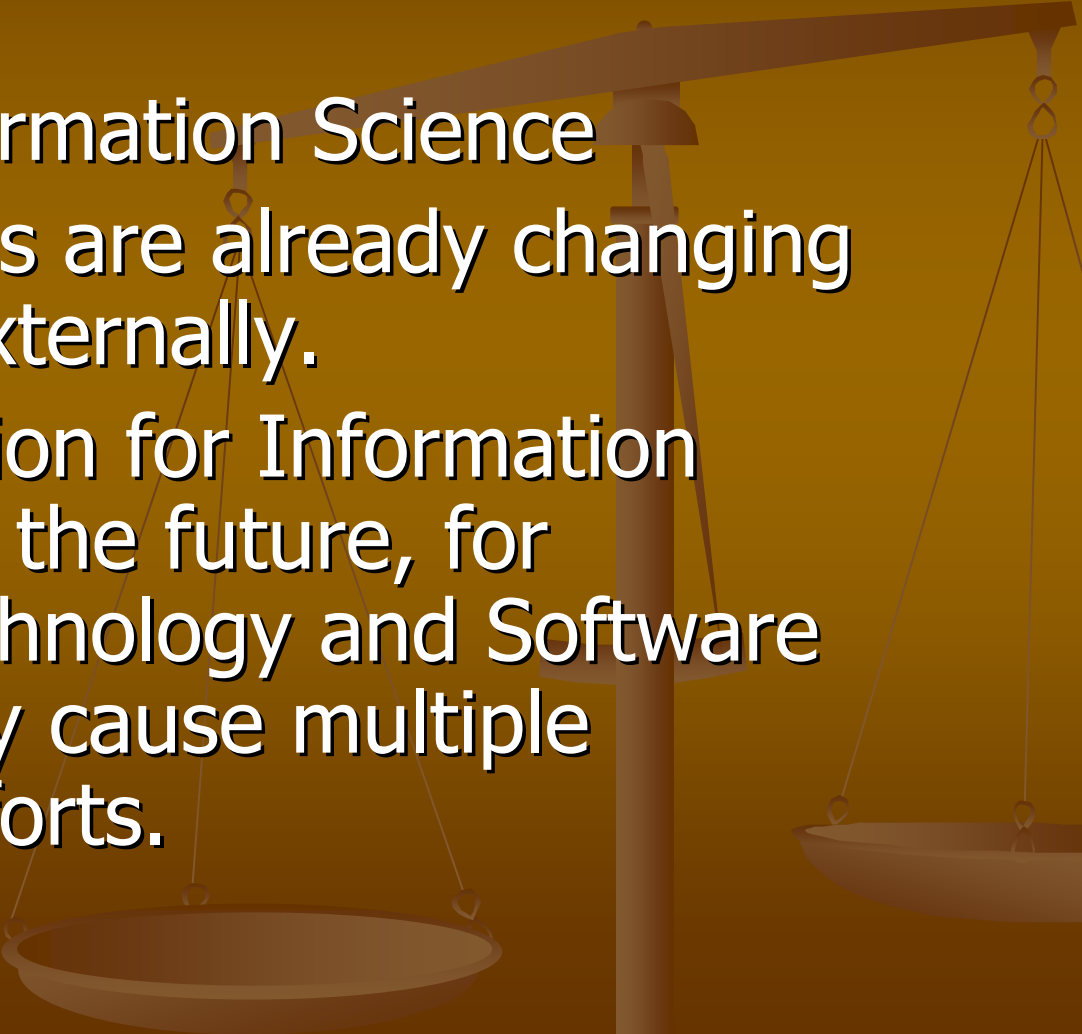




Information Schools: Traditions Growing, Morphing and Expanding

David Fenske

Standards and Traditions

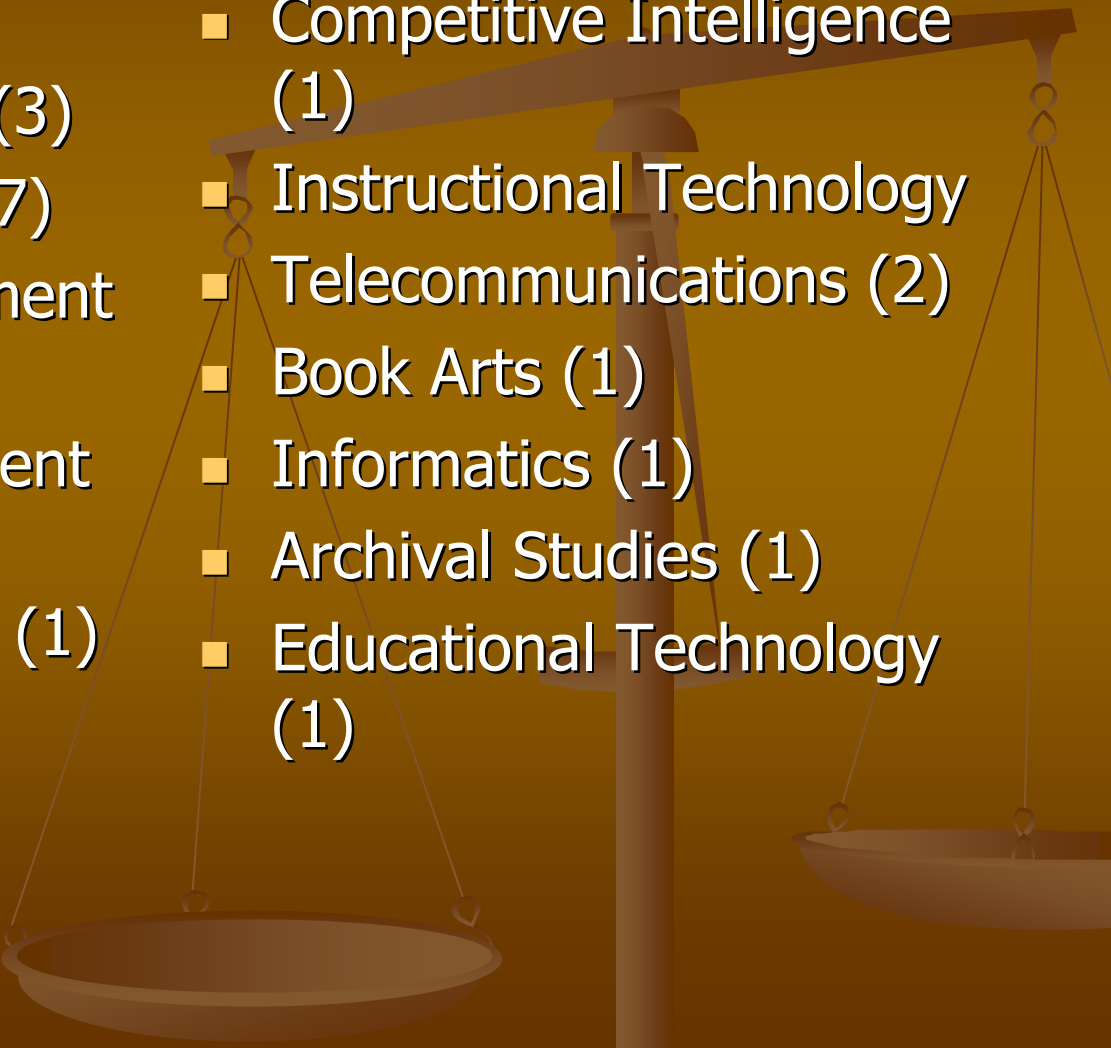
- ALA standards
 - Library and Information Science
 - But these staples are already changing internally and externally.
 - ABET accreditation for Information Systems and, in the future, for Information Technology and Software Engineering may cause multiple accreditation efforts.
- 



Degree Diversification with the ALA accredited schools

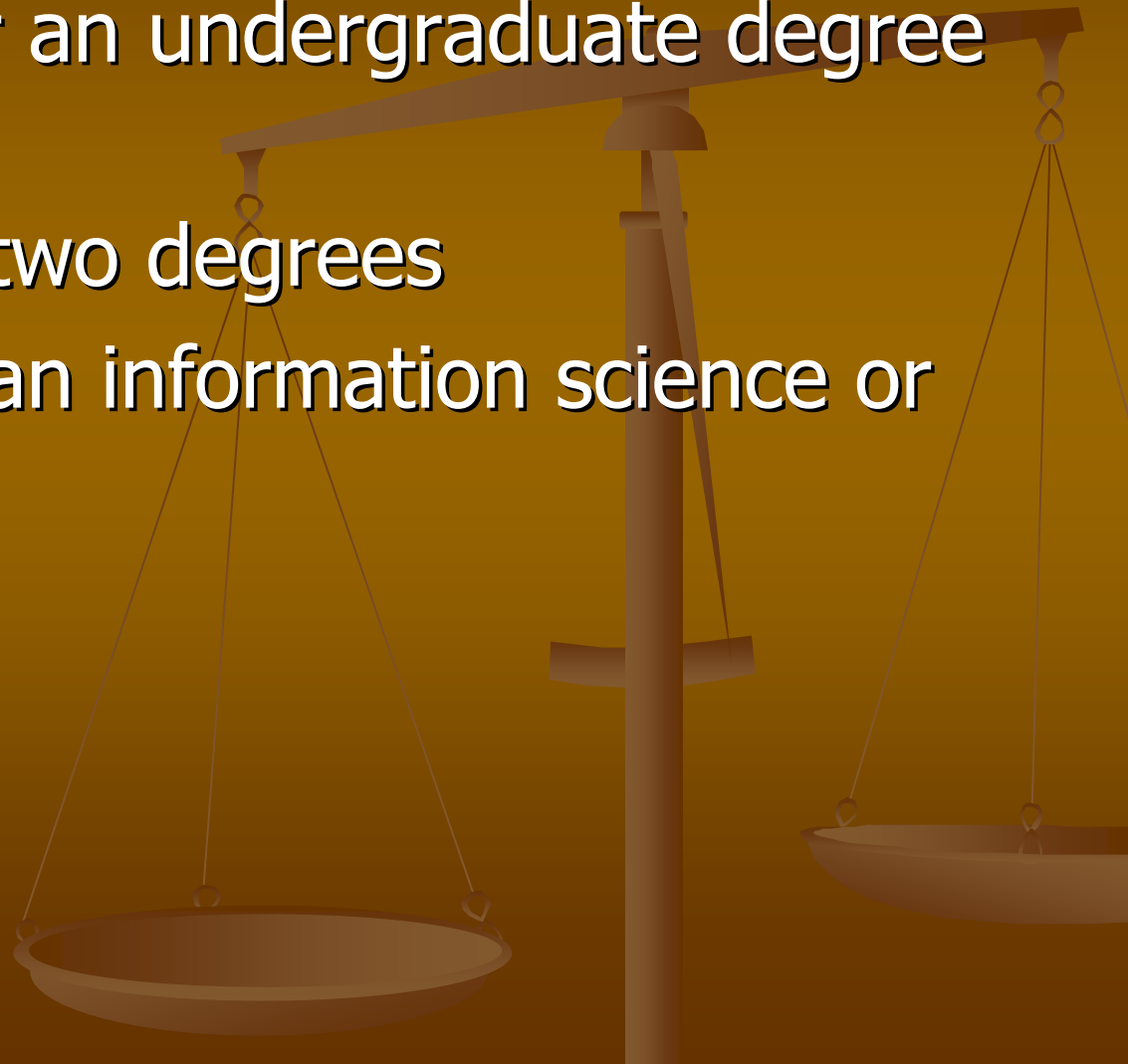
**In addition to the traditional ALA
accredited degree, the 54 or so
ALA accredited programs offer 25
additional degrees**

Masters

- 
- Computer science (1)
 - Information systems (3)
 - Information science (7)
 - Information management (3)
 - Knowledge management (3)
 - Software Engineering (1)
 - Competitive Intelligence (1)
 - Instructional Technology
 - Telecommunications (2)
 - Book Arts (1)
 - Informatics (1)
 - Archival Studies (1)
 - Educational Technology (1)

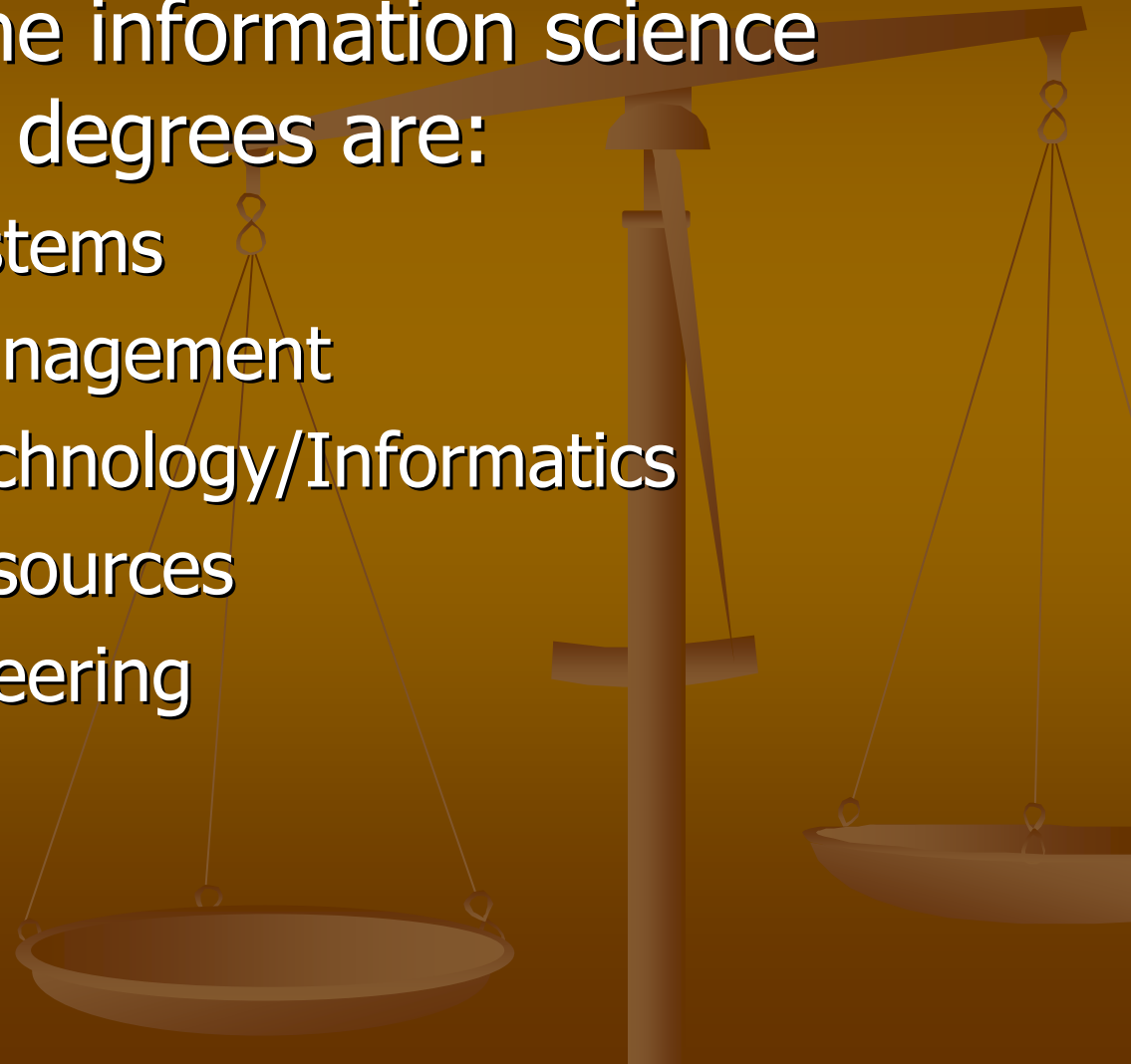
Undergraduate

- 14 schools offer an undergraduate degree of some kind
- 3 schools offer two degrees
- 7 schools offer an information science or variant degree




Degrees

- In addition to the information science variants, others degrees are:
 - Information systems
 - Information management
 - Information Technology/Informatics
 - Information Resources
 - Software Engineering



20 College/School/Department names

- 
- Library and Information Science
 - Library Science
 - Library and Information Studies
 - Information Science & Technology
 - Library & Information Management
 - Information Studies
 - Information & Computer Science
 - Information & Library Science
 - Library & Information Studies
 - Communication, Information, & Library Studies
 - Information
 - Information Science & Policy
 - Informatics
 - Information Resources and Library Science
 - Library, Archival, & Information Studies
 - Education & Information Studies
 - Communications & Information Studies
 - Information Science & Learning Technologies
 - Information Sciences
 - Information School

Computing Research Association—IT Deans

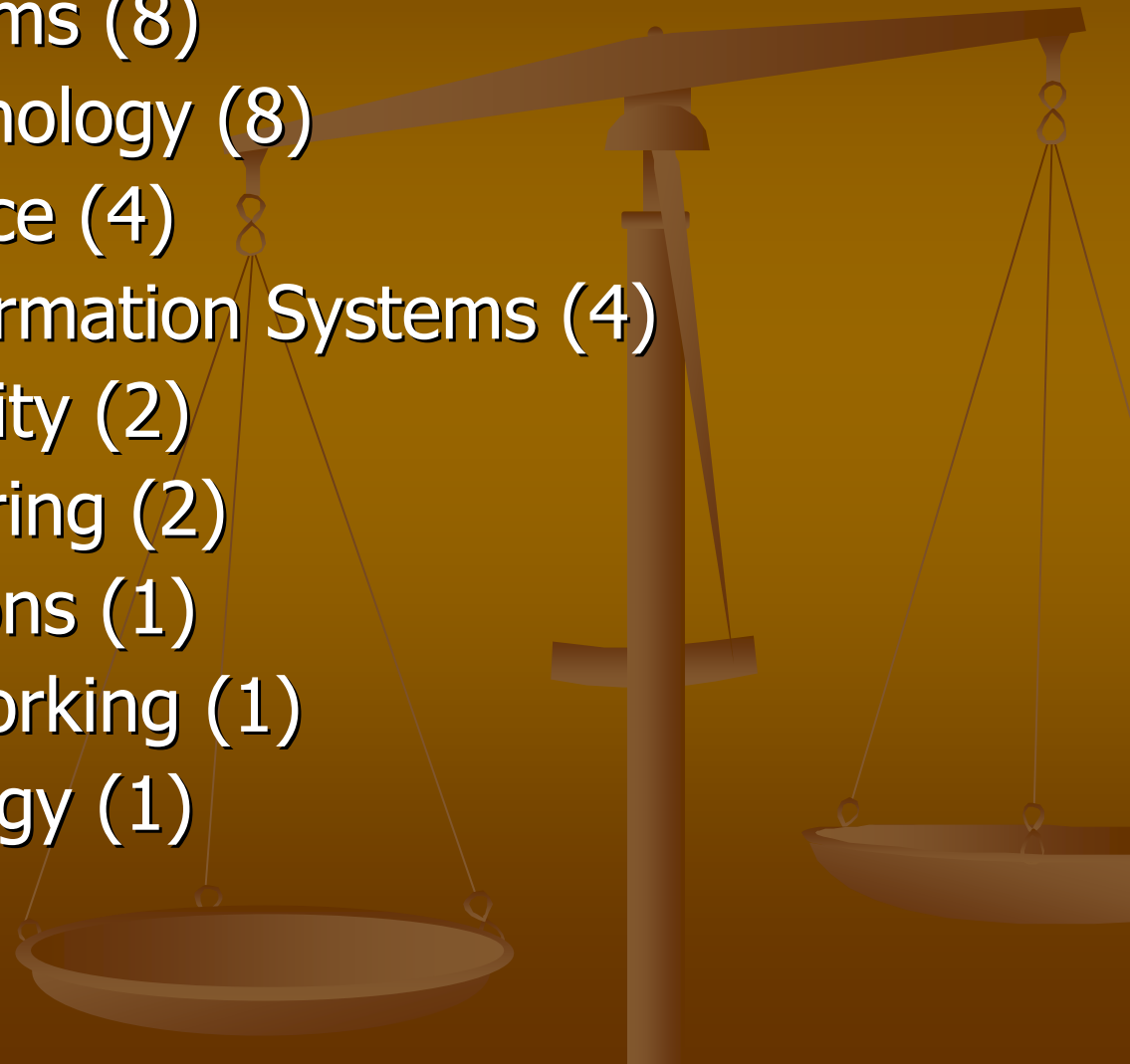


Graduate degrees in addition to
Computer Science and excluding
the ALA accredited schools and
their degree variants




Degrees

- Information systems (8)
- Information Technology (8)
- Information science (4)
- Management Information Systems (4)
- Information security (2)
- Software engineering (2)
- Telecommunications (1)
- Information networking (1)
- Internet Technology (1)

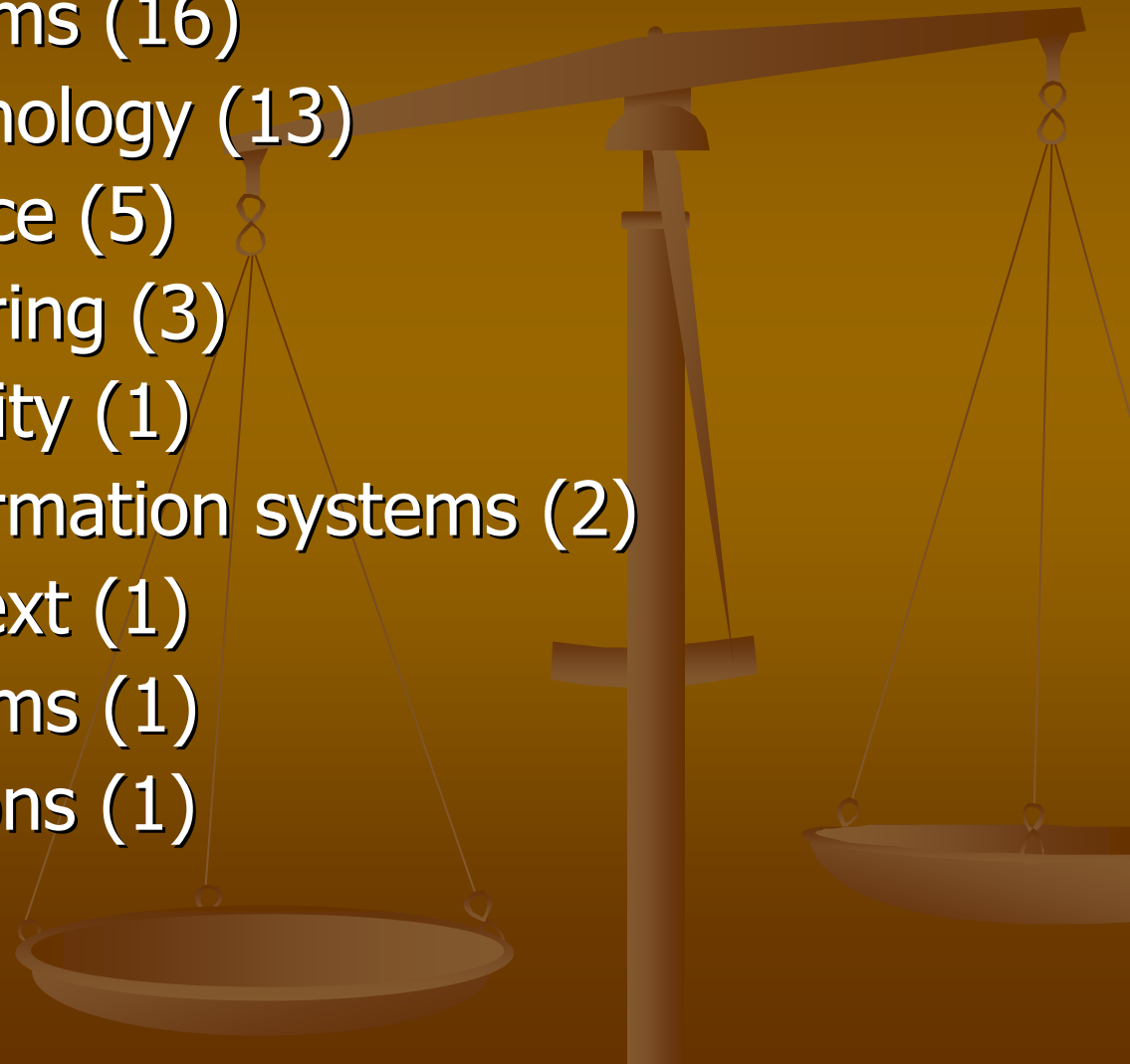


Bachelor degrees in addition to
Computer Science and excluding
the ALA accredited schools and
their degree variants

A faint, stylized illustration of a balance scale is visible in the background. The scale is positioned on the right side of the frame, with its central pillar and horizontal beam extending across the middle. Two pans are suspended from the beam by thin lines. The entire image has a monochromatic, dark brown or olive green color scheme.

Degrees

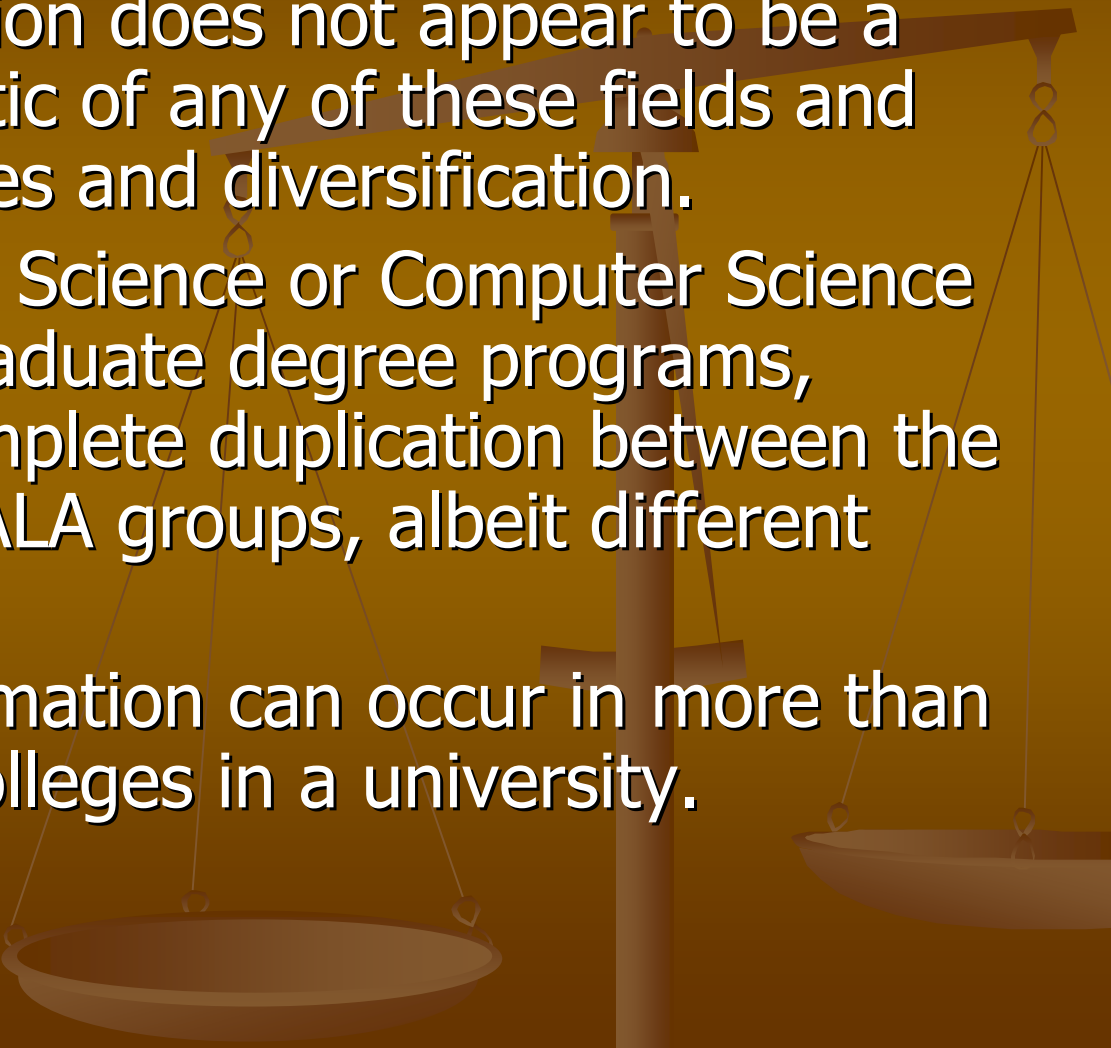
- Information systems (16)
- Information Technology (13)
- Information science (5)
- Software engineering (3)
- Information security (1)
- Management information systems (2)
- Information Context (1)
- Technology Systems (1)
- Telecommunications (1)



College/School/Department names

- 
- Business School
 - Engineering and Technology
 - Physical & Mathematical Sciences
 - Computing
 - Computer Science
 - Public Policy & Management
 - Engineering
 - Computing & Information Science
 - Computer Science, Telecommunications, and Information Systems
 - Science and Technology
 - Information Technology
 - Science and Technology
 - Computing Sciences
 - Computer and Information Science
 - Applied Science and Technology
 - Computer Science and Information Systems
 - Information Sciences and Technology
 - Science
 - Computing and Software Engineering
 - Information Science and Systems Engineering
 - Information Management and Systems
 - Information and Computer Science
 - Engineering and Computer Science
 - Business Administration
 - Engineering and Applied Science
 - Computer and Information Sciences

Conclusions

- A naming convention does not appear to be a strong characteristic of any of these fields and may reflect changes and diversification.
 - Aside from Library Science or Computer Science as the name of graduate degree programs, there is nearly complete duplication between the ALA and the non-ALA groups, albeit different traditions.
 - The study of information can occur in more than 5 basic types of colleges in a university.
- 

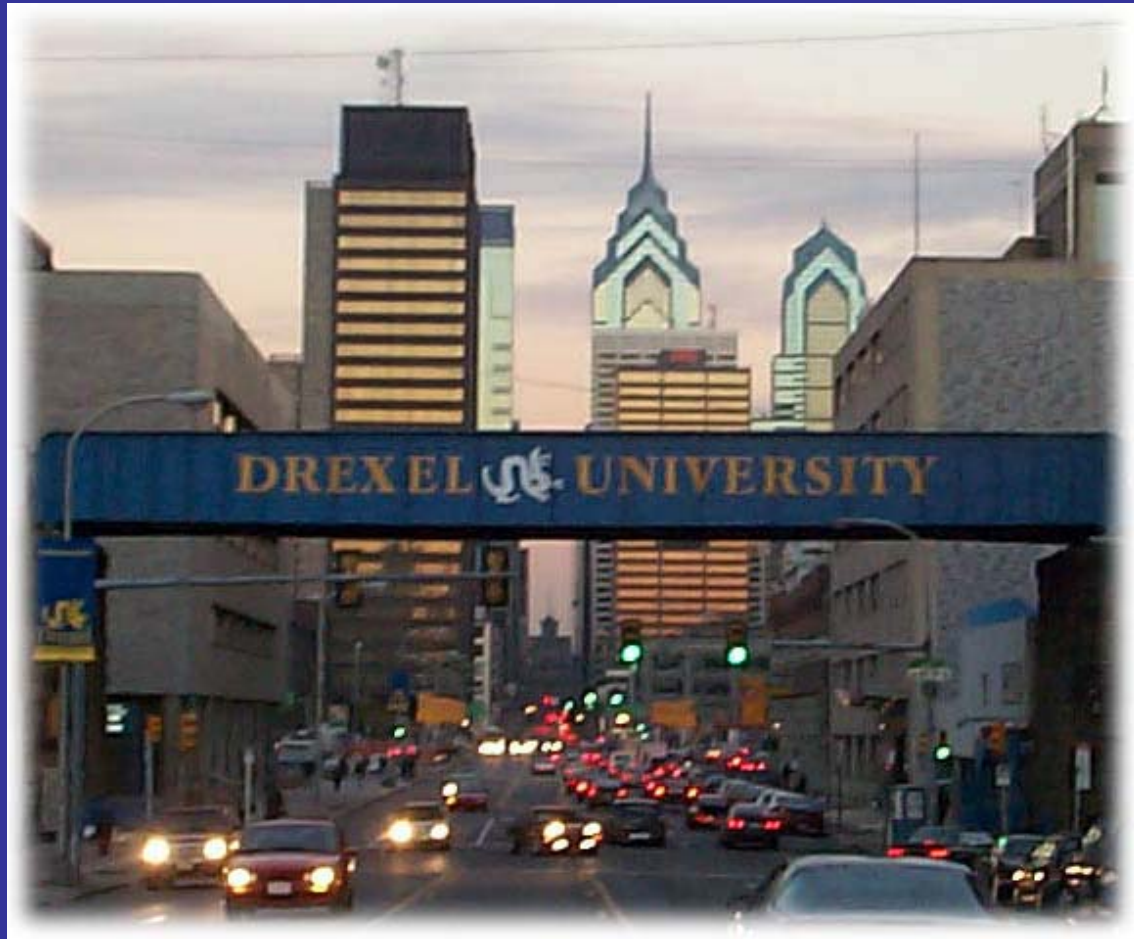
What Issues are on Drexel's Agenda





COLLEGE OF
**Information Science
& Technology**

***Empowering People and Organizations
Through Their Use of Information***



**IST Research - Exploring, Transforming
and Envisioning the World**

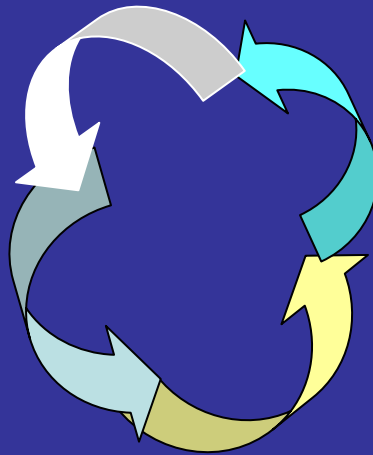
IST Mission

The College of Information Science and Technology's educational and research programs integrate

Information Content

Human Factors

Business Strategy



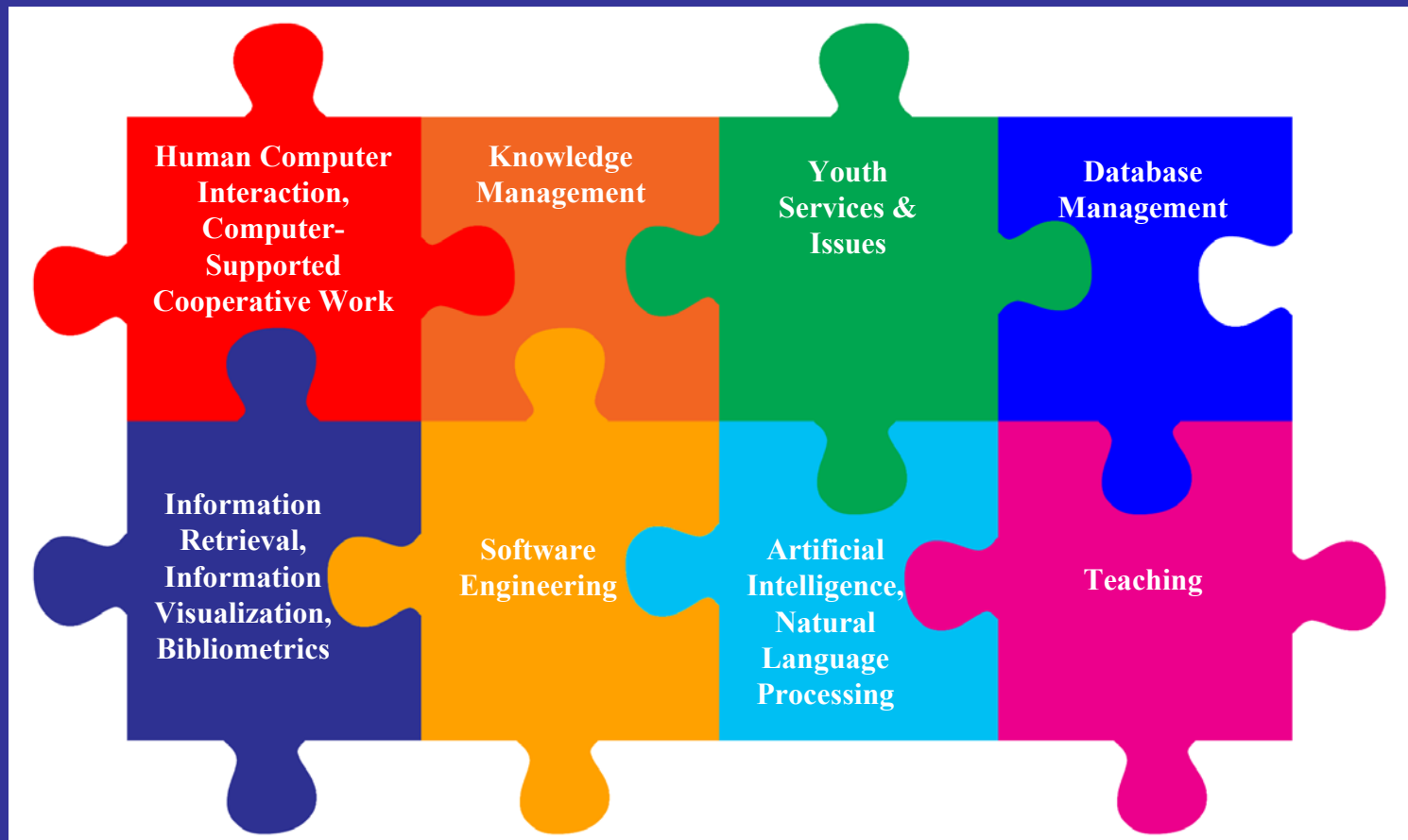
Information
technology

Organizational
forces

to advance 21st Century enterprises of all kinds.

Research Clusters

IST consists of 8 research clusters, which focus on different disciplines of information science and technology.



Human Computer Interaction, Computer-Supported Cooperative Learning

Research topics covered by the HCI Cluster include:

- Cultural effects on collaboration technologies
- Electronic communities and electronic governments
- Psychology of programming
- Group memory
- Digital libraries

Answer Garden

The Answer garden system is a web-based prototype for providing help to students learning introductory C++ programming. The Answer Garden consists of a set of questions which are posted by students.

These questions can be seen by any student and can be answered by both faculty and other students. Answers are initially divided into “Peer Answers” and “Expert Answers.” However, if a student provides an answer deemed definitive by a faculty member, it can then be promoted to the “Expert Answers” category.

Answer Garden (cont'd)

On a successful login, a student can see the main system contents page. This shows the main topic (Intro to C++) sub topics such as “Arrays”, a folder with any recently posted questions or questions posted directly into the main topic.

The screenshot shows a Microsoft Internet Explorer browser window displaying the 'Answer Garden - Enhanced' page. The browser's address bar shows the URL: http://129.25.26.79/answer_garden/jsp/folder_display_page.jsp?id=1&toRefresh=0.3603478292705813. The page title is 'Folder Display Page - Microsoft Internet Explorer'. The browser's menu bar includes File, Edit, View, Favorites, Tools, and Help. The address bar contains a search icon, a back button, a forward button, a home button, a search box, a Favorites button, a Media button, and a Go button.

The main content area of the browser displays the 'Answer Garden - Enhanced' page. The page has a blue header with the text 'Answer Garden - Enhanced' and a 'Logout' link on the right. Below the header, there is a search box with a 'Submit' button and a 'Links' section containing links for 'Main Contents', 'Help', and 'About'. The main content area is titled 'Introduction to C++' and includes a button to 'Ask a New Question in this Topic'. Below this, there is a list of sub-topics and questions:

- [Arrays](#) [F: 0, Q: 3]
- [Control Statements](#) [F: 2, Q: 0]
- [Data Types](#) [F: 0, Q: 1]
- [Functions](#) [F: 4, Q: 0]
- [Recently Posted Questions](#)
- Q:** [How is C++ different from Java?](#) [EA: 2, PA: 0, FQ: 3]
- Q:** [Is C++ a high level language or a low level language ?](#) [EA: 0, PA: 1, FQ: 0]
- Q:** [New question?](#) [EA: 1, PA: 0, FQ: 0]
- Q:** [What is C++?](#) [EA: 1, PA: 1, FQ: 2]
- Q:** [Will learning C++ get me a job.](#) [EA: 2, PA: 0, FQ: 1]

The footer of the page contains the text: Copyright 2003 Drexel University. All Rights Reserved.

Answer Garden (cont'd)

By clicking on a topic area such as “Arrays,” a student can see a short description of all questions asked in that topic. For each question, they can view any answers by students or faculty members, as well as follow-up questions. A student can examine a question in more detail or can ask a new question.

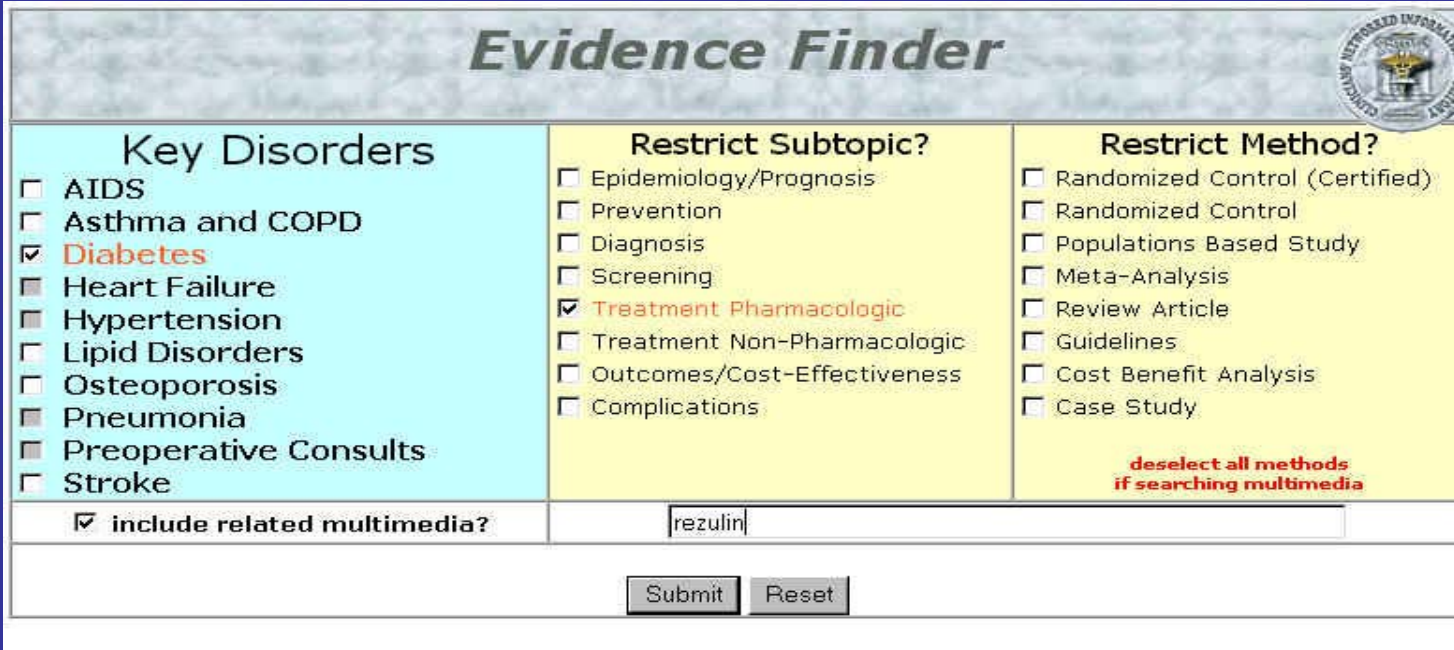
The screenshot shows a Microsoft Internet Explorer browser window displaying the 'Answer Garden - Enhanced' web application. The browser's address bar shows the URL: http://129.25.26.79/answer_garden/jsp/folder_display_page.jsp?id=225&toRefresh=0.15579563303675026. The page title is 'Folder Display Page - Microsoft Internet Explorer'. The main content area is titled 'Answer Garden - Enhanced' and features a 'Logout' link. Below the title, there is a search bar with a 'Submit' button. The main content area is divided into two columns. The left column is titled 'Search' and contains a search input field and a 'Submit' button. The right column is titled 'Arrays' and contains a description: '[Introduction to C++ \ Arrays \]' and a link '[Up]'. Below the description, there are two questions listed: 'Q: [Is an array extendable at runtime](#) [EA: 1, PA: 0, FQ: 1]' and 'Q: [What is an Array?](#) [EA: 0, PA: 0, FQ: 0]'. A button labeled 'Ask a New Question in this Topic' is located to the right of the description. At the bottom of the page, there is a blue footer bar with the text 'Copyright 2003 Drexel University. All Rights Reserved.' The browser's status bar at the bottom shows 'Internet'.

Knowledge Management

The KM cluster focuses on research topics encompassing the various aspects of knowledge management including the capture, understanding, evaluation, organization and deployment of knowledge using traditional, advanced, and intelligent information processing methodologies.

Evidence Finder

Four researchers working jointly between the College of IST, Drexel University and the School of Medicine at MCP Hahnemann University developed a digital information resource to support primary care physicians.



The screenshot shows the 'Evidence Finder' web application interface. At the top, the title 'Evidence Finder' is displayed in a stylized font. To the right of the title is a circular logo for the 'CENTRAL PENNSYLVANIA HEALTHCARE INFORMATION SYSTEMS'. The interface is divided into three main columns of checkboxes for filtering search results:

- Key Disorders:** Includes checkboxes for AIDS, Asthma and COPD, **Diabetes** (checked), Heart Failure, Hypertension, Lipid Disorders, Osteoporosis, Pneumonia, Preoperative Consults, and Stroke.
- Restrict Subtopic?:** Includes checkboxes for Epidemiology/Prognosis, Prevention, Diagnosis, Screening, **Treatment Pharmacologic** (checked), Treatment Non-Pharmacologic, Outcomes/Cost-Effectiveness, and Complications.
- Restrict Method?:** Includes checkboxes for Randomized Control (Certified), Randomized Control, Populations Based Study, Meta-Analysis, Review Article, Guidelines, Cost Benefit Analysis, and Case Study. Below these is a red instruction: 'deselect all methods if searching multimedia'.

Below the columns, there is a checkbox for 'include related multimedia?' which is checked. A search input field contains the text 'rezulin'. At the bottom of the form are 'Submit' and 'Reset' buttons.

Evidence Finder (Cont'd)

- ◆ Evidence finder combined access to succinct clinically relevant information from the published literature, and access to relevant segments retrieved from video of primary grand rounds.
- ◆ Research included building physician-language-based query expansion ontologies to enhance retrieval of key clinical information from the database.

Your query <thesaurus>rezulin AND (subtopic<MATCHES>Treatment Pharmacologic) matched 4 out of 142 documents, shown below.

[Find Again](#)

Rank	Score	Title	Collection Searched:
1	1.00	<u>Effect of troglitazone in insulin-treated patients with type II` diabetes mellitus.</u>	"Diabetes" Collection
		Method: Randomized Control-Certified	<i>Pearl In patients with type 2 diabetes poorly controlled on insulin, the addition of troglitazone to insulin resulted in improved average glycemic control and a decrease in insulin requirements in a dose-related fashion, compared to no change in patients taking placebo with insulin. One patient (out of 116) in the troglitazone group taking 600 mg a day discontinued the drug because of clinical liver dysfunction, and several others on troglitazone developed elevations in transaminases.</i>

Database Management

Research topics covered by the Database Management cluster include:

- Data warehouse design and performance optimization
- Object-oriented approach to data warehousing
- Business intelligence and CRM
- Object-oriented analysis and design with UML
- Intrusion detection systems
- Data mining applications to bio-informatics
- Data mining to healthcare informatics
- Relational data mining
- Web data extraction
- XML Applications

Data Warehousing and Data Mining for Cybersecurity

Cybercrime

- Intrusion, damage or destruction by non-physical objects

- Includes:

 - Financial fraud

 - Sabotage of data/networks

 - Theft of proprietary information

 - Unauthorized system accesses

 - Denial of service attacks

 - Cyber stalking

 - Identity theft

 - Virus attacks

 - Industrial espionage

 - Interruption of International commerce or national security

Data Warehousing and Data Mining for Cybersecurity (cont'd)

Data Warehouse Schema for Cybercrimes

Four Steps:

1. **Select the BP**

Investigation of Cybercrimes

2. **Declare the Grain**

An incident

3. **Select the Dimensions**

Attack

Attack Pattern

Attacker

Attacker Demographics

Incident

Date

Time

Target

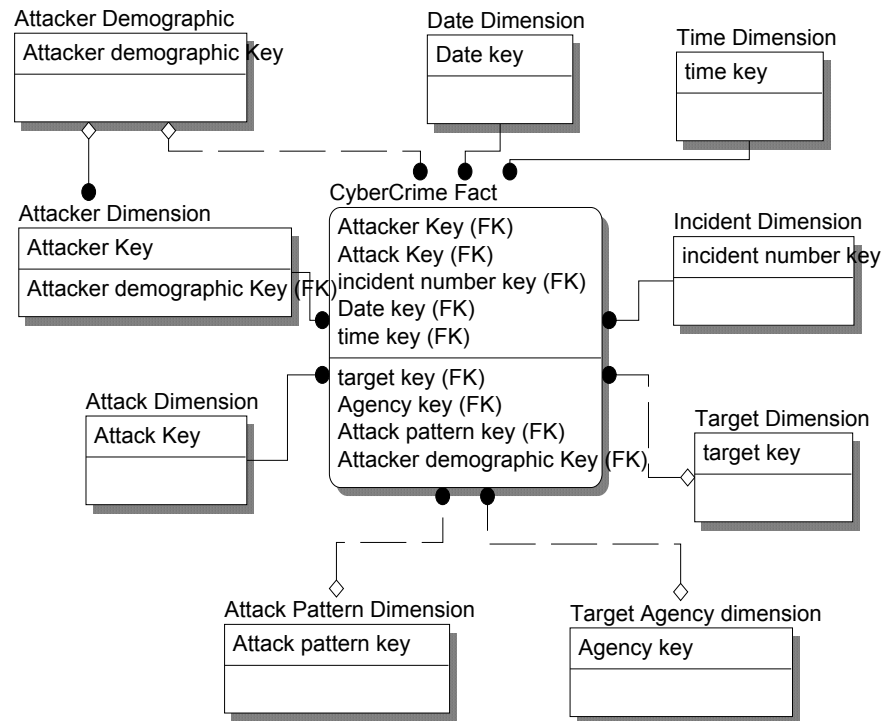
Target Agency

4. **Select Fact Table**

Cybercrimefact

Data Warehousing and Data Mining for Cybersecurity (cont'd)

A Data Warehouse Schema for Cyber Security



Information Visualization, Information Retrieval, Bibliometrics

Research areas covered include:

Knowledge Domain Visualization

- Mapping Scientific Frontiers
- Tracing Scientific Revolutions and the Growth of Knowledge
- Visualizing Knowledge Diffusion and Technology Transfer

Information Retrieval

- Visualizing Concept Structures for Information Access
- Creating Knowledge Maps for Learning and Understanding

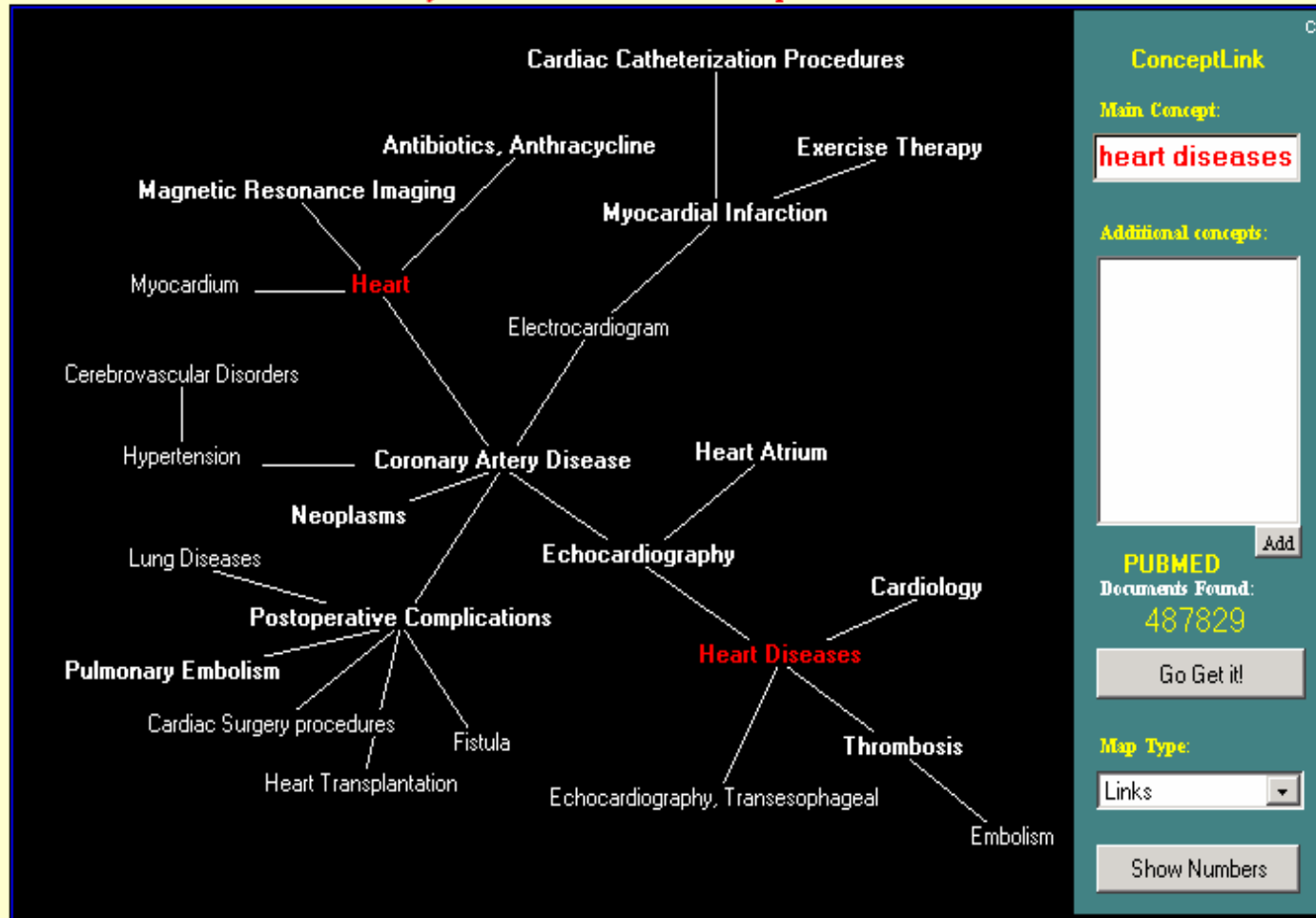
Bibliometrics and Scientometrics

- Exploring Intellectual Structures of Literature through Citation Analysis

Concept Map

Automatic generation of concept relationships from the literature

Instant Keyword Associative Map of "heart diseases"



ConceptLink

Main Concept:

heart diseases

Additional concepts:

Add

PUBMED

Documents Found:

487829

Go Get it!

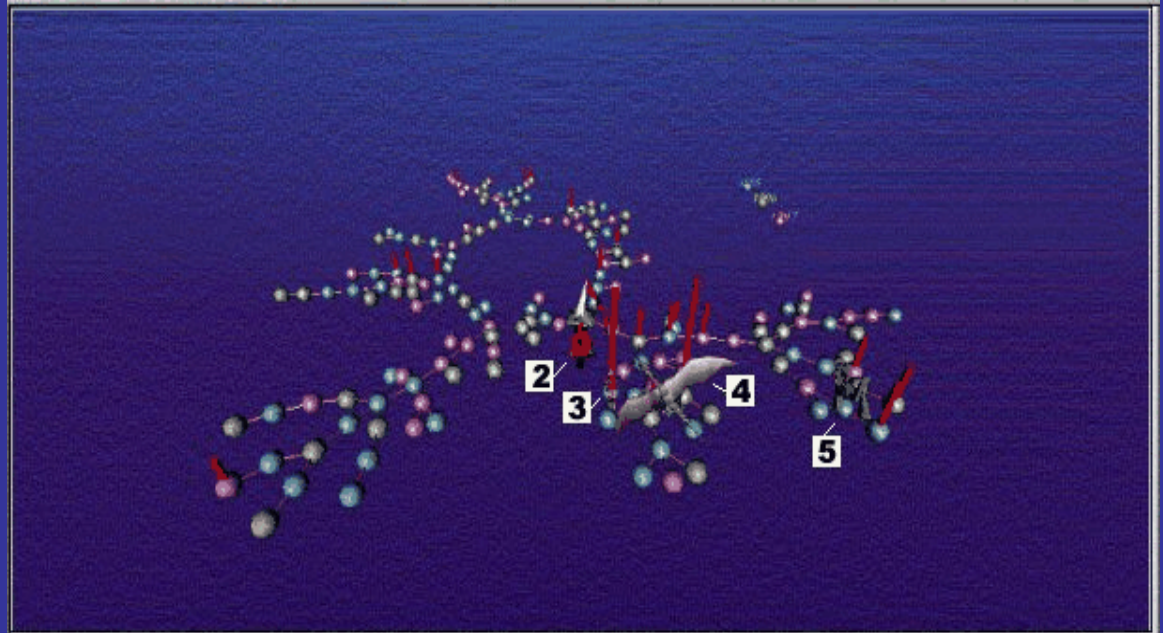
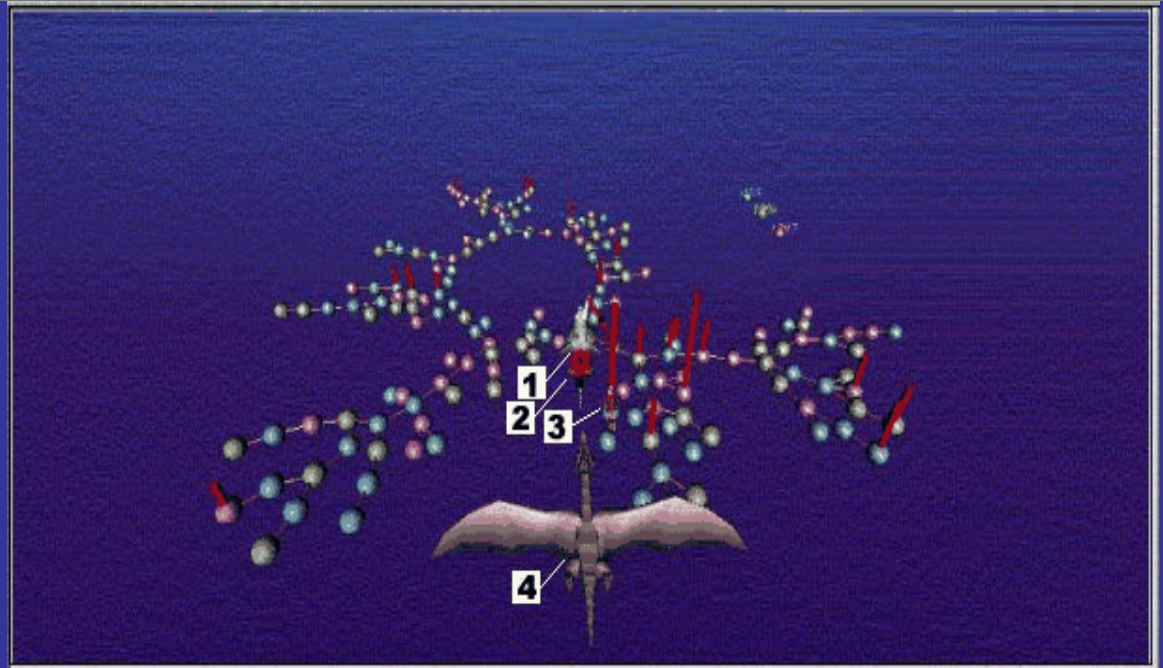
Map Type:

Links

Show Numbers

StarWalker and Social Navigation

Semantics and Cyber-footprints

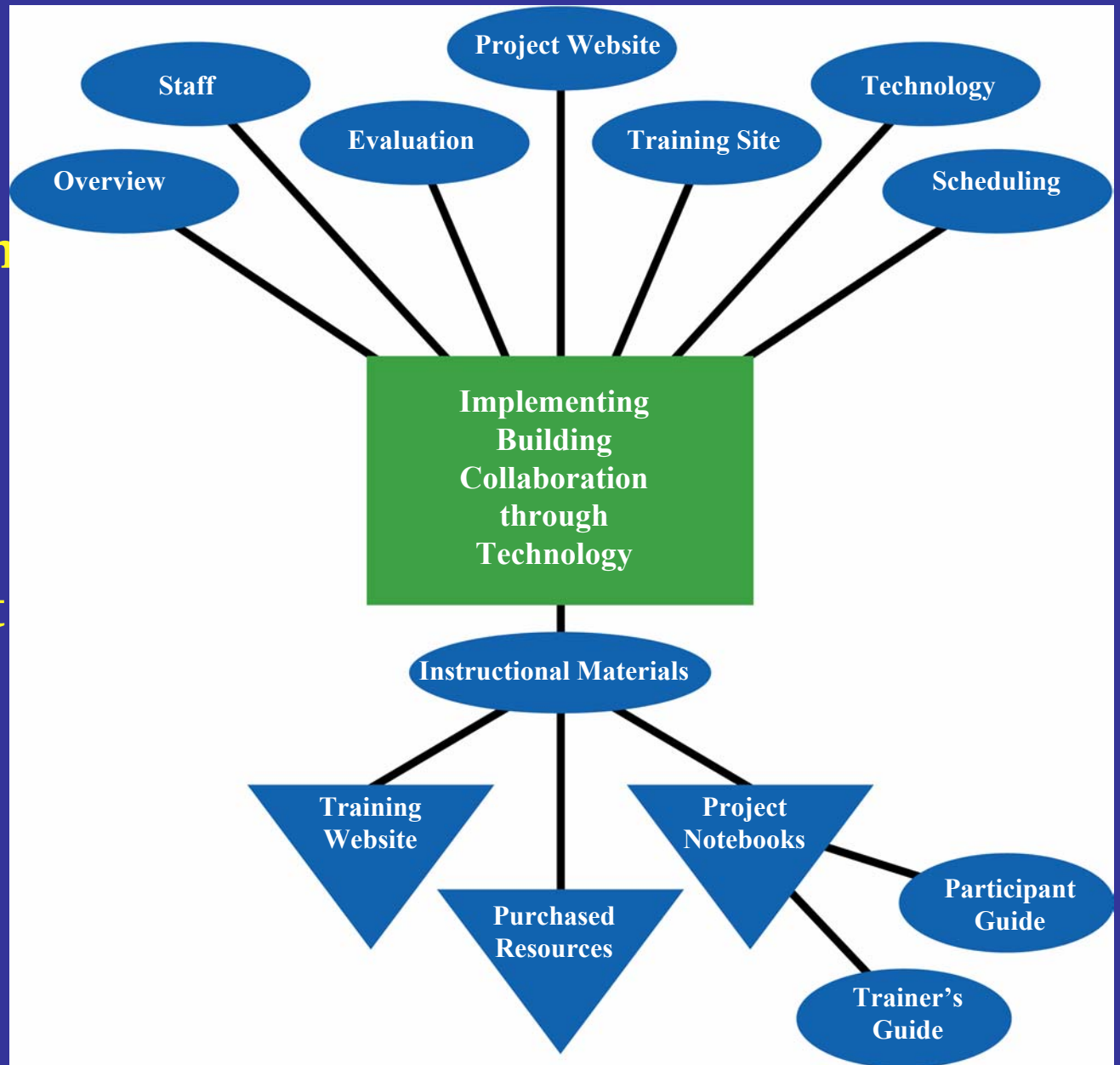


Youth Services & Issues

Research activity in this cluster includes identifying and evaluating the information needs and behaviors of specific communities in order to better serve them via libraries, as well as through technology.

Featured is a project focused on using technological tools to enable schools and librarians to meet community interests through creation of a collaborative web site.

**Building
Collaboration
through
Technology:
A
Professional
Development
Model for
School and
Public
Librarians**



Building Collaboration through Technology (cont'd)

Project Goals:

- To increase collaboration among school and public librarians serving youth
- To teach school and public librarians new tools, skills and knowledge needed to locate and use electronic databases and internet resources, in particular web development with children, youth and their families.

Target Audiences:

- School and public librarians serving youth
- Public library directors
- School district superintendents
- State library personnel
- Library professional organizations

Artificial Intelligence, Natural Language Processing

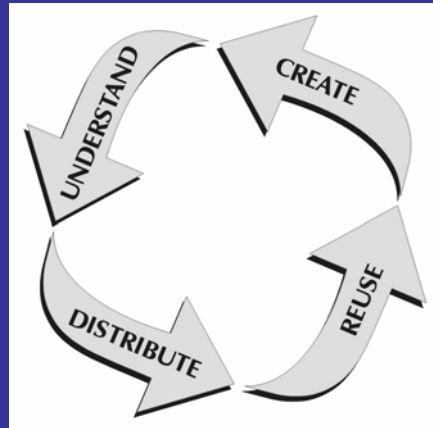
The AI & NLP cluster is comprised of faculty who are actively involved with artificial intelligence and natural language processing research, application and teaching. The cluster focuses on specific methodologies including case-based reasoning, expert systems, data mining and logic-based methods.

Case-based Reasoning and Software Testing

Designing Testing Processes with CBR

- End-user inputs a description of a software program
- System designs a testing strategy
- System should embed and manage experiential knowledge without restrictions
- System should learn

How to Achieve These Goals?



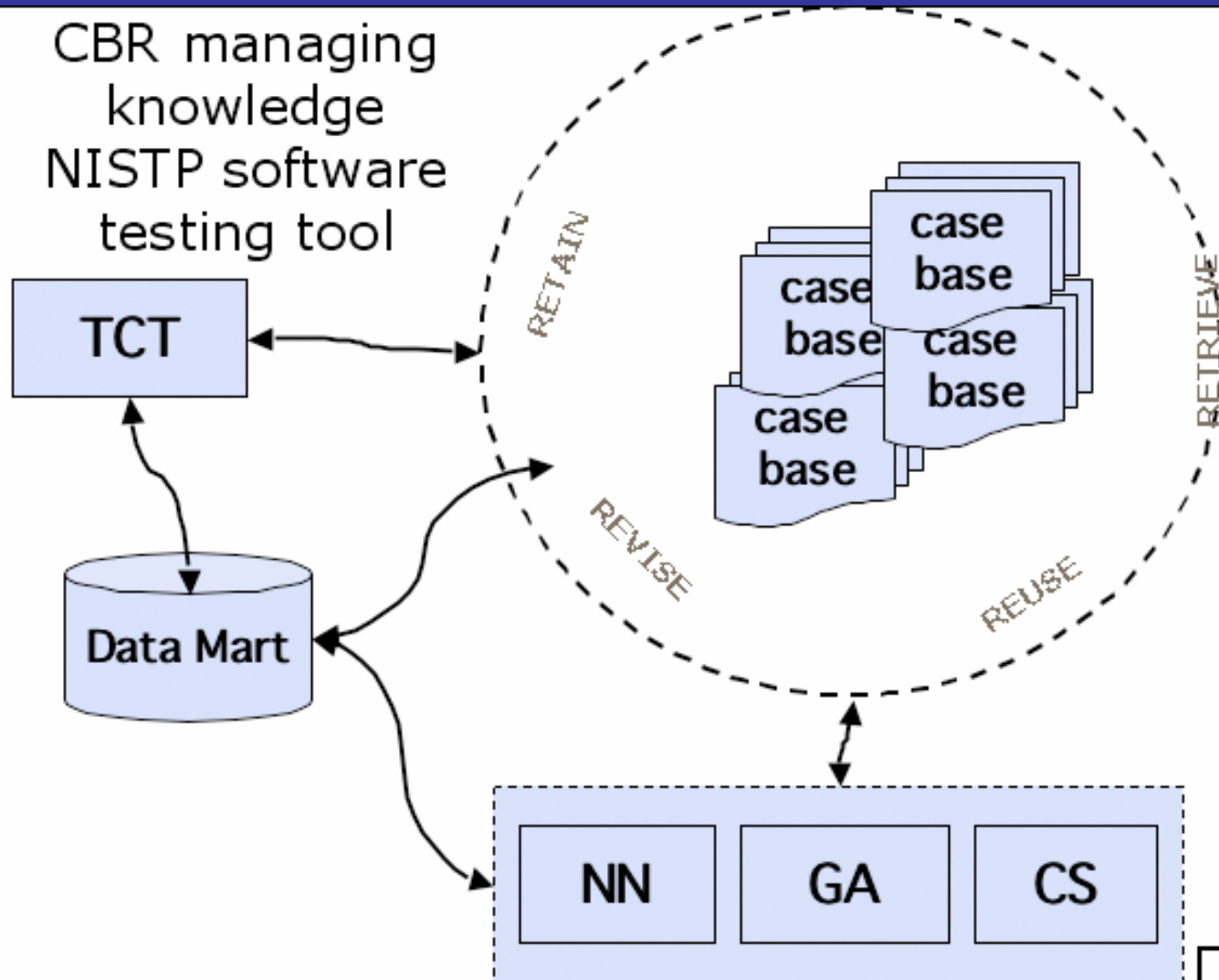
Adopting a Knowledge Management Framework

Case-based Reasoning and Software Testing (cont'd)

Main Steps

- User enters software to be tested
 - First step is to assess the level of testing required (e.g., analysis, design, units, black, white box)
 - CBR retrieves, reuses adequate testing strategy (includes guidelines to generate test cases) and incorporates lessons learned
 - TCT generates test cases (NN, GA, CS)
 - CBR revises the solution (assess quality)
 - Results of each use is learned (e.g., case is retained, adaptation knowledge, feedback from revision, lessons learned are incorporated)

Case-based Reasoning and Software Testing (cont'd)



Curriculum Development

- Increase degree diversity from a shared core curriculum.
- Add (2004) a BS in Information Technology and in Information Science to existing ones in Information Systems and Software Engineering
- Add (2005) an MS in Knowledge Management to existing ones in Library and Information Science, Information Systems and Software Engineering.

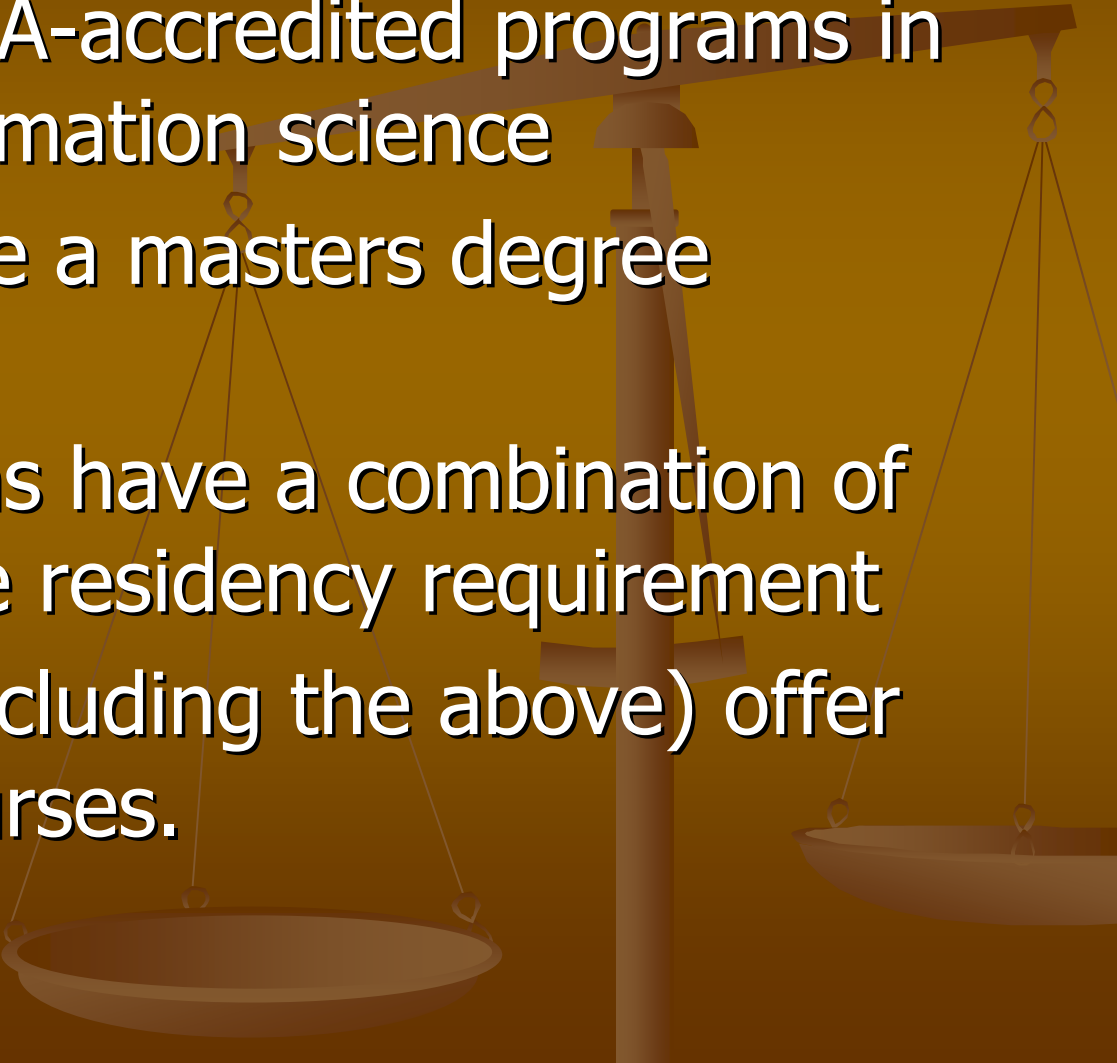
Online Degrees

- Master of Science in Information Systems
- MS in Library and Information Science
 - Management of Digital Information Specialization
 - Information/Library Services Specialization (under development)

Online Certificates

- Competitive Intelligence
- Database Technology
- Digital Information
- Healthcare Informatics
- Human-Computer Interaction
- Information Retrieval
- Internet Information Systems
- Management of Shared Information
- Software Engineering
- System Analysis and Design

Online LIS programs

- There are 54 ALA-accredited programs in library and information science
 - 5 programs have a masters degree entirely online
 - 8 more programs have a combination of online and some residency requirement
 - 21 programs (including the above) offer some online courses.
- 

What do “I” Schools hope to accomplish



Building "I" Schools by Bob Boiko and Corinne

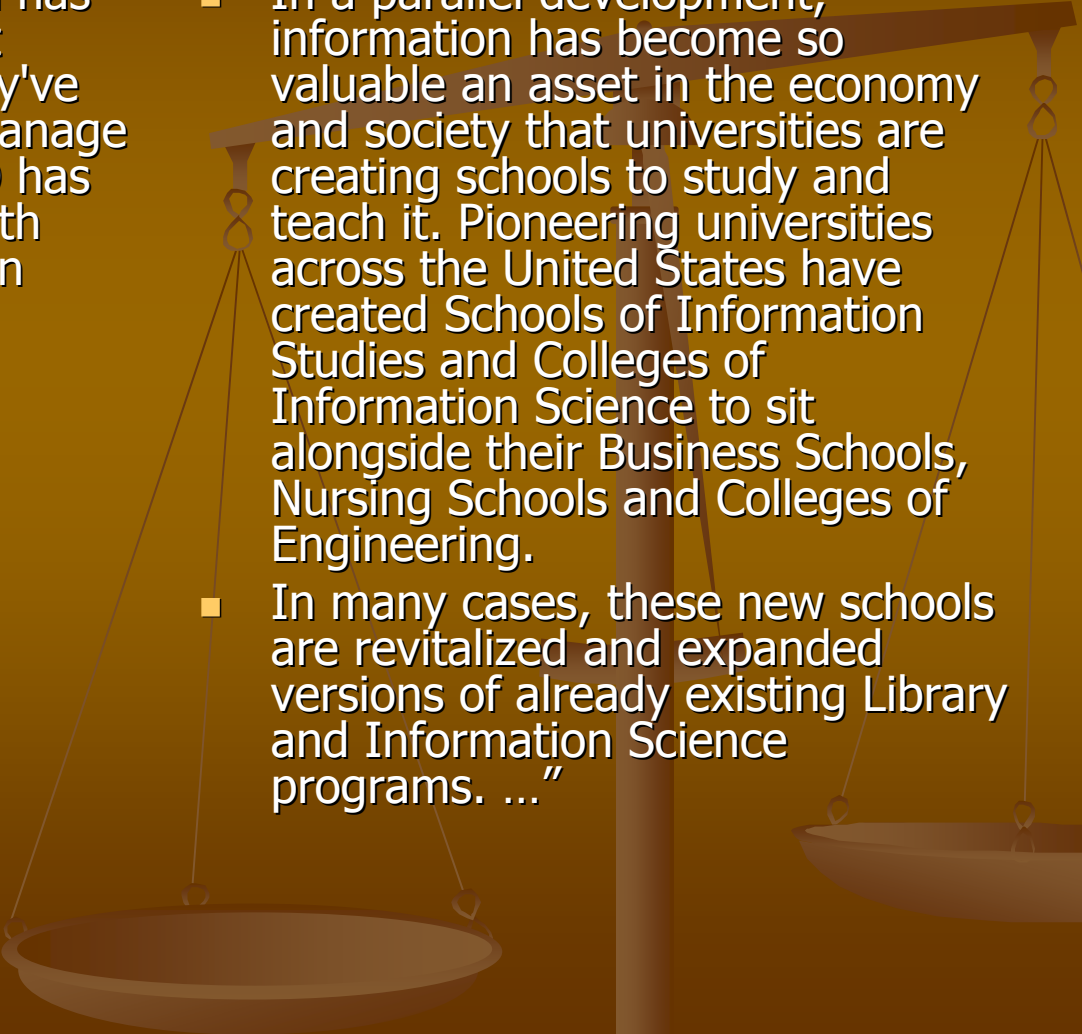
Kator

*Monday, December 02,
2002*

Knowledge Management,
destinationKM.com



Excerpts

- “In recent years, information has become so valuable an asset within organizations that they've appointed chief officers to manage it. The appointment of a CIO has placed information on par with finances and operations as an integral part of most any organization.
 - In a parallel development, information has become so valuable an asset in the economy and society that universities are creating schools to study and teach it. Pioneering universities across the United States have created Schools of Information Studies and Colleges of Information Science to sit alongside their Business Schools, Nursing Schools and Colleges of Engineering.
 - In many cases, these new schools are revitalized and expanded versions of already existing Library and Information Science programs. ...”
- 

Excerpts Cont'd

- “When they were first introduced, library schools were, in effect, trade schools, with practical skills taught by practicing librarians. As library schools matured, they developed theories and observed best practices, constructing a discipline of librarianship to complement the practice of librarianship. Information schools are beginning the same process for knowledge and information work. University information schools do not wish to simply be IT schools where practitioners train others in a practical skill. These schools are creating a body of knowledge to better inform practice. Researchers at information schools are studying knowledge workers and attempting to identify best practices. They are developing new theories and techniques for organizing and managing information. As researchers collaborate with one another, they are developing a common vocabulary for the field. Many information school professors are experts in business, library science, law, computer science and psychology and are helping to apply contributions from all these disciplines to new information contexts. ”

Excerpts Cont'd

- “The curriculum at information schools is a mix of the technical and the social sciences as well as a mixture of theory and practice. Most information schools offer technical courses in network administration and web development alongside courses like Behavior of Information Users that are grounded in the social sciences. A class in interface design melds the technical and the social, teaching the use of design tools as well as psychological principles of human-computer interaction. Likewise, a class in the organization of information melds theory and practice by teaching classification theory and then offering opportunities to apply that theory to real problems.”

The End

