2009 AF SOA Developer’s Conference

Integrity - Service - Excellence

Supporting Collaboration & Knowledge Sharing in Software Development

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Date: 21 May 2009

554 Wired for War
Knowledge Sharing & Collaboration

What are we really talking about?

• A range of practices and technologies used in an organization to identify, create, represent, distribute and enable adoption of artifacts, lessons learned, best practices, and knowledge

Developer Collaboration

• Few software developers have all the knowledge needed for developing today’s complex software systems so collaboration has become an essential aspect of software development and implementation

Knowledge Sharing

• Encompasses the transfer of knowledge among software developers and the collaborative creation of new knowledge that is needed for the development/implementation/maintenance of software systems
  • **Tacit knowledge** – subjective, experiential learning – hard to document hard to transfer/teach/learn - involves a lot of human interpretation
  • **Explicit knowledge** - objective, rational, technical - easily documented - easily transferred/taught/learned
Drivers

Software development/implementation is a very knowledge intensive activity in which trial-and-error is a dominant technique in resolving problems

- Software development requires extensive knowledge from a wide range of domains and sources
- Developers can greatly benefit from reusing positive and negative experiences that other developers have had in the past
- Helps retain development knowledge and expertise in face of retirements, transfers, etc.

With the expansion of software outsourcing and service related development, geographically distributed software development is rapidly becoming a dominant development model

- A new personalized, context-sensitive and decentralized concept for sharing software development knowledge that can be seamlessly integrated into our software development /implementation environment is required
Challenges

Organizational Boundaries

- Often collaboration practices are organizational proprietary
  - Each organization determines level & manner of involvement
  - Multiple standards & practices (coding standards, engineering Processes, etc)
  - Funding issues
  - Can lead to silo mentality

- Contextual Limitations
  - Information that seems to be irrelevant for resolving a given problem from the point of view of a developer could be very relevant for another developer, due to his/her background knowledge or the given working context
  - The problem is not only to find and store experience, but to represent it in a highly reusable form
What Do We Need

Capabilities

• Communication
  • Enable people to connect to other people

• Collaboration
  • Enable people to work together

• Storage
  • Store and maintain the knowledge - who has the knowledge – who can access – how to access

Supporting Technologies

• Synchronous
  • Instant messaging
  • Video/audio conferencing
  • IRC (chat room)
  • Application/whiteboard sharing

• Asynchronous
  • Mailing-lists
  • Message/Discussion boards
  • Wiki
  • E-mail
  • Shared Calendars
  • Structured & unstructured data repositories
  • Process/workflow support
Knowledge Now is a web-based Air Force Materiel Command (AFMC) system designed to support virtual collaboration, people networks, and on-the-job learning.

The concept of AFKN revolves around Communities of Practice (CoPs).

Each CoP residing within AFKN is a self-contained, virtual community that represents a particular segment of the Air Force workforce.

AFKN CoP collaborative features:
- Community Calendar
- Discussion Forums
- Document Management
- Tell a Friend
- Wisdom Exchange
AFKN CoPs

Pros

• Existing solution – no cost for use/implementation
• Some knowledge sharing capabilities – Discussion boards, Wiki
• Document management capabilities

Cons

• Primarily a knowledge management solution
  • Not geared towards collaborative development
• Locked in to tools/processes/solutions provided by AFKN (Wikis, discussion forums, etc)
AFMC Enterprise Information Management (EIM) System

Unstructured Data
- Document Management
- Version control
- Check in/out
- Records Management
- “Google like” Search
- Process Automation (Workflow)

Future Capability

Knowledge Management
- Blogs
- Wikis
- Ask an Expert

Production Ready

Structured Data
- wInsight (EVM)
- SMART
- CCaR
- ARM
- Office Project

EIM Capabilities
- Team Collaboration
- Management Dashboards

Other Standard Business Systems
- (ProSight, Powersteering, etc.)

External Data Systems
Pros
• Existing solution – no cost for use/implementation
• Strong knowledge management capabilities – Wiki, blogs, ask-an-expert
• Some team collaboration support – workflows – shared calendars
  • Projected to have dashboard and more extensive workflow support

Cons
• Currently limited to AFMC users
  • Scheduled for .mil access in June 2009 - .com & .edu later
• Primarily a knowledge management solution
  • Not geared towards collaborative development
• SharePoint enterprise solution
  • Locked in to tools/processes/solutions provided by EIM
• Potential for storage issues
SoftwareForge.mil

Find Software
- DoD Open Source
- DoD Community Source

Develop Software
Project Workspaces

S/W Version Control

Tracker
Source Code
File Releases
Documents
WIKI
Forums
Tasks
Reports
Project Admin

Bugs, Requirements
Feature Requests
Source Code
Configuration Mgmt
Collect, Archive &
Release Packages
Document
Management
Project-Based Wiki
Discussion Forums
Task Hierarchy,
Alert Mechanism
Real-Time Reports
& Status
Central User and
Project Admin
Software.forge.mil

Pros

• Existing solution – no cost for use/implementation
• Strong team development and collaboration support
  • Supported by CollabNet platform
• Full integrated suite of code, build, test & collaboration tools

Cons

• Geared mostly towards team/project development collaboration
  • Does have some knowledge management support
• Access is limited U.S. military, DoD government civilians and DoD contractors – CAC access – no access for private industry
• Fairly new – support/standards/processes potentially in flux
Other Solutions

**IBM Jazz**
- End-to-end team collaboration and governance across all disciplines of the development lifecycle

**Web-Based Solutions**
- Bricolage
- Dimdim
- DotNetNuke
- eGroupWare
- Group-Office
- Horde
- OpenGoo
- phpGroupWare
- ProjectPier
- Simple Groupware
- SlashCode
- TikiWiki CMS/Groupware
- Tine 2.0
- Wiggio

**Project Collaboration Solutions**
- dotProject
- eGroupWare
- Fle3
- Horde
- JavaForge
- Mindquarry
- OpenGoo
- phpGroupWare
- Plone
- project.net
- SharpForge
- Trac In
Way Ahead - General

Make reusable components, developer expertise, and knowledge easily available across organizations regardless of location or organizational constraints

• Foster a collaboration culture
  o Identify and remove barriers to adoption
  o Reward innovation
• Manage by letting it happen
• Provide organizational support and skills
• Highlight and promote professional and organizational benefits
• Set aside play time
• Expand out past our program and organizational ‘silos of excellence’
Way Ahead - Specific

Stand up a collaborative and information sharing environment across DoD & private industry

• Accessible to DoD and private industry
• Use open-source development/implementation approach
  • For developers, by developers

Set up regular “open” brainstorming sessions to establish:

• Processes/Practices
  • Group notifications/communications
  • Publishing and discovery
  • Tiered access
  • Support roles (moderators, SMEs, etc)

• Technical solutions
  • Evaluate existing solutions
  • Submit candidate solutions
  • Select & implement
How Can You Help?

First brainstorming session is scheduled for 1 June 09 @ Gunter
- Dial-in is available
- Grab a flyer – first session and contact info

Get involved
- Developers, managers, vendors
- Enterprise benefits are only realized if everyone in the enterprise helps
- Only limitations are self-imposed
The challenges of software development are certainly not going to go away, for we as an industry are continually being driven to do more with less. Methods and processes help; so do languages, frameworks, and tools. However, software development is ultimately a human endeavor, and as such it's ultimately the efforts of the software development team that enable us to deliver quality systems in a predictable and sustainable fashion.” (Grady Booch)
Questions

It's QUESTION TIME!!