Open-Source Development Dynamics

Fedora Perspective

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Fedora Brief History

- **Cornell Research (1997-2001)**
  - DARPA and NSF-funded research
  - Interoperable Repositories (experiments with CNRI)
  - Policy Enforcement research and prototyping
  - CORBA-based reference implementation developed and provided as free, "open source" software to researchers

- **Open Source Software (2002-present)**
  - Andrew W. Mellon Foundation funding
  - Re-architected for XML and web services
  - Fedora 1.0 (May 2003)
  - Fedora 2.0 (Jan 2005)
  - Fedora 2.1 (Jan 2006); *we wish we called it 3.0*
  - Mozilla Public License → Educational Community License

"Funded Era"
Andrew W. Mellon Foundation

- **Fedora Phase 1 (3 years, 2002-2004)**
  - $1.2 million
  - Build core repository service
- **Fedora Phase 2 (3 years, 2005-2007)**
  - Add additional key features to core
    - Authentication and XACML authorization
    - RDF capabilities
  - Fedora Service Framework
  - Scalability and Reliability
  - Sustainability model and community-based development

Fedora Core Development Team

Project Directors

- Sandy Payette, Cornell University
- Thorny Staples, UVA

Team

- Chris Wilper
- Eddie Shin
- Ross Wayland
- Ronda Grizzle
- Bill Niebel
- Bob Haschart
- Carl Lagoze
- Tim Sigmon

Open Source Software…
current development process

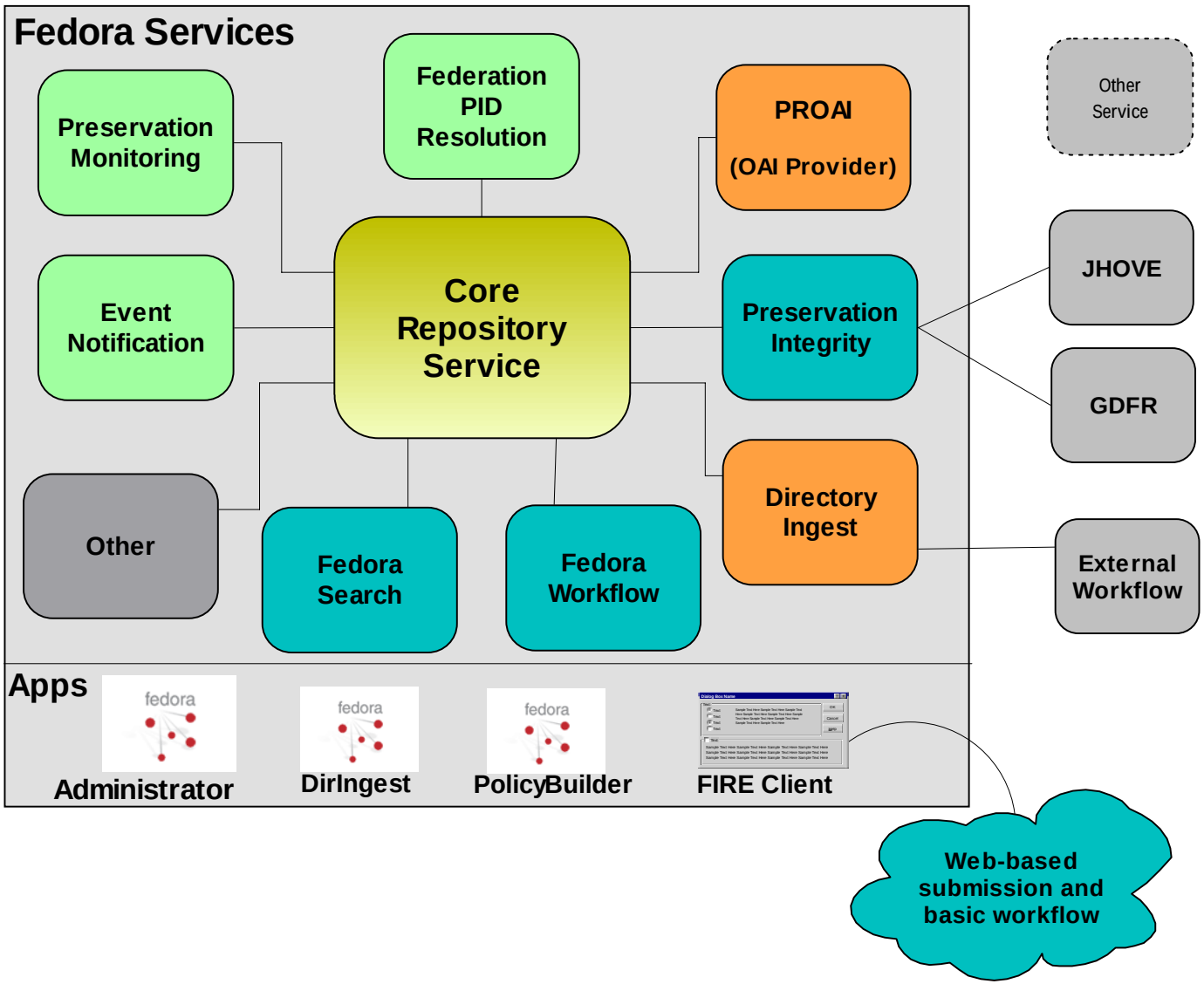
Development Philosophy : It's is in our Name

- **Fedora**
  - **F**lexible
  - **E**xtensible
  - **D**igital
  - **O**bject
  - **R**epository
  - **A**rchitecture
- Flexibility means giving our users choices
  - Object model adapts to different needs
  - System not designed for any one community use case
  - Modules that are easily replaceable
  - Configurability, configurability
  - Avoid feature lock in; ensure exit paths

Educational Community License (ECL)

- Currently used by Fedora, Sakai, OSPI, Kuali and
- An approved Open Source Initiative license
- Hope to decrease institutional barriers to adoption of OSS
- As an "open/open" license, the source code is available for unrestricted development by commercial or noncommercial entities
- It does not impose use of a particular license on derivative works

Development Context: Why the Fedora Service Framework?



Software Development Process (current model)

- **Managed development process**
  - Cornell University
  - University of Virginia
  - Community Collaborators
- **Decision making**
  - Chief architect review process
  - Collaborative design process
  - Collaborative prioritization process, with community input
- **Communications**
  - Full Team phone conference (1X/week)
  - Technical design/dev calls (1X/week)
  - Full Team meetings (2X/year)

Software Development Process (current model)

- **Development Environment**
  - Eclipse IDE
  - GForge (at Cornell)
    - CVS
    - Feature Tracker
  - Bugzilla (at UVa)
  - Email lists: fedora-dev, codewatch, users email lists

- **Testing Process**
  - Platforms (Linux, XP, Solaris, Windows 2000, Mac OSX)
  - Unit testing (per all security config combinations)
  - Manual Testing
  - Scale and Performance Testing (NSDL beta test site)
  - Final release testing (source and binaries)

Why have we done it this way?

- **Benefits**
  - **Enables ambitious agenda**
    - Total headset emersion; amount of focus is high
    - Devoted development resources
    - Rapid development of new core features
  - **Push the edge a bit**
    - Tightly integrated team has been able to build in more complex functionality (e.g., RI/triplestore, XACML)
    - Coordination for code refactoring
    - Easier to work out the gnarly issues
  - **Quality control**

Why have we done it this way?

- **Costs**
  - **Some deviations from typical open source process**
    - Development list not public
    - CVS read permitted, but must register (restriction of our GForge)
  - **Don't yet have committer group outside core team (but open to it!)**

Transitional Phase (2005-2007)…
move to community-centric process

Community Software Development

- **Collaborative Development**
  - Managed
  - Subject to design reviews
  - Selected CVS committers (core services)
  - Some "bounty model" (U-fund a developer)
- **Contributed Development**
  - Independent
  - Share software via www.fedora.info/tools
  - Community-developed Tools, Apps, Services

Fedora Community Leadership

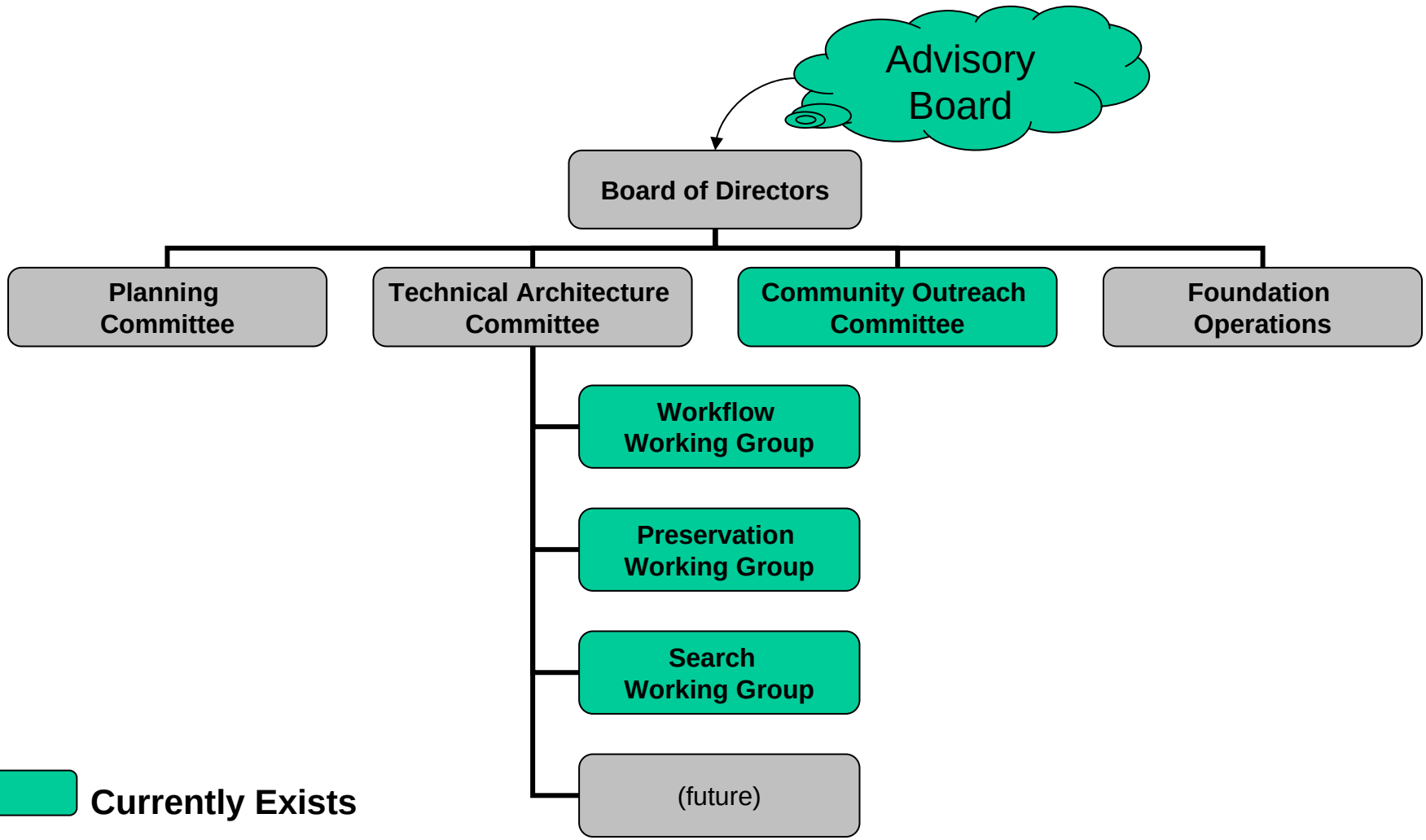
- **Advisory Board**
  - Grace Agnew (Rutgers University)
  - Dan Davis (Harris Corporation)
  - Carl Grant (VTLS)
  - Carl Lagoze (NSDL)
  - Peter Murray (OhioLINK)
  - Mogen Sandfaer (Danish Technical University)
  - Andrew Treloar (ARROW)

Fedora Advisory Board

- **Member Selection Process**
  - Invited based on "stakeholdership" in Fedora
  - Mix of perspectives: adademia, libraries, industry; international
  - Savvy to both the functional and technical issues

- **Mission**
  - Advise on strategic direction and priorities (2005-2007)
  - Commissioning of Working Groups
  - Recommendation for Long-Term sustainability model
    - Governance and Funding
    - Set Fedora Free – full open source model
    - Code Maintenance (UVA until 2012; plan for beyond)

Proposed:
Fedora Foundation – Emerging Structure



Working Group Leadership

- **Preservation Working Group,** Ron Jantz, Rutgers
- **Workflow Working Group,** Peter Murray, OhioLINK
- **Search Working Group,** Gert Schmeltz Pederson, DTU
- **Outreach,** Linda Langshied, Rutgers and Carol Minton Morris, NSDL

Fedora Outreach Committee

- **Chair (appointed), Linda Langschied, Rutgers**
- **Community relations**
  - Collaboration enviroment (wiki, other)
- **Fedora "marketing"**
  - Press
  - Fedora web site
    - More user-oriented information (currently technical focus)
    - Community Showcase – demos, graphics
    - Survey database with simple web form to profile users

Proposed: Fedora Architecture Committee

- Members will include chairs of working groups and others
- Ownership of specifications and standards for the Fedora Service Framework
- Coordinate the actions of the working groups
- Review and approve design changes to core repository service
- Review and approve new services

Open Questions

- Are institutions willing to pay to sustain? How much?
- Will the Foundation need dedicated staff, and if so for what functions? Foundation operations?
- How will new code be committed?
- Who should maintain the source code?
  - UVA Guarantee from 2007-2012
  - Would like community ownership (even before then)
- Will the foundation also maintain a source code repository for related software that is not part of the Fedora Framework or just pointers to other repositories?

Foundation
Financial and Legal Questions

Membership and Dues
- Multi level model
- Question: willingness to pay

- **Bounty model**
  - Pay for features
  - Commissioned work

- **Licensing and Intellectual Property**
  - Who owns the core Fedora software?
  - Assign IP to a foundation?

- **Staffing requirements**
  - Maintain codebase
  - Development Office (in the financial sense)

Immediate Action Items

- **Foster Community involvement**
  - **Working groups**
  - **Provide a community wiki on www.fedora.info**
  - **Allow selected committers**
- **Meet with Ithaka on business model**
- **Establish non-profit Foundation as mechanism to receive contributions**

Thank You!

www.fedora.info