JOYCE

Creating Collaborative, Nomadic Applications

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research.microsoft.com/camdis/projects/icecube.html

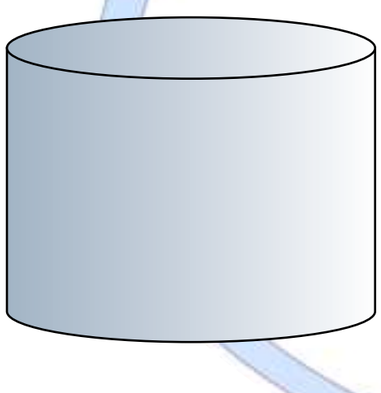
Joyce is a programming framework for creating collaborative applications.

Using Joyce you can easily create applications that participate in an ad-hoc, P2P, collaborative environment.

The frame work handles:

Group creation, discovery, joining and leaving.

Data consistency, connectivity changes passive storage. UI queues for collaborator presence and data divergence.



Automatic Storage Node

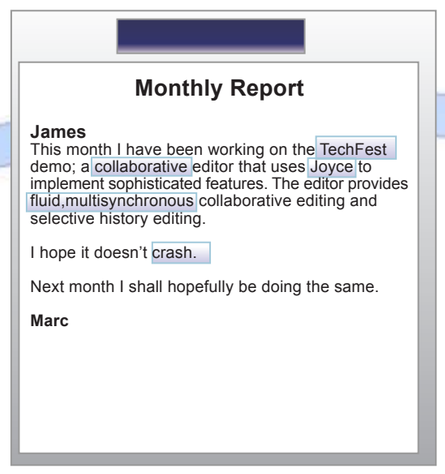
Automatically saves all traffic flowing through the group

Users can explicitly choose which actions to apply to the local state using a *history editor.*

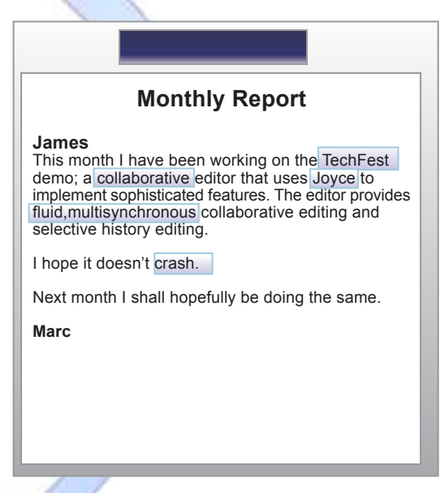
We use the semantic information in the multilog to track and *isolate* the effects of a history change.

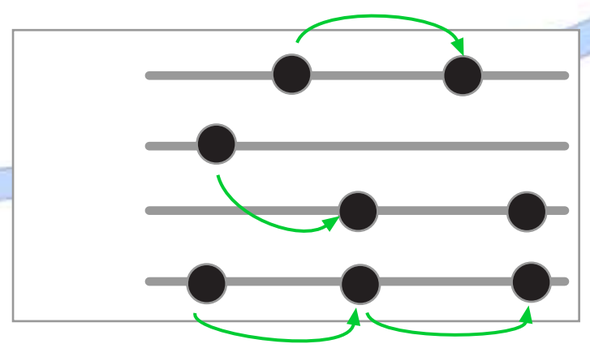
Common uses of the history editor are blocking individual collaborators and selective undo/redo.

Joyce detects and maintains an ad-hoc peer-group of applications and devices working on some shared task.



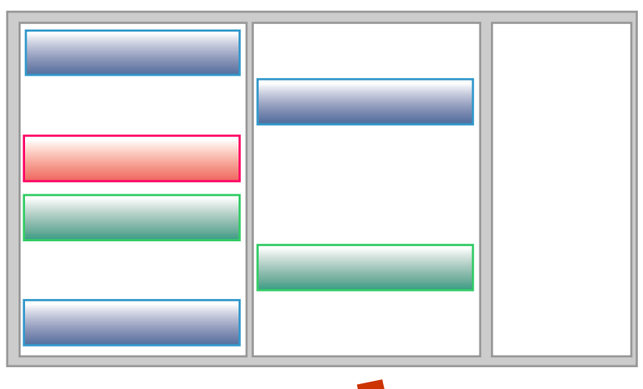
Nodes can detach (go offline) and re-attach to this group without loss of responsiveness. Offline changes will be merged.

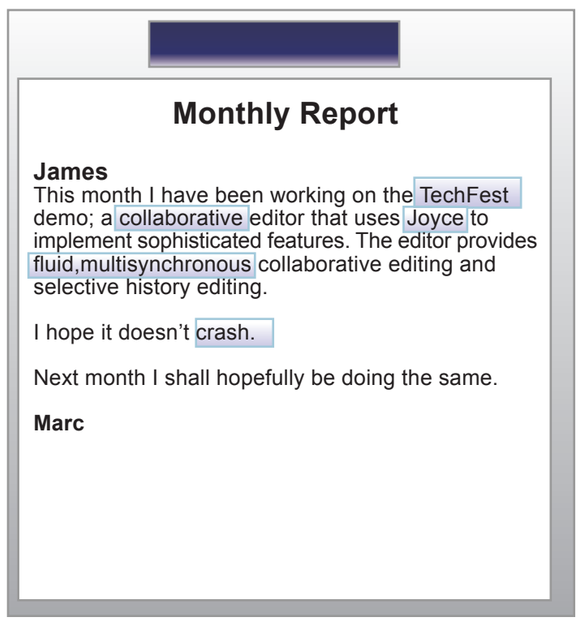




Actions and constraints are used to articulate the intended *semantics* of a modification in an application agnostic way.

We create and propagate a multilog that records group-wide modifications.





The modifications are then projected by the framework into the application user interface.

Conflicting concurrent actions are detected by the multilog and highlighted asynchronously in the application interface.

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