

## Memorandum

**Date:** 28 February 2013  
**To:** Hal Abelson  
**From:** Victoria Sun (Stickgold-Sarah, 1pm)  
**Subject:** A Versioning File System

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After some investigation, I propose we implement a *versioning file system* to allow our employees to automatically back up files, including previous revisions. This system will help mitigate consequences of accidental file deletion and loss from human and machine error, while being space and time efficient.

### Versioning File System Use Cases

It is easy to see why backing up files is a necessity: many errors, both human and machine, can cause loss of important and critical files. Suppose that one of our colleagues deletes a particularly important file, or a part of a file with important information. Under our current implementation, such losses are not easily recoverable. Deletions can be reversed through multiple undoes, though this process is tedious and not reliable. Our current system of manually maintaining backups and older versions of files imposes huge burdens on our employees, and give them unnecessary extra responsibility for something that could be just as easily automated.

A versioning file system would answer this problem by storing different versions of the same file. New versions of the file will be created when users modified files or directories. The versioning file system will be space and time efficient. Space efficiency is accomplished through the system's implementation: we only need to store the difference between the versions, not a complete copy of each version itself. The system will be time efficient by giving our colleagues extra time to work on other tasks instead of being concerned with manually storing backups.

### Timeline

I will take ownership of this project, should it be approved. My proposed timeline for the design and development of the system is as follows:

1. By February 4<sup>th</sup>, contingent on your approval, I will deliver a brief proposal outlining some technical specifications of the system.
2. By March 22<sup>nd</sup>, I will deliver a detailed report with all technical requirements fleshed out.