

PIC-SER proposal

To: Candace Holman
From: Massachusetts Institute of Technology
Subject: Response to Call for Participation (CFP) in PIC-SER Campus Trials
Date: May 27, 2005

The Plasma Science and Fusion Center and Information Services and Technology departments of the Massachusetts Institute of Technology, an Internet2 university, are pleased to submit a proposal to participate in the PIC-SER Campus Trials.

Our response includes the background and objectives for the proposed campus trial as well as responses to information requested in the CFP.

Background and Objectives

MIT's PSFC operates the Alcator C-Mod tokamak, one of three major facilities in the U.S. magnetic confinement fusion program. This experiment involves a large on-site team (~100 people) and significant off-site collaborations. Fusion experiments, by their nature, require considerable near-real-time interactions among the experimental team. Plasma pulses are produced at approximately 15 minute intervals throughout a run day, with each shot costing approximately \$2,000 incrementally (and \$10,000 averaged over the year) creating strong incentives for the team to analyze, display and assimilate data in support of between shot decision making. To support remote participation, the U.S. fusion program has done some pioneering work; operating diagnostics remotely over the internet as far back as 1991 and demonstrating full remote control of a major experiment in 1995 (The MIT experiment was operated by a joint team working from Livermore, California). Recently we have begun testing various technologies to enhance and integrate ad-hoc interpersonal communications with the aim of enhancing the experience of off-site participants and improving the overall efficiency of decision making and problem solving. Looking to the future, the next major step in the fusion program will be the construction of ITER, a 10 billion dollar international experiment. While this machine will not be built in the U.S., there is the expectation that remote participation will be an integral part of its operation. Experience gained now, should reap significant dividends in enhancing the U.S. involvement in that project.

Objectives:

- enhance the levels of the considerable near real-time ad-hoc communication with remote collaborators, needed to support a fusion run
- facilitate the ease of interaction and encourage the participation of the necessary decision makers through the use of interoperable tools
- increase operational efficiency and minimize experiment rescheduling costs

1. Name and contact information for a full-time employee who will assume primary responsibility for the trial

- Joshua Stillerman
sip:jas@mit.edu
mailto: jas@psfc.mit.edu
- Tom Fredian
sip:twf@mit.edu
mailto: twf@psfc.mit.edu

2. Commitment to provide Unix systems administration support over 4 months to support the trial

- YES

3. A project timeline of 60 days or less to install, configure, and deploy the service

- 10 days to finalize server deployment
- 20 days to configure clients
- 20 days to set up tests for trials

4. A note of support from your organization's CIO or department head

- Please see attached letter from Miklos Porkolab, Director of the MIT Plasma Science and Fusion Center.
- Letter from Jerrold Grochow, VP Information Services & Technology, to follow under separate cover.

5. Equipment commitment, including a server running a modern Linux distribution and desktop or laptop machines for trial participants, running Windows 2K/XP or Mac OS X, each with headset

and microphone capability.

- A linux server running RHEL3 has been deployed with SER installed. Accounts for several users have been created and it is functioning. The SER version information is:
-version: ser 0.10.99-dev5 (i386/linux)

We are not currently using this server in a production environment, so configuration and or version changes can be easily done. We plan to issue approximately 15 accounts, some to people, and others to particular locations. There will be up to 50 clients on XP, Macintosh and linux. We are anxious to verify their interoperability.

6. Indication of willingness to share experiences with the Internet2 community.

- We will create a web site to share our experience