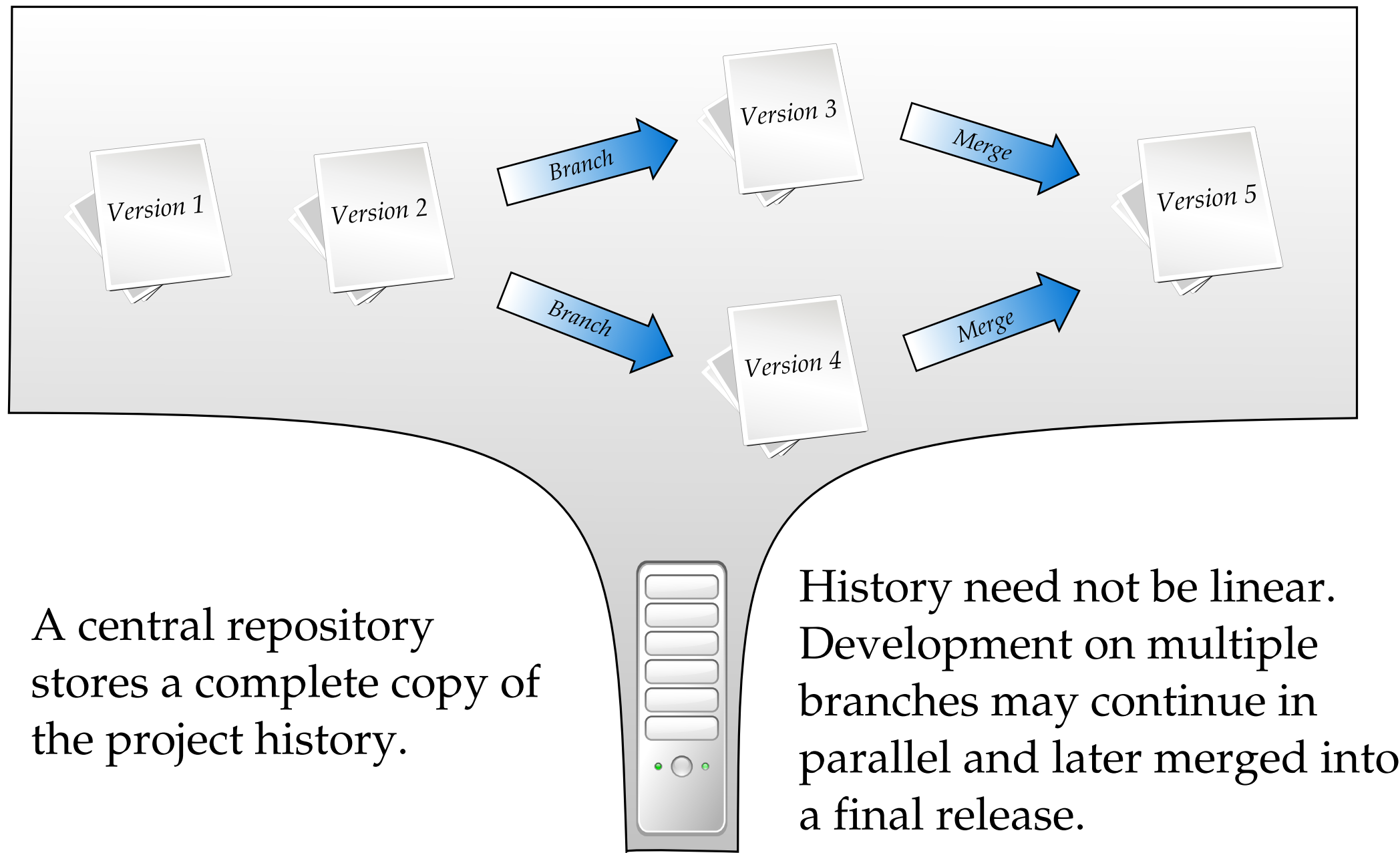


A Filesystem Interface for Source Code Version Control

Reilly Grant

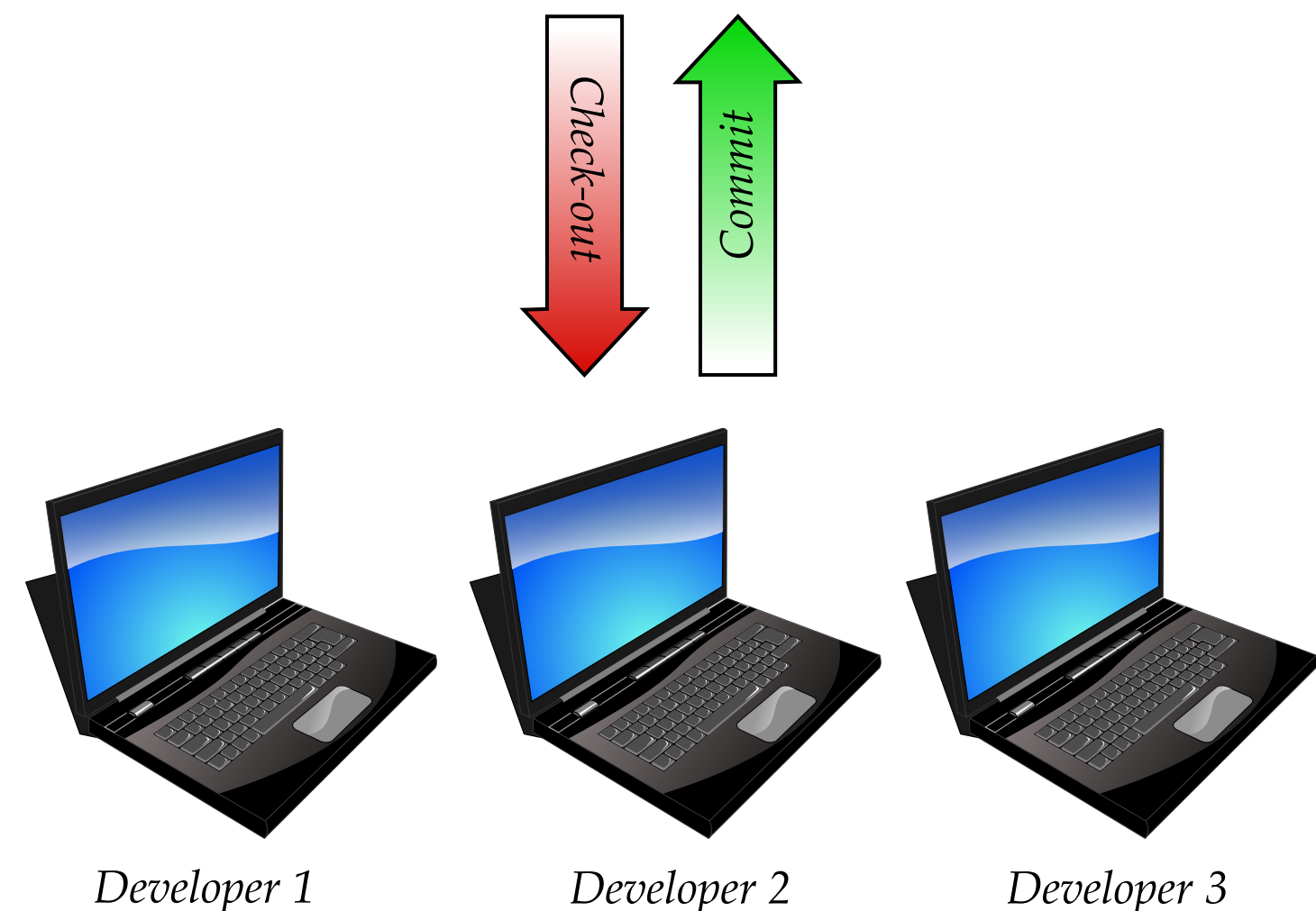
Faculty Advisor: Jonathan M. Smith

Version Control Systems



A central repository stores a complete copy of the project history.

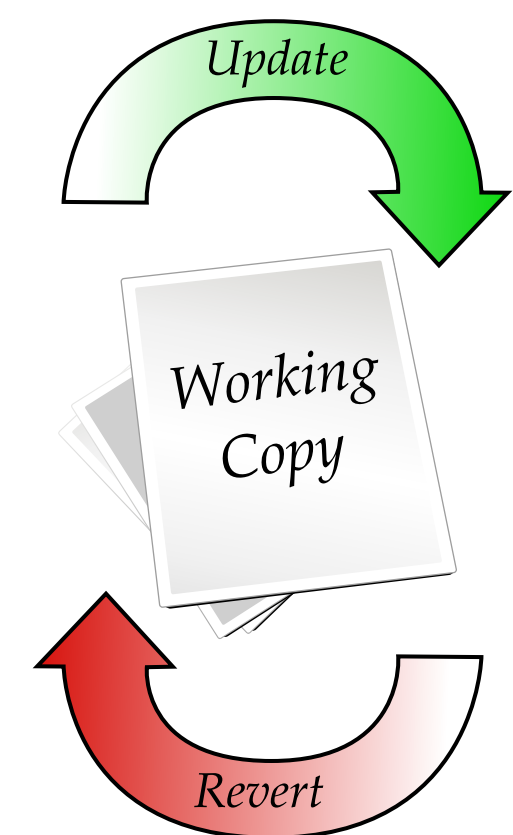
History need not be linear. Development on multiple branches may continue in parallel and later merged into a final release.



Version control gives multiple developers access to the same project while preventing them from interfering with each other's work or corrupting the code-base. New versions are sent back in complete chunks called commits. The central database serializes all the developers' actions.

User interaction centers around the working copy. Updates from the central repository and modifications made by the user all effect the same collection of files.

To view a previous version of the project, the user must limit themselves to seeing a single file or revert their entire working copy to the older state. This destroys any existing changes.



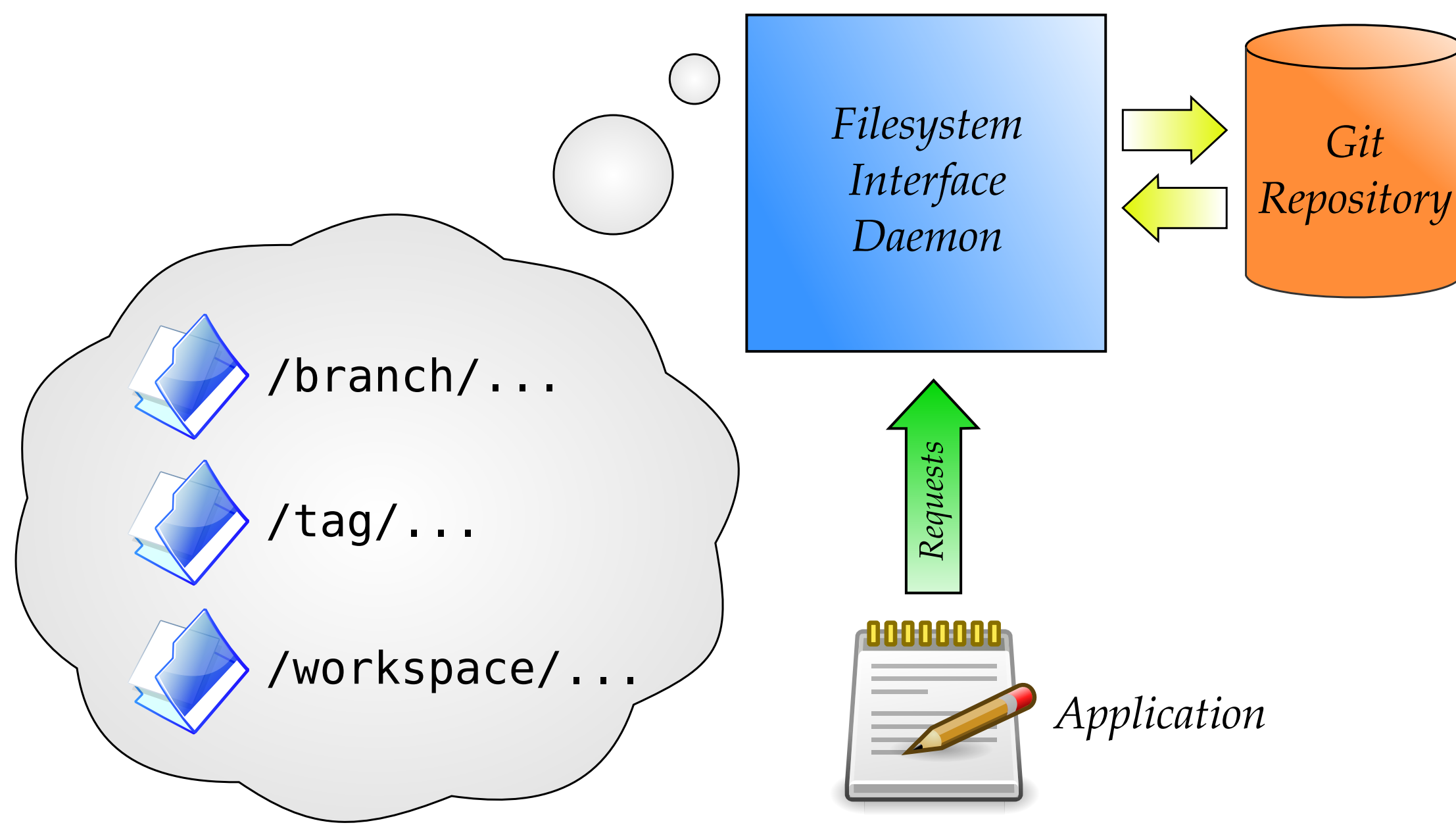
Abstract

Figs (the Filesystem Interface to Git FileSystem) provides a new way for developers to interact with their version control repository. The repository is presented as a filesystem which allows multiple versions and branches of the project code to be viewed simultaneously and without the need to reconfigure the user's workspace. It is also a more natural interface as existing tools can be used without being made aware of the versioning system in place. Presenting branches and history in this fashion will increase developer productivity and encourage the use of branches for managing feature development.

Seamless Integration - As a filesystem, any application can now access project history without the need for program-specific plugins.

History in Context - Each version is presented in its entirety. Files appear in the context in which they were intended to be viewed.

Developer Flexibility - Changing your view doesn't mean changing your working copy and disrupting work in progress.



Right: Figs presents each version as a directory. The entire project state can be viewed by navigating to this directory. In this case each version of the project (the New York Times front page) has been tagged with the date it was posted. Opening a particular folder shows the page and all associated files (images, articles, etc.).

An Example

A vertical stack of six screenshots of the New York Times front page, each representing a different version of the project. To the right of each screenshot is a folder icon and a timestamp:

- 4/18/2009, 2:00PM
- 4/18/2009, 8:00PM
- 4/19/2009, 2:00AM
- 4/19/2009, 8:00AM
- 4/19/2009, 2:00PM
- 4/19/2009, 8:00PM
- 4/20/2009, 2:00AM
- 4/20/2009, 8:00AM
- 4/20/2009, 2:00PM
- 4/20/2009, 8:00PM
- 4/21/2009, 2:00AM
- 4/21/2009, 8:00AM
- 4/21/2009, 2:00PM
- 4/21/2009, 8:00PM
- 4/22/2009, 2:00AM
- 4/22/2009, 8:00AM