

# Fermilab Site Report Spring 2015 HEPiX Workshop

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Fermilab

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# Acknowledgements

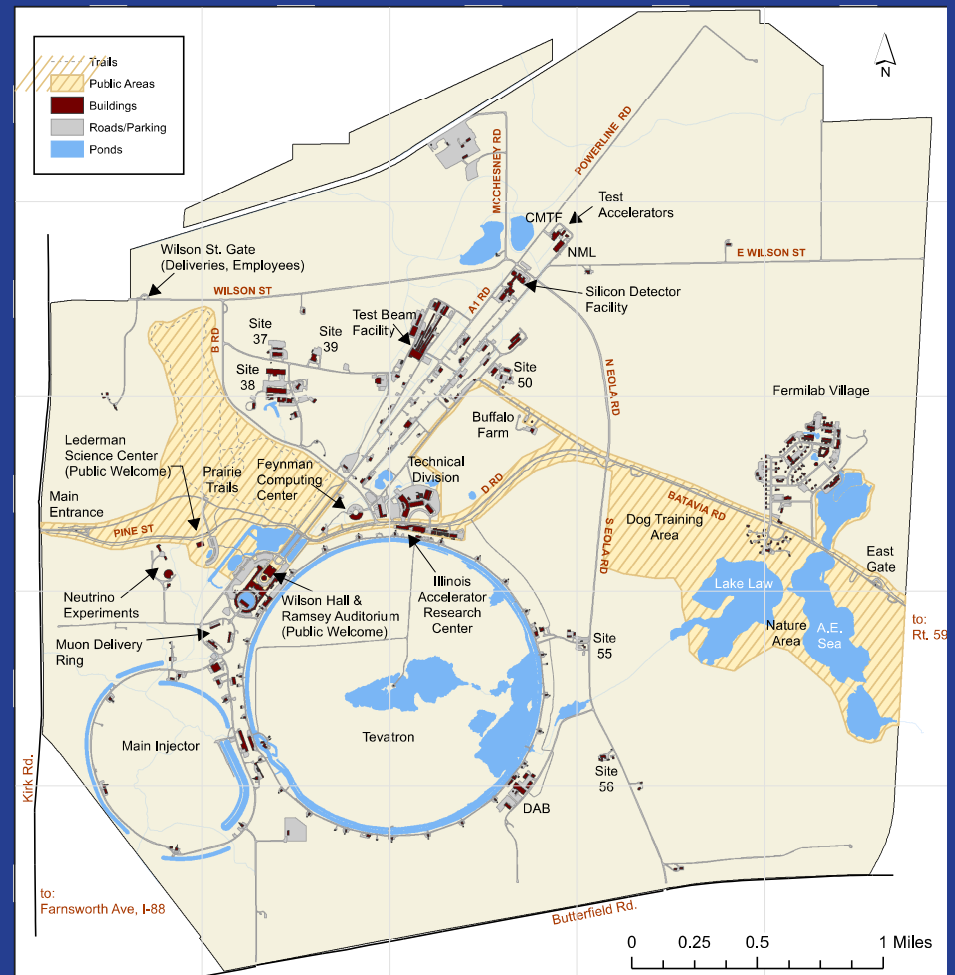
The report is on the accomplishments of the many individuals and organizations of the Fermilab Computing Sector.

Thanks to Keith Chadwick's previous site reports on which this one is based.

# Fermilab

Some quick facts about Fermilab:

- We are located in Batavia, IL (~45 miles/~60 km west of Chicago).
- Is the premier US based HEP lab,
- Provides services to the US HEP program,
- Hosts experiments in the Energy, Intensity and Cosmic frontiers,
- Is a strong collaborator with the Open Science Grid (OSG) and the World-wide LHC Computing Grid (WLCG),
- Hosts the US Tier 1 facility for the CMS collaboration,
- Is the home of Scientific Linux.



# Selected Organizational Changes since Oct 2014

## Scientific Computing Division re-org

- Better align the organization along functional areas
- Increase organization agility across 3 major areas
  - **Development, Integration, and Research**
    - Systems for Scientific Applications Quadrant
  - **Scientific Facility**
    - Scientific Computing Facilities Quadrant
  - **Science Operations and Workflows**
    - Scientific Computing Services Quadrant

# Selected Organizational Changes (Cont)

- **Changes in Scientific Computing Facilities Quadrant**
  - Focus: Provide and manage services for compute, storage, and analysis for all of FNAL scientific users
    - New department Distributed Computing Services Department
      - Headed by Lisa Giacchetti
    - FEF Re-organized and renamed Experimental Computing Facilities
    - CMS Facilities group now under ECF
    - Steve Timm now in ECF focused on Virtual Facility Project

# Selected Organizational Changes (Cont)

- Changes in Scientific Computing Services Quadrant
  - **New Departments and groups**
    - Scientific Data Processing Solutions
      - Workflow Management and Provisioning
      - Data Management and Application
    - Scientific Distributed Computing Solutions
      - Scientific Computing Information Security
      - Workflow Operations for distributed computing
      - User Support for Distributed Computing
      - Experimental Astrophysics
    - Grid and Cloud Services Department removed and some functions and resources moved to new SCF/DCSO department

# Computing Facilities

2014 Feynman Computing Center had no outages

**100% Uptime (0.0 hrs)**

2014 Grid Computing Center uptime  
**99.941% (5.14 hrs)**

2014 Lattice Computing Center uptime  
**99.965% (3.03 hrs)**

2014 WH-8 Fiber Central uptime  
**99.866% (11.75 hrs)**

# Computer Center Availability

## Availability for Computing Centers, Server Rooms and Tape Robot Room

10/10/10/11/11/11/11/12/12/12/12/12/12/	1/1	1/1	1/2		2/1	2/2			
13/20/27/3/10/17/24/1/18/115/22/29/1/5	2/1	9/1	6/1	2/2	2/9	6/1	3/1	3/1	3/8
15 15 15 5 15 15 15 5 5 15 15 15 15/16	6	6	6/16	/16	6	6	/16	/16	

42 43 44 45 46 47 48 49 50 51 52 1 2 3 4 5 6 7 8 9 10 11

FCC2  
FCC3  
GCC-  
CRA  
GCC-  
CRB  
GCC-  
CRC  
GCC-  
TRR  
LCC  
WH8-FC



Unscheduled Outages

Scheduled Outages

Unscheduled Degraded Services

Scheduled Degraded Services



# ISO20K / ITIL Service Management

Completed Formal ISO20K Maintenance Audit in December

- No findings or corrective actions
- Some strengths listed: Supplier management site, expanding use of Service Now
- Oct 2015 will be a full recertification audit

Three new service areas successfully onboarded to ISO20K:

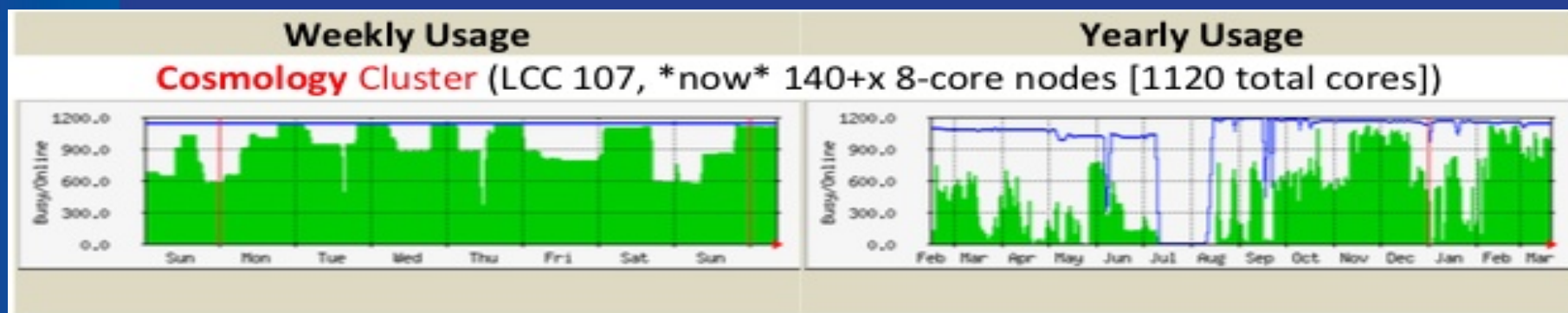
- Facilities,
- Scientific Collaboration Tools,
- Scientific Computing Systems.

All other service areas to be onboarded to “ITIL Lite” by the end of the year

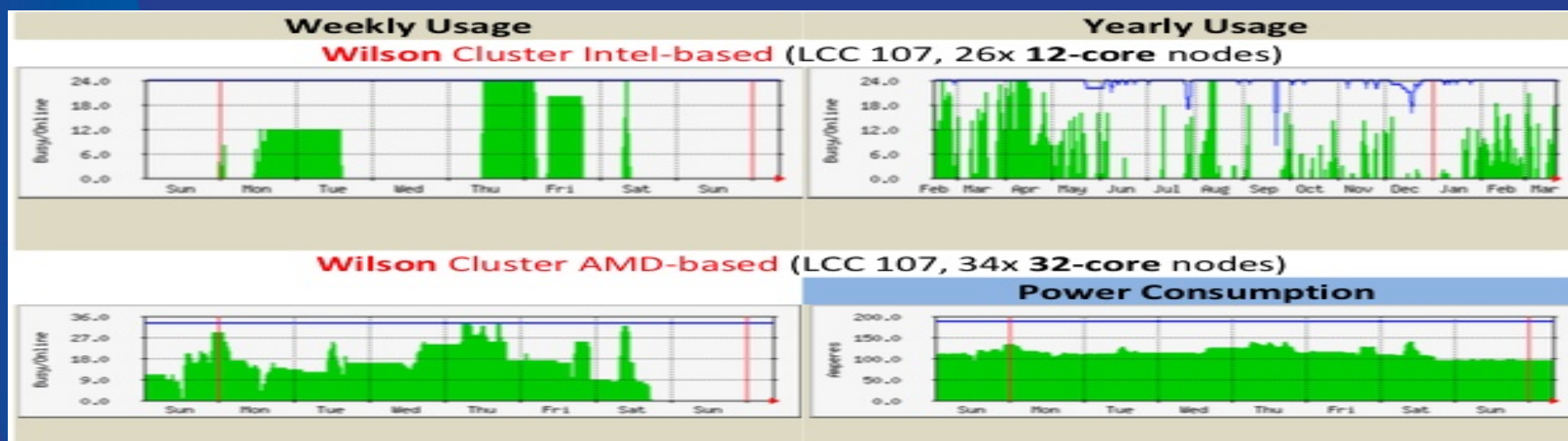
- Incident, Problem, Change, Foundation SLA.

# HPC & Lattice QCD

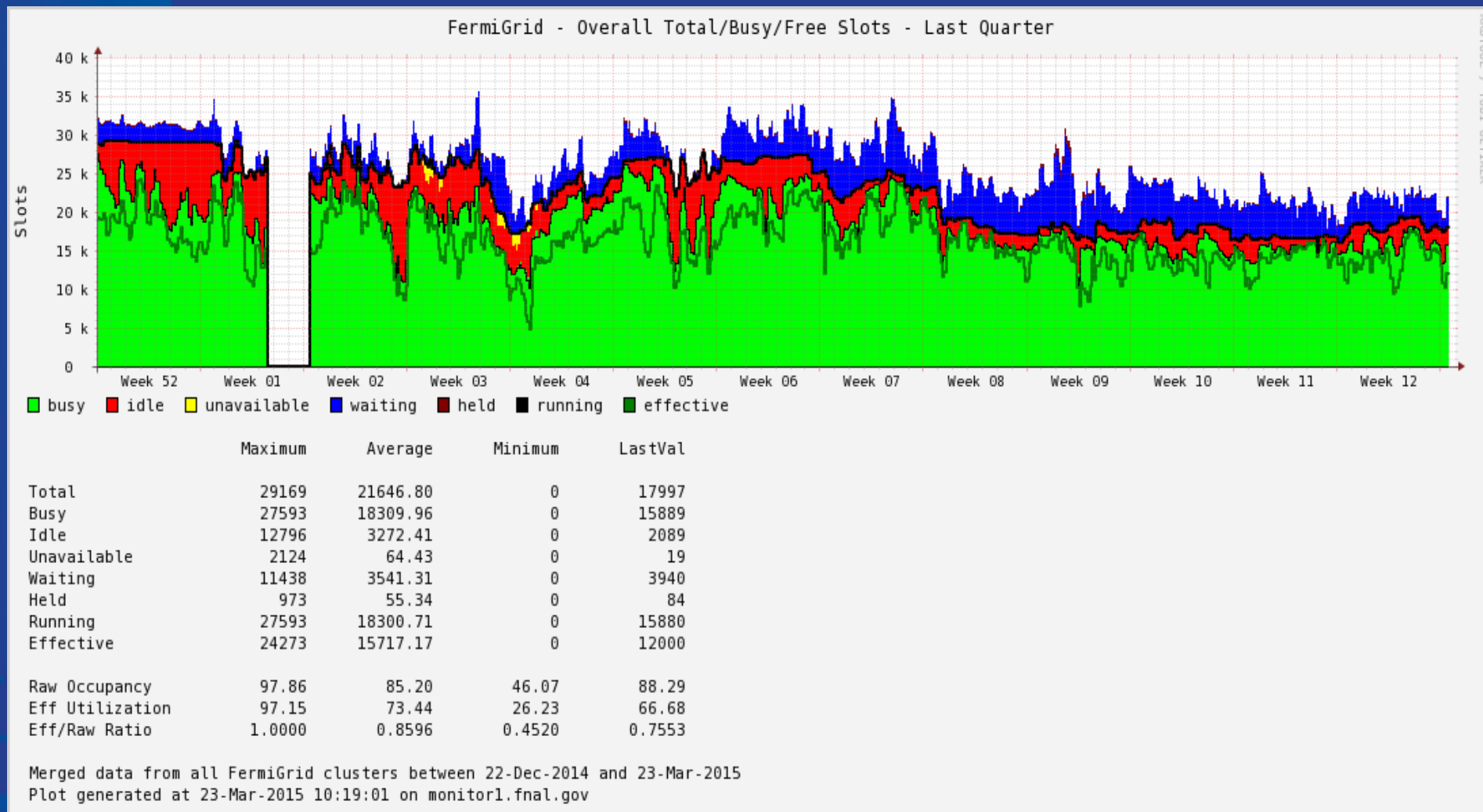
## Cosmology Cluster



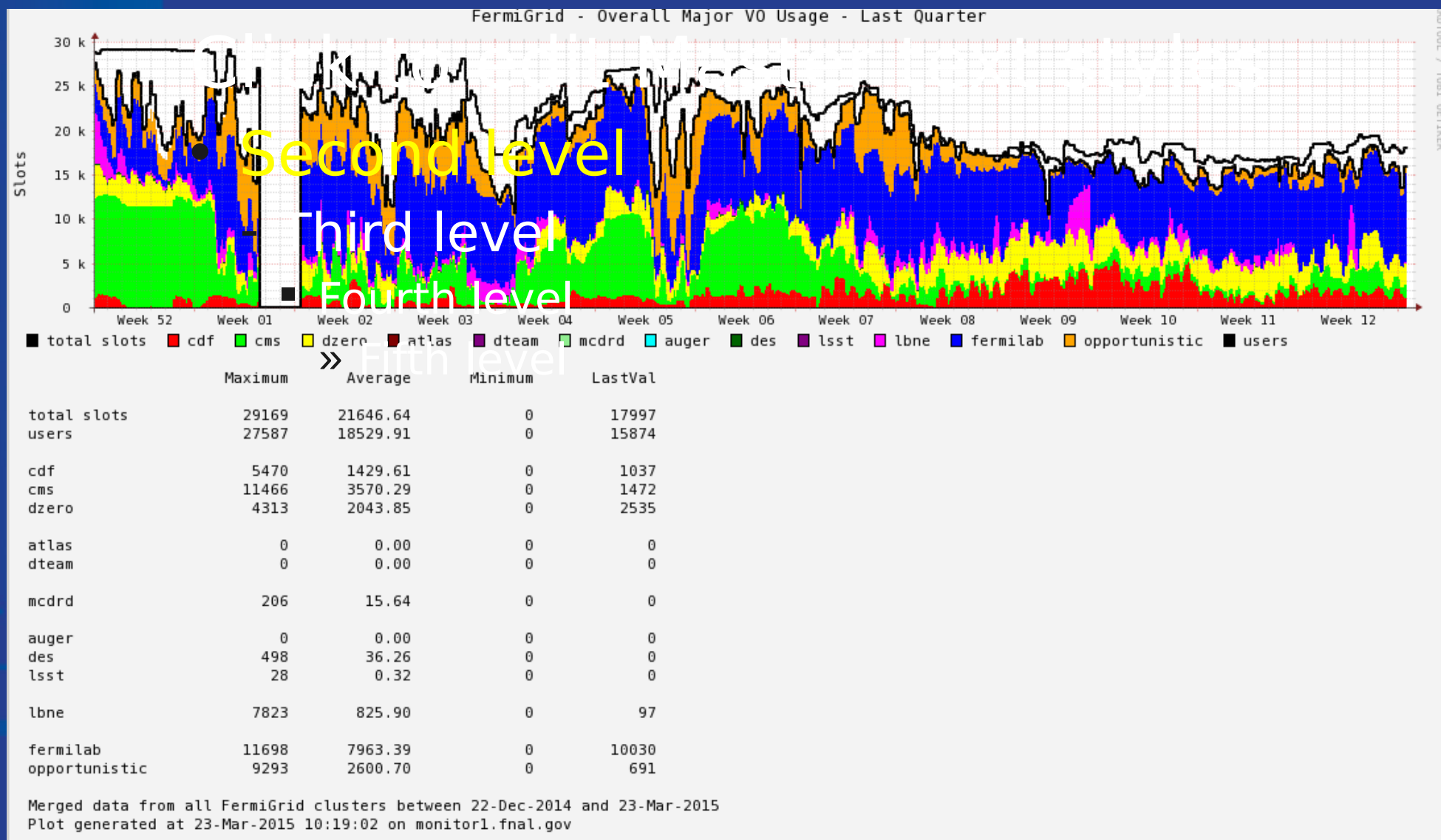
## Accelerator Modeling Cluster



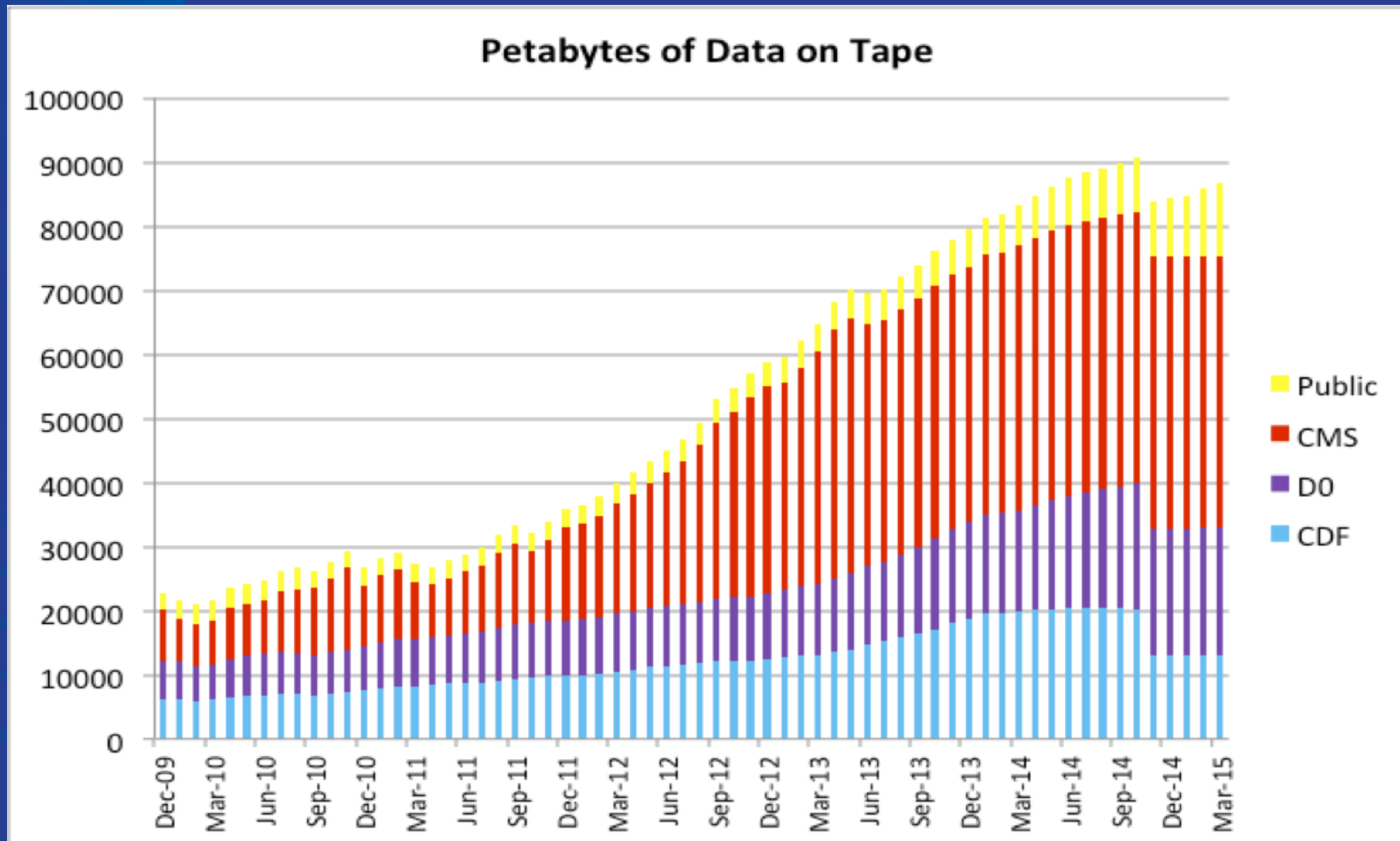
# Fermilab Campus Grid Utilization



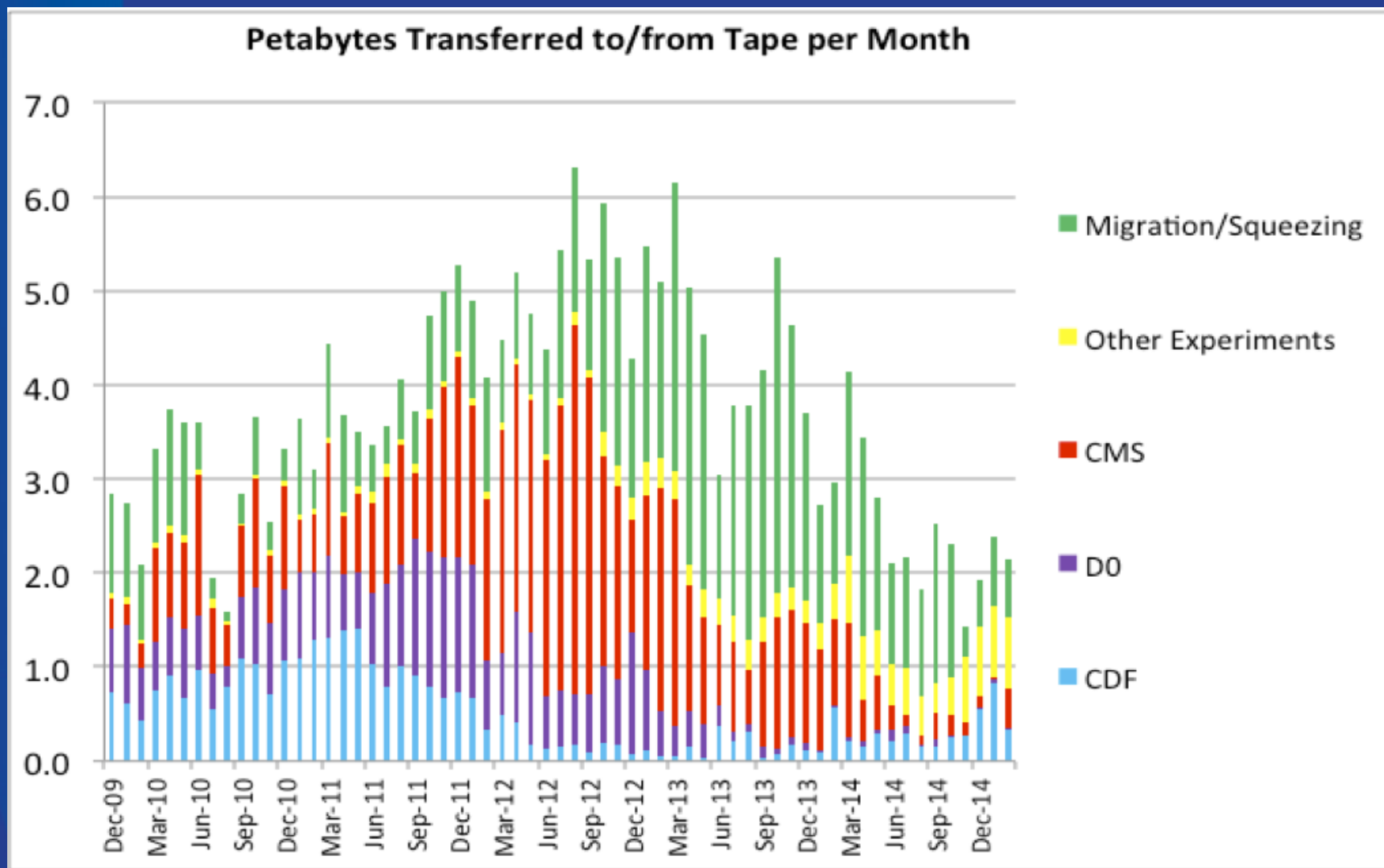
# Major Virtual Organization usage- Last Quarter



# Enstore - Data on Tape



# Petabytes to/from Tape per Month





# Security and Authentication Items

Apple OS X Yosemite removed DES encryption:

- Fermilab KCA upgraded to support SHA2.

# NOvA

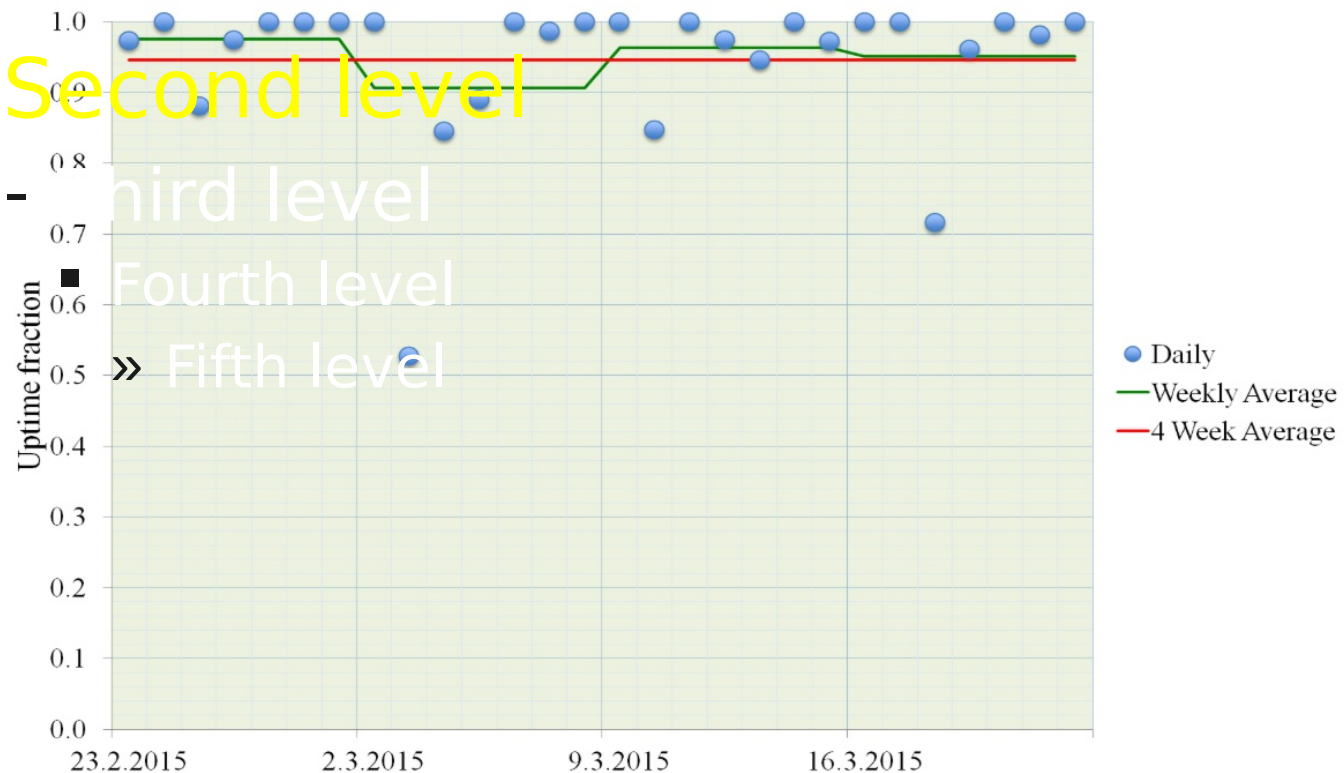
## FD: Data taking Uptime

Second level

Third level

Fourth level

Fifth level



Good data taking: “When beam up NOvA Far detector up! “

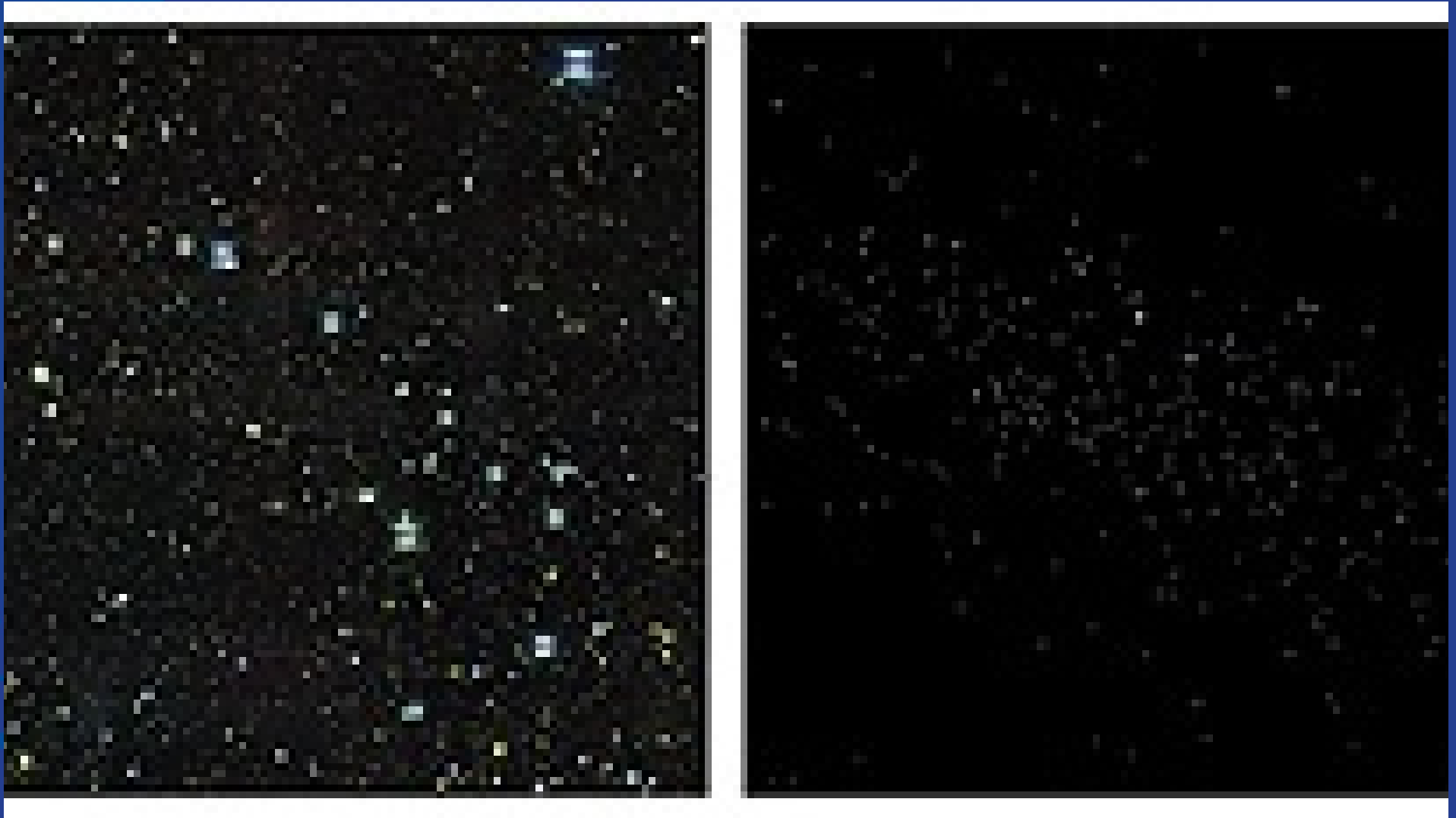


# Muon g-2 will begin Magnet cool down in April and Power up in May



Construction on Muon Campus continues as the MC-1 (g-2) building looms in the background.

# DES find rare dwarf satellite galaxy candidates in survey data



# Other Notable Items - 1

## Deployed officially supported Apache Website hosting services

- Multiple Tiers of standard service
- Enhanced Tier to offer support for special requirements
- Currently hosting the new Scientific Linux Website

# Other Notable Items - 2

- Office 365 rollout
- Identity Management linked to FermiWorks for account creation & mgt
- Shibboleth for Federated ID capabilities
- Deployed new VPN system for Metasys (lab's building control sys)
- Built a "ToughBook" for Fire Department, interfaced PC to X-ray machine

# Network Upgrades

- Networking Upgrades for
  - Nova/AshRiver
  - Minos/Soudan
  - IARC/OTE
  - USCMS transatlantic networking (EEX)
  - 100 Gigabit switches in FCC and GCC
  - Emergency Operations Center (including 3131 system)

# Summary

It is an exciting time to be supporting science at Fermilab!

Thank You!

Any Questions?