

# Editor, version 2

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# Communicating Changes

Q: How can Subversion communicate changes between clients and servers?

A: Design an abstraction to allow efficient expression of *tree deltas*.

Note: The API can be used for both sending and receiving changes, as in both *update* and *commit*.



# The Delta Editor

From `svn_delta.h`:

```
* The delta consumer implements the callback functions described in  
* this structure, and the delta producer invokes them.  So the  
* caller (producer) is pushing tree delta data at the callee  
* (consumer).
```

The Delta Editor is an API which defines a set of callbacks to be invoked to express a tree delta.



# Delta Editor Design

- Depth-first tree traversal
  - Most resources used are  $O(\text{depth-of-tree})$
- Ability to delay sending of file contents
- Can easily chain multiple editors together for improved functionality



# Delta Editor vocabulary

- ✦ add file (with copy history)
- ✦ delete entry
- ✦ send text delta
- ✦ change directory properties
- ✦ change file properties



# Example

Add a property to `A/B/C/D/foo`

- `open_root()`
- `open_dir('A')`
- `open_dir('B')`
- `open_dir('C')`
- `open_dir('D')`
- `open_file('foo')`
- `change_file_prop('foo')`
- `close_file()`
- `close_dir()`
- `close_dir()`
- `close_dir()`
- `close_dir()`



# Shortcomings of current implementation

- ✦ Depth-first tree traversal required (kind of)
- ✦ Too flexible
- ✦ Requires too much manual bookkeeping
- ✦ Prone to memory bloat



# Enter Editor, version 2 (Ev2)

- ✦ Richer action vocabulary
  - ✦ move()
  - ✦ rotate()
- ✦ Random access
- ✦ Atomic actions



# Example

Add a property to `A/B/C/D/foo`

- `open_root()`
- `open_dir('A')`
- `open_dir('B')`
- `open_dir('C')`
- `open_dir('D')`
- `open_file('foo')`
- `change_file_prop('foo')`
- `close_file()`
- `close_dir()`
- `close_dir()`
- `close_dir()`
- `close_dir()`
- `alter_file('A/B/C/D/foo', props)`



# Development Progress

- ✦ 2010: Initial Design
- ✦ 2011: Backward compatibility “shims” implemented
- ✦ 2012: Initial support released as part of 1.8
- ✦ 2013: Full support released in 1.9
- ✦ Future Improvements



# Improvements for users

- ✦ Better performance in some scenarios
- ✦ Richer action vocabulary
- ✦ Ability to track real moves:
  - ✦ Better merging
  - ✦ “True rename” support