

# Science United: UI/UX Goals

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This document discusses the assumptions, goals, and design decisions related to the user interface and experience of Science United (SU).

## 1. Target audience

One goal of SU is to attract a population of volunteers with some or all of these properties:

- Not into computer technology or jargon; can follow directions but not figure things out.
- Own a fairly modern desktop or laptop.
- Largely young: 20s and 30s.
- Roughly half female.
- Motivated by science goals: curing cancer, saving the environment, etc.
- Motivated by the defense of science itself, and by being part of the pro-science community.
- Not motivated, and possibly turned off, by competition.

This is much different than the current set of BOINC users, for whom SU is not intended.

## 2. Design principles

Based on the above properties of the target population, I suggest the following principles for the design of the SU interface.

### 2.1 No leader boards

First, our target user doesn't have a multi-GPU computer. They'll never appear high on a leader board. The boards have no personal significance to them.

Second, the compulsive need to compete, and the implicit personal ranking based on competition, are turn-offs for many people, including I think most women.

So SU will have no leader boards. It will, however, show users info about the productivity of their computers, as a form of encouragement to continue and increase participation. This info will be in terms of computing time, not FLOPS.

## 2.2 No jargon

When an interface uses jargon, people who don't understand it assume the system is beyond their comprehension, and they leave.

Not OK: "FLOPS", "CPU", "GPU", "RAM"

OK: "computer", "job"

## 2.3 Feature simplicity

BOINC has always erred on the side of complexity: more features, more info displayed.

The problem is that when a GUI shows a lot of info, the user figures it's important and they should understand it. If they don't have time for this, or if they can't understand it, they leave.

So SU will, for example, reduce the current computing preference system to 3 choices: "green", "standard", "max".

## 2.4 Avoid textual display of data

To the extent that SU shows complex info (e.g. the history of a user's contribution over time) it will do so graphically rather than textually.

## 3. Projects

A central goal of SU is to eliminate the need for volunteers to know or think about projects. However, since the BOINC interface shows projects, we can't conceal their existence completely. So the SU interface will, for example, show the set of projects a user is currently contributing to.

## 4. SU versus BOINC

A central goal of SU is to provide a single brand for volunteer computing. At some point we might make a branded version of BOINC so that "BOINC" never appears. Until then, we have to explain what BOINC is, namely the software that underlies SU.

## 5. Simplifying the volunteer experience

The BOINC volunteer interface has evolved in a way that caters to tech-savvy "power users". It provides lots of information and lots of controls. This complexity drives away non-technical people. We've observed that if a person is shown information they don't understand, they conclude that the system is too complex for them, and they withdraw.

We want the coordinator web interface to attract everyone with a computer and an interest in science. So we use the following principles in designing its primary interface:

- Don't assume that the user knows terms like CPU, GPU, core, RAM, etc., or the concepts that they represent.
- Show quantities graphically, not with textual numbers.
- Minimize clicks. Avoid requiring drill-down.

Also, while power users like performance-based competition (i.e. credit leader boards) non-technical users are turned off by it: they don't want to see lists that they have no hope of getting on. So the coordinator won't show any lists ordered by computing power.

## 5.1 Computing preferences

BOINC has an elaborate system for specifying computing preferences: when computing should happen, limits on the numbers of CPUs, RAM usage, disk usage, and so on. The coordinator will provide a simplified interface in which the volunteer selects from three options: "max computing", "standard", and "limit energy use". Each of these will map to a set of preferences.

## 5.2 Volunteer signup process

We have redesigned the signup process to minimize the number of clicks. Starting from the point when the volunteer arrives at the coordinator web site, the process is as follows:

- The home page contains a pitch for volunteer computing, followed by a signup form. This asks the user for login credentials (email address and password, Facebook, or Google), and for their science preferences (top-level keywords only).
- This takes them to a Download page explaining that they'll need to download and install a program. The Download button initiates the client software download.
- Information is passed to the client software (through the name of the download file) that causes the client to attach to the coordinator, and that links to the newly-created account.
- Thereafter the BOINC software runs automatically on system startup. No further interaction is needed.

## 6. Volunteer incentives

Once volunteers have joined, we'd like to encourage them to

- Continue participating.
- Use additional computing devices.
- Recruit other volunteers via in-person conversation, email, or social media.
- Participate in community activities such as message boards.

We can do this with targeted information and encouragement, and by offering various types of rewards. These can be done through various channels:

- Emails from the coordinator.
- Social media.

- The coordinator web site.
- Client notices: the BOINC manager can display multimedia messages from projects and account managers. The arrival of these messages is announced with “alerts”, e.g. system-tray popups on Windows.

Some possible types of information and incentives:

- Periodic message assuring the volunteer that their devices are doing work, and that it's appreciated by scientists.
- Tell the volunteer if devices have stopped doing work, or need upgrades.
- Tell the volunteer science news from projects they support.
- Define a virtual “reward system” of graduated medals or achievement levels.
- Reward the volunteer for adding more devices.
- Reward the volunteer for recruiting other volunteers.