

THE X FACTOR

DISRUPTING SINGAPORE'S LIBRARIES & ARCHIVES WITH LAB25

Ng Cher Pong

Chief Executive Officer, National Library Board Singapore



20 April 2023



National Library Board
Singapore

NLB's Key Lines of Business

Vision: Readers for Life, Learning Communities, Knowledgeable Nation

Mission: We make knowledge come alive, spark imagination and create possibilities



Public Libraries

Network of 29 public libraries,
including 3 partner libraries
Reading programmes and initiatives
Programmes and exhibitions
targeted at Singapore
communities



National Library

Preserving Singapore's
print and literary heritage,
and intellectual memory
Reference collections
Legal Deposit (including electronic)



National Archives

Custodian of Singapore's collective
memory: responsible for collection,
preservation and management of
Singapore's public and private
archival records
Promotes public interest in our
nation's history and heritage

Leveraging NLB's assets, brand and reach

We have achieved significant reach[^].



Over 3.5m
Library members
(Singapore residents)



16.5m
No. of visits to NLB premises



Overall Reach* of
7 in 10 residents

* Singapore residents to have accessed NLB's physical touchpoints, digital platforms and/or content



2 m
No. of participants in NLB's programmes & exhibitions

Our collection is well-utilised.



84.4m
No. of pageviews to NLB's websites
(e.g. Archives Online, Infopedia) and
usage of e-books and e-databases



38.6m
Overall loans

[^] 3-year average

**We are living in an era of
technological disruptions.**

Libraries and Books will Die

The Guardian

Public library loans show dramatic fall in last two years

Almost 16m fewer books have been loaned in England and Wales since 2014, reinforcing a bleak picture of widespread budget cuts and branch closures



Sound Off: In this digital age, do libraries still matter?

Staff Writer Florida Times-Union

Published 1:59 p.m. ET April 24, 2015



With all the information on the Internet and tablets and phones that allow you to download books, some people criticize

Urgent need' ... inside a public libra

Report Urges Library Leaders to Address Decline in Public Library Usage Stats

By Andrew Albanese | May 06, 2021



In a report published this week, veteran Waterstones managing director Tim Coates writes of a steep decline—and he suggests the

“In the U.S. there has been a fall of Coates writes in the *Freckle Report* which includes drops in both gate o service ignores the figures it does h

Post

If Libraries Are About Finding the Truth, Let's Be Honest About Their Decline

By Samuel J. Abrams

AEIdeas

January 05, 2022



The Washington Post recently reported that the world was in the midst of a new piece approvingly mentioned around the world, including the Bjørnvika library in Oslo, which



Forbes

Do We Need Libraries?

Steve Denning

Senior Contributor @

I write about 21st century leadership, Agile, innovation &...

Technology X Business



Is it different
this time though?

NETFLIX



coursera





X



Retail

Shifting Online

Rise in share of global e-commerce

- Made up approx. 19% of global retail sales in 2021
- Share is expected to increase to 25% by 2026
(Statistica, 2023)

E-commerce giants: Alibaba and Amazon

- Respectively generated est. 780 billion USD and est. 690 billion USD in annual online sales
(Statistica, 2022)

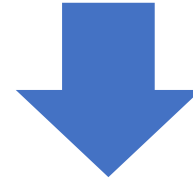
Rise of M-commerce

- Mobile shopping from Shopify merchants captured 69% of online Black Friday Cyber Monday sales
(Shopify, 2022)

Retail

**Omni-
Channel**

Single Channel



Multi-Channel



Omni-Channel

Retail

**Omni-
Channel**

**What does it mean to
provide an omni-channel
user experience?**

Integrated. Consistent. Seamless.

Amazon-Go



- Customer enters physical store with the Amazon mobile app.
- Just Walk Out technology charges items taken to customer's account, and sends receipt when they leave the store

Integrated. Consistent. Seamless.

Amazon 4-Star



Items in the physical store are selected based on Amazon's e-platform data:

- All items sold are those with 4 stars or more rating on Amazon.com
- Items displayed are those tagged as 'Most Wished For' by online customers

Content

**On
Demand**

Rise of Video-on-Demand

- Shifting from cable TV subscriptions to VOD platforms e.g. Netflix, Disney+

Anytime, Anywhere

- Content accessible via smart personal devices
- Consumption not fixed at locations (e.g. cinema)

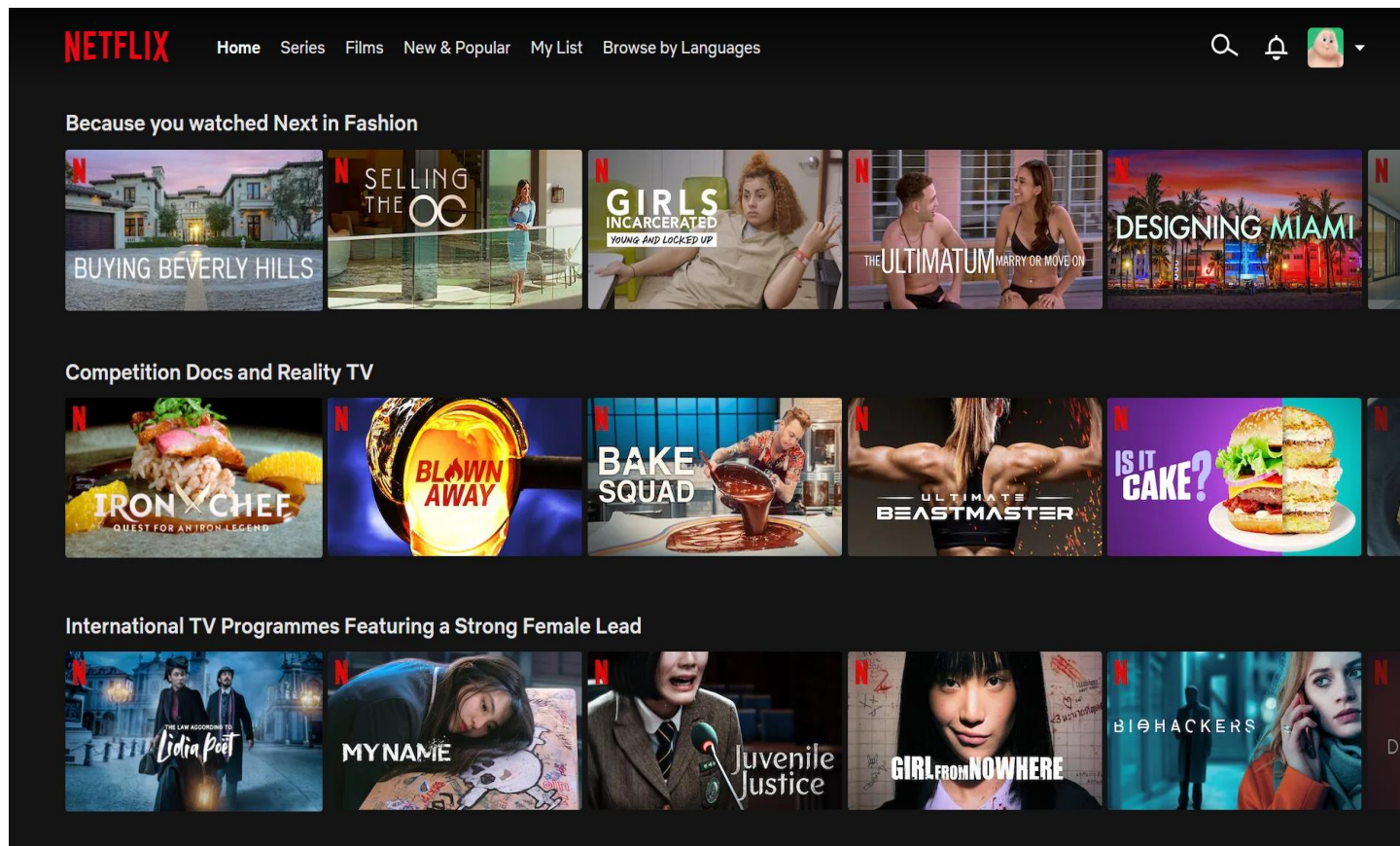
Content

**Personal-
isation**

**Data-driven personalised
recommendations based
on users' preferences and
usage history**

Customised for you.

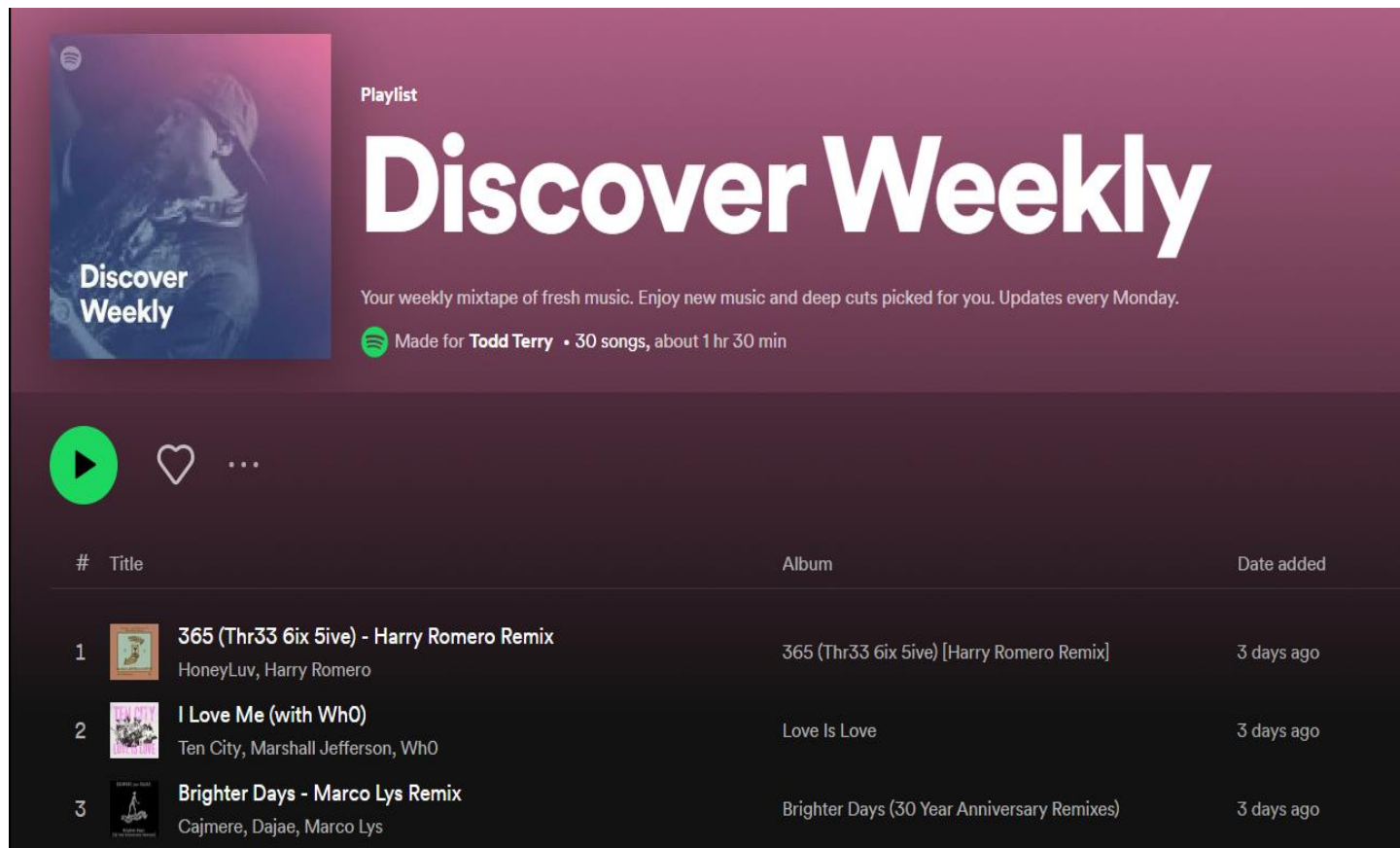
Personalised Homepage on Netflix



Netflix shows a unique homepage for each user, via AI-powered algorithm that generates "Because You Watched" recommendations.




Customised for you.

Discover Weekly Spotify Playlist



The screenshot shows the Spotify Discover Weekly playlist interface. At the top, there's a dark blue header with the text "Discover Weekly Spotify Playlist". Below this, the playlist cover features a person's face and the text "Discover Weekly". To the right of the cover, the word "Playlist" is written in small text, followed by "Discover Weekly" in large white font. Below the title, a description reads: "Your weekly mixtape of fresh music. Enjoy new music and deep cuts picked for you. Updates every Monday." Underneath, it says "Made for Todd Terry • 30 songs, about 1 hr 30 min".


Below the playlist header, there are three icons: a play button, a heart, and a three-dot menu. Below these icons is a table of songs:




#	Title	Album	Date added
1	 365 (Thr33 6ix 5ive) - Harry Romero Remix HoneyLuv, Harry Romero	365 (Thr33 6ix 5ive) [Harry Romero Remix]	3 days ago
2	 I Love Me (with Wh0) Ten City, Marshall Jefferson, Wh0	Love Is Love	3 days ago
3	 Brighter Days - Marco Lys Remix Cajmere, Dajae, Marco Lys	Brighter Days (30 Year Anniversary Remixes)	3 days ago


Spotify generates a personalised “Discover Weekly” playlist for each user, featuring 30 new songs to listen to, based on algorithms that analyses users’ music taste.

Disrupting Ourselves

We have taken several steps with transforming operations.

 **REUTERS®** World ▾ Business ▾ Legal ▾ Markets ▾ Breakingviews Technology ▾ Investigations



Meanwhile, Singapore's National Library Board has introduced two shelf-reading robots at one of its public libraries that can scan labels on 100,000 books, or about 30 percent of its collection, per day.

"Staff need not read the call numbers one by one on the shelf, and this reduces the routine and labour-intensive aspects," said Lee Yee Fuang, assistant director at the National Library Board.

**But now,
we have to
transform
the entire
user experience.**



**NLB's 5-year journey of
experimentation and innovation to
reimagine our libraries and archives**

WHAT IS LAB25?

LAB25 is NLB's invitation to partners and the community to collaborate on this journey of innovation and experimentation to reimagine libraries and archives. The goal is to be an even stronger companion to patrons as the society navigates an evolving social, cultural and economic landscape. Through four distinct roles, NLB seeks to work with the community to co-create products and services for our next generation of libraries and archives.

LEARNING MARKETPLACE

To transform NLB into a national platform of lifelong learning with like-minded partners

SINGAPORE STORYTELLERS

To inspire discovery and creation of Singapore stories and instil a deeper appreciation of our collective experience

INFORMED CITIZENRY

To nurture thoughtful people who reflect deeply on what they come across every day

EQUALISER

To bridge gaps, include more and empower all in this digital age



Key Priorities:

1. Rethinking our Channel Strategy
2. Moving from Search to T-shaped Discovery
3. Transforming the Experience of Content "Inside and Outside"
4. Promoting Digital Inclusion (the Human Factor)

The X Channel Strategy

The Four Arms of Our X Channel Strategy

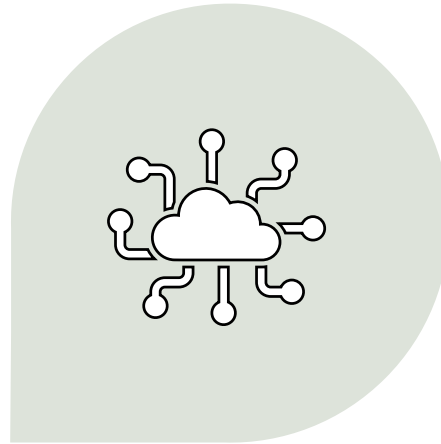
HUBS

Network of NLB-owned and run Regional, Standalone and Mall Libraries supplemented by partner-funded libraries



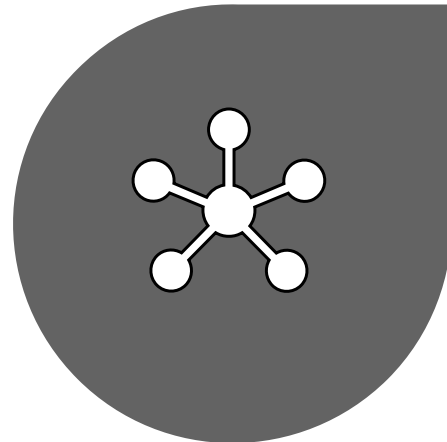
DIGITAL

AI powered recommendation engines, personalised discovery



NODES

Encounters at surprising places (malls, parks etc.) using e.g. QR codes to point back to the Hubs



DELIVERY

"The Little Book Box"
Subscription service

Borrow-n-Deliver



Fixed Touchpoints → Nodes Everywhere

We **expand our reach** in a more **flexible** and **agile** way.

Direction of shift



Network of 30+ physical facilities
and website/app

Ubiquitous presence in both physical
and digital spaces

Growth through touchpoints
(expensive!)

Growth through partners (free/cheap!)

Rigidity in expansion or contraction

Agile in expansion or contraction

Bringing the library outside the library

XL – Physical Structure + QR

E.g. curated showcases, to tie in with major events/festivals

L – Physical Decal + QR

M – Leverage Partners' Physical Build

E.g. QRs on existing installations e.g. bookshelves, exhibition panels

S – Leverage Partners' Collaterals

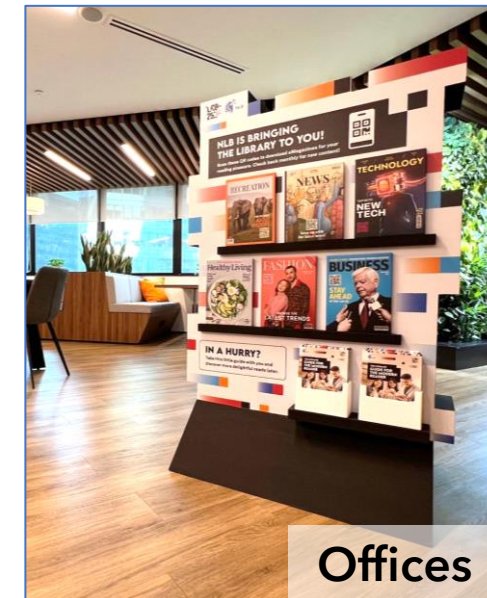
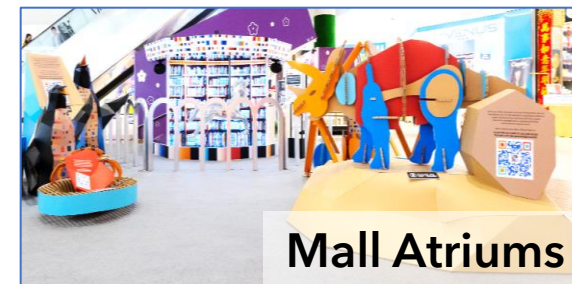
E.g. embed QR as part of print materials/collaterals

Digital – Embedded QR in Digital Platforms

E.g. algorithm on partner websites/digital platforms

Invis – No QR Codes Needed

E.g. geo-activation, text & image recognition with signs, landmarks



Grab-n-Go

NLB launches first pop-up manga library at City Square Mall

Wong Shiying

Manga fans can now access more than 5,000 titles at the National Library Board's (NLB) first manga library, a six-month pop-up at City Square Mall.

The library has popular titles such as Spy x Family, Dragon Ball Z, Assassin's Creed: Blade Of Shao Jun and Pokemon Adventures (Red, Green and Blue).

Nearly a fifth of the manga titles were donated by Japanese publisher Shogakukan Asia, said NLB on

concept where patrons can check in and check out automatically by scanning their NRIC or NLB eCard.

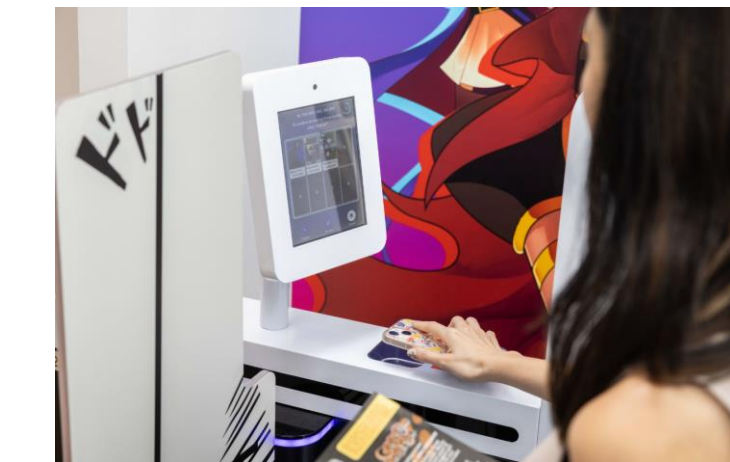
With the use of ultra-high radio frequency identification technology, the books being borrowed will appear on a screen during check-out.

After patrons scan their identification card, confirmation of their loan will appear on the screen. A confirmation e-mail will then be sent to their e-mail address. There is a borrowing limit of up to eight books at one go.

In line with the theme of comics, the manga library's concierge is a



Located on the fourth floor of City Square Mall in Farrer Park, the library has popular titles such as Spy x Family, Dragon Ball Z, Assassin's Creed: Blade Of Shao Jun and Pokemon Adventures (Red, Green and Blue). It also features local comics such as Mr. Kiasu, Roti Kaya And Guyu and The LKY Story. ST PHOTO: KUA CHEE SIONG



Best News Website or Mobile Service • Digital Media Awards Worldwide

Top Stories Latest News Discover Singapore

Singapore

More than 5,000 titles available for borrowing at NLB's first pop-up manga library at City Square Mall

The library carries popular titles such as Dragon Ball Z by Akira Toriyama and Spy x Family by Tatsuya Endo.

A vast collection of 5,000 manga book titles for patrons to borrow and enjoy. (Photo: National Library Board)

Extending NLB's footprint *outside*

- Man-less, self-service concept
- Enter external partner spaces to reach new audiences

Improving patron-centricity *inside*

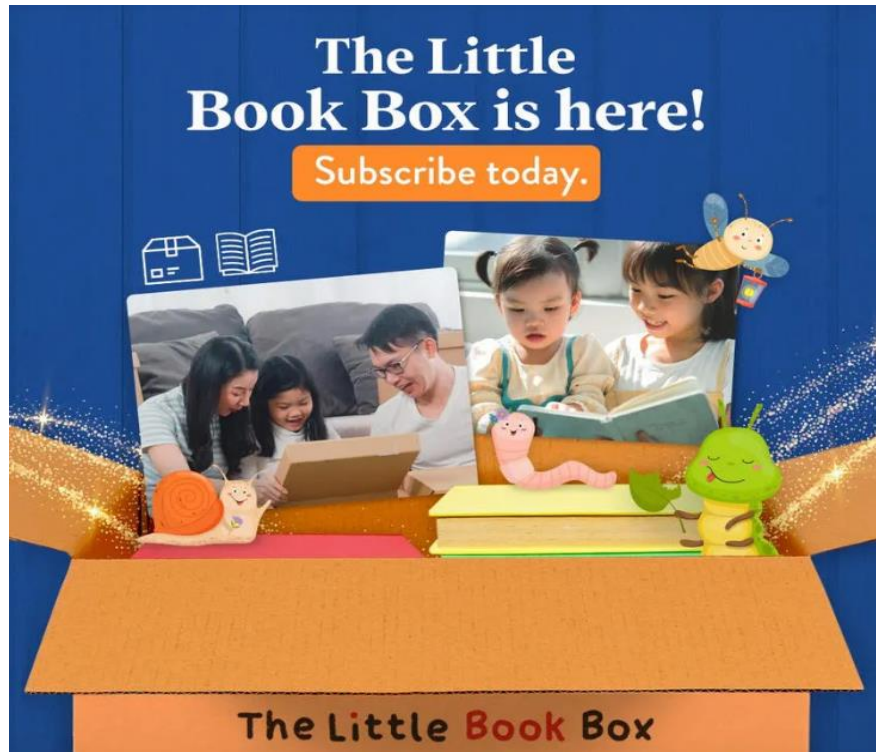
- User scans library membership ID to enter the library
- Gantry provides personalised recommendations of programmes, books etc. based on user's past activity

Manpower savings *all-round*

- Expand footprint and provide services with minimal reliance on frontline staff

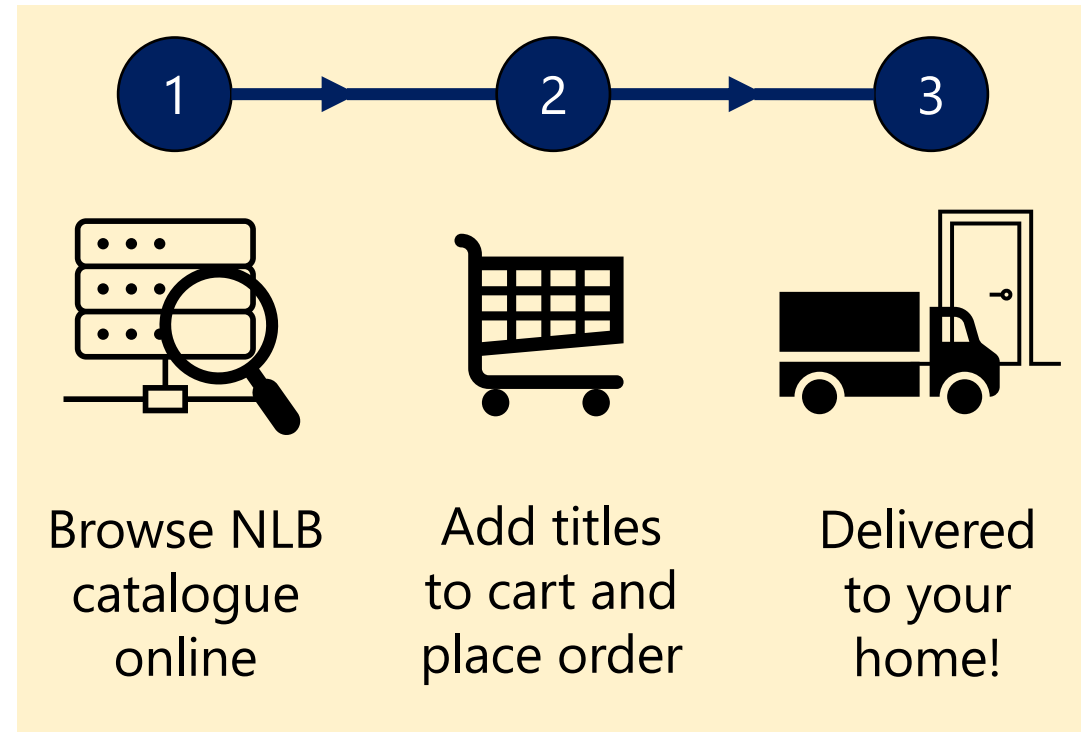
Delivery to your Doorstep

The Little Book Box



Subscribers receive a monthly selection of 8 children's books curated by librarians. Includes fiction, non-fiction, and titles from the Singapore collection.

Borrow-n-Deliver



On-demand service, where users can enjoy the convenience of selecting library books available at any public library, and having them delivered to their doorstep.



Search



T - shaped Discovery

Moving from Search to Discovery

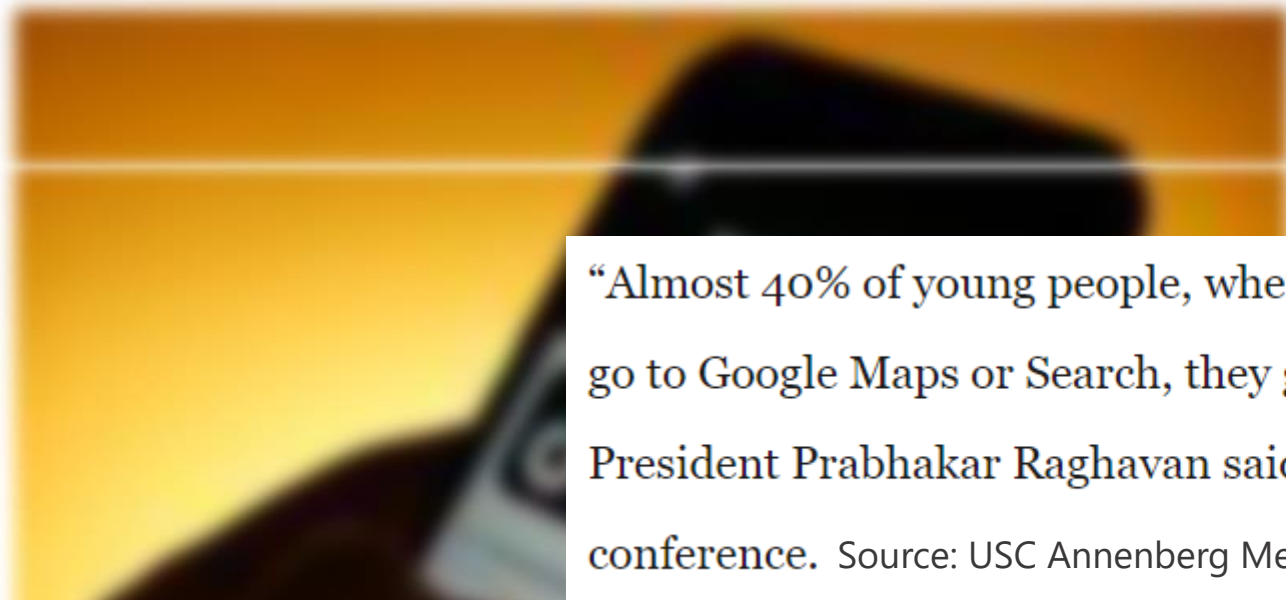
Bloomberg



Technology

Gen Z Uses TikTok Like Google, Upsetting the Old Internet Order

- Combination of search, social and fun clips wins over young
- Rivals use upstarts to deflect claims they're anti-competitive



“Almost 40% of young people, when they’re looking for a place for lunch, they don’t go to Google Maps or Search, they go on Tik Tok or Instagram,” Google Senior Vice President Prabhakar Raghavan said last July at Fortune’s Brainstorm Tech conference. Source: USC Annenberg Media, 2023.

The New York Times

For Gen Z, TikTok Is the New Search Engine

Need to find a restaurant or figure out how to do something? Young people are turning to TikTok to search for answers. Google has noticed.

Search → T - shaped Discovery

We help **guide** discovery and be a more effective **concierge**.

Direction of shift



Centres on search

Centres on personalization with relevance and context as our focus

Help customers zero in

Help customers go deeper and broader

Driven by customers' inputs

Driven by data from customer's history

Encouraging T - shaped Discovery

Broadening perspectives, deepening understanding.

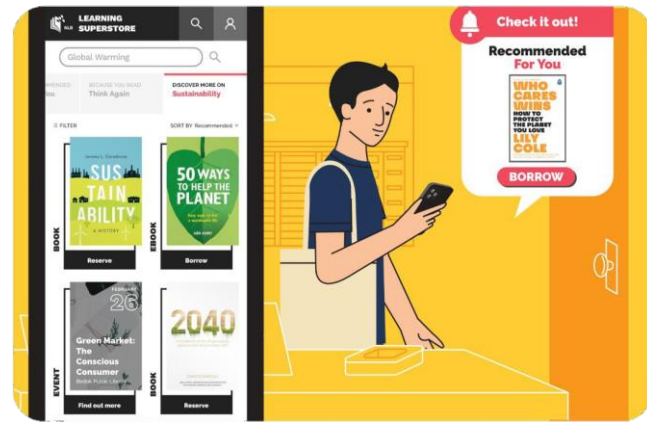
Expanding Formats beyond books & magazines into videos, audio, programmes

User



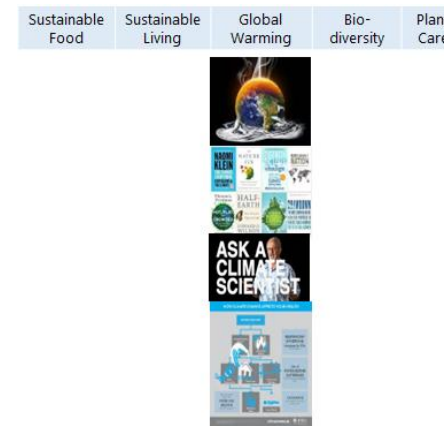
Searches for "Global Warming"

Personalised Recommendations



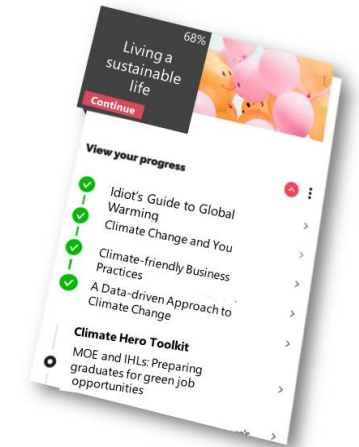
Generated by AI algorithm drawing from user's inputs and user history

T-Shaped Discovery



Tap on knowledge graphs mapping subjects and creating relationships

Multiformat Playlists



Dynamically generated based on users' data



Transforming the
experience of content
“Inside and Outside”

Physical vs Digital → Hybrid “Phy-gital”

We leverage technology to enhance **experiences**, and to **reach and engage** citizens more effectively

Direction of shift



Focus on physical and digital experiences separately

Focus on **seamless** “phy-gital*” experiences, with brand consistency and service integration being key

Physical and digital platforms compete against each other

Physical and digital platforms **amplify** each other

Growth in physical and digital patrons

Growth in “phy-gital” hybrid patrons

Inside the Library: Making Stories Come to Life

Augmented Reality (AR) Trail



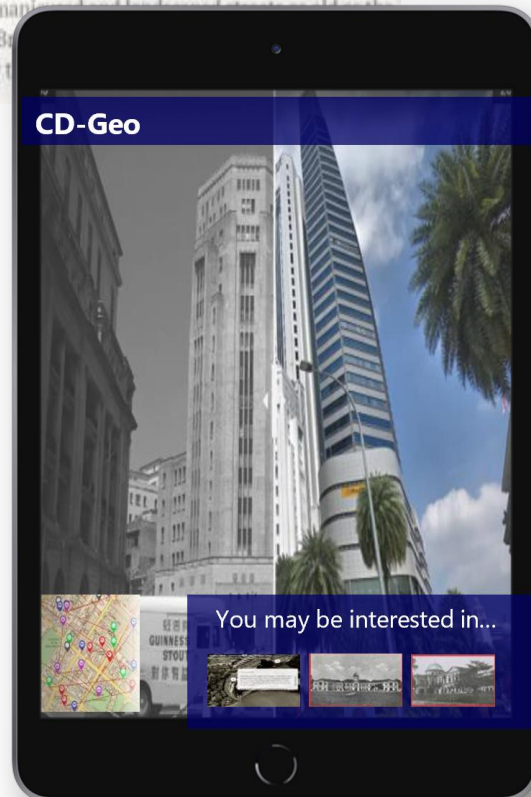
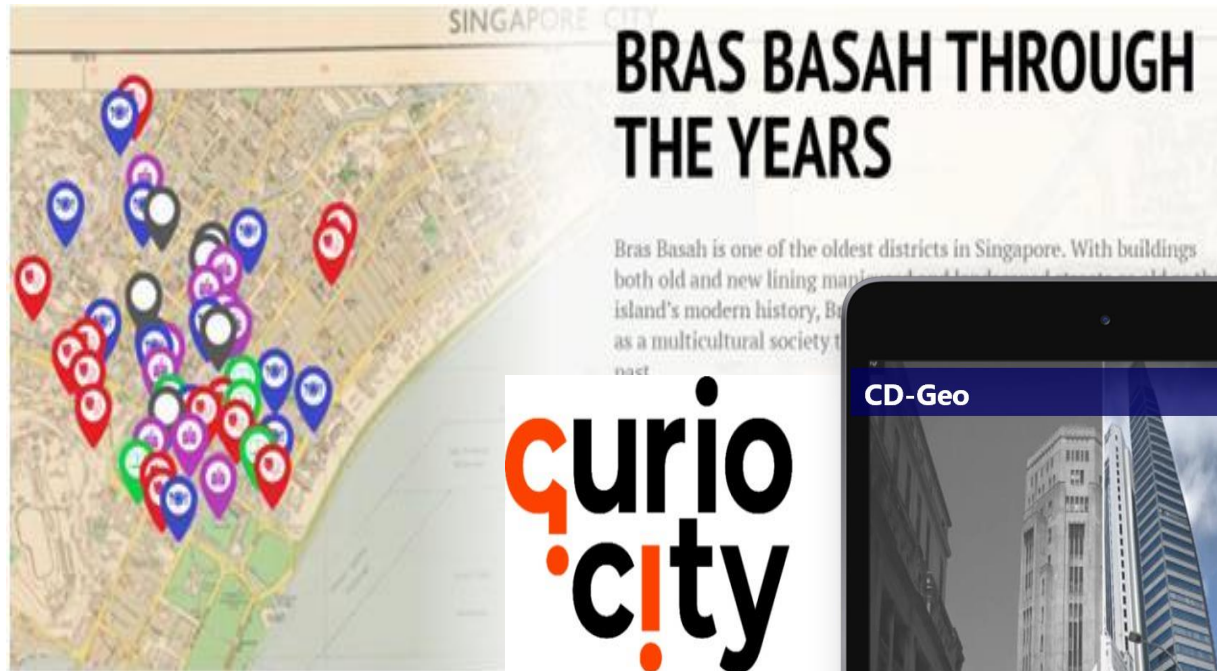
Wildlife species and natural landscapes in physical books come alive on digital devices.

Stories Come Alive Room



Uses moving images and text, light and sound effects to make storytelling an immersive and interactive experience.

Outside the Library: Geo-based SG and SEA Content



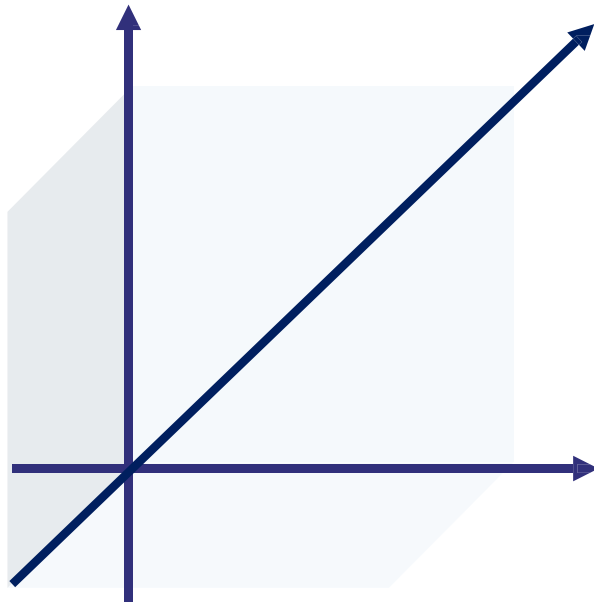
- National geo-based platform to discover Singapore content from partners and NLB.
- Singapore storytelling at every turn – about places and landmarks outside our libraries and archives.
- Accessible anywhere: contextual in situ, and searchable online from home.

Outside the Library: Geo-based SG and SEA Content



3D Framing of Time and Space

Space Zooming in and out from landmark to community to region



Narrative

Visualising a landmark/ location/ region/ community through subject tags, e.g. conflict, art, major events

Time

Visualising a location in the past, present and, possibly, future

Personalised landing page based on user's past searches.

Multi-format and Multi-sensorial (e.g. videos, maps, sounds).



Technology X Inclusion

The heart of the X Factor



Punggol Regional Library occupies five storeys, though currently only the first two levels, both dedicated to children, are operational. The remaining three floors are set to open in the coming months. ST PHOTO: GIN LAY



Pupils from My First Skool reading books at Punggol Regional Library on Monday. Other features aimed at children include the National Library Board's (NLB) first permanent toy library, which offers puppets, costumes and props to experiment with, and a Storyteller Cove that provides prompts for children to come up with their own tales. ST PHOTOS: RYAN CHIONG



Oasis Primary School pupils in Punggol Regional Library's SparkLab, which is a space that NLB set up in partnership with the Smithsonian Institution of the United States. Aimed at getting children to tackle hands-on problems independently, it encourages them to invent solutions to engineering challenges.

New Punggol library invites kids to tinker or tell stories

It also boasts a host of accessible features that cater to people with disabilities

Josiah Teo

Aimed at getting children to tackle hands-on problems independently, it encourages them to invent solutions to engineering challenges – such as how to construct an item to hover in a wind tunnel, or how to build structures around a teetering table without them falling. In line with NLB's Libraries and Archives Blueprint 2025 (LAB25), which aims in part to make libraries more inclusive to all, the new facility incorporates numerous accessible features to serve the needs of people with disabilities. For instance, one feature to make the library more friendly for wheelchair-bound patrons is the "Borrow-n-Go" passageway, which utilises Ultra-High Radio Frequency Identification (RFID) technology to enable users to borrow their desired titles without having to place them on a table-top, as is the case at traditional borrowing kiosks. The library also offers Calm Pods, quiet and safe spaces with wall and floor padding, as well as sensory aids, for users with disabilities.

Located within the One Punggol integrated community hub, the library will occupy five storeys, though currently only the first two levels, both dedicated to children, are operational. The remaining three floors are set to open in the coming months. Nevertheless, there is more than enough to explore at the soft launch, such as a tinkering space on the second floor that the National Library Board has set up in partnership with the Smithsonian Institution of the United States.

ities to go to should they need privacy to calm down. These spaces were embraced by Ms Anna Ieo Tingzon, 45, who was among the patrons who visited the library on Monday. The mother of a child with Down Syndrome, Ms Tingzon said she appreciated their inclusion as her daughter sometimes experiences difficulties regulating her emotions. She hopes that apart from the inclusive features, library staff will also be equipped to help library patrons with disabilities, citing past experiences at other libraries where librarians did not understand her daughter's condition. Multi-coloured keyboards with large keys have also been installed at the new library, so that people with visual impairments can access the library's catalogue with greater ease. These accessible features were created with inputs from the Singaporean disability community, including the NLB's Persons with Disabilities Advisory Committee, which includes experts on child development, and the CEOs of local social service organisations. Such features could be as innocuous as the sound a lift button makes when pressed, said Mr Ber-

during the construction of the library. "Thinking through how the whole environment can be made a little bit more welcoming for persons with autism – that's been the fulfilling part of the journey," said Mr Chew. Other features aimed at children include NLB's first permanent toy library, which offers puppets, costumes and props to experiment with, and a Storyteller Cove that provides prompts for children to come up with their own tales. Said Ms Catherine Lau, deputy chief executive of NLB: "When we plan the space, we want it to spark imagination and curiosity." In addition, a Stories Come Alive room on the first floor features interactive screens that animate Singaporean poems across the four official languages. For instance, in a rendition of Singaporean lawyer and writer Ronald Wong's poem Punggol, children are able to tap on accompanying pop-ups to explore the locations featured in the work, such as the all-but-forgotten Babington that was a neighbourhood fixture in the 1930s. "We want them to learn through using our book collection, through playing at the toy library and the other interactive activities," Ms Lau said. Speaking to The Straits Times, Ms Verena Lee, assistant director of the Punggol Regional Library, said: "We want to welcome persons with disabilities in and make sure they feel accepted. We want to continue to shape how we deliver our services, to think of new ways to engage our community. So come, use the library, and give us feedback."

ENGAGING EVERYONE
We want to welcome persons with disabilities in and make sure they feel accepted... We want to continue to shape how we deliver our services, to think of new ways to engage our community. So come, use the library, and give us feedback.

MS VERENA LEE, assistant director of the Punggol Regional Library.

nard Chew, 49, a member of the advisory committee. The chief executive officer of St. Andrew's Autism Centre said the library's lift buttons originally made a very shrill sound, which could trigger persons with autism, as they often experience sensory overload. He suggested implementing a longer time lag between the pressing of the button and its sound being emitted, which NLB adopted

during the construction of the library. "Thinking through how the whole environment can be made a little bit more welcoming for persons with autism – that's been the fulfilling part of the journey," said Mr Chew. Other features aimed at children include NLB's first permanent toy library, which offers puppets, costumes and props to experiment with, and a Storyteller Cove that provides prompts for children to come up with their own tales. Said Ms Catherine Lau, deputy chief executive of NLB: "When we plan the space, we want it to spark imagination and curiosity." In addition, a Stories Come Alive room on the first floor features interactive screens that animate Singaporean poems across the four official languages. For instance, in a rendition of Singaporean lawyer and writer Ronald Wong's poem Punggol, children are able to tap on accompanying pop-ups to explore the locations featured in the work, such as the all-but-forgotten Babington that was a neighbourhood fixture in the 1930s. "We want them to learn through using our book collection, through playing at the toy library and the other interactive activities," Ms Lau said. Speaking to The Straits Times, Ms Verena Lee, assistant director of the Punggol Regional Library, said: "We want to welcome persons with disabilities in and make sure they feel accepted. We want to continue to shape how we deliver our services, to think of new ways to engage our community. So come, use the library, and give us feedback."

Weather

SINGAPORE
23/31°C

SHOWERS
over many areas in the afternoon.



OUTLOOK
Wednesday: Afternoon thundery showers.
Thursday: Late afternoon thundery showers.

Punggol Regional Library

"Thinking through how the whole environment can be made a little bit more welcoming for persons with autism – that's been the fulfilling part of the journey"

Mr Bernard Chew
Member of NLB's Persons with Disabilities Advisory Committee

Accessible to All



Borrow-n-Go

Allows wheelchair users to borrow books easily by going through this passageway that detects the books they are carrying.



Accessible Collection
3,000 books including Braille books, phonics readers, touch-and-feel books, and books for caregivers to learn about specific disabilities.



Calm Pods

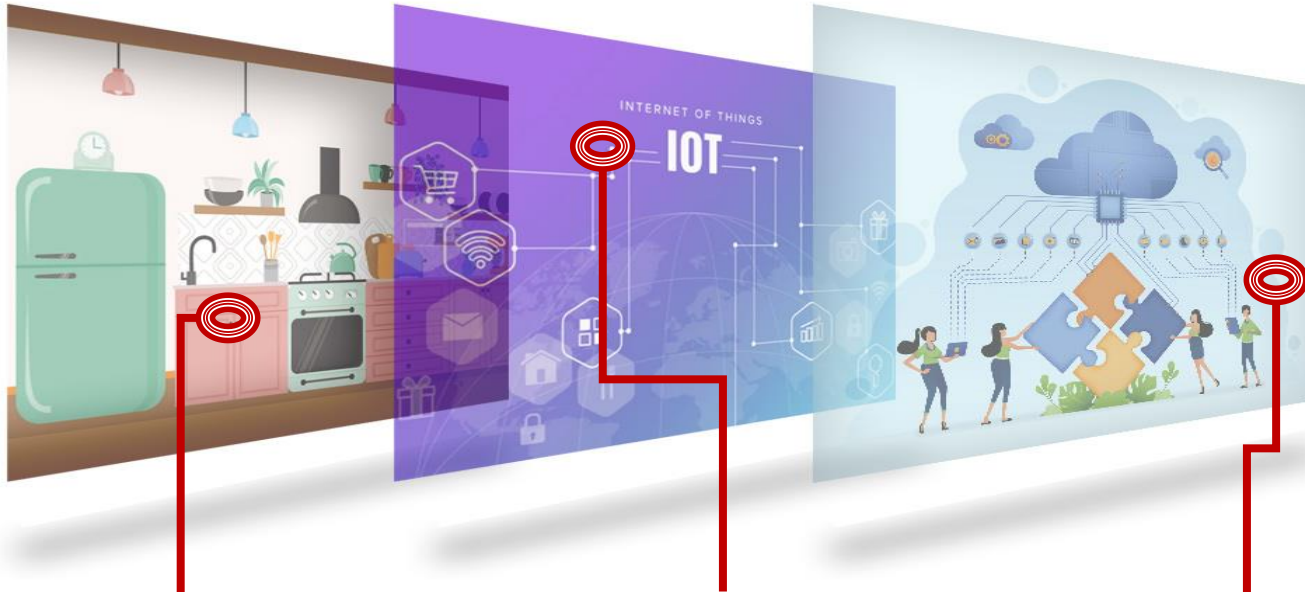
Quiet and safe space for those who need a private and calming sensorial experience.



Accessible Membership

Includes doubling of loan period; free use of reservation locker service to pick up books at a nearer library.

ExperiencelT



Users can relate to a **familiar scenario and setting**, to learn how tech can enhance quality of life.

Users are brought **behind the curtain** to show how it works in a comprehensible form.

Provide a first-hand, interactive experience of the tech in a **safe learning space** to pique curiosity.

Foster user motivation and confidence in understanding and using emerging technologies through experiential engagement.

ExperiencIT

- Developed in collaboration with industry partners (e.g. Amazon Web Services).
- Users can ExperiencIT at our Libraries, and in the Community (partner spaces).



Race Against the Machine

Compete against AI (virtual DeepRacer trained to perform optimally) in a timed trial

Other activities include:

Read To Me

Show a book to a webcam with AWS DeepLens for text to be translated and read aloud.

TrainRobo!

Learn about reinforcement learning via an interactive game to teach tricks to a robot dog

Thank you

