

# Supporting and Transforming Leadership in Online Creative Collaboration

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## ABSTRACT

Behind every successful online creative collaboration, from Wikipedia to Linux, is at least one effective project leader. Yet, we know little about what such leaders do and how technology supports or inhibits their work. My thesis investigates leadership in online creative collaboration, focusing on the novel context of animated movie-making. I first conducted an empirical study of existing leadership practices in this context. I am now designing a Web-based collaborative system, Sandbox, to understand the impact of technological support for centralized versus decentralized leadership in this context. My expected contributions include a comparative investigation of the effects of different types of leadership on online creative collaboration, and a set of empirically validated design principles for supporting leadership in online creative collaboration.

## Categories and Subject Descriptors

H.5.3 [Information interfaces and presentation (e.g., HCI)]: Group and Organization Interfaces---*collaborative computing, computer supported cooperative work, web-based interaction.*

## General Terms

Management, Design, Experimentation, Human Factors.

## Keywords

Animation, Leadership, Online Creative Collaboration.

## 1. INTRODUCTION

The success of *online creative collaboration*—i.e., online collaboration with the purpose of creating new artifacts—is one of the big surprises of the 21<sup>st</sup> century [1]. Groups of amateurs around the world collaborate over the Internet to voluntarily contribute to a host of impressive and wide-reaching projects. These include Wikipedia, a free online encyclopedia boasting over 10 million user-created articles in over 250 languages; Apache, a Web server handling over half of the Web's page requests; and Linux, an operating system used by nearly 40% of large American companies [8].

An emerging body of literature seeking to explain how online creative collaboration succeeds has emphasized the central importance of leadership [2,5,6,8]. Leadership, in various forms and to varying degrees, appears in online creative collaboration of every sort. Moreover, as projects grow in popularity and scope, a

corresponding influx of new volunteers requires more complex organizational structures. Without effective leadership, it seems, there can be no successful online creative collaboration.

Despite the central importance of leadership in online creative collaboration, little is known about it outside the contexts of Wikipedia and open source software (OSS) projects, and few studies have explored design opportunities for supporting such leaders. To address this research gap, my thesis investigates online creative collaboration in a novel context—animated movie-making—with a focus on supporting and transforming leadership. My initial work has been an empirical study of existing leadership practices in this context, summarized in the next section. I am now designing a Web-based collaborative system, Sandbox, based on these findings to understand the impact of leadership centrality on online creative collaboration.

## 2. INITIAL RESULTS

To expand our knowledge of leadership in online creative collaboration, I conducted an empirical, mixed-methods study of leadership in 3 online communities whose members collaborate over the Internet to produce computer-animated short movies called *collabs* [4]. This study produced 4 main findings:

1. *Few collabs produce a completed animation.* Less than 20% of collabs produce a completed animation, yet completion is the ultimate goal for both collab participants and audiences.
2. *Collab leaders are crucial, but overburdened.* Leaders do the bulk of the work in a collab, taking on numerous sub-roles.
3. *Collab participants have little technological support.* Collabs are organized in basic discussion forum threads, which serve as the locus of activity from start to finish.
4. *Collabs have different needs than Wikipedia or OSS projects.* The context changes how people collaborate.

My current work, outlined in the next section, investigates how we might design new technological support that results in more successful collabs and eases the burden on leaders.

## 3. THE DESIGN OF SANDBOX

Based on the findings from my previous study [4], I am designing a Web-based collaborative system, Sandbox, to support online creative collaboration within the context of animated movie-making. The main purpose of Sandbox is to make it easy for groups of users to create, manage, and complete animated movie projects together.

### 3.1 Leadership Widgets

Sandbox is being developed as an open-source platform that any online community can appropriate. When creating Sandbox

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projects, creators choose from a set of 18 existing widgets (modular features) or, if they have programming abilities, they can create their own. I designed these widgets to alleviate the challenges to leadership identified in my previous study [4]. They can be grouped into 4 categories:

- Group awareness/coordination (5 widgets)
- Project structure/vision (4 widgets)
- Quality control/evaluation (6 widgets)
- Member motivation/attribution (3 widgets)

Additionally, when a Sandbox project is created, the creator sets each widget to 1 of 3 mutually exclusive modes. In *centralized leadership* mode, the widget's permissions are set such that the project's leaders have primary control over its functionality. In *decentralized leadership* mode, control over the widget's functionality is distributed equally across all members of the project. Finally, in the *disabled* mode, the widget does not appear in the project, and has no effect on its production or outcome.

### 3.2 Four Examples

In the group awareness/coordination category, the *Activity Visualizer* widget acts like a social dashboard [7] to make visible information about project members' recent activity (e.g., last login times, latest contributions, etc.). If the Activity Visualizer widget is set to centralized leadership mode, only a project leader can view it. If it is set to decentralized leadership mode, however, any project member can see it.

In the project structure/vision category, the *Specs* widget lists the technical specifications (e.g., frames per second, height and width in pixels, etc.) to which any animation submission must adhere. Any project member can adjust these details if the Specs widget is set to decentralized leadership mode. Otherwise, in centralized leadership mode, only a project leader can change them.

In the quality control/evaluation category, the *Competition* widget enables members of the same project to compete for the same job or role in the project (e.g., a certain chapter of a story, a particular section of a song for a music video, etc.). If the Competition widget is set to centralized leadership mode, a project leader decides which project member wins the competition. If it is set to decentralized leadership mode, then project members vote on the winner as a group.

In the member motivation/attribution category, the *Awards* widget allows Sandbox users to give each other awards (e.g., most helpful, most improved, etc.) as tokens of appreciation, similar to Wikipedia barnstars [3]. Only a project leader can grant awards to project members if the Awards widget is set to centralized leadership mode. In decentralized leadership mode, any project member can grant awards.

## 4. EVALUATION

My general research questions center on the impact of technology on supporting and transforming leadership in online creative collaboration. These include:

1. How do leaders of online creative collaboration adopt new technological support with respect to their existing practices?
2. How does leadership centrality affect online creative collaboration *processes*?
3. How does leadership centrality affect online creative collaboration *products*?

A mixed-methods evaluation will guide the design process of Sandbox and allow me to address these research questions. RQs 1 and 2 will be addressed with in-depth interviews, participant observation, and log file analysis of Sandbox project members and their work. RQ 3 will be addressed with content analysis, expert review, and community review of completed Sandbox projects.

For both qualitative and quantitative data, I will be able to compare existing leadership practices and Sandbox projects with varying degrees of leadership centrality across the 4 categories mentioned previously. These comparisons will allow me to understand the particular effects of technological support and different types of leadership on a project's production and outcome. Ultimately, this evaluation will address the broader question, "For what purposes is online creative collaboration most useful, and how can we best support the practices of leaders and others who participate in it?"

## 5. EXPECTED CONTRIBUTIONS

My thesis will offer new insights into fundamental issues of online collaboration in creative contexts, both in terms of concrete design implications for socio-technical systems and a deeper theoretical understanding of how people work together creatively. Specifically, I will contribute (1) a rich description of existing practices surrounding online creative collaboration in the novel context of animated movie-making; (2) a comparative investigation of the effects of leadership centrality on online creative collaboration, focused on this context but connected to related literature in other contexts; (3) a set of empirically validated design principles for supporting online creative collaboration in this context, organized by leadership type and collaboration pattern; and (4) a Web-based collaboration system, Sandbox, released as OSS for anyone to use and modify. In the long term, I envision a multitude of studies in various contexts, gradually increasing our understanding of the potential and limitations of online creative collaboration.

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