

## **INTEGRATING REMOTE REFERENCE AND INFORMATION SERVICE WITH DOCUMENT SUPPLY AT THE NATIONAL LIBRARY, SINGAPORE**

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### **ABSTRACT**

Web-based remote reference services have long been a mainstay of reference library services for the last two decades. As libraries continue to experiment and innovate, user demands have also evolved to keep pace and sometimes supersede what libraries can provide. Today's users are often technologically savvy, strapped for time and increasingly demanding of tailored-made answers suited to their individual needs. Observations of reference service users at the National Library of Singapore have in recent years prompted proposals to couple this service with document supply to create an integrated reference service model.

A project was initiated in late 2007 to build automated features into the National Library's existing web-based remote reference service platform. In this enhanced platform, library staff are equipped with tools to tailor each reference answer to each individual end-user, making reference recommendations that users can directly click on in the received answer pages to place orders for physical library collections. This integrated user-interface provides end-users with a single contact point for both reference and document supply services and negated the need for the initiation of a second request to the National Library's Document Delivery team.

Technical development was completed in early 2009. Prior to implementation, staff members stationed at the two service points were briefed on the newly integrated service procedures and technical enhancements. Reference librarians were also encouraged to identify users who may be keen in requesting for document supply services when evaluating users' reference enquiries and making their recommendations. The integrated service was soft-launched in February 2009. To date, usage of the service has been encouraging and feedback, mostly positive. Document supply operations have also seen increased automation, which has greatly decreased service turnaround times. Through this experimentation too, the National Library is able to closely evaluate user behavioural trends and demand for select resources.

## 1. INTRODUCTION

The Republic of Singapore is a tiny island nation of no more than 710.3 km<sup>2</sup> in size (Singapore Department of Statistics), off the southern tip of the Malay Peninsular in the Southeast Asian region. Flanked by Malaysia and the Straits of Johor in the north, the Singapore Strait and Indonesian Riau-Lingga Islands to the south, and located 137 kilometres north of the equator (Encyclopædia Britannica), Singapore is a thriving city of 4.99 million inhabitants, densely populated at a rate of 7,022 residents per km<sup>2</sup>. The city state has one of the world's busiest port (Kelly 2008), and is one of the world's top eight financial centres (The City of London, Z/Yen Group Ltd 2010, 5). Ranked eleventh in the world by the Economist Intelligence Unit in its 2005 'Quality of Life index' report, Singapore also recently placed tenth in a list of most expensive cities in the world, as reported by Mercer International following its cost of living survey released in 2009 (Voigt).

Singapore's population is diversely made up of Chinese, Malay, Indian and various other ethnic groups. Literacy rate among residents of 15 years of age or older are recorded at 96.3% in 2010 (Singapore Department of Statistics). The city-state has a network of 23 public libraries (3 regional libraries, 19 public libraries and 1 community children's library) and a National Library, under the purview of the National Library Board (NLB), that are tasked to serve the information and literary needs of local residents and foreign visitors to the country. Through this network of the National Library and public libraries, residents and visitors of Singapore have access to more than 9 million items in the NLB libraries' collections (NLB 2008), ranging from books and serials to maps, microfilms, audiovisual materials etc. Library users are also provided with access to a wide array of e-resources, both accessible onsite in NLB libraries as well as remotely from anywhere in Singapore. Between 2006-2008, the 24 NLB sites have collectively recorded an annual average of 28.6 million loans and 37.8 million visits traipsing through library doors each year.

The National Library of Singapore (NLS), newly situated in the heart of the Arts and Heritage district in 2005, is first and foremost, tasked with collecting and preserving the literary and publishing heritage of Singapore. Committed to providing access to its collections and in promoting life-long learning and research into all things Singaporean and Southeast Asian, the NLS is accessible to anyone seeking to use its collections and provides users with multiple access points (e.g. onsite query, SMS, email) to its Reference and Information Service (RIS). The NLS also operates a fee-based in-depth research service, the Local History Service (LHS), as well as the Interlibrary Lending (ILL) and Document Delivery Service (DDS) for both local and overseas requests.

In July 2005, the NLB initiated a five-year plan, detailed in the Library 2010 report (NLB 2005) that set out to execute a whole host of new and innovative projects targeted for completion in 2010 that were intended to improve and increase access to NLB libraries' collections and services for a decidedly wider audience. At the NLS, one of the L2010 projects initiated is the Reference Point Document Delivery Service (RPDDS), intended to integrate the NLS' remote reference service with document supply to provide end-users with a single online interface through which they can utilise both the RIS and DDS services provided by the NLS. This paper documents the NLS' experience in developing the online platform and infrastructure required for RPDDS, and the subsequent evaluation and observations made during the first year of the service's launch.

## **2. DOCUMENT SUPPLY IN THE NATIONAL LIBRARY, SINGAPORE**

Tracing its history back to 1823 when Sir Stamford Raffles envisioned a library built to collect the literature and culture of Singapore, the Singapore Library was first established in 1844 before it was co-opted into and renamed the Raffles Library and Museum in 1887 (Azizah Sidek et al. 2007, 2-5). In 1953, local philanthropist Lee Kong Chian stepped forth to donate \$375,000 for the construction of a new library building. The rubber tycoon, however, attached two conditions to his contribution: the first is for the new library to henceforth be made freely accessible to any members of the public in Singapore, and second, that the library's collections to begin including materials in the vernacular languages of the people of Singapore (Chinese, Malay and Tamil). These two stipulations were readily accepted, which precipitated the enactment of the Raffles National Library Ordinance in 1957 (carried on in the National Library Board Act, 1995), guaranteeing free access for all, and the growth in vernacular languages collections in the then renamed National Library of Singapore, which opened its doors to the public in its new Stamford Road site in 1960. Since its days operating from the red-bricked building at Stamford Road, the NLS has provided document supply services to its users. In its early years, remote document supply was confined to other libraries, institutions and government bodies, both local and overseas. Individual library users had access to onsite printing services in the NLS premises. DDS operations were small and staffing numbers were limited, in proportion to the volume of DDS requests received at the time. When the National Library moved again in 2005 to its current site at Victoria Street, it had only two staff overseeing DDS policies and operations.

## **3. INTEGRATING DOCUMENT SUPPLY TO THE REMOTE REFERENCE AND INFORMATION SERVICE**

Although both onsite and remote RIS services have been in existence in the NLS for a very long time, the NLS officially launched a remote RIS service named Reference Point (RP) in 1996 (Chaudhry and Chua 2004, 39), dedicating manpower specifically to field remote reference enquiries made by users via phone and emails so as to relieve the burden from library staff stationed to attend to onsite enquiries. Today, RP has evolved into a remote service that receives remote enquiries via a variety of channels: email, telephone, SMS, fax and escalations from other channels. The SMS reference service was an addition to RP implemented in 2007 (Chow and Neo, 2007), due to the high penetration rate of mobile phone subscriptions in Singapore, last reported at 135.6% in July 2008 (Euromonitor International 2009).

Between 2007-2008, the NLS received an average of 94,601 enquiries annually (NLB 2008). Operating on a 3-tier system, the NLS divides the enquiries received into 3 tiers, depending on the level of assistance and research needed to attend to each case. Guideline parameters for the 3 tiers are given as follows:

- i) Tier 1 – Usually brief directional or instructional enquiries, publication searches or circulation transactions. Targeted for completion within 10 minutes onsite, and 1 day for remote enquiries.
- ii) Tier 2 – Reference enquiries that are subject-based and requires searches within NLB libraries' collections, both print and online resources. Targeted for completion within 30 minutes onsite or 3 working days for remote queries.

- iii) Tier 3 – Targeted for closure within 5 working days, these are research enquiries that require extensive search across collections in the NLS and NLB libraries, as well as other institutions outside of NLB, e.g. the National Archives of Singapore.

Winthin the NLB network, the NLS, the centralised Contact Centre and the public libraries' ASK reference service have internal escalation procedures that can transfer cases to the relevant parties quickly. Internally within NLS, staff can also escalate more complicated enquiries to subject librarians. Similarly, DDS requests received at any service points in the NLS, Contact Centre or the public libraries are automatically escalated to RP, before they are picked up by the staff in charge of the DDS service in NLS. DDS operations until 2009, were purely manual, and for overseas requests, periodically long-drawn due to payment processes involved. Observations in the last decade have highlighted a large percentage of return-users who were often requesting for documents previously recommended to them by library staff in prior enquiries. This led to the proposal that gave rise to the RPDDS project, which besides automating document supply service processes in the NLS, is also aimed at providing end-users with a feature that will allow them to place orders for recommended documents directly to the DDS team within the NLS.

### 3.1 Remote Reference and Information Service Online Platform

The NLS launched an online platform called the Reference Delivery Service (RDS) in late 2007 to replace the existing email infrastructure used by staff for its remote reference service, RP. Commissioned by the National Library to an external developer, Third Sight (<http://www.thirdsight.net/>), the RDS system provided library staff with a unified online answering interface that can be used to record and reply to enquiries sent in by users through email, phone, SMS or onsite RIS service points. The GUI of RDS provides staff with features that can drag and drop items or resources found from the NLB libraries' OPAC (<http://catalogue.nlb.gov.sg>), NLB's federated cross-platform SearchPlus (<http://nlbsearchplus.nl.sg/>) and a web search feature powered by Google. For RP, the RDS interface can be used to reply to library end-users via emails or SMS.

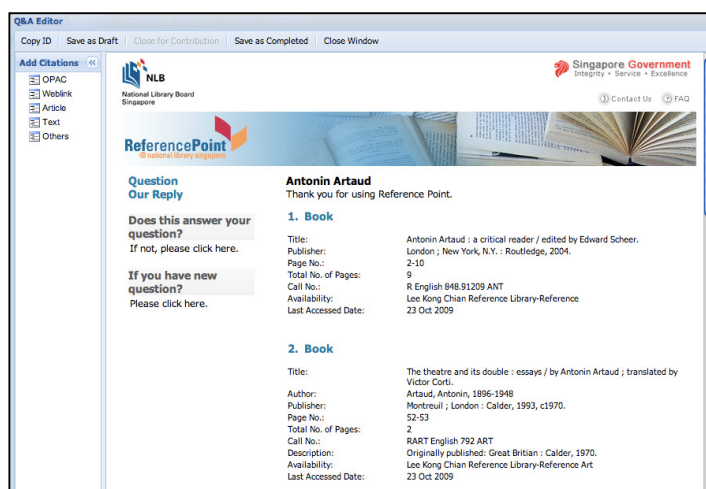


Figure 1: Example of an answer page created in RDS in response to an enquiry received.

### 3.2 Integrating Document Supply to RDS Platform

Beginning in mid-2007, discussions between the Lee Kong Chian Reference Library (LKCRIL, the reference arm of NLS) and the Service Integration and Development division (SID, formerly named

Research and Service Integration, RSI) within NLB took place to begin work on integrating document supply features into the newly launched RDS online platform. The project eventually was named RPDDS, alluding to the integration of service points between RP and DDS. The RPDDS project has two goals, given below:

- i) Integrate direct document supply features into the RDS platform to allow staff to enable selected recommended resources for document delivery and for end-users to request directly for DDS upon receipt of replies from RP
- ii) Provide an online DDS request platform through which DDS transactions can be completed online between end-users and DDS staff.

Leveraging on the existing RDS features, the RDS interface was 'tweaked' to add to their functionality, adding another layer of instructions that connect the RDS system to the RPDDS system proper. The latter is an in-house built system to cater for the second objective of the project, providing DDS staff with an online platform to conduct DDS transactions with end-users.

The first phase of the technical development for RPDDS was completed in early 2009. RPDDS was soft-launched in February that year. Prior to this, DDS staff were heavily involved in testing both the RDS and RPDDS systems and staff manning RIS service points in NLS underwent training in using the newly integrated features in RDS. In briefing sessions, reference staff were also encouraged to evaluate each enquiry to determine an end-user's need for document delivery when attending to tier 2 and 3 types of enquiries, and to make DDS recommendations where possible.

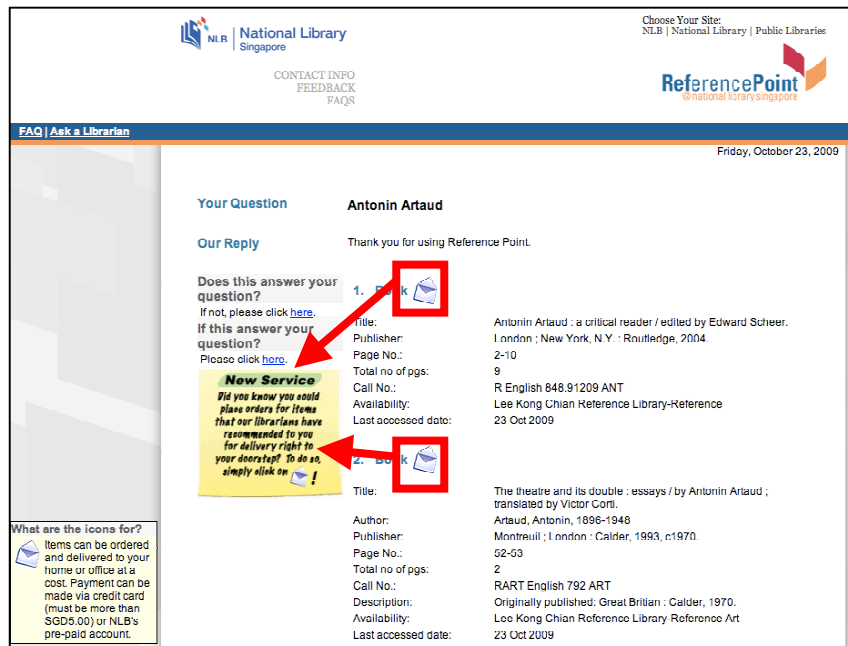


Figure 2: Example of an answer page sent to users with direct DDS request options given.

For the NLS, RPDDS created a service model that couples document supply to RIS, giving the end-users only one service contact point through which they access both the RIS and DDS services of the NLS. Users can automatically click on the desired items recommended in RP sent replies and place orders online, negating the need to initiate a second request to the DDS unit in NLS requesting for DDS as they have done in the past. The RPDDS system also alleviated much of the manual operations from DDS staff members, as confirmation and payment of each DDS transaction via

RPDDS can be conducted seamlessly online without need for complicated correspondences or long drawn communication between staff and end-users.

**Email Address**  
 Please enter your Email Address. *[Important, this field is not amendable upon submission of order]*

**Order Details**  
 Order Status : New

**Delivery Mode**  
 Please select a delivery choice. Your delivery charges will be calculated based on your selection [Delivery Charges](#)  
 Courier (Singapore)  Self-Collect  Fax (Singapore)  Fax (Overseas)  Overseas Postage

**Delivery Details**  
 User Name : Lee Lee Tan  
 Country : Australia  
 Address : 18 Lidden Street, Melbourne, Vic.  
 Postal Code : 3001

**Your Items** Answer ID: [2310-ZTVK-095830](#)

S/N	Type	Source/Author	Title	Recommended		Price SGD (Excl GST)	GST SGD	Delivery Type	Select Item
				Page No.	Total Pages				
1	Book		Antonin Artaud : a critical reader / edited by Edward Scheer.	2-10	9	3.78	0.00	A4 Plain Per Page	<input checked="" type="checkbox"/>
2	Book	Artaud, Antonin, 1896-1948	Collected works / Antonin Artaud ; translated by Victor Corti.	67-88	22	9.24	0.00	A4 Plain Per Page	<input checked="" type="checkbox"/>
3	Book	Artaud, Antonin, 1896-1948	The theatre and its double : essays / by Antonin Artaud ; translated by Victor Corti.	52-53	2	0.84	0.00	A4 Plain Per Page	<input checked="" type="checkbox"/>

**Payment Information**

*Sub-Total (SGD):	13.86
GST Charge (SGD):	0.00
#Delivery Charge (SGD):	To Be Confirmed
Admin Fee (SGD):	45.00 (No GST)
*Grand Total (SGD):	58.86

Figure 3: Example of an order page in RPDDS.

#### 4. PROJECT EVALUATION

As the RPDDS system is only sixteen months old at the time of the writing of this paper, the data presented here could only be collated from April 2009 to March 2010 to reflect the progress of the project in one year. The timeframe chosen follows the NLS' usual reporting for financial years. The full statistical breakdown is given in Table 1.

In 2009, the NLS received a total of 91,140 enquiries, of which 16.3% are tier 2 and 3 cases. This latter figure seems to mirror a library users study conducted in 2003 (Kau, Kwon and Wirtz 2003, 26), which divided user groups by their informational needs. Of the 7 groups mentioned, the two (active info-seeker and narrow-focused learner) that were most likely to put forth tier 2 and 3 enquiries make up about 17% of the users surveyed. Within the same timeframe, RDS saw inputs of 11,989 cases into its system, averaging about 4 recommended items per case. Although the percentage of recommended items that were made available for DDS via RPDDS was quite low (4.2% of 49,033), the take-up rate of recommended documents by end-users asking for DDS was considerably high, coming in at 78.5%. A major factor in this could be due to the screening done by staff manning RIS service points when gauging the end-users' informational needs.

DDS statistics also increased dramatically from 2008 to 2009, recording a more than 120% increase. Although RIS staff recommendations for RPDDS is a contributing factor, another parallel project launch during the same timeframe is in likelihood a more major influence: the NewspaperSG project (<http://newspapers.nl.sg>; Lee, Law and Ng 2009). This digitisation project has allowed staff and end-users alike to search online, at a stroke of a few keywords, vast archives of old digitised newspapers

from 1821-2006. This has been a godsend particularly for reference staff attending to history or genealogy-based enquiries, and for researchers looking for historical records in Singapore.

	2008	2009
<b><u>NLS Enquiry Statistics</u></b>		
Total no. of enquiries received	90,471	91,140
Total no. of tier 2 and 3 enquiries	16,177	14,875
Percentage of tier 2 and 3 enquiries	17.9%	16.3%
<b><u>RDS Statistics</u></b>		
Total no. of enquiry responses recorded in RDS	14176	11989
Total no. of items recommended by staff via RDS	49491	49033
Percentage of enquiries raised in RDS (measured against total no. of enquiries received)	15.7%	13.2%
Percentage of enquiries raised in RDS (measured against tier 2 and 3 enquiries)	87.6%	80.6%
Average no. of items recommended in each RDS entry	3	4
<b><u>RPDDS Statistics</u></b>		
Total no. of items made available via RPDDS	--	2064
Percentage of items made available via RPDDS	--	4.2%
Total no. of DDS requests received via RPDDS	--	79
Total no. of documents requested via RPDDS	--	1620
Take-up rate of DDS requests via RPDDS (no. of items requested vis-à-vis no. of items recommended)	--	78.5%
Total no. of DDS requests fulfilled via RPDDS	--	53
Total no. of documents delivered via RPDDS	--	951
Percentage of DDS requests fulfillment via RPDDS	--	67.1%
<b><u>Cumulative DDS Statistics for both RPDDS and manual operations</u></b>		
Total no. of DDS requests received	--	145
Total no. of documents requested	--	1674
Total no. of DDS requests fulfilled	38	85
Total no. of documents delivered	672	1656
Average no. of documents delivered per DDS request	18	19
Percentage increase/decrease (measured by total no. of documents delivered)	--	123.68%
Percentage of overall DDS requests fulfillment	--	58.6%
Percentage of documents delivered via RPDDS	--	57.4%
Percentage of documents delivered manually	100.0%	42.6%
No. of DDS requests from requestors in Singapore	--	18
No. of DDS requests from overseas requestors	--	127
Percentage of local DDS requests	--	12.4%
Percentage of overseas DDS requests	--	87.6%

Table 1: Data collated for 2008 (April 2008-March 2009) and 2009 (April 2009-March 2010)

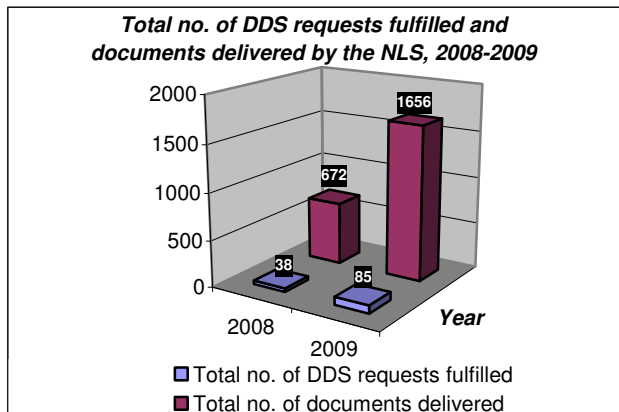


Figure 4: Statistics for DDS at NLS, 2008-2009

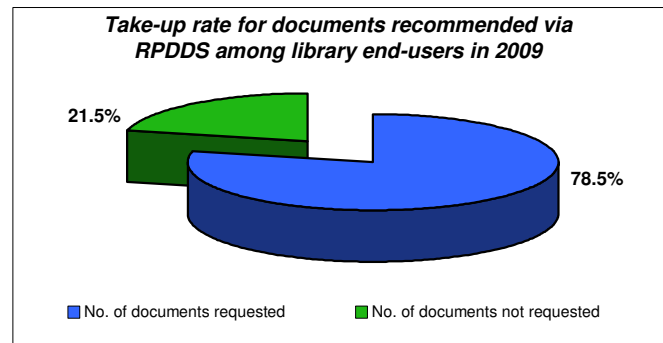


Figure 5: Take-up rate among end-users for staff recommended documents in RPDDS, 2009

## 5. CONCLUSION AND FUTURE DEVELOPMENTS

The RPDDS project has, for its first year, observed encouraging trends in its end-users' and staff's user experiences. User feedback and system imperfections have also contributed to the team's learning experience as the RPDDS system underwent a number of enhancements and system improvements in 2009. Although DDS requests have steeply risen and while manpower in NLS has also been increased slightly to accommodate this, the RPDDS system has helped to alleviate much of the manual burden on staff attending to the requests, taking up 57.4% of DDS requests received in 2009. As RPDDS caters for transactions paid for via credit cards and NLB pre-paid accounts, turnaround time for these DDS cases have also been reduced greatly, especially for the former where past transactions may take up to 1-2 weeks to complete and now may be done within 1 day.

The second phase of the RPDDS project was recently launched in June 2010, adding two more traditional access points for DDS in the online setting: an online DDS form for end-users to complete and a staff generated one that will both feed into the RPDDS system. Additional modes of payment have also been included, in the hopes of increasingly bringing more DDS operations onto the online platform. While data will continue to be collected and evaluation made on which service model end-users and staff would most likely prefer: the RIS-DDS integrated service model, or the more traditional but separate service points for RIS and DDS, for now, the past year has been a valuable learning experience and enlightening experiment into the staff and end-users' user behaviours for both the RDS and RPDDS integrated systems.

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