Leveraging a Collaborative Work Environment to Bootstrap Communities of Practice

by

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(v 1.28)

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 ontological engineering communities and federal government communities that his company has been supporting, to demonstrate how their "Collaborative Work Environment" service (designed to implement the Doug Engelbart "bootstrap" paradigm) were able to co-evolve with these communities to arrive at a win-win outcome for both his clients and his company.

Outline

- Key concepts at play
- Communities
- Organizations
- Tamed vs. Wicked Problems
- Engelbart's "Bootstrap" vision and mission
- CIM Engineering, Inc. (dba. "CIM3")
- the CIM3 Collaborative Work Environment
- the case of the ONTOLOG community
- cases in Intergovernmental Collaboration
- Reflections
- References

A Few Key Concepts at Play

- Ray Kurzweil's "Law of Time and Chaos"
- Horst Rittle's "Wicked Problems"
- Thomas Kuhn's "Paradigm Shift"
- Bob Johansen's "Fishnet Organization"
- Jon Bosak's "OASIS TC Process"
- Doug Engelbart's "Bootstrapping"
- akin to Jim Spohrer's - Scientific Methods, Augmented

A Range of Communities

- The Community Spectrum [Kaplan/iCohere]
  - Affinity Networks
  - Learning Communities
  - Communities of Practice (CoP's)
  - Project Teams

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)

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.
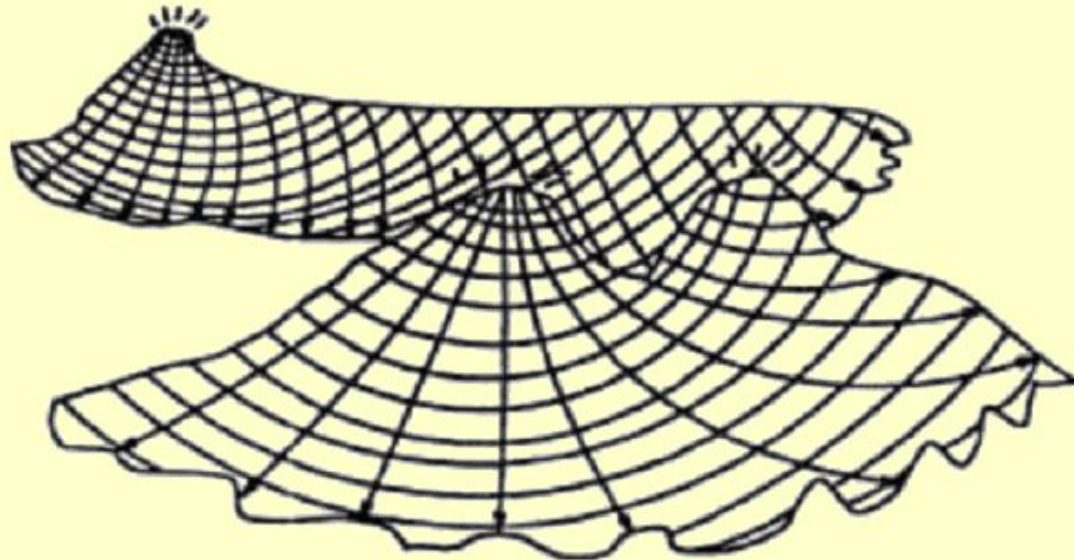
The Fishnet Organization

Source: Institute for the Future: *Johansen, R., Swigart, R.* Upsizing the Individual in the Downsized Organization

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
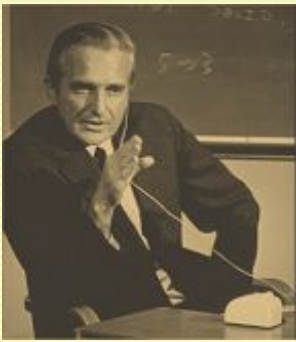
Harnessing explosive technology depends, to a new degree, on the "Capability-Improvement Capability"

Engelbart's Capability Infrastructure

- Doug Engelbart, Jan. 2000

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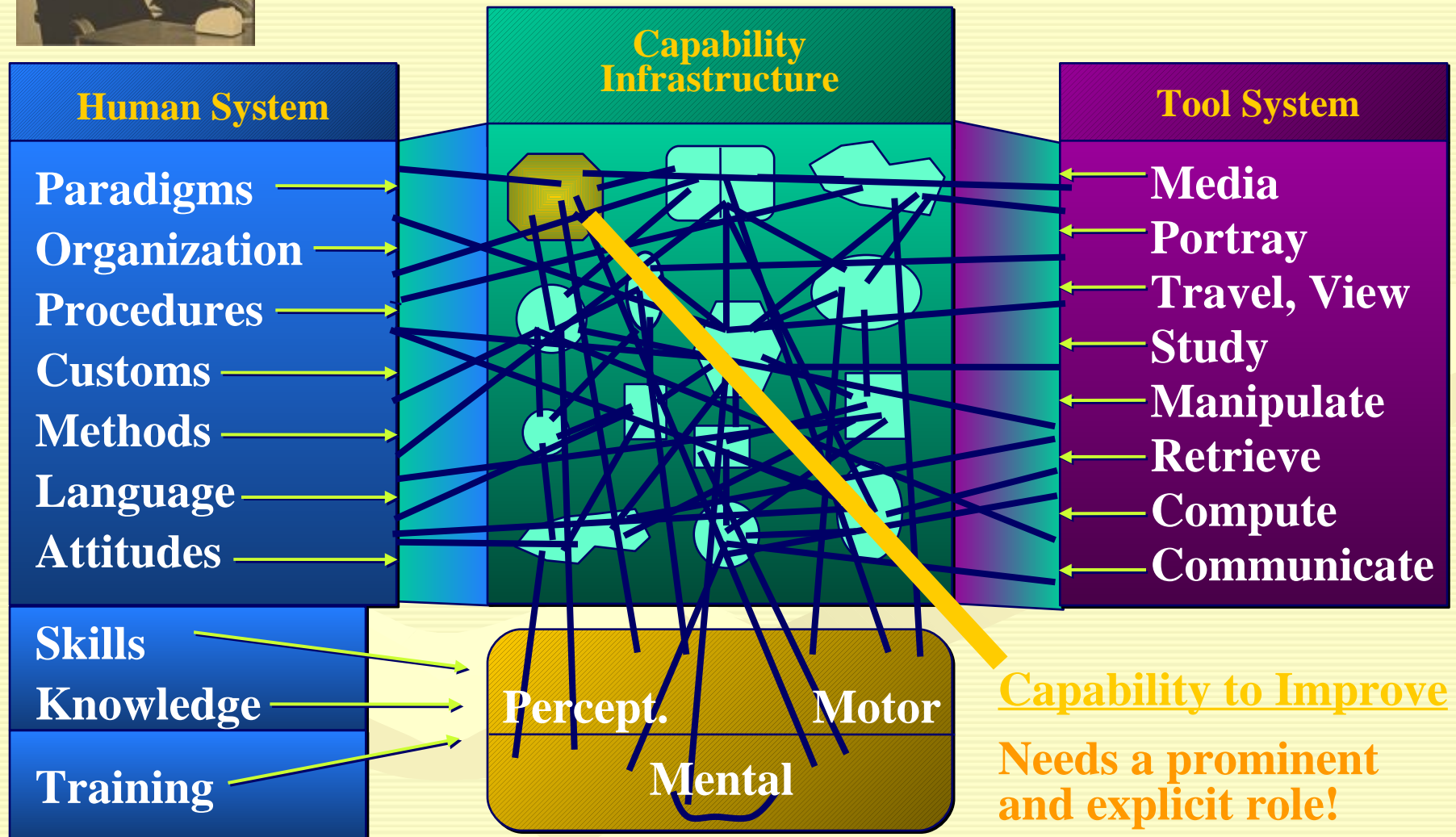
Capability Infrastructure

Human System

Paradigms
Organization
Procedures
Customs
Methods
Language
Attitudes

Skills
Knowledge
Training

Percept. **Motor**
Mental

Tool System

Media
Portray
Travel, View
Study
Manipulate
Retrieve
Compute
Communicate

Capability to Improve

Needs a prominent and explicit role!

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
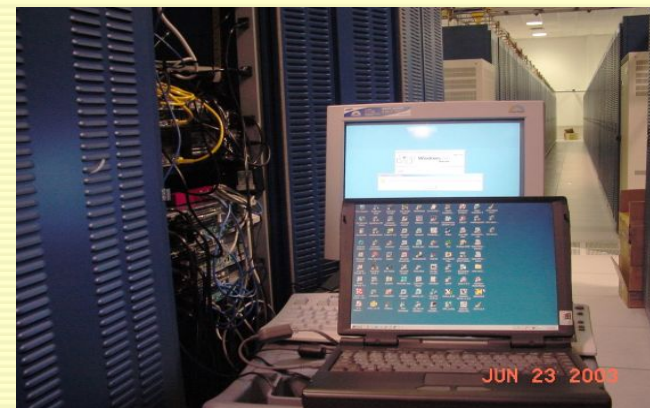
Hosted Infrastructure

- 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 OC48 & Gige self-healing fiber-ring

- **Ontolog**
- **CWE-dev**
- **Bootstrap**
- **Protégé**
- **eGov: COLAB**
- **eGov: DRM project work & public forum**
- **Millennium Project (AC/UNU)**
- **Digital Art Ontology**
- **Hosting of: SUMO, CODS,**
- **… *(more)***

COLAB - cwe

COLAB - collaborative work environment

Portal

Wiki

Forum

Shared File

Comr
Comr
Comr
Mess
Subsc
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/
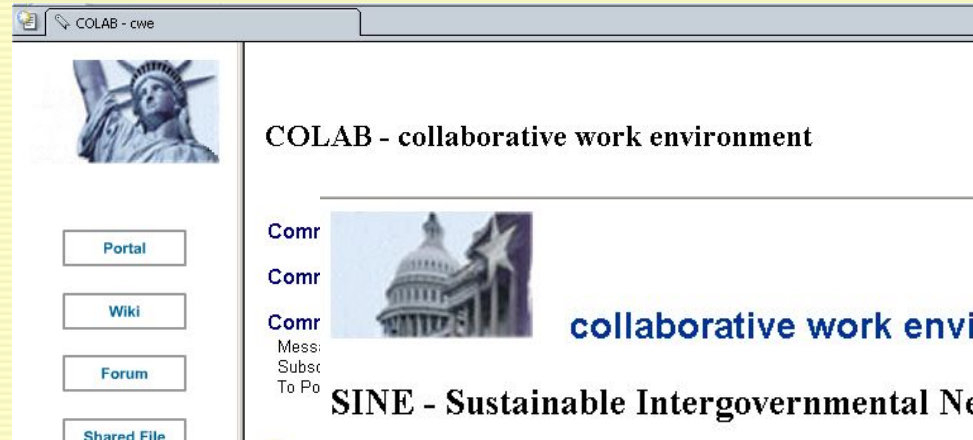Subscribe/Unsubscribe/Configure: http://ontolog.cim3.net/mailman/listinfo/ontolog-forum/
To Post: mailto:ontolog-forum@ontolog.cim3.net

?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

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

Introducing:

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, ...
  - Resides on a virtual collaborative work environment which serves as a dynamic knowledge repository to the community's collective intelligence
- **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 ... on the wall one sees 'the fishnet'*

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 does Ontolog bring 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.)
- help evangelize ontological work and educate the industry
- explicit input to eGov and Standards bodies (OASIS, UN/CEFACT, …)
- implicit sharing of expertise with other communities (especially those who reside on and share the cim3.net infrastructure)

US – eGovernment

federal enterprise architecture program

DRM

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

YOUR GOVERNMENT   KIDS   ESPAÑOL   CONTACT   PRIVACY POLICY   SITE MAP   SEARCH

The White House
PRESIDENT GEORGE W. BUSH

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Printer-Friendly Version

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

In Focus
- Medicare
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- Economic Security
- Homeland Security
- More Issues
- En Español

News
- Current News
- Video

President Signs E-Government Act

Statement by the President

...d into law H.R. 2458, the "E-Government Act of 2002." This legislation builds upon my ...xpanding E-Government initiative by ensuring strong leadership of the information ...es of Federal agencies, a comprehensive framework for information security standards and ...form safeguards to protect the confidentiality of information provided by the public for ...s. The Act will also assist in expanding the use of the Internet and computer resources in ...vernment services, consistent with the reform principles I outlined on July 10, 2002, for a ...esults-oriented, and market-based Government.

...uthorizes agencies to award
...contracts under which contractors share in ...ed by agencies through the provision of ...mprove or accelerate their work. The ...hall ensure, consistent with applicable law, ...s are operated according to sound fiscal ...thorized waivers for funding of potential ...o appropriate circumstances, so as to ...cial risk to the Government.

...s the Federal Information Security
...of 2002. It is very similar to title X of the Homeland Security Act of 2002, which also bears ...nformation Security Management Act of 2002 and which I signed into law on November ...ing into law the E-Government Act after the enactment of the Homeland Security Act, ...ication that the Congress intended the E-Government Act to provide interim provisions ...ly until the Homeland Security Act took effect. Thus, notwithstanding the delayed ...licable to the Homeland Security Act, the executive branch will construe the Act ...as permanently superseding the Homeland Security Act in those instances where both ...erent amendments to the same provisions of the United States Code.

...ive branch shall construe and implement the Act in a manner consistent with the ...utional authorities to supervise the unitary executive branch and to protect sensitive ...aw enforcement, and foreign relations information. In particular, consistent with my ...orities and section 301(c) of this Act, the executive branch shall construe the Act in a ...ves the authorities of the Secretary of Defense, the Director of Central Intelligence, and other agency heads with regard to the operation, control, and management of national security systems.

GEORGE W. BUSH
THE WHITE HOUSE

Appointments
- Nominations
- Application

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.

http://interop.cim3.net/

INTEROP - collaborative work environment

<interop> – collaborative work environment

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

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

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

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

This collaborative work environment is hosted on CIM3.NET

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

Reflections (1)

Semantic Technologies, applied in the presence of the ever increasing computing power and connectivity, could well bode the advent of a paradigm shift (in the sense of Thomas Kuhn's "Scientific Revolution") **and usher 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 individual participants hold the key to the communities' success – it's in their "attitude towards sharing"

References

- 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)