FY10 Plan for **Intensity Frontier Computing Support**

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Relevant Strategic Plans - Strategic Plan for Intensity Frontier

**Intensity Frontier Goal** –

* Interactive and batch, including Fermi GRID, computing resources
* Central disk storage resources needed by experiments
* Setting up tape archival for remaining experiments
* Software, application, and operations support
* Comprehensive solution(s) for database services

**Intensity Frontier Strategy –**

1. To achieve the goals with a minimum of manpower common solutions are needed that extend to all of the experiments needs
2. Communication among all the stake holders and the computing division in the form of meetings, mailing lists, and web based applications.
3. Since there is a large overlap of collaborators across many of the experiments (especially in the Neutrino area) having common tools and architectures for computing makes moving among the various experiments easier.
4. Computing hardware needs to be flexibly assignable to specific experiments as needs arise.
5. Using computing resources external to Fermilab must be easily integrated in the resource needs for all or most experiments.

**FY09 Accomplishments**

1. Identified representatives from each experiment and coordinated activities of all groups.
2. Begin plans for computing and storage resources needed in 2009 and 2010 experimental programs. Generate spreadsheet with projected needs for next 5 years.
3. Begin plans for coordinating hardware, software, and operations efforts among the many Intensity Frontier groups.
4. Generate disk purchase for 50 TB usable BlueArc space for Minerva, Argoneut, and Neutrino contingency.
5. Put 15 farm class machines into budget for use in GP Farm or potentially in interactive cluster.
6. Procured and commissioned 5 server class dual quad servers for MINERvA , and seed for Intensity Frontier interactive cluster.
7. Provided MoU’s for Intensity Frontier experiments.

**Not Accomplished in FY09**

1. Need to replace MIPP DB server nodes.
2. Replace database hardware for MINOS
3. MoU’s for remaining experiments.

**Objectives for FY10**

1. Provide flexible approach for interactive user login cluster and migrate existing nodes to the new model.
2. Provide needed central disk storage for experiments
3. Provide central tape archive for experiments
4. Work with experiments to identify and provide common software solutions.
5. Assist experiments to run simulations on Fermilab computing facilities.

**ACTIVITIES**

**Activity= /Intensity Frontier/Intensity Frontier Computing Support/ORACLE database support**

* Activity type: Project
* Description: Install new version of DB on new hardware; turn over management
* Timescale: As identified and needed
* Milestones:
* Metrics ------

**Activity= /Intensity Frontier/Intensity Frontier Computing Support/PostgreSQL database support**

* Activity type: Project
* Description: Install new version of DB on new hardware; turn over management
* Timescale: As identified and needed
* Milestones:
* Metrics ------

**Activity= /Intensity Frontier/Intensity Frontier Computing Support//General Support**

* Activity type: Service
* Description: Support driven by infrastructure changes
* Timescale: Continuous
* Milestones: ------
* Metrics Service request times < 1 business day

**Activity= /Intensity Frontier/Intensity Frontier Computing Support/System support for DAQ computers (Maybe not required)**

* Activity type: Service
* Description: Maintain Control Room and DAQ computers
* Timescale: Continuous
* Milestones:
* Metrics Service request times < 1 business day

**Activity= /Intensity Frontier/Intensity Frontier Computing Support/Network support**

* Activity type: Service
* Description: Maintain Control Room and DAQ computers
* Timescale: Continuous
* Milestones: Prototype control room by December 08
  + - * DAQ setup in NUMI hall, early 09
* Metrics Service request times < 1 business day

**Activity= /Intensity Frontier/Intensity Frontier Computing Support/User Consultation**

* Activity type: Service
* Description: Support driven by customer requests. software support and account generation for local cluster, databases, CRL, docdb, CVS, VPN, VO
* Timescale: Continuous
* Milestones: -------
* Metrics Service request times < 1 business day
* Status –are currently done by users.

**Activity= /Intensity Frontier/Intensity Frontier Computing Support/Hardware Improvements**

* Activity type: Project
* Description: Budget/Spec/Order new hardware for interactive analysis cluster disk/CPU.
* Timescale: 1st Q FY2010
* Milestones: Cluster installed and operational
* Metrics -------

**Activity= /Intensity Frontier/Intensity Frontier Computing Support/Mass Storage Tape Archive**

* Activity type: Project
* Description: Tape archive for IF experiments
* Timescale: continuous throughout year
* Milestones: Archive data to tape
* Metrics -------

**Activity= /Intensity Frontier/Intensity Frontier Computing Support/Central Storage Disk**

* Activity type: Project
* Description: Installation of Central disk storage for IF experiments
* Timescale: 1st Q 2010
* Milestones: Central disk storage solution
* Metrics -------

**Activity= /Intensity Frontier/Intensity Frontier Computing Support/GRID Computing Resources at FNAL**

* Activity type: Service
* Description: GRID slots for IF experiments
* Timescale: Continuous
* Milestones:
* Metrics -------

**Priorities:**

1. Implement data catalog and storage system. (Probably SAM for catalog, will need simple archiving to pnfs while this is being set up.).
2. Implement production databases for hardware tracking, run data, calibration constants and pedestals.
3. Provide adequate disk and CPU for user analysis as the run starts.
4. Integrate MINERvA operations and support into CD structures.

**Change control:** Changes or delays in deployment of objectives need the approval of the NuComp committee.

**Risk Assessment:**

Professional quality computing is vital for the success of the Intensity Frontier program. Many tasks which are normally performed by trained CD professionals using approved procedures are currently being performed by professors and graduate students with little familiarity with Fermilab norms and procedures. In addition, experiments use computing hardware currently based on user-supplied desktops. These are running FNAL approved OS but lack physical security and are often well beyond maintenance contract expiration. There is a high risk of project failure due to inadequacies in computing resources and implementation if the deficiencies in hardware and staffing are not addressed.

1. Failure to complete the migration of the databases to a production machine will put operational data at risk.
2. Failure to implement a robust archiving system for data could lead to data loss.
3. Failure to support Control Room could lead to operational consequences for MINOS, MINERVA, NOvA data taking. This has implications for DOE performance metrics.
4. Failure to provide adequate computing resources limits the ability of the experiment to commission the detector, take data and publish the physics in a timely fashion.
5. Failure to have of support staff from CD assigned to experiments will lead to continued delays in implementing sensible and professional software and hardware solutions. Users will find a way to make things work but it won’t be the right way and, if history is any judge, CD will have to step in the end to clean up the mess. We would like to do things right from the start but cannot without staff/liaison support.

**RESOURCES REQUEST**

**Staffing Request:**

* Associate Scientist – 1 FTE
* Experiment Liaison – 1 FTE
* Two user support and production operations persons – 2 FTE
  + User accounts
  + User support
  + Production operation support
* Neutrino software applications expert – 1 FTE
  + Common software development
  + Expert software support
* Infrastructure support person – 1 FTE
  + System support for Control Room and DAQ computers
  + Assistance with desktop computers including installation and upgrades
  + Support for the interactive cluster
  + NIS service for interactive cluster and desktop machines
  + Data handling systems
* General application development and support person – 1 FTE
  + Grid production
  + Docdb
  + CRL
  + Databases

The plan is that these people would be shared among all of the Neutrino experiments, although focus to each particular experiment's needs will be coordinated as needed.

**Hardware Request:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Central DISK (TB)** | **TAPE (TB)** | **Int. Login cores** | **GRID Slots** | **DB Conditions**  **Construct.** | **DB SAM** |
| **MINOS** | **30**  **+30rpl.dsk** | **100** |  | **800** |  | **Y** |
| **MINERvA** | **20** | **50** |  | **60** |  | **Y ?** |
| **NOvA** | **30** | **100** | **40** | **100** |  | **Y ?** |
| **MIPP** |  |  |  |  | **1** |  |
| **MiniBooNE** | **60 (?)** | **100** |  | **200** |  |  |
| **LAr\*** |  | **200** | **20** | **50** | **?** | **y** |
| **LBNE-WC** | **2** | **6** | **20** | **50-100** | **?** | **y** |
| **Mu2e** | **2** |  | **4** |  | **?** | **?** |
| **G minus 2** | **8** |  | **4** |  | **?** | **?** |
| **TOTAL** | **150 +30rpl** | **550** | **88** | **1260-1310** | **1** |  |

**\*LAr includes ArgoNeut, MicroBooNE, and LBNE-LAr**

**Software requests:**

Oracle License - ?

RHEL OS license minosora1, minosoa3, minervadbprod – 3 x $1000