Collaboration Solutions for the U.S. Government

Part 1: Overviews of Web 2.0 and Some Existing Government Platforms

January 21, 2010

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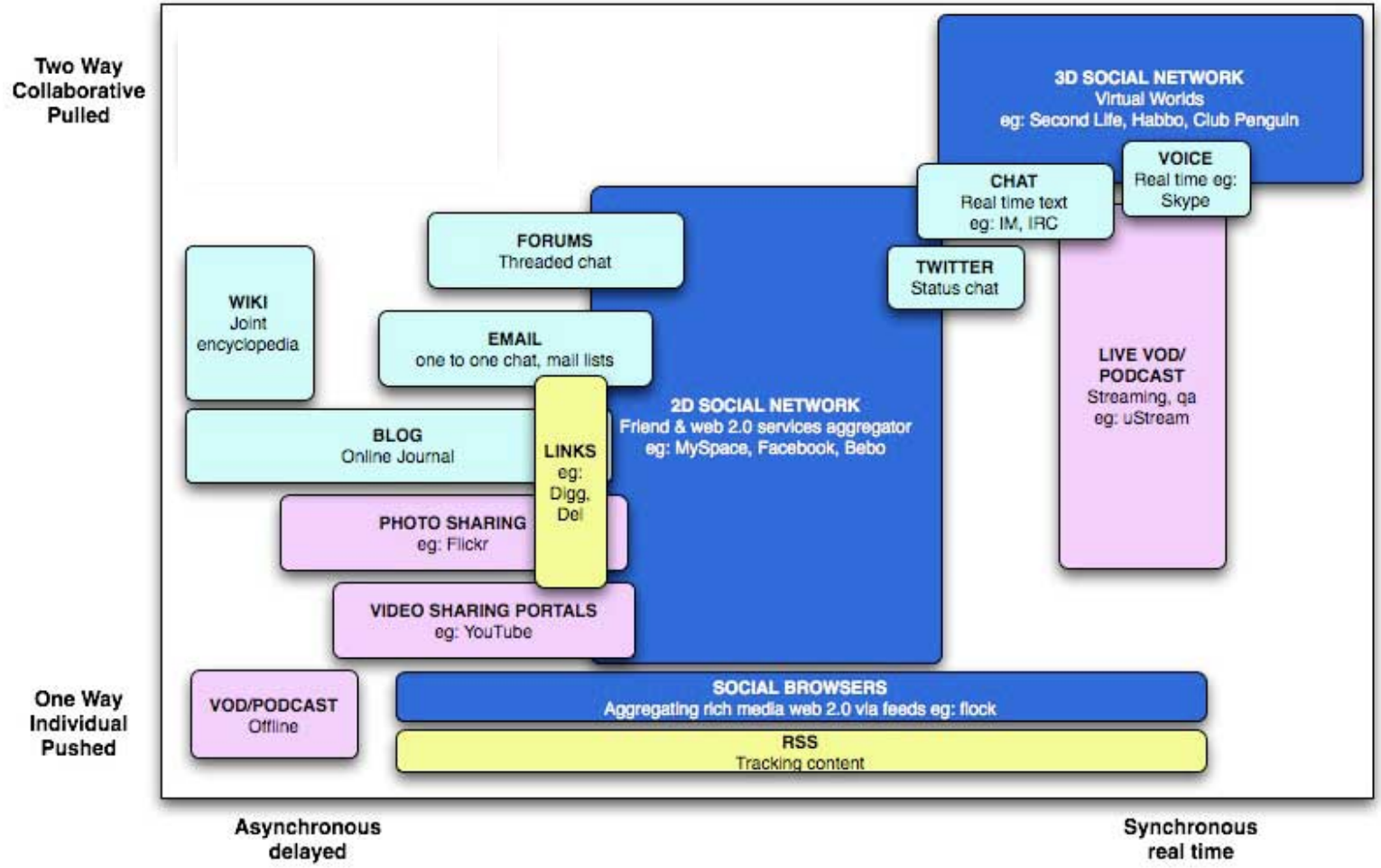
Institute for Defense Analyses

Outline

- Web 2.0 Overview
  - What is Web 2.0 (aka social software, aka collaborative software)?
  - What are the potential roles of Web 2.0 in Government?
  - How are Web 2.0 services delivered?
- Collaboration Platforms in the U.S. Government
  - Collaboration platform functions and features
  - Examples: OMB MAX, CORE.gov, Intelink, AKO/DKO, AFRL's Aristotle
- Observations and recommendations: Presented in Part 2, a standalone companion briefing

View of Web 2.0:
In terms of Applications



Source: http://www.personalizemedia.com/web-00-to-50-spheres-of-influence/

But Web 2.0 is More Than Applications:

The applications are enabled by various technologies and standards, and the effectiveness of the applications depends on certain values.

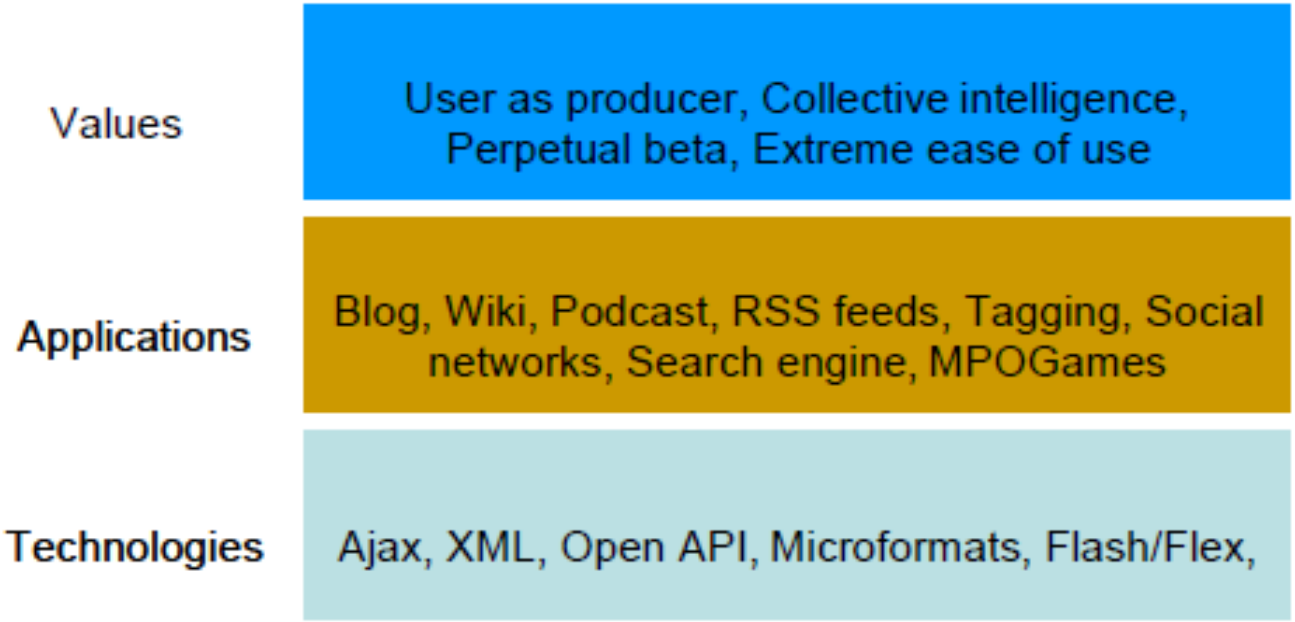


Figure 2: Operational description of web 2.0 (adapted from O' Reilly and Forrester research)

Source: European Commission Joint Research Centre, Institute for Prospective Technological Studies
http://www.collaborationproject.org

Potential Roles of Web 2.0 in Government

Mostly "Public Outreach"

Technology	Simple Definition	Examples	Opportunity/Potential in Government
Blogs	Journal or diary with social collaboration (comments)	33 federal agencies have public blogs, USA.gov government blog library, Webcontent.gov advice, GovGab.gov	Govt info to new audiences. Puts human face on govt using informal tone. Opens public conversations. Surface issues & solve them.
Wikis	Collaborative authoring & editing	GSA Collab Environment, Core.gov, MAX, NASA, US Courts, Intellipedia, PTO, Diplopedia, PeaceCorps, Utah Politicopia	Workgroup or public collaboration for project management, knowledge sharing, public input. Contributions to 3rd party sites e.g. Wikipedia
Video Sharing (and Multimedia)	Videos, images, & audio libraries (YouTube, AOLVideo, YahooVideo, tubemogul, heyspread…)	USA.gov Multimedia library, NOAA & NASA YouTube , Coast Guard, CA &VA YouTube Channels, Americorps contest, Tobacco Free Florida contest	Public outreach, education, training, other communication for "connected" and on-line audiences. How To videos & audios to improve service and achieve mission.
Photo-Sharing	Photo libraries	USA.gov fed/state photo libraries, LoC & USGS galleries w Flickr API,EPA contest	Cost savings potential. New audiences. Awareness.
Podcasting	Multimedia content syndicated out for use on iPod TM, Mp3 players & computers	White House, NASA, USA.gov federal podcast library, Webcontent.gov, Peacecorps, Census daily podcasts	More ways to get message out. Build trust with conversational voice. Use for updates, live govt deliberations, emergencies, how-to messages
Virtual Worlds	Simulations of environments & people (Webkinz, Club Penguin, Neopets, Stardoll, Whyville, Second Life, Active Worlds, Kaneva, ProtoSphere, Entropia Universe, uWorld)	NASA, NOAA, CDC in SL & Whyville,VA, Natl Guard, Energy, DoD, National Defense Univ Federal Consortium for Virtual Worlds, Real Life Govt in 2nd Life Google group	Public outreach & other communication for kids and niche Internet audiences. Virtual Town Halls, Education, Training. Ability to bring people together worldwide for meetings, lectures, etc.
Social Networking Sites	Connecting people globally	EPA Facebook group, NASA Colab, USAgov Facebook page, MySpace, Linkedin	Intranet use to cross internal stovepipes. Cross government coordination. Public communities. Viral impact. Knowledge mgmt. Recruitment. Event announcements.
Syndicated Web Feeds	Automated notifications of frequently updated content (think RSS)	USA.gov Federal RSS Library, NOAAWatch	Do more with RSS, XML/Web feeds. Expand reach. Pull content together across government. Authoritative source. Reduce duplication.
Mashups	Combine content from multiple sources for an integrated experience	USA Search, USGS, NASA, EPA, Virtual Earth, Google Earth, Google maps	Lots of potential. Improved govt reach, service, usefulness, and functionality. Integrate external data. Get licenses, stay vendor neutral. Make content available to others who create mashups
Widgets, Gadgets, Pipes	Small applications & code in Web pages or for desktop use	FBI widgets, Veterans Affairs, Census Population Clock & NASA Planet Discoveries Desktop widgets	Increase awareness, use, and usefulness of .gov sites, information, and service. Bring content to the user's home page (iGoogle, netvibes, etc)
Social Bookmark &News (Sharing, Tagging) Sites	Ways of sharing content with others	USA.gov, NASA, Govt blogs, Digg, Delicious Technorati .AddThis	Increase the popularity and use of .gov pages, information, and services. Viral marketing.
Micro-blogging. Presence Networks.	Form of blogging which allows brief (Instant Message size) text updates.	Twitter, Jaiku, Cromple, Pownce, NASA Edge, USA.gov, GovGab, Univ of Mich	Seek input. Broadcast msgs: emergencies, news, announcemts. Real time reportg.Recruitg.

July 18, 2008 Bev Godwin, USA.gov and Web Best Practices, GSA Office of Citizen Services

Source: WebContent.gov (website managed by Federal Web Managers Council)
http://www.usa.gov/webcontent/documents/Web_Technology_Matrix.pdf

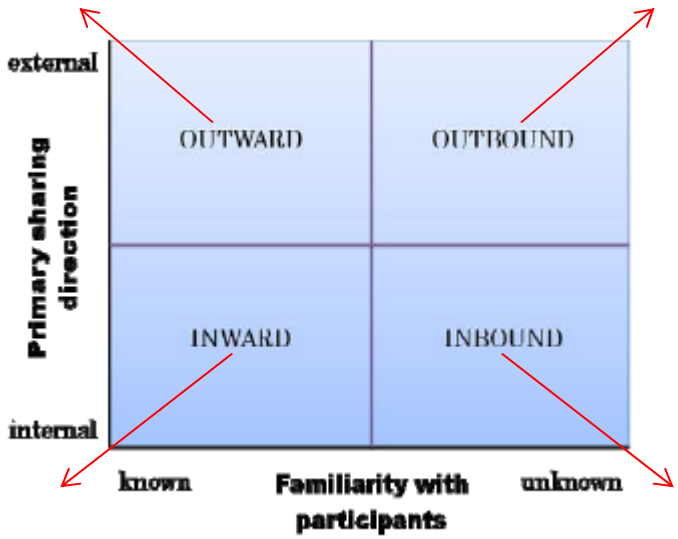
Four-Quadrant Government Web 2.0 Framework

Source: Mark Drapeau and Linton Wells II, "Social Software and National Security: An Initial Net Assessment," Center for Technology and National Security Policy, National Defense University, April 2009 (annotated in red).

But Public Outreach is only <u>one of four</u> functions of Web 2.0

Inter-organizational Communication, Sharing, and Collaboration

Public Outreach; Communication and Sharing with the Public; Empowering the Public



Apps for Democracy
Apps for America
Apps for the Army

Intra-organizational Communication, Sharing, and Collaboration

Crowdsourcing: Accepting Input and Feedback from the Public; Leveraging Public Contributions

http://www.ndu.edu/ctnsp/Def_Tech/DTP61_SocialSoftwareandNationalSecurity.pdf

Social Software Service Delivery:

Personal Use

Emphasis is on sharing content (e.g., photos, videos, commentary, personal status and thoughts, news, bookmarks, etc.) with friends, colleagues, and the public.

- Individual applications
  - Facebook, Flickr, YouTube, Digg, Delicious, WordPress, Skype,Twitter, etc.
    - Applications are adding features
      - IM/Chat from Facebook
      - Facebook apps
    - Applications are interoperating
      - Sending Tweet or Facebook Status Update from iPhone
      - OpenID and Facebook Connect single sign-on services
- Social browsers
  - Flock (tabs for Facebook, Twitter, etc.; media bar for Flickr; news and other content feeds)
- Customizable home pages
  - iGoogle: Gmail, Googletalk, and other Google applications; Facebook, Twitter, and other widgets; news and other content feeds; Google gadgets (mini-applications similar to iPhone apps)

Collaborative Software Service Delivery:

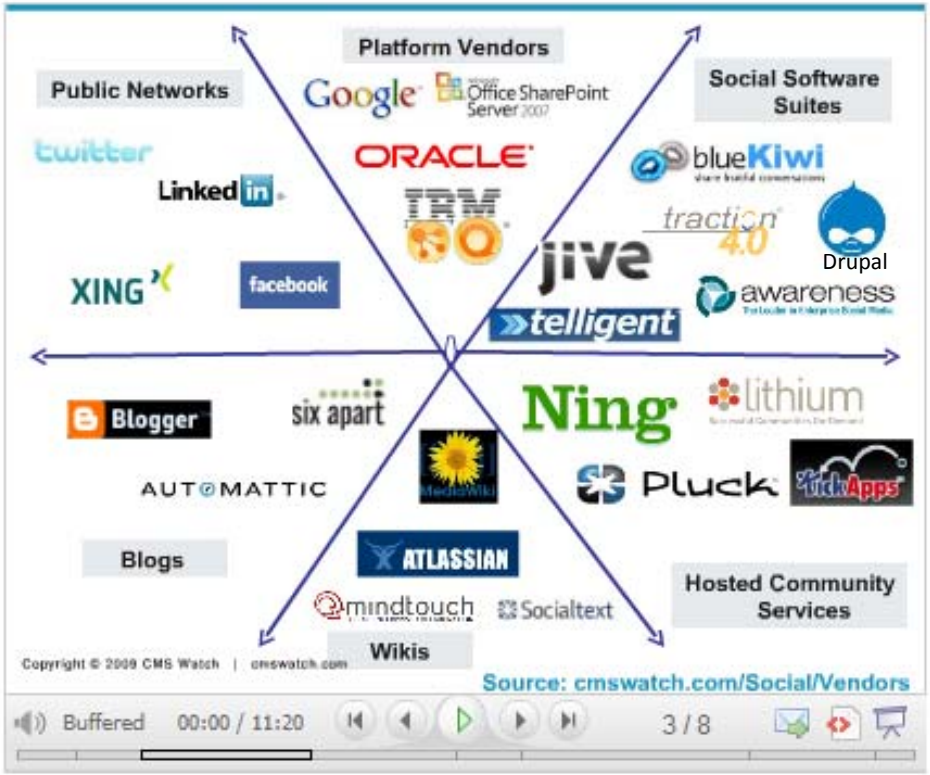
Enterprise Use

In addition to sharing, communication and collaboration are important. Email, document management, and content management are integrated into portals and platforms.

- Government portals offering several applications
  - Intelink, AKO/DKO
- In-house collaboration platforms--integrated software suites running on Government servers
  - OMB MAX: Atlassian Confluence on OMB servers
  - CORE.gov: Tomoye Communities on GSA servers
- Vendor-hosted collaboration platforms
  - For example, Atlassian or Tomoye hosted platforms
- Cloud-hosted collaboration platform
  - Collaboration services managed by Government or by vendor

Collaborative Service Delivery

Source: http://www.cmswatch.com



Collaboration Platforms in the U.S. Government

Collaborative Platform Capabilities

Examples: OMB MAX, CORE.gov, Intelink, AKO/DKO, AFRL's Aristotle

Collaboration Platform Capabilities

- **Social networking (**Facebook, MySpace, LinkedIn, Plaxo, GovLoop, A-Space)
  - User profiles
  - Dynamic set of user-selected “friends”
  - People search
  - Facebook, MySpace, LinkedIn, Plaxo, GovLoop, A-Space
- **Sharing**
  - Photos (e.g., Flickr), videos (e.g., YouTube), news stories (e.g., Digg), bookmarks (e.g., Delicious)
  - Commentary (e.g., blogs, discussion forums)
  - Status and thoughts (e.g., Twitter)
- **Communication**
  - Email
  - Instantaneous (e.g., IM/chat)
  - Voice over IP
- **Alerts**
  - RSS feeds, podcasts
  - Notifications of community activity and content updates

Collaboration Platform Capabilities (cont)

- **Crowdsourcing** (harnessing the power of a community or the public to accomplish tasks)
  - Ratings (collaborative rating of content or contributions to the community)
  - Reputations (collaborative ranking of participants in a community according to activity, ratings by community members, productivity, etc.)
  - Social tagging (collaboratively annotating content): yields a “folksonomy”
  - Social bookmarking (collaboratively managing links to web pages)
- **Community-developed applications** (another form of crowdsourcing)
  - iPhone apps, Google gadgets, Facebook applications
- **Collaboration**
  - Content management systems
  - Wikis (e.g., Wikipedia, Intellipedia): specific content management system
  - Comment threads; question/answer dialogs
  - Document management systems
  - Web conferencing
  - Search
- **Metrics**

OMB MAX Federal Community

at https://max.omb.gov/community/display/FedCom

Powered by **Atlassian Confluence,**
a Wiki-Based Collaboration Platform
with Closed Communities

(collaboratively authored and edited web pages with some lightly used social features: user profiles, social tags, social bookmarks, comments)

Favorites
Homepage (link to MAX Federal Community home page)
Directory (white pages)
Page Link (permalink)

Paperclip (1 attachment to this page)
Tools (include edit restrictions, page history, watch list, print view, etc.)
OPEN (0 view restrictions; however, there are edit restrictions)
Star (add page to favorites)
Envelope (watch page, i.e., request email **alert** if page changes)
Stacked Envelopes (watch page and descendents)
119 users watching this page

Favorites | Homepage | Directory | Page Link: https://max.omb.gov/community/x/NwBnAQ
Help Search
Dashboard > MAX Federal Community > Home
Browse Karen Gordon (CONI,CTR)

Home

(1) Tools
OPEN (0) (119)

Hover mouse over user name to access **user profile**.

last edited by EDWARD BORREGO (OMB) on Sep 23, 2009 09:59 AM (view change)

Welcome to the MAX Federal Community!

Click on the Agency, Government-wide Community, or Cross-Community Information you are interested in.
(You can make any community your personal Homepage by editing your Preferences and choosing a new "Site Homepage".)

Agency Communities

- Access Board
- Army Corps of Engineers
- Broadcasting Board of Governors
- Consumer Products Safety Commission
- Corporation for National & Community Service
- Council on Environmental Quality
- Department of Agriculture
- Department of Commerce
- Department of Defense
- Department of Education

Government Wide Communities

Acquisition	Homeland Security	Performance
Budget	Human Capital	Planning
E-Government	IT Infrastructure	Recovery Act
Financial Management	Management	Small Agencies
Grants	Open Government	

Each Agency Community and Government Wide Community has its own Space, which is essentially an independent wiki.

Continued on next slide…

Pulls together information from all the Government Wide Communities (which are listed on previous slide)

Department of Energy
Department of Health and Human Services
Department of Homeland Security
Department of Housing & Urban Development
Department of the Interior
Department of Justice
Department of Labor
Department of State
Department of Transportation
Department of the Treasury
Department of Veterans Affairs
Executive Office of the President
Environmental Protection Agency
Federal Communications Commission
Federal Deposit Insurance Corporation
General Services Administration
National Aeronautics & Space Admininistration
National Archives & Records Administration
National Gallery of Art
National Science Foundation
Nuclear Regulatory Commission
Office of the Director of National Intelligence
Office of Management and Budget
Office of National Drug Control Policy
Office of Personnel Management
Office of Science & Technology Policy
Pension Benefit Guaranty Corporation
Small Business Administration
Smithsonian Institution
Social Security Administration
US Trade Representative

Other Spaces
Test Space
MAX Development Space

The President's SAVE Award NEW!

Give Us Your Feedback

MAX Performance

Cross-Community Information

Collaborations	**Highlights**	**Recent Updates**
Data Calls & Exercises	**Human Capital**	**Shared Information**
Documents & Guidance	**Media**	

About the MAX Federal Community

Announcements:
- (8/24/09) Table-plus macro released Click here for details!
- Use My Favorites for personal navigation
- Sign-up for Community training
- Have you checked out the Directory function in the menu bar?
- Get Help!
- Provide feedback on the Community
- Join the Collaboration Workgroup
- **The MAX Community is over 18,900 users!** (chart)

Learn More:
- **Government-wide Collaboration, Data Collection, and Knowledge Management**
- **MAX Collect (w/eBriefing): automated Q&As, QFRs, Briefing Books, Reports, and Structured Data Calls**
- **About the Budget Formulation & Execution Line of Business (BFELoB)**
- **MAX Data Collection & Tracking - MAX Technology Services**
- **Who Owns MAX Data?**
- What Is the MAX Federal Community?
- MAX FISMA Compliance MAX Accessibility

Feature Highlights:
- How to Watch a Family of Pages
- Creating diagrams and flowcharts
- Using MAX Groups as e-mail distribution lists
- Other Community Features

Hours of Operation (ET):
- Weekdays (supported): 8AM-6PM,
  (unsupported): 4AM-8AM, 6PM-2AM
- Weekend Availability:
  Sat 4AM- Sun 2AM; Sun 8AM-Mon 2AM
- System NOT Available:
  Mon-Sat 2AM-4AM, Sun 2AM-8AM

Continued on next slide…

Attachments (1) Show Attachments | ~~Add Attachment~~

Children (11) Hide Children | View in Hierarchy

- Community Feedback
- Featured
- FedCom CSS
- Goverment-Wide Communities Drop-down
- Highlights
- About the Community
- Agency Communities
- Cross-Communities Links
- Global Announcement
- Government-wide Communities
- Spaces

Add Labels

Tags: if page already has tags, they will appear here.

Total elapsed time: 2.282 sec. ==> Generate page (MAX server): 0.583 sec. Other (e.g. browser, network, internet): 1.699 sec.

Site Feedback Powered by Atlassian Confluence 2.10 (OMB Build ID 46 created on Jan 30, 2009) **MAX Homepage**

GSA's CORE.gov
at https://collab.core.gov

Powered by **Tomoye,**
a Social Collaboration Platform
with Closed Communities

(collaboratively authored and edited web pages with emphasis on networking (especially finding experts), questions and answers, and integration with SharePoint)

- "Welcome" Tab discusses plans for 2006 and 2007
- "Documents & Videos" Tab: 17 entries (16 in 2006 and 1 in Jan 2007)
- "Questions & Answers" Tab: 2 questions (2006) and 1 answer

My Options | Karen Gordon | Sign Out | Search

CORE.gov *Working together to build government-wide solutions*
Component Organization and Registration Environment

CORE

Browse

- CORE
  - Advisory Committee on the Electronic...
  - AIC - Architecture and Infrastructure...
  - Army Corps of Engineers Data...
  - Convergence Subcommittee (restricted to...
  - CORE.gov Community Leaders
  - DCMA
  - DHS (Department of Homeland Security)
  - DoD Enterprise Architecture
  - DoD ITI
  - DOD OMB EA Assessment
  - DOI Data Architecture Community
  - DOI-MMS/NARA Flexible Schedule Pilot

Email

CORE

Welcome | People

Welcome

Welcome to The Community Organization and Registration Environment (CORE)
The purpose of this system is to provide collaboration capabilities in support of the Federal Enterprise Architecture and other cross-agency initiatives.
To learn more about establishing new communities on CORE.gov please contact GSA:
The CORE.gov Customer Support Line: 202.208.7420
- Marion A. Royal: 202.208.4643 marion.royal@gsa.gov
- Yvette Gibson: 202.501.3970 yvette.gibson@gsa.gov

This site is an official U.S. Government site maintained by the General Services Administration.

Unauthorized attempts to upload information or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and the National Information Infrastructure Protection Act. Information may also be used for authorized law enforcement investigations.

Please review our full Privacy and Security Policy on the main page of CORE.gov http://core.gov/privacy.cfm

Each Community has its own Space, which is essentially an independent wiki.

Continued on next slide…

- Federal CIO Council - Best Practices...
- Federal CIO Council - IT Workforce...
- First Responder's
- GovShare
- HSPD-12 IPWG
- IPv6 General Information
- LEXS
- Lines of Business
- NPS & Federal Lands Highway
- NPS TEST Community
- Public Key Enabling (PKE)
- SMARTBUY
- SSA State and Local Community
- UN/CEFACT TBG17
- Universal Core
- Violence in the Workplace
- XML

Browse Popular Tags

.gov 201-1 8000 access accreditation activity administrator americorps and applications asp assessments atlassian authentication biosecurity community dar dartt data data.gov datagov documents e-gov encryption encryptionwizard encrytion files government govshare govspace group guide hspd-12 interest leaders management marion may measurement open pki-pke presentations public royal sales sweere tomoye transparent videos wizard

View All

Powered by Tomoye Ecoo 2.1

Our Communities

- bike and build
- DHS (Department of Homeland Security)
- ITI LoB Gartner Tasks 2 & 3 "Data Center Performance Review"
- Violence in the Workplace
- Convergence Subcommittee (restricted to ISC Invited Members)
- DOI Data Architecture Community
- NC to SD Route
- SMARTBUY

Show All ...

Tag cloud showing social tags (size reflects popularity)

Site is powered by Tomoye collaboration platform.

Intelink
at https://www.intelink.gov

A Portal with Access to Several Web 2.0 Tools
featuring:
Single Sign-On
Enterprise-Wide Keyword Search
Intellipedia (a Wiki Open to the Entire Intelink User Base)

Intelink Services

Customizable Personal Homepage (including RSS feeds)

Security Banner

This page contains dynamic content -- Highest Possible Classification is Unclassified

Home MyIntelink

INTELINK 15th Anniversary SINCE 1994

Web | Recent Intel | Media | White Pages

Search Web

Advanced Search | Preferences

Intellipedia Blogs Inteldocs Hosting Messenger Email IC PKI Passport Bookmarks iVideo Gallery

Intelink Turns 15!

08/11/2009

Concept to operation, Intelink has come a long way in its 15 years! Today's Intelink is rooted in a joint memo signed by then-DCI James Woolsey and then-Deputy Secretary of Defense John Deutsch declaring "Intelink as the strategic direction for Community product dissemination systems." Watch for more as Intelink celebrates 15 years of Community empowerment!

Mobile Version About ICES Visit Us Site Metrics More...

To report a problem please submit an ODNI/ICES Ticket Phone: 301-688-1800 (commercial), 644-1800 (DSN), 363-6105 (NSTS).

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This page contains dynamic content -- Highest Possible Classification is Unclassified

ntweb3o

- Intellipedia Wiki (MediaWiki)
- Blogs (WordPress MU)
- Inteldocs DMS (KnowledgeTree)
- Hosting: Collaborative Sites (Sharepoint)
- IM (XMPP Server and Jabber Web Client)
- IC PKI: Local Registration Authority (LRA) for DoD PKI
- Enterprise Email (Zimbra, a Gmail-like capability)
- Passport: Single Sign On
- Social Bookmarks (GD AIS tag|Connect, a del.icio.us-like capability)
- iVideo: Video Sharing (ICES YouTube-like capability)
- Gallery: Photo Sharing (ICES Flickr-like capability)

Intelink Search

Security Banner

This page contains dynamic content -- Highest Possible Classification is **Unclassified**

Intelink

Not Logged In

Sign In | Customize | Help

Intelink | Intel Spaces | MyPages | MyMedia

References | Services | Tools

Web | Recent Intel | Media | White Pages

Search Web: Search Advanced Search

When searching for "this or that" be sure to use an uppercase OR.

DoD Enterprise Search

DoD Content Discovery is now powered by Intelink.

Use the Enterprise Search service to discover information from across the Department of Defense (DoD PKI certificate required).

To find out how you can make your information assets crawlable or to expose your local search service to federated queries, please visit the NCES Developer's Website on DKO.

powered by Google™ → Provides full-text search of Intelink

Searching approximately 10 million documents.

To report a problem please submit an ODNI/ICES Ticket Phone: 301-688-1800 (commercial), 644-1800 (DSN), 363-6105 (NSTS).

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This page contains dynamic content -- Highest Possible Classification is **Unclassified**

ntweb3o

AKO/DKO
at https://www.us.army.mil

A Portal with Access to Several Web 2.0 Tools
featuring:
Single Sign-On
Enterprise Search (via Intelink)
Private (i.e., Closed) Folders
Active Blogs and Discussion Forums

DKO DEFENSE KNOWLEDGE ONLINE

Email | Files | Discuss | Groups | IM | Forms | Video | People | Help | Logout

Home | My Account | Favorites | Quick Links | Self Service

Search... AKO Content Search

DKO Home (Related Content)

Options

AKO Home > DoD Organizations > DKO Home

DKO Information

WELCOME to the DKO Homepage!

click one of the menu bars below to find out more about DKO

About DKO | DKO News | DoD Retiree | DoD IRR | Inside AKO/DKO

KBAs

Mandatory KBA Enrollment
Required for portal access.

All AKO/DKO account holders are required to complete Knowledge Based Authentication (KBA) enrollment, a process that allows users to select personal security questions for added security. These questions will appear any time a user accesses the portal with a username and password. To learn more, visit the AKO/DKO KBA Page.

Enrollment takes just 5-10 minutes; users who have not completed KBA enrollment will not be able to access their accounts without a CAC.

MY ALERTS

- New Notifications (1)
- New In My Files (7)
- New In My Blogs (0)
- My Tasks (0)

TOOLBOX

- Manage My Groups
- Edit My Favorites
- Edit Notification Settings
- Create a Site
- Create a Page
- View My Profile
- Upload File

NCES User Services (Shared)

DCO DEFENSE CONNECT ONLINE

nces enterprise search

Continued on next slide…

NCES Services appear only on DKO (vs AKO) home page →

Select your security questions now.

DKO Hot Topics

DKO Hot Topics

The intention of this channel is to provide regular, revolving, and useful information pertaining to AKO/DKO.The content in this channel will change regularly, so check back regularly!

New Dates for AKO/DKO Open House

Scheduled for 18 November at Ft. Belvoir, Va., the next AKO/DKO Open House will focus on "Possibilities: How can AKO/DKO help my organization move into the future?" All attendees are invited to stay for free Portal training on 19 November. Register now by visiting the official Open House page.

Details of Homeowners Assistance Program Announced

Defense Department officials this week announced the details for distributing $555 million available under the Homeowners Assistance Program. Those eligible include active and former service members of the Army, Navy, Marine Corps, Air Force and Coast Guard. It also includes Defense Department and Coast Guard civilian employees and non-appropriated fund civilians. To learn more, read the official press release by clicking the link above.

Files Quick Tip

Files "Road Map"

The new training document details the new locations of all Files area toolbar functions.
Check out the new road map now.
To send feedback, blog on the Enhanced Files Area HQ.

Quick Links

Joint Training

JKO

DKO Interests

- DKO CONOPS
- DKO Board of Directors Charter
- *DKO Policy* - DKO Account Sponsorship
- *DKO Policy* - DKO General User Guidelines
- DKO Account FAQ

DoD News

- Early Bird
- Defenselink DoD Top News
- Defenselink Military News

DoD Related

- Defenselink Homepage
- DKO Caps Brief -- IRR Conf -- Jun 09
- DoD Publications and Forms Page
- National Defense Strategy
- Language Training Portal

DISA Related

- DISA Home
- DISROnline (CAC or soft-cert required for access)
- DISA RACE

TRAINING

- AKO/DKO Training & Tutorials Page
- Defense Language Institute (DLI)

⋮

Announcing the Return of the Wiki

Click here to visit the Wiki Portal page.

Appears only on AKO (vs DKO) home page

Aristotle

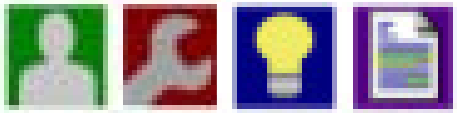
at AFRL

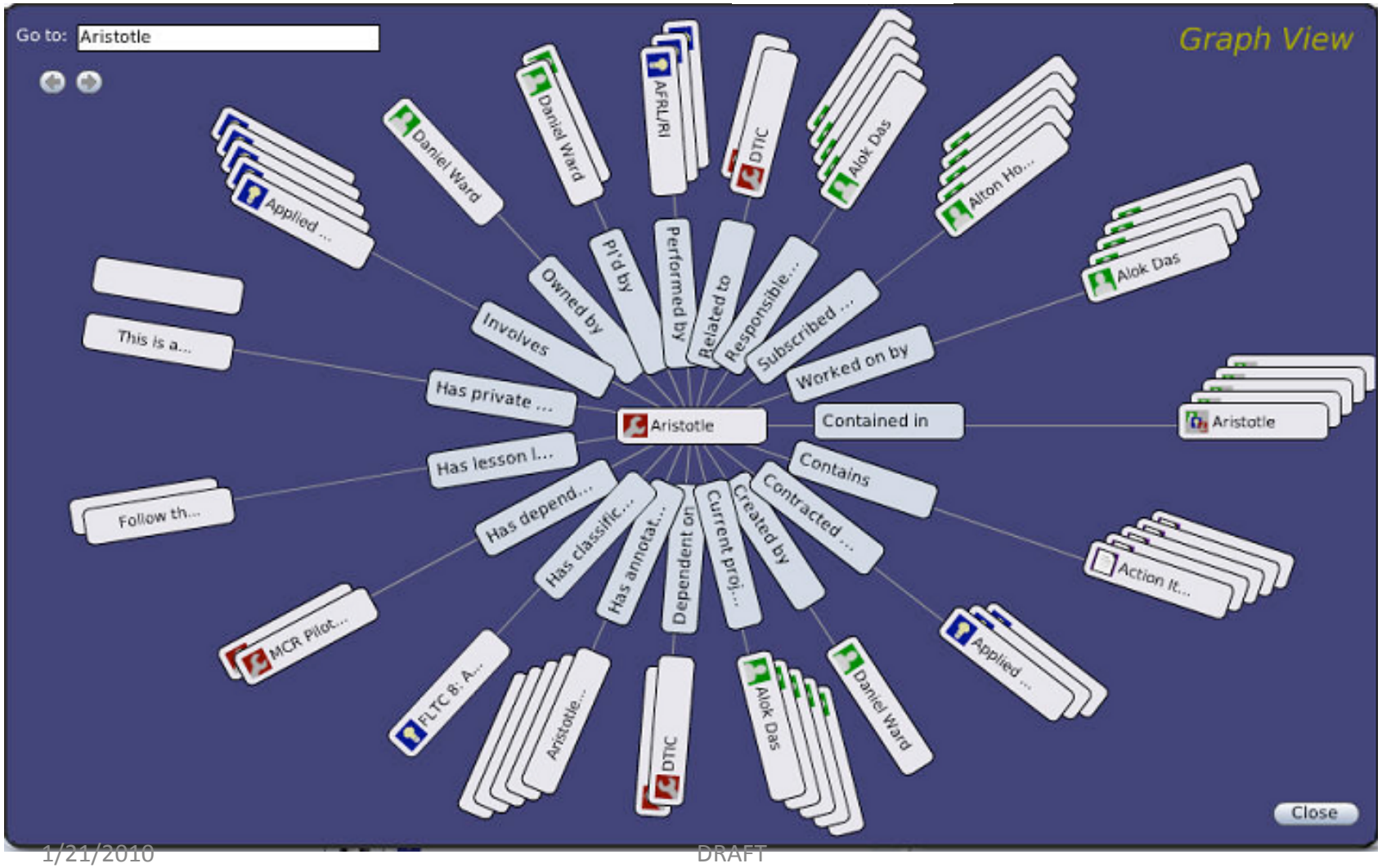
Powered by **PeoplePoint Systems,**

a Social Networking System for the Enterprise

(supports the construction, searching, and visualization of social networks composed of four types of entities—people, projects, topics, and documents)

Aristotle: Links People, Projects, Topics, and Documents

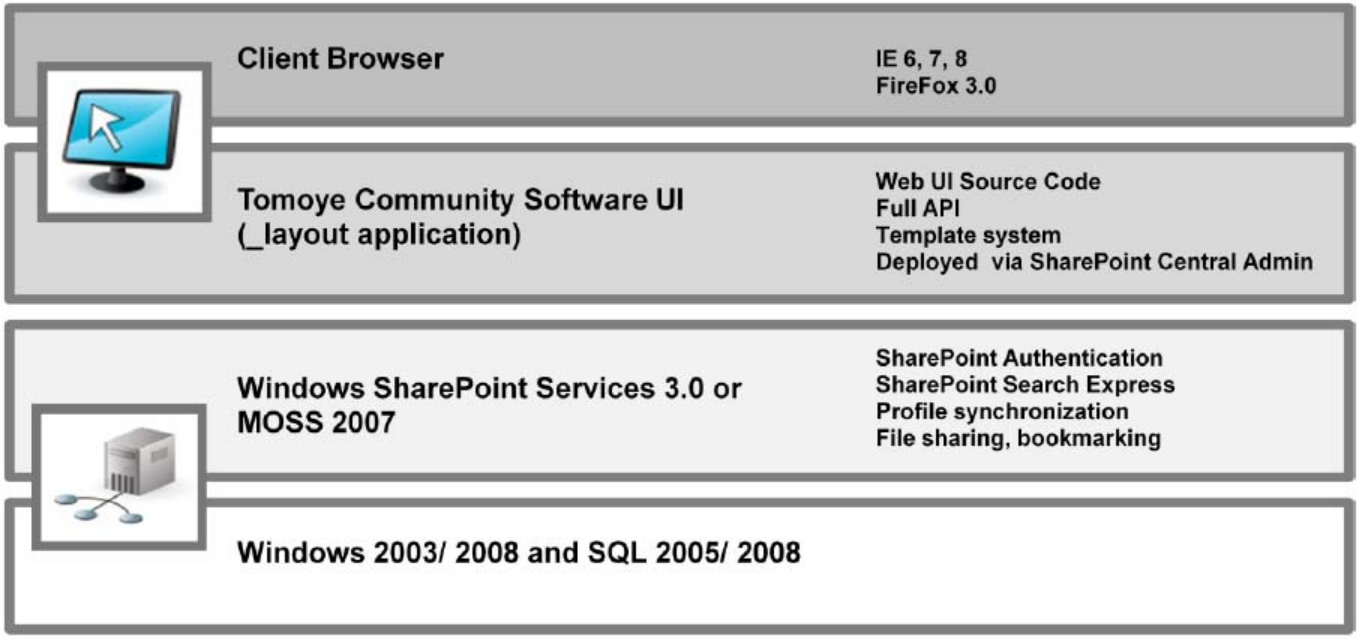




Update: Tomoye Community Software v3.0

Note that Tomoye product is now marketed as "The Community and Social Platform for SharePoint"

Tomoye Community Architecture



Tomoye v3.0 is architected as a SharePoint add-on.

Source: http://www.tomoye.com/Community_for_SharePoint_Architecture.html, December 19, 2009

Tomoye Community Software v3.0

All inclusive bundle

GET STARTED COMMUNITY PACKAGE – Our most popular offering, this package includes what you need to get up and running: software, hosting and services.

Email sales@tomoye.com or for a real person dial 819-246-9007 extension 315

Internal user pricing (software and support only)

For employees – subscription and perpetual licensing – deployed on your servers or ours. Subscription licensing is a yearly fee while perpetual means that you own it forever.

External user pricing(software and support only)

For partners and business to consumer – subscription and perpetual licensing – deployed on your servers or ours. Subscription licensing is a yearly fee while perpetual means that you own it forever.

Services

Our range of services will be quoted based on a short discussion with you. Our most popular services include hosting, template development, single sign-on, data migration, feature development.

Pricing starts at $35 per seat.
Source: Tomoye Community Software Blog, Maggie Patterson, October 7, 2009.

Source: http://www.tomoye.com/Community_for_SharePoint_Pricing.html, December 19, 2009.

Observations and Recommendations

See Part 2, a standalone companion briefing.

Collaboration Solutions for the U.S. Government

Part 2: Observations and Recommendations

January 21, 2010

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Observations

1. Different Web 2.0 tools have different purposes.
2. Web 2.0 provides an environment that fosters entrepreneurial innovation.
3. Online communities tend to experience a high degree of participation inequality.
4. For keyword searching, crowds are often measured in terms of pages and links.
5. Need to Know sometimes still trumps Need to Share; this practice limits sharing, limits participation, and ultimately limits capabilities.
6. The proliferation of Web 2.0 platforms is placing a growing burden on users.
7. Standards for interoperability and federation are continuing to emerge.
8. Social networking sites present unique security risks.
9. Social networking sites have become a major target of hackers.
10. The General Trend is Toward Sharing, Consolidation, Regionalization, and Centralization

Different Web 2.0 Tools Have Different Purposes

Consider, for example, the Knowledge Management application domain:

Factors that Impact Different Ways of Engaging Knowledge

Distinguishing Factors

	Seeking & Providing Authoritative Knowledge	Exchanging Knowledge Sources	Sharing & Learning from Others' Experience	Understanding Ambiguous Knowledge	Collaborating	Creating New Knowledge
Similarity to other users	Awareness of users interests and needs	Shared interest	Different experiences gained through changing contexts while doing a similar task or job	Cognitive diversity used to address a similar issue	Shared goal but having different types of expertise	Cognitive diversity
Weak vs. Strong Ties between Users	Ties between users not necessary	**Weak ties** But strong enough for generalized reciprocity	**Medium ties** Strong enough for the belief in others' good intentions	**Medium ties** Awareness of others' expertise and a way to learn others' bona fides	**Strong ties** Knowledge of others' expertise and awareness of strengths and weaknesses	**Strong ties** In-depth knowledge of others' knowledge
Facilitation or Support	Resources for gathering, vetting, and distributing knowledge	Support provided by users	Facilitation necessary	Support provided by users	Support provided by team/group leader	On-line articulation of an issue or need Support for F2F conversation
Examples of Social Media	CALL, WebEx Intellipedia. ATTPs on milWiki, blogs	Twitter, Tagging, blogs, del.icio.us, Forums	BCKS Forums CAVNET	Social Networking A-Space	Wikis SharePoint	Innocentive Netflicks Second Life? Tele-presence

Purposes ranging from <u>sharing</u> authoritative data to <u>creating</u> new knowledge

Applicable Web 2.0 tools

Source: http://www.nancydixonblog.com/2009/10/do-we-really-need-so-many-kinds-of-social-media.html

Web 2.0 Provides an Environment that Fosters Entrepreneurial Innovation

- So, over time, the mapping between tools and purposes continually changes
  - New tools are being developed
  - Existing tools are evolving
  - Existing tools are being used for new purposes
- In addition, the environment itself is evolving
  - New technologies and standards, including iPhone and its apps, Google gadgets, Facebook Connect, and OpenID/Oauth/OpenSocial standards

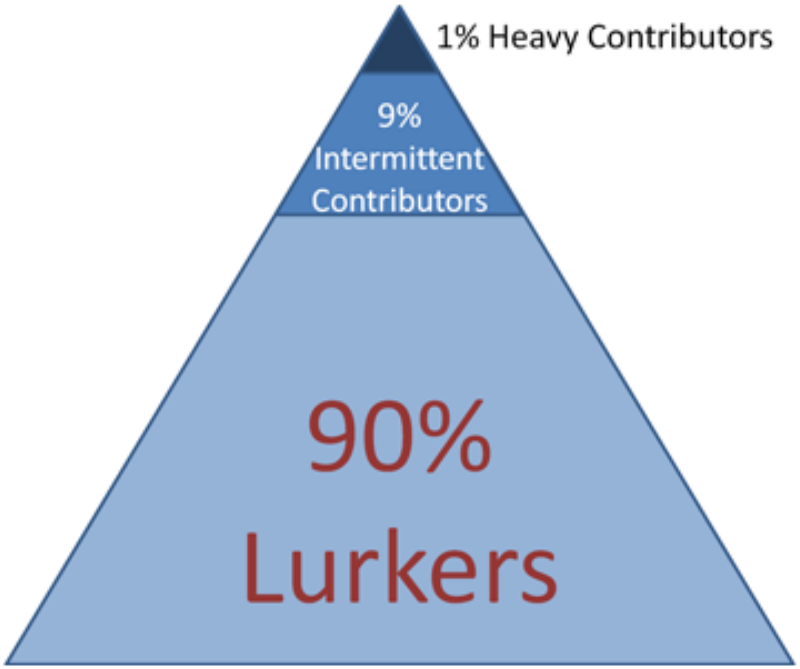
Examples: Innovative and Serious Purposes of Once-Unserious Web 2.0 Tools

- Facebook, launched in 2004 (social networking tool designed for college students, to enable them to keep in touch)
  - Serving as public relations mechanism; e.g., fan pages for the White House, DoD, U.S. Army, Dept. of State, FEMA, many universities, etc.
  - Promoting candidates or causes such as health care reform.
  - Conveying information to the public, e.g., news on Ft. Hood shootings.
- YouTube, launched in 2005 (video sharing tool for sharing personal videos)
  - Fueling protests, e.g., broadcasting images of June 20, 2009, death of Neda Agha-Soltan, a woman protesting the Iranian election.
- Twitter, launched in 2006 (microblogging tool designed for sharing personal status, i.e., answering "What are you doing?"):
  - Sharing knowledge sources, i.e., sending links as tweets.
  - Campaigning.
  - Capturing highlights of conferences.
  - Broadcasting breaking news stories, e.g., November 2008 Mumbai terrorist attack, March 2009 Madagascar coup.
  - Communicating during crises, e.g., "I'm okay" messages after Ft. Hood shootings
  - Fundraising for Haiti, e.g., spreading word of "Text Haiti to 90999" fundraising campaign (through which $10 is charged to cell phone bill of person sending text message and then donated to the American Red Cross).

Observation 3:

Online Communities Tend to Experience A High Degree Of Participation Inequality

90-9-1 Rule of Participation Inequality



Source: Jakob Nielsen, http://www.useit.com/alertbox/participation_inequality.html

Implication of Participation Inequality: Crowdsourcing Takes a Crowd

- Successful Web 2.0 tools do have the crowds
  - Public platforms
    - Google: Over **140M** unique visitors per month[1]
    - Facebook: Over **300M** registered users[2] and over **120M** visitors per month[1]
    - Wikipedia: Over **60M** unique visitors per month[1]
  - Mobile platforms
    - iPhone: Over **30M** sold (plus over **20M** iPod touches)[3]
    - New players: Motorola Droid (250,000 in sales first week) and Google Nexus One (*only* 20,000 in sales first week)[4]
  - Government platforms
    - Intellipedia: Over **30K** registered users on the Unclassified version[5]

[1] http://siteanalytics.compete.com
[2] http://blog.facebook.com/blog.php?post=136782277130
[3] http://online.wsj.com/article/SB125796886127143907.html?mod=rss_Today%27s_Most_Popular
[4] (Compared to over 1.6 million in first-week sales for iPhone). http://economictimes.indiatimes.com/infotech/hardware/Initial-Nexus-One-sales-pale-in-comparison-to-Android-powered-Apple-devices/articleshow/5448233.cms
[5] IC CIO, "Capabilities Brief: Intelligence Community Enterprise Solutions," June 2009

Follow-Up Implication of Participation Inequality: Closed, Small, Voluntary Communities May Struggle

- Why?
  - The 90-9-1 rule means that the odds are against having enough participation to keep the community going.
- Consider online communities of practice, which often have dozens—not thousands or millions—of voluntary participants.
  - Typically, the communities start out with high expectations, some management support and user enthusiasm, and a flurry of activity.
  - But then, after a few weeks or months, the activity tapers off dramatically—the "volunteers" lose their enthusiasm.
  - Example: CORE.gov AIC community

NASA's Solution to Participation Inequality: Add a Human Facilitator

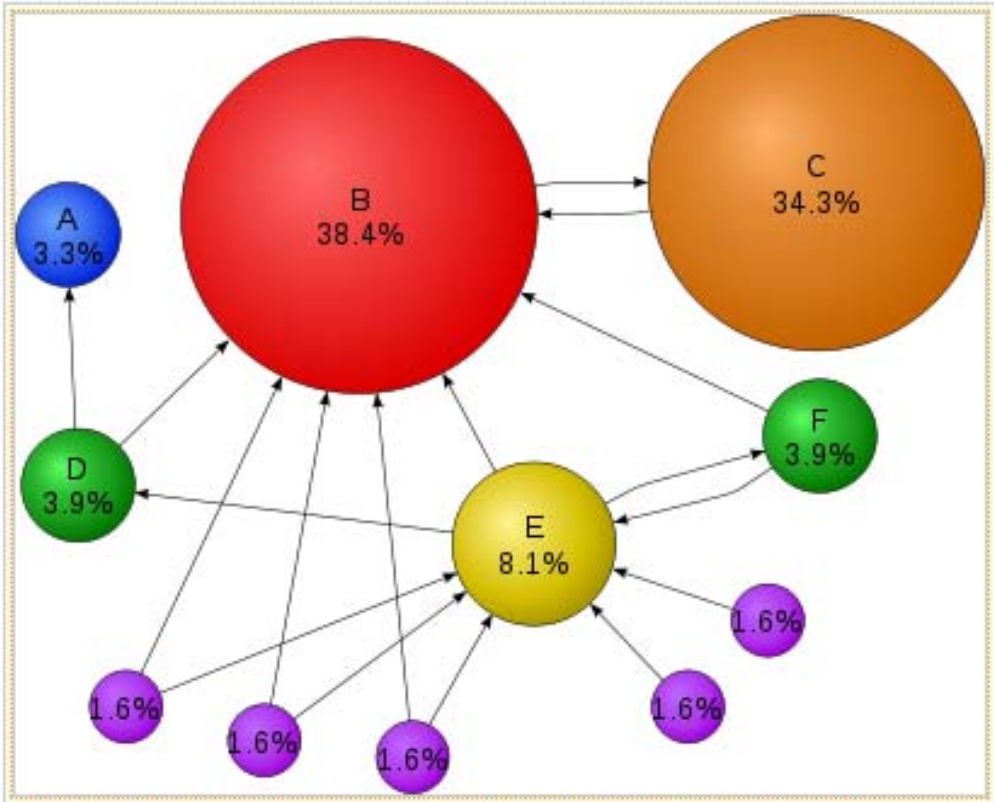
"When we've brought up collaborative systems without that human facilitator in the loop, sometimes they work and sometimes they don't…. The most predictable method for success with online communities of practice is having a human facilitator involved."

-- Jeanne Holm, Chief Knowledge Architect at NASA/JPL and Co-Chair of the Federal Knowledge Management Working Group (KMWG), "Cross-agency Collaboration," FCW Insight eSeminar, October 28, 2009

The NASA Knowledge Management Team provides a facilitator for NASA-wide communities of practice, which represent NASA core competencies. As Holm acknowledges, this is expensive, but crucial for success.

Observation 4:

For Keyword Searching, Crowds Are Often Measured in Terms of Pages and Links



Mathematical **PageRanks** (out of 100) for a simple network (PageRanks reported by Google are rescaled logarithmically). Page C has a higher PageRank than Page E, even though it has fewer links to it; the link it has is of a much higher value. A web surfer who chooses a random link on every page (but with 15% likelihood jumps to a random page on the whole web) is going to be on Page E for 8.1% of the time. (The 15% likelihood of jumping to an arbitrary page corresponds to a damping factor of 85%.) Without damping, all web surfers would eventually end up on Pages A, B, or C, and all other pages would have PageRank zero. Page A is assumed to link to all pages in the web, because it has no outgoing links.

Google Search Algorithm

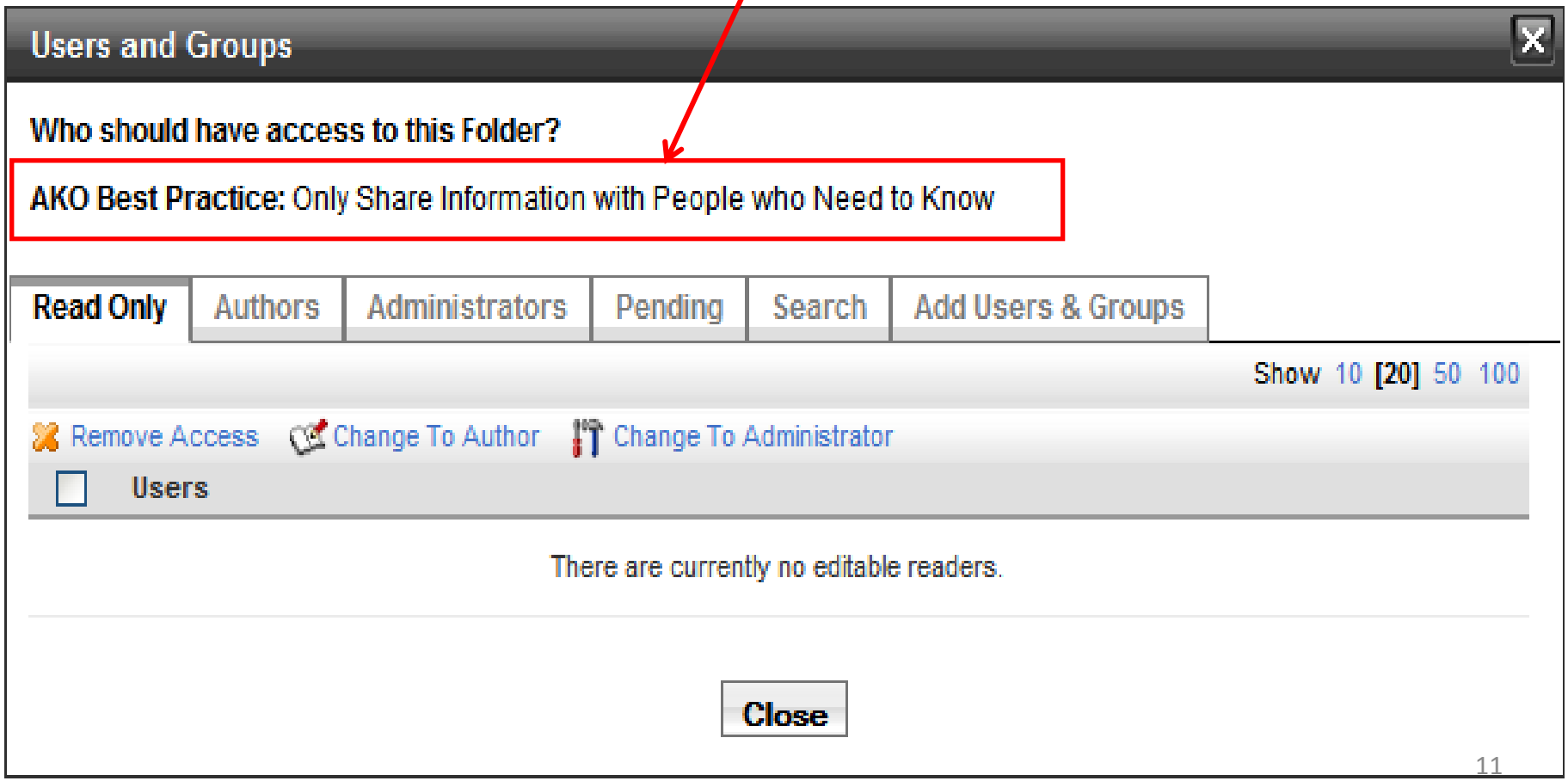
- Google PageRanks are based on the link structure of webpages.
  - When Page B links to Page C, it is essentially voting for Page C.
  - Page B's vote gets a lot of weight, because Page B itself has a lot of votes.
- Google PageRanks depend on "crowds" of linked pages.
  - The richness of the web's link structure makes the algorithm successful.

Source: http://en.wikipedia.org/wiki/PageRank

Observation 5:

Need to Know Sometimes Still Trumps Need to Share; This Practice Limits Sharing, Limits Participation, and Ultimately Limits Capabilities

AKO Best Practice for Access to File Folders



Observation 6:

The Proliferation of Web 2.0 Platforms is Placing a Growing Burden on Users

- Web 2.0 is creating new information silos, making it difficult for users to find the information they need.
  - Multiple collaboration platforms to search
  - SharePoint and other micro-silos with restricted access
- Users are becoming overwhelmed with increasing numbers of usernames and passwords.
  - Security risks, e.g., re-using or writing down names and passwords, etc.
- Users are experiencing social fatigue.
  - Re-entering profile, re-inviting friends, re-selecting privacy preferences, re-submitting content, etc., each time they join a new social networking site

Observation 7:

Standards for Interoperability and Federation are Continuing to Emerge

- Standards for communication
  - SMTP for email: universally adopted
  - XMPP for IM and Google Wave: not universally adopted yet, but increasingly supported
- Standards for search and discovery
  - Discovery metadata standards, including Dublin Core, DoD Discovery Metadata Specification (DDMS), Geospatial Markup Language (GML)
  - OpenSearch
- Standards for identity, authentication, authorization, syndication, social networking, and web applications
  - Security Assertion Markup Language (SAML): Authentication, Authorization, Single Sign-On
  - Microformats: Semantic markup for XHTML and HTML
  - OpenID: Identity, Authentication, Single Sign-On
  - OAuth: Authorization ("valet key for the web" [John Panzer, September 22, 2007, http://www.imc.org/atom-protocol/mail-archive/msg10372.html])
  - Portable Contacts (PoCo): Friends
  - Atom: Syndication (open competitor to RSS) plus Activity Streams ("an extension to the Atom feed format to express what people are doing around web" [http://activitystrea.ms])
  - Open Social: standard application program interfaces, based on XML and JavaScript, for building social software applications that are portable across platforms (e.g., Google, Yahoo!, MySpace, etc.)

Examples of Emerging Social Standards

The Open Stack

Advocated by Google, Yahoo!, MySpace, etc.

Identity & Profile	→	OpenID + hcard
Discovery	→	XRDS-Simple
Authorization	→	OAuth
Relationships & Contacts	→	PoCo + XFN
Activities	→	ATOM + ??
Gadgets	→	OpenSocial

hCard: Microformat for contact information

XFN: Microformat for social relationships

Note: RSS is not an open protocol

Source: http://www.slideshare.net/daveman692/blowing-up-social-networks-by-going-open-presentation#

Observation 8:

Social Networking Sites Present Unique Security Risks

- From "Guidelines for Secure Use of Social Media by Federal Departments and Agencies," Federal CIO Council (ISIMC/NISSC/W20SWG), Version 1.0, September 2009.
  - Social spear phishing attacks
    - Using a lure based on information mined from social networking sites
    - Sending a phishing message via a social media platform, thus bypassing security controls in place for email
  - Social engineering attacks
    - Using information mined from social networking sites to establish a trust relationship with the target, e.g., by expressing interest in similar topics
  - Web Application attacks
    - Using web applications, e.g., Facebook apps, to gain access to private data or to download and install unauthorized software

Observation 9:

Social Networking Sites Have Become a Major Target of Hackers

Percent of Attacks Targeting Various Sites
January-June 2009

Social/Web 2.0	19%
Media	16%
Technology	12%
Internet	12%
Government/politics	12%
Retail	12%
Entertainment	7%
Finance	5%
Education	5%

In the first half of 2009, social networking and Web 2.0 sites were the #1 target of hackers, accounting for 19% of all attacks.

Source: Breach Security's Web Hacking Incidents Database 2009, as reported in Doug Beizer, "Social media and DoD: To be or not to be?" August 21, 2009, http://www.fcw.com/Articles/2009/08/24/WEEK-DOD-social-media-debate.aspx

Observation 10:

The General Trend is Toward Sharing, Consolidation, Regionalization, and Centralization

- Policy
  - Sharing of data and services
  - Transparency
- Organizational Consolidation
  - ODNI, Department of Homeland Security
- IT and Service Regionalization and Centralization
  - Intelligence Community Enterprise Solution (ICES)
  - DoD Net-Centric Enterprise Services (NCES)
  - DISA Defense Enterprise Computing Centers (DECCs)
    - DISA manages 13 DECCS, which host various DoD services, including DISA's RACE, SourceForge, and ProjectForge Cloud offerings.
  - Army's Global Network Enterprise Construct (GNEC)
    - GNEC is the Army's strategy for consolidating its networking and IT infrastructure and operations.
  - Defense Message System (DMS)
    - Services are being regionalized and virtualized by DISA and the PTC.

Recommendations

1. Establish a government-wide collaboration environment of multiple loosely-coupled collaboration services, primarily those services already existing for intra-department use.
2. Make the loosely-coupled collaboration services available to users via customizable thin portals, provided to users by their own departments.
3. Implement the critical infrastructure necessary for the government-wide sharing of collaboration services and underlying data.
4. Adopt standards for interoperability and federated operation of collaboration services.
5. Foster a culture of sharing and collaboration.
6. Establish policies and training for the secure use of collaboration services.

Recommendation 1:

Establish a Government-Wide Collaboration Environment

- The goal should be
  - To establish a government-wide collaboration environment of multiple loosely-coupled collaboration services, primarily those services already existing for intra-department use
    - Different services meet different needs.
    - Loose coupling facilitates: extensibility; exploratory usage of new services; support of department historical or preferred services.
    - Loose coupling reduces dependence on single provider.
  - Rather than to simply choose a new collaboration tool aimed at inter-department collaboration.
    - Attempts to choose a single tool (e.g., OMB MAX, CORE.gov) have met with only limited success.

Scope of Government-Wide Collaboration Environment: Collaboration at All Levels

- Intra-Department collaboration
- Inter-Department collaboration
  - Not only
    - Supporting formally established inter-department committees, working groups, etc. in accomplishing shared goals.
  - But also
    - Supporting ad hoc inter-department groups of USG employees and contractors in accomplishing shared goals.
    - Supporting individual USG employees and contractors in doing their jobs by facilitating routine inter-department information sharing and communication.

Scope of Government-Wide Collaboration Environment: Collaboration <u>of All Kinds</u>

- **Information Sharing.** Making data, documents, photos, images, audio recordings, videos, links, ratings, etc., discoverable and accessible.
  - Breadth of sharing can vary widely (e.g., from publically accessible Wikipedia to closed OMB MAX "agency communities").
- **Communication.** Exchanging thoughts, feelings, information, etc.
  - Can be *synchronous* or *asynchronous*.
  - Can be *one-to-one*, *one-to-many*, *many-to-one*, or *many-to-many*.
- **Cooperative Work (i.e., "collaboration in the narrow sense").** Cooperatively working toward a shared goal, e.g., developing a concept, writing a paper, creating web content, formulating a policy, accomplishing a mission, etc.
  - Degree of participation can vary from *open* to *closed*.
    - Can transition from closed (e.g., while a draft paper is in development) to open (when it is completed)
  - Degree of interaction can vary from *wiki-style* (pseudo-simultaneous updating) to *Document-Management-System-style* (serial updating—checking documents out for updating).

↓

"Collaboration in the Broad Sense"

Recommendation 2:

Make Collaboration Services Available to Users Via Customizable Thin Portals

- The loosely-coupled collaboration services should be accessible to users through "thin portals" offering <u>single-point access to the services</u>.
  - Thin portals should be provided independently by Departments to employees and contractors.
    - No need to establish portal at U.S. Government level.
  - Thin portals should be customizable; that is, users should be able to search for and add services to the portals (similar to the ideas behind the iPhone, iGoogle, DoD Storefront, etc.) to suit their (changing) needs.
    - Access to services may be controlled for management, security, or privacy purposes.

Example: Intelink Portal,

Providing Access to Multiple Loosely-Coupled Collaboration Services

Security Banner

This page contains dynamic content -- Highest Possible Classification is Unclassified

Home MyIntelink

INTELINK 15th Anniversary SINCE 1994

Web | Recent Intel | Media | White Pages

Search Web

Advanced Search | Preferences

Intellipedia Blogs Inteldocs Hosting Messenger Email IC PKI Passport Bookmarks iVideo Gallery Pilots

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11/20/2009

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ntiweb3o

Hypothetical button for searching for and enabling access to additional apps.

App Search

Recently introduced Intelink Pilots Button provides access to pilot services (e.g., Chirp, Federal Wave), thus facilitating exploration.

Recommendation 3:

Implement Critical Infrastructure for Government-Wide Sharing

- To make intra-department services and underlying data shareable on a government-wide basis, critical infrastructure must be put in place.
  - Critical infrastructure includes Federated identity, credential, and access management (FICAM) and federated search.
  - Applicable technology and standards, which are available and maturing, include PKI cards (e.g., DoD CAC), SAML, XACML, OpenID, OAuth, and OpenSearch.
- Federal CIO Council should continue to play lead role in identifying critical infrastructure and guiding implementation of it. For example:
  - Publication of "FICAM Roadmap and Implementation Guidance" on November 10, 2009.

Recommendation 4:

Adopt Standards for Interoperability and Federated Operation of Collaboration Services

- To ensure interoperability and federated operation of intra-department collaboration services, Federal CIO Council should track standards and selectively adopt as they mature. For example:
  - Communication services
    - XMPP, used in IM and Google Wave, is maturing.
  - Social networking services
    - Standards for profiles, relationships and contacts, activities, and widgets are maturing.
- The Federal CIO Council should examine ongoing work of other enterprise collaboration efforts (e.g., OMB's Federal Enterprise Architecture (FEA), DoD's Collaboration Interoperability Working Group (CIWG), IC's Enterprise Collaboration Service Working Group (ECSWG), etc.) and determine whether and how the various efforts can be synergized.

Recommendation 5:

Foster a Culture of Sharing and Collaboration

- The U.S. Government and individual departments should continue to promote and foster a culture of sharing; they need to implement standard operating procedures reflecting <u>need to share</u> policy statements.
  - Keep communities <u>open</u> to the extent that privacy and security allow.
    - Open communities encourage sharing of information, architectural infrastructure, and applications.
      - Closed communities perpetuate the existence of information silos and duplicative infrastructure and applications.
    - Open communities (e.g., Wikipedia) can more easily achieve the user participation necessary for success.
  - Collaboration capabilities depend as much on culture as on technology.

Recommendation 6:

Establish Policies and Training for the Secure Use of Collaboration Services

- Policies and practices on both the personal and professional use of collaboration tools and services should be established, and training should be implemented to inform users of those policies.
  - Users need to be sensitized to the unique security risks associated with collaboration tools and services, notably those with social networking capabilities.

Implementation and Funding of Shared Collaboration Services

Funding Issues

- Issues vary by extent of sharing
  - Limited sharing: Sharing a service with individual users from other departments for purposes of inter-department collaboration
    - Example: One department hosts (i.e., acquires and funds) a wiki and allows guests (i.e., individuals from other departments) to access the wiki for purposes of inter-department collaboration.
  - Full-scale department-level sharing: Sharing a service with one or more other departments for purposes of intra-department, as well as inter-department, collaboration
    - Example: Two or more departments jointly acquire and fund a service for general use.

Limited Sharing of a Collaboration Service: Host Should Fund Guest Usage "From the Top"

- Each Government entity funding a service for its own employees and contractors budgets for a certain level of usage by those internal users.
  - To accommodate inter-department collaboration, the Government entity should budget for a "reasonable" level of usage by external users or "guests."
    - Funding should come from the top; guest usage should be built into the budget, just as certain other items (e.g., maintenance, backups, growth, etc.) are built into the budget.

To Assure Fair Usage, Host Should Monitor Guest Usage and Take Remedial Action as Necessary

- Government entity should monitor the usage of its collaboration services
  - To determine “normal” usage patterns, possibly by user and/or organization type
  - To enable better forecasting of demands and to inform the budgeting process
  - To identify “heavy” or “greedy” users and organizations
- Government entity should examine usage by users and organizations whose loads exceed the norm, resulting in one or more of the following actions:
  - Request justification of the level of usage
  - Restrict or cut usage
  - Request contributions for funding the service (e.g., through establishment of MOAs between the provider and the consumer of the service)
  - Accept the usage level as appropriate

Full-Scale Department-Level Sharing of a Collaboration Service

- Points of contention
  - Funding: Who funds services?
  - Fair Usage: How is usage of services regulated?
- All *traditional* government procedures within a single department are antithetical to sharing an expensive resource across the various entities in that department. With current policies, any perturbation in funding, usage, or evolution tends to upset the equilibrium and lead to failure.
  - For a sharing arrangement among several departments, the issue is much the same.

Funding Approaches

- Funding responsibility should <u>not</u> be assigned to one or more of the entities sharing the service, since:
  - When budgets are tight, one entity may cut funding.
  - Cost to the remaining entities therefore increases.
  - This may cause others to exit, resulting in the domino effect to failure.
- Requires some fundamental changes in acquisition policies.
- Two suggested solutions:
  - Fund “from the top.”
  - Embrace Cloud computing, specifically, the emerging Software as a Service (SaaS) paradigm.

“From the Top” Funding

- Often, a source of “from the top” funds is not available.
- There is limited experience in government’s funding “from the top.”
  - Intelink successfully provides services to the Intelligence Community and beyond (DoD, State Department, etc.).
  - DKO likewise extends the Army AKO with additional funding from the top.
  - DISA’s Net-Centric Enterprise Services (NCES) provides other core services to the DoD; but not yet tested in a fully operational situation.
- As in the case of limited (i.e., host-guest) sharing, monitoring of usage is critical; usage should be regulated with some mechanism to burden overuse, either short term or averaged over the longer term
  - Since any using entity sees this as a “free” resource this can become a problem.
  - Not easy to manage prioritization.

Cloud Computing Implications for Funding Strategy

- Collaboration Solutions can be provided as Software-as-a-Service offerings
- Costs shared by the users (i.e. agencies) of that service
- Some governance on which solutions are recommended is required

Cloud Computing provides a new implementation strategy and funding approach for collaboration services.

Cloud Computing Overview

- Cloud computing: Represents a natural evolution of computer resource sharing strategies, which date back to the 1960s vision of a “computer utility” and Multics (Multiplexed Information and Computing Service)
- Enablers:
  - Commodity computer resources
  - Virtualization
  - Service oriented architectures
  - Extensive broadband networks

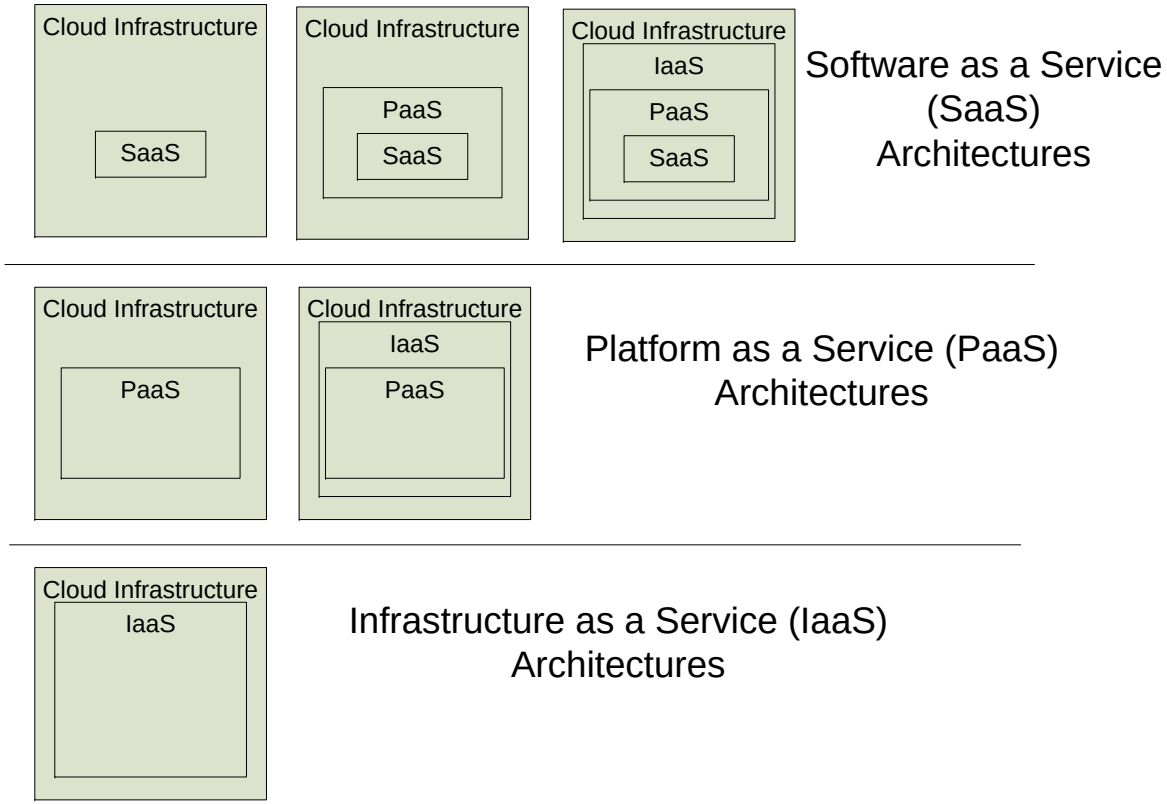
Overview of Cloud Computing (cont)

- Features and benefits:
  - Network-based access, providing location independence to customers
  - Pooled resources managed by professional operations staff 24/7
    - Economies of scale
    - Efficient use of resources through averaging out peaks and valleys of resource demands over large customer base
    - Reduced administrative burden and costs to customers
    - Enhanced security through centralization and tighter management and control
  - On-demand self-service provisioning
    - Elimination of upfront capital expenditures by customers
    - Rapid deployment and agility as seen by customers
  - Scalability and elasticity (resources allocated to each user dynamically scale up or down to accommodate changes in workload)
    - Significant cost savings to customers (no need to pay for underutilized servers just to meet peak loads)
  - Measured service, enabling “pay per use” business model

Cloud Service Models

- Infrastructure as a Service (IaaS)
  - Virtualized computer resources
  - Examples: Amazon's S3 (Simple Storage Service) and EC2 (Elastic Compute Cloud)
- Platform as a Service (PaaS)
  - Virtual computing platforms (higher level of abstraction than IaaS) on which applications can be deployed
  - Examples: Google App Engine, DISA's RACE (Rapid Access Computing Environment), hosted software development environments (such as Salesforce.com's Force.com, SourceForge.net, DISA's SoftwareForge and ProjectForge)
- Software as a Service (SaaS)
  - Applications provided as a service
  - Examples: Salesforce.com, Google Apps, Pentagon Telecommunications Center (PTC) Defense Message System (DMS) services

Relationships between the Cloud Service Models



Source: Peter Mell and Tim Grance, "Effectively and Securely Using the Cloud Computing Paradigm," NIST, Information Technology Laboratory, October 7, 2009, http://csrc.nist.gov/organizations/fissea/2009-conference/presentations/fissea09-pmell-day3_cloud-computing.pdf.

Cloud Computing Business Models: Evolving

Type	Customer	Unit of Deployment	Offering	Pricing Structure
IaaS	Software Owner	Virtual Machine Image	· Runtime environment for virtual machines · Cloud storage · May have Cloud Services	All charges per billing period. · Compute usage per hour · Data transfer in per GB · Data transfer out per GB · I/O requests per million · Storage per GB · Storage transfer in per GB · Storage transfer out per GB · Storage I/O requests per thousand For more details see Figure 3.
PaaS	Software Owner	Application Package	· Runtime environment for application code · Cloud Storage · Cloud Services	All charges per billing period. · Compute usage per hour · Data transfer in per GB · Data transfer out per GB · I/O requests per million · Storage per GB · Storage transfer in per GB · Storage transfer out per GB · Storage I/O requests per thousand For more details see Figure 3.
SaaS	End User	Not Applicable The SaaS vendor does business directly with the End User	· Finished applications	Per user, per month

Utility model (pay per use, as illustrated in the chart) *or* subscription model (pay per operating environment, as in DISA RACE case)

Subscription model (as illustrated) *or* utility model (pay per transaction, as in mobile phone text message case)

Source: Keith Pijanowski's Blog, http://www.keithpij.com/Default.aspx?tabid=36&EntryID=27, May 31, 2009

Example of Vendor Offerings: Atlassian Confluence (Used for OMB MAX)

Traditional offering

SaaS offering

	Download Confluence Deploy on your server	Hosted Hosted Enterprise Wiki Monthly | Yearly
	Download and deploy on your own server	Your own, dedicated instance hosted by Atlassian
10 users	Get started for $10 All proceeds go to charity	$150/mo
25 users	$800	$300/mo
100 users	$2,200	$500/mo
500 users	$4,000	$700/mo
2,000 users	$8,000	$1,000/mo
2,000+ users	$12,000	$2,000/mo
	DOWNLOAD	TRY

Perpetual use and one year of maintenance and support

Source: http://www.atlassian.com/software/confluence/pricing.jsp, December 19, 2009

Example of Vendor Offerings: Jive (Used for IC's A-Space and DoD's MilBook)

From the Jive website (http://www.jivesoftware.com/products/how-to-buy, December 19, 2009):

Delivery Options

Jive offers two deployment paths that meet enterprise security, scalability and reliability needs. Jive's Software-as-a-Service (SaaS) option offers rapid deployment with the proven scalability to support hundreds of thousands of users in tandem with adherance to strict enterprise compliance and security requirements. Our on-premise software offers an open and deep architecture that meets custom integration needs while being easy for IT departments to maintain and upgrade.

Software as a Service

SaaS offering

We worry about all the hard stuff:

- No hardware to install
- Secure, scalable infrastructure
- No added infrastructure costs or resources for you
- Automatic updates and back-ups along with 24/7 availability

Licensed / Self-hosted model

Traditional offering

Utilize your existing infrastructure:

- Install and run Jive inside your firewall
- Maintain full control
- Still receive regular updates

(continued on next slide)

Jive Offerings (continued from previous slide)

	Jive Express	Jive SBS (SaaS)	Jive SBS (On-Premise)
Maximum Users	1,000	Unlimited	Unlimited
Cost	$3/user/month	Contact us	Contact us
Billing	Quarterly billing (credit card)	Annual license (invoiced)	Annual license (invoiced)
Deployment	Cloud (Amazon EC2)	Hosted (Dedicated - Sungard)	Self-Hosted
Built-in deployment wizard	✓		
Support	Concierge & support community	Support contract & private support space	Support contract & private support space

Jive's two SaaS offerings

Jive provides its SaaS offerings on top of the IaaS/PaaS offerings of other vendors

<Education/Training and various optional modules (e.g., Analytics, Mobile, SharePoint Connector, Video) are available>

Technical Consulting		✓	✓
SSO / Integration		✓	✓
Theming		✓	✓
Customization / Plugins / Widgets		✓	✓
Strategic Consulting		✓	✓
	Sign Up	Contact Sales	Contact Sales

Cloud Computing Leads to a Wide Range of Acquisition Options for Collaboration Services

For example:

- Government customer acquires and installs collaboration software
  - On internal servers, either dedicated or virtualized
    - For many reasons (e.g., efficiency, reliability and availability, and scalability), virtualized servers are generally preferred.
  - Or on public or private cloud servers, typically virtualized and acquired in the form of Platform as a Service (PaaS) or Infrastructure as a Service (IaaS)
    - This choice relieves the Government customer from the burden of managing the platform or infrastructure.
    - Private cloud may be provided by another Government entity (e.g., RACE offering, provided by DISA using their DECCs).
- Or Government customer acquires the collaboration service as Software as a Service (SaaS)
  - From the collaboration service vendor
    - Atlassian offers Confluence as a customer-hosted service or as a vendor-hosted SaaS service. (Note that OMB uses the customer-hosted version for OMB MAX.)
  - Or from another Government entity
    - Defense Message System (DMS) services by Pentagon Telecommunications Center (PTC)
    - DoD Enterprise Search is provided by a partnership between DISA and the IC CIO

Each Government entity can independently decide how to acquire each of its collaboration services.

Shared Funding of SaaS Services

- SaaS significantly reduces funding issues for customers:
  - No upfront capital expenditures
    - Pay per use or subscription, typically on a monthly basis
  - Rapid deployment
    - On-demand self-service provisioning
  - Scalability and elasticity
    - Resources scale up or down with customer demand
  - Measured service
- If two departments are sharing a SaaS service and one department opts out, the other department is not left with the bill. The opting out department simply cancels its subscription.

Shared Funding of SaaS Services (cont)

- What if a SaaS offering is either unavailable or unacceptable to the customers (e.g., sensitivity of data requires that the service be implemented on secure dedicated servers, but the SaaS vendor does not offer such an option)?
  - Then customers may be forced to acquire collaborative software rather than SaaS.
  - In this case, the customers can still utilize Cloud computing by acquiring the required servers and other computer resources as Cloud services (PaaS and IaaS).
    - Advantages of Cloud computing apply to the computer resources.
    - If customer demand decreases (e.g., if a customer opts out), then the computer resources can dynamically scale down.
      - Unused resources do not incur charges.

Bottom Line

- Construct a government-wide collaboration environment that
  - Adopts the principles of loose coupling and service-oriented architectures to
    - Enable departments (or other organizational entities) to pursue solutions that best meet their own needs
    - Enable individuals to customize their collaborative experience through iGoogle-like or iPhone-like app store approaches
  - Draws on the powers and benefits—both technical and financial—of Cloud computing to achieve agility and affordability
  - Enables collaboration across departments through:
    - Host-guest relationships - a department allows individuals from other departments to use its services on a guest basis
    - Standards and federation – departments adopt standards and establish federated services