BOINC

BOINC, the Berkeley Open Infrastructure for Network Computing, is a software system for researchers based on the concept of Public-Resource Computing. It was very interesting to see that they wanted to increase public awareness of scientific progress , while at the same time efficiently using combined computing power of millions of Personal Computers to do scientific calculations and make it feasible for researchers to execute projects without limitations on the compute power.

BOINC allowed the researchers to create applications which used Public-Resource Computing and executed them on PCs of people participating in the project. The biggest challenge involved with this computing model is the fact that projects relying on volunteer computing need to be able to be highly flexible given the diverse resources they need to work with. This diversity is not only with regards to the physical architecture of the system and the system resources, but also the various levels of reliability and availability associated with these resources as well. This is somehow very hard for me to understand in terms of management issues. Also, the security model seems to be highly flawed since there is no level of abstractions or encryptions involved.

The scheduling is the most important aspect of this system , which is handled by the scheduler. It makes local decisions aiming to maximize resources while adhering to deadlines. A huge amount of control still lies with the participants on how they want their machine to be used and the scheduler makes sure these are all met. The participant allocates disk space, memory, network and processor time he wants to make available to the BOINC systems.