

Google Faculty Summit - 27 July 2007

LIKES

Living In the KnowlEdge Society

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Co-PIs at VT: English – Evia; Business – Fan, Sheetz, Zobel

Co-PIs at partner sites: Carr (NC A&T), Chung (UTEP -> SCU), Beck (Villanova)

<http://fox.cs.vt.edu/talks/2007/20070727LIKES.ppt>



NSF CPATH Awards for LIKES

- 24 month awards just made
- Virginia Tech, largest university in Virginia, as lead (public) institution, with PI in CS and co-PIs in English and Business
- Team including a private university, an HBCU, and other minority communities
 - Villanova
 - North Carolina A&T
 - Santa Clara University



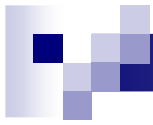
Problems

- CS **enrollments are declining**, though demand continues/increases for computing/IT professionals able to help build and improve the Knowledge Society of the 21st Century.
- Application of computing methods across the breadth of areas essential for living in the Knowledge Society is **shallow**, and **sparse** in key areas needed in our global environment to ensure security, competitiveness, and quality of life.

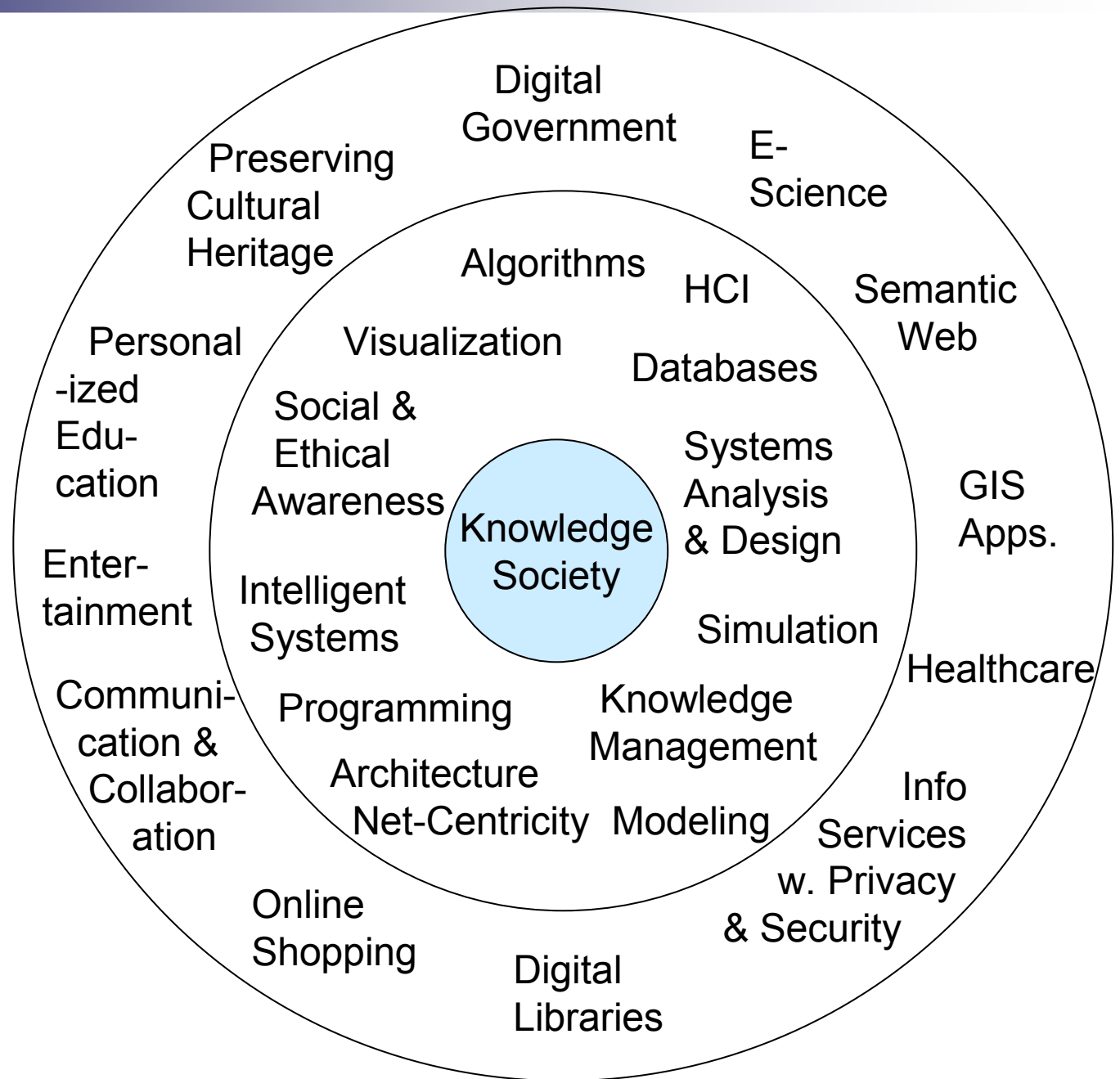


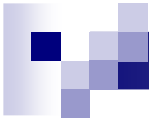
Purpose

- Graduates from US universities (and beyond) should be prepared to live in and contribute to the Knowledge Society emerging in the 21st century
 - Students in **non-computing areas** can **utilize** various **computing concepts/technologies** related
- Computing education can be revitalized:
 - if the LIKES theme spreads in CS programs (so **students enjoy** solving key real-world problems)
 - if CS **faculty collaborate** (both in education and research endeavors) with colleagues across US universities who are interested in LIKES



Knowledge society enabled by CS/IS concepts to provide applications needed by individuals and society.



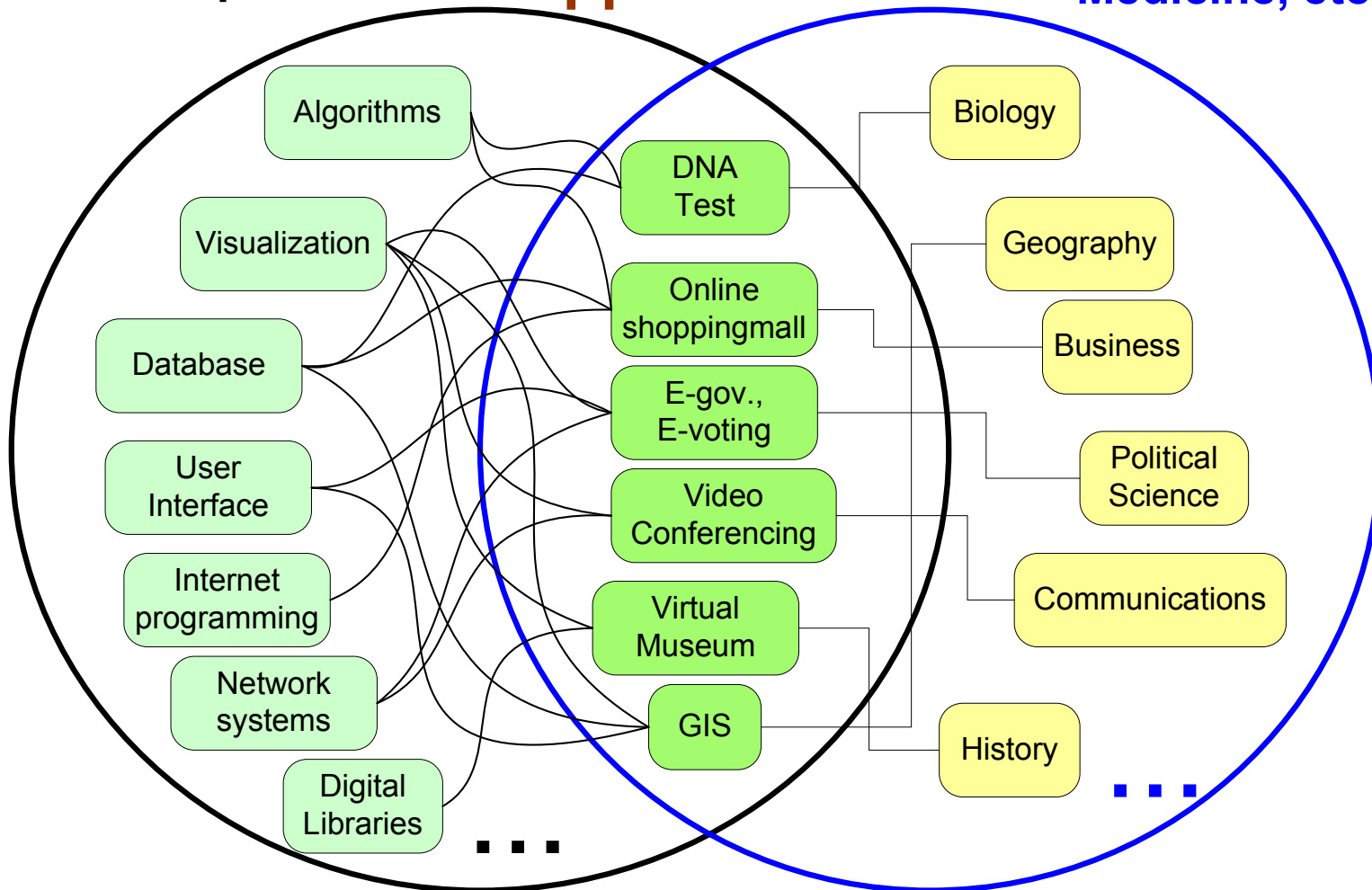


Technology Applications

**Computing
Concepts**

**Technology
Applications**

**Liberal Arts,
Engineering,
Medicine, etc.**





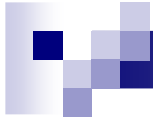
Goals

Knowledge Society of the 21st Century

CS Education is Enhanced So Graduates Can Help Build the K.S.

Interdisciplinary Students (minors) Help Specify and Learn how to Live in the K.S.

Those Wanting a Themed Core gain a Liberal Arts Background Supporting LIKES



Themed Core 1

- A multi-disciplinary collection of
- university core courses that provide the
- concepts, skills, and perspectives necessary for
- using information for
- personal, group, organizational, and societal
- advancement and innovation.



Themed Core 2

- Courses across all colleges and many departments from the university provide
- coverage of the breadth of impacts of computing on the future lives of students.
- This breadth of disciplines involves those that provide the **philosophical, conceptual, and technical skills** at multiple levels of communication and collaboration that create **organizations and society**.



Themed Core 3

- Students emerging from this course series will:
 - Understand **how computing is used in society**,
 - Identify issues associated with managing knowledge,
 - Be adept with techniques for **managing personal information**, as well as group collaboration and communication,
 - Be aware of knowledge management issues in organizations,
 - Be aware of and prepared for a **lifetime of learning** new computing concepts, techniques, and tools, &
 - Be prepared to live in the 21st Century Knowledge Society.



Goals

1. Identify key **problems in disciplines**
2. Identify **key computing concepts** that can help with the key problems
3. Define the problem-centered **pedagogy** most appropriate for the computing concepts
4. Demonstrate LIKES feasibility by developing **course modules and tools**



Chart to fill-in more ...

Problems / Computing Concepts	Data / Database	Visualization
Biology	Hierarchical data structures	GIS mapping of species to locations
Chemistry	Registry of chemicals: name/structure	Virtual lab for experimentation



Pedagogical Approach (preferred, not required)

- Problem centered learning.
- Require students to adapt the concepts of the courses to knowledge in their domain.
- Group work. Also makes collaboration inherent.
- Based in the discipline of the student, as well as in their life as a scholar and citizen.



Potential Course Areas/Courses

- Personal Knowledge Management
- Communication and Collaboration
- Organization
- Society



Potential Course Areas/Courses 2

- Personal Knowledge Management
 - Computer Science and Information Systems, e.g., multi-media, process design and evaluation, and Human-Computer / Human-Information interaction.
 - Psychology, e.g., knowledge organization principles, human cognitive processes.
 - Industrial Systems Engineering, e.g., Ergonomic factors of knowledge environments.
 - Ethics, e.g., ethical issues of information disclosure.
- Communication and Collaboration
 - Communications, e.g., Communication using digital visualizations, using knowledge access in constructing digital messages.
 - Information Systems and Computer Science, e.g., computer supported cooperative work and group support systems.
 - Marketing, e.g., influence of knowledge presentation on on-line customer behavior.



Potential Course Areas/Courses 3

■ Organization

- Information Systems, e.g., service innovation and development, system design and development.
- Management Science, e.g., decision support systems concepts, capabilities, techniques, and tools.
- Management, Marketing, Accounting, and Finance, e.g., business in the information age.

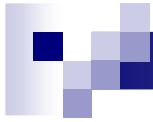
■ Society

- Sociology, e.g., impact of knowledge differentials across society and countries.
- Political Science, e.g., governmental collection and use of knowledge, impact of technology on elections and government.



Approach

- Outcomes
 - > 20 universities w. LIKES initiative
 - Collaborative multi-disciplinary efforts
- 4 workshops
- Supporting virtual community



Workshop 1

- Defining (Problems and Applications of) the Knowledge Society
- -> list of computing problems from a broad range of disciplines
- October 18-20, organized by Santa Clara University (near San Jose airport)



Later Workshops

- March 2008: NC A&T
 - Identifying Computing Concepts and Paradigms for the Knowledge Society
- October 2008: Virginia Tech
 - Learning for LIKES
- March 2009: Villanova
 - Building the Knowledge Society



Related Projects

- Networked Digital Library of Theses and Dissertations (www.ndltd.org)
- Digital Library Curriculum (<http://curric.dlib.vt.edu>)
- CITIDEL (Computing and Information Technology Interactive Digital Educational Library, www.citidel.org)
- Digital Library Testbed for Research Related to 4/16/2007 at Virginia Tech (<http://recovery.dlib.vt.edu>)



Questions?

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