

National Library Board Singapore: World-Class Service through Innovation and People Centricity¹

Thomas Menkhoff and Jochen Wirtz

November 19, 2017

Abstract

The National Library Board (NLB) Singapore is a statutory board that managed to become a serial innovator. Its globally leading innovations in the library context include an award-winning radio frequency identification (RFID) system to automate check-out, returns, and sorting of books, shelf-reading robots, and even self-service libraries. NLB's consistent focus on excellent service delivery reinforced its commitment to innovation. Key levers were effective strategic leadership, a smart innovation strategy that made heavy use of technology—such as app-delivered self-service technologies and crowdsourcing—as well as a people-centric staff culture. NLB managed to co-create attractive libraries of the future together with different types of community members, such as volunteers and corporations, ushering in a new age of citizen involvement while also preparing both the library and the population of Singapore for the knowledge demands of the 21st century. This case study examines NLB's drivers of successful innovation.

¹© 2017 by Thomas Menkhoff and Jochen Wirtz.

Jochen Wirtz is Vice Dean of Graduate Studies and Professor of Marketing at the NUS Business School, National University of Singapore. Thomas Menkhoff is Academic Director of Master in Innovation Programme and Professor of Organisational Behaviour and Human Resources (Education) at the Singapore Management University.

The authors thank Professor Kah Hin Chai for his invaluable feedback and suggestions and Chia En Celeste for her assistance with the data collection for this case study.

NATIONAL LIBRARY BOARD'S JOURNEY OF INNOVATION

The National Library Board's (NLB's) vision is an ambitious one, to say the least. The vision's stated aim is to achieve "Readers for Life, Learning Communities, and a Knowledgeable Nation." Correspondingly, it describes its mission thus: "We make knowledge come alive, spark imagination and create possibilities." Naturally, this massive endeavor could only be approached with significant and sustained innovation and the massive deployment of technology.

NLB's Vision

The Board's innovation objectives were outlined in several master plans that envisioned the establishment of a world-class library system which sought to meet the learning needs of a rapidly developing young nation. The Board evolved through three waves of transformation, each successive wave building on what was achieved through the previous one's master plan.

Wave 1 – Library 2000

The focus of the early transformation effort in Wave 1 was to develop and expand the infrastructure of an adaptive, world-class public library system in Singapore that would be convenient, accessible, and useful. Several strategic undertakings were formulated and subsequently implemented, such as establishing a network of national reference libraries and a three-tier public library system of regional, community, and neighborhood libraries, as well as assisting in the setting up of school libraries and development of specialized libraries for specific sectors. All publicly funded libraries within Singapore were linked to overseas libraries and information services through computer networking. A coordinated national collection strategy was initiated to provide comprehensive coverage of Singapore's literary and publishing heritage. This culminated in the core collection of the so-called Lee Kong Chian Reference Library, with over 300,000 items featuring material in various formats (microfilms, maps, audio-visual materials, ephemera, posters, and print publications) related to the history, political and economic history, literature, as well as social-cultural history of Singapore. As Singapore developed into a global knowledge hub offering information on regional businesses and cultures, Wave 1 laid the foundation for safeguarding the documentary heritage and intellectual memory of the country, in keeping with its aim to build a literate, informed, and participative society.

Another strategic goal was to ensure that the libraries would offer quality service through market orientation. The innovative use of radio frequency identification (RFID) technology-enabled self-service allowed customers to perform the check-out and return transactions themselves. As waiting times were minimized, customers could engage with the library more proactively. In a bid to remain relevant in an increasingly digital world, NLB launched the eLibraryHub, enabling users to access digital content easily from an online portal without having to be physically present at the libraries.

New strategic and symbiotic linkages between the government, businesses, and the general public were formed to ensure that NLB would meet the needs of Singaporeans in the 21st century. Through initiatives such as the Friends of the Library Programme, NLB involved community members, reaching out to volunteers whose personal preferences and abilities were matched with areas within its libraries. By organizing enriching programs for children

from low-income families or delivering books to those unable to visit libraries, volunteers made a real difference and felt that they were part of something greater than themselves.

Wave 2 – Library 2010

Wave 2 of NLB's transformation had an even stronger focus on IT, supporting the leadership's desire to achieve higher productivity in library services. The reengineering of business processes had stretch targets in five key areas: Time-to-Market, Time-to-Checkout, Time-to-Shelf, Time-to-Information, and Library Planning, Setup, and Renewal. This also included greater emphasis on use-education so that library users could fully appreciate and explore the breadth of the collections.

The key thrusts of NLB's digital strategy included the following:

- Creation of immersive reading experiences inside physical library spaces with e-reading stations, multimedia video walls, and mobile services. The latter included NLB Mobile app, which could be used to borrow items and bypass the queue at book-borrowing stations.
- Pushing personalized content and recommendations to encourage users to read more. This was enabled through patron analytics, smart displays, and devices.
- Increasing NLB's outreach through presence in spaces outside its libraries, such as personalized recommendations on partner platforms and spaces.
- Productivity-focused automation and self-service technology to optimize staff deployment and enhance patron convenience. For instance, thanks to reservation lockers, patrons were able to make reservations outside library opening hours.
- Data-driven library operations and collections planning allowed NLB to plan effective library services, optimize content usage, and provide relevant collections to users.

The innovative efforts by NLB to create digital libraries culminated in the OneSearch Service, an online search portal for information spread across a variety of resources, spanning NLB's libraries and archives databases as well as the National Heritage Board's museum repository of artefacts and artworks. Through the OneSearch Service, users could conveniently retrieve a wide range of digital content (books, magazines, audio-visual materials, e-books, photographs, films, maps, etc.).

As more people were reading online, NLB's "eRead" resources offered digital and audio books, newspapers, and magazines from various genres and in English, Chinese, Malay, and Tamil. Capable of retrieval from a wide range of digital content including books, magazines, audio-visual materials, e-books, photographs, films, oral history interviews, and maps, NLB once again achieved service excellence with technology as an enabler.

Wave 3 – Library 2020

Wave 3 was launched in 2016 with the motto “Readers for Life, Learning Communities, and a Knowledgeable Nation” to create more learning communities and inspiring spaces across Singaporean society.

To promote reading, learning, and literacy, NLB rolled out various reading programs tailored to the needs of different demographic groups. They included Early READ for children up to 6 years, kidsREAD for children of ages 4 to 8 years from low-income families, and READ@School for students of ages 7 to 17 years.

An example of NLB’s concept of an “Inspiring Space” is the historical Memories at Old Ford Factory site. Once the assembly plant of the Ford Motor Company of Malaya, on 15 February 1942, it became the site where the British forces surrendered Singapore to the Japanese Imperial Army. In early 2017, the building reopened to mark the 75th anniversary of the start of the Japanese Occupation of Singapore. It features archival records and multisensory displays to bring history to life. After a public call for donations of historical materials such as Japanese textbooks or oral history accounts covering the years 1937 to 1954, NLB received over 400 donated items.

As a guardian of historical knowledge, NLB’s HistorySG projects such as Memories at Old Ford Factory are critical for presenting Singapore’s collective memory to the young and old alike.

How did a statutory board like NLB manage to become an award-winning serial innovator? Key fundamentals underpinning NLB’s innovation success included (1) an effective innovation leadership and innovation process, (2) a strong focus on (technology-enabled) service delivery, (3) an enduring culture of staff involvement and innovation, and (4) innovation through co-creation and 3P (people, private, public sectors) engagement.

Transformational Leadership and Innovation Process

From the beginning, senior management exhibited strong, transformational, and intrapreneurial leadership as it worked with Singapore’s public administration to enhance organizational efficiency, digitalization (e.g., as part of the computerization of the entire civil service) and service delivery. All levels of staff within NLB were galvanized for technological and organizational change as the Information Age was ushered in. If one looks at the innovation strategy development process as a series of cascading stages, where each stage derives from or acts upon the results of the preceding stage (see Table 1), it becomes clear that NLB’s leaders managed to ask the right strategic questions and followed through them decisively, step after step.

Table 1: Critical Aspects of a Strategic Innovation Cascade*

1. What's Our Purpose?

Why innovate, and on the basis of what kind of objectives?

2. Where to Play (Where Not to Play)?

Where should the innovation's focus and scope be?

3. With What Intensity?

How much innovation (e.g., incremental or radical) is wanted?

4. How to Win?

How should corporate innovation goals be pursued, and which unique value proposition should they be based on?

5. With Whom to Innovate?

With whom should collaboration be (e.g., internal partners and/or external complementors), and where are the innovation boundaries?

6. With What Capability Assets?

How can it be ensured that people in the organization are capable and motivated to make innovation work?

7. With What Management Systems?

How can working relationships be structured and organized to "get things done" innovatively?

What business processes need to be built in order to create and capture innovation value?

How can strategic innovation matters be tracked and innovation efforts be evaluated?

* As an innovation strategy tool, the Strategic Innovation Cascade can point management's attention to critical questions that need to be answered to make innovation work.

What Is Our Purpose / Where Should We Play?

NLB's mission ("We make knowledge come alive, spark imagination and create possibilities") and innovation objectives were derived from several master plans envisioning the establishment of a world-class library system. National development goals such as becoming an internationally competitive nation and a cohesive society with a strong national identity paved the way for NLB to find the right "playing field" in terms of its vision, mission, localities, product and service categories, customer segments, channels etc. Encouraging Singaporeans to discover and celebrate the joy of reading propelled many of its nation-wide reading initiatives, such as "Read! Singapore" (2005). The initiative was aimed at promoting a culture of fiction-reading among Singaporeans, and a key component of the initiative was the promotion of cross-translated short stories. Presented in Singapore's four official languages, the initiative featured meet-the-author sessions, book clubs, writing workshops, storytelling sessions, and book-derived workshops for children and adults. This allowed the public to be more hands-on with the library's initiatives.

Important questions that NLB's leadership team had to answer concerned the Intensity Level of Innovation Efforts ("How much incremental or radical innovation do we want?") and the strategic approach towards pursuing innovation goals on the basis of a compelling value proposition ("how to win"). The outcomes of such strategy decisions included the

deployment of RFID technology to enable self-service borrowing and returning as well as the development of a new mobile application enabling library members to borrow materials using their mobile devices on the go (see Table 3).

With Whom to Innovate?

NLB became a leader in “co-creation.” An example of this boundary-spanning collaboration approach was the 2013 opening of the library@chinatown, whose whole day-to-day operations are fully run by volunteers. Through this kind of novel service co-creation, NLB involved community members and public organizations such as CP1 Pte. Ltd. (the property developer for the Chinatown Point shopping center) and Kwan Im Thong Hood Cho Temple, based on the 3Ps sector motto (People, Public, and Private). It enabled NLB to tap into the knowledge, input, and resources of the wider community, contributing to improved public service delivery.

Gradually, NLB further strengthened its customer value proposition with a focus on “non-customers” and demonstrated the ability to create and capture new demand as evidenced by its “Verging All Teens” program, rolled out in the Jurong Regional Library (the first library space created for teens by teens), and My Tree House, the world’s first green library for children (created in collaboration with City Development Limited) to promote learning and reading for life in line with the Library 2020 vision. The colorful indoor setting changed the perception of reading, while the décor was made of recyclable or environmentally friendly resources, with energy-saving furnishings. Such partnerships with private companies added to NLB’s capabilities in developing and improving public libraries while serving as a touch point for these organizations to give back to the public.

With What Capability Assets?

All this wouldn’t have worked if not for a strong foundation comprising a set of reinforcing capabilities and competency-enhancing activities, such as the Master of Science in Library Science program for library staff (developed together with the Nanyang Technological University in Singapore), embedded in a robust culture of learning and innovation.

With What Management Systems?

Besides good innovation governance and strategy execution in general, NLB established various supporting management systems (e.g., for innovative IT deployment such as the OneSearch service). Rather than focusing on traditional librarianship duties, staff across all levels were motivated to provide ideas for innovation and engage in new initiatives such as crowdsourcing. The latter became a core component of NLB’s Citizen Archivist Project, which enabled the public to contribute to the nation’s intellectual memory. NLB’s success in innovation was driven by numerous value-adding business processes, such as rapid prototyping and open innovation, and an integrative performance measurement approach. Recently, NLB deployed the use of geo-spatial analytics to better understand the borrowing behavior of library users across the island.

At the structural level, several innovation processes were implemented to create and capture innovation value. This provided a conducive environment for all ideas to be considered and then further refined for implementation (see Table 2). Through the establishment of strong

channels for internal communication within NLB, staff was kept informed about organizational changes and encouraged to make suggestions for improvements.

Table 2: Examples of Innovation Processes and Strategic Actions Taken by NLB

Processes	Examples of Strategic Actions Taken
<p>The organization generates, gathers, and screens creative ideas from all sources.</p>	<p>NLB involved its own employees in the innovation process through various initiatives. An example of its “dare to try” innovation spirit and ideation process was the BlackBox program. It consisted of (i) a call for ideas, (ii) an innovation competition, (iii) development and trial, and (iv) the presentation of findings and recommendation to senior management.</p> <p>While testing out technology-based ideas, NLB employed a rapid prototyping approach called proof of concept (PoC), through which NLB could safely and economically assess the viability of an idea by developing small-scale projects. By maximizing time and resources within a limited period of time, the PoC approach helped NLB to evaluate the viability of ideas and to minimize the financial risks they might pose.</p>
<p>The organization incorporates new developments and changing requirements into innovations.</p>	<p>Predictive data analytics enables NLB to forecast user demand for new and existing titles, which in turn leads to more efficient resource management and greater service quality.</p>
<p>The organization involves employees and partners in the new product/service design.</p>	<p>NLB proactively maintained and expanded partnerships with overseas libraries, government agencies, non-profit organizations, and private organizations as well as communities.</p> <p>The library@chinatown was Singapore’s first volunteer-run public library that was co-developed with and managed by the community, for the community.</p> <p>MOLLY, NLB’s mobile library, brought library services to orphanages, children’s homes and special education schools such as Pathlight School (a school for autistic children) in collaboration with SBS Transit Ltd. and Comfort Delgro Pte. Ltd.</p>
<p>The organization has a relationship with customers to identify and address innovation opportunities.</p>	<p>NLB aligned itself effectively between several customer segments and its customer strategy, in line with its overall mission. An example was reaching out to seniors above the age of 60 and examining their requirements for productive leisure, mental stimulation, and social engagement. Tools deployed to understand their (future) needs included</p>

	<p>customer dialogue sessions and customer feedback channels.</p> <p>Customers were involved systematically in library renovation projects or when niche library spaces were designed for community members via face-to-face sessions and CRM-enabled feedback loops.</p>
The organization reviews management of innovation projects and validates them.	To ensure that innovation projects delivered the intended outcomes, NLB carefully managed the end-to-end maturation journey of an idea. Key milestones included planning, followed by business cases, project management, and post-implementation review.
The organization seeks breakthrough improvements in key business processes for value creation.	One strategic goal of NLB was to make its content discoverable with the help of digital services. NLB's Mobile app, the revamp of its Archives Online, the Oral History Interviews Portal and the OneSearch search engine were examples of e-services that were rolled out to facilitate easy access to content on Singapore and to NLB's resources.
The organization evaluates and improves its management of innovation processes for product, service and business process innovation.	One hallmark of NLB's innovation culture was co-creation powered by the strategic belief in the importance of harnessing the power of collective wisdom via public participation.

Source: Various NLB materials such as its Innovation Award Report, available at https://www.spring.gov.sg/Building-Trust/Business-Excellence/Documents/IAward_NLB_2016_Summary_Report.pdf

NLB's leadership team created a strong foundation for greater innovativeness by putting in place systems for effective people management systems (e.g., training programs on ideation and innovation management) and innovation process management (e.g., idea generation approaches together with staff, customers, suppliers, and other partners). While the impetus was to adopt advanced technology to improve work processes, NLB's leadership involved all levels of staff as part of the change efforts in order to create a trustworthy and engaged work environment.

Focus on Technology-Enabled Service Delivery to Library Users

Over the years, NLB continuously rolled out numerous digital services (self-service technologies) aimed at making its content accessible. For example, in the nation with the highest mobile penetration rate in the world, NLB Mobile app has given library users access to library information and allowed transactions such as loaning of library materials and e-books that can be read on the go. Users can borrow books with their mobile phones using

updated RFID technology via the app, rendering queuing for self-checkout machines a thing of the past.

NLB provided e-books (in all four official languages) that could also be accessed through its website. Subjects include the arts, economics, literature, history and geography, philosophy and religion, social science, politics and law, and science. These e-books were procured through major international e-books providers. To provide easy access to Singapore's archival holdings, Archives Online was revamped to enable a seamless search for information across the National Archives of Singapore's various databases, which include photographs, maps, oral history interview samplers, and snippets of audio-visual recordings. Library users could also get online access to the Oral History collection of Singapore's National Archives, including a vast collection of stories from politicians to street hawkers, medical professionals to prisoners-of-war, and artists to entrepreneurs.

NLB's innovation was successful because it was both technological and non-technological. This was in line with academics' and consulting firms' findings that it was organizational strategy and innovation culture, not technology per se, that drove the success of digital transformation efforts. NLB used technological innovation not as an end goal but as a means to free up resources so that they could engage in other forms of innovation, mainly co-creation for service excellence and productivity with external parties.

Technologically enabled service innovations pioneered by NLB such as book drops, self-checkout machines, and borrower enquiry machines became standard features in new libraries. They exemplified a positive trend where innovation efforts by NLB were accompanied by the gradual evolution of citizen engagement.

As an example of innovative service co-creation, the library@orchard won the prestigious President's Design Award for its outstanding interior design in 2015. Its space design was informed by the ideas and proposals contributed by Orchard Road "regulars" and other members of the public in collaboration with design thinking experts from Singapore Polytechnic (SP). The three development phases included (i) observing target users and understanding their needs and "pain points" via interviews, (ii) ideation based on the results of data collection efforts, and (iii) development of prototypes to obtain user reactions and to appreciate customer preferences. At the Pasir Ris Public Library, a new (volunteer-run) teen's mezzanine with comfortable multi-functional furniture and a doodle wall for self-expression and discussions was created for teenagers.

Culture of Staff Involvement and Innovation

Future-proofing the libraries and expanding the nation's learning capacity with the aid of information resources provided a purpose for many organizational members and ultimately helped NLB to achieve its strategic objectives. All librarians were encouraged to build up relevant competencies and human capital alongside the transformation of the library, aimed at reaching Level One certification from the Singapore Workforce Skills Qualifications in six months. Thus, a culture of staff involvement was built from the organization's beginning.

While public organizations elsewhere were stereotyped as being bureaucratic, NLB gave its staff the autonomy and empowerment to voice their opinions and raise suggestions. The adoption of the Staff Suggestion Scheme served as a channel for staff across all levels to

share their ideas, to be evaluated by the heads of the divisions and then approved online. This was not a token exercise. For example, as early as in 1997, when the scheme was introduced, 60 percent of 2,239 suggestions received were implemented. This sent a strong signal to all levels of staff that contributions were taken seriously and that the organization was genuine about constant incremental improvements. Tools such as the BlackBox program (see below) ensured that the ideas and innovation potential of NLB’s staff were fully exploited.

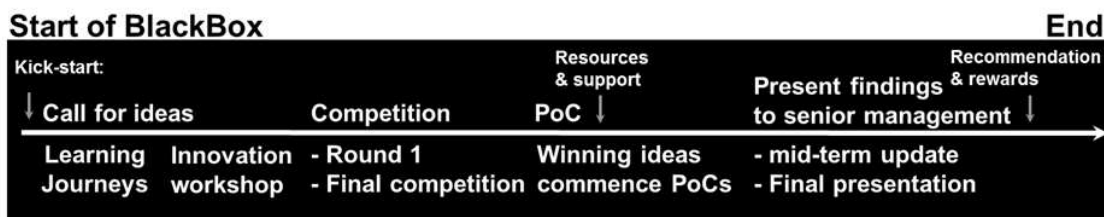
To sustain innovation efforts, NLB realized that it was key to invest in people. Librarians’ competencies were developed over the years in line with changing customer expectations. The form in which knowledge was processed and interpreted evolved even if the core services of providing research and references services to the public remained. Traditional librarianship had to be further professionalized, moving beyond cataloguing and referencing to research, synthetization, and packaging of information. To aid in this upgrade, NLB signed a memorandum of understanding (MoU) with the Nanyang Technological University in 1998 to offer the Master of Science in Library Science degree to library staff. These formal academic qualifications helped librarians specialize in information and navigate the Information Age, serving readers all the same. Many more MoUs followed to facilitate knowledge sharing on technical systems and innovations with academics.

Other capabilities that were built for librarians included skills to develop specialized collections, including arts, multi-culture, and Singapore; the productization of information services to provide reference answers to the public on an online database, namely, Singapore Infopedia; specialized information services in business information and customized information; cataloguing and indexing newspapers on the digital space through the Dublin Core Standard; and Cybrarian services for users to communicate remotely on the eLibraryHub.

Specialization in these roles helped NLB to increase the range of services delivered to customers as well as serve a wider segment. Knowledge across different areas also helped to expand the scope for innovation.

As we know from innovation studies, trying to make innovation work with the same tight planning, budgeting, and reviews that are applied to existing businesses can create a “trap.” One remedy is to add flexibility to planning and control systems; for example, by providing special funds for new opportunities. NLB did just that. To support the passage of ideas from initial planning to post-implementation review, various means and channels were instituted. The BlackBox program (held biennially) was spearheaded by the Technology & Innovation division (see Figure 1) and has helped to identify numerous potential innovative projects. Winning teams were provided with funds, mentors, and financial resources to conduct a 6-month proof-of-concept.

Figure 1: NLB’s BlackBox Program



One of the projects spawned out of BlackBox was Quest, a trading-card game aimed at encouraging young boys to read. Quest won the American Library Association Presidential Citation for Innovative International Projects in 2011. The continuity of the BlackBox program exemplifies NLB’s strong innovation culture.

Another effective innovation management approach adopted by NLB was the involvement of staff in projects that featured cross-divisional teams. The formation of such work groups broke the functional silos and allowed staff from all levels to come together. Cross-functional project teams reduced hierarchy and bureaucracy, bringing together various domain experts to be involved as team members and manage and implement projects together. The re-opening of revamped libraries like the Pasir Ris Public Library in 2015 provided clear evidence of the benefits of cross-divisional collaboration between staff from the Public Library Service, Properties and Facilities Management division, and the Technology and Information division to ensure that the library provides up-to-date services across all functions on time.

Innovation through Co-Creation and 3P (People, Private, Public Sectors) Engagement

One of the first instances of public involvement with NLB beyond the traditional library usage was during the rollout of the Verging All Teens program in the Jurong Regional Library. It was the first library created for teens by teens, meant to inspire each other to read more about the creation of relevant library spaces. Thanks to youths’ input, the Teens Library had unique features catered to this target group, including music, décor, stage performances, and even a graffiti wall. This section of the library was publicly run by volunteers.

NLB’s co-creation approach eventually expanded beyond the daily running of operations to the very conceptualization of libraries. This was particularly important for mall libraries, because they were set apart from the regional, neighborhood, and national libraries in terms of space, location, and curated collections. The library@esplanade became Singapore’s first performing arts library. Taking in feedback from the arts community, it boasted an exhibition space and performing stage alongside a niche collection of books, screenplays, and music scores.

The success of this mall library led to the co-development of library@chinatown alongside a panel of experts on Chinese culture comprising educators, academia, and media experts. Opened in 2013, the library’s main purpose was to promote Chinese art and culture. It was also a step-up from volunteer programs, for all its day-to-day operations were fully run by volunteers. These volunteers not only addressed basic queries but also brainstormed for engaging library programs for the public. Customer satisfaction, in fact, registered higher in these volunteer-run libraries; library@chinatown had the highest customer satisfaction rating, proving that NLB’s careful design and planning over the years not only matched user behavior and expectations but gratified them even more as users were directly involved in the library’s activities.

Table 3: Components and Outcomes of NLB’s Breakthrough Innovations

Innovation Strategy Components and Outcomes	NLB’s Innovation Strengths
<i>Component: Citizen Engagement and</i>	Co-creation and volunteer-delivered services

<p style="text-align: center;"><i>Collaboration through Co-Creation</i></p> <p>Outcome: Greater social engagement of NLB's stakeholders (e.g. volunteers)</p>	<p>have multiplied impact and reach:</p> <ul style="list-style-type: none"> • library@orchard • library@chinatown • Pasir Ris Public Library • Citizen Archivist project aimed at greater public participation in the archival process
<p style="text-align: center;"><i>Component: Making NLB Content Discoverable through Digital Services</i></p> <p>Outcome: Effective harnessing of digital (e.g. self-service) technologies</p>	<p>Digital services facilitated easy access to content on Singapore and NLB's e-Resources:</p> <ul style="list-style-type: none"> • NLB Mobile app • Revamp of Archives Online • Oral History Interviews Portal • OneSearch Portal
<p style="text-align: center;"><i>Component: Buffering Front Office Activities from the Back Office</i></p> <p>Outcome: Organizational efficiency gains through resource optimization</p>	<p>Resources saved through technologies were channeled to higher value tasks:</p> <ul style="list-style-type: none"> • Auto-sorter system • Self-service reservation system • Shelf-reading robot

Co-creating with public and private organizations allowed NLB to participate in other projects beyond the library, combining its internal strengths with the business know-how of these organizations. In 2011, NLB led the Singapore Memory Project for the Singapore Government, reaching out and partnering with other institutions, which included heritage agencies and research institutions, to kick-start a memory movement. Through their shared expertise, the partnership enabled the creation of a new wave of knowledge assets in a Library 2.0 environment.² An Add to Singapore Memory app was created through which the public could contribute their own perspectives in the form of videos, photographs, and web links to the platform, with NLB playing a key role in the curation and archiving of these assets.

The Citizen Archivist project, a crowd-sourcing portal launched in 2015, tapped the public's knowledge and wisdom for its extensive collections of archival records. This encouraged more public participation in the archival process. Citizens' involvement in the description and transcription of archival records directly contributed to the greater accessibility of Singapore's intellectual memory in the form of archives.

Another example of 3P participation was the development of NewspaperSG, a digital archive of Singaporean and Malaysian newspapers published between 1831 and 2009. With the support of Singapore Press Holdings, the leading publisher in Singapore, NLB was granted permission to digitize *The Straits Times* from its first issue onwards. Once again, it was the fruitful partnership with different stakeholders that allowed NLB to broaden its range of services offered to the public, maintaining its commitment to customer-centricity.

Going Forward

² The term "Library 2.0" refers to the application of interactive and collaborative (multimedia) web-based technologies to library services and collections.

NLB's strong staff culture has provided a conducive environment for innovations to occur, supported by leadership, strategy, innovation culture, capacity-building, formalized processes, IT mastery, and 3P partnerships for co-creation. The adoption of both technological and non-technological innovations enabled NLB to engage stakeholders such as the public in unprecedented ways. Although innovations usually started internally within the organization, through suggestions from the staff seeking to improve customer delivery, these novel and value-creating ways of doing things eventually diffused outwards and had a far-reaching impact on the scope and depth of NLB's services.

In the era of Big Data, NLB continues to use innovations to serve its customers in line with its mission and vision. As Singapore's demographics change, NLB is well advised to harness the capabilities of data analytics and artificial intelligence for effective collection planning in order to serve the different segments of Singapore's diverse population. With transformation as a continual process rather than an end goal along with Singapore's growth as a smart nation, NLB can rely on its established innovation processes, forward-looking vision, and digital thrusts to address the ever-changing needs of readers of all ages and backgrounds. Several of NLB's current technology initiatives are aimed at figuring out how to use technology for *personalization* and to push out actionable information that is useful to individual users. This is just one of numerous new initiatives of NLB to future-proof itself.

Study Questions

1. What are the main transformation waves NLB has gone through?
2. How did NLB manage to create a strong culture of innovation and service excellence?
3. What did NLB do in terms of staff capacity-building in order to expand the propensity for innovation?
4. What was the role of IT and digital services in transforming NLB and to improve the customer experience?
5. How did organizational strategy and culture drive NLB's digital transformation and innovation outcomes?
6. What could NLB do to further stay ahead as a "Library for Life" as part of NLB's 10-year strategic development plan?