC Public Briefing. This briefing will be conducted by IDA, and will cover the details of the conduct and objectives of the LBS CFC, including the events leading to the final award of project, and expectations of the proposals.

Details are as follows:

Date : **4 Mar 2003 (Tue)**
 Time : 10:00 am
 Venue : Meeting Room 325, Level 3
 Suntec City Convention Centre
 1 Raffles Boulevard
 Suntec City
 Singapore 039593

All parties interested in attending the public briefing are to register online through IDA's website or through cfc@ida.gov.sg or before 10 a.m. on 1 March 2003

6.3 Networking Session

Interested parties seeking relevant and complementary partners to collaborate with are invited to attend a networking session. Details are as follows:

Date : **28 Mar 2003 (Fri)**
Time : 9:00 am
Venue: To be provided upon registration

Attendees have an option to conduct presentations during the networking session. Those who choose to conduct presentations have to adhere strictly to a 3-slide presentation. Registration is required for ALL participants, and must be done via email or directly from IDA's website by **24 Mar 2003**.

- To register, please email to cfc@ida.gov.sg with subject title " LBS CFC Networking (with / without presentation)"
- Please include in the email the following information:

1. Company Name and Address
2. Presenter / Guest
 - a. Name
 - b. Designation
 - c. Email
 - d. Direct Line
 - e. Fax
 - f. Mobile Number (Optional)
3. * Three sentence (text only) describing company, core expertise and partners required
4. * Softcopy (in Microsoft PowerPoint format) of the 3-slide presentation
 - Company background
 - Core expertise / Key strengths
 - Potential complementary companies sought

Note: Items 3 and 4 are only required for attendees interested in conducting presentations

6.4 Evaluation Process

Proposals will be reviewed and evaluated by an Evaluation Committee nominated by IDA. It is essential that each submitted proposal contains sufficient technical details and is written in good and concise English. In assessing the proposal, the following will be considered:

- The ability to comply with project requirements as outlined in section 4 and prerequisites as outlined in section 5.1.
- The strength of the consortium in terms of track record and experience
- The demonstration of collaboration across players across the LBS value chain
- The ability to leverage on various wireless data technologies and to augment multiple content and applications to provide high value added location-based services to the user.
- The viability of the business models and ability of the consortium to market the product or service at affordable cost to business and/or consumer end users
- The effectiveness of the measures undertaken to address location privacy where applicable

6.5 Selection of Projects

Only complete proposals will be considered. Short-listed applicants will be required to make a presentation to, and answer questions on the project by the Evaluation Committee.

6.6 Award of Project

IDA reserves the right not to award any project or to award multiple projects under the CFC. Successful applicants for this CFC will be notified by IDA, and the terms of the project, milestones and co-funding terms will be negotiated and agreed upon between the parties prior to award of the project.

6.7 Confidentiality

The Participant undertakes not to divulge or communicate to any third party any confidential information howsoever acquired in relation to or arising from the project and/or the CFC without first having obtained the written consent of the IDA.

For the purposes of the CFC, all information furnished by the IDA shall be deemed confidential unless otherwise indicated.

These obligations of confidentiality does not apply to information that:

- a) is or becomes publicly available without breach of confidentiality; or
- b) is released for disclosure with the written consent of the IDA.

6.8 Disclaimer

IDA shall have the absolute discretion to accept or reject any submission made without being liable to give any reason thereof. IDA reserves the right to retain the proposals submitted by all applicants without liability for the costs of such documents and/or their submissions.

7.0 SUBMISSIONS

7.1 Format of Submissions

Details on the format and information to be included in a CFC proposal is available in IDA's website. All the information in the format outlined must be furnished accordingly.

7.2 Place and Time of Submissions

ONE (1) hardcopy AND ONE (1) softcopy (in a CD-ROM) of the proposal should reach IDA no later than **30 May 2003 at 10:00 am**. All proposals should be clearly marked as "**Call for Collaboration for Location-based Services**", **Reference Number: IDA (CFC-007)**, and addressed to:

Tender Box Number: 1
Infocomm Development Authority of Singapore
8 Temasek Boulevard
#14-00 Suntec Tower 3
Singapore 038988

Late submissions will not be entertained.

7.3 Contact details

All questions regarding this CFC should be addressed to:

Mr. POOI Choon Poh
Infocomm Development Authority of Singapore
8 Temasek Boulevard
#14-00 Suntec Tower 3
Singapore 038988
DID: (65) 6211 1339
Fax: (65) 6211 2213
E-mail: cfc@ida.gov.sg with subject title: "LBS CFC: <subject>"

No questions regarding submissions for this CFC will be entertained after **29 May 2003**.

8.0 UPDATES TO THIS DOCUMENT

This document will be made available for download at the IDA website at URL <http://www.ida.gov.sg> under the section Key Programmes > Wired With Wireless > Call For Collaboration for Wireless Projects > Location-Based Services.

IDA reserves the right to make changes and clarifications to the scope and requirements outlined in this document as and when such changes are deemed necessary and appropriate. Participants in this CFC should periodically check the IDA website for future updates to this document prior to submission of proposals. Updates will be made available for download as addendums to the initial document.

ANNEX A: POTENTIAL COLLABORATION WITH LAND TRANSPORT AUTHORITY

I) Introduction

The Land Transport Authority (LTA) assumes the role of a content provider by providing traffic data, namely incidents, still images, Electronic Road Pricing (ERP) rates and details of road works.

II) Background Data

The CFC participants may potentially leverage on LTA for live traffic data which is consolidated from various Intelligent Transport System (ITS), namely Expressway Monitoring and Advisory System (EMAS), TrafficScan, ERP, Road Information Management System (RIMS) and Green Link Determining (GLIDE) system. These are individual systems implemented for specific traffic management purposes. They provide static information such as maps and road furniture information as well as dynamic traffic data such as traffic speed, traffic volume, and incident occurrences. The data is sent to the backend server where the processing, fusion and storage of the data will take place. The real-time information is available to the public through the Internet (via traffic.smart website - <http://traffic.smart.lta.gov.sg>) and telecommunications services providers.

III) Content Provision

The content that may be potentially provided at this stage is as follows:

1. Traffic Data (speed and volume)
2. Incidents
3. Raw Incidents
4. Alerts
5. Raw Alerts
6. Variable Message Signal Messages
7. Roadworks
8. Electronic Road Pricing Rates

IV) Other Collaborative Opportunities

A) Value-added services

LTA may provide other dynamic traffic information subject to technical feasibility and cost.

B) LTA as potential user

Subject to acceptance by LTA, CFC participants are free to suggest projects to LTA whereby LTA may be a potential user of the services proposed under the project.

V) Possible Scenarios and Examples

LTA may provide traffic data to companies. The CFC participants can leverage on the data to develop the possible scenarios below:

Scenario 1

The CFC participants can develop a map-based application that leverages on different types of information (e.g. map data layer, traffic data feeds) that is suitable for car navigation devices or PDAs. The application can be intelligent enough to forewarn road users and, even better, provide an alternative route when original route is congested.

Scenario 2

Car users can trace out the roads they will use and applications can sum up and display the total ERP charges. Alternatively, car user can indicate the origins and destinations and the routing engine will suggest the optimal routes based on users' inputs. (i.e. the cheapest, shortest, fastest routes)

Scenario 3

Logistics and fleet management companies can make use of the traffic information to plan out their daily itineraries for optimal resource usage.

VI) Contact Information

LENG Soon Pak
Assistant Manager
Transport Technology
Email: soon_pak_leng@lta.gov.sg
Tel: 65-6377 7033

Augustine GOH Yock Kin
Systems Engineer
Transport Technology
Email: yock_kin_goh@lta.gov.sg
Tel: 65-6377 7476

ANNEX B: POTENTIAL COLLABORATION WITH NATIONAL HERITAGE BOARD

I) Introduction

NHB may assume the role of content provider for cultural and heritage-related information on historic sites, monuments and selected places of historical interest.

II) Background Data

The CFC participants can leverage on NHB for cultural and heritage-linked information to be used in a system that would allow visitors and interested members of the public to:

- Use wireless handheld technology to plan visits to heritage sites and provide information on demand about historical places in Singapore as well as other relevant cultural information.
- Use wireless handheld technology to enhance site tour experiences by playing audio and video automatically as visitors move from point to point, or exhibit to exhibit, like a virtual site tour guide.
- And in creating this framework, to integrate with other initiatives of STB to provide a complete visitor experience.

III) Content Provision

The type of content that may potentially be provided by NHB are:

(1) Historic Sites and National Monuments in Singapore

To date, 50 buildings have been gazetted as National Monuments and 72 sites significant to Singapore's history have been marked as historic sites. NHB can provide visitor information (locations, directions, highlights, etc.), historical overview, photographs and selected oral history audio clippings (relevant snippets of interviews) for these places.

(2) Oral History Collection

NHB could provide audio / video interviews from a range of topics relevant to heritage places such as the following:

- Prominent personalities in Singapore
- Accounts of vanishing trades
- Descriptions of life of days gone by e.g. e.g. the experiences of those who worked around the Singapore River

Information provided by NHB could be integrated with information and initiatives of other agencies (e.g. STB, LTA) so as to create wireless tourist applications providing a complete visitor experience.

Examples of integration with other wireless tourist applications include:

- Basic tourist information like maps, location of hotels, attractions, services, etc.
- Connecting back to the concierge desk;
- Sending of MMS photo postcards from Singapore;
- Performing registration of events/conferences;
- Booking of taxis at airports;
- Usage of e-vouchers/tickets/coupons for shows, matches, concerts;
- Reservations of restaurants;
- Cyber-mobile forum for visitors to interact with other visitors and locals in Singapore via real-time video, audio interaction using mobile devices
- Information push onto the user device about daily events and happenings in Singapore, mobile ticketing, location-based advertising;

At Meetings, Conventions and Exhibitions events, the visitor can use a PDA to navigate the exhibition with maps and directories. In addition, the mobile device could alert him if someone he wants to meet is within a designated proximity to encourage communication.

IV) Scenarios and Examples

Scenario 1

Wireless applications have the potential to offer an improved quality of experience while in Singapore for example, by empowering a free-and-easy visitor with a wireless site tour-guide where for example in museums, monuments, and conserved areas, the visitor can:

- Download information from the exhibit once he/she is near to it, even including the highlights of architectural details, streaming of audio/video clips of firsthand account interviews, and all other cultural information related to the exhibit. For example, a person standing in front of the YMCA would be able to download brief information on the summary history of the site, view a 1950's image of the original YMCA building (that was torn down to make way for the present one), and listen to an audio commentary by a person who was imprisoned there by the Kempeitai during the Japanese Occupation.
- The information can be pushed to him once he steps within a defined radius or it can be preloaded into his mobile device to be activated by him when he sees an exhibit which he wants to know more about, for example, playing a video of an eye-witness account.
- There can also be language-specific narration to cater for Japanese and Chinese tourists on the mobile device.

Scenario 2

School groups, tourists and other visitors keen on visiting Singapore's heritage sites can download recommended trail routes or design their own trails based on available amount of time and their present location. They can get a suggested itinerary showing heritage sites within walking distance in the immediate vicinity, and details of whether such sites are available for visitation at that particular point in time. They can also get site-specific details to help them plan their future visit e.g. site map, transport information, opening hours, admission charges (if any) etc., phone number for booking/enquiries etc. A value-added service would be to enable such visitors to automatically send a message to heritage site owners using their handsets (e.g. phone, PDA) via SMS or SMS-to-email – so that their queries (e.g. tour booking, location assistance) can be registered immediately.

V) Content Information

Mr Daniel FOO
Historic Sites Officer
Heritage Development Services
Email: daniel_foo@nhb.gov.sg
Tel: 65-6332 7945

Ms Sarin ABDULLAH
Manager (Historic Sites Unit)
Heritage Development Services
Email: sarin_abdullah@nhb.gov.sg
Tel: 65-6332 4550

Ms G. Uma DEVI
Deputy Director
Heritage Development Services
Email: uma_devi@nhb.gov.sg
Tel: 65-6332 3235

ANNEX C: POTENTIAL COLLABORATION WITH SINGAPORE LAND AUTHORITY

I) Introduction

Singapore Land Authority (SLA) may provide the map content for interested CFC participants.

II) Background Data

SLA may provide the following forms of digital map content:

- Street Directory Plus (Vector format)
- Points of Interest (Digital format)
- Historical Maps (Raster format for maps from 1954 to 1998 and vector format for maps from 1998 to 2002)

III) Content Provision

- Street Directory Plus is an intelligent geo-coded version of the Street Directory. The data is in Oracle format.
- Point-of-Interest data provides the geo-location of establishments. Examples are hotels, cinemas, restaurants, etc. The data is in Oracle format.
- Historical maps are a series of street directory maps dated from 1954 to 1998 in JPG format and from 1998 to 2002 in DGN format.

IV) Other collaborative opportunities

A) Value-added services

SLA may provide assistance in interpreting and understanding SLA map data.

V) Scenarios and Examples

Maps could be leveraged to enhance the following applications:

- Telematics
- Mobile yellow pages
- Taxi hailing service
- Proximity marketing
- Location finder

- Tourist trip planner/advisor
- Tourist/Education Historical walks
- Geography education
- Emergency services
- LBS gaming

VI) Contact Information

Mr LIM Ser Chin
Section Head, Development and Marketing
Land Information Centre
Singapore Land Authority
Email : lim_ser_chin@sla.gov.sg
Tel : 65- 63251556

ANNEX D: POTENTIAL COLLABORATION WITH SINGAPORE TOURISM BOARD

I) Introduction

Singapore Tourism Board (STB) may provide the map content for interested CFC participants.

II) Background Data

The CFC participants can potentially leverage on STB for statistical information on Annual Visitor Arrivals, Tourism Receipts and country breakdown of tourists. They may also link directly to or retrieve information from STB's destination marketing website – www.visitsingapore.com

III) Content Provision

The potential content that may be provided is essentially information that leisure tourists and business travellers would find useful when they are in Singapore:

- Events and happenings in Singapore
- Dining information, including list of restaurants categorised under various food genres
- Entertainment information, including list of establishments
- Information on places of interest (Sentosa, Zoo, Jurong BirdPark, etc)
- Information on shops and services, ranging from antiques, art galleries, shopping centers, designer fashion, jewelry & watches, etc
- Information on transportation around Singapore
- Maps – MRT route map, Orchard Road / City Center, etc

Above information can be found on print (WHERE Singapore Magazine) as well as online (www.visitsingapore.com)

IV) Scenarios and Examples

Leisure tourist can make use of information to get around as well as be updated on the happenings, which will enhance their stay in Singapore. Selected information can also be re-packaged to suit the needs of business travellers (eg. e-concierge).

IV) Contact Information

LEONG See Kay
Manager, Destination Communications
Singapore Tourism Board
Tourism Court
1 Orchard Spring Lane
Singapore 247729
Email: seekay@stb.com.sg