



# **FUTURE AUDIO VISUAL ARCHIVES: RICH IN CONTENT, SMART & CONNECTED**

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Architecture & Innovation



## PUBLIC LIBRARIES

- **WHAT:** Promote reading and learning through engaging public library services
- **WHERE:** 26 Public Libraries
- **COLLECTION:** Children, Young People, Adults

## NATIONAL LIBRARY

- **WHAT:** Reference & Research, legal deposit
- **WHERE:** L7-L13, NL Building
- **COLLECTION:** Nation's published heritage & Reference

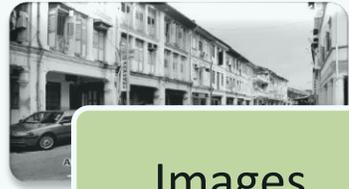
## NATIONAL ARCHIVES

- **WHAT:** Keeper of records of national or historical significance.
- **WHERE:** Archives Reading Room at the National Archives Building, Former Ford Factory
- **COLLECTION:** Significant records & Reference

# National Library Board (NLB) - Core Groups



Historic newspapers



Images



Digitised books



Audio-visual recordings



Oral history recordings



Maps

### Other collections

- Infopedia articles
- Web Archives
- Singapore Memories
- Music
- Films
- Posters
- Building Plans
- Govt Records
- Private Records

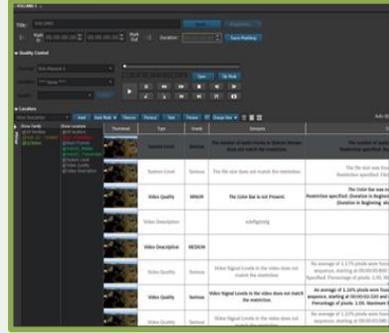
# The Growing NLB Collections



Media  
obsolescence



High definition  
content



Quality control



Storage  
requirements

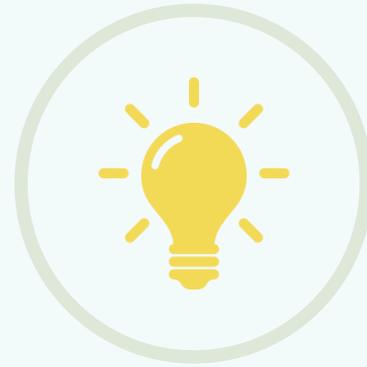


Access of  
audiovisual  
content

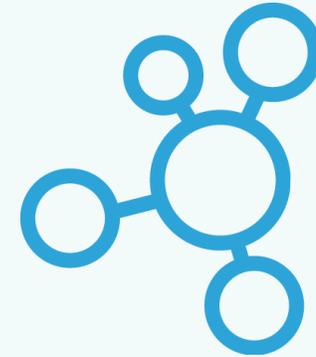
# Challenges in Managing Audiovisual Materials



**Rich in Content**



**Smart**



**Connected**

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Future-Ready Audio Visual Archives



## Smart Operations

Future-Ready Audio Visual Archives

Free-to-air channels



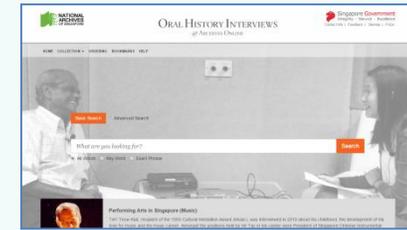
Digitisation

Off-air recording

Automated file-based video QC

Media asset management

Re-production



Access

Metadata management

Digital preservation



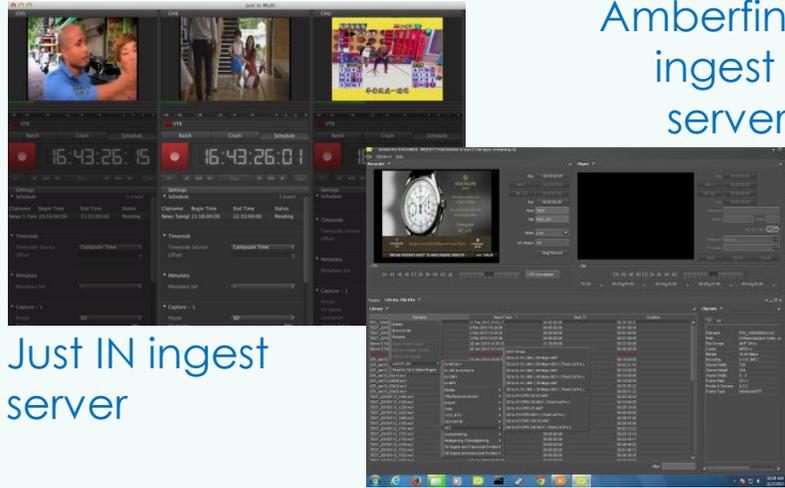
# End-to-end Management of Audiovisual Content

SMIL conserves, digitises and preserves  
audiovisual recordings for NLB



Sound & Moving Image Laboratory (SMIL)

## Full HD Support



Amberfin  
ingest  
server

Just IN ingest  
server

- Added over-the-air recording of HD content as Singapore's broadcast industry goes full HD in 2016
- High speed fibre channel infrastructure to cater to increased bandwidth needs

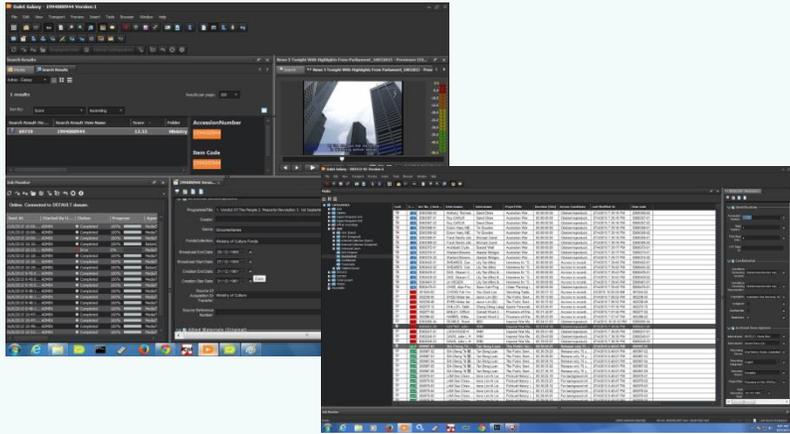
## Audiovisual QC software

Error	Synopsis	Timecode	Duration	
1	 Some pixels are found to be Out-of-Gamut.	00:02:22:19	00:00:06:08	✘
2	 Video Signal Levels in the video does not match the restriction.	00:02:26:21	00:00:12:10	✘
3	 Some pixels are found to be Out-of-Gamut.	00:02:26:21	00:00:05:13	✘
4	 Video Signal Levels in the video does not match the restriction.	00:02:43:04	00:00:10:24	✘
5	 Some pixels are found to be Out-of-Gamut.	00:04:49:16	00:00:21:10	✘

- Baton from Interra Systems
- Container checks: play time, file size, number of streams, etc.
- Video checks: resolution, blurriness, pixelation, colour gamut, etc.
- Audio checks: silence, flutter, etc.
- Detail QC reports generated and kept alongside the audiovisual materials

# Sound & Moving Image Laboratory (SMIL)

## End-to-end Workflow Management



- Dalet Galaxy Media Asset Management (MAM) System
- Orchestrates the end-to-end workflow for audiovisual content

## Re-production Requests



- Re-production requests more than doubled in 2014
- Need to deal with rights, editing and transcoding
- MAM provides a web-based multimedia editor to handle these requests

# Sound & Moving Image Laboratory (SMIL)



## Smart Services

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Future-Ready Audio Visual Archives

Globally, consumer Internet video traffic will be 80 percent of all consumer Internet traffic in 2019, up from 64 percent in 2014.

Cisco Visual Networking Index: Forecast and Methodology, 2014-2019

**You**Tube

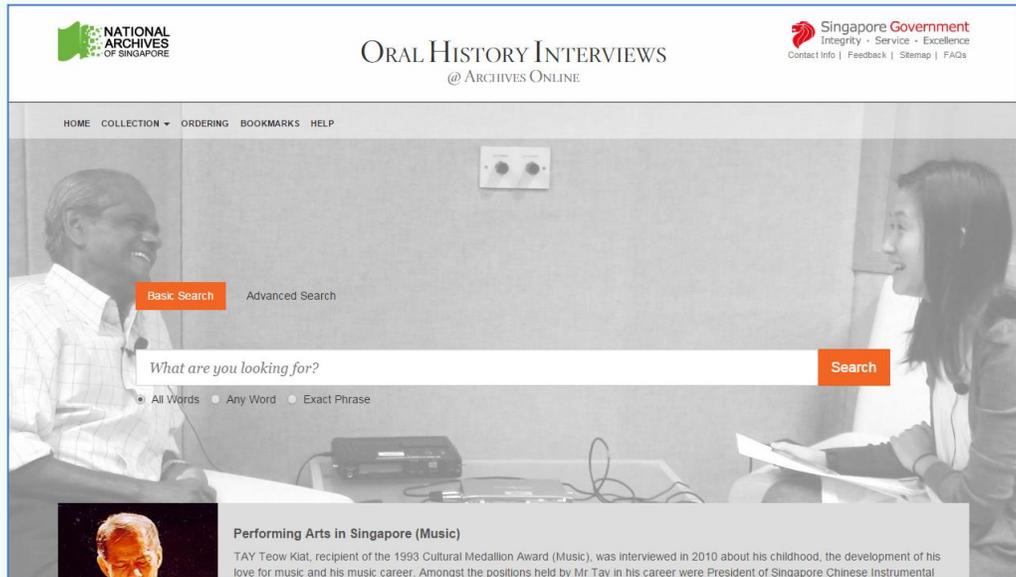
**NETFLIX**



Proliferation of computing devices

# Making Audiovisual Content Accessible

# Record, preserve and disseminate the history of Singapore through oral history interviews



- Centre established in 1979
- Over 4,000 interviews
- Aggressively making full interviews online, pushing out 600 hours every month since March 2014

## Archives Online – Oral History Centre

[http://www.nas.gov.sg/archivesonline/oral\\_history\\_interviews/](http://www.nas.gov.sg/archivesonline/oral_history_interviews/)

# Automated voice-to-text technologies to enhance search and discovery

The screenshot displays the 'Oral History Interviews' page for 'PALMER, Vernon'. The transcript is titled 'The Public Service – A Retrospection 新加坡公共服务史, Accession Number 001423'. A 'Time Markers' section is highlighted with a red box, showing a list of timestamps and their corresponding audio content:

- 07:15 the Broadcasting Headquarters, Radio Singapore, was on the first and
- 07:18 second floors of the Cathay flats. DC
- 07:28 Mr **Palmer**, can you describe for us the arrangements
- 07:31 that you were asked to undertake **Time Markers**
- 07:34 for the surrender
- 07:36 ceremony? VP
- 07:38 I don't want to give the impression that

Below the list are checkboxes for 'Show all markers' and 'Auto scroll'. A button 'Show All Reels/Discs Within This Interview' is also visible. The right sidebar shows 'Suggested Contents' with various interview entries.

- Interviews can go into hours and are organised into reels of 30/60 minutes
- Manual transcripts are not time-stamped
- Enrich transcripts with time-stamps from automated voice-to-text technology
- Search, and 'jump-to-hear'

Archives Online – Oral History Centre

[http://www.nas.gov.sg/archivesonline/oral\\_history\\_interviews/](http://www.nas.gov.sg/archivesonline/oral_history_interviews/)

# Contextual discovery of related content via text analytics

The screenshot displays the 'Oral History Interviews @ Archives Online' interface. The main content area features a video player for an interview with NEO, Jack (梁智强). The video player shows a progress bar at 00:45 / 26:53. To the right of the video player is a 'Suggested Contents' sidebar, which is highlighted with a red border. This sidebar lists several related interview records, including 'Singapore Film Industry 新加坡电影业 Interview with UY Ricardo', 'Singapore Film Industry 新加坡电影业 Interview with Maswani Bin Marowan @ M. Wani', 'Special Project 特别计划 Interview with KRISHNAN, L (Dato)', and 'Special Project 特别计划 Interview with KASSIM Masdor'. The sidebar also includes navigation tabs for 'Within Oral History Interviews' and 'Within Archives Online'.

- Good recommendations can increase usage, e.g., amazon.com
- Text mining technologies used to identify related resources
  - Within the Oral History collection
  - Across other NLB collections
- User gets a 'cluster' of relevant resources

Archives Online – Oral History Centre

[http://www.nas.gov.sg/archivesonline/oral\\_history\\_interviews/](http://www.nas.gov.sg/archivesonline/oral_history_interviews/)



Basic Search Advanced Search

Keywords (Mandatory)

All Words

From this date (dd/mm/yyyy)



To this date (dd/mm/yyyy)



Search

Genres

Collections

Search

Genres



MUSIC



HOME MOVIES



CURRENT AFFAIRS

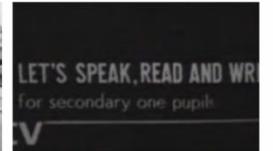


NEWS

Collections



Ministry of Culture



Ministry of Education



National Arts Council



Rediffusion Pte Ltd

Highlights



National Day Rally Speeches



National Day Messages



The Battle for Merger Radio Talks



National Day Parades

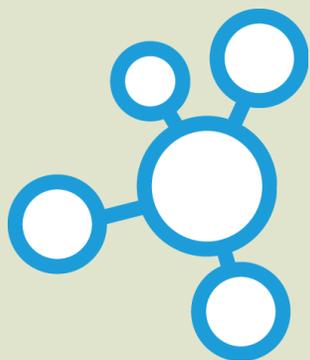


Rediffusion Broadcasts

Explore the archives

# Archives Online – Audiovisual and Sound Recordings

[http://www.nas.gov.sg/archivesonline/audiovisual\\_records/](http://www.nas.gov.sg/archivesonline/audiovisual_records/)



**Connected**

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Future-Ready Audio Visual Archives

A digital archive set up to digitise, archive and provide access to all forms of published Singapore musical works

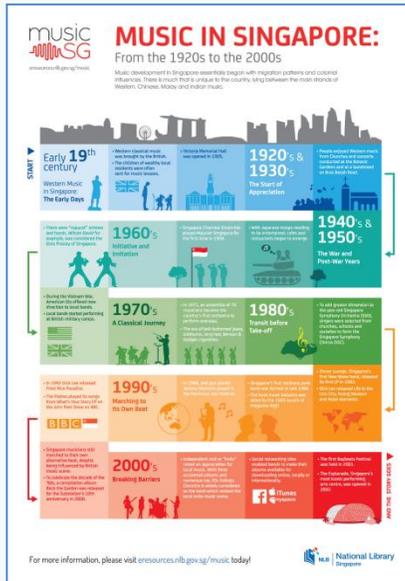


- Aims to raise the awareness of Singapore music and provide resources for research & discovery
- Content:
  - Over 8,000 tracks
  - Album inserts
  - Lyrics
  - Scores
  - Articles on topics related to Singapore music
  - Biographies
  - Infographics

MusicSG – Collaboration with COMPASS

<http://eresources.nlb.gov.sg/music>

## Example of online MusicSG content



Infographics



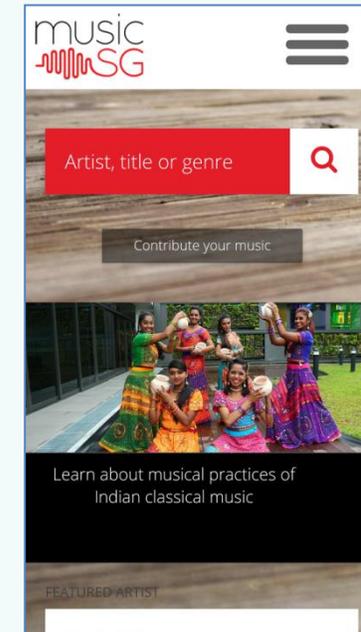
Interviews



Album inserts

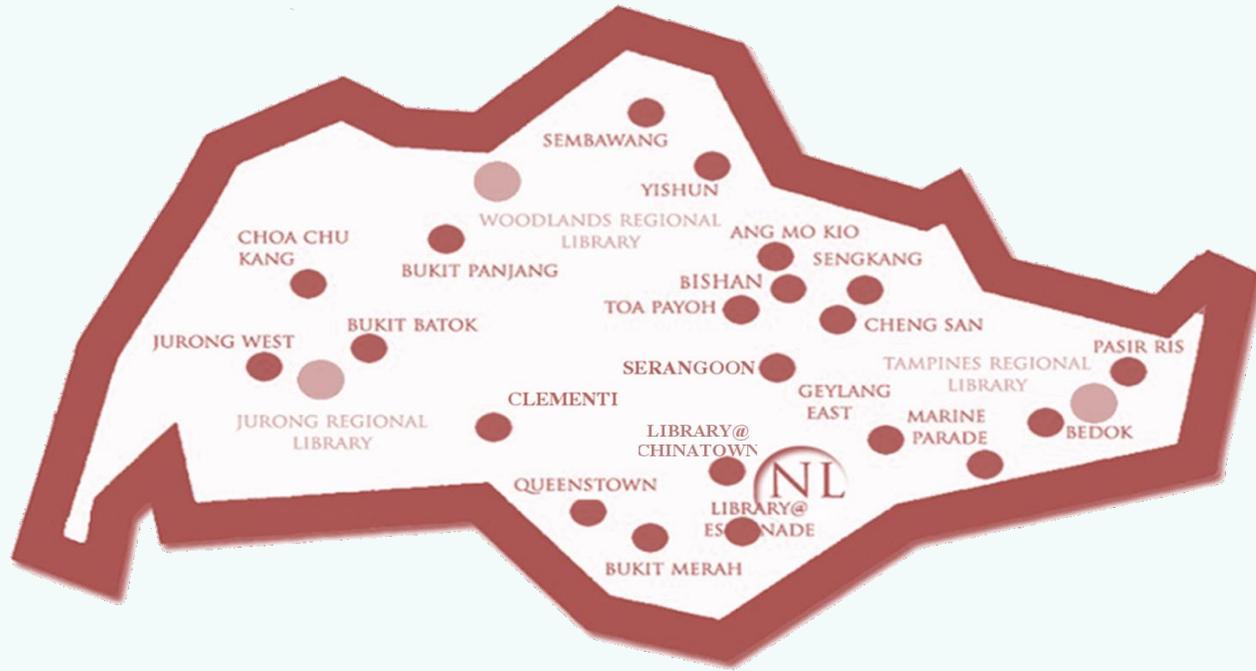


## Mobile friendly



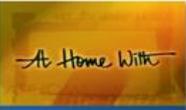
# MusicSG – Collaboration with COMPASS

<http://eresources.nlb.gov.sg/music>



 NL and NAS Full Content Onsite Access only

NAS Audiovisual Recordings

 Talking Point	 In Conversation	 At Home With	 Pre 1994 Broadcast Archives	
 星期二特写 Tuesday Report	 前线追踪 Frontline	 生命线上 Code Red	 Code Red (English)	 THE THINGS PEOPLE DO The Things People Do

# Audio Visual Archives – Collaboration with Mediacorp

On-site access across the National Library and Public Libraries network

 Login ▾

 Search  
Advanced Search

One Search, many sources.

-  Books
-  Magazines & Articles
-  Audiovisuals
-  Images
-  Newspapers
-  Records & Papers
-  Websites
-  Physical Objects
-  eJournals

# OneSearch – Across Libraries, Archives, Museums & Galleries

<http://search.nlb.gov.sg/>



*Racing in Singapore*

Describe this photo collection



## Service Delivery through Crowdsourcing

<http://www.nas.gov.sg/CitizenArchivist/>

HOME ABOUT Search within this site LOG IN/ SIGN UP

### TRANSCRIBE AUDIO

- Hokkien**  
Transportation in Singapore 新加坡运输业 - CHNG Tien Huat 庄天发, CHNG Gek Poh  
**OPEN**
- Mandarin, Teochew**  
Special Project 特别计划 - TOON Choong Mong 钟春望  
1 reels  
**OPEN**
- Malay**  
The Public Service 新加坡公共服务史 - Rasidah Zali  
4 reels  
**OPEN**
- English**  
Vanishing Trades 消失中的行业 - SOH Sin Yan  
6 reels  
**OPEN**

### ANNOTATE eBook

- THE ANNOTATED ONE HUNDRED YEARS HISTORY OF THE CHINESE IN SINGAPORE  
**OPEN**

### DESCRIBE PHOTOGRAPHS

- OPEN**
- COMPLETED**
- OPEN**
- OPEN**
- OPEN**
- OPEN**

### TRANSCRIBE DOCUMENTS

- COMPLETED**
- COMPLETED**

# Service Delivery through Crowdsourcing

<http://www.nas.gov.sg/CitizenArchivist/>

Home / Transcribe Audio / Sports Personalities of Singapore 新加坡体坛人物 - MITCHELL, Keith; MITCHELL, Barry; WOLTERS, Wiebe / Reel/Disc 1

## Sports Personalities of Singapore 新加坡体坛人物 - MITCHELL, Keith; MITCHELL, Barry; WOLTERS, Wiebe

Sports Personalities of Singapore 新加坡体坛人物 - MITCHELL, Keith; MITCHELL, Barry; WOLTERS, Wiebe

Interviewer : Chong Ching Liang  
Language : English

8  
Reels in this collection

002133 - [Open] Displaying 1 of 8 Reels

MITCHELL, Keith|MITCHELL, Barry|WOLTERS, Wiebe Reel/Disc 1

00:00 / 30:54

Chong Ching Liang  
Interviewer's comment: this session was done in a group interview setting with 2 recorders simultar

MITCHELL, Keith

MITCHELL, Barry

WOLTERS, Wiebe

**Transcribe Audio**

Press **ESC** to play/pause. Press **Enter** to insert the transcript.

Press **PgUp** to Step Backward. Press **PgDn** to Step Forward.

Interviewer: Chong Ching Liang

Mitchell and I am in a school in Singapore studies off in

Chong Ching Liang  
03:10.30

03:34.92 Oops Sorry, Okay, I am actually going to get that on audio tape. I am actually

Chong Ching Liang  
03:59.66

04:01.96 Mr. Wolters a little bit about yourself?

WOLTERS, Wiebe  
04:03.58

04:46.63 I was born in Surabaya Indonesia in 1932 I was there during the war my

Please register or login to contribute.

# Service Delivery through Crowdsourcing

Transcribe Oral History Recordings

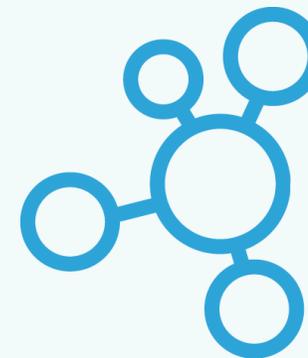


## Rich in Content



## Smart

Smart Operations  
Smart Services



## Connected

Collaboration  
Curation  
Crowdsourcing

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# Future-Ready Audio Visual Archives

**THANK YOU**

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