Eclipse Communication Framework

http://www.eclipse.org/ecf

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Committer and Project Lead

Team Communication for Open Source Projects

- How are OS Projects Different from Other Projects?
  - ◆ Membership
    - Distributed
    - Each Person in Multiple Groups
      - ✦ Within and cross-organizational
    - Frequent Resource Changes
    - Diverse Skills and Backgrounds
    - Diverse Cultures (e.g. language)
  - ◆ Project Organization
    - Flat
    - Self-driven/Voluntary
    - Communication/Collaboration Within and Across Teams
  - ◆ Community Expectations
    - Open Planning Required
    - Responsiveness to Community Contributions
      - ✦ Bug reports, patches, documentation, etc.

Communication Tools for Open Projects

- Multi-Protocol/Interoperability
  - ◆ People use Different Communication Tools
    - ▪ IRC, Yahoo, MSM, Google Talk, etc.
  - ◆ Each member in multiple groups
- Integrate/Simplify
  - ◆ With UI - Don't want 10 IM User Interfaces for 5 Teams
  - ◆ With Other Tools – Workbench, Editors, Debugging, etc
- Extensible
  - ◆ Customize UI for Teams
  - ◆ Integrate with Team-specific and/or Proprietary Tools
  - ◆ Add support for specific processes/approaches/conventions

Project Themes: Interoperable, Integrated, Extensible

Goal: Lower Barriers to Team and Community Communication

to

Increase Productivity

Increase Trust

Increase Community Participation

Increasing Productivity via Project Diversity

- *The Difference by Scott Page*
  - ◆ **Diversity Trumps Ability**
    - ▪ Pre-Conditions
      - ✓ High-performing individuals
      - ✓ Difficult problems
    - ▪ Good Diversity
      - ✦ Cognitive Diversity: Think Different[tm]
      - ✦ Leads to More/more Varied 'toolboxes'
      - ✦ Avoid 'Local Maxima' in Solution Searches
    - ▪ Bad Diversity
      - ✦ 'Fundamental preferences'
        - ★ e.g. 'What are the project's goals'?

Project Diversity via Communication

- Use Existing Diversity Effectively
  - Make it Easy for 'Outsiders' to Communicate Directly With You
    - Use Client Interoperability
  - Expose Unfinished Work
    - Milestones, Dev Mailing List, Wiki, Bugzilla, IM/Chat
  - Communicate Regularly and Publicly with Community
    - IRC, IM/Conference Calls, ECF Collaboration Groups, etc.
  - Solicit [Beg for] Contributions
    - Bugzilla/BugDay/IRC, etc.

Demos

- IM/Chat
  - XMPP, IRC, Google Talk, Yahoo, Skype, Others

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Increasing Trust

- Opportunities for Real-Time Interaction
  - ◆ F2F/EclipseCon
  - ◆ Conferencing
  - ◆ Make Committer Membership Visible (team.php)
  - ◆ Have a Project Page and Update Regularly (index.php)
  - ◆ Real-Time Collaboration
    - ▪ URL Sharing, File Sharing, Screen Capture
  - ◆ Shared Editing
    - ▪ Use Case: Code Review

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Increasing Integration

- Real-Time Communication Integrates Well With
  - ◆ Workbench (sharing resources)
  - ◆ Bug Tracking (Mylyn sharing tasks)
  - ◆ Conferencing
    - ▪ Shared Editing

Demos

- Real-Time Collaboration
  - URL Sharing, File Sharing, Screen Sharing

- Shared Editing
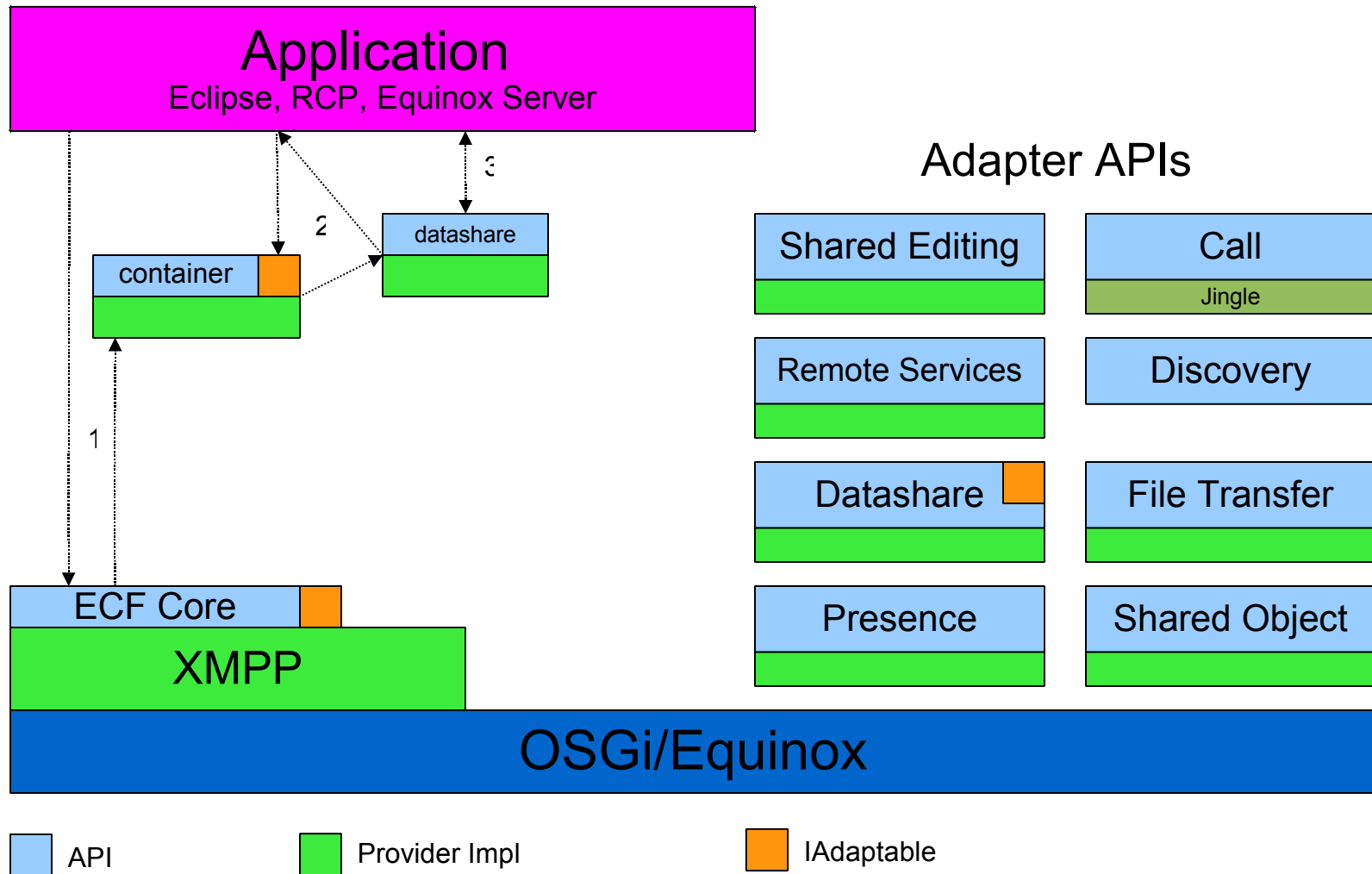 - Use Case: Code Review and others

Can Absence Make a Team Grow Stronger?
Majchrzak, et. al.

- Answer: yes
  - ◆ Rule 1: Exploit Diversity
  - ◆ Rule 2: Use Technology to Simulate Reality
    - ▪ Virtual Spaces for Team and Community
  - ◆ Rule 3: Hold Team Together: Build Trust

- See Bjorn's Blog Entries

Framework-Provided Extensibility

- APIs through Adapters
  - ◆ Core: Very small
    - ▪ Identity, Distributed container - IContainer
  - ◆ API plugins/bundles – aka Container Adapters
    - ▪ Discovery, File Transfer, Remote Services, Datashare/Channels, Shared Objects, Call Setup, Etc. (by you OR me)
- Providers Implement: core API + 0 or more Adapter APIs
- Extensibility Also Allows Exploiting Diversity In Community
  - ◆ Deep additions by others

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ECF Provider Architecture

Application
Eclipse, RCP, Equinox Server

container

datashare

1

2

3

Adapter APIs

Shared Editing	Call
	Jingle

Remote Services	Discovery

Datashare	File Transfer

Presence	Shared Object

ECF Core

XMPP

OSGi/Equinox

API

Provider Impl

IAdaptable

In Code

- `container = ContainerFactory.getDefault().createContainer();`

- `ds = (IChannelContainerAdapter) container.getAdapter(IChannelContainerAdapter.class);`

- `IChannel channel = ds.createChannel(...)`

API: Dynamic Service Discovery

- org.eclipse.ecf.discovery
  - IDiscoveryContainerAdapter
    - Adapter from IContainer
  - Service Discovery API
    - Get properties for existing service types: ITunes, http, etc.
    - Register new types for equinox-based services: updatesite, remotesvcs, etc.
  - Two Providers So Far...
    - Zeroconf/Rendevous (Apple iTunes)
    - SLP (RFC 2608)

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Demo

- Dynamic Service Discovery

API: Asynchronous File Transfer

- org.eclipse.ecf.filetransfer
  - ◆ IRetrieveFileTransferContainerAdapter
    - Adapter from IContainer
  - ◆ API
    - sendRetrieveRequest
    - Asynchronous notifications to provided listener
      - ✦ Start,Data,Done
  - ◆ Several Providers
    - URLConnection (JRE), Apache httpclient 3.0.1, SCP/SSH/JCraft, Eclipse File System
    - Uses Jobs API
  - ◆ Also have send and browse API
- Being used for p2

Demo

- File transfer

API: Remote Services

- org.eclipse.ecf.remoteservice
  - ◆ IRemoteServiceContainerAdapter
    - ▪ Adapter from IContainer
  - ◆ API
    - ▪ Looks very much like **OSGi Services**
    - ▪ **Clients have choice**
      - ✦ **Proxy (transparent)**
      - ✦ **IRemoteService (explicit)**
        - ★ Asynchronous (Listener) Invocation
        - ★ Futures
  - ◆ Providers
    - ▪ R-OSGi, JMS ActiveMQ/BEA, ECF generic, JavaGroups, Riena
    - ▪ Others (?)

Demo

- Remote Services

Summary

- ECF for Open Project Communications
  - ◆ Build Diversity, Trust, and Community
  - ◆ Through Technology
    - ▪ Interoperability
    - ▪ Integration
    - ▪ Extensibility
  - ◆ Project
    - ▪ http://www.eclipse.org/ecf
  - ◆ Wiki
    - ▪ http://wiki.eclipse.org/Eclipse_Communication_Framework_Project
  - ◆ IRC
    - ▪ irc://irc.freenode.net/eclipse-ecf
  - ◆ XMPP server for Eclipse Projects
    - ▪ https://bugs.eclipse.org/bugs/show_bug.cgi?id=126089