

# **IBM Academic Initiative Introduction for Pamplin School of Business**

**Virginia Tech – October 13, 2011**

## **“IBM Academic Skills Cloud and Computing Education Modules”**

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# Background: Digital Libraries (DL) Curriculum Project

- NSF awards to VT and UNC-CH
  - Grant Numbers IIS-0535057 & 0535060
- CS and LIS
- Project server: <http://curric.dlib.vt.edu/>
- Wikiversity: [http://en.wikiversity.org/wiki/Curriculum\\_on\\_Digital\\_Libraries](http://en.wikiversity.org/wiki/Curriculum_on_Digital_Libraries)
- Coverage: Digital libraries, but extended to Information retrieval, Multimedia

# Software-based Modules and Cloud Instances

<b>IR</b>	<b>Apache Solr</b>	<b>Lemur</b>
<b>IR</b>	<b>WordNet</b>	<b>R</b>
<b>IR</b>	<b>NLTK</b>	<b>SEDNA XML DB</b>
<b>IR</b>	<b>CLUTO</b>	<b>Weka</b>
<b>IR</b>	<b>TREC Eval</b>	<b>Hadoop Map-Reduce</b>
<b>MM</b>	<b>Media Computation</b>	<b>Audacity</b>
<b>MM</b>	<b>PureData</b>	<b>Fingerprint</b>

# Cloud Module Development

- Fall 2010 – CS5604 (Information Retrieval)
  - 5 cloud instances developed, then used
  - 5 additional cloud instances developed
- Spring 2011 – CS4624 (Multimedia, Hypertext, and Information Access)
  - Use of above cloud instances
  - 4 additional cloud instances developed
- Fall 2011 – CS6604 (Digital Libraries)
  - Update 8 of the cloud instances
  - Update 6 of the other modules

# Module-based Pedagogy

- Class use of modules, 1 wk each
- Independent study of a module of interest
- Independent study preping for tool use
  
- Learning by making modules
- Learning by preparing cloud instances

# Module Template

- 1. Module name**
- 2. Scope**
- 3. Learning objectives**
- 4. 5S characteristics of the module**  
(streams, structures, spaces, scenarios, societies)
- 5. Level of effort required (in-class and out-of-class time required for students)**
- 6. Relationships with other modules (flow between modules)**
- 7. Prerequisite knowledge/skills required**
- 8. Introductory remedial instruction**
- 9. Body of knowledge (theory + practice;**  
an outline that could be used as the basis for class lectures)
- 10. Resources (required readings for students;**  
additional suggested readings for instructor and students)
- 11. Exercises / Learning activities**
- 12. Evaluation of learning objective achievement**  
(graded exercises or assignments)
- 13. Glossary**
- 14. Additional useful links**
- 15. Contributors (authors of module, reviewers of module)**

# Completed Topical Modules - 1

- **Module 1-a (10-c): Conceptual frameworks, models, theories, defns**
- **Module 1-b: History of digital libraries and library automation**
- **Module 2-c (8-d): File Formats, Transformation, and Migration**
- **Module 3-b: Digitization**
- **Module 3-e (7-e): Web publishing**
- **Module 4-b: Metadata**
- **Module 5-a: Architecture overviews**

# Completed Topical Modules - 2

- **Module 5-b: Application software**
- **Module 5-d: Protocols**
- **Module 6-a: Information needs/  
relevance**
- **Module 6-b: Online information seeking  
behaviors and search strategies**
- **Module 6-d: Interaction design and  
usability assessment**
- **Module 7-a: Indexing and searching**
- **Module 7-a(1): Image retrieval**



# Completed Topical Modules - 3

- **Module 7-b: Reference Services**
- **Module 7-c: Recommender systems**
- **Module 7-d: Routing**
- **Module 7-f: Crawling**
- **Module 7-g: Personalization**
- **Module 8-a: Preservation**
- **Module 8-b: Web archiving**
- **Module 9-c: Digital library evaluation, user studies**



## FRAMEWORK FOR A DIGITAL LIBRARY CURRICULUM<sup>1</sup>

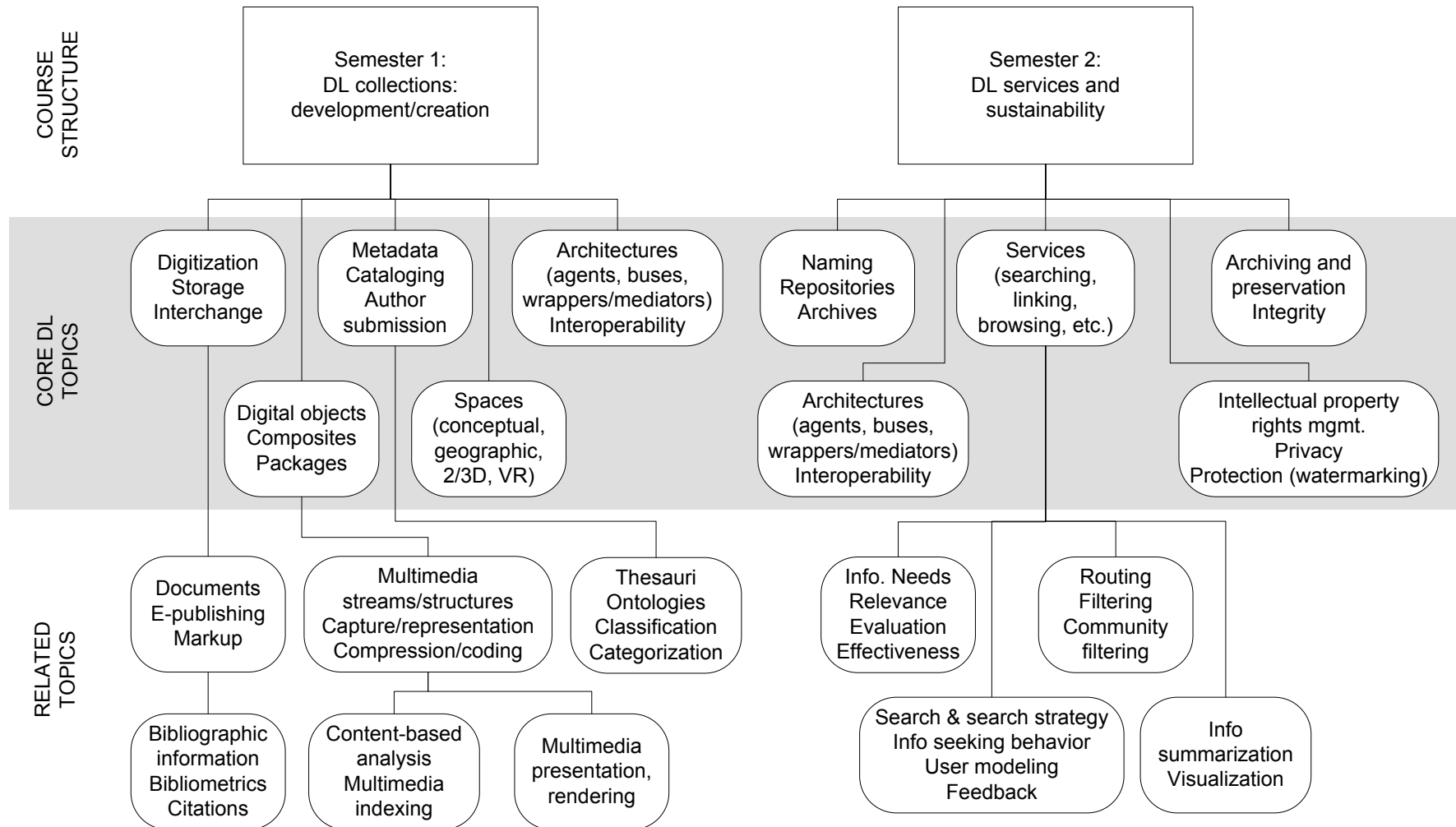
(2008/08/23)

### CORE TOPICS

1	Overview	1-a (10-c): Conceptual frameworks, models, theories, definitions	1-b: History of digital libraries and library automation
2	Digital Objects	2-a: Text resources 2-b: Multimedia <b>2-b (1): Images</b>	2-c (8-d): File formats, transformation, migration 3-c: Harvesting
3	Collection Development	3-a: Collection development/selection policies 3-b: Digitization	3-d: Document and e-publishing/presentation markup <b>3-e (7-e): Web (push) Publishing</b> <b>3-f (7-f): Crawling</b>
4	Info/ Knowledge Organization	4-a: Information architecture (e.g., hypertext, hypermedia) 4-b: Metadata 4-c: Ontologies, classification, categorization	4-d: Subject description, vocabulary control, thesauri, terminologies 4-e: Object description and organization for a specific domain
5	Architecture (agents, mediators)	5-a: Architecture overviews 5-b: Application software 5-c: Identifiers, handles, DOI, PURL	5-d: Protocols 5-e: Interoperability 5-f: Security
6	User Behavior/ Interactions	6-a: Info needs, relevance 6-b: Online info seeking behavior and search strategy	6-c: Sharing, networking, interchange (e.g., social) 6-d: Interaction design, usability assessment 6-e: Info summarization and visualization
7	Services	7-a: Indexing and searching <b>7-a (1): Image retrieval</b> 7-b: Reference services 7-c: Recommender systems	7-d: Routing, community filtering <b>7-e (3-e): Web (push) Publishing</b> <b>7-f (3-f): Crawling</b> <b>7-g: Personalization</b>
8	Preservation	8-a: Preservation <b>8-b: Web archiving</b>	8-c: Sustainability 8-d (2-c): File formats, transformation, migration
9	Management and Evaluation	9-a: Project management 9-b: DL case studies 9-c: DL evaluation, user studies 9-d: Bibliometrics, Webometrics	9-e: Intellectual property 9-f: Cost/economic issues 9-g: Social issues
10	DL education and research	10-a: Future of DLs 10-b: Education for digital librarians	10-c (1-a): Conceptual framework, theories, definitions 10-d: DL research initiatives

<sup>1</sup> This project is funded by the National Science Foundation through grants NSF IIS-0535057 (to Virginia Tech) and IIS-0535060 (to University of North Carolina at Chapel Hill).

# DL Curriculum Framework



## CC2001 Information Management Areas

IM1. Information models and systems*	IM8. Distributed DBs
IM2. Database systems*	IM9. Physical DB design
IM3. Data modeling*	IM10. Data mining
IM4. Relational DBs	IM11. Information storage and retrieval
IM5. Database query languages	IM12. Hypertext and hypermedia
IM6. Relational DB design	IM13. Multimedia information & systems
IM7. Transaction processing	IM14. Digital libraries

\* Core components

Questions?  
Discussion?

Thank You!  
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