

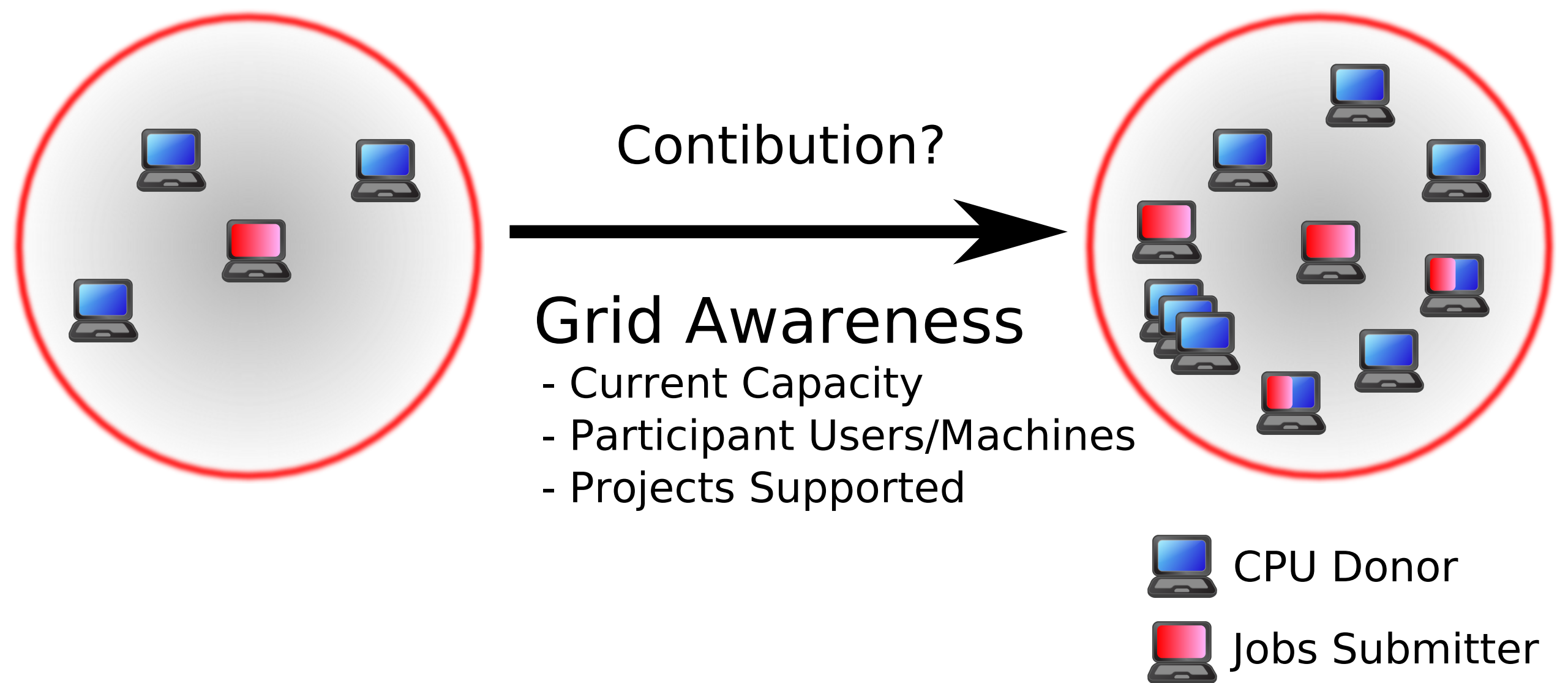
GridOrbit Public Display

Providing Grid Awareness in a Biology Laboratory

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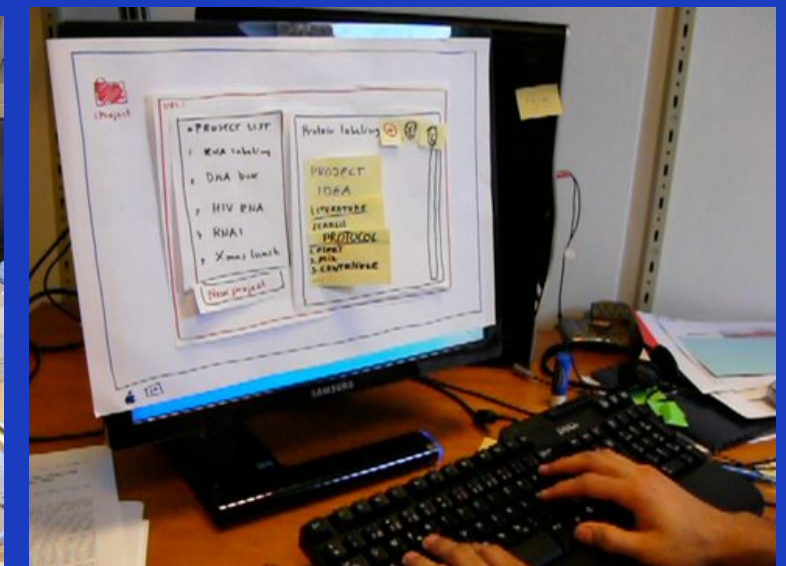
Abstract

We introduce GridOrbit, an awareness public display that visualizes the activity of a community grid system executing bioinformatics analysis in a biology laboratory. A community grid system relies on users that donate CPU cycles to the grid. The goal of GridOrbit is to provide awareness of the research taking place in the biology laboratory using the grid, promote contributions to the grid, and thereby mediate its appropriation. GridOrbit visualizes the activity in the grid, shows information about the different active projects, and supports a messaging functionality where people comment on the projects. Our work explores the usage of interactive technologies as enablers for the appropriation of infrastructure.

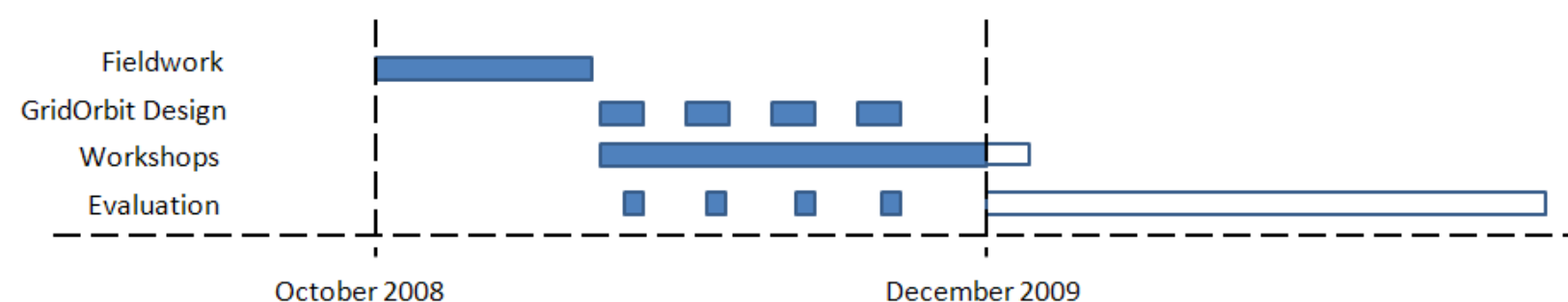


Our Hypothesis: *Increasing local awareness of a resource sharing infrastructure will lead to a broader user participation, and hence to increased contribution.*

Molecular Biology Research Center



Participatory Design Workshops



Metaphor & Community Grid

In our current design, GridOrbit captures data from the P2P grid and visualizes grid activity by showing a land-scape of windmills and light bulbs; each windmill represents a computer in the grid, and each light bulb represents a research project (all grid jobs are tagged with a project name). The level of CPU contribution by a device defines the rotational speed of the windmill. The level of computing power used by a project defines the glowing level of the light bulb.

Interaction Zones

AMBIENT ZONE: > 70cm - Presents the landscape of light bulbs and windmills.

NOTIFICATION ZONE: 40-70 cm. Enables the system notifications and the TagCloud. These features aim at capturing the attention of the user. The system notifications alert about new messages in the last 24 hours. The TagCloud is made from extracting words from the messages.

INTERACTIVE ZONE: < 40 cm. Enables touch interaction for browsing through projects and users. The TweetBox can be used to create and reply to messages, engaging in conversations. Messages are associated to users and optionally to projects, and can be deleted at any time. Selecting a light bulb will show details about the project and filter out the messages in the TweetBox. Users can also interact with the TagCloud by selecting a tag, filtering out the messages in the TweetBox. Finally, the user can access information about joining the P2P grid, and leave suggestions on how to improve GridOrbit.



Appropriation

Mainwaring et al., point out that the appropriation of infrastructure is a collective process where the community buys into a new way of living, and a set of conventions of practice emerges. We designed GridOrbit to mediate in this process by making infrastructure and its activities visible, and its impact on research.

Research Awareness

GridOrbit creates research awareness by informing users about the different research projects in the department and their grid jobs, thereby serving two purposes. First, projects are represented as sets of tasks; this granularity makes the activities more concrete than higher-level projects. Second, publicly showing the project descriptions and activities creates opportunities for knowledge sharing is created.

Social Interactions

We focused on fostering social interaction, we thus enabled viewers to browse and annotate projects on the display. These annotations try to trigger social interactions by constructing topic-based conversations on the grid activity, specific research projects, the use of public displays, and the annotations themselves.