Leveraging a Collaborative Work Environment to Bootstrap Communities

by

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(v 2.01)

Abstract

Communities of practice and networked organizations have been emerging as promising organizational structures to tackle certain classes of problems (a lot of them, "wicked problems") that traditional hierarchical organizations have not been very successful with.

The speaker will draw upon live cases of some of the communities that his company has been supporting, to demonstrate how their "Collaborative Work Environment" service (inspired by Doug Engelbart's "bootstrap" paradigm) were able to co-evolve with these communities to arrive at a win-win outcome for all parties concerned.

Outline

- Key concepts at play
- Communities, Organizations & Policy
- Tamed vs. Wicked Problems
- Engelbart's "Bootstrap" vision and mission
- the CIM3 Collaborative Work Environment
- Cases of CoP's at work
- Reflections
- Reference

A Few Key Concepts at Play

- Ray Kurzweil's "Law of Time and Chaos"
- Horst Rittle's "Wicked Problems"
- Thomas Kuhn's "Paradigm Shift"
- Richard Dalton's "Nothing Replaces Anything"
- Donald Stokes' use-inspired basic research policy
- Bob Johansen's "Fishnet Organization"
- Jon Bosak's "OASIS TC Process"
- Doug Engelbart's "Bootstrapping"

State of the Future?
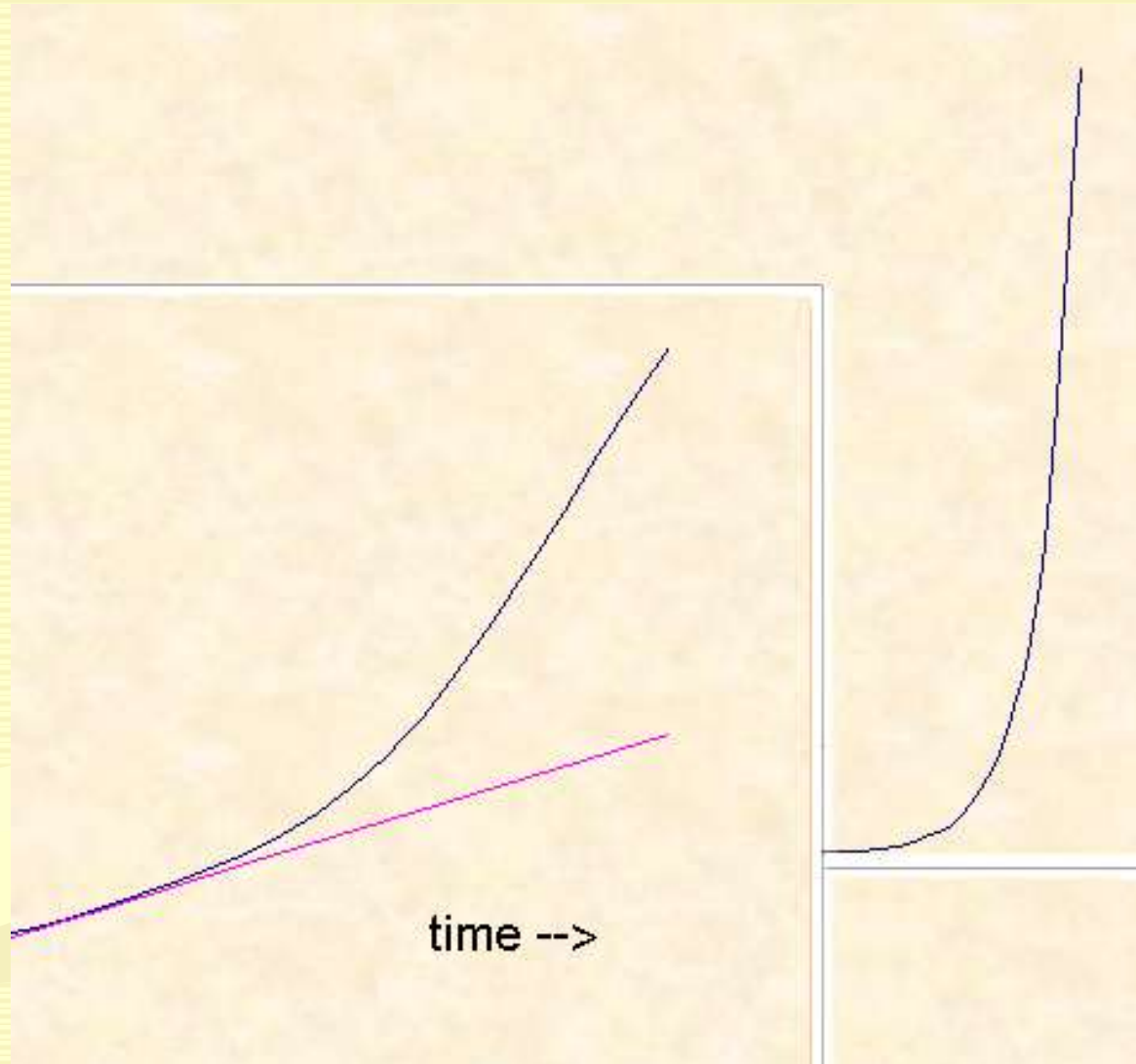
time -->

Working as Communities of Practice
What are CoP's anyway?

- small groups of people who have worked together over a period of time. Not a team, not a task force, not necessarily an authorized or identified group. They are peers in the execution of "real work." What holds them together is a common sense of purpose and a real need to know what each other knows. (--John Seely Brown / ref: http://ps1.cim3.net/ps.php?theurl=http://www.fastcompany.com/online/01/people.html#purp531)

- a group of professionals, informally bound to one another through exposure to a common class of problems, common pursuit of solutions, and thereby themselves embodying a store of knowledge. (--Peter & Trudy Johnson-Lenz / ref: http://www.co-i-l.com/coil/knowledge-garden/cop/definitions.shtml)

- groups of people who share a concern or a passion for something they do and who interact regularly to learn how to do it better. (--Etienne Wenger / ref: http://www.ewenger.com/theory/index.htm)

- in the case of US eGov folks, it could be groups that work together along lines of business within the government that are dedicated to the support of certain business functions (ref: http://colab.cim3.net/cgi-bin/wiki.pl?DataReferenceModel_09_2004/TheGlossary_DRM_VolIv1#nid2K8F)

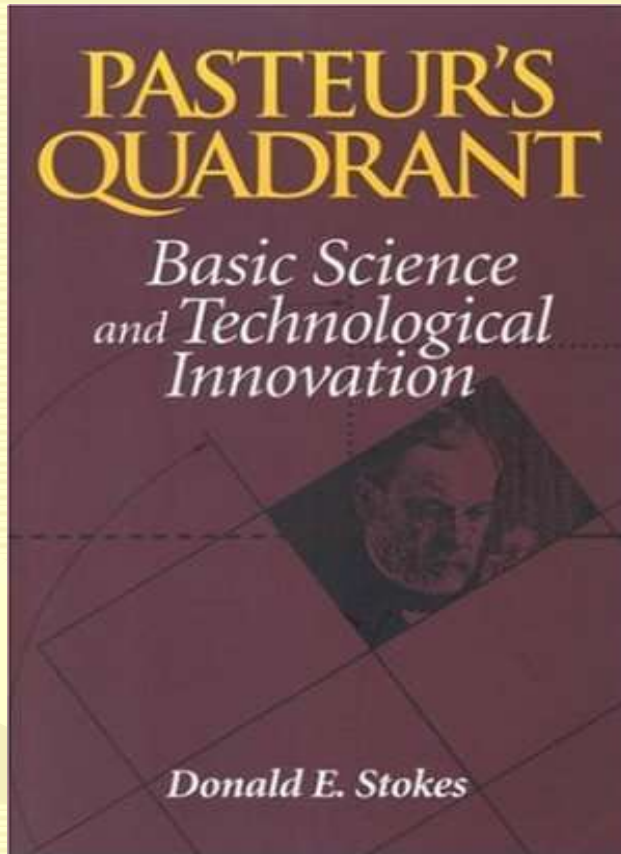# "Nothing Replaces Anything"... Richard Dalton, IFTF

Use-Inspired Basic Research

Figure 3-5. *Quadrant Model of Scientific Research*

Research is inspired by:

	Considerations of use?	
	No	**Yes**
Quest for fundamental understanding? — Yes	Pure basic research (Bohr)	Use-inspired basic research (Pasteur)
No		Pure applied research (Edison)

3 TRANSFORMING THE PARADIGM   p. 73

PASTEUR'S QUADRANT

Basic Science and Technological Innovation

Donald E. Stokes

A couple of personal insight I'd like to share:

- Ontological Research is 'strategic' research that is more appropriately modeled in Donald Stokes' Pasteur's Quadrant (as use-inspired basic research) ... we should no longer treat (and fund) basic-research and applications like opposite poles

- With the Internet, virtual communities, and an 'open' paradigm, we have the promises of unprecedented research capabilities in our hands now.

http://www.amazon.com/exec/obidos/ASIN/0815781776/

Tamed vs. Wicked Problems

- Unlike Tamed Problems like Mathematics, Chess, ...
- Wicked problems are ill-defined design and planning problems which have incomplete, contradictory, and changing requirements; and solutions to them are often difficult to recognize as such because of complex interdependencies.
- *" ... on tackling 'wicked problems': it's about arriving at a shared commitment, with a shared understanding, augmented by a shared display and a facilitator."*

  -- work by the IBIS people (Horst Rittle/Jeff Conklin)

see: http://en.wikipedia.org/wiki/Wicked_problem

Fishnet Organization

these are temporary (or semi-permanent) hierarchies, that emerge out of the CoP's, which capitalize on distributed capabilities to achieve specific purposes; when those purposes are achieved (or when the opportunities no longer exist), they disband, and the resources (people, knowledge, skillsets) are returned to the CoP's where they come from.
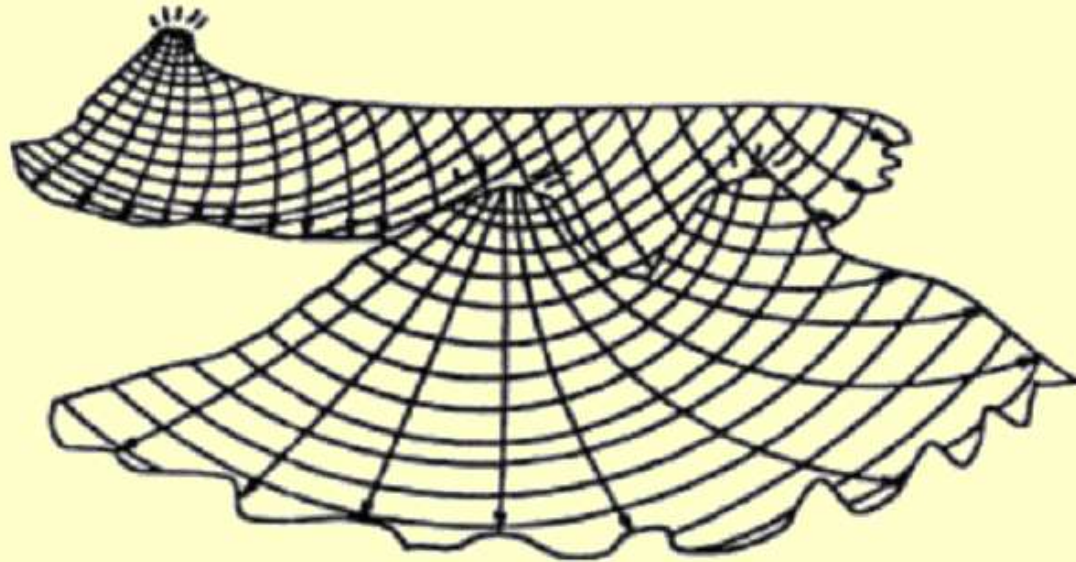
The Fishnet Organization

Source: Institute for the Future: *Johansen, R., Swigart, R.* Upsizing the Individual in the Downsized Organization
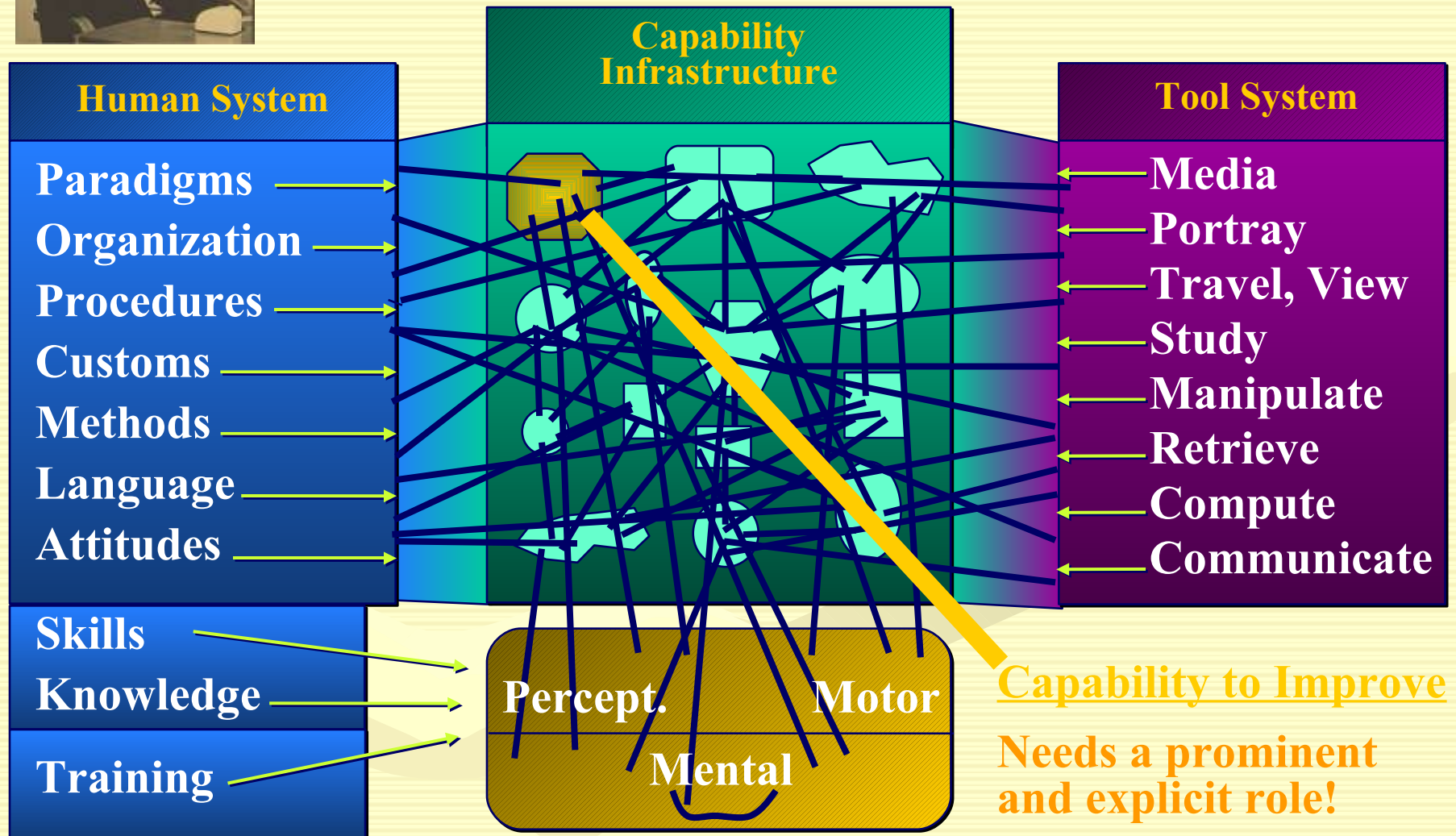
Harnessing explosive technology depends, to a new degree, on the "Capability-Improvement Capability"

Engelbart's Capability Infrastructure

- Doug Engelbart, Jan. 2000

(excerpt from the Stanford 'Unfinished Revolution-II' Colloquium)

Capability Infrastructure

Human System

Paradigms
Organization
Procedures
Customs
Methods
Language
Attitudes

Skills
Knowledge
Training

Tool System

Media
Portray
Travel, View
Study
Manipulate
Retrieve
Compute
Communicate

Percept.   **Motor**
Mental

Capability to Improve

Needs a prominent and explicit role!

B1 BOOTSTRAP INSTITUTE

The Bootstrap Vision and Mission Statements[1]

December 31, 1999 <Alliance,1198,>

The Bootstrap Vision Statement[2]

Our world is a complex place with urgent problems of a global scale.[2A]

The rate, scale, and complex nature of change is unprecedented and beyond the capability of any one person, organization, or even nation to comprehend and respond to. [2B]

Challenges of an exponential scale require an evolutionary coping strategy of a commensurate scale on a cooperative cross-disciplinary, international, cross-cultural level. [2C]

We need a new, co-evolutionary environment capable of handling simultaneous complex social, technical, and economic changes at an appropriate rate and scale. [2D]

The grand challenge is to boost the Collective IQ of organizations and of society; success of this effort will improve the capacity to address any other grand challenge. [2E]

The improvements gained and applied in its own pursuit will accelerate the improvement of Collective IQ. This is a bootstrapping strategy. [2F]

Those organizations, communities, institutions and nations that successfully bootstrap their Collective IQ will achieve the highest levels of performance and success. [2G]

The Bootstrap Mission Statement[3]

Our Mission is to:[3A]

Promote awareness of the scale, urgency, and complexity of the challenges we face; [3B]

Catalyze, launch, and shepherd an active, strategic pursuit of boosting the Collective IQ on a scale commensurate with the rate, scale, and pervasiveness of change; [3C]

Create an exploratory environment where participants can collaborate, experiment, and set in motion advanced pilot outposts in diverse application areas; [3D]

Enable a whole new way of thinking about the way we work, learn, and live together; [3E]

Promote development of Collective IQ among, within and by networked improvement communities; [3F]

Cultivate a knowledge environment which includes a shared dynamic knowledge repository; [3G]

Foster development of an open platform information system infrastructure, based on an Open Hyperdocument Systems (OHS) framework; [3H]

Share the A-B-C's of Bootstrapping and support co-evolution of human organizations and their tools; [3I]

Enable sharing of effort, cost and risks of advanced exploration among a diverse set of organizations and improvement communities; [3J]

Push the scaling of bootstrapping towards what could become National Improvement Infrastructures, as well as a Global Improvement Infrastructure. [3K]

Collaboratively developed since Jan '99 by Douglas Engelbart (assisted by Christina Engelbart, Pat Rush, Mary Dye & Peter Yim).

Source: http://bootstrap.cim3.net/vision_mission.html

Introducing CIM3

- CIM Engineering, Inc. (dba. "CIM3") - San Mateo, CA. est. 1989

- Mission: to enable more effective distributed collaboration and virtual enterprise through bootstrapping collective intelligence over the Internet

- Doing business as:
  - "cim3.com", "cim3.net" and "cim3.org"
  - cim3.com – the business arm of the company
  - cim3.net – the collaborative work environments where client Communities of Practice and distributed team workspaces are hosted
  - cim3.org – the research arm, and holder of the company's open technology, content and other intellectual properties

- Products/Services: providing an ISP/ASP based Collaborative Work Environment ("CWE") infrastructure that enables distributed project teams, virtual enterprise partners and communities of practice to work effectively over the Internet.

Our Focus:
Communities & Distributed Teams

- People as an integral part of the system
- The Community Spectrum [Kaplan/iCohere]
  - Affinity Networks
  - Learning Communities
  - Communities of Practice (CoP's)
  - Project Teams
- We optimize our infrastructure, tools and process for CoP's and Distributed Project Teams

CIM3's Approach

- Augmentation - human-machine interaction - collaboration - communities
- Openness - we use open-source software & comply with open standards as much as we can; we open-source our technology and content, and participate in open standards development
- Capitalizing on the Internet technology: taking it
  - from the research and academic network
  - to the current form as publishing media
  - to Transactions and Web Services
  - onto being its future as knowledge media in the Semantic Web
- Providing Enterprise performance, quality, robustness, security & fault tolerance
- Providing platform neutrality: supporting machines on PC's, Mac's, Linux, Unix, …
- System built upon a knowledge architecture optimized for distributed teamwork
- Emphasis on effectiveness and strategic value - not technology
- Supporting entire user spectrum: from the everyday users to the power users
- While we do open-source work, we believe in properly remunerating our contributors, and in helping create a viable economic model for open work, possibly in the form of Open Virtual Enterprises (OVE's)

The Case for the Augmentation Approach in CWE

- We work towards providing a work environment for *both* humans and machines, optimizing between objectives like
    - Supporting the expressiveness that humans need to convey their ideas, and the structure and rigor that machines need to properly interoperate - in essence, promoting both creativity and operational efficacy
    - The ease-of-use that everyday users need, and the versatility and extensibility that power users need to take their work to the next level
    - Securing the borders of the cwe to malicious intruders, while encouraging access, participation, sharing and the free flow of information and knowledge among members of the trusted communities
    - Catering to the quality requirements of information and transaction processing systems and the realities of human behavior that just aren't *
        - o Fully describable, fully online, fully informative, fully accurate, or fully responsible
- Our intent is to foster shared understanding and learning
- We are trying to spur innovation, as well as organic or emergent behavior in the user communities and teams

*Ref: Winograd, Newman, Yim "Including People in CIM Designs"*

The Collaborative Work Environment Features

- archived email forum
- wiki – a read-and-write web
- document repository/file sharing workspace
- Community of Practice (CoP) portal/website
- Fine-grain access and linking ("Purple numbers")
- Full-text search

- voice conferencing
- screen/application sharing
- instant messaging
- real-time chat session
- Optimized for distributed community and teamwork
- Platform neutral

The Hosting Facility
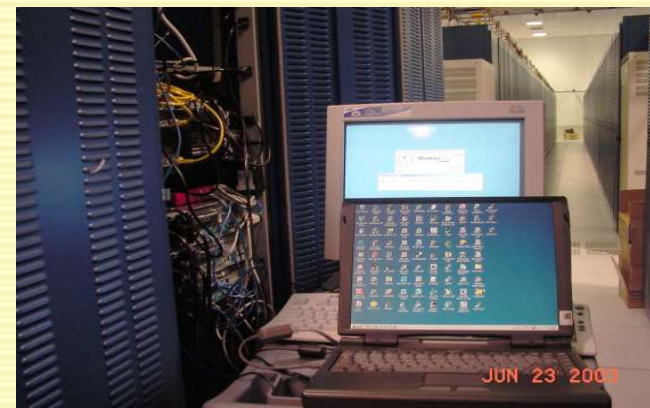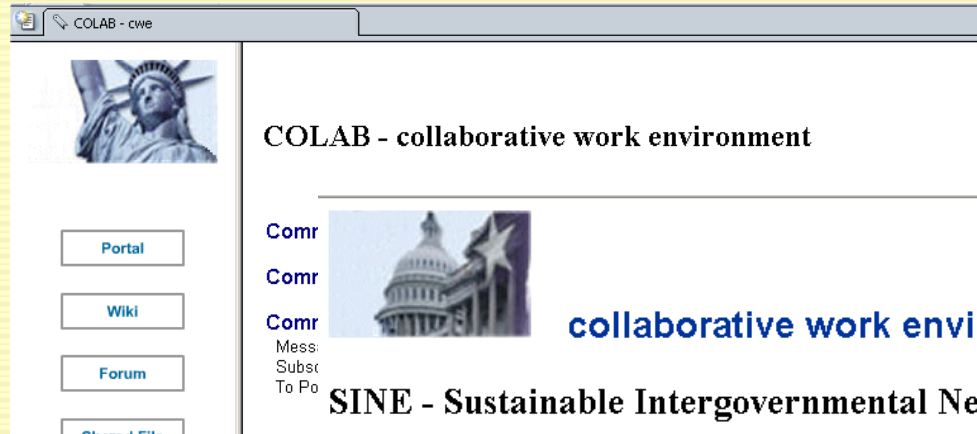
Hosted Infrastructure

- Product features:
  - CWE – "open", "community-only" & "secured"
  - Robust, scalable, enterprise performance
  - Secured and Fault Tolerant
  - Platform neutral (PC's, Mac's, Linux, Unix, …)
- Infrastructure:
  - Tier-1 hosting facility
  - 100Mbps bandwidth into the Internet backbone
  - Backbone: multiple OC192, OC48 & Gige self-healing fiber-ring
  - built on one of the top networks in the world, as measured by connectivity to the rest of the Internet (our colocation facility is ranked among the top ten Internet networks in the world by fixedorbit.com's Knodes Index)

- Ontolog
- CWE-dev
- Bootstrap
- Protégé
- eGov: colab
  - Expedition Workshop
  - DRM project work & public forum
  - SICoP
    - ONTAC
    - COSMO
  - Chief Architects Forum
  - GeoSpatial CoP
  - Intergovermal Advisory
- NIST: interop
- IMS-US
- Millennium Project (AC/UNU)
- Digital Art Ontology
- Hosting of: **CODS, SIGMA-kee, SUMO, kifb, purpleslurple**
- … *(more)*

COLAB - cwe

COLAB – collaborative work environment

Portal

Wiki

Forum

Shared File

Comr
Comr
Comr
Mess
Subs
To Po

collaborative work environment

SINE – Sustainable Intergovernmental Network Exchange

trator for password to upload)

ONTOLOG – collaborative work environment

Open, International, Virtual Community of Practice on Ontologies

Community Portal: http://ontolog.cim3.net/

Community Wiki: http://ontolog.cim3.net/wiki/

Community Forum:
Message Archives: http://ontolog.cim3.net/forum/ontolog-forum/
Subscribe/Unsubscribe/Configure: http://ontolog.cim3.net/mailman/listinfo/ontolog-forum/
To Post: mailto:ontolog-forum@ontolog.cim3.net

@sine.cim3.net)

Community Repository:
Shared File Workspace:
http://ontolog.cim3.net/file/pub/
http://ontolog.cim3.net/file/resource/ (member password required to upload)
http://ontolog.cim3.net/file/work/ (member password required to upload)
http://ontolog.cim3.net/file/community/ (member password required to access)
http://ontolog.cim3.net/file/admin/ (administrator password required to access)

quired to access)

Google

Search

Search ontolog.cim3.net Search cim3.net Search WWW

ppy/Leveraging-CWE-to-Boots

This collaborative work environment is hosted on the CIM3.NET infrastructure.

ONTOLOG (aka. Ontolog Forum) est. Apr.2002

- **3 co-conveners** - PeterYim; LeoObrst & KurtConrad
- **Hosted** on the CIM3 collaborative work environment infrastructure
- **Charter** - Ontolog is an open, international, virtual community of practice, whose membership will:
  - Discuss practical issues and strategies associated with the development and application of both formal and informal ontologies.
  - Identify ontological engineering approaches that might be applied to the UBL effort, as well as to the broader domain of eBusiness standardization efforts.
  - Strive to advance the field of ontological engineering and semantic technologies, and to help move them into main stream applications.
- **Activities:**
  - Weekly conference calls of active members
  - Monthly virtual Invited Speaker events
  - Scheduled Technical Discussions
  - Specific Projects: like [CCT-Rep], [Health-Ont], NHIN-RFI response, Upper Ontology Summit, Ontologizing Ontolog's Body of Knowledge, ...
  - Resides on a virtual collaborative work environment which serves as a knowledge repository to the community
- **We welcome your participation** – see: http://ontolog.cim3.net/wiki/

Ontolog – an open CoP

Caption: *John McCarthy having a dialog with Doug Engelbart at a tavern … with 'the fishnet' on the wall*

Ontolog's key Differentiation

Activities are community driven; we are neutral, open, and we are not answerable to any authority or institutional structure, except for (explicitly) our charter & IPR policy, and (implicitly) our professional integrity.

We are adamant about collaboration, sharing and open knowledge
… and are trying to spur organic or emergent behavior
in the community and our project teams

What is Ontolog bringing to the table?

- our open collaborative attitude - we **can** and **will** gladly work with other communities sharing similar attitudes and goals
- our established infrastructure and community membership of a lot of the key players in the domain
- our agility: we can put together a fairly substantial virtual event in short order (say, 2 weeks.)
- advancing the research and engineering agenda and envelope
- help evangelize ontological work and educate the industry
- explicit input to eGov and Standards bodies (NIST, OASIS, UN/CEFACT, ISO, …)
- the community's knowledge residing in its open virtual collaborative work environment
- implicit sharing of expertise with other communities (especially those who reside on and share the cim3.net infrastructure)

US – eGov – NITRD

The White House
PRESIDENT GEORGE W. BUSH

President • News • Vice President • History & Tours • First Lady • Mrs. Cheney

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Home > News & Policies > December 2002

🖨 Printer-Friendly Version

For Immediate Release
Office of the Press Secretary
December 17, 2002

President Signs E-Government Act
Statement by the President

Today I have signed into law H.R. 2458, the "E-Government Act of 2002." This legislation builds upon my Administration's expanding E-Government initiative by ensuring strong leadership of the information technology activities of Federal agencies, a comprehensive framework for information security standards and programs, and uniform safeguards to protect the confidentiality of information provided by the public for statistical purposes. The Act will also assist in expanding the use of the Internet and computer resources in order to deliver Government services, consistent with the reform principles I outlined on July 10, 2002, for a citizen-centered, results-oriented, and market-based Government.

Title II of this Act authorizes agencies to award "share-in-savings" contracts under which contractors share in the savings achieved by agencies through the provision of technologies that improve or accelerate their work. The executive branch shall ensure, consistent with applicable law, that these contracts are operated according to sound fiscal policy and limit authorized waivers for funding of potential termination costs to appropriate circumstances, so as to minimize the financial risk to the Government.

Title III of this Act is the Federal Information Security Management Act of 2002. It is very similar to title X of the Homeland Security Act of 2002, which also bears the name Federal Information Security Management Act of 2002 and which I signed into law on November 25, 2002. I am signing into law the E-Government Act after the enactment of the Homeland Security Act, and there is no indication that the Congress intended the E-Government Act to provide interim provisions

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COLAB - cwe - Mozilla Firefox

File   Edit   View   Go   Bookmarks   Tools   Help

http://colab.cim3.net/

COLAB – collaborative work environment

GSA portal

Wiki

Forum

Shared File

ua-exp.gov

Component Technology

et.gov

GJXDM-RR

web-services.gov

Community Portal: http://www.gsa.gov/collaborate

Community Wiki: http://colab.cim3.net/wiki/

Community Forum:
Message Archives: http://colab.cim3.net/forum/
Subscribe/Unsubscribe/Configure: http://colab.cim3.net/mailman/listinfo/
To Post: e-mail to 'forum-name'@colab.cim3.net
(substitute 'forum-name' with name of the forum, like: colab-test@colab.cim3.net)

Community Repository:
Shared File Workspace:
http://colab.cim3.net/file/pub/
http://colab.cim3.net/file/resource/   (member password required to upload)
http://colab.cim3.net/file/work/   (member password required to upload)
http://colab.cim3.net/file/community/ (member password required to access)
http://colab.cim3.net/file/admin/ (administrator password required to access)

Google [   ] Search
⦿ Search colab.cim3.net ○ Search cim3.net ○ Search WWW

This collaborative work environment is hosted on the CIM3.NET infrastructure.

Social, Economic, and Workforce Implications of IT and IT Workforce Development (SEW)

NITRD Agencies: NSF, DoD Service research organizations, NIH, DOE/SC, DOE/NNSA
Other Participants: GSA

The activities funded under the SEW PCA focus on the nature and dynamics of IT and its implications for social, economic, and legal systems as well as the interactions between people and IT devices and capabilities; the workforce development needs arising from the growing demand for workers who are highly skilled in information technology; and the role of innovative IT applications in education and training. SEW also supports efforts to speed the transfer of networking and IT R&D results to the policymaking and IT user communities at all levels in government and the private sector. A key goal of SEW research and dissemination activities is to enable individuals and society to better understand and anticipate the uses and consequences of IT, so that this knowledge can inform social policymaking, IT designs, the IT user community, and broadened participation in IT education and careers.

President's 2007 Request

Strategic Priorities Underlying This Request
Interactions between IT and society: Develop new knowledge about and understanding of the implications of new technologies for economic, social, and technical systems, and their dynamic interactions
Public policy: Sponsor activities that bring SEW researchers and research findings together with policymakers to foster informed decision making
Federal information sharing: Implement a Data Reference Model for information sharing as part of the Federal Enterprise Architecture and e-government initiatives
Government IT practitioner communities: Build communities of practice across all levels of government and private-sector organizations in which practitioners, with support from researchers, can work collaboratively on issues associated with implementing emerging technologies to improve government services
IT education and training: Support innovative educational approaches to broadening participation in IT careers, and doctoral and post-graduate programs to expand the highly skilled workforce in such fields as bio-informatics and computational science

Highlights of Request
Ecology of IT: New program emphases on understanding the ecology of IT, knowledge creation, innovation, and intellectual property issues; information privacy and other human-centered computing priorities; continue broadening participation by underserved communities in IT activities – NSF
Computational Science Graduate Fellowship Program: Continue support for advanced computational science training activity at national laboratories – DOE/NNSA, DOE/SC
Collaborative Expedition Workshops: Continue monthly series of open workshops exploring cost-effective implementations of emerging technologies in delivery of public services at all levels of government, establishing "communities of practice" among IT implementers across government and the private sector, and evaluating Data Reference Model for interoperable Federal information sharing – CIO Council, GSA, NSF, with SEW
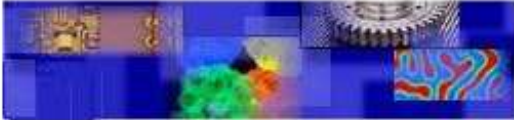
Planning and Coordination Supporting Request
SEW functions as a crossroads between the networking and IT R&D community and the larger arena of policymakers and IT implementers. SEW has developed a partnership with GSA and the Federal Chief Information Officers (CIO) Council that sponsors a monthly open workshop series – the Collaborative Expedition Workshops – to encourage collaboration among government and community implementers of IT and to demonstrate promising IT capabilities emerging from Federal research. NSF co-sponsors these events and invites researchers to give academic talks on selected topics in order to bridge gaps between research and policy. The workshops draw participants from Federal, state, and local government, academia, industry, and other communities. The focus is on emerging technologies for applications in such areas as emergency preparedness

16   NITRD Supplement to the President's FY 2007 Budget   February 2006

ppy/Leveraging-CWE-to-Bootstrap-Communities--PeterYim_2006061

The CWE where NIST is engaging an international community of multi-disciplinary experts in a discourse on "semantic distance"

The AC/UNU Millennium Project
State of the Future Index (SOFI)
System prototype

SOFI Viewer

File   View   Tools   Window   Help

http://mp.cim3.net:2180/sofi/main.jsp

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Search: [____] GO

SOFI

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Saturday - June 28, 2003   SOFI Directory | System Administration

>> Home

Welcome to SOFI

Recent Places: My SOFI 1 | MP-SOFI 2002

MP-SOFI Community News   Publish News

SOFI 2002 Now Available Online

Futures Research Methodology v2.0 Coming in July 2003

General SOFI Community News

France Publishing SOFI

World Bank sponsors SOFI Workshop in Tokyo

Eighteen APEC Members Present their SOFI at Meeting in Shanghai

MySOFI Community News

XYZ Names Jane Smith VP of Corporate Strategy and Knowledge Management

Four Scenarios Developed for the Future of E-Learning

SOFI Calculation

SOFI Calculation

1.2

1

0.8

0.6

0.4

0.2

0

1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2010 2011

◆ My SOFI 2002 - Scenario 1   ■ MP-SOFI 2002

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
0.8931	0.9368	0.8884	0.9132	0.9297	0.9648	0.9794	0.9913	0.9952	1.0149	1	1.0209	1.0321	1.0327	1.0392	1.
0.8931	0.9368	0.8884	0.9132	0.9297	0.9648	0.9794	0.9913	0.9952	1.0149	1	1.0209	1.0321	1.0406	1.0476	1.

Source:

SOFI Architecture Diagram
Collaborative Model

International Collaboration

SEOUL digital FORUM 2005

World ICT Summit

"Quo Vadis Ubiquitous: Charting a New Digital Society"

May 18~20, 2005

Improving on our "Improvement Systems"

-- Bootstrapping Capabilities in a Collaborative Work Environment

Peter P. Yim
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(v 1.09)

American Council for
The United Nations University
The Millennium Project

Reflections (1)

Bootstrapping,
applied in the presence of the ever increasing computing power, connectivity, and semantic technologies, could well bode the advent of a paradigm shift (in the sense of Thomas Kuhn's "Scientific Revolution") **and allow us to harness the real "knowledge economy"**

Reflections(2) : the Challenges

- Bringing "Bootstrapping" and Augmented Scientific Methodologies into the main stream
- We need to be improving at an exponential rate, just to cope with the exponential rate of "change" happening around us
- We need the "tools", the "process", and most importantly the "people" to all work together
- Team building, with distributed individuals who might not even have met one another, is a challenge
- Trusted communities cannot be developed overnight
- the current economic and legal infrastructure aren't meant for these types of organizations
- the networked communities may become our research laboratories, our universities, our source for innovation and our future ... so, keep it "open"!
- The individual participants hold the key to the communities' success – it's in their "attitude towards sharing"

the DAO of it all

- Live with the 'Duality' around us:
  - the Cathedral vs. the Bazaar
  - the Form vs. Free-form
  - Discipline vs. Creativity
  - Transaction Process vs. Collaborative Process
  - Classic AI vs. Augmentation approaches
  - the small 'o' vs. the big 'O' in Ontology
  - Planned vs. Emergent behavior
  - The reductionist vs. the holistic approach
- **we are not bound to choose** *one* **or** *the other*
- Lao Zi had this figured out, circa 500 BC

Reference

- Doug Engelbart's Bootstrap Vision and Mission
- [ontolog-forum]: http://ontolog.cim3.net/wiki/
- eGov COLAB Communities: http://colab.cim3.net
- CWE Community: http://community.cim3.net/wiki/
  & http://colab.cim3.net/cgi-bin/wiki.pl?CommunityLearning_CWE/**ConferenceCalls_2006_01_20**
- CIM3 ISP/ASP Product Structure & Services: Collaborative Work Environment Hosting
- More Information:
  - CIM Engineering, Inc.
  - Peter P. Yim (bio) (cv)