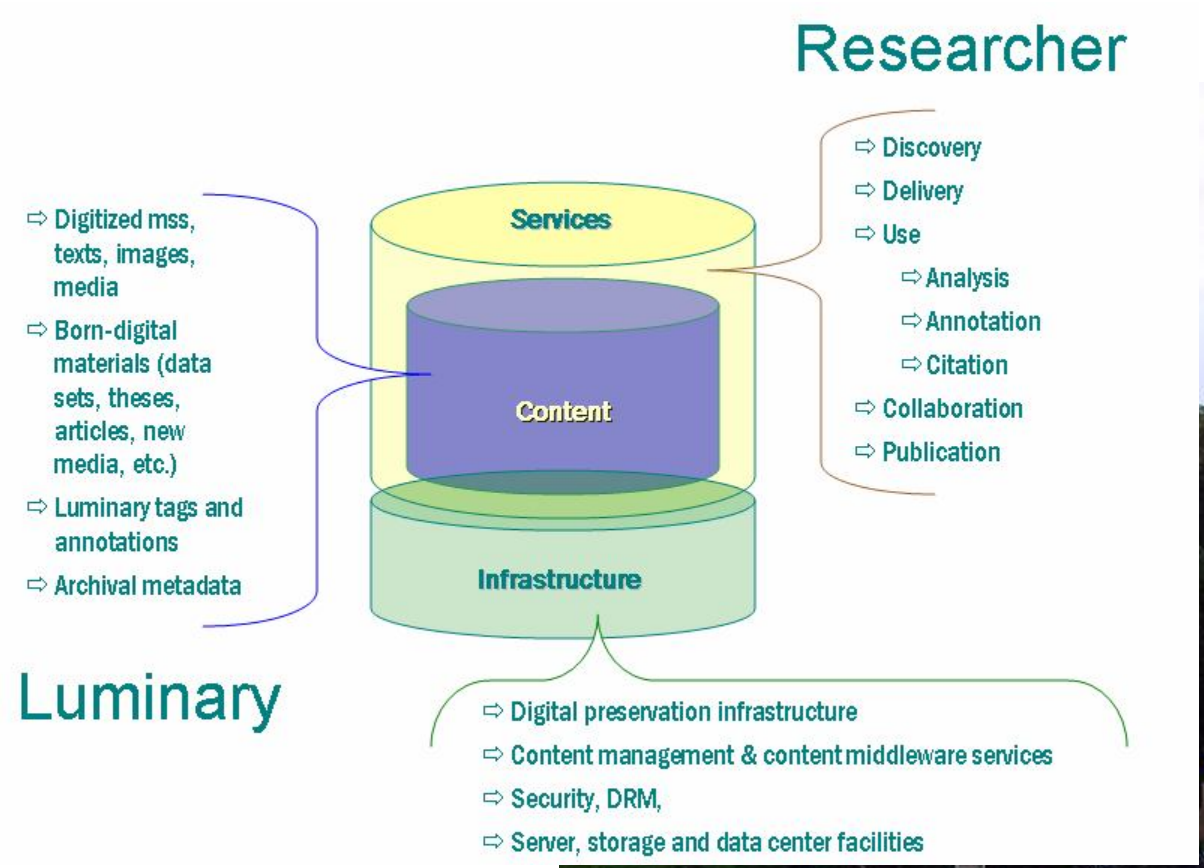
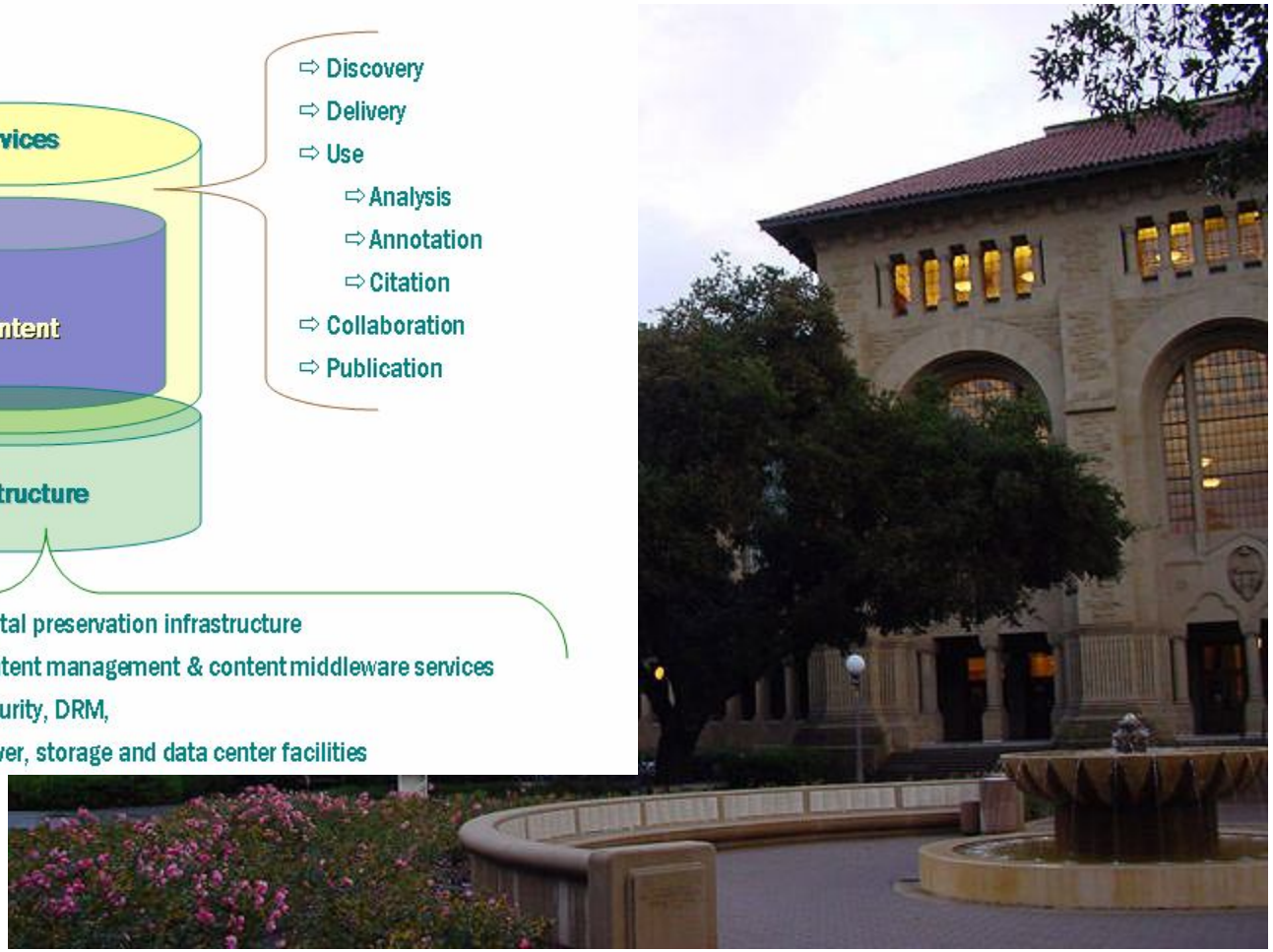
Self Archiving Legacy Toolkit

Computer-assisted Semantic Annotation of Scientific Life Works

Will Snow, Project Manager
will.snow@stanford.edu

Stanford's digital library



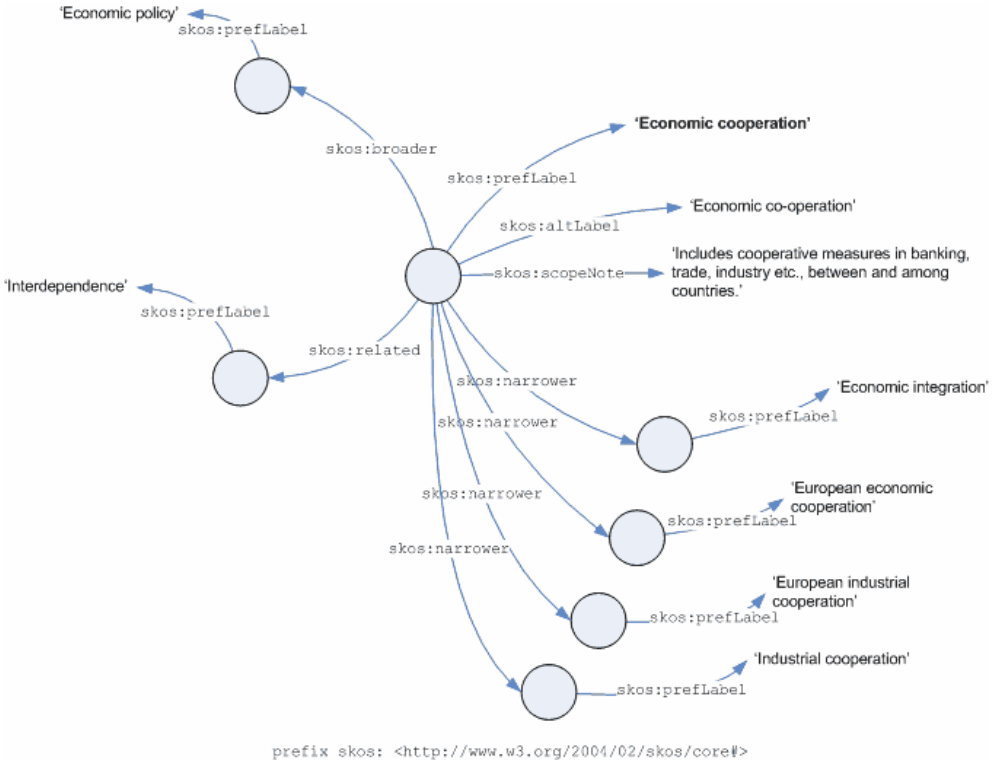


The problem

- Preservation and access
- Adding “context and content”

The opportunity

- Living Luminaries
- The Internet



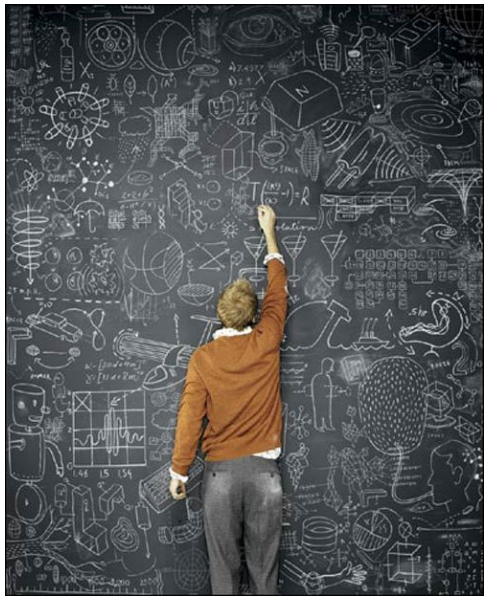


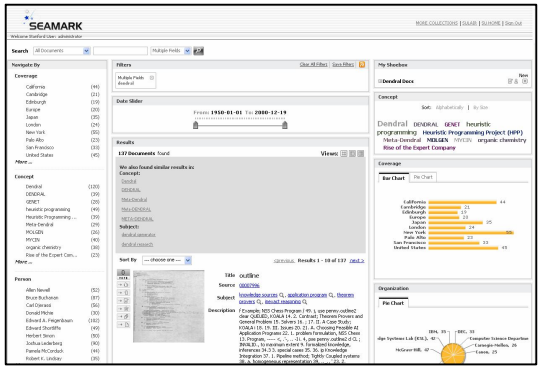
Image: New York Times Photograph from the Year in Ideas by Zachary Scott December 12, 2004.

Hybrid archive

- Discovery tools
- Content and context
- Collection web page
- Finding aid
- Electronic archive
- Physical archive

The SALT project

- Next-Generation Discovery investigation
- Public Bio Site
- Luminary Toolkit
- Self Archiving workflow
- Adding Collections

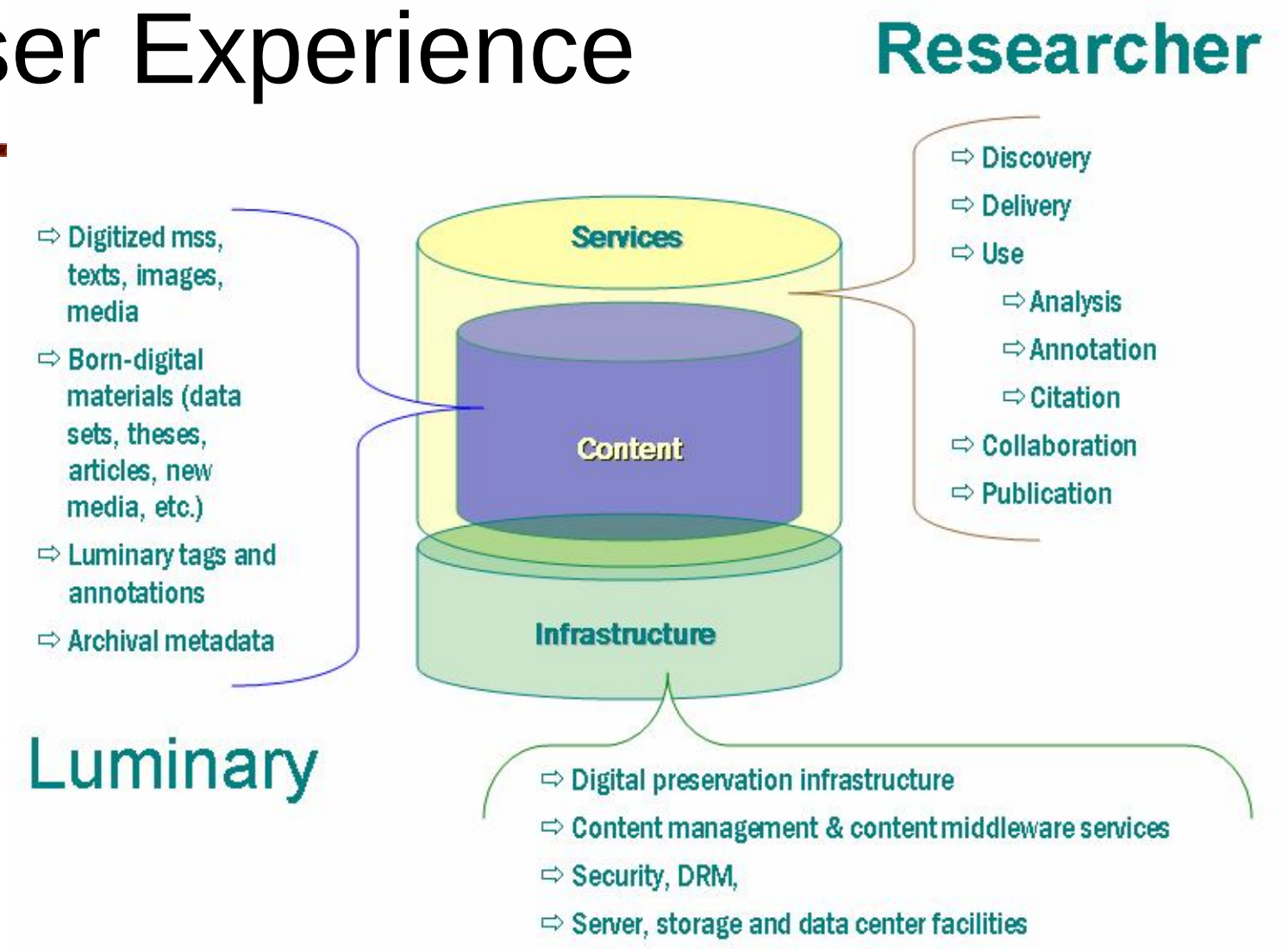


Navigational Search (Siderean)

Public Bio Site (Custom)

Luminary Toolkit (Drupal)

User Experience



Next Generation Discovery

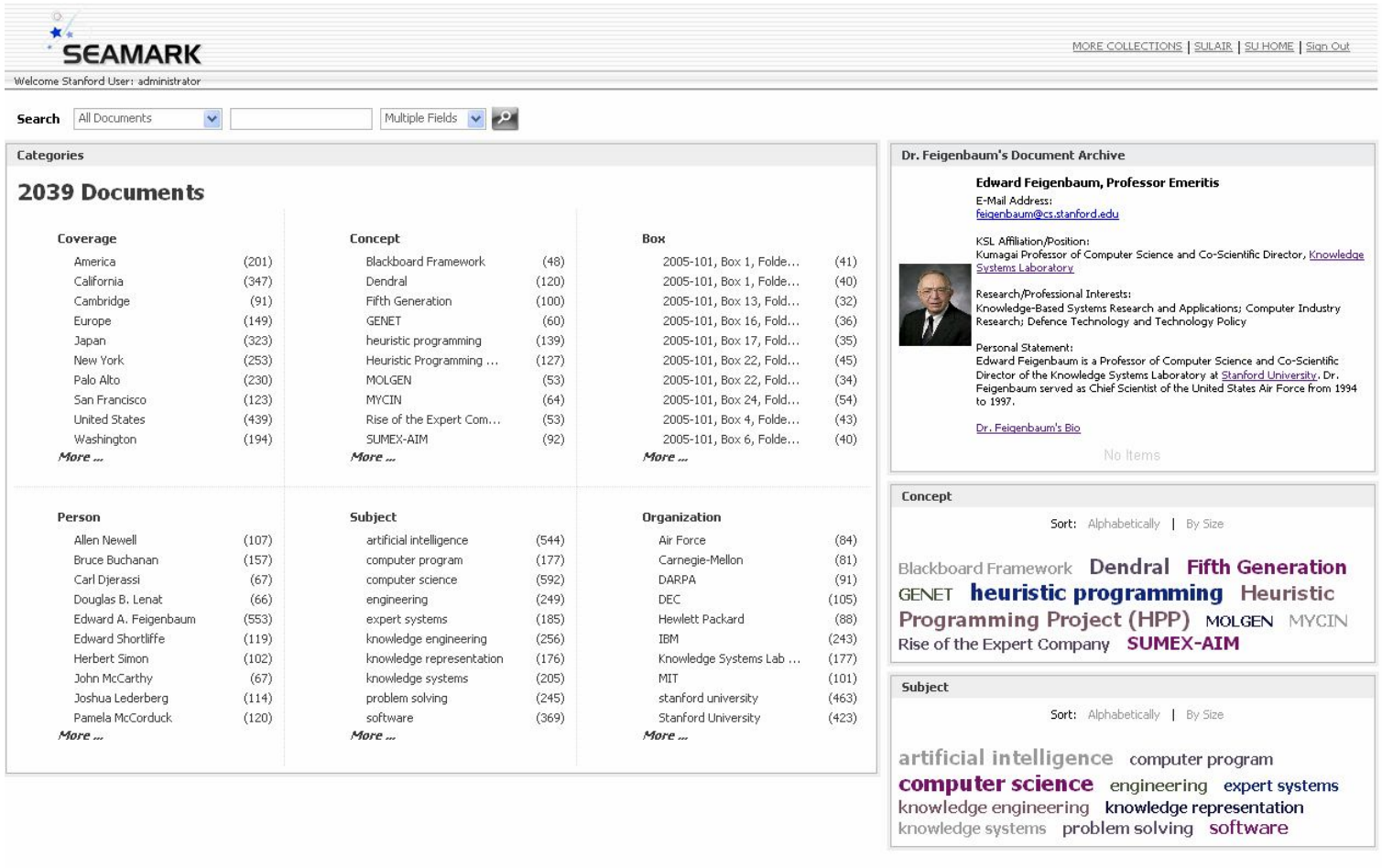
1) Aggregate content and data from everywhere

2) Automatically extract metadata to provide context and build relationships

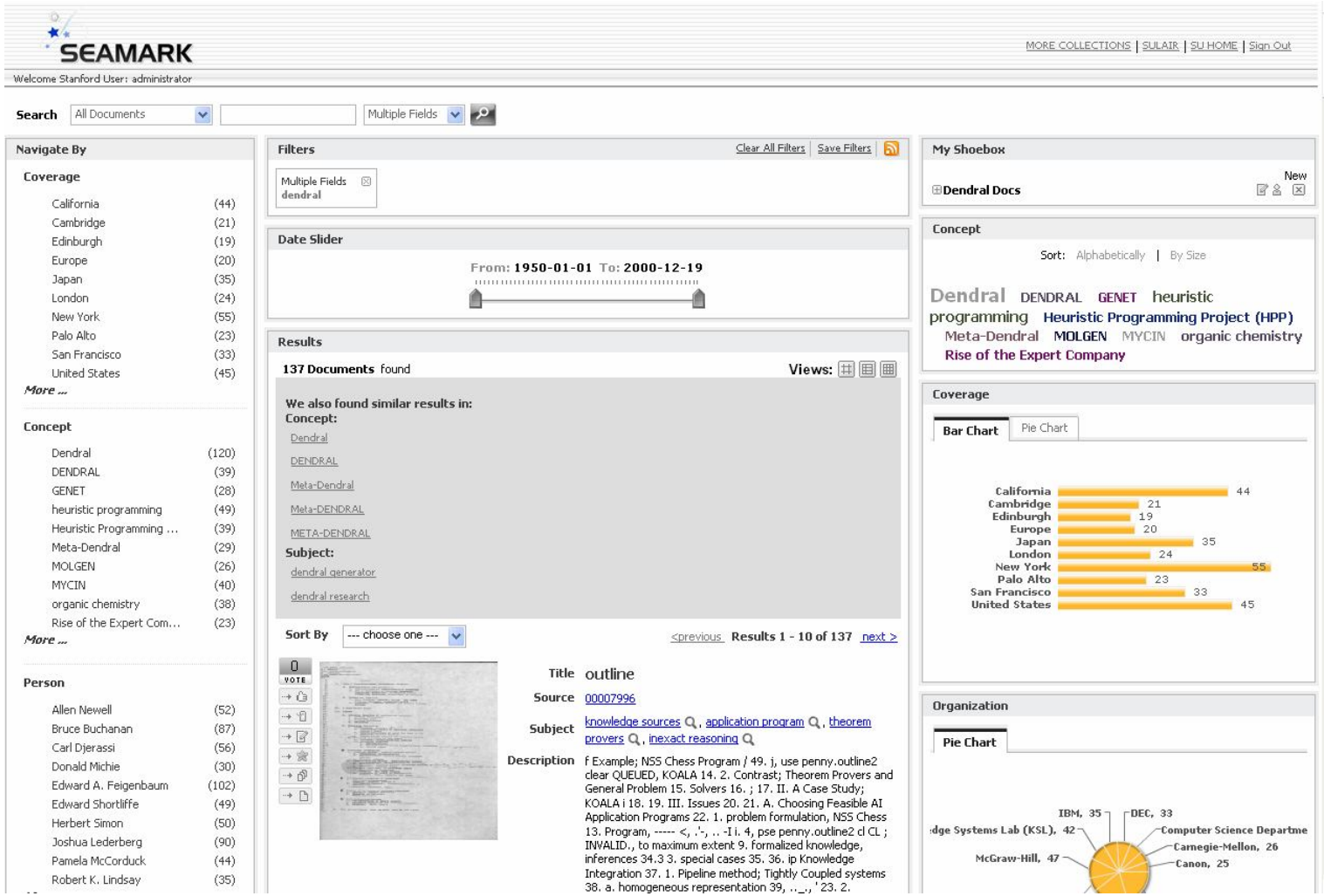
3) Provide people with Web-based social navigation experiences that allow them to participate in discovery

4) Deliver feeds for sharing discoveries

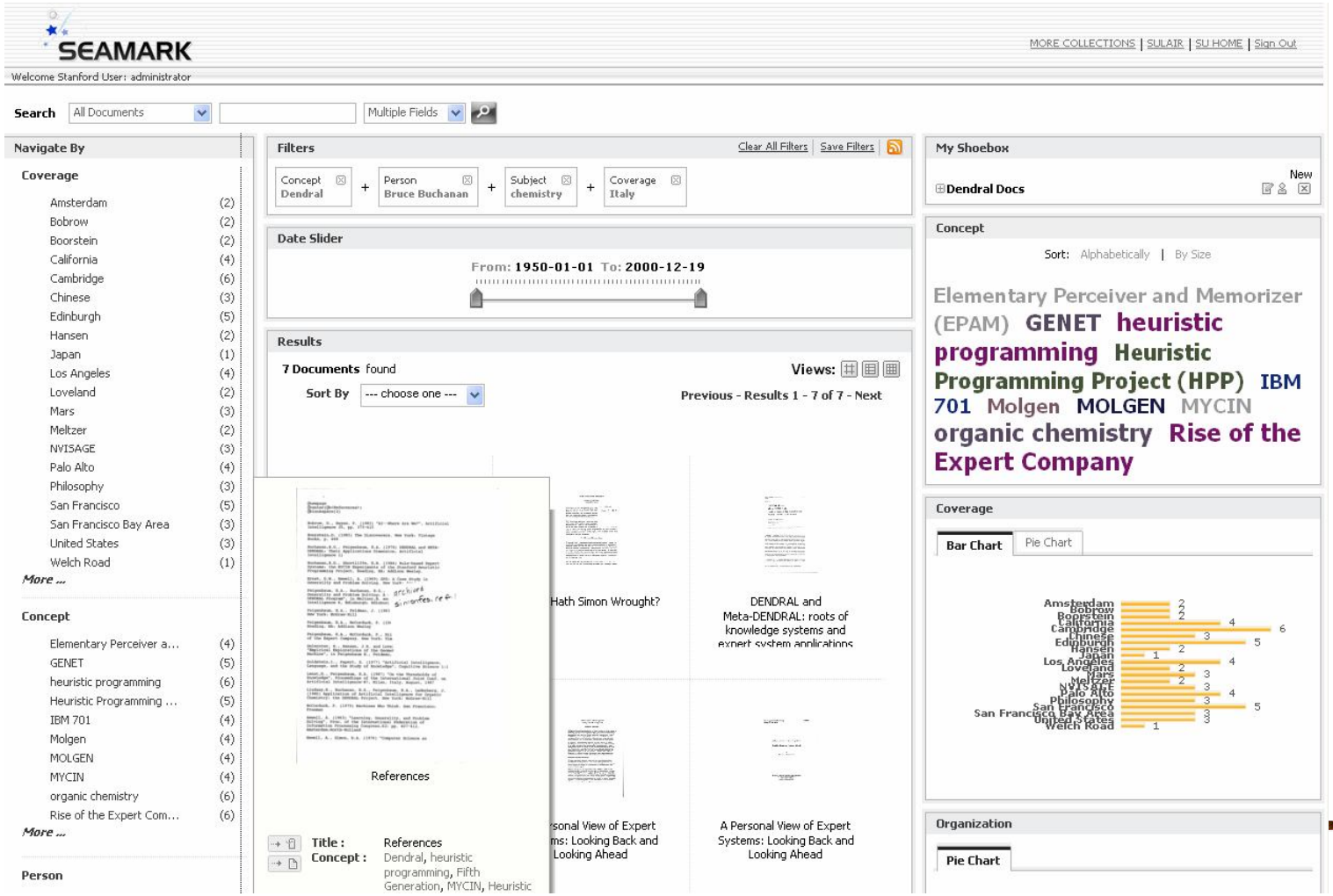
Demo: Stanford and Siderean



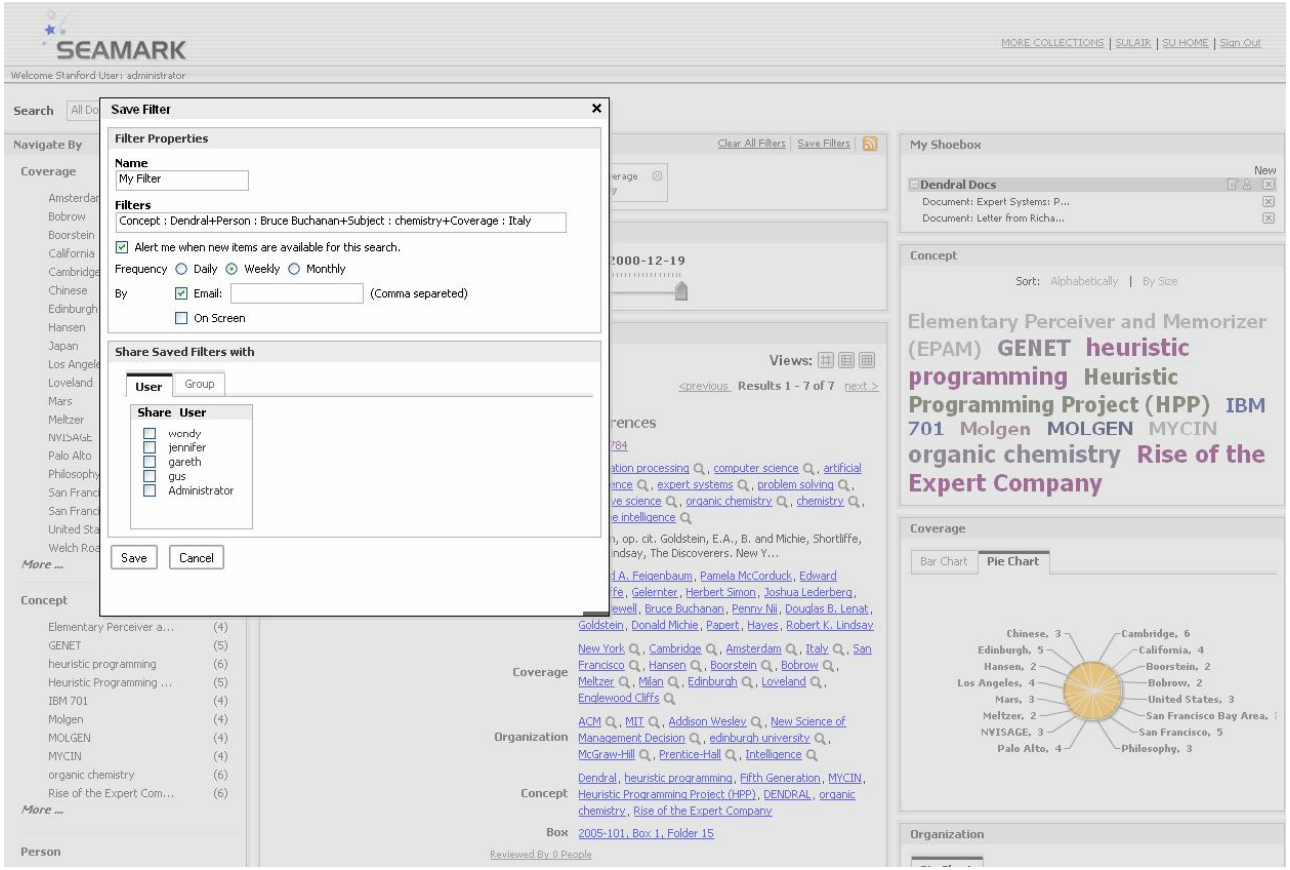
Text search


SEAMARK
MORE COLLECTIONS | SULAIR | SU HOME | Sign Out
Welcome Stanford User: administrator
Search
All Documents
Multiple Fields
Navigate By
Coverage
California (44)
Cambridge (21)
Edinburgh (19)
Europe (20)
Japan (35)
London (24)
New York (55)
Palo Alto (23)
San Francisco (33)
United States (45)
More ...
Concept
Dendral (120)
DENDRAL (39)
GENET (28)
heuristic programming (49)
Heuristic Programming ... (39)
Meta-Dendral (29)
MOLGEN (26)
MYCIN (40)
organic chemistry (38)
Rise of the Expert Com... (23)
More ...
Person
Allen Newell (52)
Bruce Buchanan (87)
Carl Djerassi (56)
Donald Michie (30)
Edward A. Feigenbaum (102)
Edward Shortliffe (49)
Herbert Simon (50)
Joshua Lederberg (90)
Pamela McCorduck (44)
Robert K. Lindsay (35)
Filters
Clear All Filters | Save Filters
Multiple Fields
dendral
Date Slider
From: 1950-01-01 To: 2000-12-19
Results
137 Documents found
Views:
We also found similar results in:
Concept:
Dendral
DENDRAL
Meta-Dendral
Meta-DENDRAL
META-DENDRAL
Subject:
dendral generator
dendral research
Sort By
--- choose one ---
<previous Results 1 - 10 of 137 next >
VOTE
Title outline
Source 00007996
Subject knowledge sources, application program, theorem provers, inexact reasoning
Description f Example; NSS Chess Program / 49. j, use penny.outline2 clear QUEUED, KOALA 14. 2. Contrast; Theorem Provers and General Problem 15. Solvers 16. ; 17. II. A Case Study; KOALA i 18. 19. III. Issues 20. 21. A. Choosing Feasible AI Application Programs 22. 1. problem formulation, NSS Chess 13. Program, ----- <, .'-, .. -I i. 4, pse penny.outline2 cl CL ; INVALID., to maximum extent 9. formalized knowledge, inferences 34.3 3. special cases 35. 36. ip Knowledge Integration 37. 1. Pipeline method; Tightly Coupled systems 38. a. homogeneous representation 39, .._, ' 23. 2.
My Shoebox
New
Dendral Docs
Concept
Sort: Alphabetically | By Size
Dendral DENDRAL GENET heuristic programming Heuristic Programming Project (HPP) Meta-Dendral MOLGEN MYCIN organic chemistry Rise of the Expert Company
Coverage
Bar Chart
Pie Chart
California 44
Cambridge 21
Edinburgh 19
Europe 20
Japan 35
London 24
New York 55
Palo Alto 23
San Francisco 33
United States 45
Organization
Pie Chart
IBM, 35
DEC, 33
dge Systems Lab (KSL), 42
Computer Science Departme
Carnegie-Mellon, 26
McGraw-Hill, 47
Canon, 25

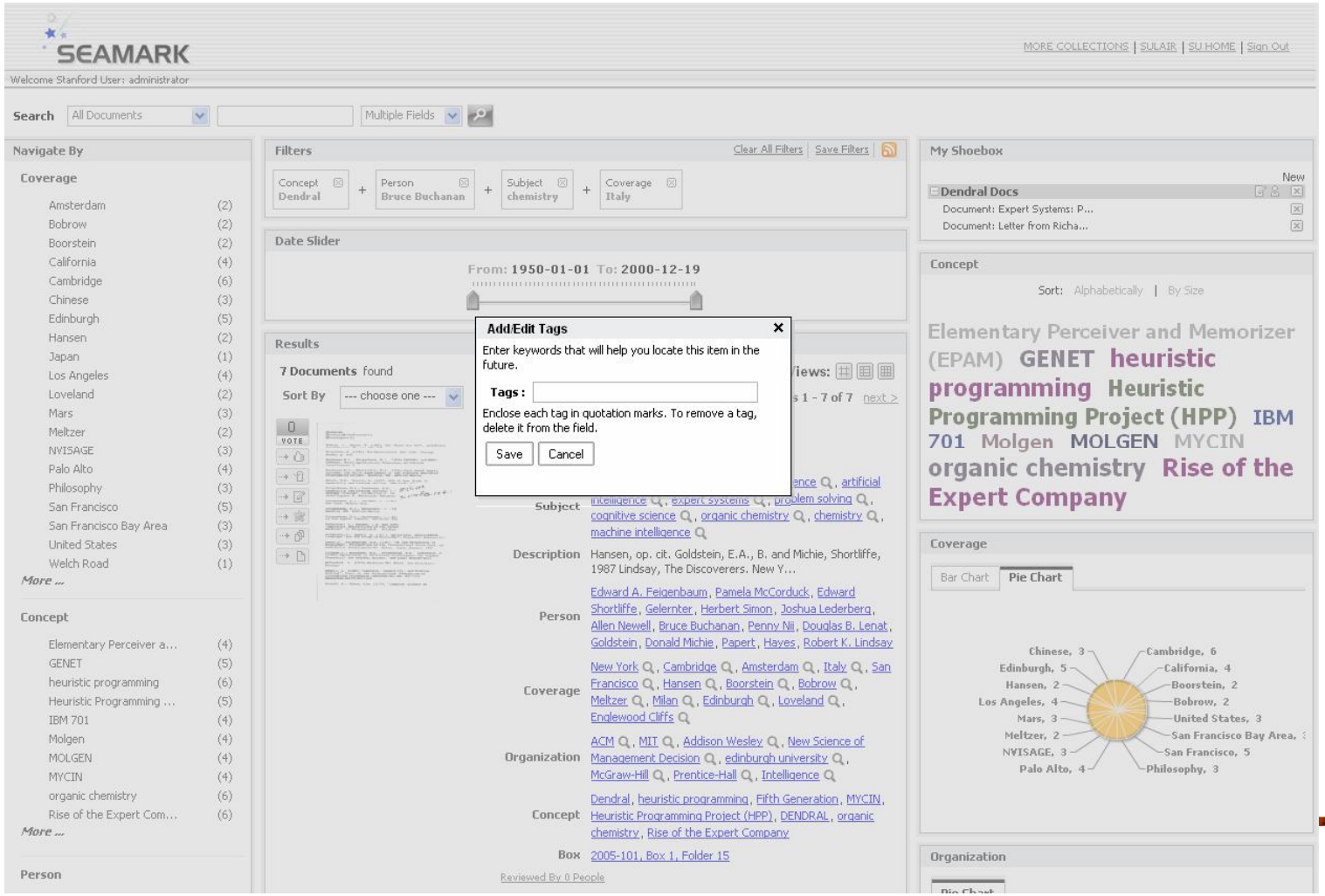
Filter, tile


SEAMARK
MORE COLLECTIONS | SULAIR | SU HOME | Sign Out
Welcome Stanford User: administrator
Search
All Documents
Multiple Fields
Navigate By
Coverage
Amsterdam (2)
Bobrow (2)
Boorstein (2)
California (4)
Cambridge (6)
Chinese (3)
Edinburgh (5)
Hansen (2)
Japan (1)
Los Angeles (4)
Loveland (2)
Mars (3)
Meltzer (2)
NVISAGE (3)
Palo Alto (4)
Philosophy (3)
San Francisco (5)
San Francisco Bay Area (3)
United States (3)
Welch Road (1)
More ...
Concept
Elementary Perceiver a... (4)
GENET (5)
heuristic programming (6)
Heuristic Programming ... (5)
IBM 701 (4)
Molgen (4)
MOLGEN (4)
MYCIN (4)
organic chemistry (6)
Rise of the Expert Com... (6)
More ...
Person
Filters
Clear All Filters | Save Filters
Concept Dendral
Person Bruce Buchanan
Subject chemistry
Coverage Italy
Date Slider
From: 1950-01-01 To: 2000-12-19
Results
7 Documents found
Views:
Sort By --- choose one ---
Previous - Results 1 - 7 of 7 - Next
References
Hath Simon Wrought?
DENDRAL and Meta-DENDRAL: roots of knowledge systems and
A Personal View of Expert Systems: Looking Back and Looking Ahead
Title : References
Concept : Dendral, heuristic programming, Fifth Generation, MYCIN, Heuristic
My Shoebox
Dendral Docs
New
Concept
Sort: Alphabetically | By Size
Elementary Perceiver and Memorizer (EPAM) GENET heuristic programming Heuristic Programming Project (HPP) IBM 701 Molgen MOLGEN MYCIN organic chemistry Rise of the Expert Company
Coverage
Bar Chart
Pie Chart
Amsterdam 2
Bobrow 2
Boorstein 2
California 4
Cambridge 6
Chinese 3
Edinburgh 5
Hansen 2
Japan 1
Los Angeles 4
Loveland 2
Mars 3
Meltzer 2
NVISAGE 3
Palo Alto 4
Philosophy 3
San Francisco 5
San Francisco Bay Area 3
United States 3
Welch Road 1
Organization
Pie Chart

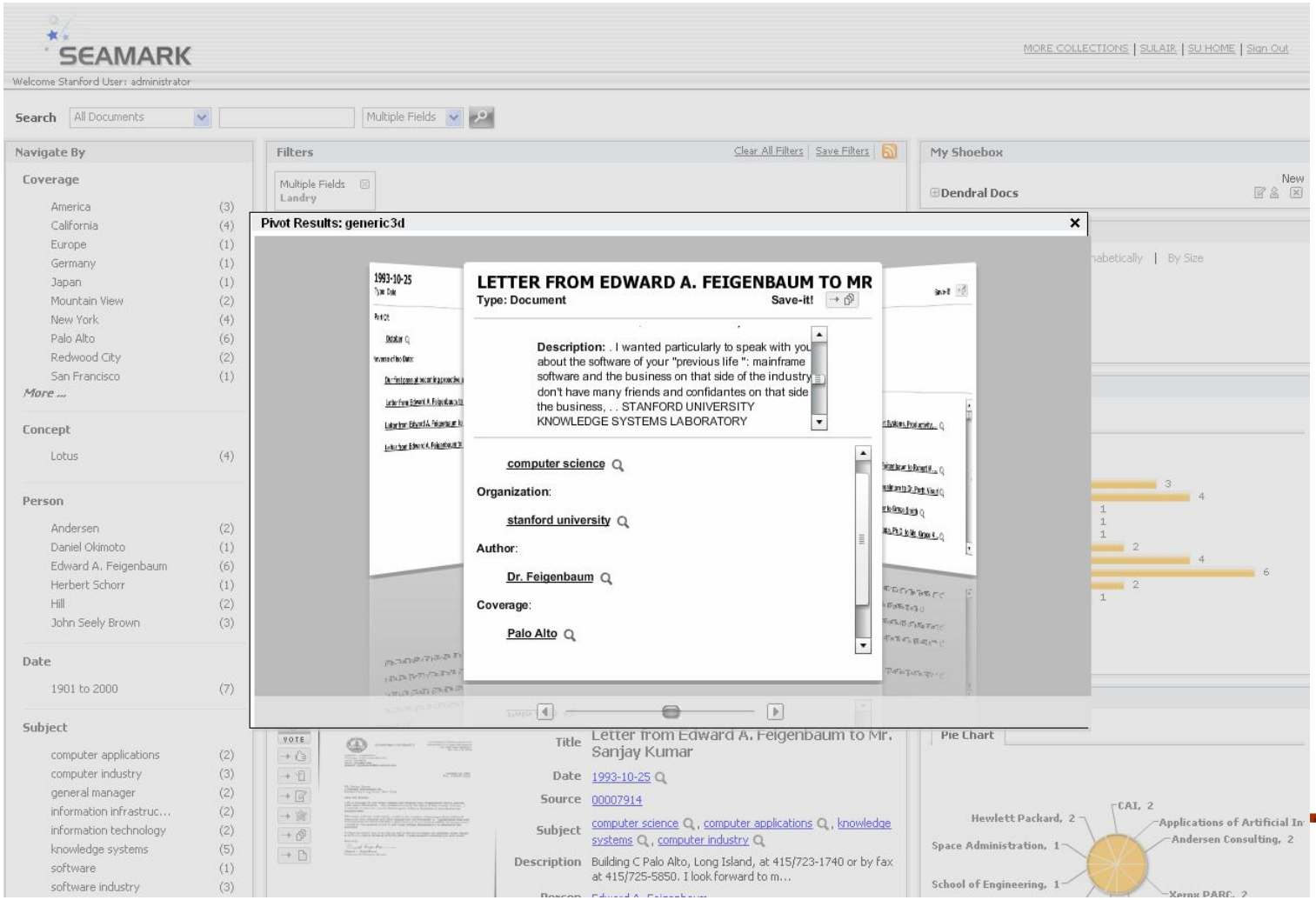
Personalize, save, alerts



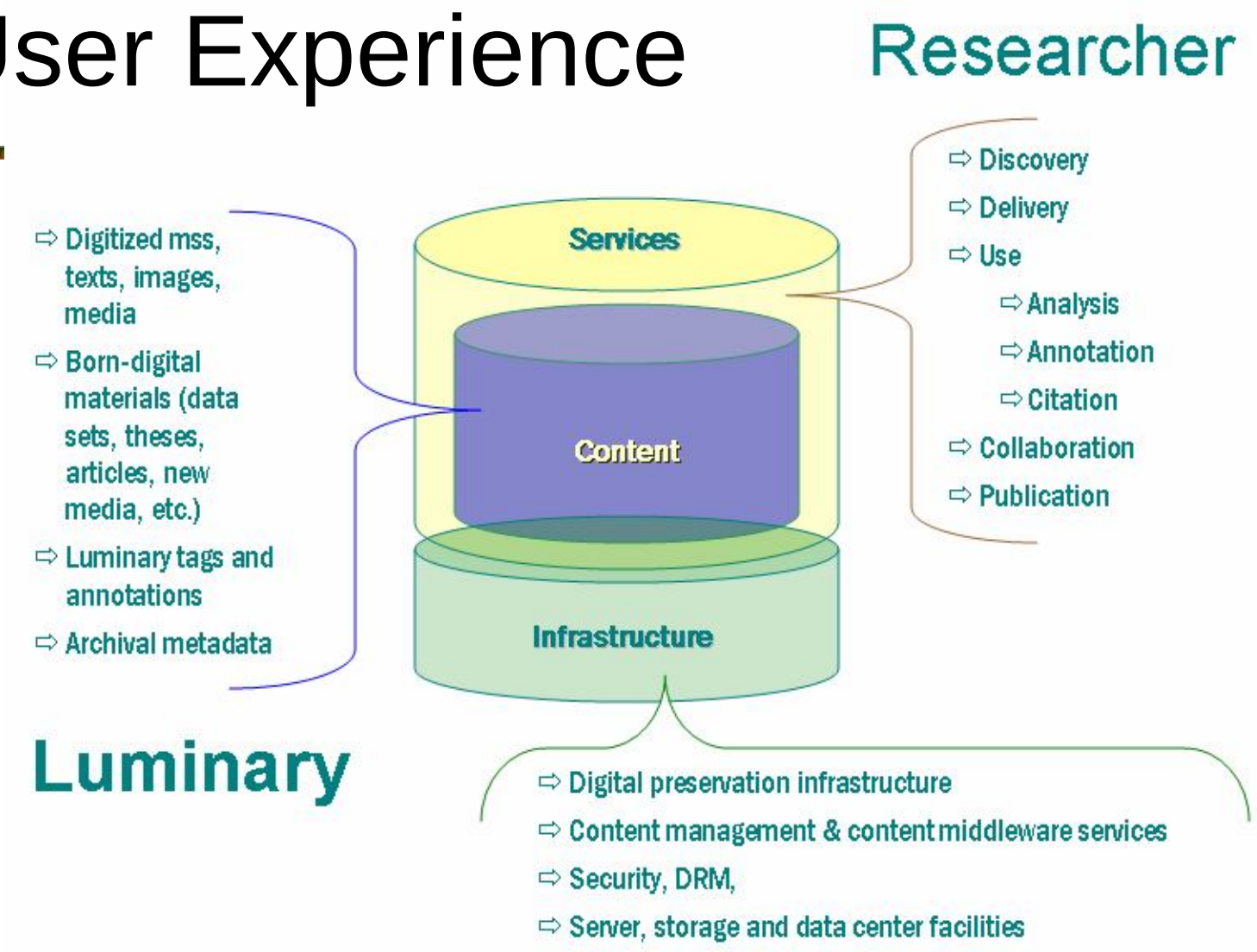
Tag, rate, share



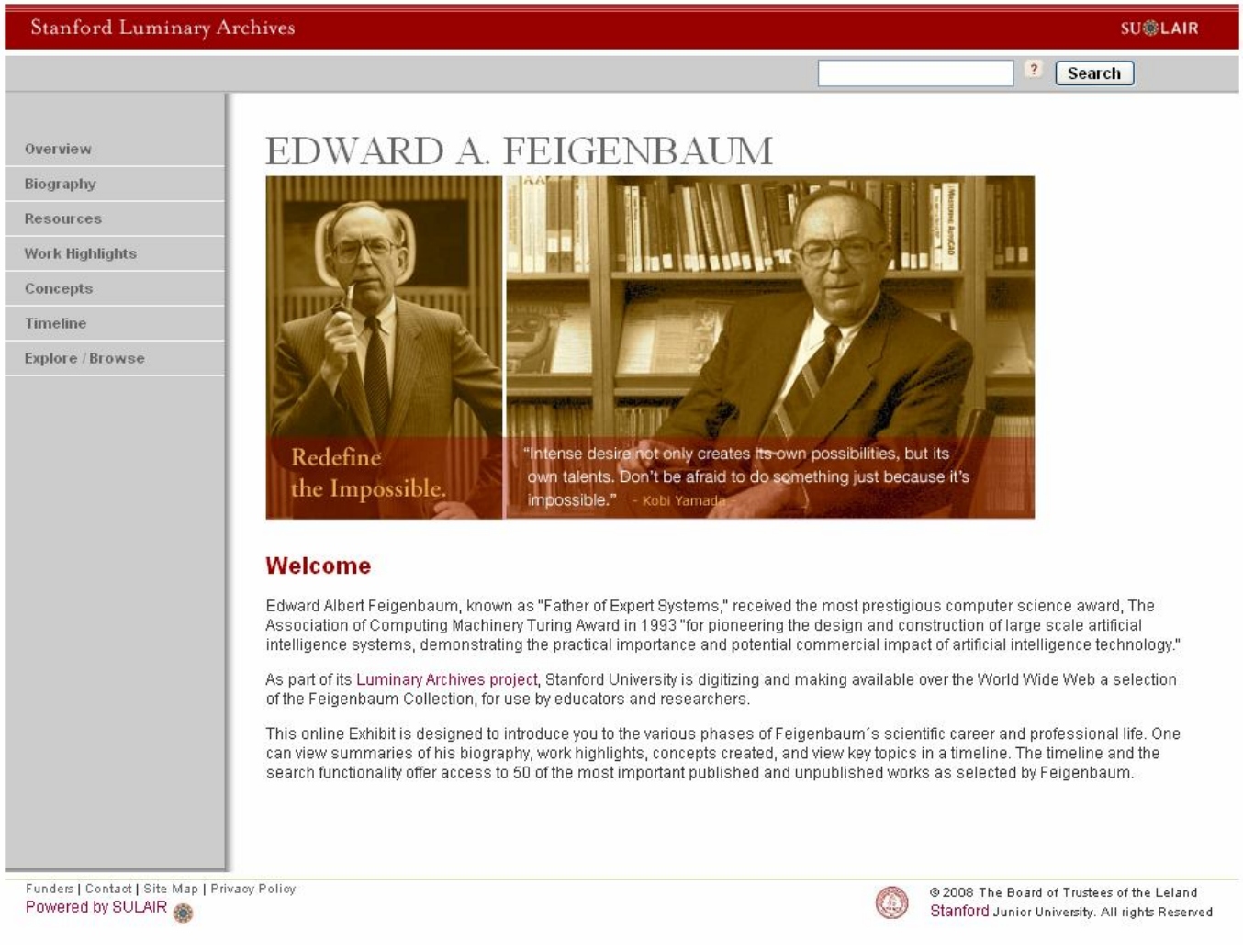
Navigate the Graph



User Experience



Public bio site



Biography

Stanford Luminary Archives

SULAIR

Search

- Overview
- Biography
- Resources
- Work Highlights
- Concepts
- Timeline
- Explore / Browse

Feigenbaum's Biography

Edward Albert Feigenbaum joined Stanford's faculty in 1965 as Associate Professor of Computer Science. That same year, he was appointed director of Stanford's Computation Center, overseeing Stanford's considerable computer facilities. He also served as Principal Investigator of the Heuristic Programming Project (HPP), later known as the Knowledge Systems Laboratory (KSL). Today Feigenbaum is co-director emeritus of KSL. KSL is a hub for advanced research in knowledge-based computer programs (expert systems) with applications in medicine and engineering. Feigenbaum was appointed Professor of Computer Science at Stanford in 1969. In 1995, he became the Kumagi Professor of Computer Science, a position he has held in emeritus since his retirement in 2001.

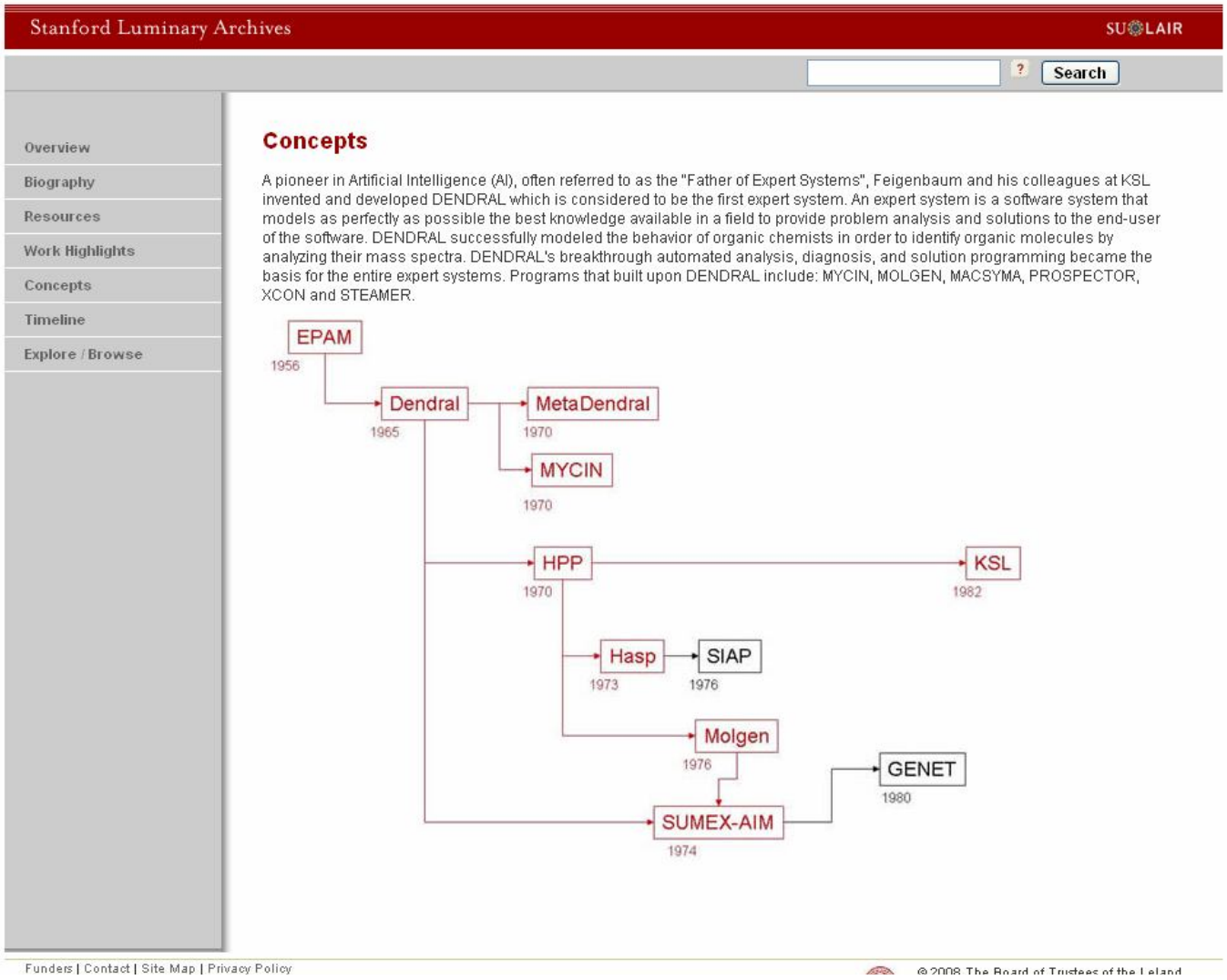
Feigenbaum began his academic career in 1960 at the University of California, Berkeley with a research appointment at the Center for Research in Management Science. He was appointed Associate Professor at Berkeley's School of Business Administration in 1964 before joining the newly launched Stanford's Artificial Intelligence Laboratory (SAIL) in 1965. During his more than four distinguished decades at Stanford in addition to his groundbreaking work at KSL, Feigenbaum has been Director of Stanford's Computation Center (1965-1968), Professor (by courtesy) to the Department of Psychology (1976-83), Chairman of the Computer Science Department (1976-81), Principal Investigator and then co-Principal Investigator of the SUMEX-AIM Project, a national computer resource for application of artificial intelligence to medicine and biology established by the National Institutes of Health (NIH) (1978-1992), and Founder and Co-Director of the Stanford Software Industry Project (1993-1998). Additionally, Feigenbaum has served as Chief Scientist of the United States Air Force (1994-1997) and as Senior Scientist to the United States Air Force Office of Scientific Research (2000-2001).

A pioneer in Artificial Intelligence (AI), often referred to as the "Father of Expert Systems", Feigenbaum and his colleagues at KSL invented and developed DENDRAL which is considered to be the first expert system. An expert system is a software system that models as perfectly as possible the best knowledge available in a field to provide problem analysis and solutions to the end-user of the software. DENDRAL successfully modeled the behavior of organic chemists in order to identify organic molecules by analyzing their mass spectra. DENDRAL's breakthrough automated analysis, diagnosis, and solution programming became the basis for the entire expert systems. Programs that built upon DENDRAL include: MYCIN, MOLGEN, MACSYMA, PROSPECTOR, XCON and STEAMER.

Feigenbaum has been instrumental in transferring expert systems technology to industry as a co-founder of three start-up companies in applied AI. He has served on the boards or advisory councils of [seven] companies and has founded or has been affiliated with dozens of industry, scientific and government organizations. Author or co-author of [ten- confirm] books as well as [X-number] papers, Feigenbaum has been the recipient of dozens of honors including, honorary degrees, lectureships, fellowships and awards, including the ACM's prestigious A.M. Turing Award.

Feigenbaum received a B.S. in Electrical Engineering at Carnegie Institute of Technology in 1956 and his Ph.D. in 1959 from the Graduate School of Industrial Administration, Carnegie Institute of Technology (now Carnegie-Mellon University).

Concepts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Resources
Work Highlights
Concepts
Timeline
Explore / Browse
Concepts
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EPAM
1956
Dendral
1965
MetaDendral
1970
MYCIN
1970
HPP
1970
KSL
1982
Hasp
1973
SIAP
1976
Molgen
1976
GENET
1980
SUMEX-AIM
1974
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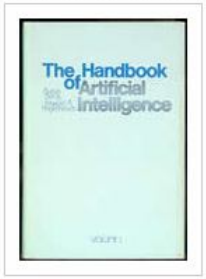
Timeline

a microcomputer-controlled laser printer system led to the founding of Imagen Corporation by a Stanford post-doctoral researcher. In 1981, a SUMEX-AIM researcher developed the first multiple-protocol router. A version of this router was later licensed by Stanford start-up company, Cisco Systems in 1986. [20]



1981-1989

The Handbook of Artificial Intelligence

Now in it's fifth edition, The Handbook of Artificial Intelligence describes the early stars of Artificial Intelligence. First published by Stanford's Heuris Tech Press in 1981, the AI Handbook was co-edited by Feigenbaum, Avron Barr and Paul Cohen. [21]

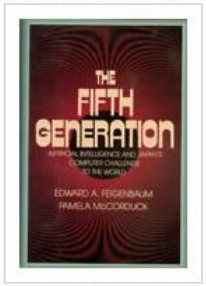
Handbook of AI |

1981

Knowledge Systems Laboratory

In 1982, Feigenbaum founded Stanford's Knowledge Systems Laboratory (KSL) along with colleague Bruce Buchanan as a forum for research and publication of reports in the areas of expert systems across all disciplines. KSL has become a center for research and an information clearing house for knowledge-based systems. Since its inception, researchers have published hundreds of reports on the work they have done at KSL. Current research areas include: the semantic web, hybrid reasoning, knowledge aggregation and ontology engineering. [22]

KSL Reports ... | How Things Work ... |



1983

The Fifth Generation

In 1983, Feigenbaum and co-author Pamela McCorduck published a best-selling technical book that read like a novel, The Fifth Generation: Artificial Intelligence and Japan's Computer Challenge to the World. The Fifth Generation Computer Systems project (FGCS) began in 1982. A joint effort between Japan's Ministry of Trade and the Japanese electronics industry, FGCS was supposed to create a fifth generation computer to give the Japanese the technological and therefore the commercial advantage over the fourth generation computers running on microprocessors in the U.S. Even though FGCS did not deliver as planned, Feigenbaum's book captured the excitement surrounding the project and still provides an excellent historic perspective on the Computer industry in the early 80s. [23]

The Fifth Generation | Penninsula Times ... |

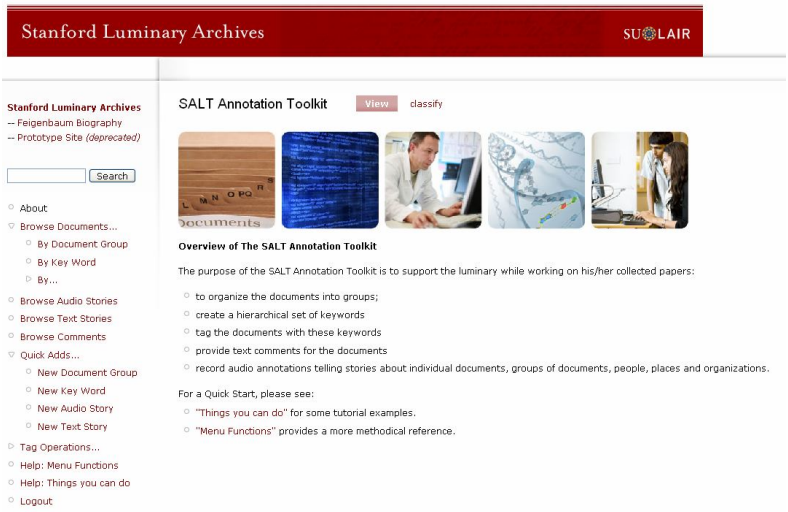
1981-1986

Start-Up Companies

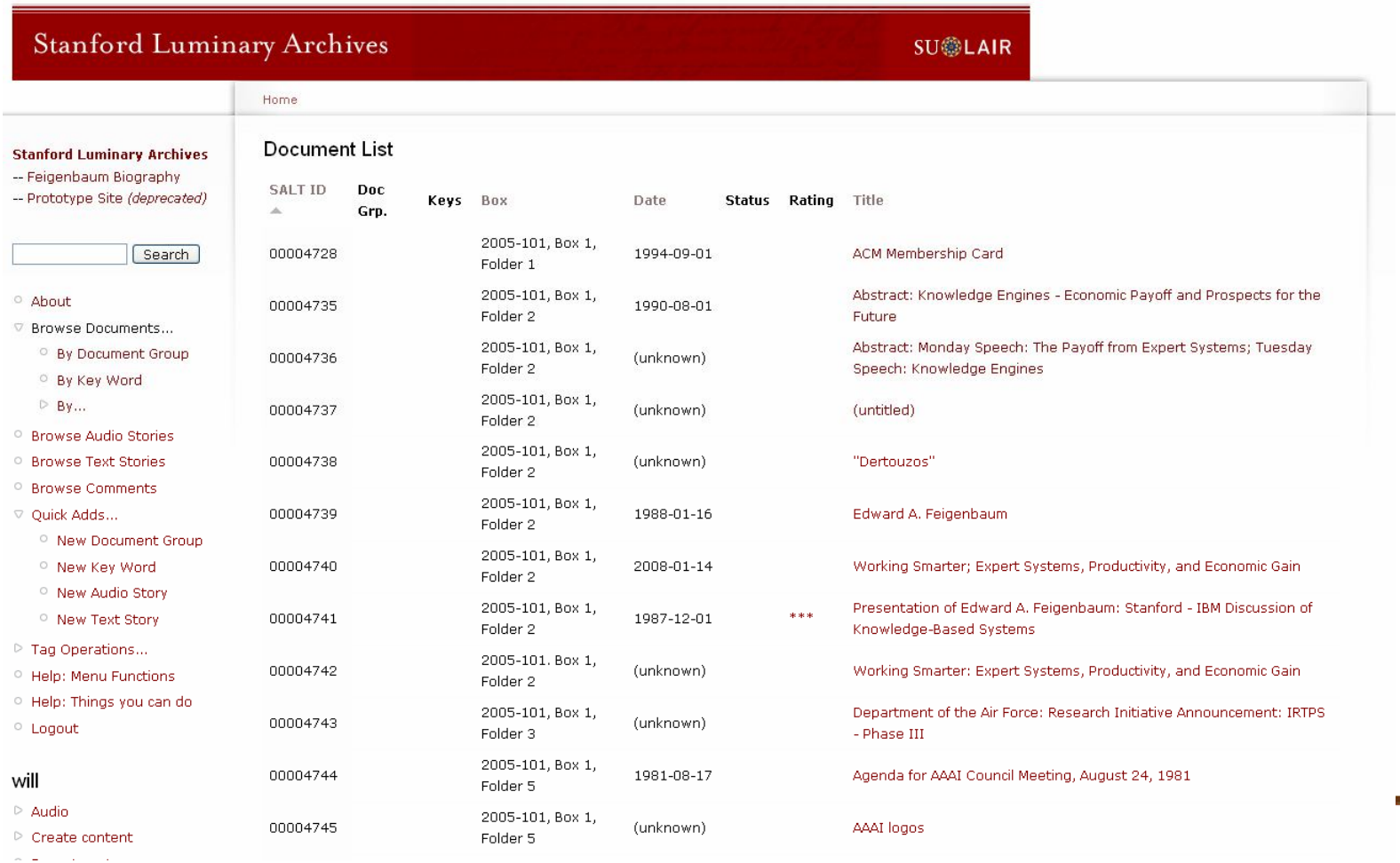
In September 1980, Feigenbaum founded IntelliGenetics, Inc. with Stanford Ph.D. Douglas Brutlag (now a professor of Biochemistry at Stanford), Stanford Medical Professor Laurence Kedes (now a professor of Medicine at UCLA), and Peter Friedland, Research Director of MOLGEN. IntelliGenetics' narrow focus -- to commercialize computer programs and applications for research in recombinant DNA

The Luminary Toolkit

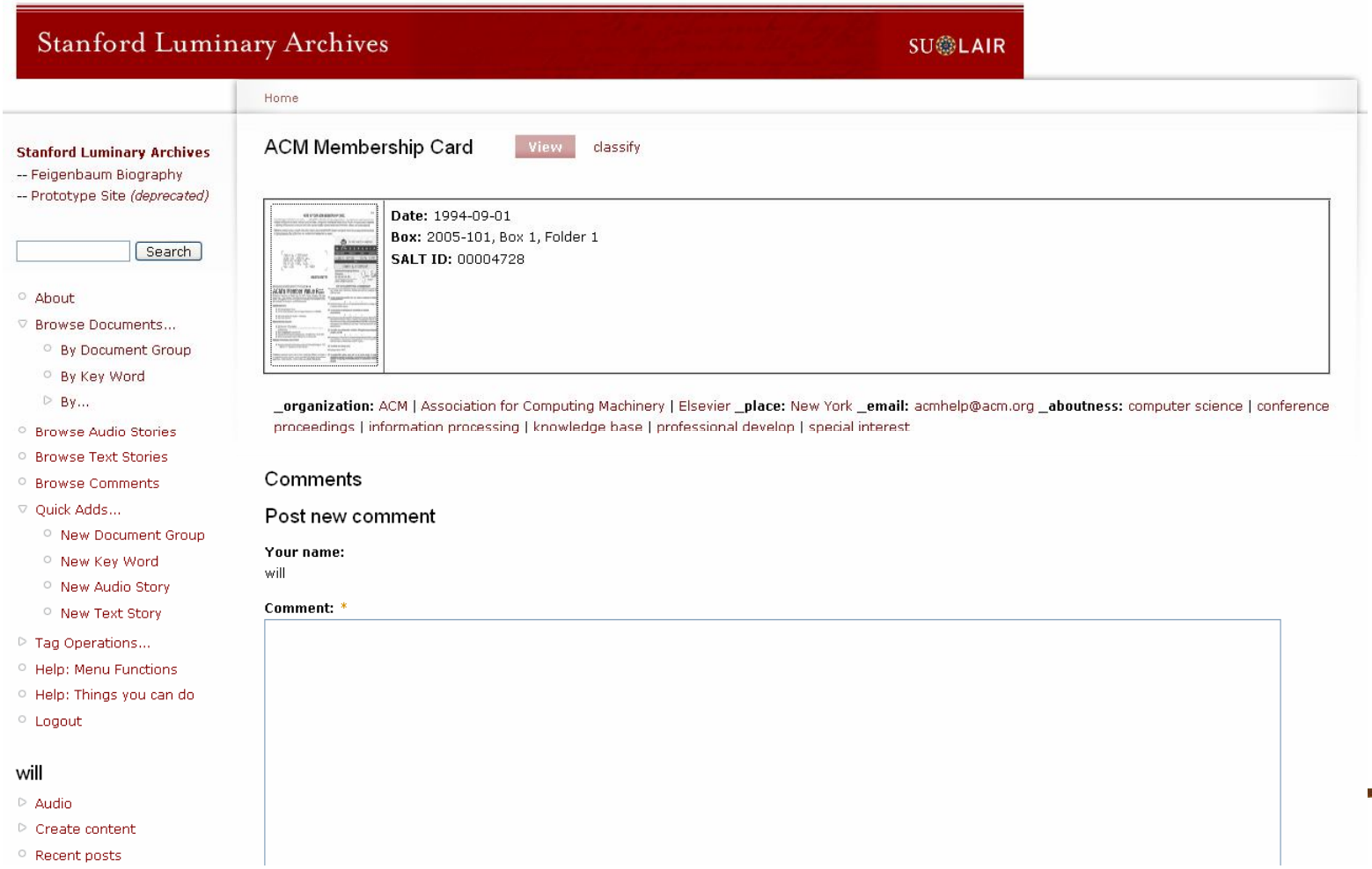
- View Docs: thumbs and metadata
- Add Keywords from extracted entities
- Add comments
- Group docs
- Synonyms
- Links



Provenance View

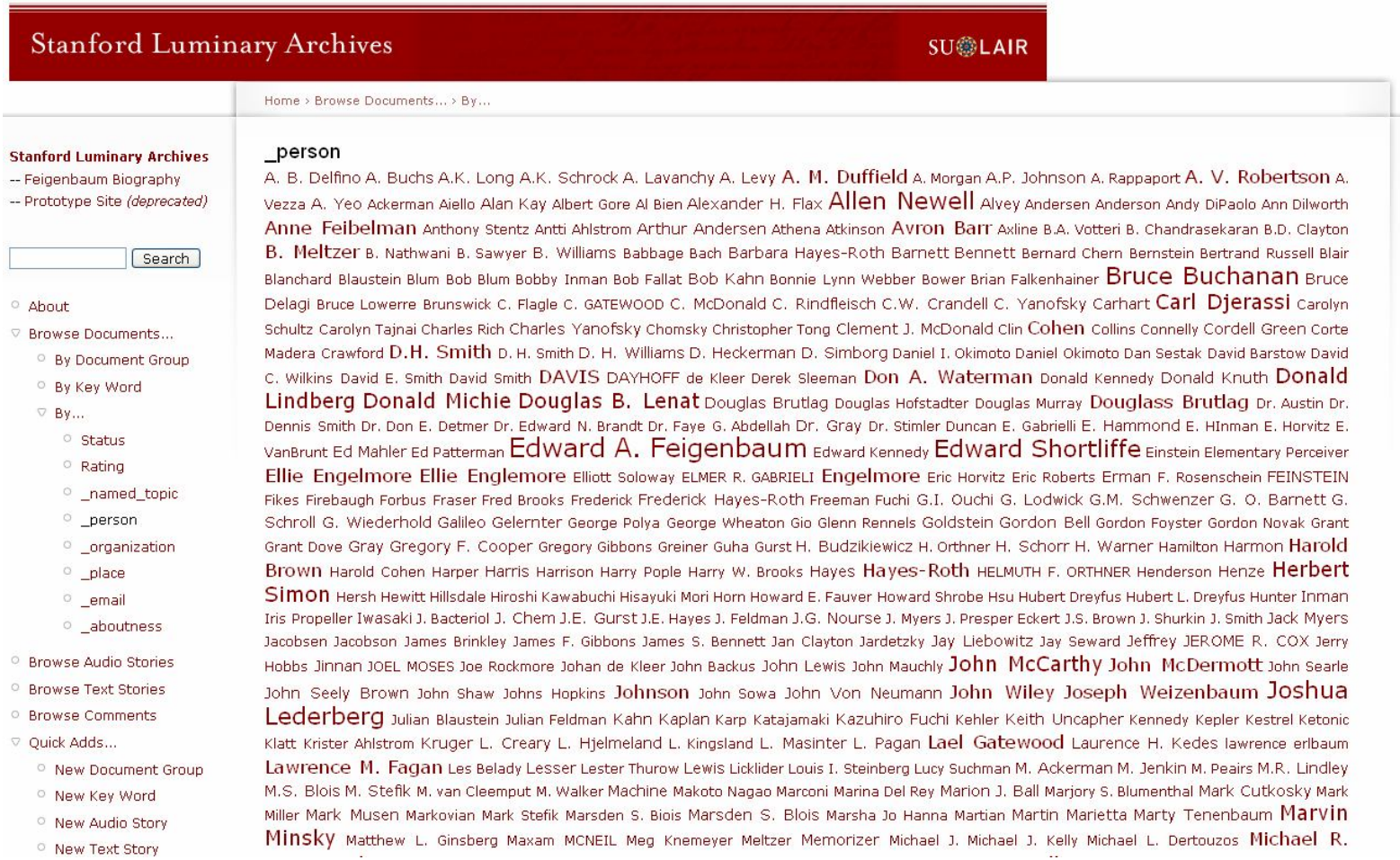


Document View



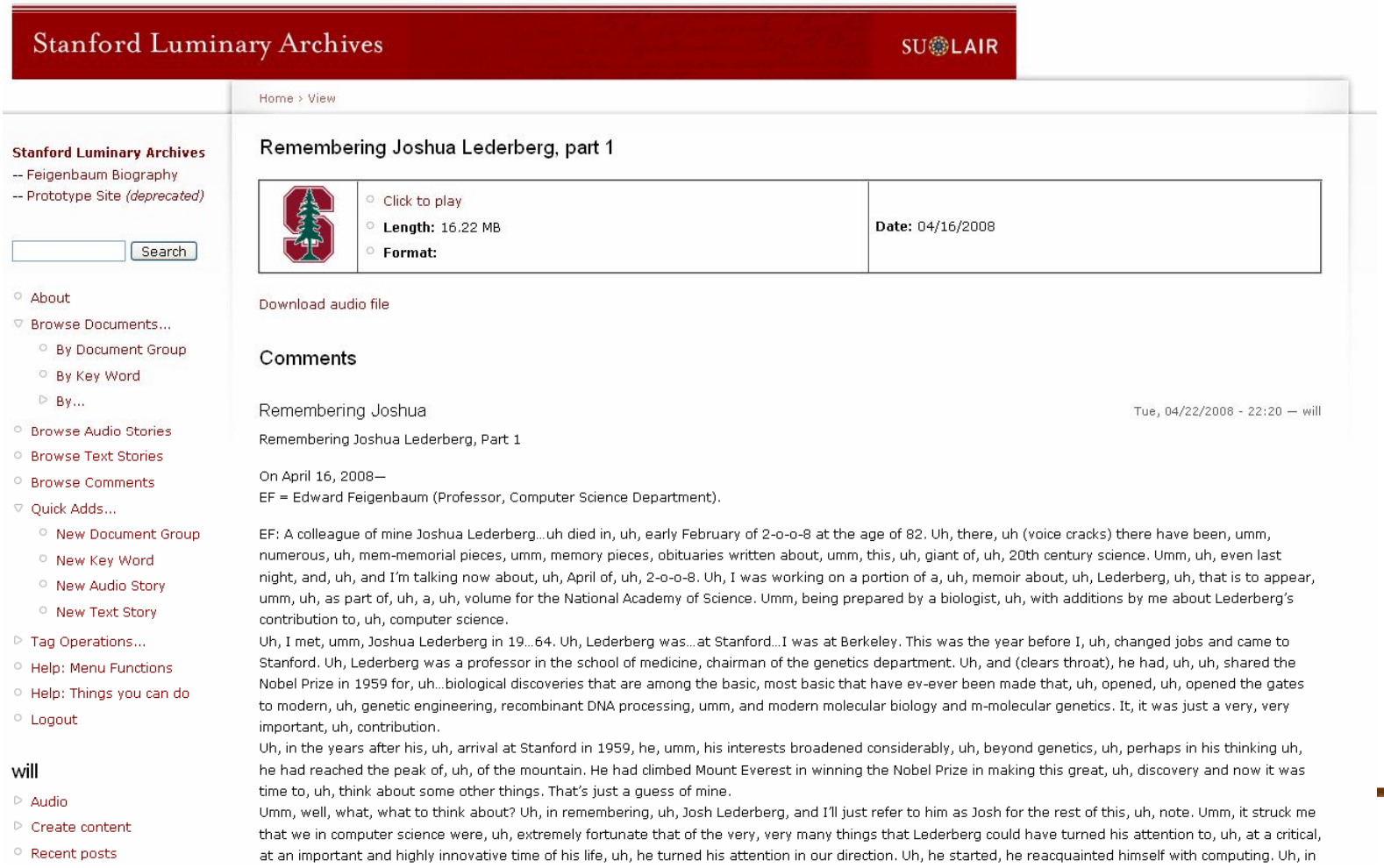
Named Topics

Person Entities



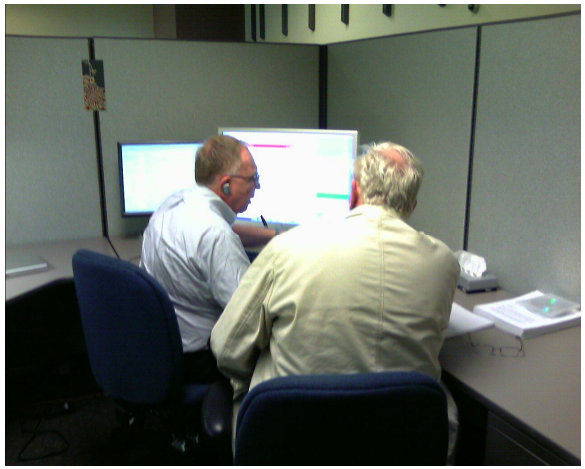
Text Annotations

Audio Annotations



Findings so far

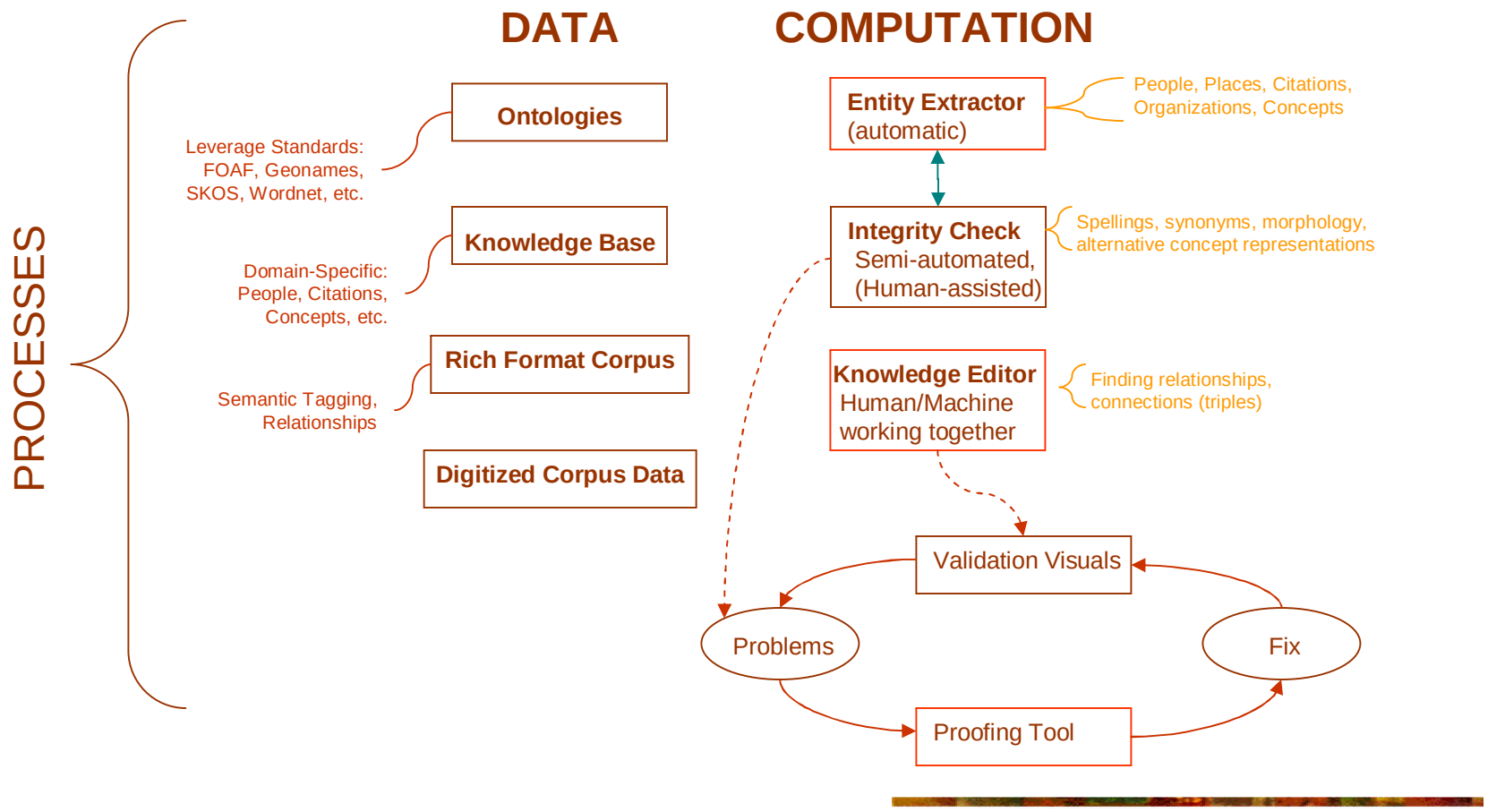
- From provenance view to tags
- Ratings
- Physical limitations
- Audio annotations
- Need for multitasking
- Need a timeline metaphor
- Grouping



Entity extraction on 2000 docs

Person	13,000	900
Place	5,000	1,000
Organizations	25,000	1,000
Aboutness	82,000	1,200
Email	600	600
Named Topic	200	200
	Algor: NEE	Algor: Custom

Vision for Workflow



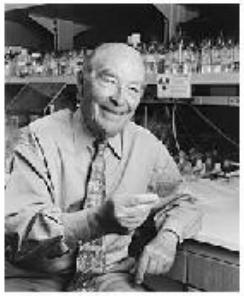
Self Archiving

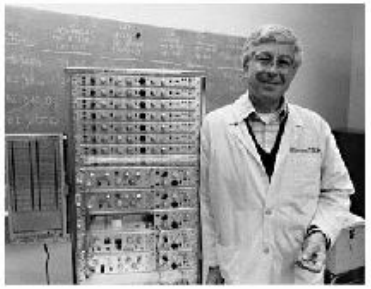
- Born digital
- Re-born digital

Stanford Luminary Archive

Stanford Luminary Archives

Text: A A A



Welcome to the Stanford Luminary Archives

The Stanford Luminary Archives is a multi-year initiative within Stanford University Libraries and Academic Information Resources (SULAIR) to enhance the University Archives' ability to capture, preserve, and add context to the life-work collections of eminent faculty and researchers, which are increasingly digital in their nature, and make them available via the Internet.

Seeking insight

- Navigational search for researchers
- Partnering in the semantic web space
- Luminary motivation
- Copyright issues
- Born-digital material
- Funding fit

Call to action

- For questions or next steps…

Self Archiving Legacy Toolkit

Computer-assisted Semantic Annotation of Scientific Life Works

Will Snow

will.snow@stanford.edu

doodle from http://accuracyandaesthetics.com