Appendix 4: Facilities & Other Resources available to the project
UC Santa Cruz (Carlos Maltzahn)

Office and Lab Space:

The Computer Science Department of the Baskin School of Engineering (BSOE) is housed in the Engineering II building: a 151,550 square foot, LEED GOLD building located in the Natural Sciences and Engineering complex of the campus.

The current space inventory for the Institute for Scalable Scientific Data Management (ISSDM) includes four dedicated rooms: a research office; a visitor's office; a big-data research lab and a dedicated video conference room. These dedicated ISSDM spaces, totaling 1,347 square feet, will be available for project use for the duration of the project.

Computing Resources – BSOE:

Overview
To support research and instruction, the Baskin School of Engineering maintains and operates a state-of-the-art computing network of several hundred Unix, Windows, and Macintosh computers, powerful computing clusters, several computer laboratories and quality IT staff, all of which will be available to project research personnel and students.

Network
The ITS/BSOE computing support team operates a high-speed 100/1000 megabit-per-second network with 1/10 gigabit-per-second fiber optic backbones and redundant core routers and paths. Most areas of BSOE buildings are covered by wireless networking of various types (802.11g/n). The BSOE computing network has redundant connections to the main campus network.

Data Centers
BSOE Computing also operates four separate Tier 1+ data centers, all with UPS and air-conditioning support. Two of the data centers have backup power generation and the other two use a campus cogeneration facility for backup power. In addition, BSOE uses the main UCSC data center (Tier 2) for some redundancy and for web sites and copies and/or mirrors data to distant Universities (such as the San Diego Supercomputer Center).

Cluster
The Campus Rocks cluster is a shared campus resource comprising one head node and seven compute nodes with a total of 304 cores on which to execute processes. Campus Rocks is available to all faculty, staff and students. File system data is made available to computer science researchers (including students), providing a unique opportunity to study a real file system and how people use it.

Computing Resources – ISSDM

The Institute for Scalable Scientific Data Management (ISSDM) **cluster** is available for the project and includes the following:

Four full-sized racks in a raised-floor, air-cooled machine room with battery-backed power
48 nodes, each of which has 2 Opteron CPUs with 2 cores per CPU
Extreme Summit: model 400-48t, 48 ports
Netgear switch: model GS748T, 48 ports

With additional nodes:
4 nodes, each with 2 Opteron CPUs with 8 cores per CPU, 64 GB RAM, 1 TB hard drive.

ISSDM **storage** resources also include two – one primary and one backup – mirrored QNAP TurboNAS, each with Intel Xeon CPU, 4 cores, 12 x 4TB disk drives, 8GB DRAM.

Other Equipment and Resources:

The project personnel will have access to Polycom video conferencing equipment, model VSX 7000s with SoundStation VTX 1000.

UC Santa Cruz is within commuting distance of several universities and industrial laboratories, including Stanford University, UC Berkeley, Google, Facebook, Amazon's Lab126, HP Labs, IBM Almaden Research Center, NEC Labs, Lawrence Livermore, NASA, Sandia and SRI International. The proposed research project will benefit from this proximity and these existing relationships, in terms of timely progress, relevance and dissemination. Graduate student researchers and faculty will also benefit from continued university-industry interactions that will be stimulated by the proposed project.