

Thinking in 4D: Preserving and Sharing Mental Context Across Time

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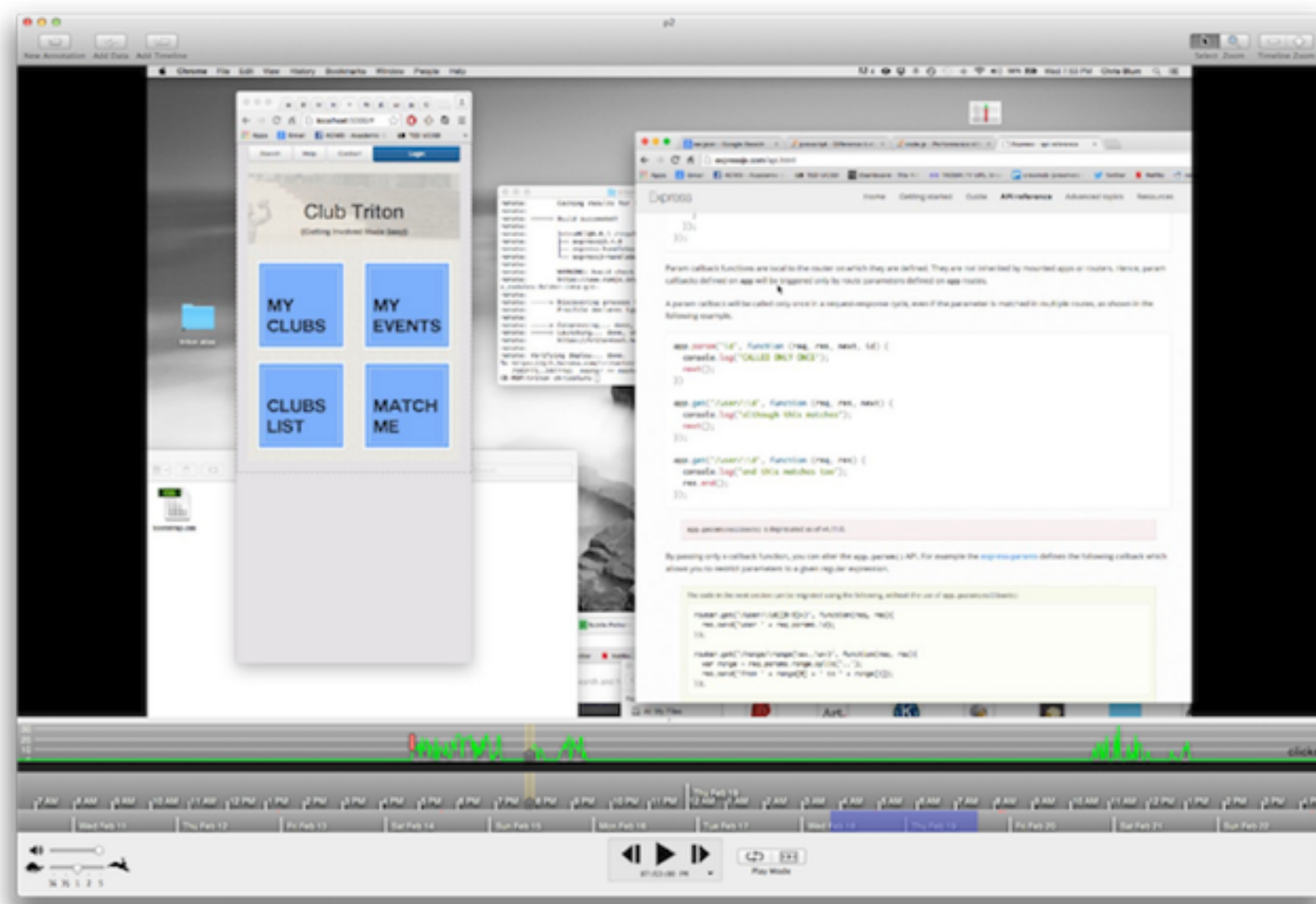
Collaborating across time

Problem: Creative activities are frequently interrupted, making it difficult to maintain complex trains of thought. Computational resumption aids might help people preserve and share this mental context both with their future selves and collaborators.

Question: What knowledge, artifacts, and strategies do programmers, writers, and graphic designers use to preserve and restore mental context across time?

Sampling everyday activity

We recorded the screens of ten programmers, writers, and graphic designers as they worked on everyday activities. After two weeks of recording, we interviewed them about moments when they were resuming a complex activity.



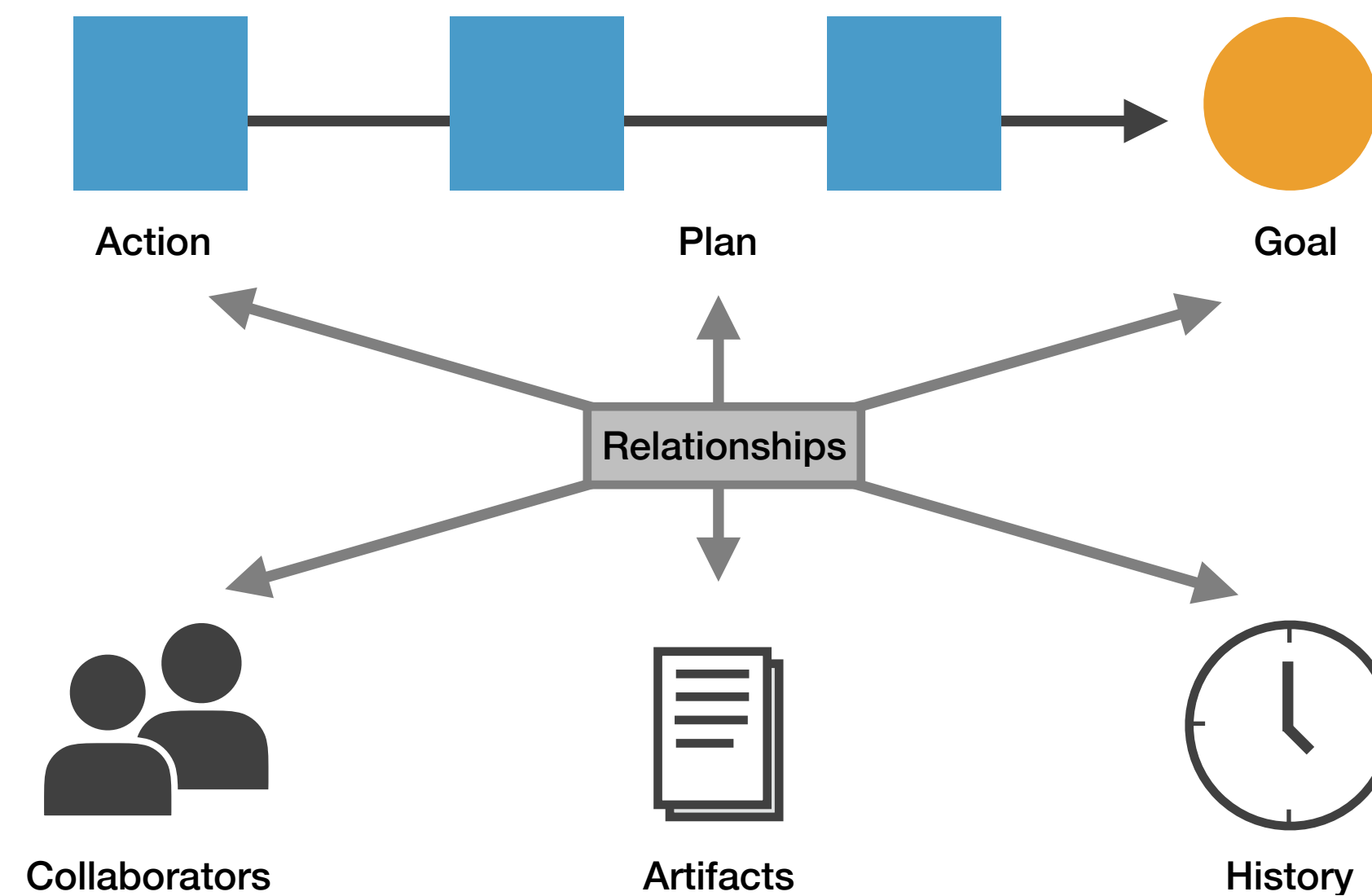
Participants reviewed screen recordings of their past work to help them accurately describe the strategies they use to restore the mental context of creative activities.

Acknowledgements

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Beyond goals, plans, and actions

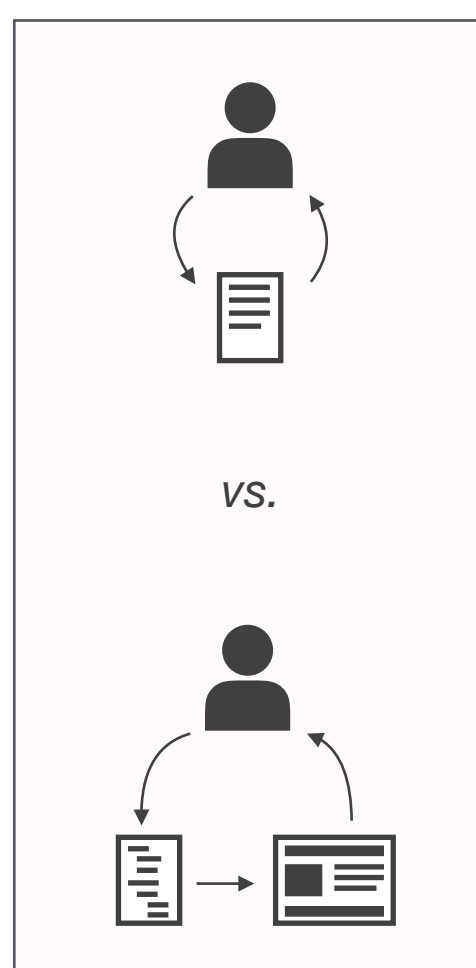
Participants need to recall not only of goals, plans, and actions but also knowledge about collaborators, relationships between activity components, and activity history.



Resumption strategies depend on activity

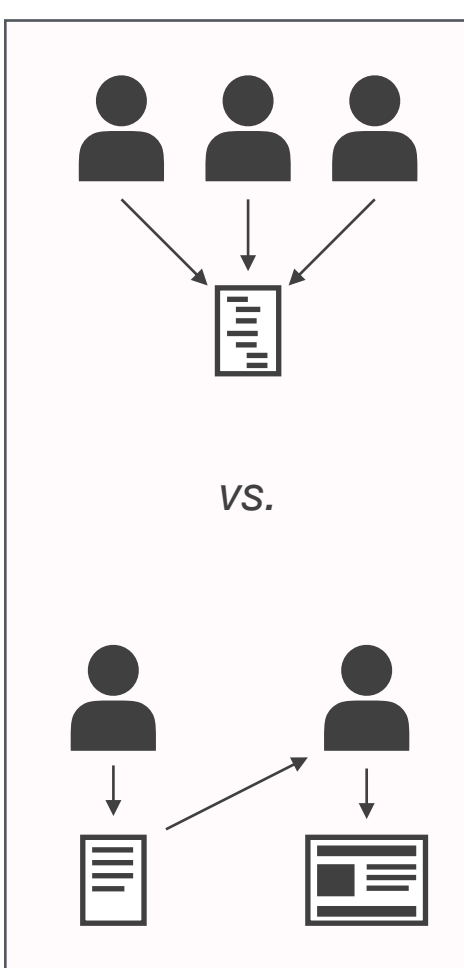
Participants restored context by reviewing key artifacts such as program files, organizing artifacts such as todo lists, and looking at templates but made varied use of these strategies depending on the structure of the activity. Key differences included:

directness of manipulation



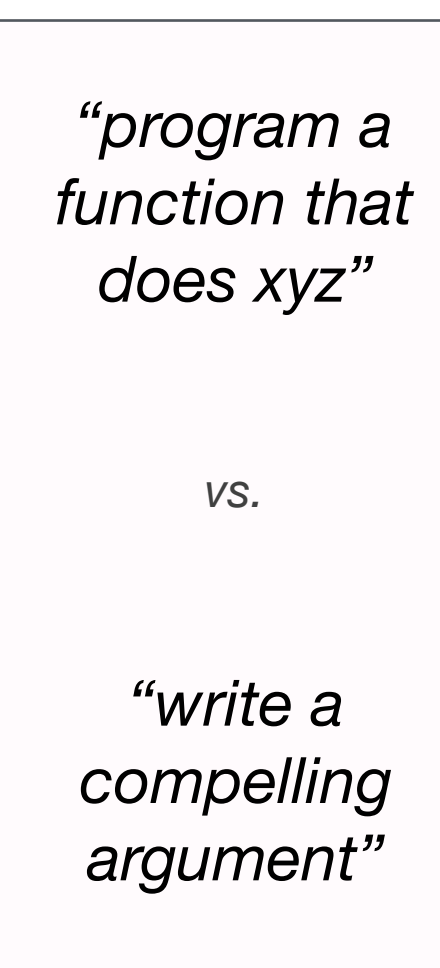
vs.

overlap of collaboration



vs.

explicitness of goals



vs.

“program a function that does xyz”

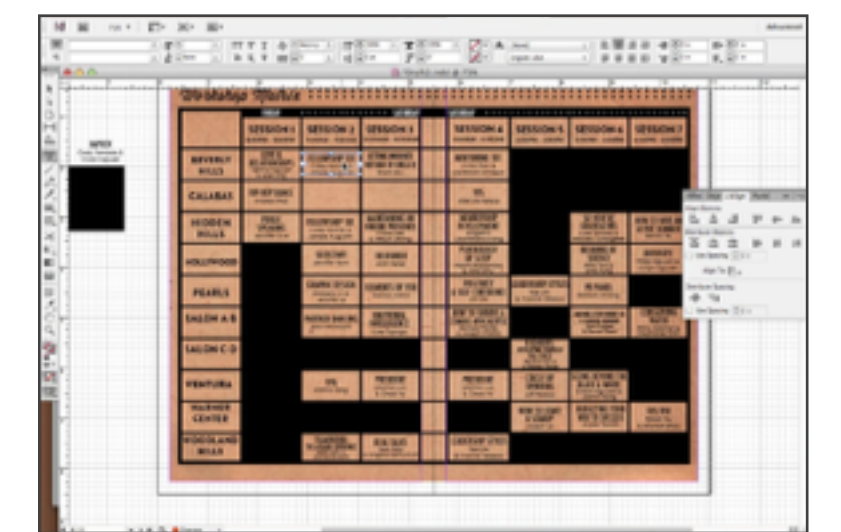
“write a compelling argument”

Rich implicit cues

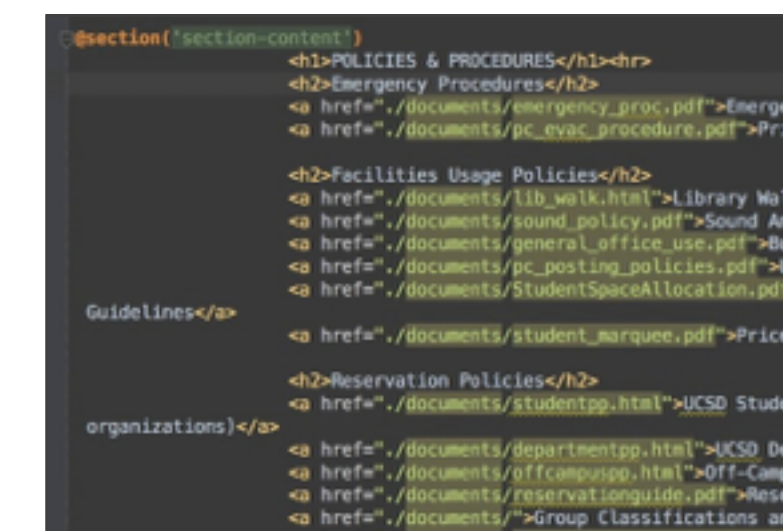
In addition to explicit cues, such as todo lists, participants used implicit cues to restore mental context. These were often byproducts of the activity itself and could only be interpreted with self-knowledge or knowledge of the activity’s structure.



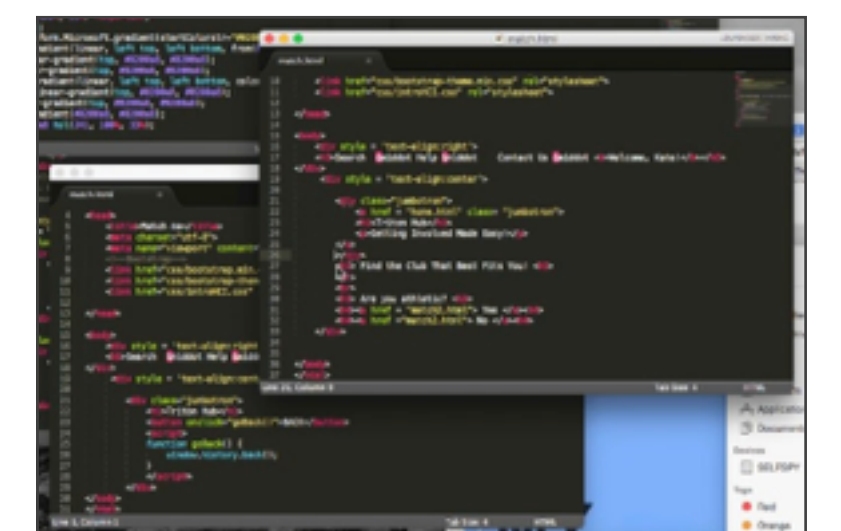
templates



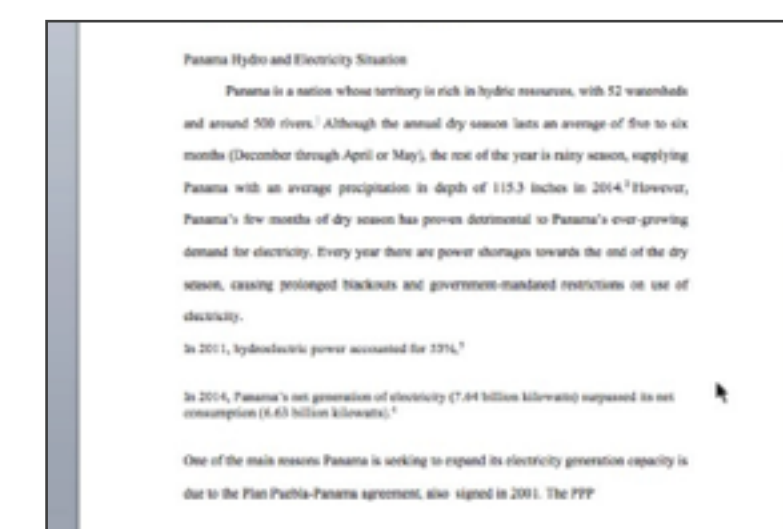
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highlighting



shape of code



level of detail



leftover tabs

Future work

Future work will explore how people use physical artifacts such as whiteboards and office arrangements to restore mental context as well as how summary visualizations of past work activity might enable restoration of mental context.