

# CASA Build and Distribution

Current System and Planned Changes

# CASA Build and Distribution

All CASA developers should understand, at a high level:

- the process code goes through from commit by a developer to installation on a user's computer,
- what changes are planned for this process in the near term, and
- what changes are planned for this process in the long term.

# CASA Build and Distribution

## CASA 4.1.0 Must Run On

- OS X 10.6
- OS X 10.7
- Redhat 5.7
- "Generic Linux" – tested on Redhat 6.3

CASA packages must pass acceptance tests on all platforms before publication.

# CASA Build and Distribution

## CASA 4.2.0 Must Run On

- Debian 7
- Fedora 17
- OS X 10.7
- OS X 10.8
- Redhat 5.7
- Redhat 6.3
- Ubuntu 12.04 LTS
- "Generic Linux"

CASA packages must pass acceptance tests on all platforms before publication.

# CASA Build and Distribution

## CASA Must Deliver

- one test package every week,
- one stable package every month, and
- one release package every 6 months.

Ordered by increasing strictness of acceptance tests

We also produce (somewhat inconsistently) nightly packages for internal use. To be improved.

- All packages must be installable on the same system, at the same time, without interfering with each other.
- More than one release package (CASA 3.4.0, 4.0.0, 4.0.1, 4.1.0, etc.) must be installable on the same system, at the same time, without interfering with each other.

# CASA Build and Distribution

- Current system
  - Different people have been responsible for Linux and OS X
  - They did what they thought was best for their platform's users
  - Inconsistencies between platforms cause confusion with users and within the project
  - Inconsistent feedback to developers
  - Too much manual work
  - Some CASA features are not even testable until packages are built
- Moving to a more formal Deployment Pipeline
  - Improved consistency across platforms
  - Cross platform feedback to developers
  - Much more automation
  - All CASA features will be testable in a developer build
  - One instance of the deployment pipeline for each active branch

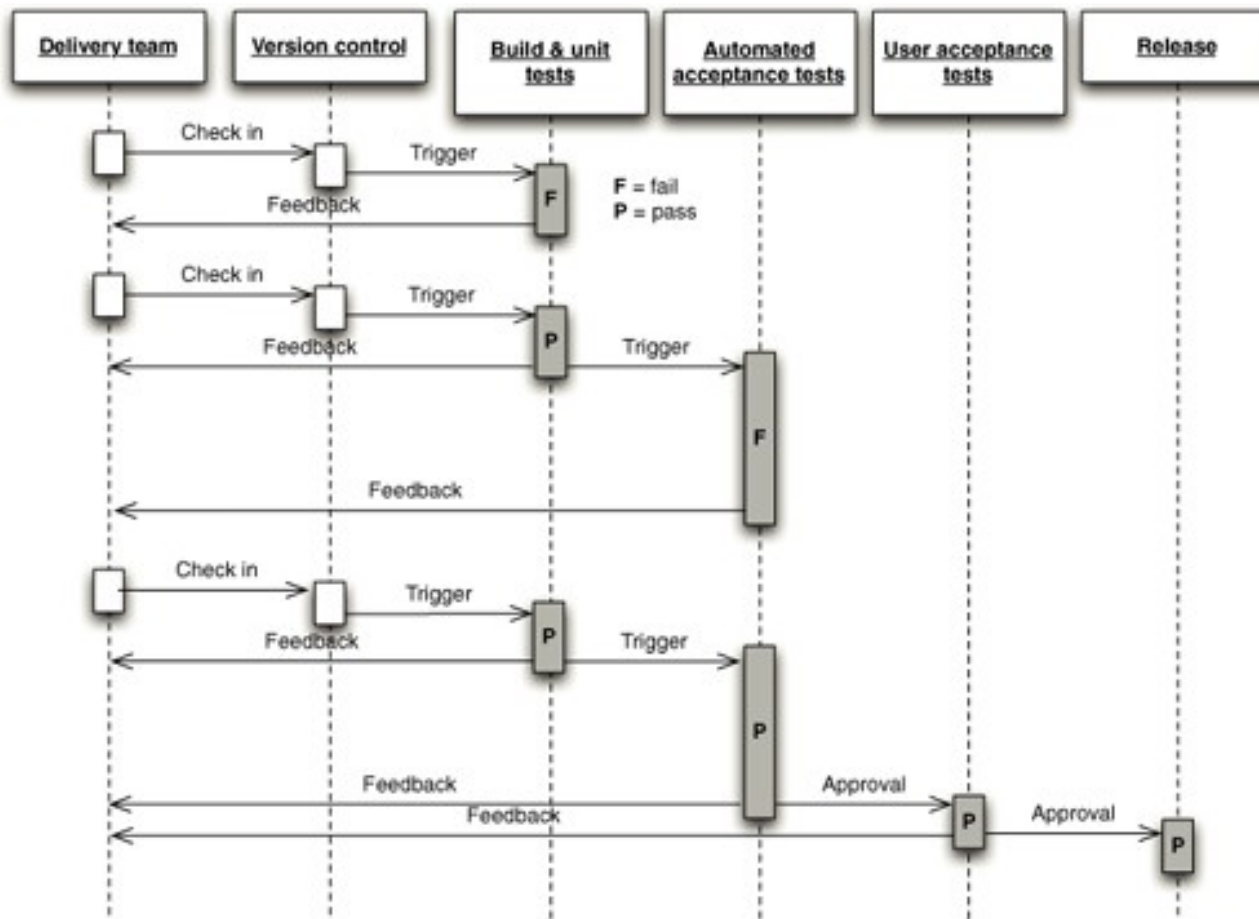
# CASA Build and Distribution

## What is a Deployment Pipeline?

One of the challenges of an automated build and test environment is you want your build to be fast, so that you can get fast feedback, but comprehensive tests take a long time to run. A deployment pipeline is a way to deal with this by breaking up your build into stages. Each stage provides increasing confidence, usually at the cost of extra time. Early stages can find most problems yielding faster feedback, while later stages provide slower and more thorough probing.

From <http://martinfowler.com/bliki/DeploymentPipeline.html>

# CASA Build and Distribution



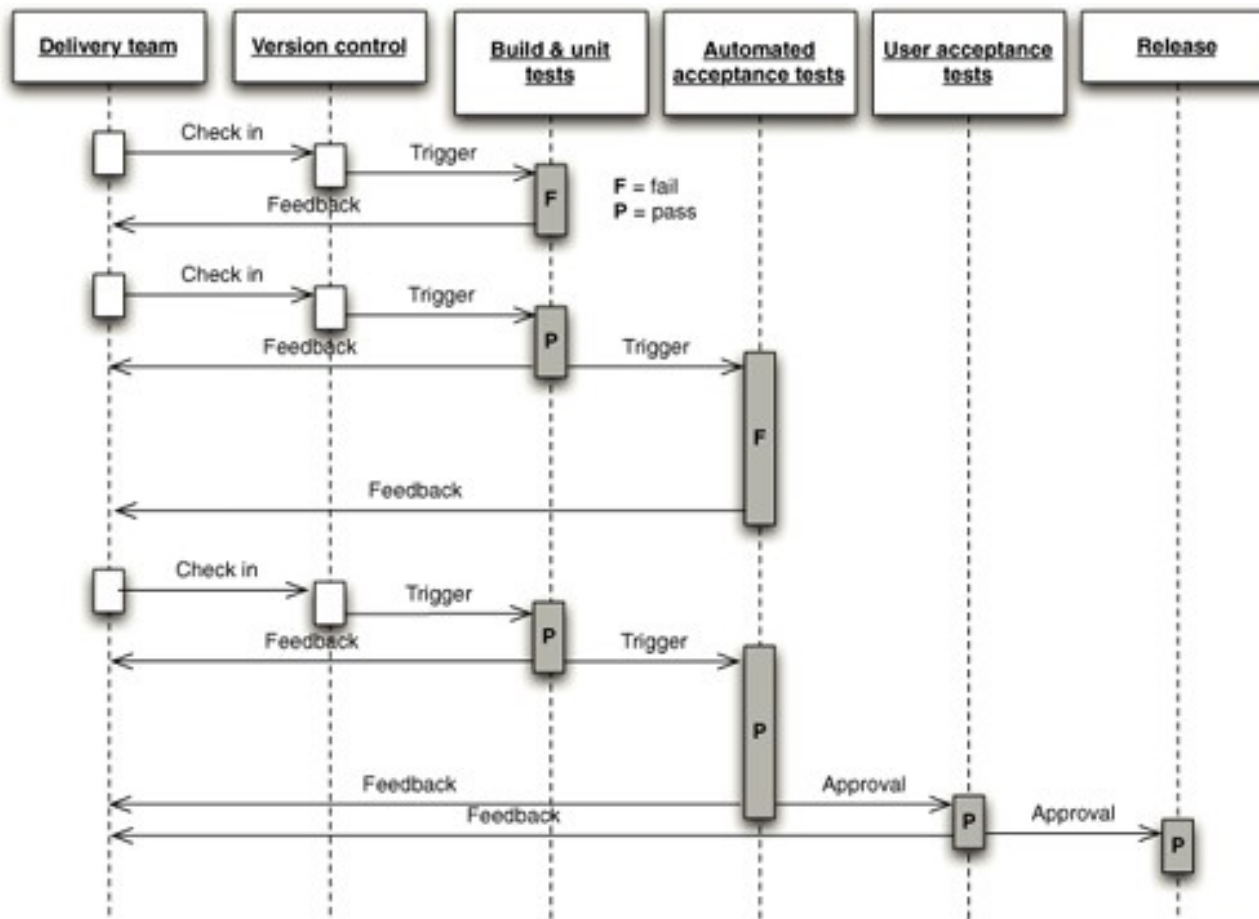


# CASA Build and Distribution

What is changing in Version Control?

- Closing NRAO fork of casacore
- Proposal: eliminate test branch
- Proposal: defer stable branch creation until necessary
- Results:
  - Easier to follow change history
  - Faster package delivery

# CASA Build and Distribution



# CASA Build and Distribution

What is changing in Build and Test?

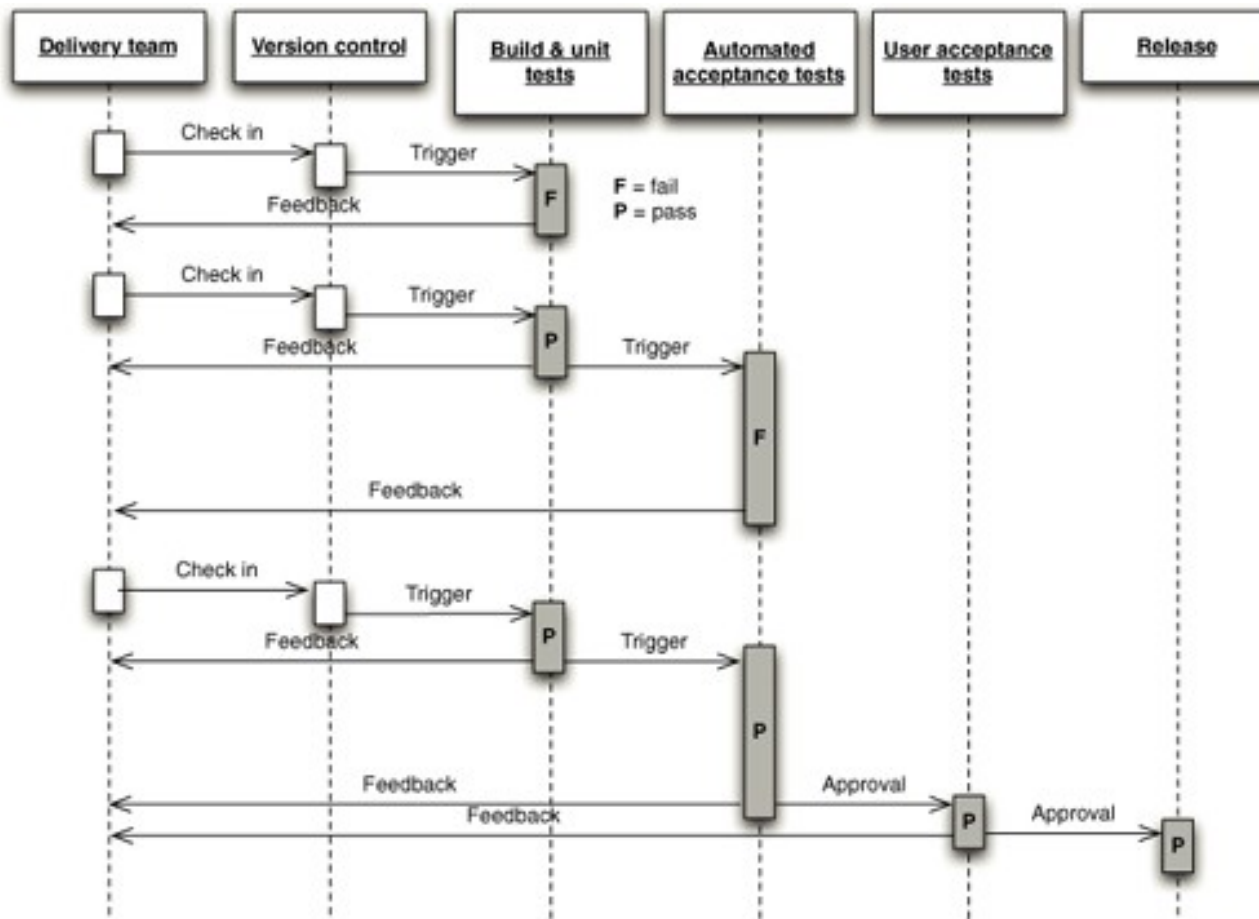
- We will build and run commit acceptance tests on all platforms in parallel
  - Now, only on Redhat 5.9
- Seperate build jobs for casacore, code, gcwrap, asap  
(and others as the new architecture is implemented)
- Build and test results will be distributed to casa-staff and casacore developers
  - E-mail when build breaks, or attempted fixes fail
  - E-mail when build is repaired
  - So long as build is clean, no e-mail chatter
- More metrics
  - Build and Test failures over time
  - Warnings
  - Code Quality
  - Details TBD
- Web server will be visible to the world

# CASA Build and Distribution

What is a commit acceptance test?

- Commit acceptance tests give developers feedback on the quality of a commit
- These are low level, fast tests. Examples include: tests of functions or methods, class integration tests, library integration tests.
- These tests do not require a full CASA build to run.
- Run with the “make test” target.
- Developers should run them before a commit
- Build system will run them on all platforms

# CASA Build and Distribution



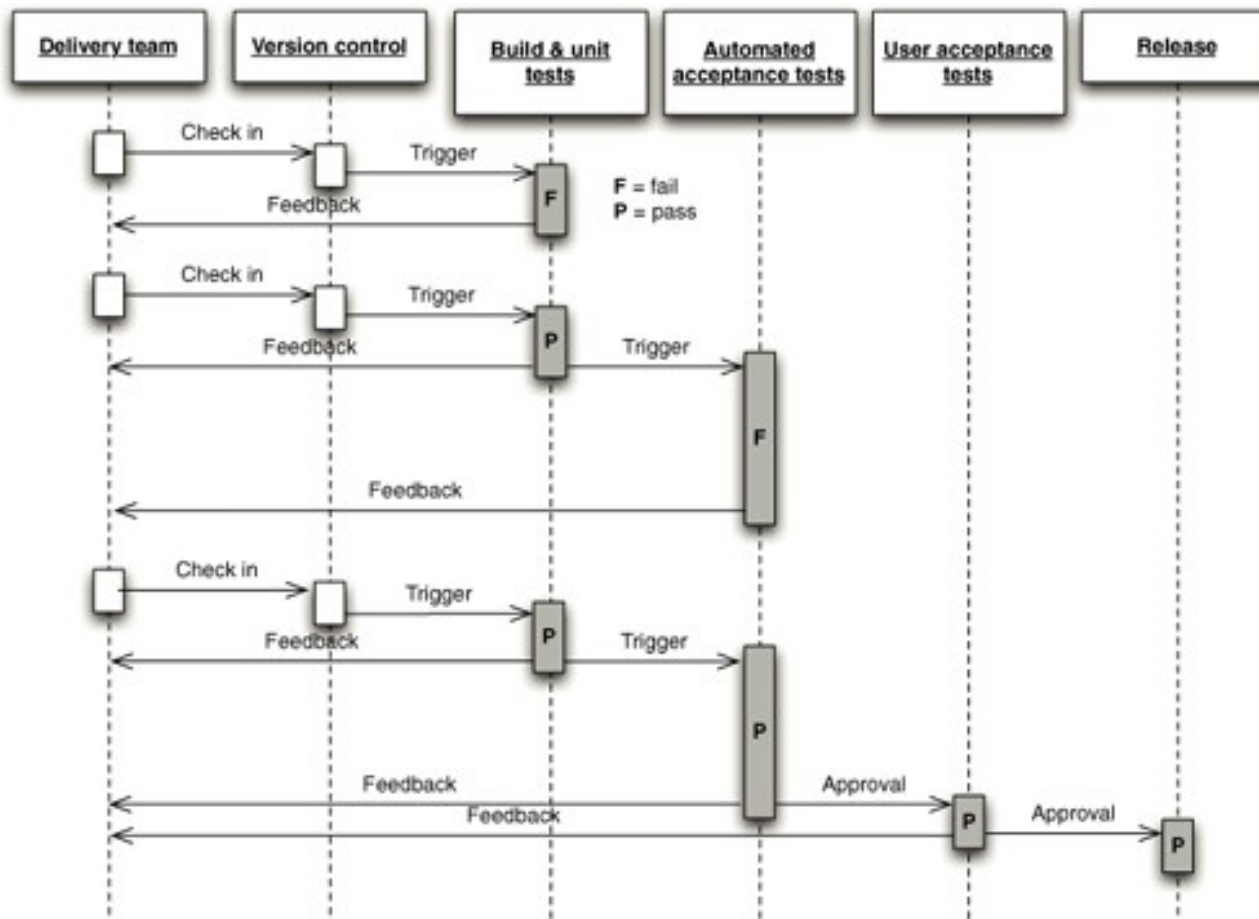
# CASA Build and Distribution

What is changing in Packaging ?

(missing from diagram)

- More native package formats
  - Debian and Ubuntu
  - Possibly Mac dpkg
  - Possibly MacPorts
- More different versions of existing formats
  - Redhat 5, Redhat 6, Fedora 17
- Packages will be built before acceptance testing from the products of the build/test system
  - The build/test system will build software in an environment similar to a developer environment
  - The packaging system will package already built software
  - Fewer differences between developer environment and installed packages
- Packages will support external development and debugging
  - Redhat packages already support external development
  - OS X packages to not
- All published packages will be as self contained as we can reasonably make them
  - To survive changes in the host OS

# CASA Build and Distribution



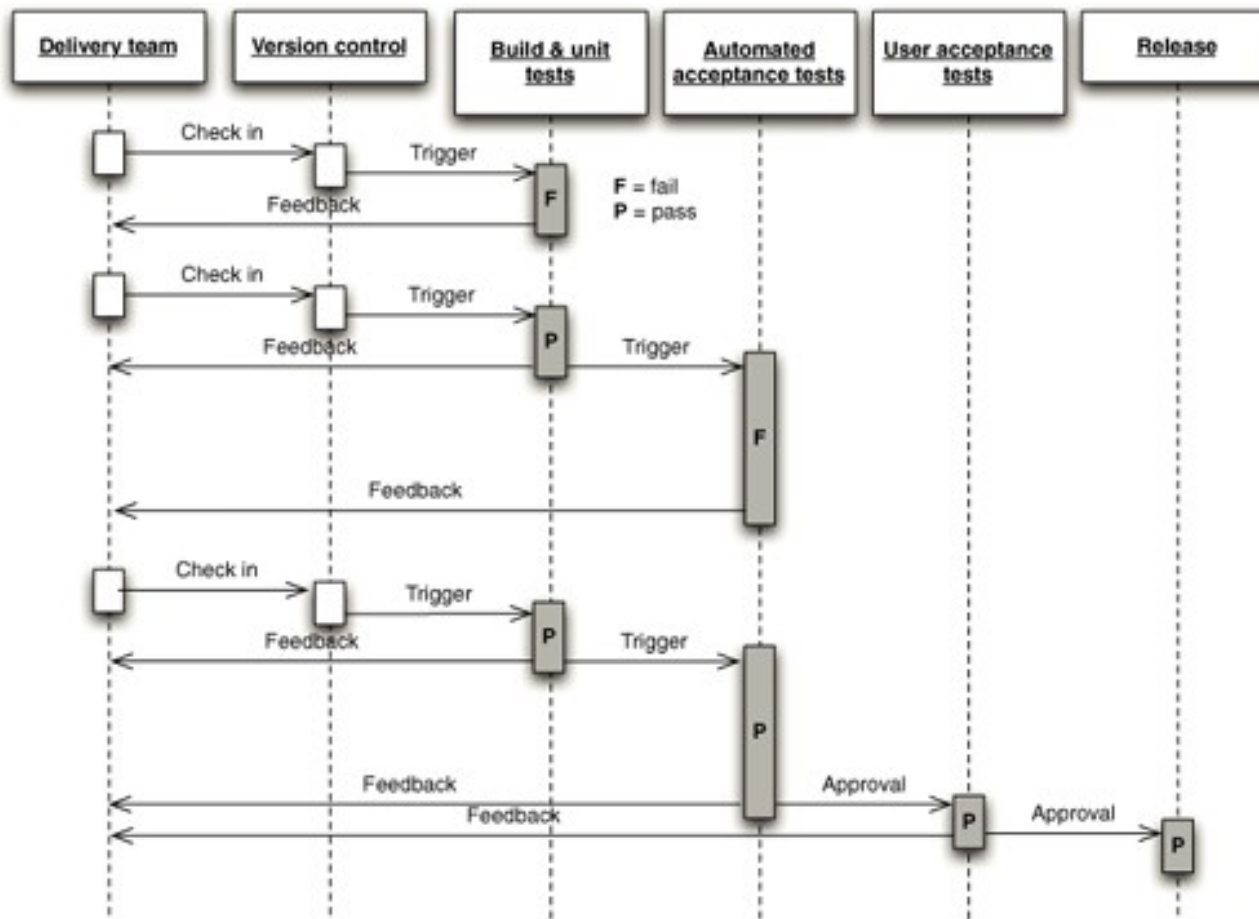
# CASA Build and Distribution

What is changing in Acceptance Testing?

- We will automate package acceptance tests and reporting, and run them on all platforms in parallel
  - Now, tests run manually, reports are assembled manually
- Acceptance tests will run in stages. Later stages run only if earlier stages have passed
- Developers will have more influence over package acceptance tests for
  - Nightly
  - Test
  - Stable
  - Release
  - Mechanism TBD
- New CASA tester(s) will provide additional acceptance tests



# CASA Build and Distribution

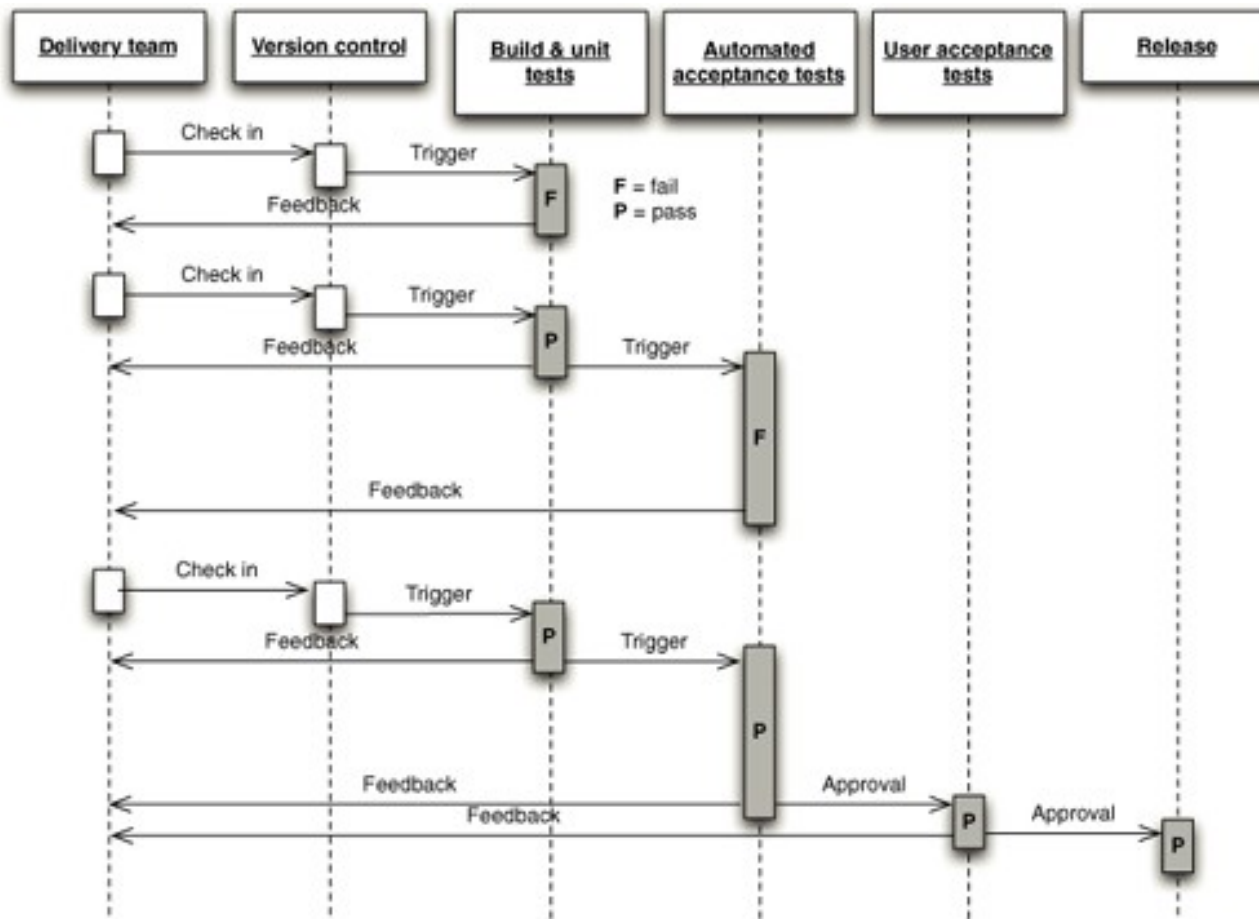


# CASA Build and Distribution

What is changing in User Acceptance Testing?

- Organized by Mark Rawlings
- Driven by new features

# CASA Build and Distribution



# CASA Build and Distribution

What is changing in Release (package publishing)?

- Download site moving to [casa.nrao.edu](http://casa.nrao.edu)
- Consistent naming and version identification for both packages on web server and installed packages on filesystem
  - Details TBD
- Consistent installation - Closer to Linux Filesystem Hierarchy Standard

# CASA Build and Distribution

## Questions

- How will we handle Pipeline?