

# XNAT Custom Development & Open Source Contributions

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**Audience:** Focus on coders, but useful information to anyone who can fill out a bug report

**Goal:** Introduce potential contributors to the methods and tools for contributing to XNAT

<http://nrg.wikispaces.com/XNAT+2010+Workshop+-+Custom+Features+and+Open+Source+Development>

XNAT is Open Source!

## 3 Great Things about Open Source

- Freedom to use & customize as you want
- Leverage the work of others
- Help build a better world

## Sign Me Up. How Can I Help?

- Install & Use XNAT → Bug Reports & Feature Requests
  - We love details & specifics (OS, Browser, Java, PostgreSQL versions; steps to reproduce; expected results; actual results)!
  - New “Report Issue” tool helps users send report to site admin with details. Site admin can then resolve or forward issue onto [bugs@xnat.org](mailto:bugs@xnat.org)
  - Post to [xnat\\_discussion](mailto:xnat_discussion) mailing list<sup>1</sup> (if it is a security issue, contact [bugs@xnat.org](mailto:bugs@xnat.org) directly)
- Custom Schemas<sup>2</sup>
- New Tools using the REST API<sup>3</sup>
  - Extensive XNAT REST API
  - Build a reusable tool or integrate XNAT into an existing system
  - Examples: [xnatfs](http://xnatfs)<sup>4</sup>, [PyXNAT](http://pyxnat)<sup>5</sup>
- Fix Bugs & Implement New Features

## XNAT Ecosystem

XFT, XDAT, XNAT, Customizations, Pipeline, DICOM Tools, REST-based Tools<sup>6</sup>

## 3 Tools of an XNAT Developer

### #1 Version Control with Mercurial<sup>7</sup>

- Modern, distributed version control system
- Everyone is a First Class citizen (easier to get your code upstream)
- [hg.xnat.org](http://hg.xnat.org)

<sup>1</sup> [http://groups.google.com/group/xnat\\_discussion](http://groups.google.com/group/xnat_discussion)

<sup>2</sup> <http://xnat.wikispaces.com/XNAT+2010+Workshop+-+Customizations>

<sup>3</sup> <http://xnat.wikispaces.com/XNAT+2010+Workshop+-+REST>

<sup>4</sup> <http://bitbucket.org/nrg/xnatfs>

<sup>5</sup> <http://packages.python.org/pyxnat/>

<sup>6</sup> <http://xnat.wikispaces.com/XNAT+Code+Structure>

<sup>7</sup> <http://xnat.wikispaces.com/Mercurial>

```
hg clone http://hg.xnat.org/xdat_release
```

### #2 Building with Maven

- Standard tool for managing dependencies & build process (pom.xml)
- Moving towards Maven 2 (xdat\_core, DICOM tools, etc.)  

```
mvn clean install
```

### #2 Eclipse<sup>8</sup> Integrated Development Environment

- Advanced IDE: code completion, refactoring, debugger, XML schema editor, Velocity editor, Mercurial integration.
- Preferred by NRG devs: we ship files to make it easier to develop within Eclipse (future refactoring may make other IDE's easier to use)

### Demo: Fix a Bug & Submit a Patch<sup>9</sup>

#### 1) Clone Code<sup>10</sup> & Setup Projects<sup>11</sup>

```
hg clone http://hg.xnat.org/xdat_release
bin/setup.sh -Ddeploy=true
```

...

#### 2) Register in Eclipse

#### 3) Fix Code

#### 4) Test

#### 5) Commit

```
hg commit
```

#### 6) Publish the Change

```
hg push
https://bitbucket.org/johnpaulett/xdat_release_demo
```

### Additional Topics

Debugging with JPDA<sup>12</sup>

<sup>8</sup> <http://xnat.wikispaces.com/XNAT+Eclipse>

<sup>9</sup> <http://xnat.wikispaces.com/Submitting+a+Mercurial+Patch>

<sup>10</sup> <http://xnat.wikispaces.com/XNAT+Build+from+Source>

<sup>11</sup> <http://xnat.wikispaces.com/XNAT+Installation+Guide>

<sup>12</sup>

<http://xnat.wikispaces.com/Debugging+with+Eclipse+%26+JPD+A>