



Evolution of Unidata's Software Development Environment

Ethan Davis

Unidata Joint User/Policy Committee Meeting

27 October 2011



What are the Goals?

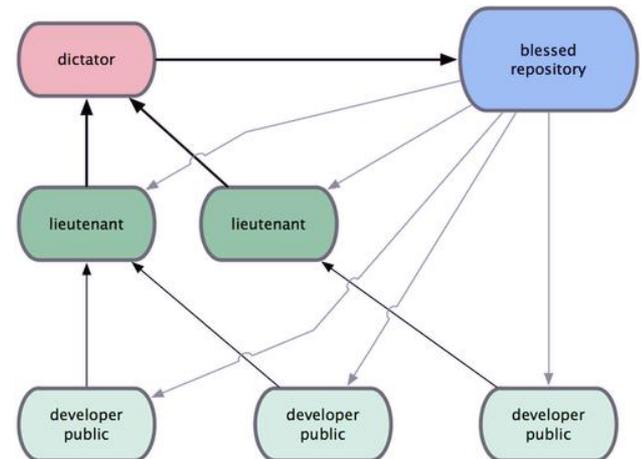
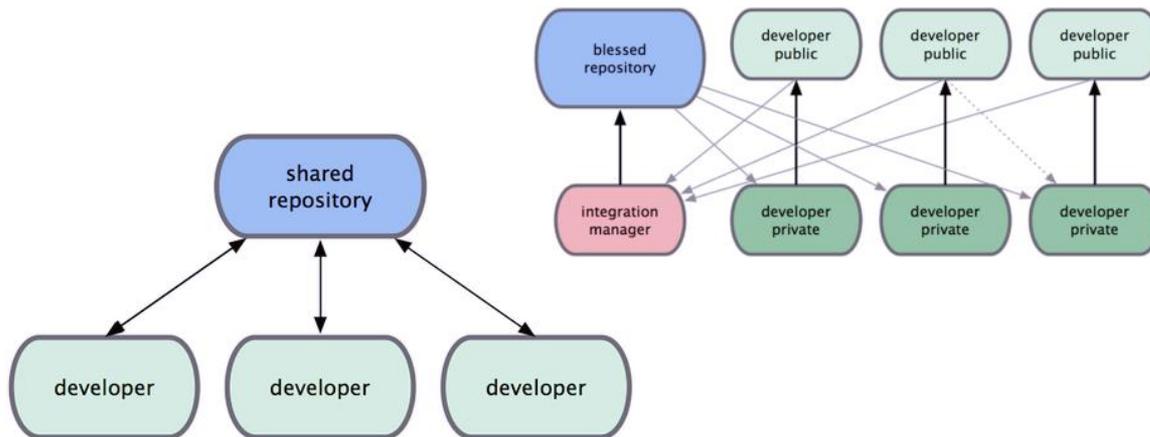
- Increased transparency
 - Plans, Features, Issues, Fixes, Testing
 - Users, collaborators, Unidata developers
- Simplified contribution process
 - Improved documentation on how to contribute
 - Tools that make it easy to contribute

Steps Taken/Planning

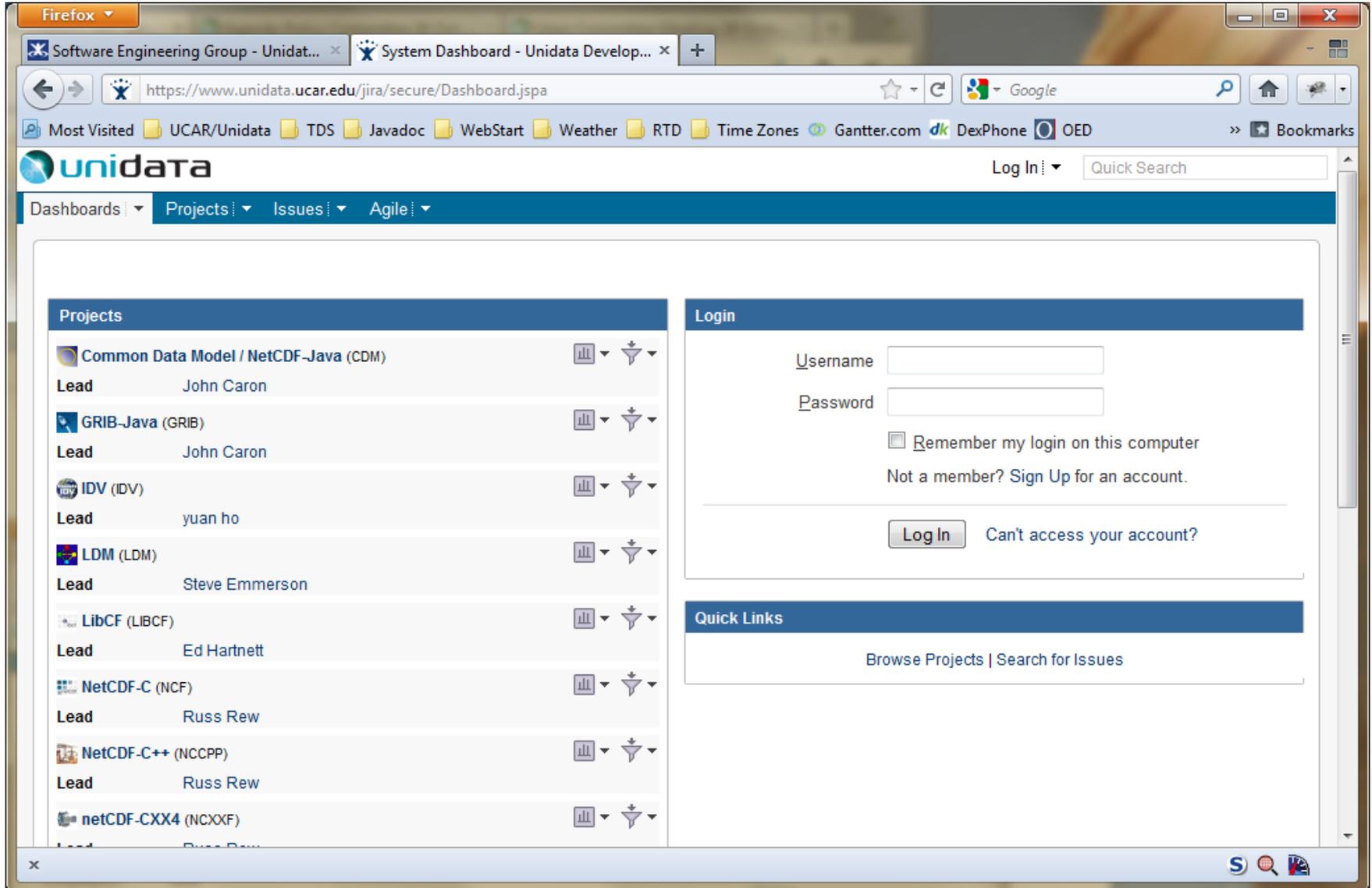
- Distributed Version Control System (DVCS)
 - Increased flexibility in contribution workflow
 - Testing git - THREDDS, IDV, LDM, NOAAPORT Ingest
- Publicly available issue tracking system
 - Using JIRA: netCDF-C, TDS, netCDF-Java
- Build/Test/Release Framework
 - Nightly testing / continuous integration
 - “Automated” releases
 - Soon: Try out Bamboo (JIRA sibling)

DVCS

- Each user has full copy of code repository
 - Function as backups
 - Allows developers to work offline
- Supports multiple workflows



Issue Tracking



The screenshot shows a Firefox browser window displaying the Unidata JIRA issue tracking dashboard. The browser's address bar shows the URL <https://www.unidata.ucar.edu/jira/secure/Dashboard.jspa>. The page features a navigation menu with options for Dashboards, Projects, Issues, and Agile. The main content area is divided into two columns. The left column, titled 'Projects', lists several projects with their respective lead developers: Common Data Model / NetCDF-Java (CDM) led by John Caron, GRIB-Java (GRIB) led by John Caron, IDV (IDV) led by yuan ho, LDM (LDM) led by Steve Emmerson, LibCF (LIBCF) led by Ed Hartnett, NetCDF-C (NCF) led by Russ Rew, NetCDF-C++ (NCCPP) led by Russ Rew, and netCDF-CXX4 (NCXXF) led by Russ Rew. The right column, titled 'Login', contains a login form with fields for Username and Password, a checkbox for 'Remember my login on this computer', and a link to 'Sign Up for an account'. Below the login form is a 'Quick Links' section with a link to 'Browse Projects | Search for Issues'.

Firefox

Software Engineering Group - Unidata... System Dashboard - Unidata Develop... +

<https://www.unidata.ucar.edu/jira/secure/Dashboard.jspa>

Most Visited UCAR/Unidata TDS Javadoc WebStart Weather RTD Time Zones Gantter.com DexPhone OED

unidata Log In Quick Search

Dashboards Projects Issues Agile

Projects

| | |
|---|---|
|  Common Data Model / NetCDF-Java (CDM) |   |
| Lead John Caron | |
|  GRIB-Java (GRIB) |   |
| Lead John Caron | |
|  IDV (IDV) |   |
| Lead yuan ho | |
|  LDM (LDM) |   |
| Lead Steve Emmerson | |
|  LibCF (LIBCF) |   |
| Lead Ed Hartnett | |
|  NetCDF-C (NCF) |   |
| Lead Russ Rew | |
|  NetCDF-C++ (NCCPP) |   |
| Lead Russ Rew | |
|  netCDF-CXX4 (NCXXF) |   |
| Lead Russ Rew | |

Login

Username

Password

Remember my login on this computer

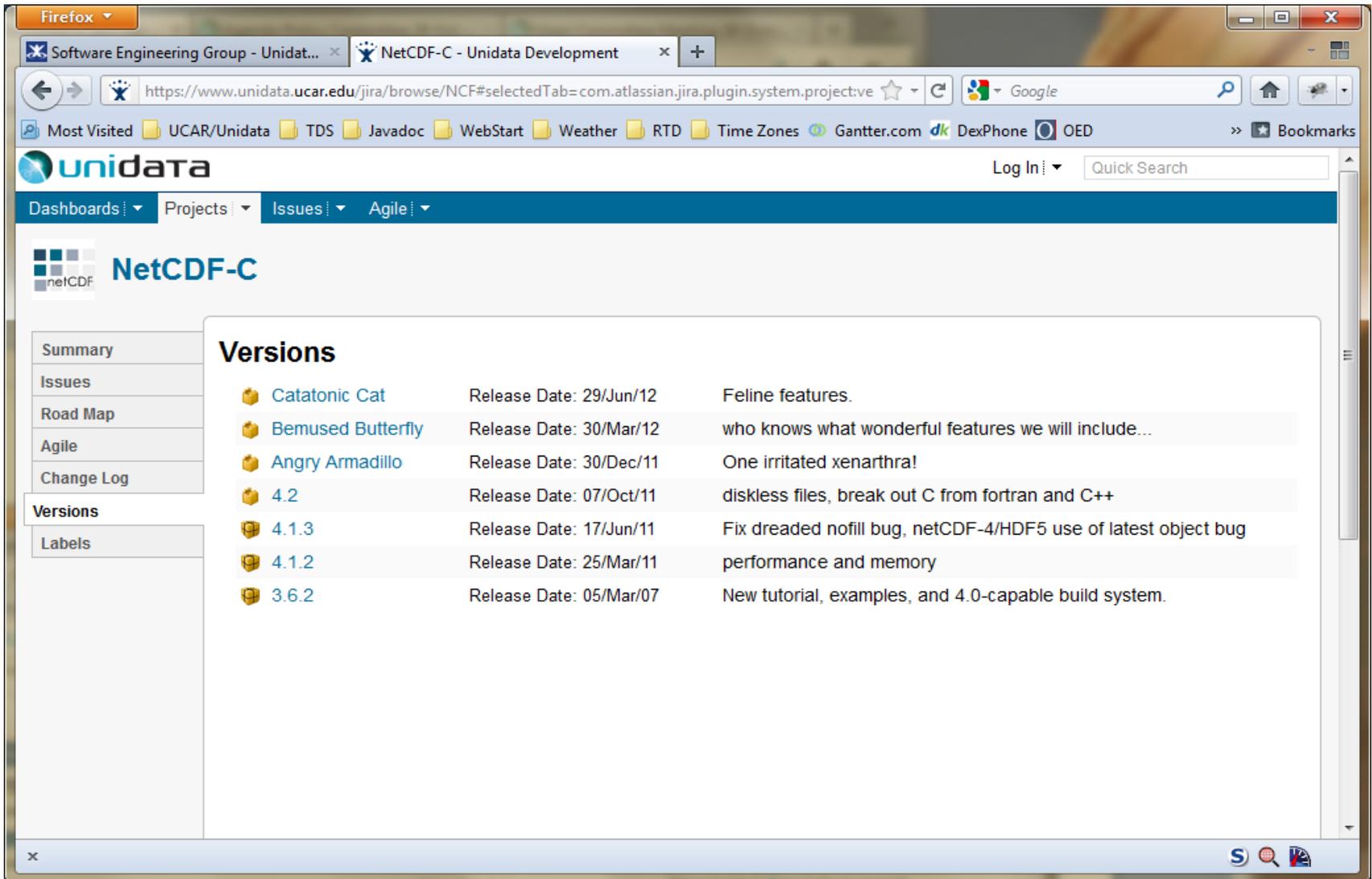
Not a member? [Sign Up for an account.](#)

[Can't access your account?](#)

Quick Links

[Browse Projects](#) | [Search for Issues](#)

Issue Tracking (Planning)



Firefox

Software Engineering Group - Unidata... NetCDF-C - Unidata Development

https://www.unidata.ucar.edu/jira/browse/NCF#selectedTab=com.atlassian.jira.plugin.system.projectve

Most Visited UCAR/Unidata TDS Javadoc WebStart Weather RTD Time Zones Ganttter.com DexPhone OED

unidata Log In Quick Search

Dashboards Projects Issues Agile

netCDF NetCDF-C

Summary
Issues
Road Map
Agile
Change Log
Versions
Labels

Versions

| | | |
|---|-------------------------|--|
|  Catatonic Cat | Release Date: 29/Jun/12 | Feline features. |
|  Bemused Butterfly | Release Date: 30/Mar/12 | who knows what wonderful features we will include... |
|  Angry Armadillo | Release Date: 30/Dec/11 | One irritated xenarthra! |
|  4.2 | Release Date: 07/Oct/11 | diskless files, break out C from fortran and C++ |
|  4.1.3 | Release Date: 17/Jun/11 | Fix dreaded nofill bug, netCDF-4/HDF5 use of latest object bug |
|  4.1.2 | Release Date: 25/Mar/11 | performance and memory |
|  3.6.2 | Release Date: 05/Mar/07 | New tutorial, examples, and 4.0-capable build system. |

Issue Tracking (Planning)

Firefox

Software Engineering Group - Unidata... NetCDF-C - Planning Board - Unidata... +

https://www.unidata.ucar.edu/jira/secure/VersionBoard.jspa

Most Visited UCAR/Unidata TDS Javadoc WebStart Weather RTD Time Zones Gantt.com DexPhone OED

1 2

Standard Issue Count (0 total) 0

| | | | |
|---|--|---|---|
| <p>NCF-25</p> <p>subdir packages (udunits, libcf, netcdf-fortran, netcdf-c++) should be</p> <p>Unscheduled Ed Hartnett</p> | <p>NCF-65</p> <p>64-bit DLLs should be produced</p> <p>Unscheduled Ed Hartnett</p> | <p>NCF-28</p> <p>Enhance netcdf-4 to be able to read HDF5 file that uses the "user area" at the</p> <p>Unscheduled Ed Hartnett</p> | <p>NCF-31</p> <p>Make netCDF-4 opens files which make it easy for other HDF5 apps to open</p> <p>Unscheduled Ed Hartnett</p> |
| <p>NCF-33</p> <p>netCDF-4 allows write access even for non-creation ordered HDF5</p> <p>Unscheduled Ed Hartnett</p> | <p>NCF-35</p> <p>NetCDF-4 better handles cyclical links in HDF5 file</p> <p>Unscheduled Ed Hartnett</p> | <p>NCF-58</p> <p>clean up and document dispatch interface</p> <p>Unscheduled Ed Hartnett</p> | <p>NCF-12</p> <p>ncdump should produce NcML output for netCDF-4</p> <p>Unscheduled Russ Rew</p> |
| <p>NCF-14</p> <p>provide reasonable answers to netCDF-3 files for netCDF-4 functions</p> <p>Unscheduled Ed Hartnett</p> | <p>NCF-62</p> <p>pnetcdf access should be done in dispatch layer</p> <p>Unscheduled Ed Hartnett</p> | <p>NCF-63</p> <p>HDF4 access should be handled through dispatch layer</p> <p>Unscheduled Ed Hartnett</p> | <p>NCF-13</p> <p>nc_inq_dimname does not work for dims in parent groups</p> <p>Unscheduled Ed Hartnett</p> |
| <p>NCF-19</p> <p>Read BIG NetCDF format for Arqonne</p> <p>Unscheduled Ed Hartnett</p> | <p>NCF-39</p> <p>Support automatic data packing using _Scale and Offset attributes within C</p> <p>Unscheduled Russ Rew</p> | <p>NCF-108</p> <p>Clean up of some libsrc4 code</p> <p>Unscheduled Ed Hartnett</p> | <p>NCF-71</p> <p>NC_MAX_DIMS use in netCDF-4</p> <p>Unscheduled Ed Hartnett</p> |

Unscheduled

| | |
|--------------------------|-----------------------|
| Bug: 4 | Improvement: 2 |
| New Feature: 2 | Story: 28 |
| Task: 4 | |
| Total Issues: 40 | |
| To Do: 36 | Unresolved: 36 |
| In Progress: 0 | Resolved: 4 |
| Done: 4 | |
| Story Points: 740 | |

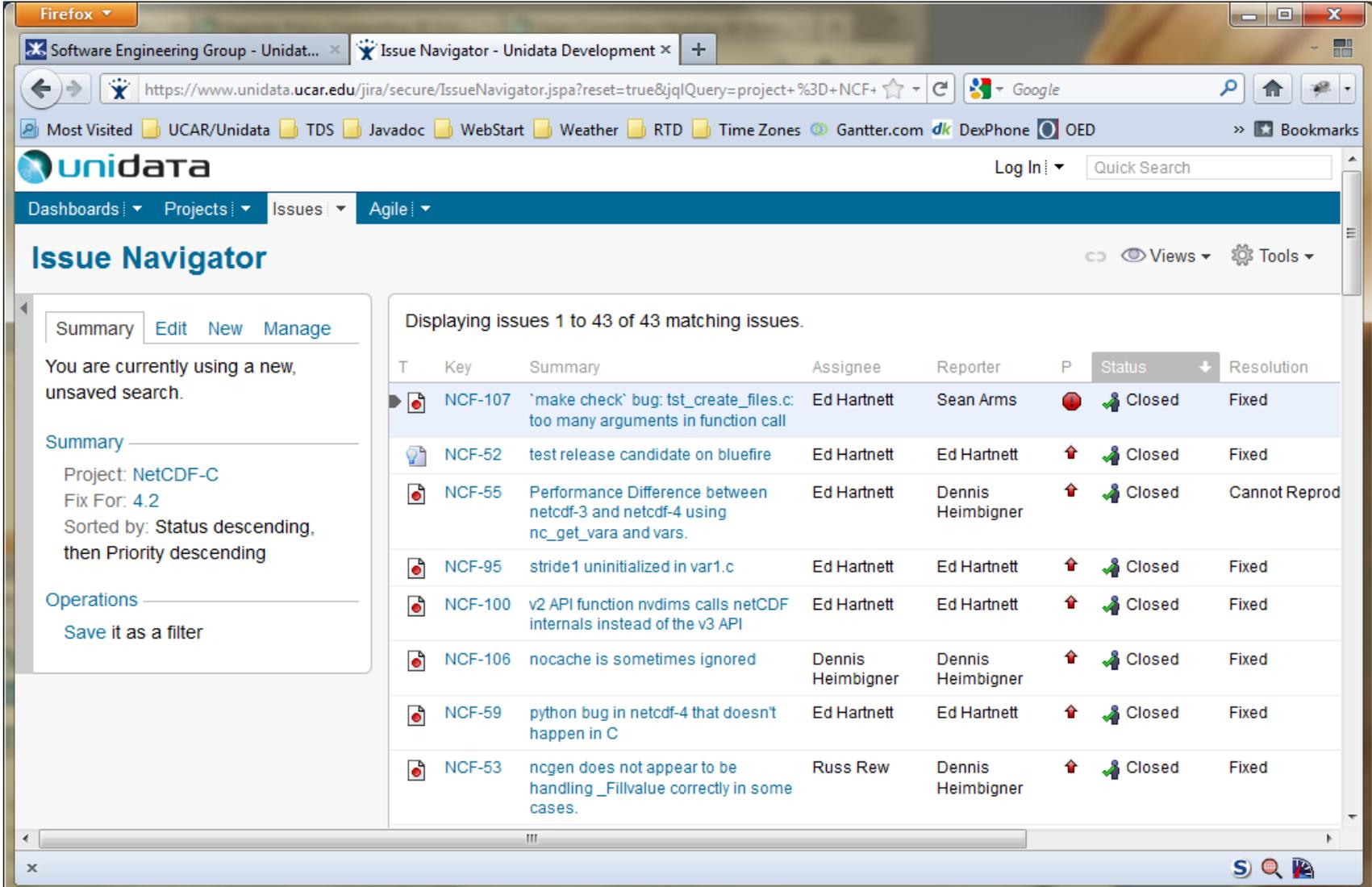
4.2

Angry Armadillo

Bemused Butterfly

Catonic Cat

Issue Tracking (Find Issues)



The screenshot shows the Unidata Issue Navigator interface. The browser window title is "Issue Navigator - Unidata Development". The URL is <https://www.unidata.ucar.edu/jira/secure/IssueNavigator.jspx?reset=true&jqlQuery=project+%3D+NCF+>. The page header includes the Unidata logo, a "Log In" dropdown, and a "Quick Search" input field. The navigation menu shows "Dashboards", "Projects", "Issues", and "Agile".

The main content area is titled "Issue Navigator" and displays a list of issues. A sidebar on the left provides search controls and summary information.

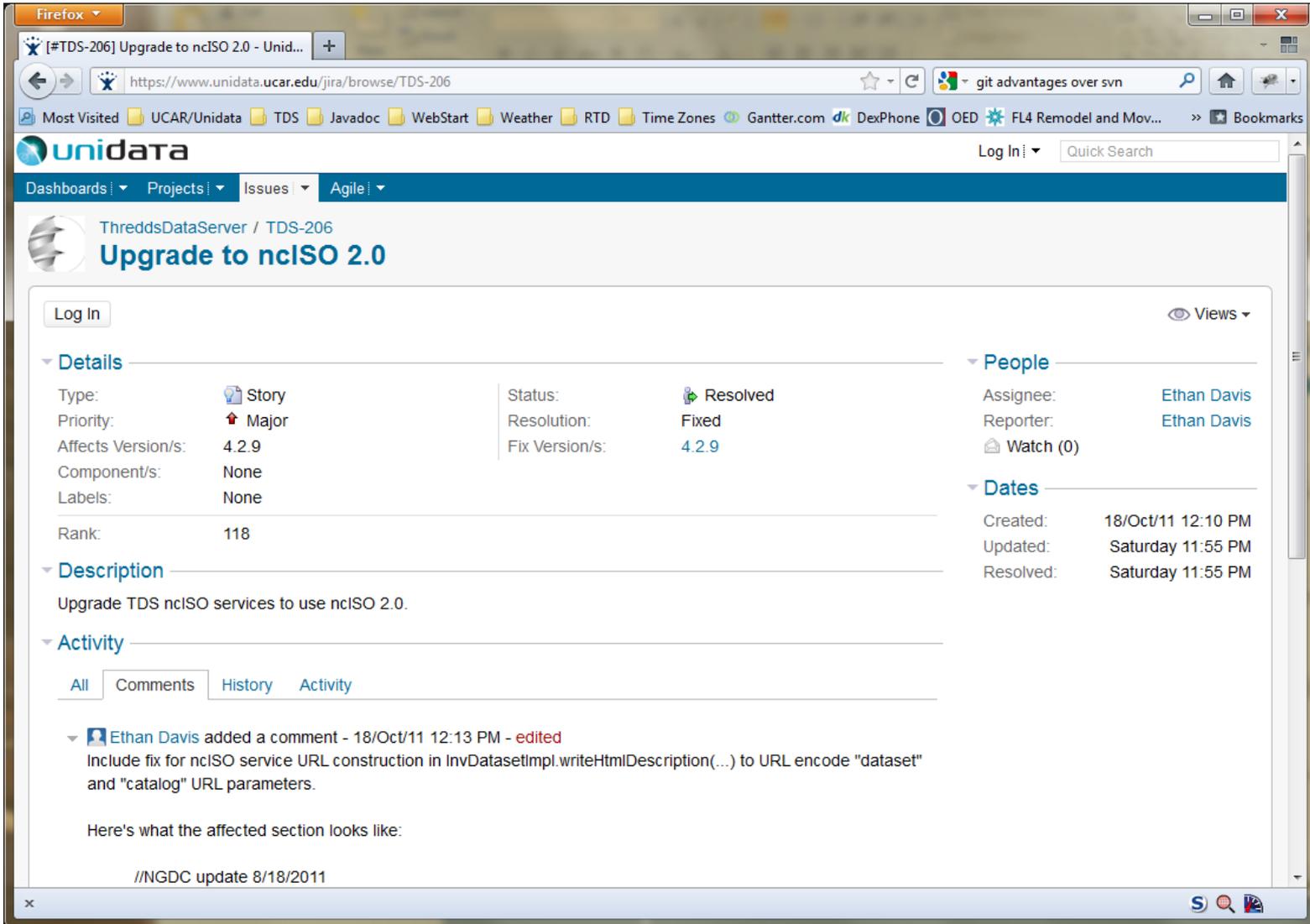
Issue Navigator Summary:

- Buttons: Summary, Edit, New, Manage
- Message: You are currently using a new, unsaved search.
- Summary:
 - Project: NetCDF-C
 - Fix For: 4.2
 - Sorted by: Status descending, then Priority descending
- Operations:
 - Save it as a filter

Issue List: Displaying issues 1 to 43 of 43 matching issues.

| T | Key | Summary | Assignee | Reporter | P | Status | Resolution |
|---|---------|--|-------------------|-------------------|------|--------|---------------|
| | NCF-107 | 'make check' bug: tst_create_files.c: too many arguments in function call | Ed Hartnett | Sean Arms | High | Closed | Fixed |
| | NCF-52 | test release candidate on bluefire | Ed Hartnett | Ed Hartnett | High | Closed | Fixed |
| | NCF-55 | Performance Difference between netcdf-3 and netcdf-4 using nc_get_vara and vars. | Ed Hartnett | Dennis Heimbigner | High | Closed | Cannot Reprod |
| | NCF-95 | stride1 uninitialized in var1.c | Ed Hartnett | Ed Hartnett | High | Closed | Fixed |
| | NCF-100 | v2 API function nvdims calls netCDF internals instead of the v3 API | Ed Hartnett | Ed Hartnett | High | Closed | Fixed |
| | NCF-106 | nocache is sometimes ignored | Dennis Heimbigner | Dennis Heimbigner | High | Closed | Fixed |
| | NCF-59 | python bug in netcdf-4 that doesn't happen in C | Ed Hartnett | Ed Hartnett | High | Closed | Fixed |
| | NCF-53 | ncgen does not appear to be handling _Fillvalue correctly in some cases. | Russ Rew | Dennis Heimbigner | High | Closed | Fixed |

Issue Tracking (Comment and Watch)



The screenshot shows a web browser window displaying a Jira issue page. The browser's address bar shows the URL `https://www.unidata.ucar.edu/jira/browse/TDS-206`. The page header includes the unidata logo, navigation menus for Dashboards, Projects, Issues, and Agile, and a search bar. The issue title is "Upgrade to ncISO 2.0" under the project "ThreddsDataServer / TDS-206".

The issue details are as follows:

| | | | |
|--------------------|-------|----------------|----------|
| Type: | Story | Status: | Resolved |
| Priority: | Major | Resolution: | Fixed |
| Affects Version/s: | 4.2.9 | Fix Version/s: | 4.2.9 |
| Component/s: | None | | |
| Labels: | None | | |
| Rank: | 118 | | |

The "People" section shows the Assignee as Ethan Davis and the Reporter as Ethan Davis. There are 0 watchers.

The "Dates" section shows the issue was Created on 18/Oct/11 12:10 PM, Updated on Saturday 11:55 PM, and Resolved on Saturday 11:55 PM.

The "Description" section contains the text: "Upgrade TDS ncISO services to use ncISO 2.0."

The "Activity" section shows a comment by Ethan Davis on 18/Oct/11 12:13 PM, which was edited. The comment text is: "Include fix for ncISO service URL construction in InvDatasetImpl.writeHtmlDescription(...) to URL encode "dataset" and "catalog" URL parameters. Here's what the affected section looks like: //NGDC update 8/18/2011".



Build/Test/Release Framework

- Web UI and services
- Automates build, test, deploy, release
- Manages builds/tests on agent machines
- Create a release workflow