

Held at The Hong Kong Institute of Education
24 April 2015

Future Trends of ILS

K.T. Lam

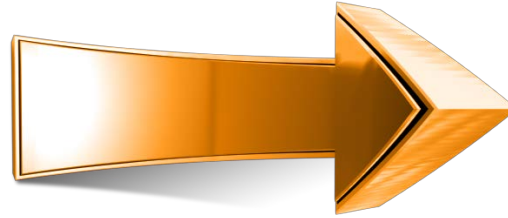
The Hong Kong University of Science and Technology Library

lblkt@ust.hk, orcid.org/0000-0003-2625-9419



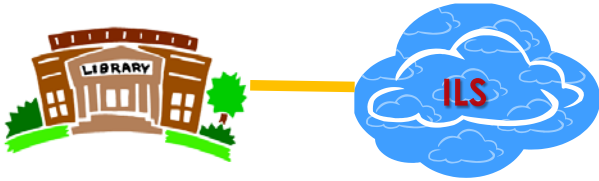
Library automation

- Circulation
- Cataloging
- Acquisitions
- Serials control
- ERM (electronic resource management)
- OPAC (online public access catalog)



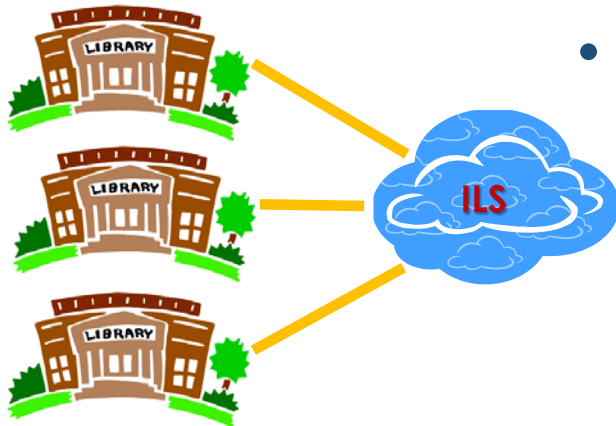
Next-Generation

Cloud-based, SaaS, Multi-tenant



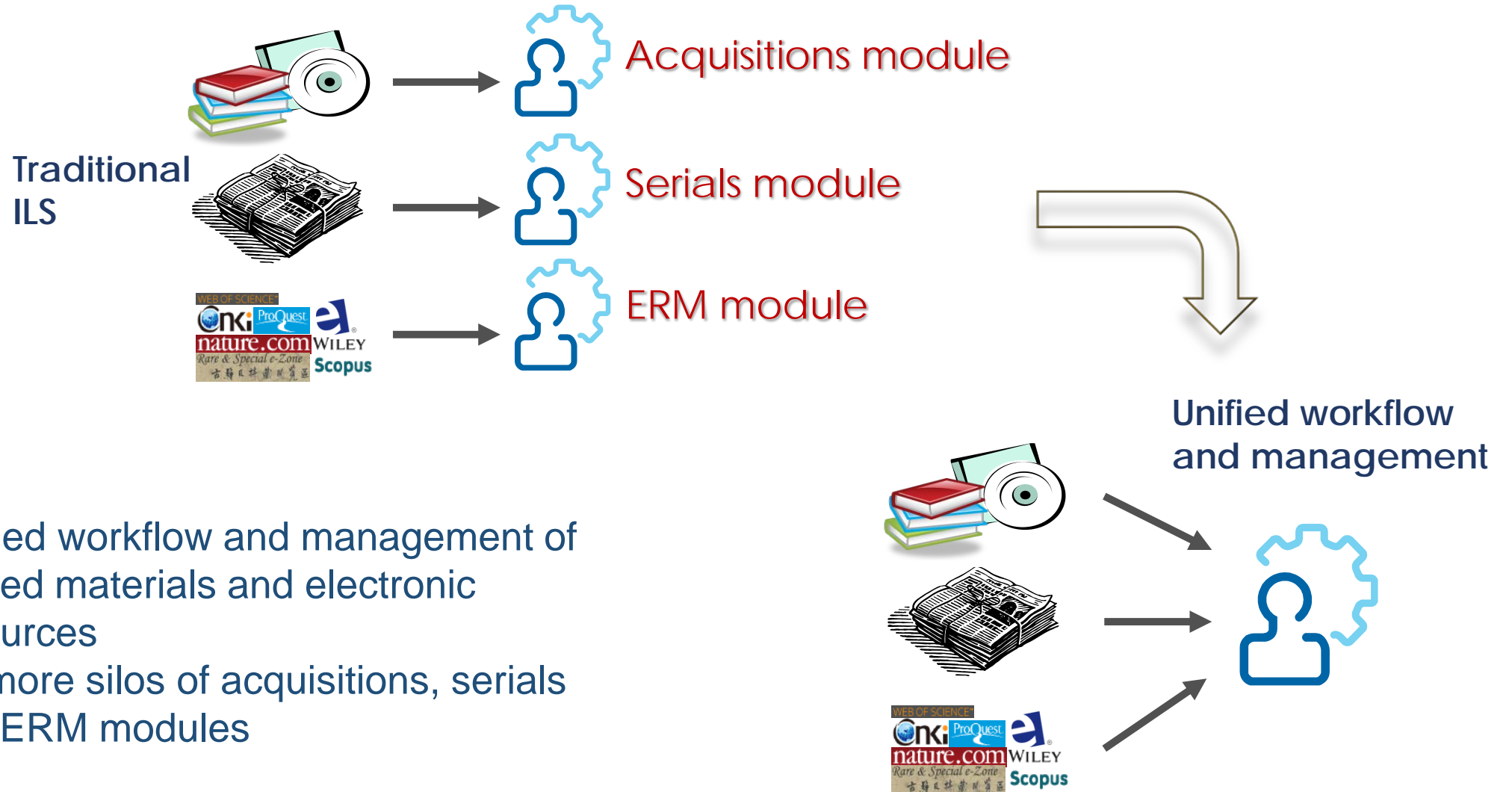
- **Cloud-based**
 - ILS software hosted remotely at vendor's data centers
 - Server virtualization
 - No more headache of locally hosted system

- **Software as a service**
 - ILS vendor provides the “service”
 - Subscription based
 - Software update processes simplified
- Library Service Platform



- **Multi-tenant**
 - Single ILS software instance
 - Used by multiple number of libraries
 - Each library can have its own settings and data
 - Allow sharing of content

Unified management of resource types



- Unified workflow and management of printed materials and electronic resources
- No more silos of acquisitions, serials and ERM modules

Integrated with information discovery platform

- **One stop** searching
- **Seamless access** to the discovered objects
 - Subscribed electronic resources: full-text of journal articles, conference papers, e-books, news, etc.
 - Free web resources
 - Library held electronic items and digitized objects
 - Library held physical items
- The goal is to **use** the discovered objects, not their metadata
- **Open architecture** to
 - Direct users to external content
 - Bring in external content (e.g. enrichments such as cover arts, table of contents, summary, cover art, reviews, etc.)
 - Incorporate social media features

From circulation to fulfillment

- Traditional access service focuses on
 - Circulation
 - Interlibrary loan
 - Document delivery
- Next generation access service emphasizes on
 - Fulfillment
- Seamless access and request via Information Discovery Platform

Fulfillment means:

- Access to physical items held in library
 - Circulation – for items held in library
 - User initiated borrowing – for items held elsewhere
- Access to information objects available online
 - Online reading – for library subscribed / accessible resources
 - Delivery to desktop – for resources requiring request permission or purchases

Build-in knowledge base

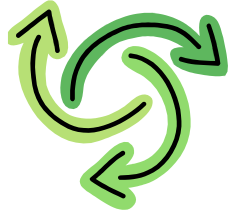


- ✓ Knowledge of E-journal packages
 - ✓ Profiles
 - ✓ Coverages

- ✓ Knowledge to link to full-text of articles and e-books

- ✓ Authority control metadata
 - ✓ Names
 - ✓ Subjects
 - ✓ Places

Seamless linking to third party system



Link / Harvest

✓ Finance system

✓ Student/staff records

✓ Book vendors, aggregators

✓ Bibliographic utilities

✓ Authority databases
✓ OCLC's VIAF
✓ LC Linked Data Service

✓ Enrichments
✓ Cover images
✓ Reviews
✓ Table of contents
✓ Online attentions
✓ Linked data

✓ Learning Management System
✓ To ILS
✓ Reading lists
✓ Course materials objects
✓ Put on reserve
✓ From ILS
✓ Discover information objects relevant to courses

Facilitate sharing and collaboration

- Sick of loading e-journal and e-book packages to catalog?
 - Duplication of effort
 - Load bibliographic metadata to a “shared” database
 - Individual libraries just add holdings to these records
- Collaborated cataloging
 - Sharing metadata
 - Long-standing concept
 - But, must be able to have seamless integration to workflow
- Collaborated collection development
 - Benchmarking, collection analysis
 - Consortial purchases

Decision support tools

- Traditional report generation
 - Static reports
 - Have to export tables and run analysis externally
- Build-in data analysis tools to support decision making
 - Real time access to data
 - Cross table/database tabulation
 - Drag and drop design
 - Filter and extract options

Open architecture

- Traditional ILS
 - Data is in black box – not openly accessible
 - Limited APIs to access data, usually require purchases
 - Impossible to develop external programs to extend functionalities
- Open architecture means
 - Non-proprietary databases and search engines
 - Oracle, MySQL, PostgreSQL, Solr, etc.
 - System staff know how to query them
 - Rich set of open APIs to access the data
 - Allow both viewing and updating
 - Full support of third party programming
 - Developer forums
 - Community repositories of source codes



Migrating from MARC to linked data



Google Knowledge Graph
linked data in action

About 3,940,000 results (0.35 seconds)

Kenedy Goals & Skills Fluminense 2014/2015 [HD] - YouTube



www.youtube.com/watch?v=OEmKxgLQyDo
Jan 20, 2015 - Uploaded by g Element
The Best of Brazilian Talent Robert Kenedy Nunes do Nascimento (18yrs old, Right-Winger) playing ...

Kenedy (footballer) - Wikipedia, the free encyclopedia

en.wikipedia.org/wiki/Kenedy_(footballer) - Wikipedia
Robert Kenedy Nunes do Nascimento (born February 8, 1996), commonly known as Kenedy, is a Brazilian footballer who plays as a striker for Fluminense.

Kenedy, Texas - Wikipedia, the free encyclopedia

en.wikipedia.org/wiki/Kenedy,_Texas - Wikipedia
Kenedy is a city in Karnes County, Texas, United States, who bought 400,000 acres (1,626,000 m²) in 1996.

Scouting report: Brazilian starlet Kenedy - Daily Mirror

www.mirror.co.uk > Sport > Football > Kenedy Daily Mirror
Mar 5, 2015 - His name may be an amusing spelling mistake, but don't let that detail define Fluminense starlet Kenedy (catchy full name: Robert Kenedy ...

Kenedy Independent School District

www.kenedy.isd.tenet.edu/
The Kenedy High School staff would like to invite the parents of students in Grade 12 to an informative meeting on Thursday, April 16th at 6:00 PM in the Kenedy ...

- Providing information of objects
- Connecting an object to other objects

Kenedy



Soccer player

Robert Kenedy Nunes do Nascimento, commonly known as Kenedy, is a Brazilian footballer who plays as a striker for Fluminense. Wikipedia

Born: February 8, 1996 (age 19), Santa Rita do Sapucaí, Minas Gerais, Brazil

Height: 5' 11" (1.81 m)

Weight: 170 lbs (77 kg)

Career start: 2013

Current team: Fluminense FC (#30 / Forward)

People also search for View 10+



Gerson



Cristóvão Borges



Fred

Google

kenedy town



Sign in

Web

Maps

Imag

Google Knowledge Graph responsive to what you search



About 13,900,000 results (0.00 seconds)

Showing results for **kennedy town**

Search instead for **kenedy town**

Kennedy Town - Wikipedia, the free encyclopedia

en.wikipedia.org/wiki/Kennedy_Town - Wikipedia

Kennedy Town (Chinese: 堅尼地城; jyutping: gin1 nei4 dei6 seng4) is at the western end of Sai Wan on Hong Kong Island in Hong Kong. It was named after ...

[Geography](#) - [History](#) - [Features](#) - [Demographics](#)

What to see and do in Kennedy Town | South China ...

www.scmp.com/.../what-see-and-do-kennedy-... - South China Morning Post

Oct 23, 2014 - In **Kennedy Town**, there's one question on everyone's mind: what will happen when the MTR arrives? With the West Island Line extension set to ...

Kennedy Town Hong Kong | CNN Travel

travel.cnn.com/.../5-things-we-love-about-kennedy-town-855458 - CNN

Sep 22, 2011 - While parts of **Kennedy Town** look and sound like a construction site right now, anyone with their finger on the pulse is pointing to it as Hong ...

Foodie's Complete Guide to Kennedy Town - AsiaXPAT ...

asiaxpat.com/features/ktown-top-list.html



Kennedy Town

Town in Hong Kong

Kennedy Town is at the western end of Sai Wan on Hong Kong Island in Hong Kong. It was named after Arthur Edward Kennedy, the 7th Governor of Hong Kong from 1872 to 1877. Administratively, it is part of Central and Western District.

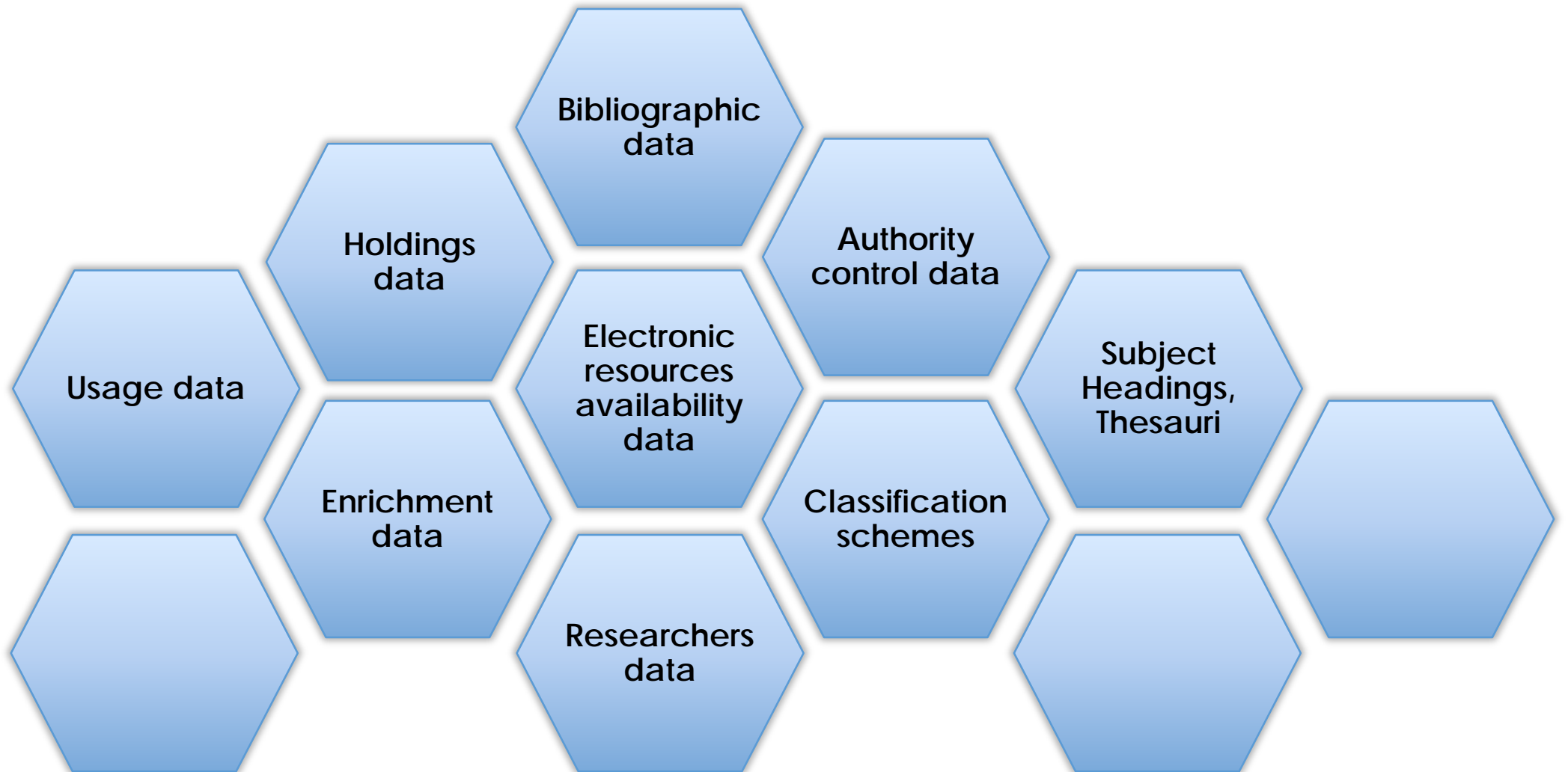
[Wikipedia](#)

Weather: 79°F (26°C), Wind SE at 16 mph (26 km/h), 57% Humidity

Feedback

Where are the libraries in the linked data arena?

When our users start a search on the web, is our data there?




```

LEADER 00000nam 2200421Ia 4500
001 82362916
008 070208s2007 cc a 000 0 chi d
020 9789620763779
020 9620763777
035 (OCoLC)82362916
040 HNK|cHNK
049 HNKA
090 QB985|b.W6 2007
245 00 |6880-01|aWo men wei he zai ci?/|czuo zhe Huojin ... [et
al.]
250 |6880-02|aDi 1 ban
260 |6880-03|aXianggang :|bXianggang ke ji da xue da xue fa
zhan yu gong gong shi wu chu :|bShang wu yin shu guan
(Xianggang) you xian gong si,|c2007
300 148 p. :|bill. (some col.) ;|c21 cm
440 0 |6880-04|aXianggang ke ji da xue gao deng yan jiu yuan jie
chu jiang zuo xi lie
490 1 |6880-05|aKe da, Shang wu ke pu cong shu =|aPop science
series ;|v1
500 |6880-06|aEssays from "Yu zhou qi yuan", held June 2006 at
Xianggang ke ji da xue gao deng yan jiu yuan
500 Colophon title
600 10 Hawking, Stephen,|d1942-
650 0 Cosmology
700 1 Hawking, Stephen,|d1942-
830 0 |6880-07|aKe da, Shang wu ke pu cong shu ;|v1
880 00 |6245-01/$1|a我們為何在此? /|c作者霍金 ... [et al.]
880 |6250-02/$1|a第1版
880 |6260-03/$1|a香港 :|b香港科技大學大學發展與公共事務處 :
|b商務印書館(香港)有限公司,|c2007
880 0 |6440-04/$1|a香港科技大學高等研究院傑出講座系列
880 1 |6490-05/$1|a科大·商務科普叢書 =|aPop science series ;|v1
880 |6500-06/$1|aEssays from "宇宙起源", held June 2006 at
香港科技大學高等研究院
880 0 |6830-07/$1|a科大·商務科普叢書 ;|v1
910 do/dl

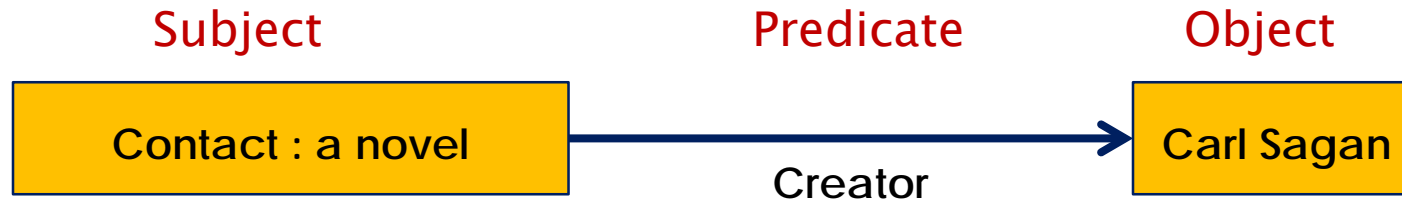
```

MARC

- “MAchine Readable” – defined in 1960s, in the sense of printing Catalog cards
- Not readable at all by machines in semantic web
- String-based; not entity-based; we need “things” not “strings”
- No linking capability, even among MARC records

Linked data

Directed Graph



Triple

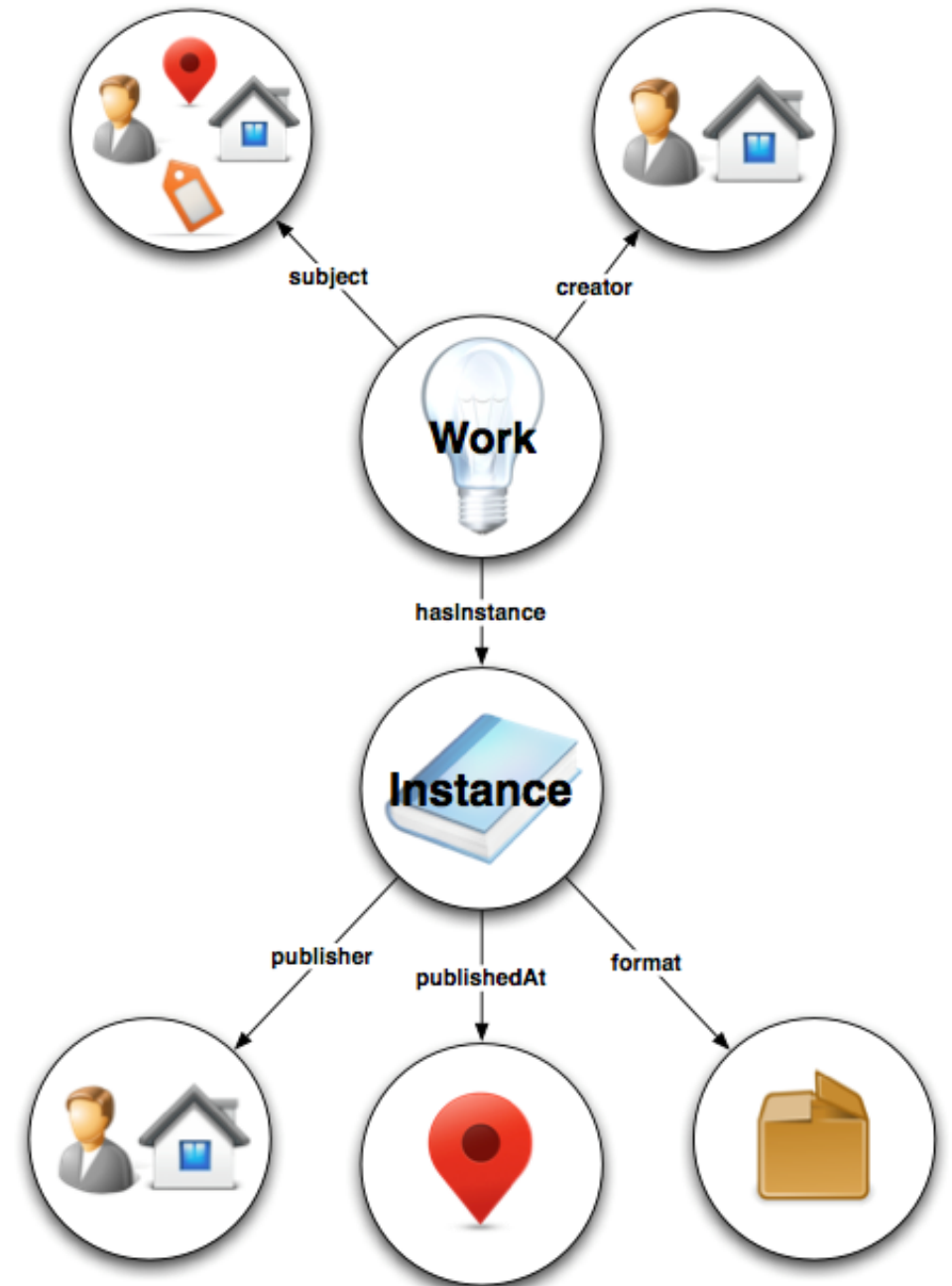


RDF/XML

```
<?xml version="1.0" encoding="UTF-8"?>
<rdf:RDF xmlns:bf="http://bibframe.org/vocab/" xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
  <rdf:Description rdf:about="http://catalog.ust.hk/b111111">
    <bf:creator rdf:resource="http://catalog.ust.hk/bf/b111111person1"/>
  </rdf:Description>
</rdf:RDF>
```

bf: BIBFRAME

- Announced in 2011 by Library of Congress
- To replace MARC
- Enabled for linked data
- Entity-based model
 - Creative work, Instance, Authority, Annotation
 - Person, organization, place, topic, etc.
- More real beginning this year
 - Testing, learning, pilot implementation by individual libraries and also at national level



Enter record number:

Some randomly selected records: [b1059046](#), [b1104797](#), [b1166905](#), [b1304185](#), [b1304125](#), [b1333636](#), [b1347105](#), [b1349015](#), [b1349060](#), [b1433359](#), [b1439930](#), [b1443939](#), [b1444035](#), [b1444087](#), [b1445086](#), [b1445150](#), [b1446803](#), [b1447270](#), [b1447835](#), [b1447856](#), [b1447894](#), [b508784](#), [b1433460](#), [b1447956](#), [b1447986](#), [b1447996](#), [b1448010](#), [b1448143](#), [b1448154](#), [b1448227](#), [b173951](#), [b462636](#), [b847556](#), [b988186](#), [b1448507](#), [b1448511](#), [b1448526](#), [b1448613](#), [b1448639](#), [b1431178](#), [b1447129](#), [b1447353](#), [b1447435](#), [b1447483](#), [b1447519](#), [b1447657](#), [b1447819](#), [b1448205](#), [b1448358](#), [b1448463](#)

About SmartCAT Linked Data in bibframe

This is an experimental bibframe triple store of the HKUST Library Catalog. We develop this tool to help our librarians in learning bibframe. You can review how a marc record is transformed into bibframe linked data, using Library of Congress' marc2bibframe program.

We also want to study how well the transformation works for CJK (Chinese, Japanese, Korean), especially on the approaches of mapping marc tag 880 (which contains the vernacular script in parallel to its equivalent tag in roman script) to bibframe. The current marc2bibframe version is not working well when handling 880 tags (e.g. [b938803](#) and [b918494](#)).

You can retrieve a record by either inputting a record number to the above "Retrieve" box, click on the above randomly selected records, or search [SmartCAT](#) and click on the [bf](#) icon in the Record page (next to the Permanent URL).

Have fun!

7 April 2015

bibframe project at
HKUST Library

- Learning resource for librarians
- Test bed
- Platform for further studies

<<http://catalog.ust.hk/bf>>

Sample SmartCAT record in bibframe data model

<<http://catalog.ust.hk/bf/b995980>>

Instance (<hkust:b995980instance14> [bf:instanceOf] <hkust:b995980>

```
[bf:title]: Quantum computing explained (cloth
[bf:isbn10]: http://isbn.example.org/047009699
[bf:isbn13]: http://isbn.example.org/978047009
[bf:instanceTitle]:
  [bf:titleValue]: Quantum computing explain
  [rdf:type]: bf>Title
[bf:publication]:
  [bf:providerName]:
    [rdf:type]: bf:Organization
    [bf:label]: Wiley-Interscience
  [bf:providerPlace]:
    [bf:label]: Hoboken, N.J.
    [rdf:type]: bf:Place
  [bf:copyrightDate]: c2008
  [rdf:type]: bf:Provider
[bf:publication]:
  [bf:providerName]:
    [rdf:type]: bf:Organization
    [bf:label]: IEEE Computer Society
  [bf:copyrightDate]: c2008
  [rdf:type]: bf:Provider
[bf:modeOfIssuance]: single unit
[bf:dimensions]: 25 cm
[bf:illustrationNote]: ill. ;
[bf:titleStatement]: Quantum computing explain
[bf:providerStatement]: Hoboken, N.J. : Wiley-
[bf:supplementaryContentNote]: Includes biblio
[bf:lccn]:
  [rdf:type]: bf:Identifier
  [bf:identifierValue]: 2007013725
  [bf:identifierScheme]: id:vocabulary/ident
[rdf:type]: bf:Instance
[rdf:type]: bf:Monograph
```

Annotation (<hkust:b995980annotation17> [bf:annotates] <hkust:b995980>

```
[bf:label]: Biographical information on author
[bf:annotationBody]: http://www.loc.gov/catdir/enhancements/fy0740/2007013725
[rdf:type]: bf:Annotation
```

Aunnotation - Summary (<hkust:b995980summary16> [bf:summaryOf] <hkust:b995980>

```
[bf:label]: Publisher abstract
[bf:review]: http://www.loc.gov/catdir/enhancements/fy0740/2007013725-d.html
[rdf:type]: bf:Summary
```

Work (<hkust:b995980>

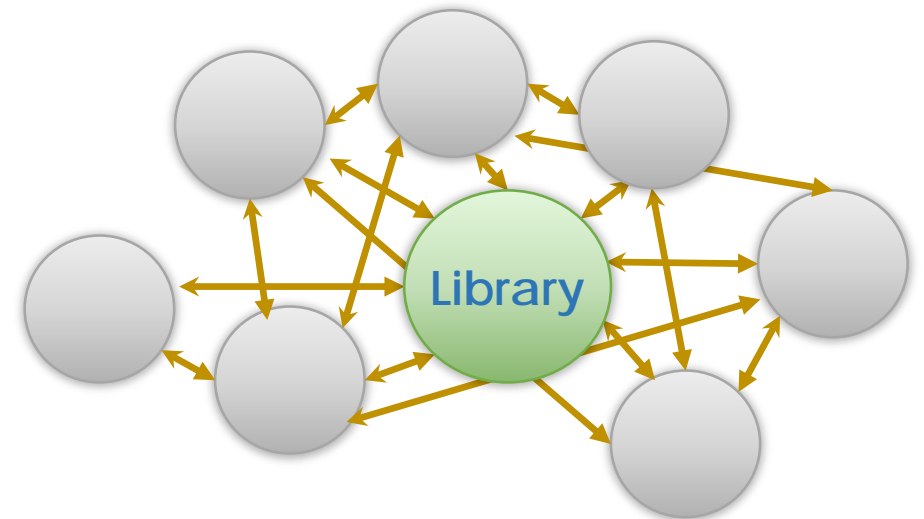
```
[rdf:type]: bf:Text
[bf:workTitle]:
  [bf:titleValue]: Quantum computing explained
  [rdf:type]: bf>Title
[bf:creator]:
  [bf:label]: McMahon, David (David M.)
  [bf:authorizedAccessPoint]: McMahon, David (David M.)
  [bf:hasAuthority]:
    [rdf:type]: madsrdf:Authority
    [madsrdf:authoritativeLabel]: McMahon, David (David M.)
  [rdf:type]: bf:Person
  [bf:hasAuthority]: http://viaf.org/viaf/78186500
  [bf:hasAuthority]: http://id.loc.gov/authorities/names/n2005041076
[bf:subject]:
  [bf:authorizedAccessPoint]: Quantum computers
  [bf:label]: Quantum computers
  [bf:hasAuthority]:
    [rdf:type]: madsrdf:Authority
    [madsrdf:authoritativeLabel]: Quantum computers
    [madsrdf:isMemberOfMADSScheme]: id:authorities/subjects
    [rdf:type]: madsrdf:Topic
  [rdf:type]: bf:Topic
  [bf:hasAuthority]: http://id.loc.gov/authorities/subjects/sh98002795
[rdf:type]: bf:Work
[bf:authorizedAccessPoint]: McMahon, David (David M.) Quantum computing explained
[bf:language]: id:vocabulary/languages/eng
[bf:classificationLcc]: id:authorities/classification/QA76.889
[bf:classification]:
  [rdf:type]: bf:Classification
  [bf:classificationScheme]: id:authorities/classSchemes/ddc
  [bf:classificationNumber]: 004.1
  [bf:label]: 004.1
  [bf:classificationEdition]: full
  [bf:classificationEdition]: 22
[bf:authorizedAccessPoint]: mcmahondaviddaviddmquantumcomputingexplainedengworktext
```


ILS and bibframe

- Expect to see vendors' native support of bibframe in the next-next-generation of ILS
- Provision of linking capabilities to external linked data stores
 - Bibliographic description repositories (e.g. LC, OCLC, etc.)
 - Possibly, publishers would contribute metadata directly to these bibliographic utilities – not libraries
 - Names and subjects authority control (e.g. VIAF, LC, etc.)
 - No more loading authority records to ILS, just linking persons, organizations, places, topics, etc. to external stores

[Cataloging would become a professional work of linking and annotation]

- Provision of auto-discovery of enrichment and availability information (thanks to linked data and semantic web)
 - Table of contents, summary, cover art, reviews, etc.
 - Linking to the actual online resources
- Enabling library data for discovery by machines, thus increasing the library visibility



Summary

- Discussed trends in next-generation ILS
 - Cloud-based, SasS, Multi-tenant
 - Unified resource management
 - Broadening of information discovery, access services, sharing and collaboration
 - Provision of knowledge base and seamless linking to external systems
 - Decision support tools
 - Open architecture
- Highlighted the linked data need to make libraries sustainable in the semantic web
 - Replacing MARC with BIBFRAME
 - Will see this happening in the **NEXT-NEXT GENERATION ILS**



Thank You!