
COMPUTING SECTOR
ALL HANDS MEETING
JANUARY 30, 2014

Vicky White -- Intro

Jennifer Adelman-McCarthy – I found the Higgs!

Jennifer Adelman-McCarthy – I found the Higgs!

- I am part of the CMS computing operations team that helped discover the Higgs!
 - We were operating the Tier-0 when the accelerator was running.
 - We transfer 1PB data a week so that CMS physicists can analyze the collisions worldwide
 - We are continuously running more than 100,000 analysis and processing jobs in parallel worldwide.

 The Nobel Prize in Physics 2013
François Englert, Peter Higgs

The Nobel Prize in Physics 2013

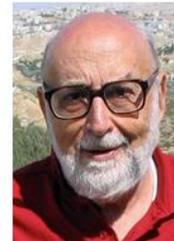


Photo: Pnicolet via Wikimedia Commons
François Englert

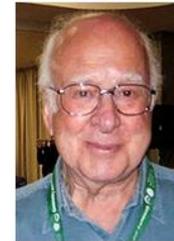
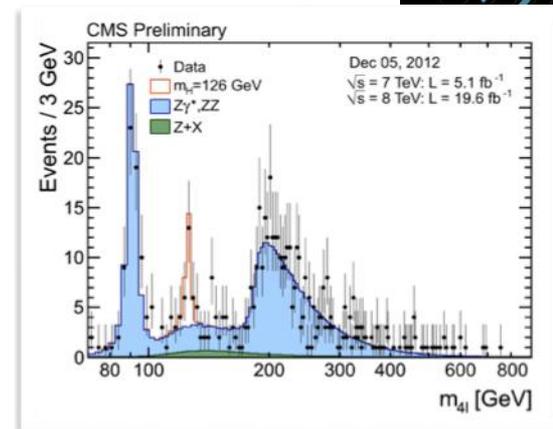
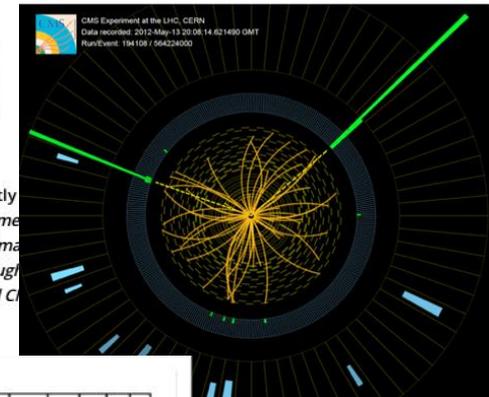
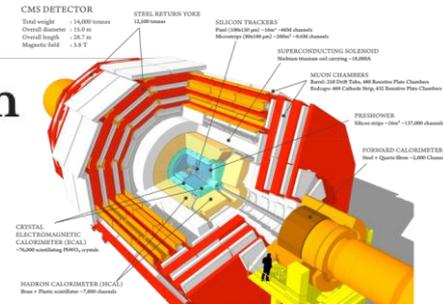


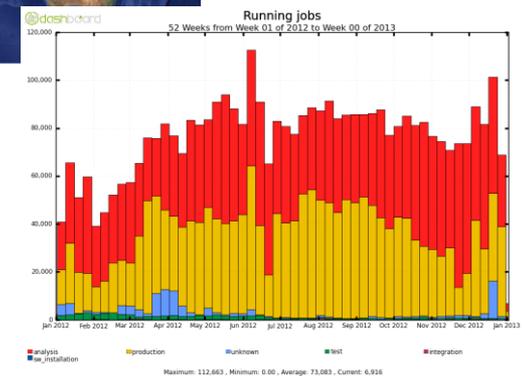
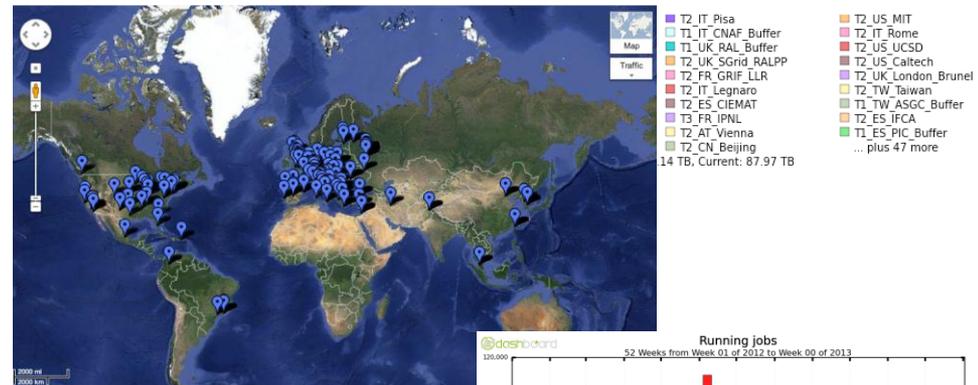
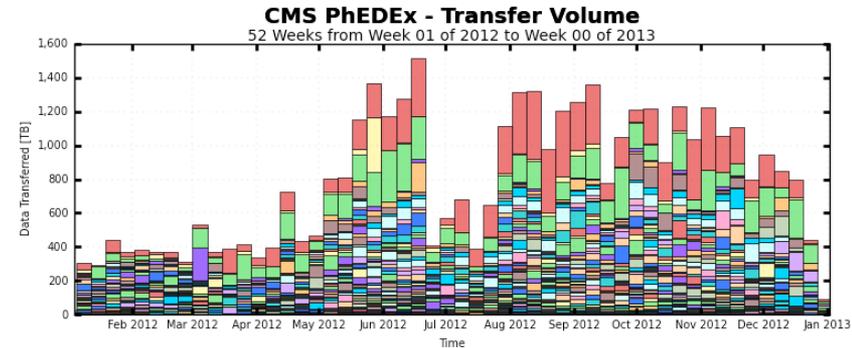
Photo: G-M Greul via Wikimedia Commons
Peter W. Higgs

The Nobel Prize in Physics 2013 was awarded jointly to Peter W. Higgs "for the theoretical discovery of a mechanism which contributes to our understanding of the origin of mass of subatomic particles, and which recently was confirmed through the discovery of the predicted fundamental particle, by the ATLAS and CMS experiments at CERN's Large Hadron Collider"



Jennifer Adelman-McCarthy – I found the Higgs!

- On behalf of my team members world wide, I would like to thank the Computing Sector for their support in our efforts.
 - Our Tier-1 facility, tape, network teams.
 - Administrative support, computer support, facilities support teams that help us get where we need to go and keep us up and running.
 - And everyone else I forgot.



Jennifer Adelman-McCarthy – I found the Higgs!

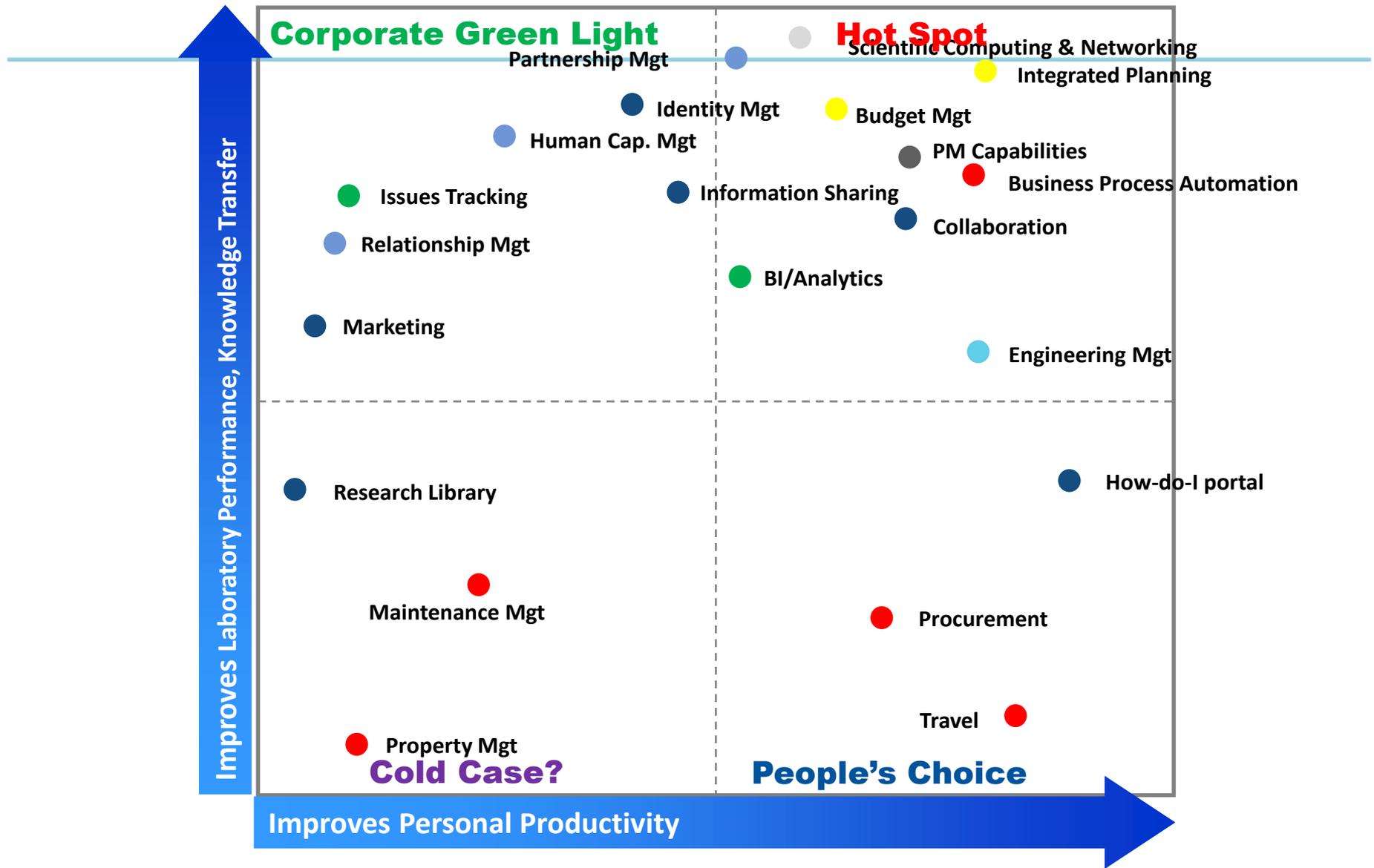
- In my time at the Lab, the Computing Division has gone from large single computers, to small linux clusters then farms to the grid and now onto the cloud.
- I have gone from transferring data via FedEx trucks, 8 tapes at a time to PhEDEx Petabytes a week and large tape robots for storage and disk caches for access.
- I would like to see Fermilab continue to stay on the leading edge of computing and have the support of the division to carry out exciting large-scale science.



Bill Boroski – PM -- OCIO

Bill Boroski

- Head, Project Management & Enterprise Architecture (OCIO)
- Over the last several years, OCIO, and in particular the PM and EA offices have been involved in many initiatives aimed at improving project delivery and strategic decision-making.
- We've built a strong team of PMs and they're developing and applying a tailored approach to manage some of our larger computing projects; we're beginning to work with SCD to develop a PM-lite approach.
- We've established an IT Policy Board with labwide participation to define policies and establish buy-in.
- We've established portfolio management teams to help with decision-making on scientific computing and information systems projects.
- We're working on implementing an EA program.
- We've engaged senior lab management in identifying the computing capabilities needed to realize the lab's strategic agenda; we're using this input to develop strategic computing roadmaps.



IS Portfolio Roadmap



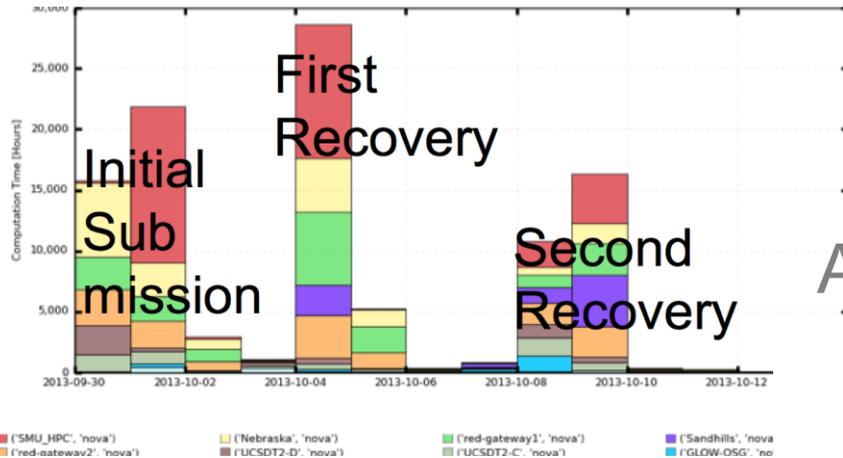
TRACK	FY2012	FY2013	FY2014	FY2015
(Projects may provide multiple capabilities)	\$800K No \$100K U of C FTEs constrained by EBS upgrade	\$800K Projects constrained by \$ and lack of analysis/definition	Strive for more \$ and balance. HOT capabilities in place mostly	More focus on automation and efficiency
Business Process Automation			[Light Blue Box]	
Budget and Planning		LWBPS projects [Light Blue Box]	BPS-1 (Process) [Yellow Box]	BPS-2(Tools) [Yellow Box]
CAS/BI/Analytics		Data Warehouse/BI [Light Blue Box]	BPS [Yellow Box]	
		iTrack [Orange Box]	iTrack Program [Red Arrow]	FermiDash Program [Red Arrow]
	FermiDash (1) [Orange Box]	FermiDash (2) [Orange Box]		
Engineering	TeamCenter (1) [Orange Box]	TeamCenter (2) [Orange Box]	Teamcenter Program [Red Arrow]	TeamCenter (3) ? [Yellow Box]
ES&H			ESHTRK Program [Red Arrow]	
Human Capital		HCM (1) [Green Box]	HCM (2) [Yellow Box]	
Project Management		ProMISe (1) [Orange Box]		ProMISe (2) [Light Blue Box]

Mike Kirby

Mike Kirby

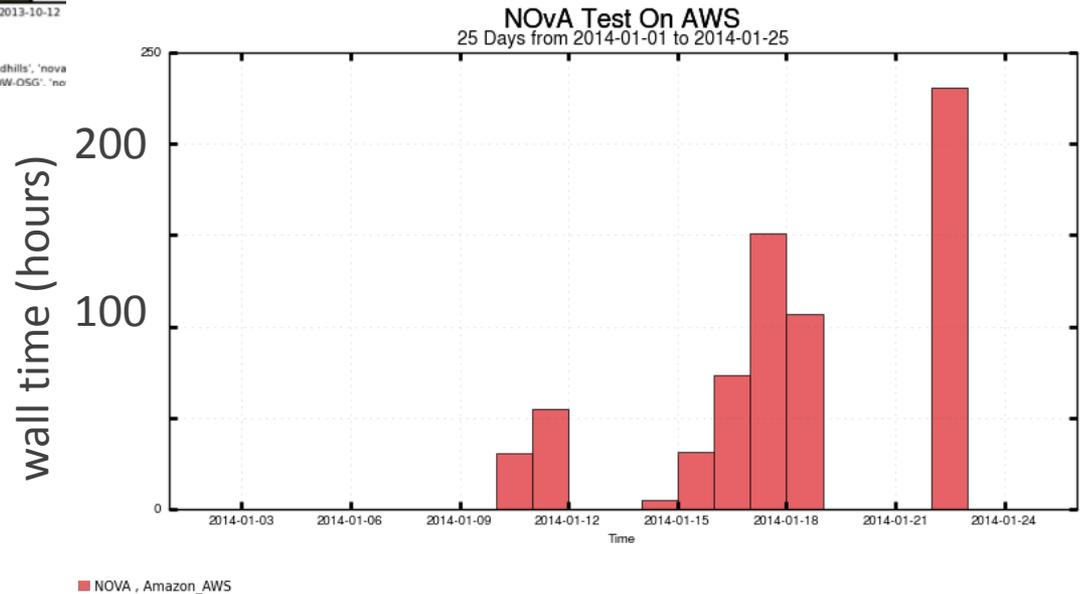
- Project lead for the Fabric for Frontier Experiments (FIFE)
- Science at Fermilab: moving from 2 major large experiments to many smaller ones with fast growing computing needs
- constructing computing infrastructure beyond exp. effort levels
- **How do you support the new science?**
Through common services, running on the national cyber-infrastructure
- Accomplishment: Oct 2013 – NO ν A generated 1,000,000 ev with ~10k jobs for 88,535 CPU h in 2 weeks of ops and 2 TB of data
- Run on the Open Science Grid at SMU (dedicated), UNL, UWisc, UC, UCSD and FermiCloud
- Considerable effort from NO ν A experimenters to make software and infrastructure portable

Oct, 2013 initial NOvA processing on OSG sites



NOvA processing on Amazon Cloud computing Jan '14

Develop tools to enable for “cloud bursting” of grid jobs and meet acute computing needs of experiments.



Maximum: 230.58 Hours, Minimum: 0.00 Hours, Average: 31.06 Hours, Current: 230.58 Hours

Going forward

- As we speak, we are working with NOvA, μ BooNE, Mu2e, DES, DarkSide 50. Soon with g-2, LBNE, ...
- The keys to success are...
 - a strong support team at Fermilab working together with the experiments to foster common computing practices and live with the smallest supportable level of diversity
 - tight collaboration with the organizations fostering the national cyber-infrastructure through Grids and Clouds (OSG, XSEDE, National Laboratories / University, Commercial Cloud providers, etc.)
 - common computing activities among the major laboratory stakeholders (SCD, CCD, USCMS, IF)

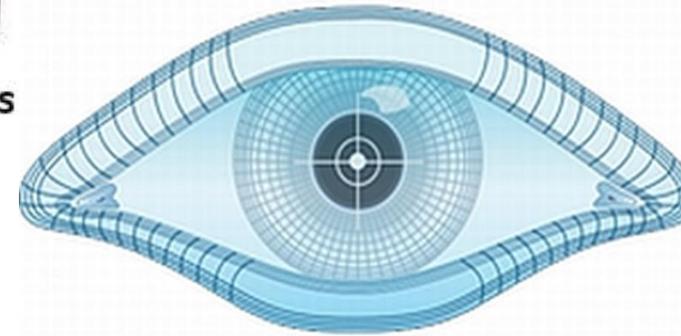
Irwin Gaines - Computer Security Team

Irwin Gaines (on behalf of the Computer Security Team)

- There is no “silver bullet” for computer security
- Over past ten years we have:
 - Moved from a compliance based to a risk based security paradigm
 - Combined commercial and home made detectors to alert us to threats
 - Built good relations with site office by providing dashboards
 - Kept the user community reasonably sympathetic to restrictions
- Bottom line: unlike several other DOE labs, we have not had to disconnect from the Internet to recover from an incident
- Thanks to security team (Joe Klemencic, Art Lee, Wayne Baisley, Greg Cisco, Jason Ormes, Ron Cudzewicz, Mine Altunay) and many others in the sector



Antivirus



Scanner Farm



Critical Vulnerabilities



Self Assessments



Microsoft
Windows[®]

WSUS Patching Status



Adam Walters -- Facilities

Adam Walters

- When Vicky became the Division Head in 2002, there was no Grid Computing Center or Lattice Computing Center, and capacity in Feynman Computing Center was almost fully utilized
- Her assessment of the situation and vision for the future started a decade of phased construction to meet the growing needs of the Lab's scientific program
- This included new rooms at LCC, GCC, and the two ARRA projects in FCC
- The result is a world class set of Computing Centers that will continue to meet the Lab's mission for the next decade

Jon Bakken – Head, Core Computing

Jon Bakken, Head of the Core Computing Division

Accomplishment: Modernizing our cadre of computing apps & infrastructure

- Driven from our scientific and business objectives
- Enable automated processes and work flows wherever possible
- Cloud solutions where appropriate
- Simplified end state

Few Examples: We have invested money to save money:

- Email and calendaring
- SharePoint collaboration
- Human Capital Management & Identity Management
- Facilities & Networking
- Virtualization
- ServiceNow
- Project Management
- Managed Printing

Significance/Value-add:

- Easier to manage & reduced risk – running legacy systems are not sustainable
- Cost savings – allowing us to invest money and effort into moving lab forward
- Improved work environment helps increase our overall productivity

Thanks to:

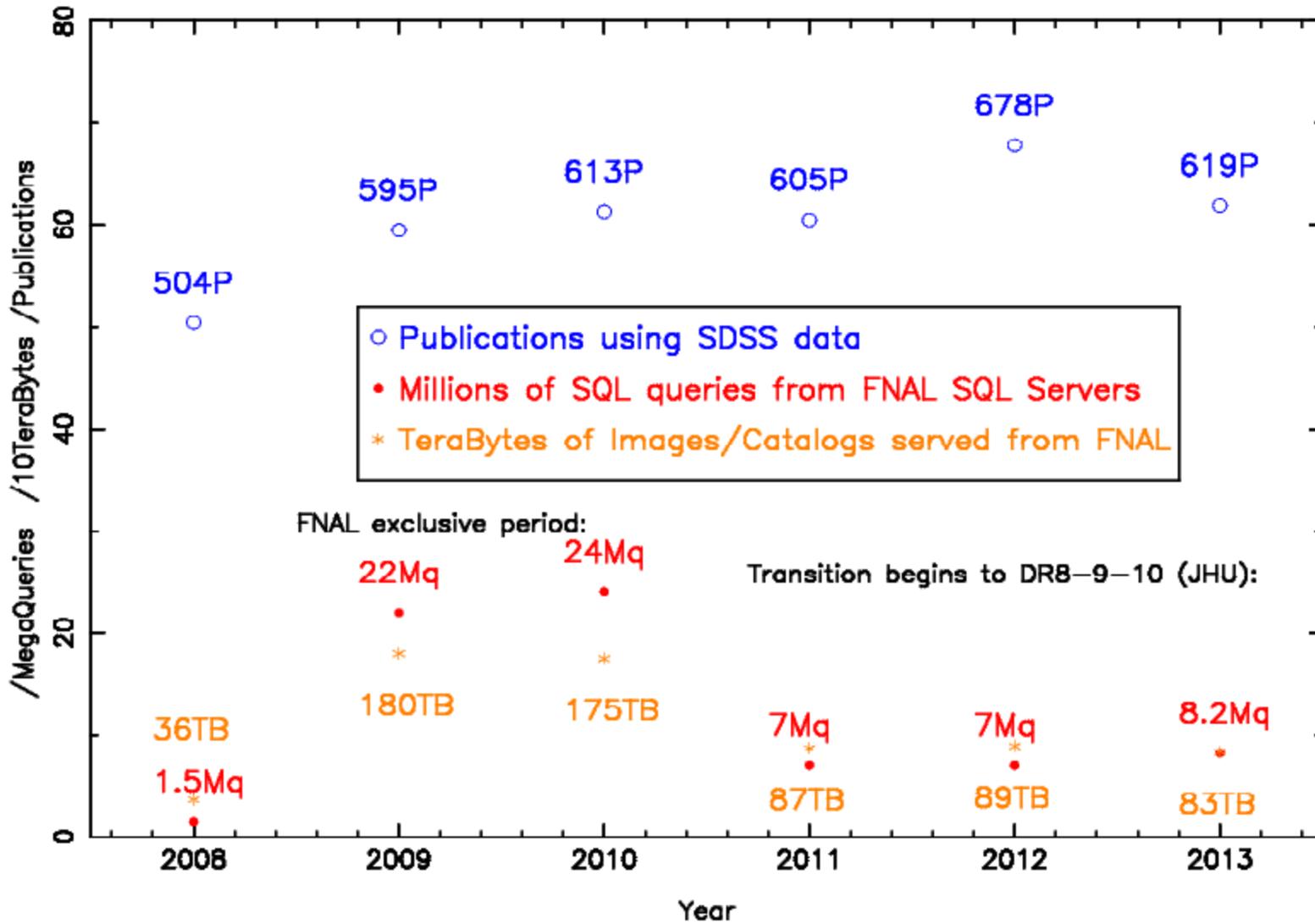
- The excellent set of leaders in the computing sector, especially Vicky, for their vision in recognizing the issues and setting us on a course to address them
- The entire computing staff for their dedication to moving ahead in spite of unexpected difficulties and multiple simultaneous high priority items.

Briain Yanny for EAG
Experimental Astrophysics Group in CD

Experimental Astrophysics Group in CD (B. Yanny for EAG)

- EAG has been in the CD since 1993, with about 20 rotating members and support
- Exp#1: Sloan Digital Sky Survey – Data Acq., Data Processing, Software Management, Data Distribution to the public, basis for thousands of astrophysics science papers, 1993-2013. Major success by all accounts!
- Exp#2: Dark Energy Survey – 2005-present. Design; Distributed Data processing environment,; Simulations, Software support and management, tape archive support. Currently Operational through 2018.
- First large scale HEP style adaption of techniques to astrophysics, great impact of distribution of calibrated, documented data to world for science.
- Continual critical CD support – people, management, budget, technical: 20 years+,
- Bailed us out of budget situations, technical situations, hardware/software, code control, CVS/SVN, UPS/UPD (pioneer), ENSTORE, web pages (pioneer since 1993) and servers, support for SQL DB, and web interfaces.

SDSS Key Success Metrics



Going forward

- **SDSS love[sd] you, CD!**

- **DES wants to keep the love going and going to count high redshift galaxy clusters as it characterizes dark energy!**

Panagiotis Spentzouris

Panagiotis Spentzouris

- Leader, Systems for Scientific Applications Quadrant
- Of course I am proud of our many major accomplishments in the past decade: event processing frameworks, Geant4, Pythia, accelerator modeling, DAQ tools and hardware, R&D on new architectures (you have or will hear more during this discussion).
- What I think has been essential for these successes is the way CD and now the sector has operated by deploying teams of experts with different domain expertise and have them function at the highest level.
- The excellent performance of these teams has allowed us to leverage resources and utilize common requirements to deliver on many different projects. And that, during a period of tighter budgets and constrained budget categories.
- Every single person that has worked with me on ADSS and now SSA has contributed to these successes. I would like to thank them, and thank Vicky for fostering this model of operation!

Mark Kaletka

Mark Kaletka

- Deputy Head, Core Computing Division
- When the Computing Division was reorganized in 2002, there were disparate IT support organizations in CD, ES&H, BSS, TD and PPD, all following their own standards and procedures. Today, these are a single IT support organization following the same standards and procedures which are based on ITIL.
- This enables us to efficiently deliver a higher level of service uniformly across the entire laboratory, using the best of what each organization had to offer.
- Thanks to the cooperation, support, teamwork and professionalism of the staff and line managers and support by laboratory senior management.

Going forward

- We will continue to work with the AD staff and management to unify the standards and procedures for IT support between our organizations.

Margherita Vittone-Wiersma
Database Applications Group

Margherita Vittone-Wiersma

(Database Applications Group)

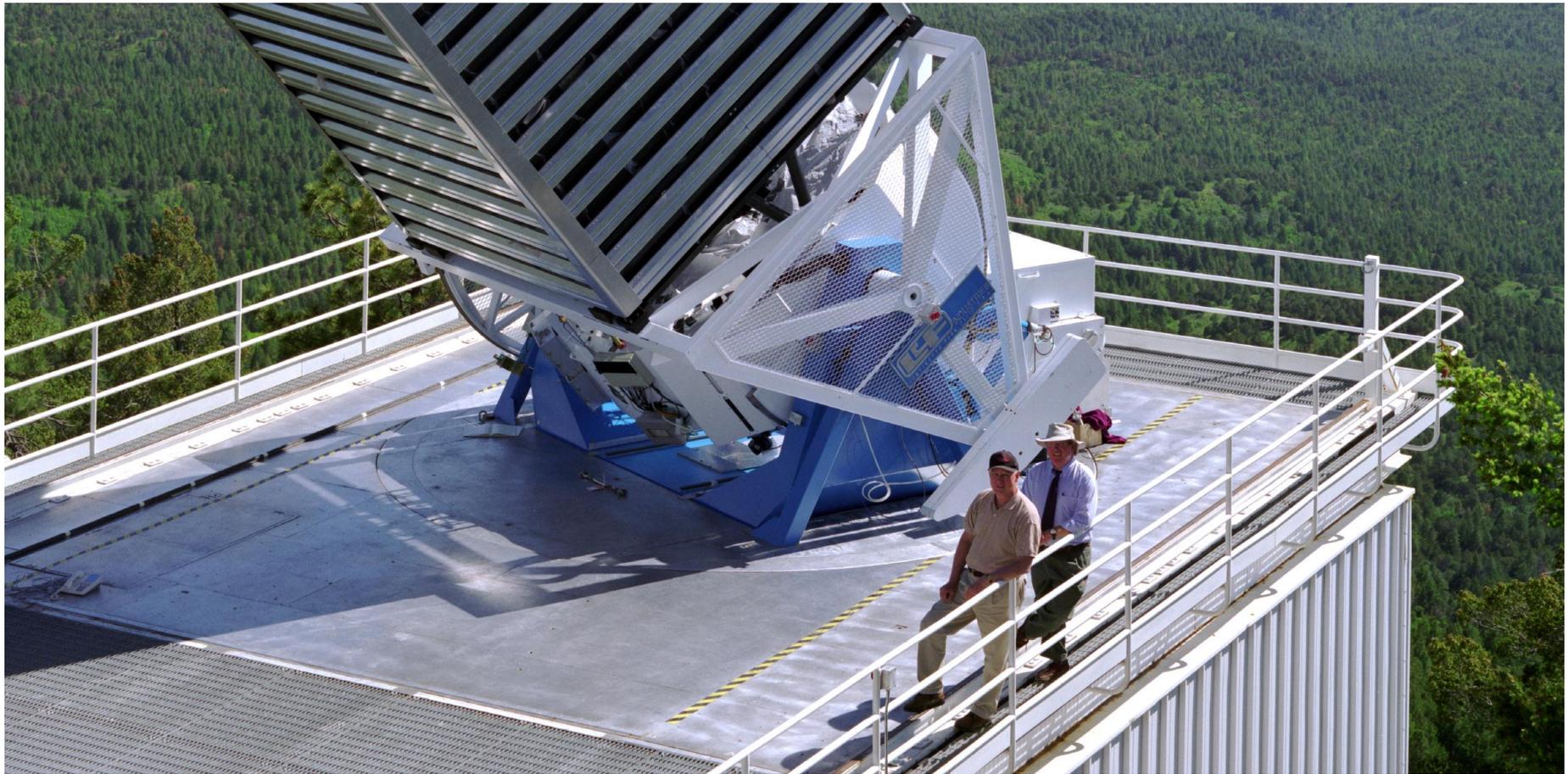
- “*From Control to Monitor*” : Electronic Collaboration Logbook and IFBeam DB and NuMI beam monitoring, two great accomplishments for our group:
- **ECL**: we currently support 38(!) instances used by various groups and experiments with goals which span from a simple centralized information to real Control Room Logbook usage.
- **IFBeam** DB: used by IF experiments for beam status monitoring and as off-line beam conditions data storage. IF Control Room monitoring tools are critical for NOvA, Minos and MINERvA

Thanks to the users who provide us with feedback and ideas! It means they are *really* using the tool (not just another pretty web) making our accomplishments more appreciated and felt needed! Thanks to Igor, Steve and Vladimir for our team work to strive to optimize the tool performance!

Valena Sibley -- Finance

Valena Sibley

- Finance Manager for Computing Sector
- Manage Sector Spending to within 1% of budget!
- \$65 Million Sector Budget
- 40 unique Buckets of money (more than any other division)
- 40+ Projects (from \$5K to \$20 million)
- Only Sector in the lab to consistently spend to budget
- Thanks to the Finance Team for diligence in monitoring budgets (Molly Anderson, John Galvan, Jo Ann Larson).
- And Business Infrastructure Applications team for assistance in developing tools to facilitate quick and easy tracking (Penelope Constanta, Lauri Carpenter, Norman Ho, Shirley Jones and Heather Kumlin).



SDSS II (Managed the Financials for this Project)

Marc Mengel

Marc Mengel

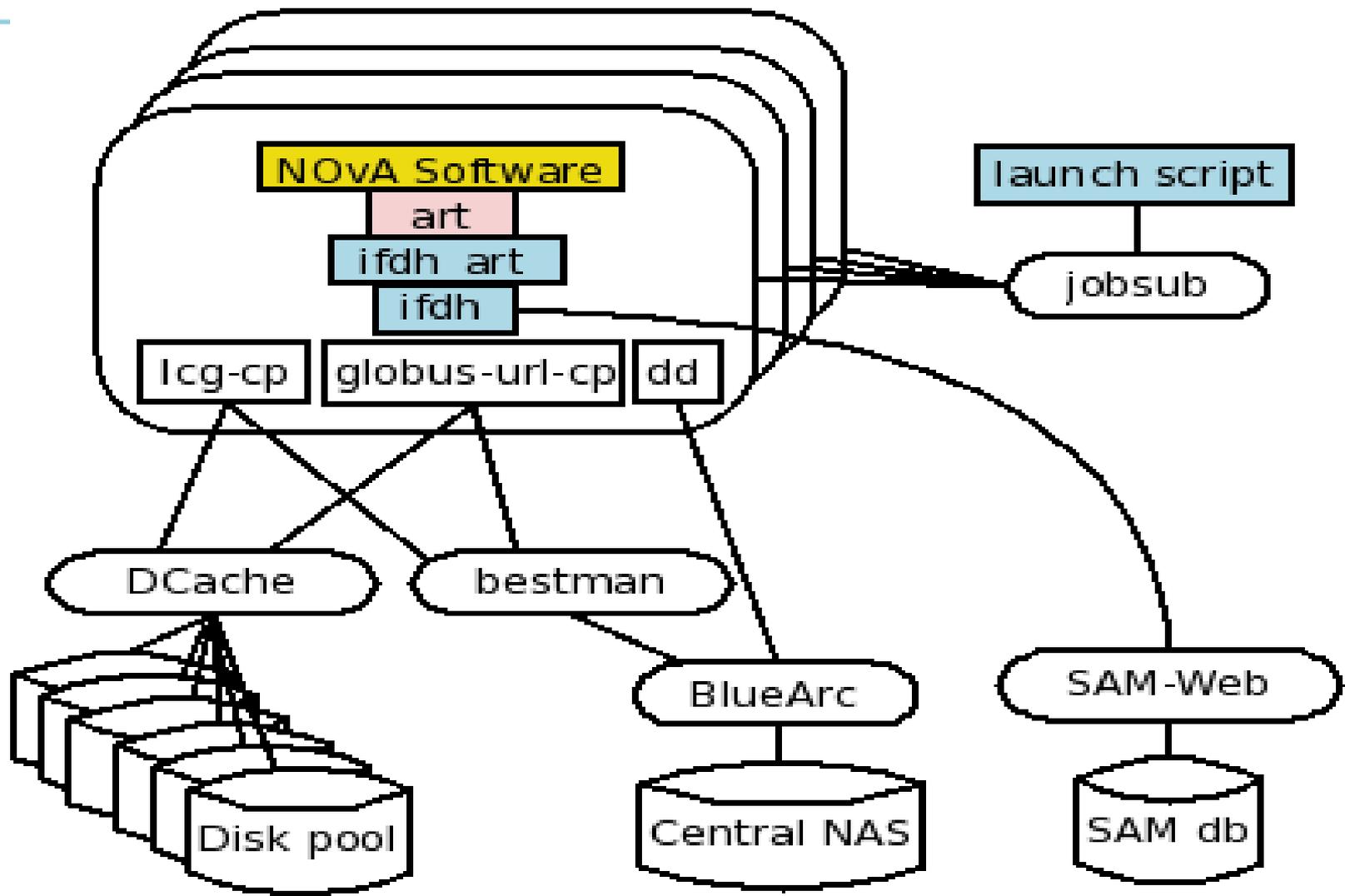
Software Architect & Developer, Data Management Group

I worked with NOvA to do last-mile integration of experiment software based on the Art framework, SAM, DCache, GRID software and jobsub_tools to enable their data analysis.

This is letting them make use of our large DCache disk cache, and process 10k files/hour using on and off-site GRID computing resources for MonteCarlo, Reconstruction, and Analysis.

This involved folks from NOvA, Data Management, FermiGrid, Grid Computing, OSG, and both Data Storage groups, who I thank for their efforts and general helpfulness

Next up: Minerva, uBoone, LBNE, g-2,.....

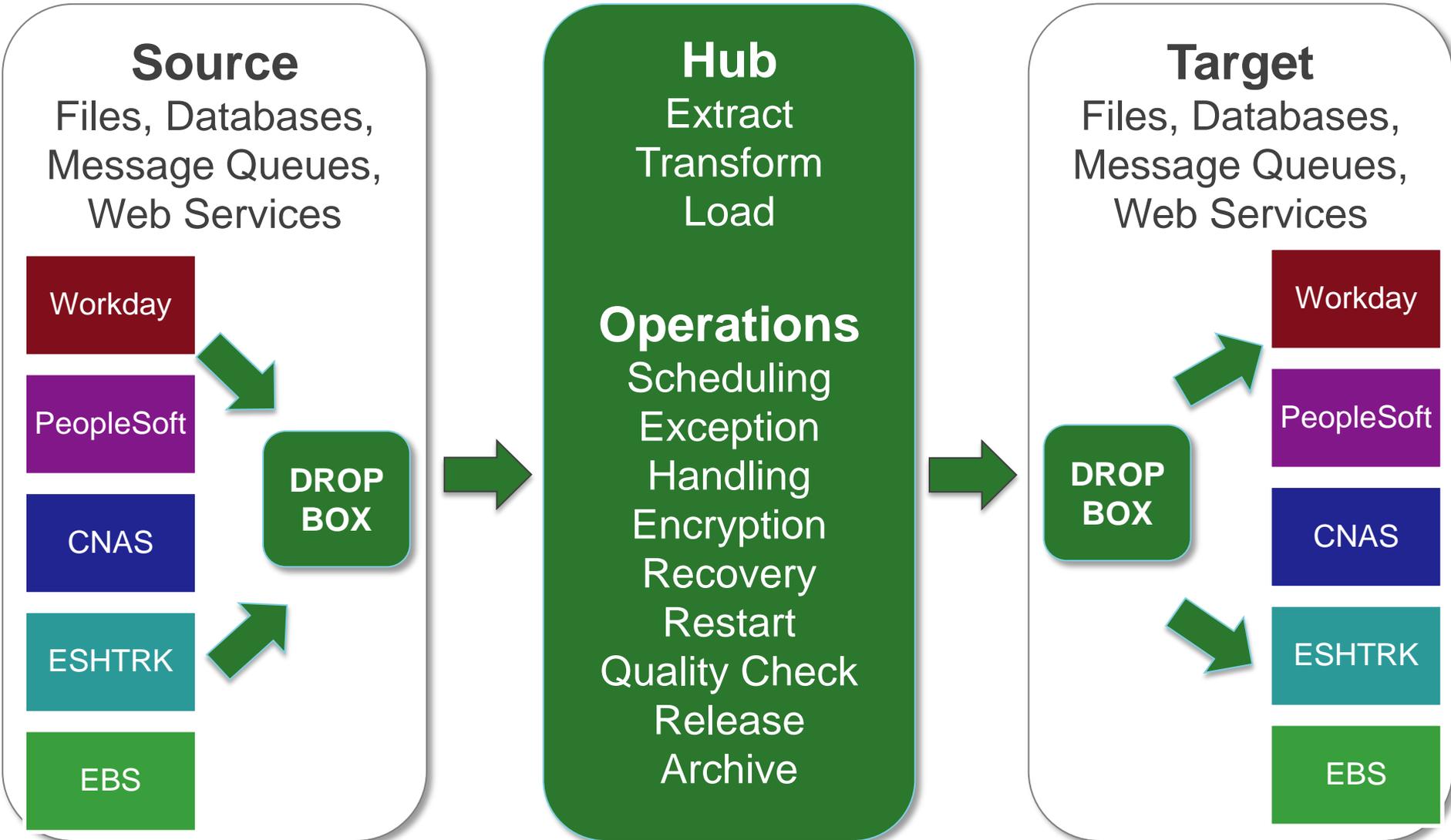


Sriram Sankaranarayanan

Sriram Sankaranarayanan

- Newbie from CS/CCD/INF – Enterprise Applications Group
- **Opportunity**
 - ETL Definition – **E**xtract, **T**ransform and **L**oad data
 - CloverETL – FermiWorks ETL / Integration & Data “Hub” Tool
- **Significance / Value-add**
 - Simplify, standardize and automate integration between Legacy HCM Applications and Workday
 - Share common, reusable, open source ETL components
 - Agnostic to source and target applications, DBs and OSs
- **Planned Go-live Date** – June 30, 2014
- **Thanks** to the Enterprise Architecture Team, and especially Scott Nolan and Krysia Jacobs, for evaluating and deploying this valuable tool.

FermiWorks – Data Hub Solution



Keenan Newton -- SharePoint

Keenan Newton

- SharePoint Program Manager
- Establishment of the SharePoint Program
 - Over 278 sites
 - Used for science as well as the business - LBNE, Accelerator Division, etc...
 - Migrating to SharePoint 2013
- Being able to share ideas and collaborate here at the lab is critical to our success. SharePoint is an enabler for that
- The program wouldn't be successful without:

Bob Sieloff

Vicky White

Ping Wang

Mark Kaletka

Krishna Yarrapragada

Ruth Pordes

Kimberly Myles

Marcia Teckenbrock

Going forward

SharePoint can be “the” collaboration platform for the lab

- Manage your documents and content
- Discover anything no matter where or how it is stored
- Communicate and socialize internally or outside your team
- Work with and share documents with external partners
- Manage projects and resources
- Manage and automate routine business processes
- Report on the status of your experiment, project, program or department

Marcia Teckenbrock

Marcia Teckenbrock

Group Leader, OCIO/Communications
Service Management Communications

Communications Group:

Fang Wang

Clementine Jones

Elyse Hornstein

Responsibilities:

- *Computing Bits* sector newsletter
- ITSM (service-related) communications
 - Small project communications
 - Service Desk communications requests
- Portfolio project communications (HCM, SharePoint 2013)
- Computing Sector top-level public web pages

Communications Group FYI

- ***Computing Bits (CD Tracks) newsletter***
 - Issue #83 (almost 7 years) published today.
 - We want the newsletter to be of value to you. Your feedback is essential
 - . Email cd-feedback@fnal.gov
- **Service Desk Communications Requests**
 - Thanks for your patience. This stuff matters, and we want to get it right.
 - We have a diverse audience, and we need to communicate effectively to everyone.
 - We are beginning to work with service providers to develop templates to standardize communications and streamline the vetting process.



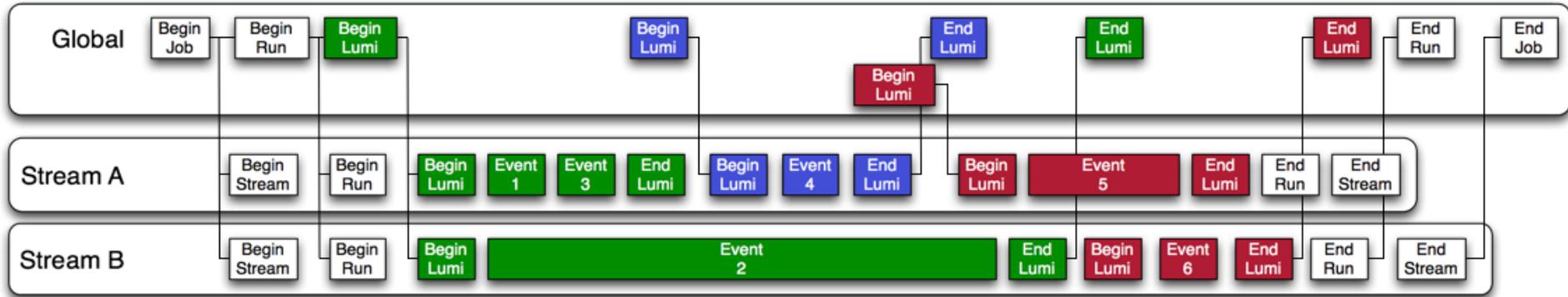
Communication matters.

Chris Jones

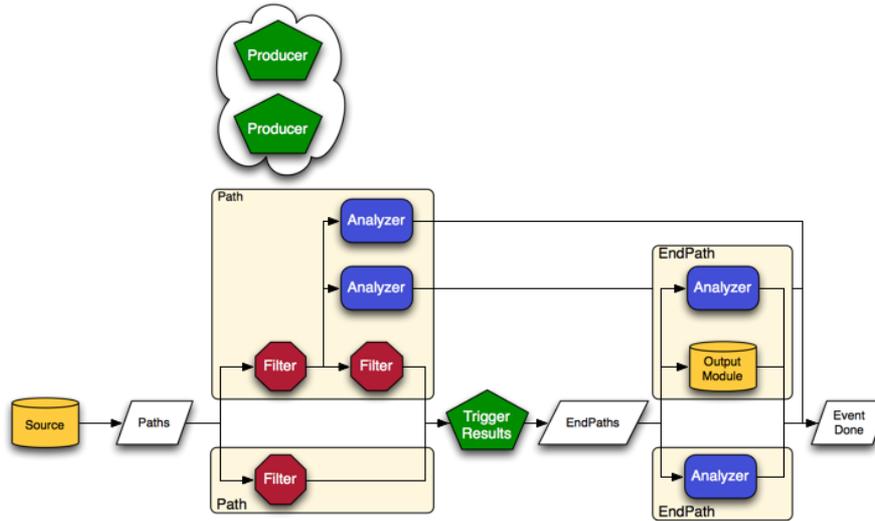
Chris Jones

- Co-leader of the CMS Core Software group
- Bringing CMS *kicking and screaming* into the 21st Century
 - Need to make efficient use of all the CPU cores in a machine
 - Delivered a multi-threaded event parallel *framework* in the latest release of CMS' software, 7_0_0
 - This is the first parallel HEP framework in the field!
- Would not have been possible without the whole group
 - David Dagenhart
 - Patrick Gattung
 - Bill Tanenbaum
 - And discussions with our CMS collaborators

Processing Many Events In Parallel



Processing Algorithms within an Event in Parallel



Mike Rosier

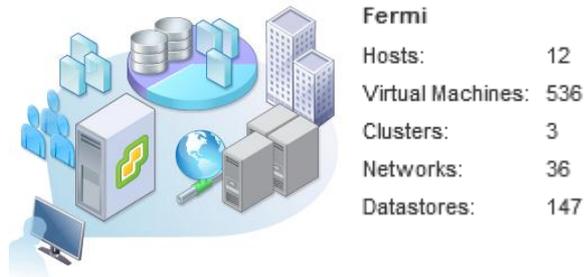
Mike Rosier

- CS/CCD/ESO - Enterprise Services Operations Department
- **Accomplishment**
 - Setup a central virtual infrastructure by merging several smaller environments into a single environment.
 - Expanded the use of virtualization technologies for desktop and server systems from under 100 to over 475 active virtual machines.
- **Significance to Fermilab**
 - Reduced hardware acquisition, system deployment time, power/cooling requirements, and rack space.
 - Simplified server maintenance, system deployment, and system management tasks
- **Thanks to many in CCD, SCD, and customer organizations!**

Cost Savings Summary

	Without Virtualization	Using Virtualization	Savings
Server Count	458	10	448
# of Racks	13	2	11
Power (KW)	138	8.5	129.5
Power Cost/yr	\$54,280	\$3,344	\$50,936
Acquisition Cost	\$1,374,000	\$531,250	\$842,750

Summary of Environment



Future of CCD Virtualization

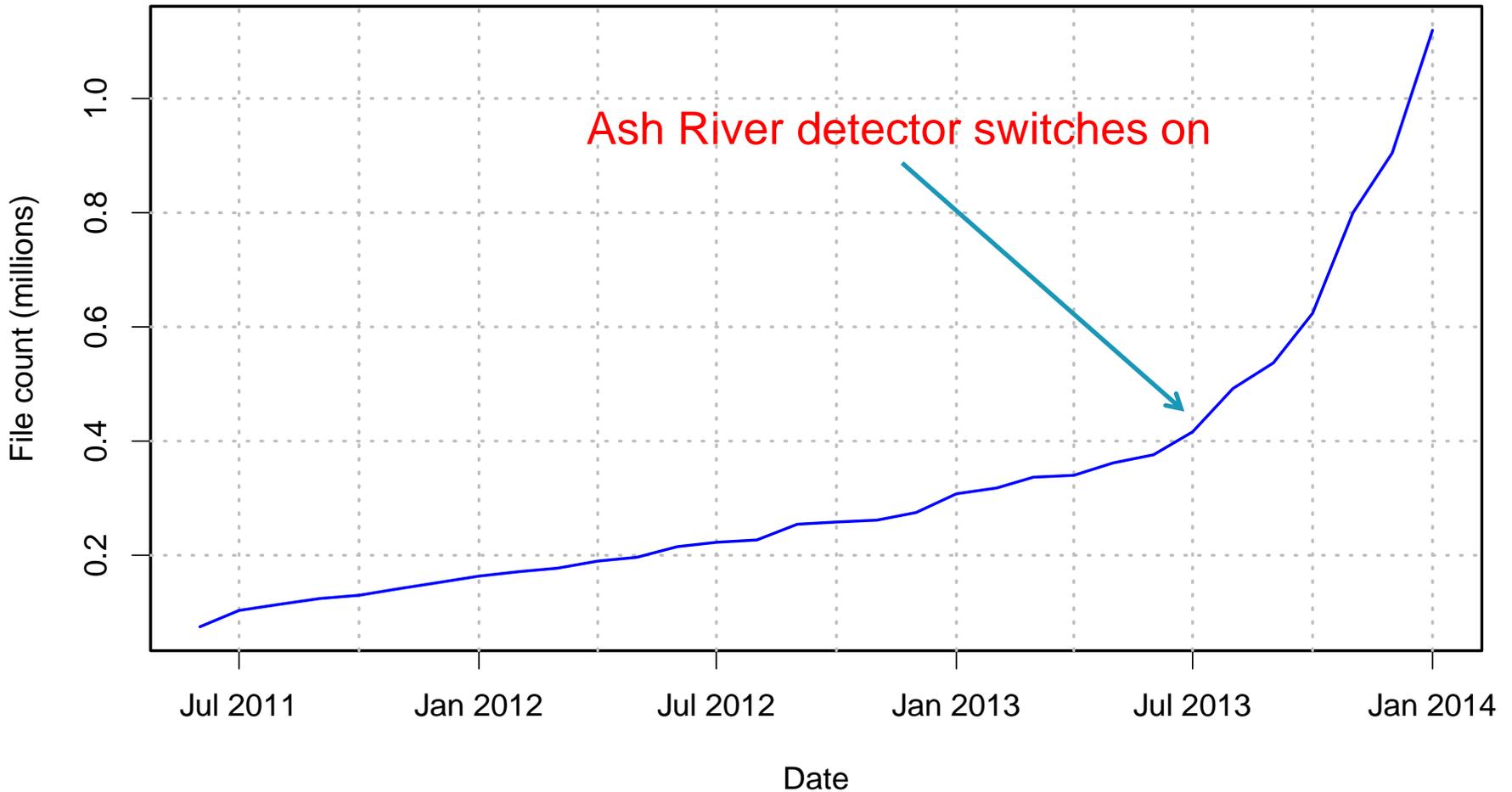
- Proactive hardware and software purchases to keep with future demands to the virtual infrastructure.
- Achieve a greater geographical diversity of our infrastructure within the Fermilab campus.
- Leverage experience in virtualization technologies to benefit key IT projects and other initiatives.
- Work closer with other groups like FEF and FermiCloud to understand where certain workloads make the most sense to run.

Robert Illingworth

Robert Illingworth

- Scientific Data Processing Data management group
- We have updated the SAM data management application for use by the newer Intensity and Cosmic Frontier experiments.
- Benefits from over a decade of experience from Run II and takes advantage of new technologies
- We are managing the cataloguing of raw data and the automated file transfers into Fermilab dCache for Minerva, NOvA and Darkside; from offsite at Ash River and Gran Sasso for the latter two
- Experiments have started running production and analysis jobs using SAM and dCache

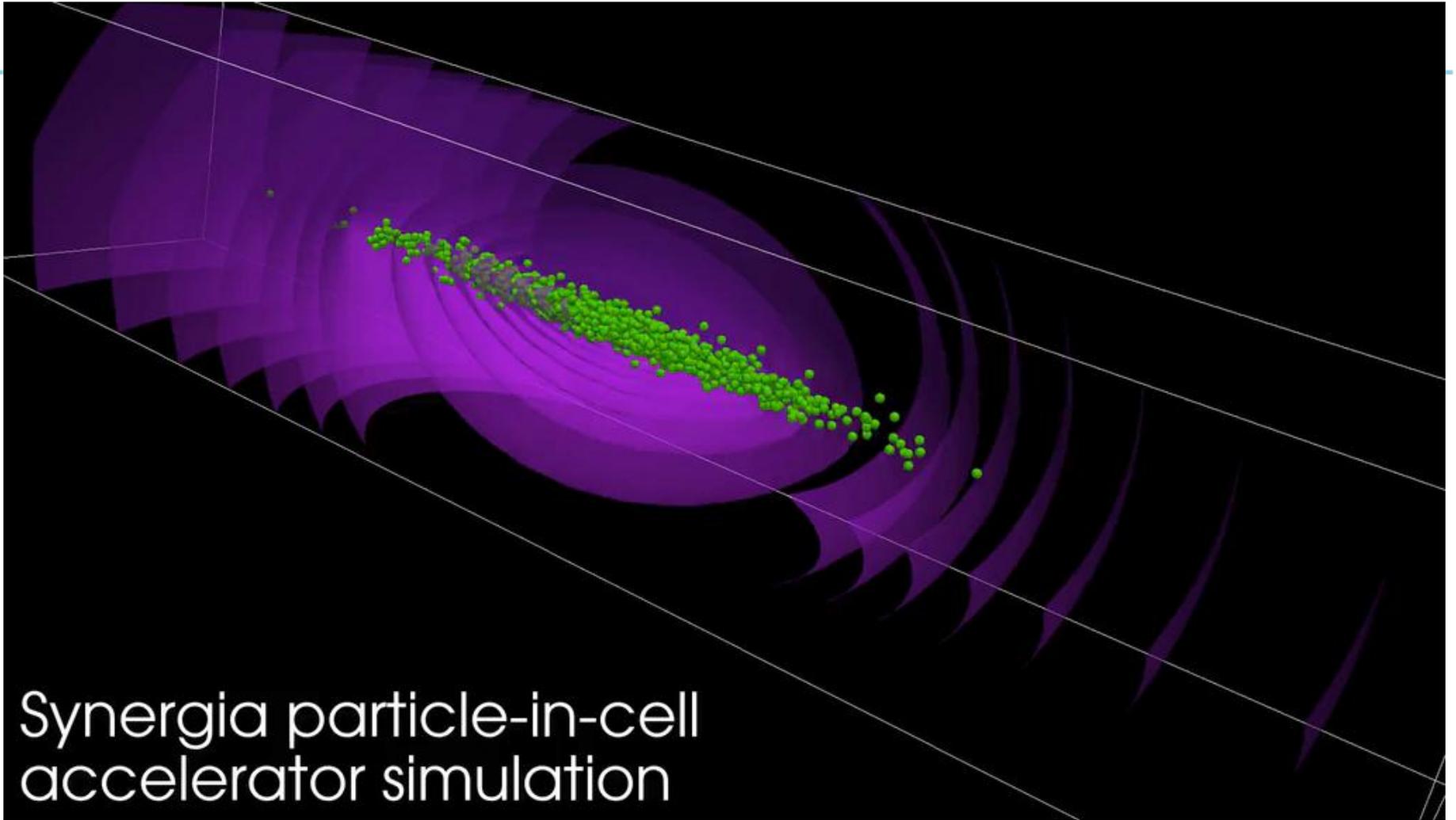
Cumulative file metadata in Nova SAM



James F Amundson

Accelerator Simulation Group

- James Amundson, Paul Lebrun, Qiming Lu, Alex Macridin, Leo Michelotti, Chong Shik Park, (Panagiotis Spentzouris), and Eric Stern
- Our accelerator simulation tool, Synergia is being used in:
 - Fermilab PIP I and PIP II, Mu2e
 - Studies for the High Luminosity LHC upgrade at CERN
 - Getting our tools used at CERN is a major breakthrough.
 - Our DOE INCITE 2013 and 2014 awards for large-scale simulation of Fermilab and CERN Accelerators
 - 130 million core-hours on Argonne BG/P and BG/Q.
 - 100,000+ core parallel jobs.



Synergia particle-in-cell accelerator simulation

Stephen Mrenna

Stephen Mrenna

- I am a Scientist in the Scientific Computing Division
- I am one of 3 primary authors of a computer program that simulates the microscopic physics of particle collisions
- The PYTHIA event generator was the most-highly cited HEP publication of 2012
- The SCD plays a leading role in data analysis at the Energy Frontier. PYTHIA was a major tool for discovering the Higgs boson and understanding the Standard Model
- The model of performing service for the HEP community through cutting edge research works well.

High Citation Rate continues in 2013

1. [1745](#) core citations in 2013

Observation of a new particle in the search for the Standard Model Higgs boson with the ATLAS detector at the LHC

ATLAS Collaboration (Georges Aad (Freiburg U.) *et al.*). Jul 2012. 24 pp.

Published in **Phys.Lett. B716 (2012) 1-29**

CERN-PH-EP-2012-218

DOI: [10.1016/j.physletb.2012.08.020](#)

e-Print: [arXiv:1207.7214 \[hep-ex\]](#) | [PDF](#)

[References](#) | [BibTeX](#) | [LaTeX\(US\)](#) | [LaTeX\(EU\)](#) | [HarvMac](#) | [EndNote](#)

[CERN Document Server](#); [ADS Abstract Service](#); [Link to all figures including auxiliary figures](#); [Interactions.org article](#)

2. [1737](#) core citations in 2013

Observation of a new boson at a mass of 125 GeV with the CMS experiment at the LHC

CMS Collaboration (Serguei Chatrchyan (Yerevan Phys. Inst.) *et al.*). Jul 2012. 42 pp.

Published in **Phys.Lett. B716 (2012) 30-61**

CMS-HIG-12-028, CERN-PH-EP-2012-220

DOI: [10.1016/j.physletb.2012.08.021](#)

e-Print: [arXiv:1207.7235 \[hep-ex\]](#) | [PDF](#)

[References](#) | [BibTeX](#) | [LaTeX\(US\)](#) | [LaTeX\(EU\)](#) | [HarvMac](#) | [EndNote](#)

[CERN Document Server](#); [ADS Abstract Service](#); [Link to PRESSRELEASE](#); [Interactions.org article](#)

3. [1038](#) core citations in 2013

PYTHIA 6.4 Physics and Manual

Torbjorn Sjostrand (Lund U., Dept. Theor. Phys.), Stephen Mrenna, Peter Z. Skands (Fermilab). Mar 2006. 576 pp.

Published in **JHEP 0605 (2006) 026**

FERMILAB-PUB-06-052-CD-T, LU-TP-06-13

DOI: [10.1088/1126-6708/2006/05/026](#)

e-Print: [hep-ph/0603175](#) | [PDF](#)

[References](#) | [BibTeX](#) | [LaTeX\(US\)](#) | [LaTeX\(EU\)](#) | [HarvMac](#) | [EndNote](#)

[ADS Abstract Service](#); [Fermilab Library Server \(fulltext available\)](#); [JHEP Electronic Journal Server](#); [OSTI Information Bridge Server](#)

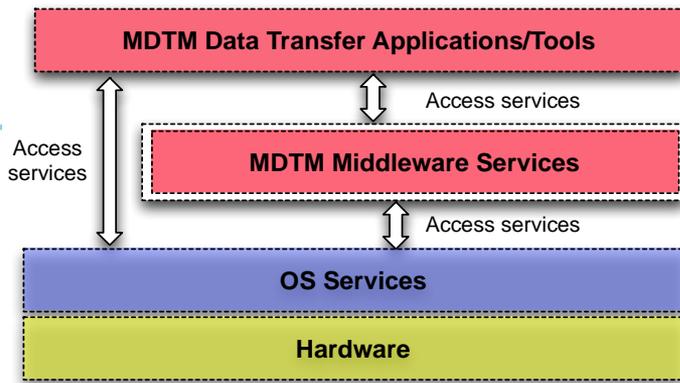
Going forward

- The near future promises demands for more complex, faster, and more distributed calculations. There is an opportunity for the SCD to make a significant impact.
- We have to be creative in attracting university and collaboration support to complement our own expertise.
- Consider the common needs/requirements/problems in neutrino generators, LHC generators, detector simulation, lattice QCD, accelerator modeling, ...

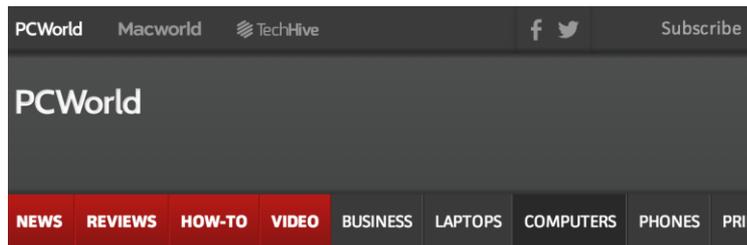
Wenji Wu

Wenji Wu

- Computer science researcher – CCD network research group
- Accomplishments
 - Multicore-Aware Data Transfer Middleware (MDTM)
 - Aims to harnesses multicore parallelism to scale data movement toolkits at multicore systems.
 - A DOE-funded research project, \$1.05 million over 3 yrs
 - <http://web.fnal.gov/project/mdtm/>
 - Network traffic monitoring and analysis with GPUs
 - Aims to use GPUs to accelerate network traffic monitoring and analysis in high-speed networks
 - The work was reported by PC World, Network World and other computing publications.
 - A start-up company is approaching us for collaboration
- Thanks for support of my colleagues and management at different levels.



MDTM Architecture



Desktops Components Input devices Displays Storage Networking

COMPUTERS

SC13: GPUs would make terrific network monitors

Joab Jackson
@Joab_Jackson

Nov 21, 2013 11:50 AM

A network researcher at the U.S. Department of Energy's Fermi National Accelerator Laboratory has found a potential new use for graphics processing units—capturing data about network traffic in real time.

GPU-based network monitors could be uniquely qualified to keep pace with all the traffic flowing through networks running at 10Gbps (gigabits per second) or more, said Fermilab's Wenji Wu.

The MDTM project will be carried out at Fermi National Acceleration Laboratory (Fermilab) and Brookhaven National Laboratory (BNL). It is sponsored and funded by DOE Advanced Scientific Computing Research (ASCR) Program

NETWORKWORLD

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Take Control of Your Cloud Network Citrix NetScaler
 Features From Modern NetScaler
 Gartner Report: Load Balancers Are Dead; Refocus on Application Deliv

News

Super Computing 13: GPUs would make terrific network monitors

An off-the-shelf Nvidia GPU is able to easily capture all the traffic of a 10Gbps network, Fermilab research finds

By Joab Jackson, IDG News Service
November 21, 2013 02:50 PM ET

3 Comments Print

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IDG News Service - A network researcher at the U.S. Department of Energy's Fermi National Accelerator Laboratory has found a potential new use for graphics processing units -- capturing data about network traffic in real time.

GPU-based network monitors could be uniquely qualified to keep pace with all the traffic flowing through networks running at 10Gbps (gigabits per second) or more, said Fermilab's Wenji Wu.



Going forward

- We see opportunities for collaboration with private sector:
 - Capitalizing on expertise elsewhere in CS is key to becoming an effective partner with private industry

Marc Paterno (SSD Group)

Marc Paterno (SSD Group)

- Development and deployment of the *art* framework and infrastructure (libraries, build & distribution tools, workbook).
- 9 experiments are sharing *art*, supplied by us: reduces the support burden, increases the mobility of physicists.
- Core team: L.Garren, C.Green, J.Kowalkowski, Q.Lu, M.Paterno, P.Russo; many others have contributed.
- For the future
 - Move beyond day-to-day support: start on major requested features, move to many-core. Filling our open job req is important for achieving this goal.
 - Move to the improved development methodology we've been trying for years to establish.
 - Improve the coupling with other systems (*artdaq*, *artg4*, ...)

Ruth Pordes



- Assoc Head of SCD; SM Scientific Services Coordinator;
- Chair of the Open Science Grid governing Council;

The Open Science Grid

THE Shared National Distributed CyberInfrastructure

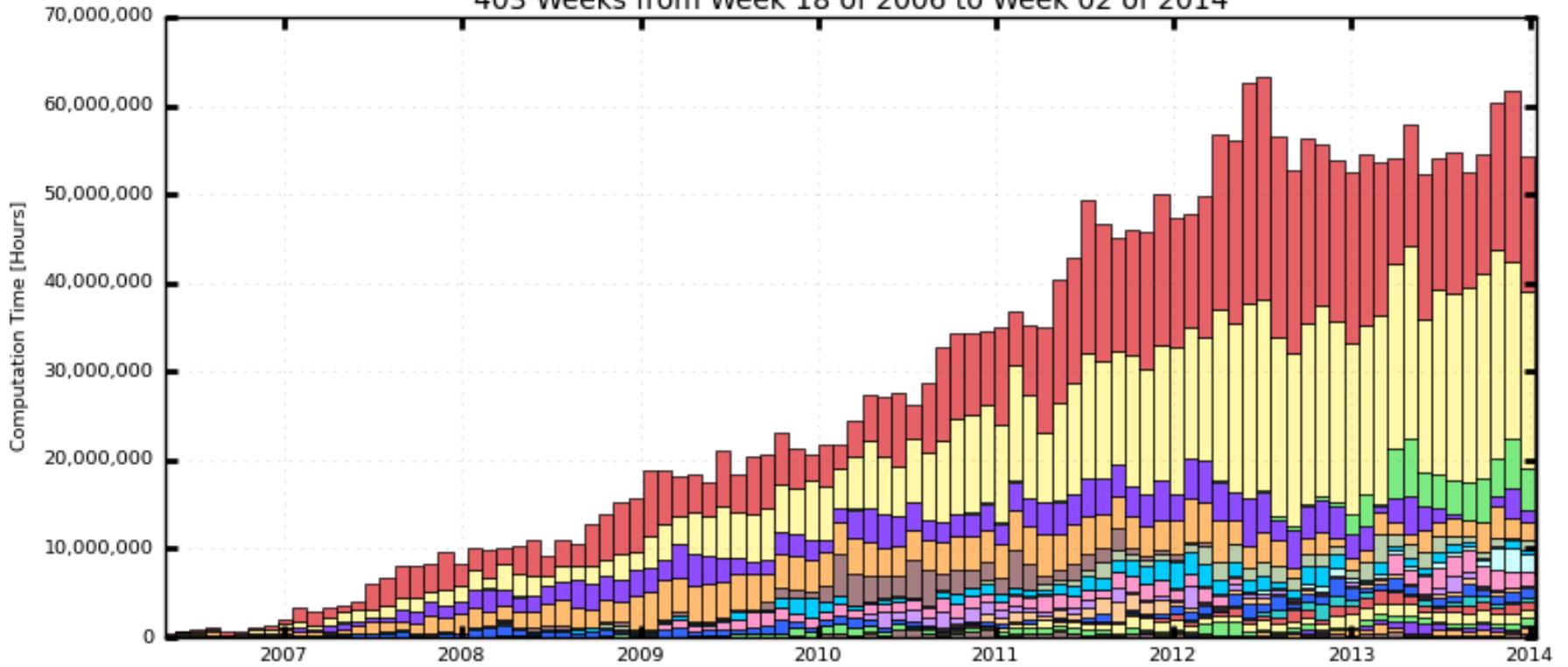
A tremendous success built up over many years - 1999 through 2014 – onwards to 2025 and beyond..

Initial work of DOE SciDAC program – Vicky - to DOE-NSF – Lothar kicking things off - to ~80 universities and 5 Labs; Success due to to many many people from many many organizations.

Fermilab benefits and contributions are Leadership and Key. CMS, LHC, Run II, Intensity and Cosmic Frontier. & not-least non-physics.

Hours Spent on Jobs By VO

403 Weeks from Week 18 of 2006 to Week 02 of 2014



- | | | | | |
|-------|-----------|--------|-------|---------|
| cms | atlas | osg | dzero | cdf |
| ligo | glow | engage | mu2e | dosar |
| hcc | gridunesp | Other | auger | minerva |
| alice | minos | mars | nova | sbgrid |

Maximum: 63,246,967 Hours, Minimum: 355,469 Hours, Average: 28,357,097 Hours, Current: 10,158,362 Hours

- Demonstrates that sharing, opportunistic, external software, federation of computing and storage can work and be of significant value.

OSG Opportunistic Wall Hours (Millions)		
	2012	2013
VO		
engage	20.0	7.8
glow	17.6	16.7
hcc	5.7	4.0
osg	3.3	50.2
sbgrid	2.2	4.2
Total	48.8	82.9

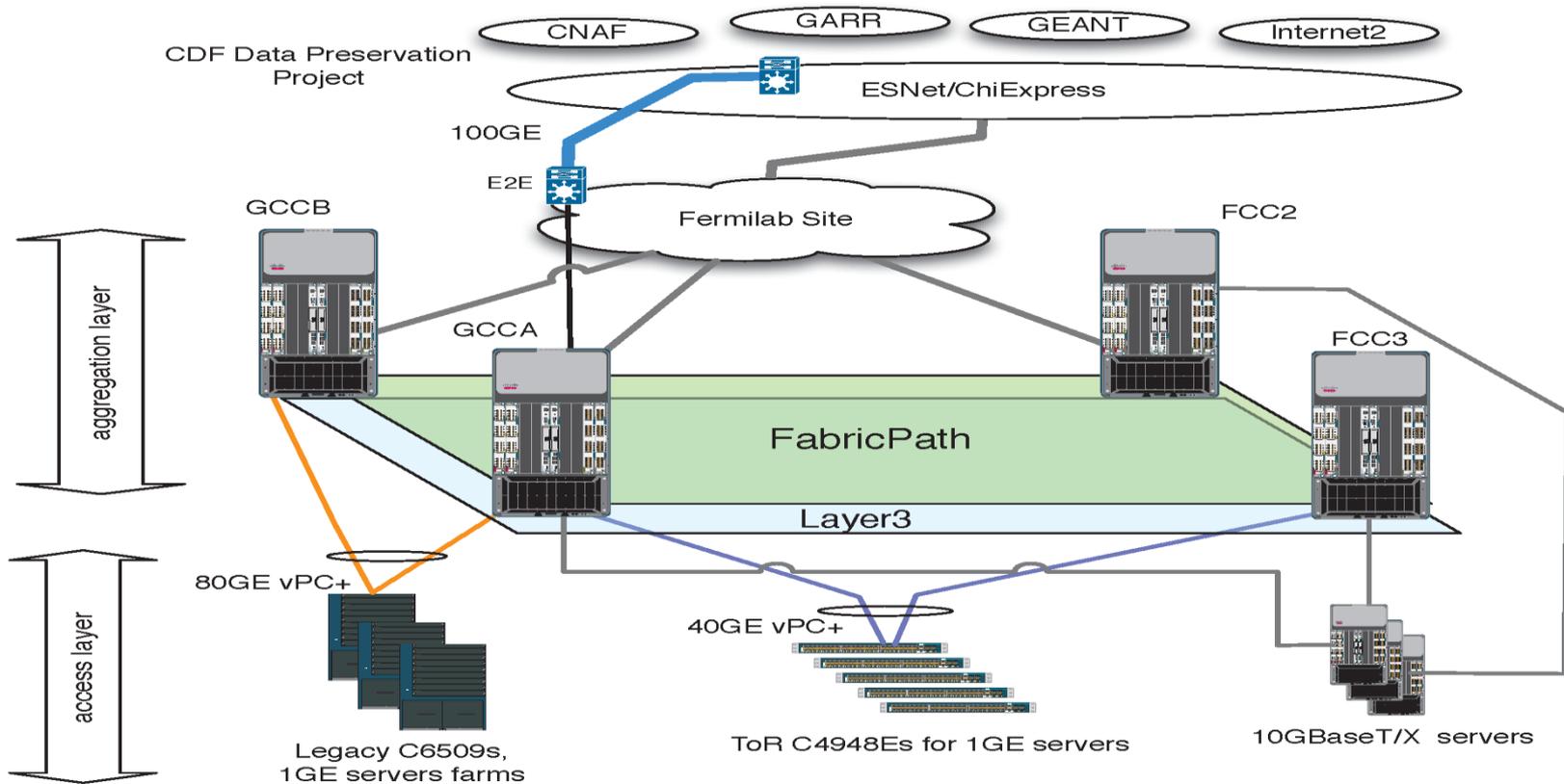
- Recognized as More than a Peer with LHC, Europe and US CIs. We in HEP actively gain and learn not only give and teach in multi-disciplinary groups.

**Rob, all -
your continued strong support is
necessary, valuable & highly appreciated**

Ray Pasetes

Ray Pasetes

- Department Head Network and Communications Services
- Over the past 2 years...
 - Evolutionary upgrades to allow large data movement
 - 100Gb network connectivity for WAN
 - Switching fabric between Data Centers upgradable to 1.2Tb
 - Replaced aging fiber and improved inter-building connectivity
 - 3000 fibers and ~11 miles of outdoor fiber installed
 - Support for a more mobile workforce
 - Wireless infrastructure upgrades to 1Gb (>100x increase)
- Thank you to Network Services and Network Cabling for all their hard work.



High-level picture of data center switching fabric and connection to 100Gb WAN for large data movement to various sites.

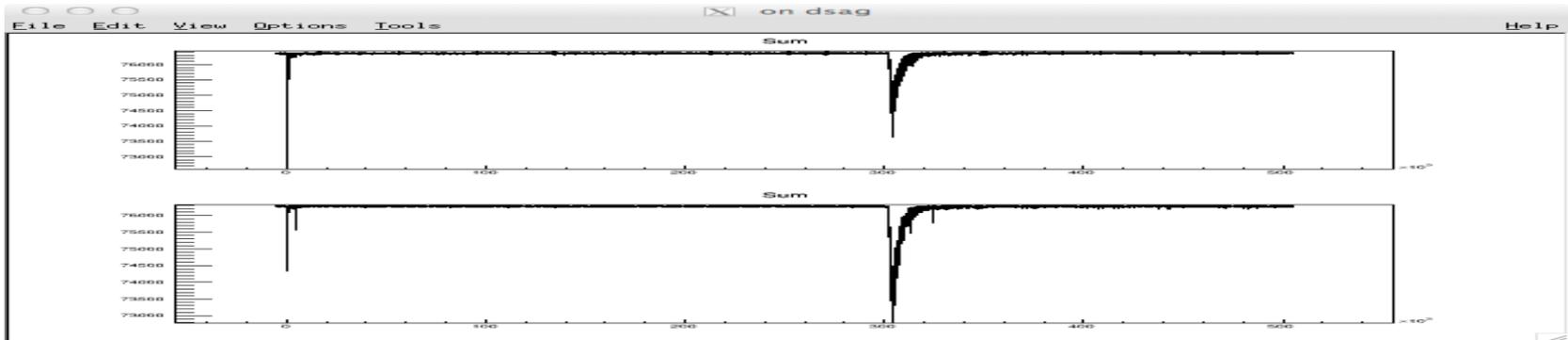
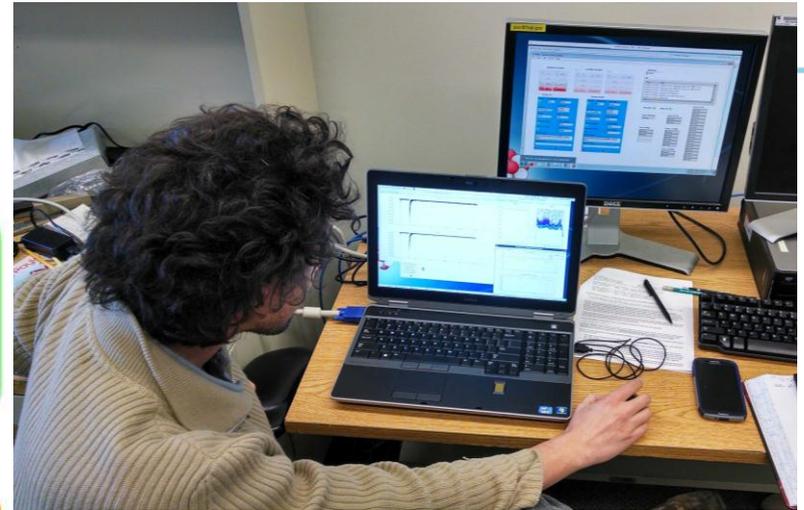
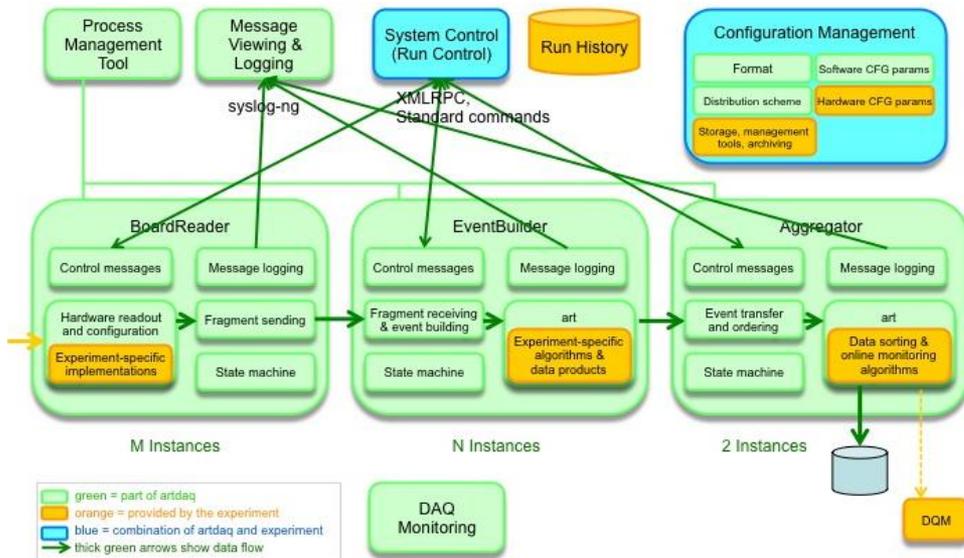
Going forward

- Refresh Aging Border Routers and Push for Dual 100Gb WAN connections
 - Primary for Science Data
 - Secondary for R&D
- Continue to work with FESS and City of Batavia for new western boundary fiber infrastructure
 - Support for new construction, provide resiliency

Kurt Biery - Realtime Software Infrastructure

Kurt Biery (Realtime Software Infrastructure)

- *artdaq* – a toolkit of reusable DAQ software components; includes *art*.
- Successful use of *artdaq* in the DarkSide-50 DAQ; updated release of the *artdaq-demo* earlier this month.
- DS-50 DAQ – First production deployment of *artdaq*. Collecting data for high-statistics background studies now. Developed over last 1.5 years, collaboration with LNGS. ~900 Hz laser evts; ~40 Hz physics evts \approx 400 MB/s
- *artdaq-demo* – sample code, documentation; demonstrates how *artdaq* is used and customized for an experiment; will provide starting points for Lariat, LBNE, Mu2e DAQ software.
- Lots of people: RSI group (KB, RR, JF, GL, SF) , DarkSide collaborators (AR), SSI group (JK, MP, CG, LG, PR, MW).



artdaq software components; DarkSide-50 remote shift at Fermilab this week; online monitoring waveforms from DS-50 DAQ.

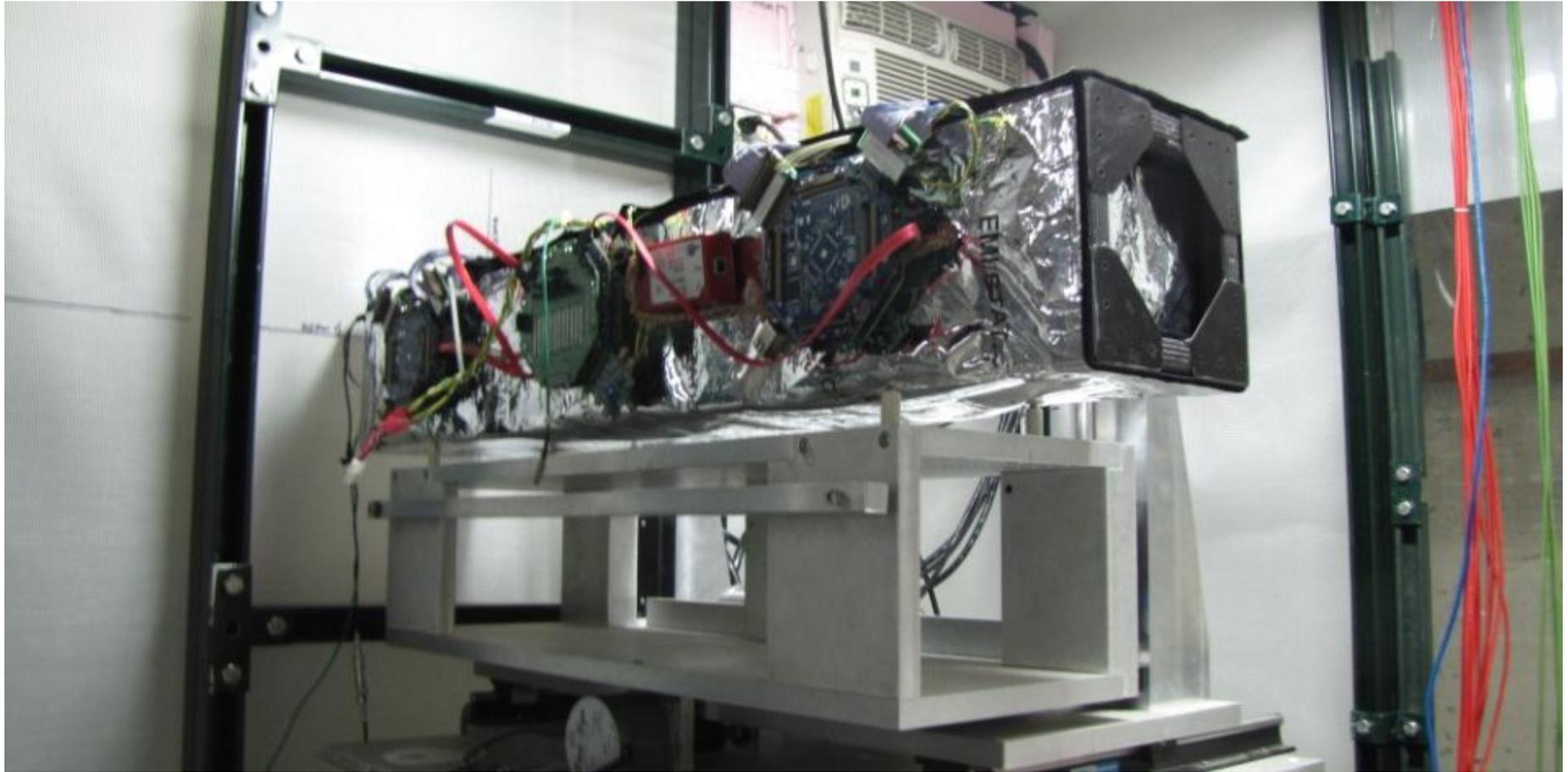
Going forward

- Provide the standard DAQ toolkit for Fermilab experiments.
- Add more components to core *artdaq*: Run Control GUI, DAQ monitoring, configuration management, etc.
- Work with the Lariat, LBNE, and Mu2e DAQ groups to implement their DAQ software using *artdaq*.
- Pull reusable pieces from experiments into the core.
- Partner with new experiments to use *artdaq* in their DAQs.
- Work with engineers and controls experts to add reusable hardware and slow controls components to a larger toolkit that can be used for testbeam and full experiments.

Ryan Rivera

Ryan Rivera

- I am an Electrical Engineer in ESE
- Since 2009, the ESE Department of the Computing Sector has developed to completion a high-performance tracking pixel telescope for future detector research and development at the Fermi Test Beam Facility.
- The telescope system leverages the CAPTAN DAQ and distributed computing techniques in a gigabit Ethernet network to provide high throughput and < 10 micron resolution particle tracking to test beam users.
- Major Players: John Chramowicz, Simon Kwan, Alan Prosser, Lorenzo Uplegger



The pixel telescope in situ at FTBF.

Going forward

- I would like to continue to see the electrical engineering of ESE working closer with the software expertise of Computing Sector.

Kevin True

Kevin True

- Business Analyst supporting Tammy Whited, Liaison for PPD
- iTrack – Item Tracking – 2 releases during FY2013
- High priority initiative supported by former COO Jack Anderson. Creates a single application platform for Fermilab organizations to track corrective actions for Items, Findings, Recommendations and Observations from internal and external reviews / audits at the laboratory.
- Contributors
 - Matt Crawford – Business liaison and architecture
 - Matt Arena – Enterprise Applications
- Service Owner – TJ Sarlina supported by Kathy Zappia

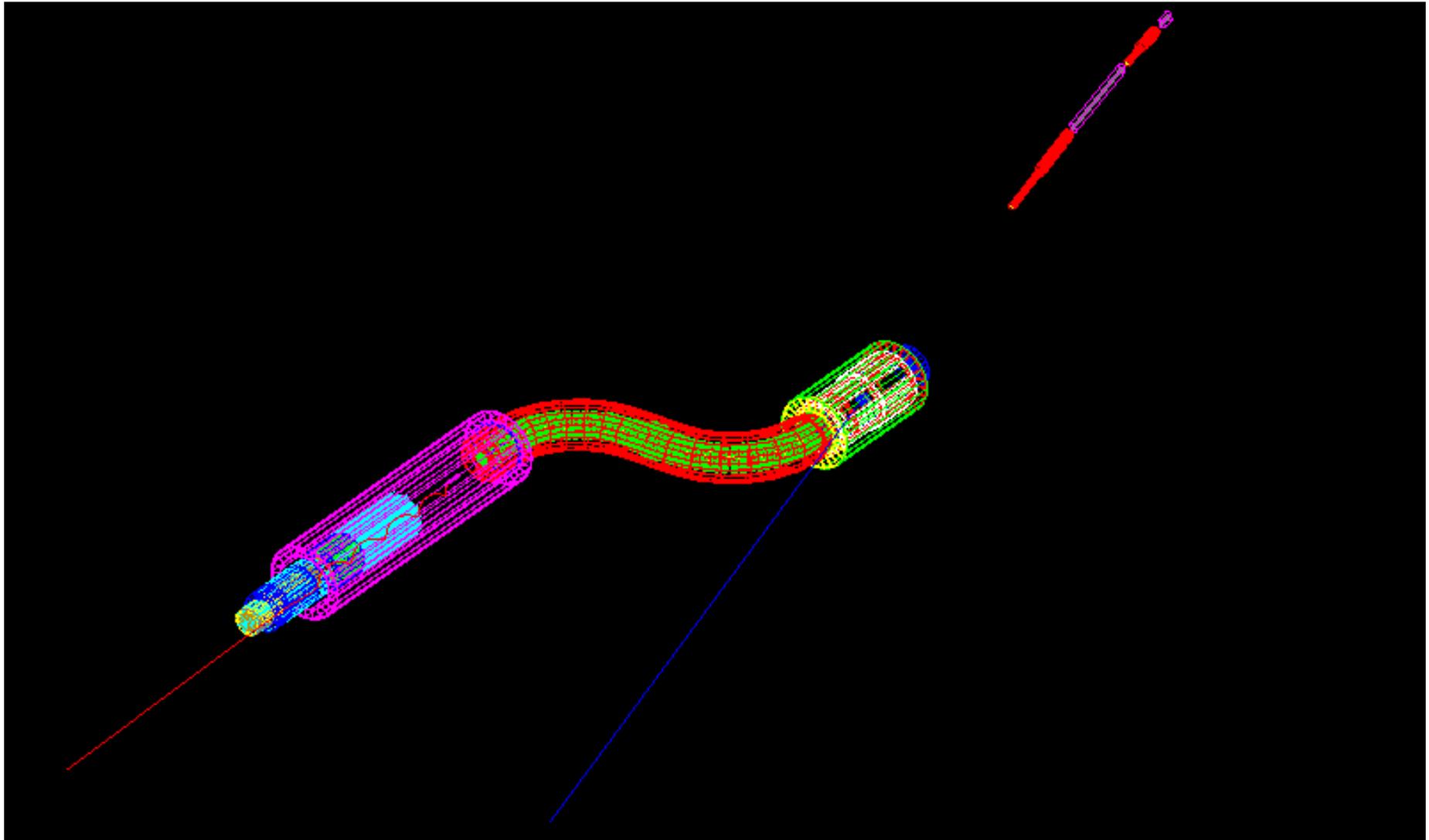
iTrack – Item Tracking

- Enhances the former frESHTRK item tracking
- New features:
 - Ability to have a Responsible Party hierarchy for approval of delivered Corrective Action Plans (CAP's)
 - email for assignments and monthly for approaching due dates
 - Multiple CAP's can be created for each Item
 - Items can be associated with multiple organizations.
 - iTrack Search capabilities
 - Excel export
- DOE audit performed in December 2013
 - Application was given high praise
 - Some recommendations
- Service Owners planning for new release in 2014

Krzysztof Genser - Physics and Detector Simulation Group

Krzysztof Genser/Physics and Detector Simulation Group

- I am assistant group leader of PDS Group (in SCD/SSA/SCS)
- Our group takes part in Geant4 Collaboration working on most widely used HEP Physics and Detector Simulation Tool
 - Created/developing/using Geant4(G4) Profiling & Benchmarking Infrastructure and Physics Validation Database
 - Participating in G4 Steering Board and various working groups
 - Performing Geant4 code reviews and contributing new code
- Resulting Geant4 improvements led to more efficient and accurate code for the benefit of HEP Community. Fermilab's participation in Geant4 increased its focus on the needs of our local program; Many people contributed, including: S. Banerjee, P. Canal, W. Brown, D. Elvira, R. Hatcher, S. Jun, J. Kowalkowski, G. Lima, M. Paterno, H. Wenzel, J. Yarba, ...



A simulated event in (selected elements of) future Mu2e experiment

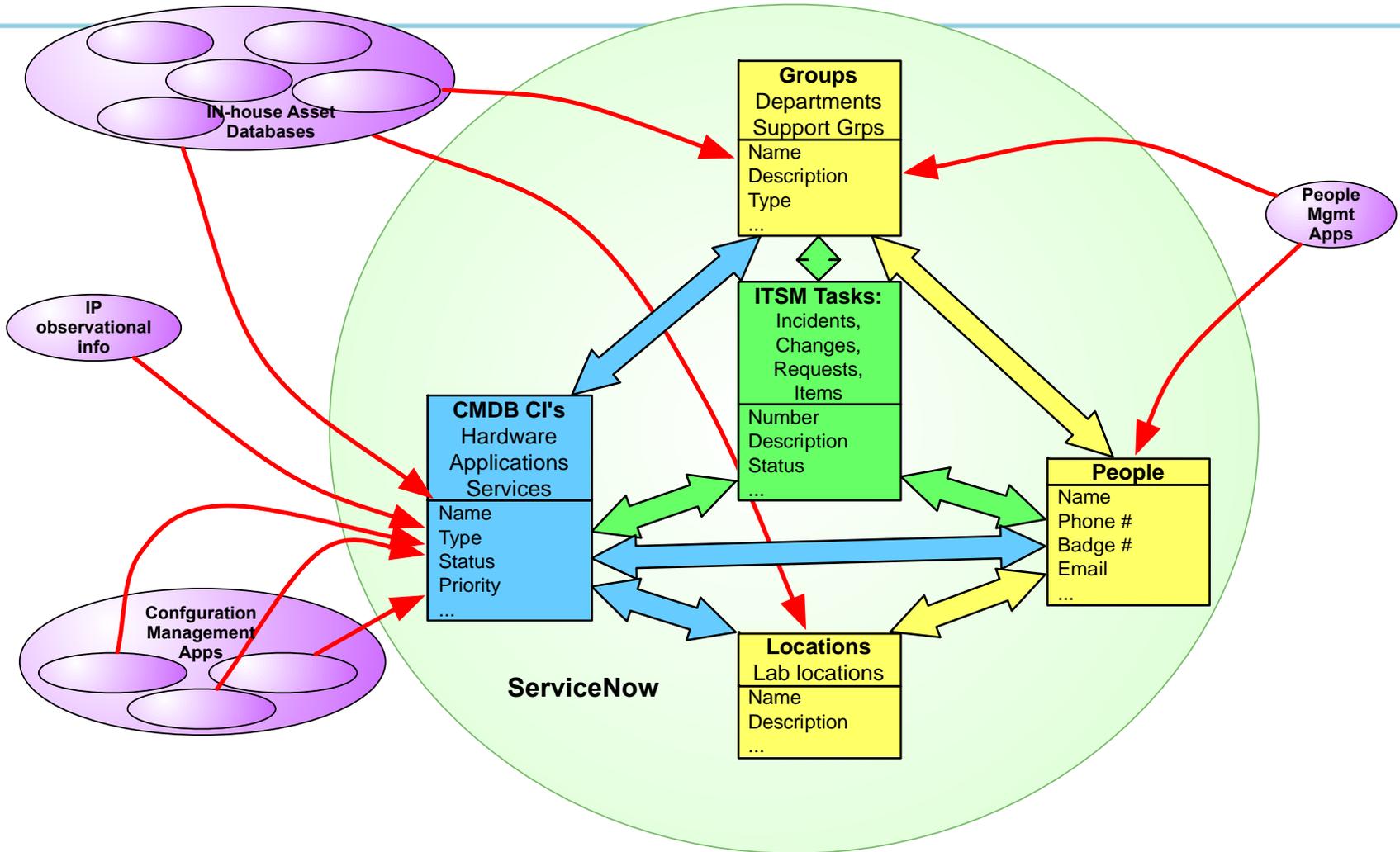
Going Forward with Geant4

- Increasing Geant4 focus on Intensity Frontier Experiments
 - conveying the needs of experiments to the collaboration
 - adding more validation data and tools; adjusting G4 parameters
 - dedicated Thin Target Test Beam experiment(s) to measure quantities crucial to the lab physics program would enable more accurate simulations
- Transforming Geant4 towards the future
 - participating in DOE sponsored HEP-ASCR collaboration to explore new hardware architectures (GPU, MIC...)
 - collaborating with CERN on a Geant4 prototype to exploit the benefits of vectorization
 - co-founded (with CERN) "Concurrency Forum" for R&D of HEP software for new computing technologies (hosted first meetings)

Kryisia Jacobs

Krycia Jacobs

- Consultant, Core Computing
- CMDB – Configuration Management Database
- A cloud-based central repository of information about computing assets, applications & services, and their relationships to one another.
- Part of the large ITSM deployment effort led by OCIO and the IT Service Management Team that resulted in the Lab's obtaining the coveted ISO-20K certification.
- Consolidates info maintained in many legacy repositories of computing information into one, easily accessible collection.
- Supports Fermilab's Service Management by linking Incidents, Requests and Changes to Configuration Items
- Helps IT staff assess impact of their work on other areas



ITSM & CMDB

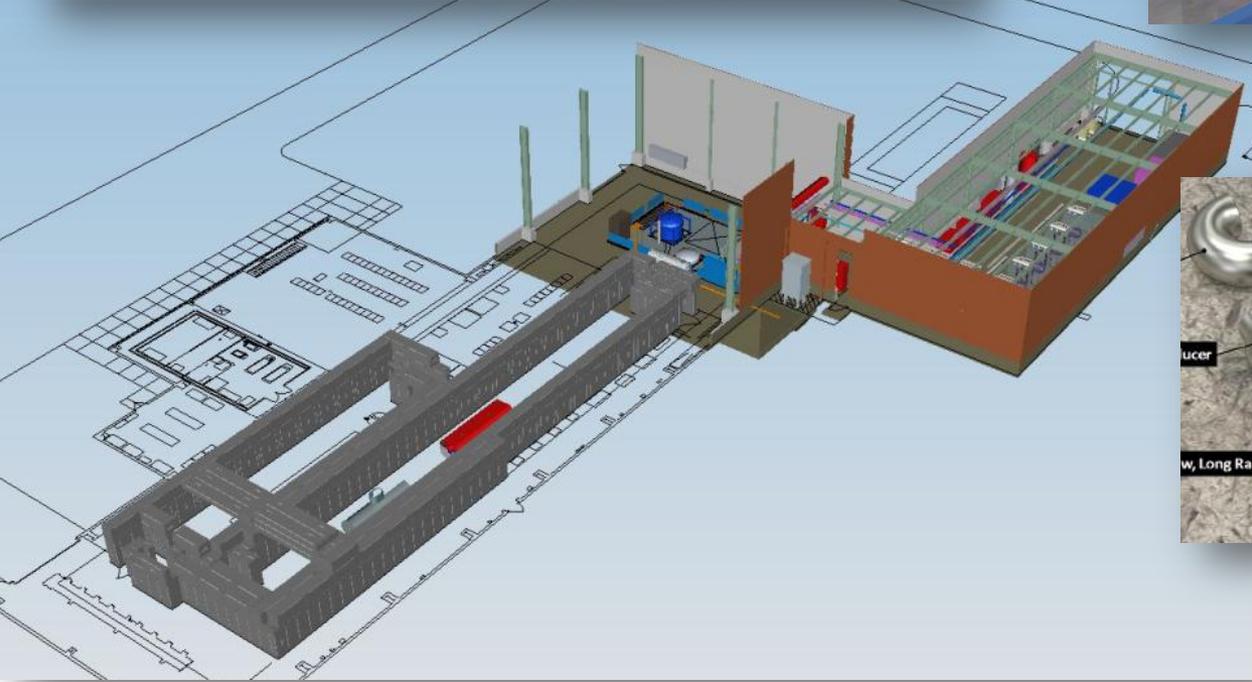
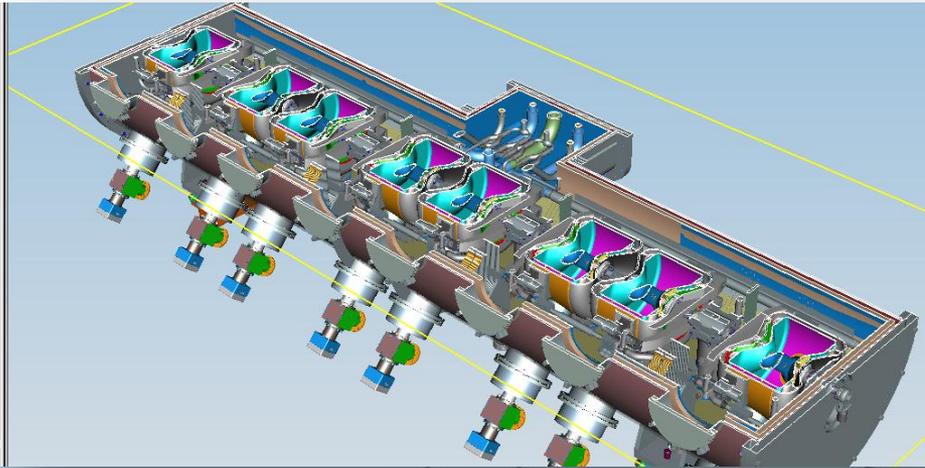
Going forward

- Now that we have some 500,000 Configuration Items in the CMDB, the effort continues to:
 - Add more classes of CI's
 - Establish more **relationships**
- Julie Trumbo, our Configuration Manager, is available to answer questions and help you find our way around the CMDB.

Tony Metz

Tony Metz

- CS/CCD/INF – Enterprise Engineering Applications Group
- **Accomplishment**
 - Implement Teamcenter
 - Engineering Database Management System (EDMS)
 - 5+ year implementation roadmap started in 2010
 - In production since 2012; 200+ trained; 40 to 50 daily users
- **Significance / Value-add**
 - Provided a central, enterprise-wide repository for engineering data
 - Simplified, standardized and automated engineering workflows, rev control, doc. links
 - Improved visualization and reuse of parts
- **Thanks!**
 - Bob Andree and David Lowell



Teamcenter – EDMS; large Assemblies; visualization; reuse of parts

Going Forward

- **Current Initiative** – SLAC; LCLS-II
 - Share our proven Teamcenter solution as a template that other Labs can leverage / re-use
 - Provide guidance to SLAC as they proceed with their Teamcenter implementation
 - Improve collaboration and standards across the Labs
- **Future Initiative** – Remote Collaborator Access
 - Improve remote Teamcenter access, use and collaboration
 - Support multiple operating systems
 - Streamline and simplify how we extend Teamcenter to remote collaborators

Eileen Berman

Eileen Berman

- SOS Department Head, Managed Service Oversight
- Managed Services at Fermilab

Service Desk	Desktop Support
IMAC	Logistics/PREP
Hardware Repair	Network Cabling
SCCM Operations	Managed Print

- Formed a partnership with Dell to integrate them into our established processes providing coverage of first-level operational work thus affording Fermilab more opportunities for Service planning and improvement.
- Successful - thanks to the hard work of many throughout the entire Computing Sector.

Jim Fromm

Jim Fromm

- Group Leader - **Business Infrastructure Applications**
- **Accomplishment**
 - Modernized NCIS/Tissue/FBI software suite. Development effort began in 2010, rollout occurred between 2011-2013.
- **Significance/Value-add**
 - Satisfies requirement to track devices on the Fermi network.
 - Allows Fermilab to run an open network
 - ~620k network polls per day, 15k active end hosts tracked.
 - In 2013, 3338 Tissue events were created and 1195 blocks issued
- Thanks!
 - Lauri Carpenter, Randy Reitz, Michael Zalokar

NCIS next step:

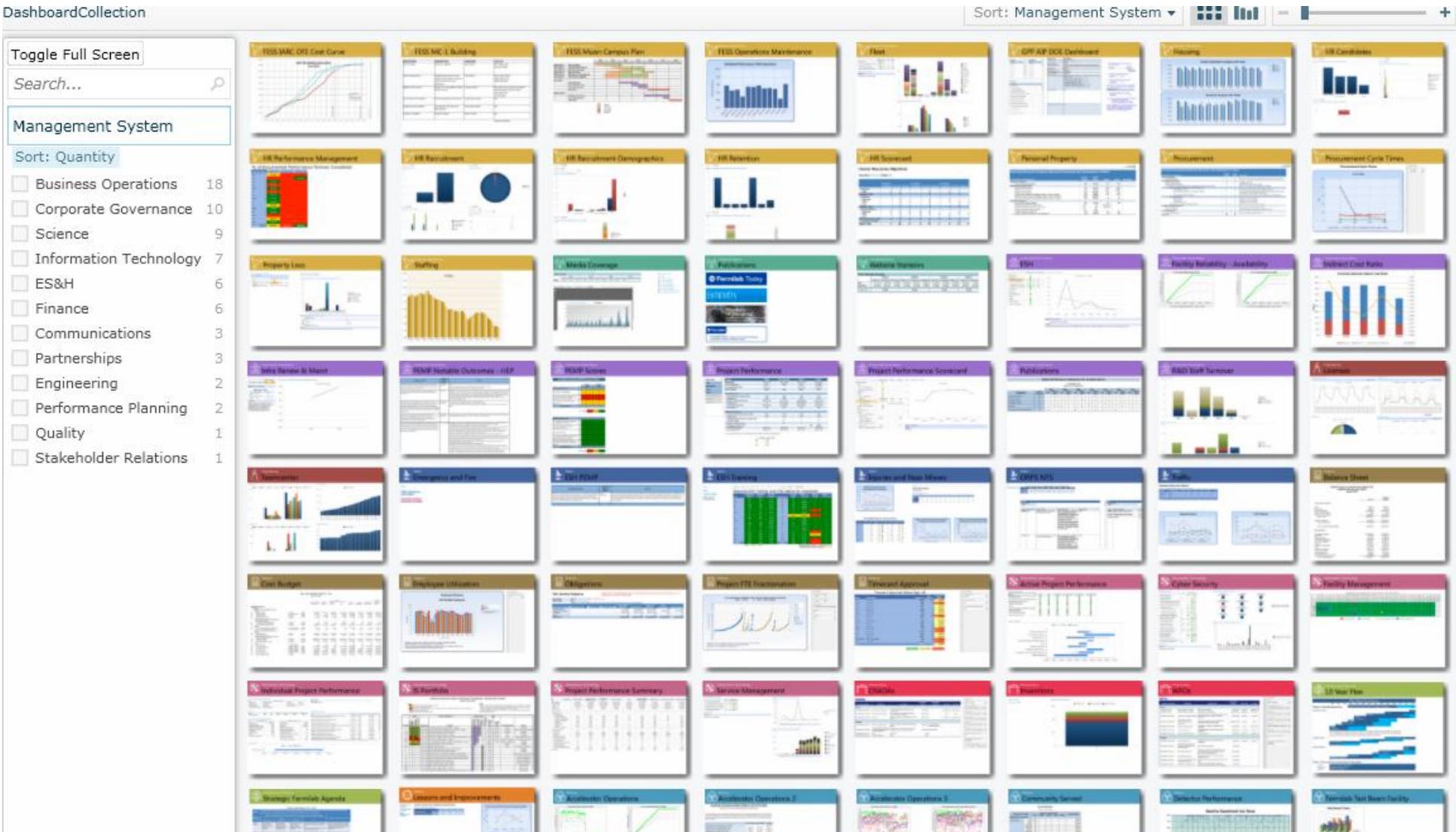
- Add end-host services:
 - Each end-host offers network services.
 - Some services are known to the use, some are not.
 - Allow Computer Security to do advanced search based on services offered.
 - Provides for effective vulnerability/configuration scans.
 - More robust exemption system, leveraging lab strategic tools (ServiceNow)

Matt Arena

Matt Arena

- CS/CD/INF – Enterprise Applications Group
- **Accomplishment**
 - Implemented FermiDash for the CAS
 - In production since December 2011
- **Significance / Value Added**
 - Delivered executive-level, graphic dashboards
 - Delivered ability to analyze trends and uncover opportunities
 - Leveraged SharePoint Technology
- **Thanks!**
 - M. Crawford, T. Doody, J. Marsh, C. Mohler, C. Klopfenstein, P. Constanta, M. Kuc, C. McKenna, K. True, B. Sieloff, P. Wang, L. Stover, H. Kumlin, S. Sankaranarayanan, K. Yarrapragada

FermiDash “Baseball Cards”



FermiDash DART Charts

Days Away, Restricted or Transferred

FermiDash Corporate Governance

FermiDash Business Operations Communications Corporate Governance Engineering ES&H Finance Information Technology Partnerships Performance Planning

Corporate Governance Dashboard : Highlights | Dashboards | ESH | R&D Staff Turnover | Facility Reliability - Availability | PEMP Scores | PEMP Notable Outcomes - HEP | Infra Renew & Maint | Indirect Cost Ratio | Project Per

	Target vs. Actual	Actual	Target
ESH Perspective			
DART Days			
DART Rates			
DART 2-Year Trend	1.00 -0.50	21	0
DART 5-Year Trend	1.00 0.05	49	0
DART 2-Year Trend - WP/C	1.00 -0.50	4	0
DART 5-Year Trend - WP/C	1.00 -1.38	18	0
DART Current FY	0.50 0.32	2 Cases	<10 Cases
DART Current FY - WP/C	0.25 0.00	0 Cases	<5 Cases
TRC Rates			
ORPS			
Training			
Vehicle Accidents			
Worker's Compensation			

DART 2-Year Trend



Going forward

- **Current Initiative**

- Modernizing technical infrastructure to support future opportunities

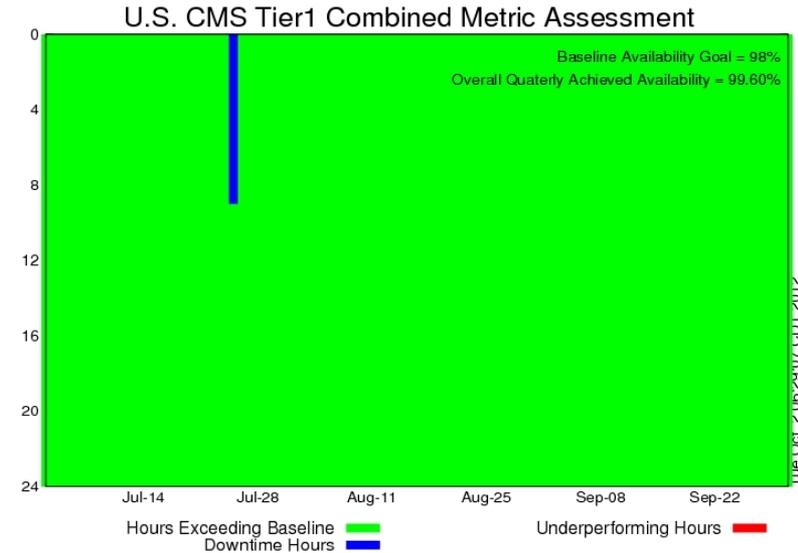
- **Future Opportunities**

- Expand use of Dashboards to line management and employees
- Develop a corporate data warehouse
- Sharpen our thinking on metrics
 - Understand what's going on today and anticipate what will happen tomorrow

Lothar Bauerdick

Lothar Bauerdick

- SCD Deputy Head, USCMS Software and Computing Head, OSG Executive Director
- Thanks to the Computing Sector
Fermilab is the best place worldwide to do CMS science!
- On all levels
 - People working here deeply care about CMS' success
 - The computing facilities, the LHC Physics Center, the Fermilab CMS Center

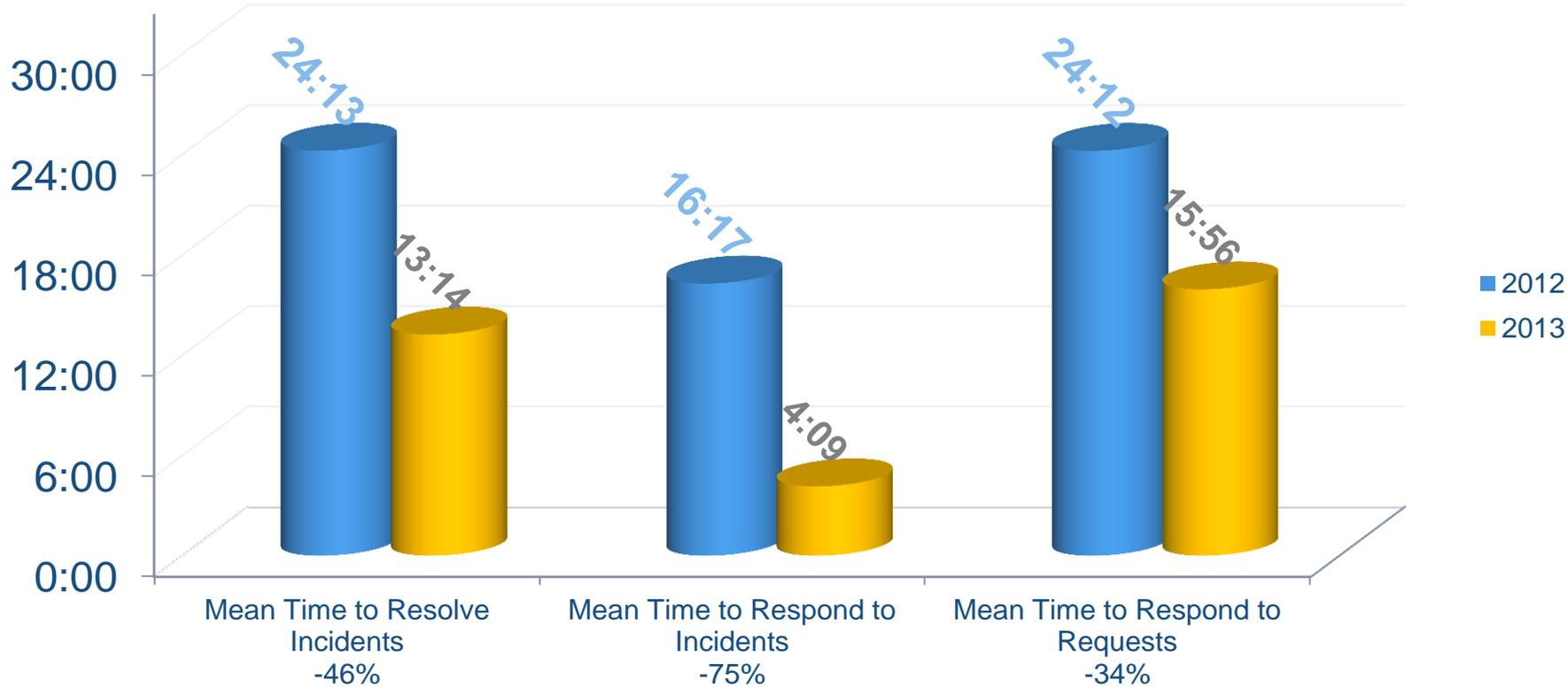


- Appreciation for Vicky's role in establishing CMS at Fermilab
- Thank you to Vicky for her vision, leadership, and support

Anthony Donzelli

Anthony Donzelli

- Incident Manager
- In the area of KPI measurements, a significant normalization of response and resolution of incidents and requests occurred in 2013.
- These improvements provide increased confidence in Computing and improved service to all customers
- Each and every member of the Computing Sector contributed in supporting and accomplishing these significant improvements!!



2012 – 2013 KPI Improvements

Going forward (optional slide)

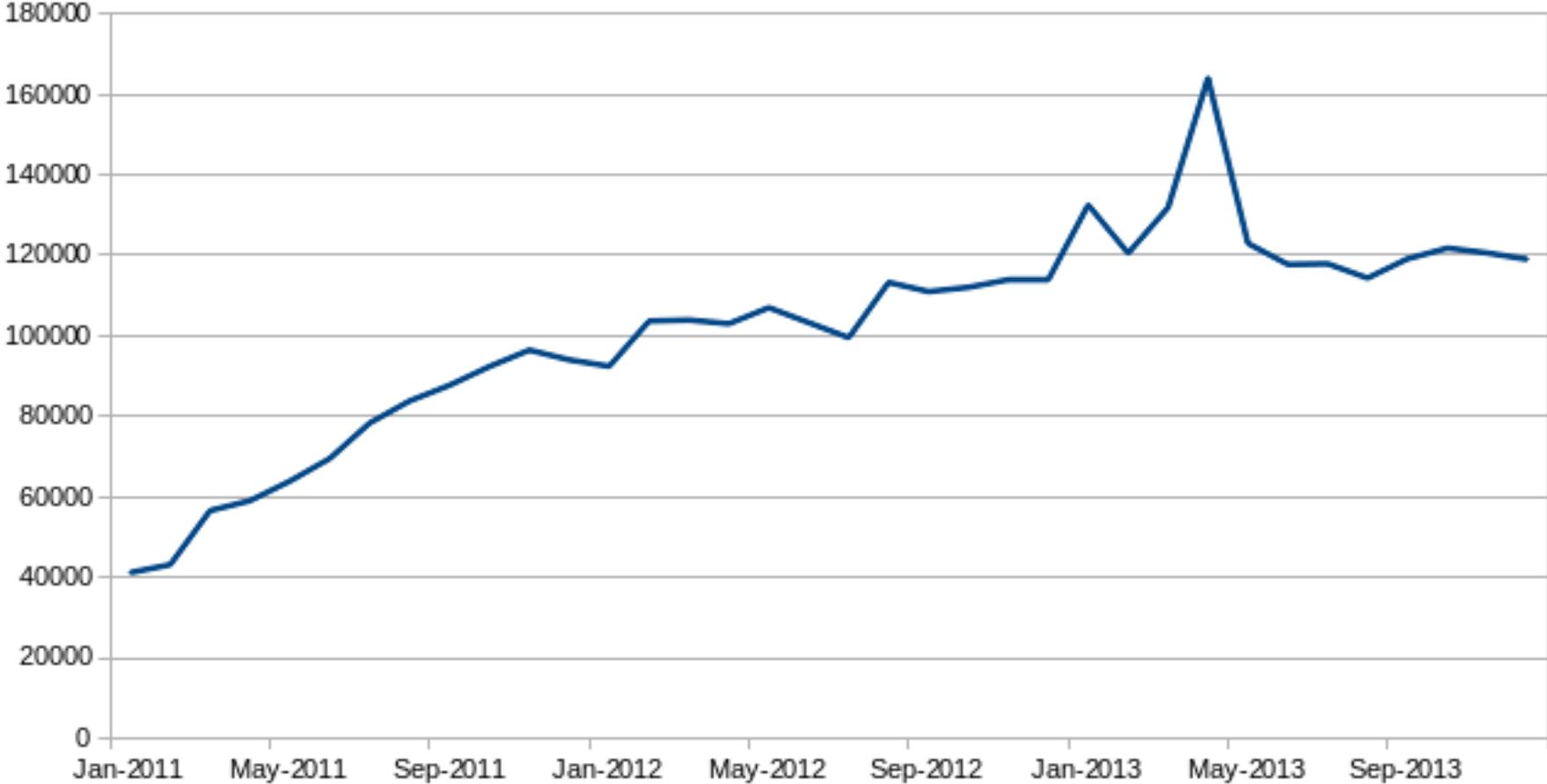
- Realize synergies and leverage existing expertise to improve overall scientific support and service by incorporating Accelerator Division's Operations Center Support into the Incident and Service Request Management processes and procedures.
 - Shared goal of support
 - Improved communication between experiments, support staff and AD
 - Reduction in response times during critical situations

Pat Riehecky - CS/SCD/FEF/SLA and Scientific Linux

Pat Riehecky, for CS/SCD/FEF/SLA and Scientific Linux

- Pat Riehecky, member of the Scientific Linux team since 2011
- Since 2011 we have released 11 versions of Scientific Linux
 - Used all over the world, and even in space!
- Since 2011 we have released 9 versions of Scientific Linux Fermi
- Our continuing goal is to provide a stable platform for scientific computing.
 - All Fermilab experiments run on Scientific Linux
- There are lots of people to thank
 - Connie Sieh – project founder, personal mentor, friend
 - Troy Dawson – now at Red Hat
 - Rennie Scott, Bonnie King
 - And many many more

Approximately how many world wide systems are there?



Tyler Parsons for CS/SCD/FEF

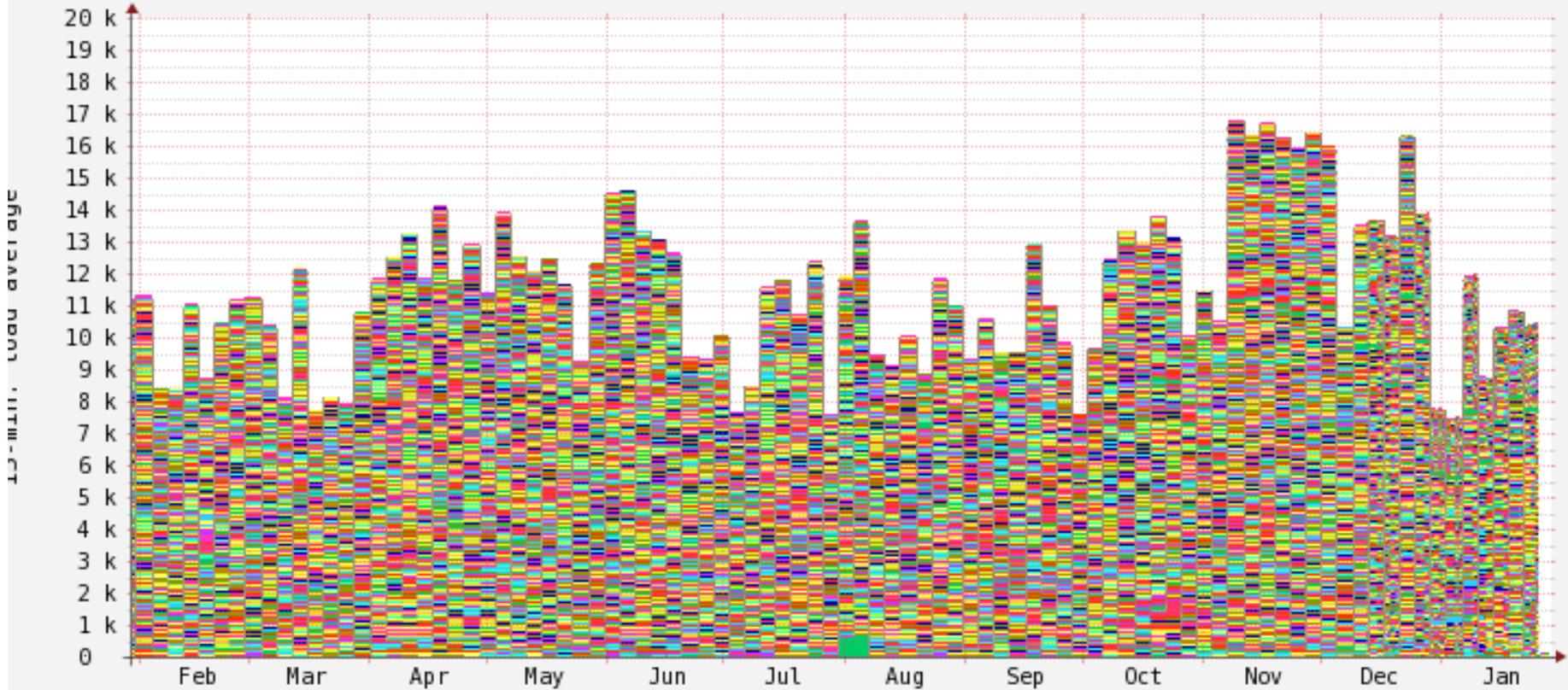
Tyler Parsons, for CS/SCD/FEF

FEF manages computers for Fermilab experiments and related projects. We work closely with many others, including the DMS, GCS, Database Services, Network Services, Facility Operations, Dell Managed Services, and other CS departments; PPD members; other experiment members; and more.

- 2179 systems (physical and virtual) currently managed
- 35 experiments & other stakeholders
Examples: NOvA, DES, SAM, CDF, D0, g-2, MicroBooNE, ...
- Groups of computers with 150 different purposes

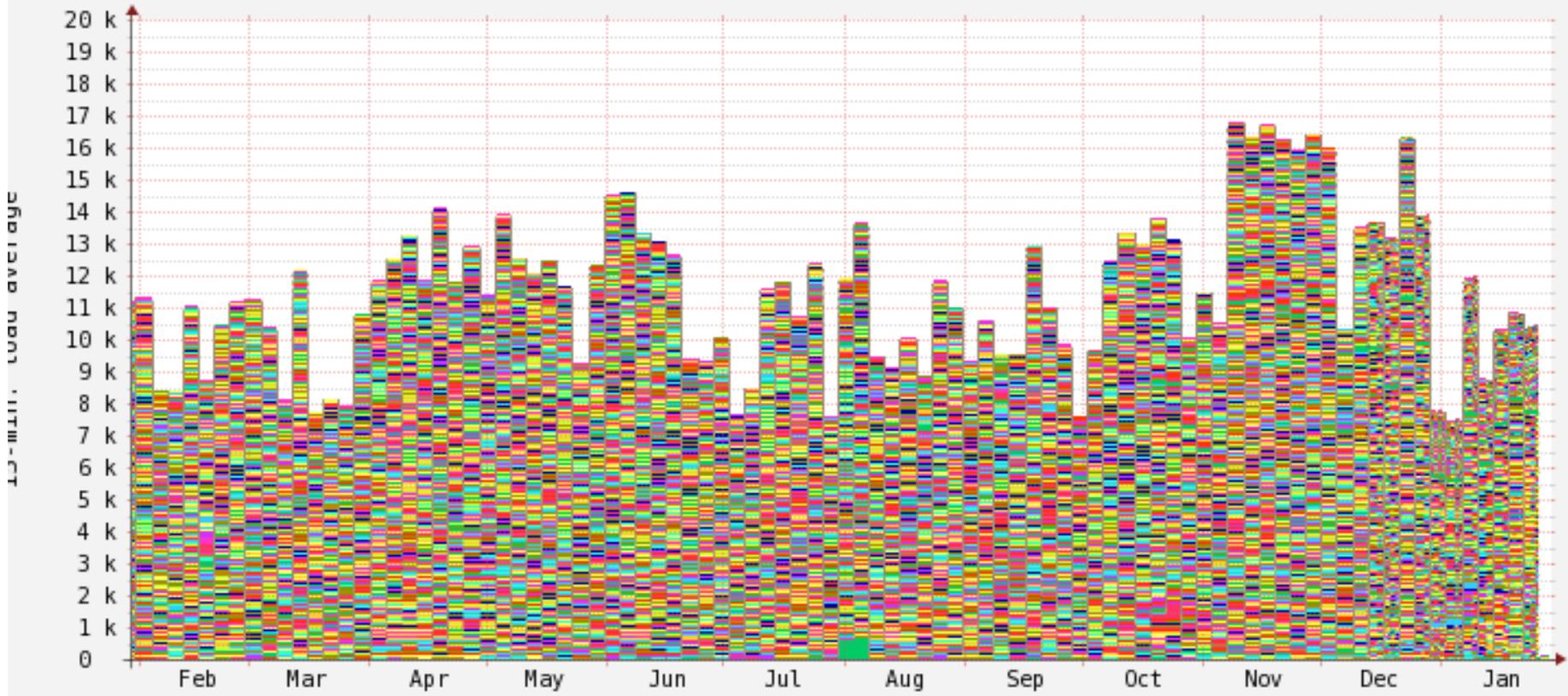
The next few years will be challenging, with new experiments coming online, new processor technologies becoming important, and other changes. We live in interesting times!

FEF combined load average last year



Cumulative load on FEF-managed servers

FEF combined load average last year



Cumulative load on FEF-managed servers

Brian McKittrick

Brian McKittrick

- Service Level Manager
- ServiceNow Implementation
- Cultural shift in the way the lab does IT/business
 - Provide Customer organizations more transparency into computing work
 - Service Owners and Providers have increased service visibility
 - Process Owners now have a vehicle for process operations and growth
 - Customers have a one-stop-shop and have visibility into Computing Services
- Thanks to the entire sector
 - Senior Management, Service Owners, Service Providers; Service Management

Customer Survey - Overall Experience past 30 Days



SLA KPIs

	Least 7 days	Least 30 days	Least 12 months
Incident Response SLA	✓ 95.15%	✓ 96.30%	✓ 94.69%
Incident Resolution SLA	✓ 93.80%	✓ 92.69%	✓ 92.22%
Requested Item Response SLA	✗ 83.33%	✗ 88.73%	✗ 85.10%

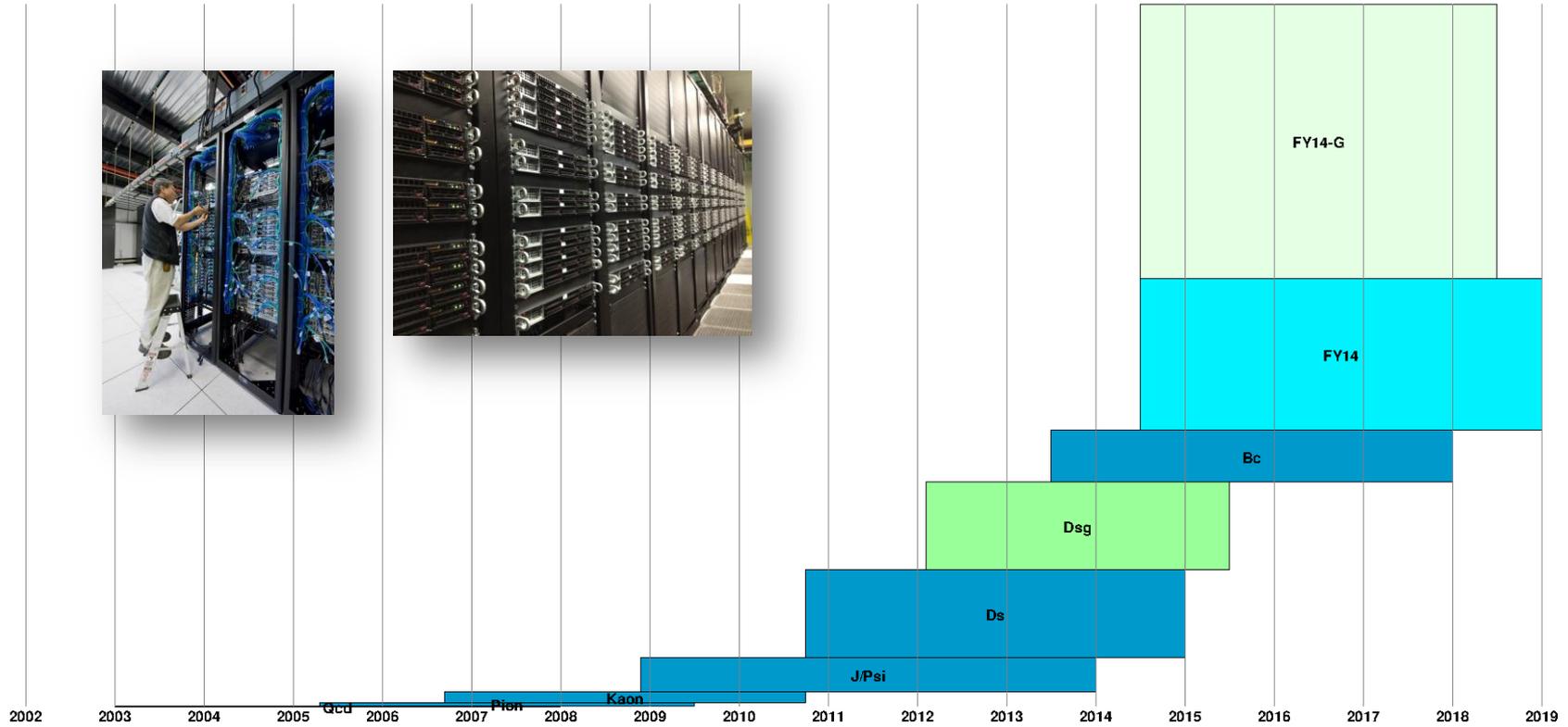
Going forward

- Continue to leverage the capabilities of our Service Management Application
- Push to automate where appropriate
- Improve the Service Management capabilities for supporting experiments
- Push to improve reporting and performance indicators to meet the labs needs.

Amitoj Singh

Amitoj Singh

- I am a member of the High Performance and Parallel Computing Facilities group.
- Since 2002 HPPC group has deployed and operated an evolving portfolio of machines. Delivered TFlops of deployed clusters has been following Moore's law predictions and at times exceeding such predictions by the use of latest and upcoming HPC technologies such as GPUs & Xeon Phi's
- Providing our stakeholders the "*best bang for their buck*".
- It's an honor working with my team which I compare to a well-oiled machine. A big thank you to Facilities, Networking, Mass Storage and numerous groups within Core and Scientific Computing that support the eco-system that drives the various machines we operate within our group.

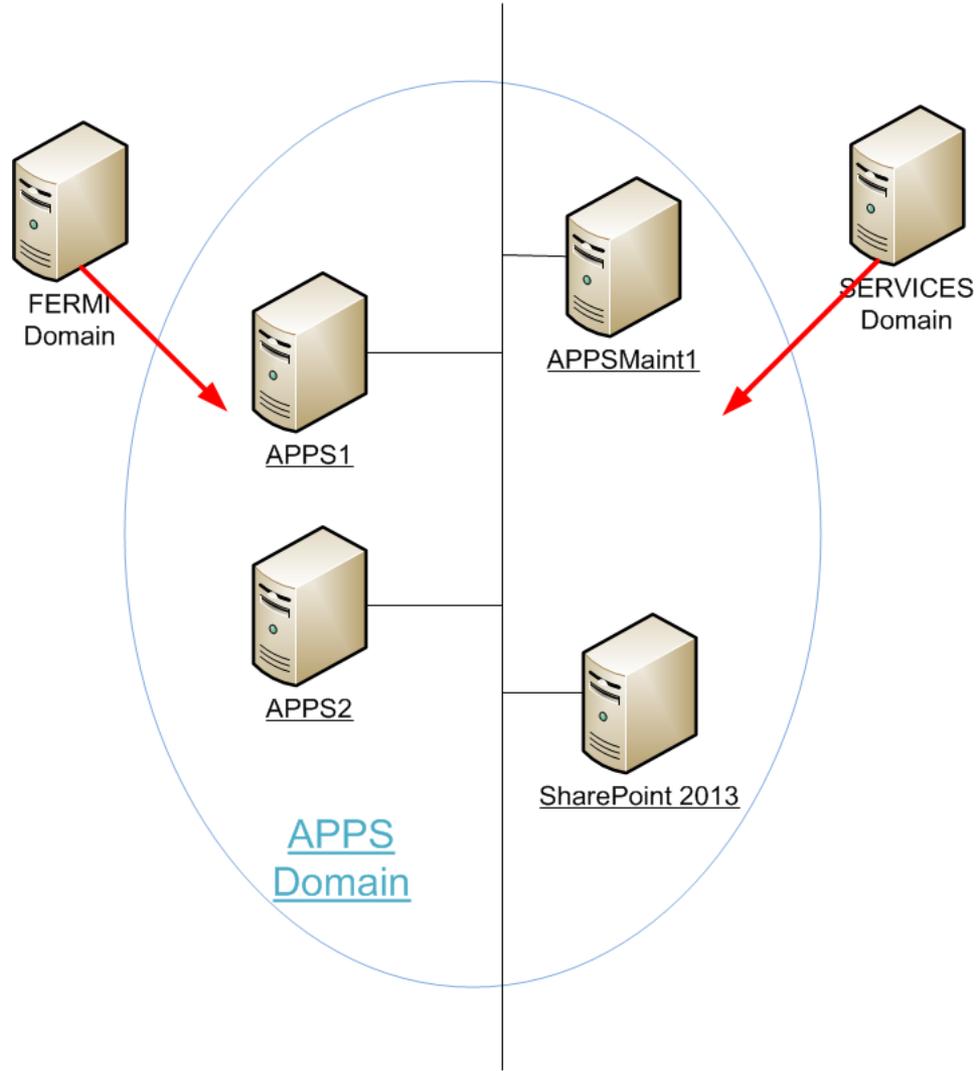


- The height of each rectangle is proportional to the computing capacity in TFlop/sec.

AI Lilianstrom

Al Lilianstrom

- Group Leader, Authentication Services
- Based on the recommendations of the Authentication Task Force a new Windows Domain was created to allow applications to have access from both the FERMI Windows Domain and the SERVICES LDAP Domain.
- This configuration should have a positive impact for SharePoint users
- Kevin Conway led the effort on this project along with Nathan Colson. Steve Schultz and Andy Huguenard from the Windows Server Team and Bob Sieloff from the Web Services Administration group were extremely helpful.



Mine Altunay

Mine Altunay

- Mine Altunay, OSG Security Officer and Fermilab Security Team
- OSG security team manages the identity and access control for OSG, and provides thousands of science users with secure access to grid resources. We recently made a significant change in grid job submission model. We allowed users to submit jobs without needing certificates.
- Certificate-free user jobs is a big improvement because it makes accessing the grid much easier and faster while keeping it secure. Enthusiastic feedback from the users. Now we can reach out to new users easier
- OSG security team, Kevin Hill and Anand Padmanabhan, worked hard on ensuring the security of the new job submission model.

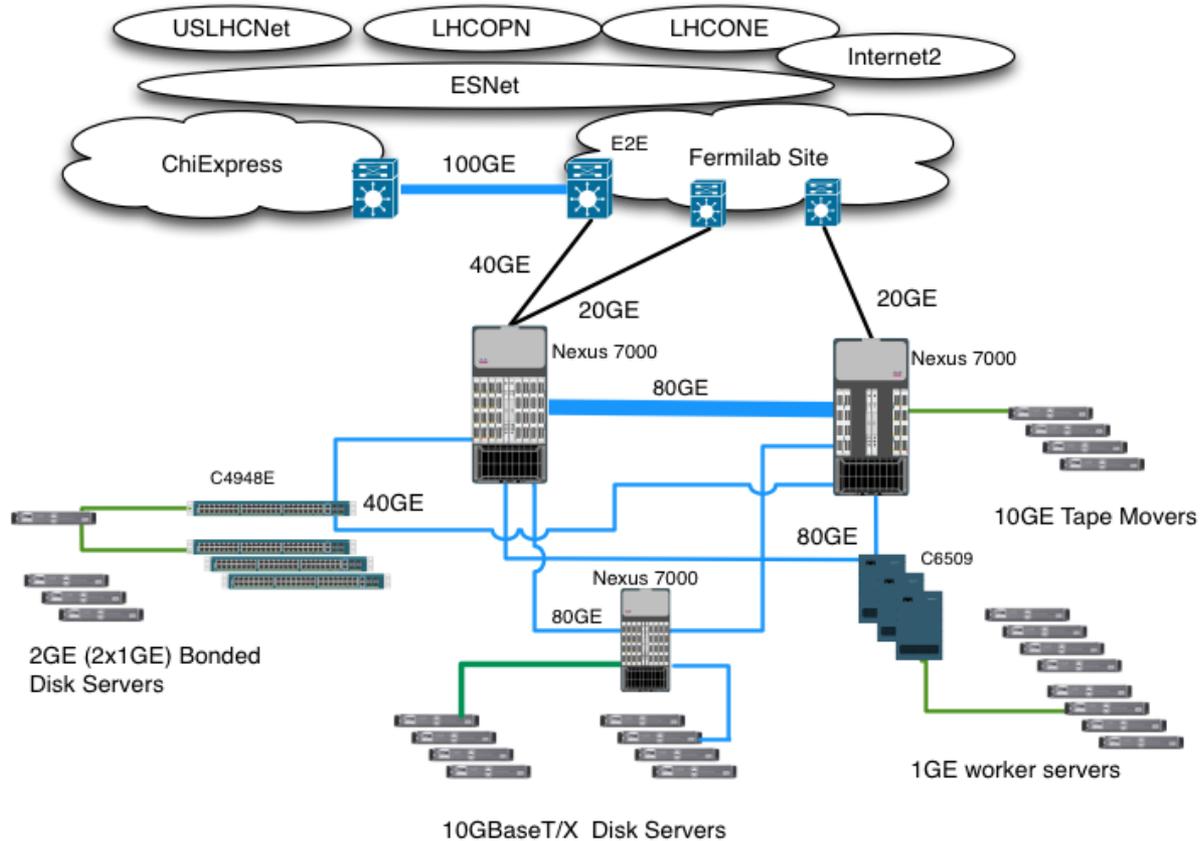
Going forward

- We want
 - OSG and other scientific resources to be easily accessible
 - Security to be an enabler, not a barrier.
 - To be in synch with technologies and changes outside of Fermilab.
 - Modify our policies based on changing user needs while keeping our lab secure.
 - Adopt and evolve with all our collaborators and users

Andrey Bobyshev

Andrey Bobyshev

- CCD/NCS/NS - Network Architect
- Setup high-performance network for USCMS-Tier1 Facility
 - Leading facility amongst 7 CMS facilities around the globe.
 - Upgrades performed non-disruptively.
- Network is a critical component of the LHC computing and we hoped that it helped aid in the discovery of the Higgs boson particle
- All Network Services crew made significant contribution to setup and operate network for CMS and other experiments



2014-01-19 \$AB

Ping Wang

Ping Wang

- Work in Web Services Administration Group / Enterprise Services Operations Department
- Administrating SharePoint is my primary responsibility.
- SharePoint comprises a multipurpose set of Web technologies backed by a common technical infrastructure. By default, SharePoint has a Microsoft Office-like interface, and it is closely integrated with the Office suite. SharePoint can be used to provide intranet portals, document & file management, collaboration, social networks, extranets, websites, enterprise search, and business intelligence. It also has system integration, process integration, and workflow automation capabilities.

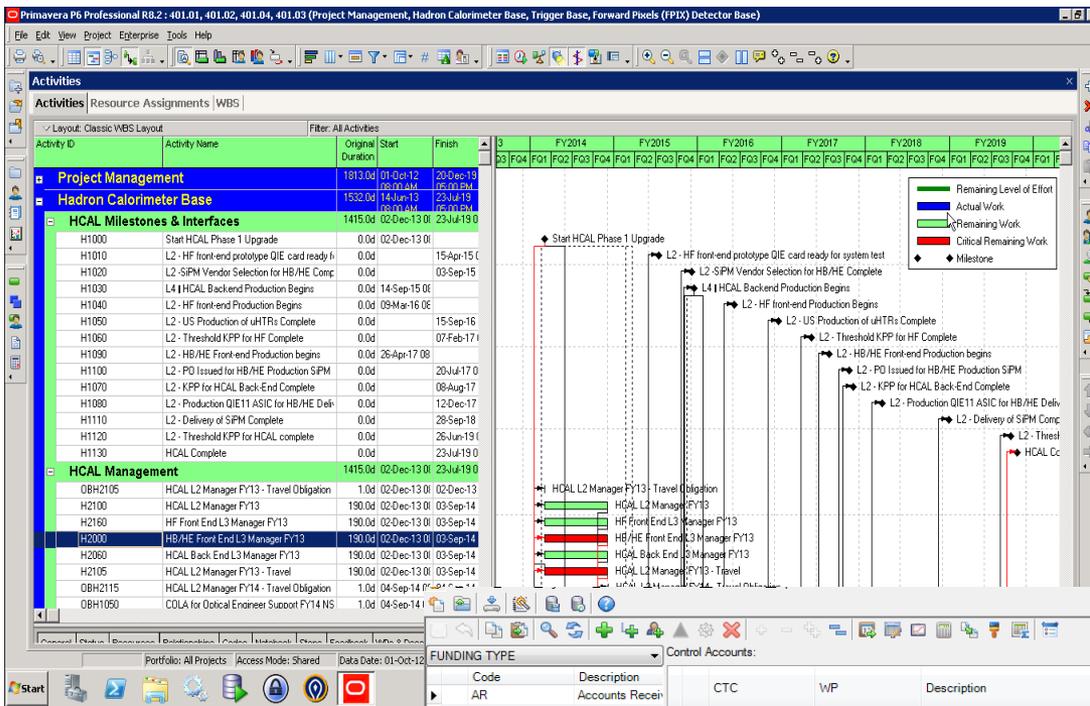
Going forward

- Currently there are about 500 unique visitors daily to access Fermilab SharePoint sites.
- We are running SharePoint 2010 and will upgrade to 2013 by the end of March this year. SharePoint Server 2013 includes a wide variety of improvements and new features. Discover how SharePoint Server gives you new ways to share your work, work with others, organize your projects and teams, and discover people and information.
- We work closely with our Windows Server Support Team, Database Service Team, Authentication Services Team, Storage and Virtual Services Team. Thank you all for your daily support to SharePoint farms.

Pawel Grawender

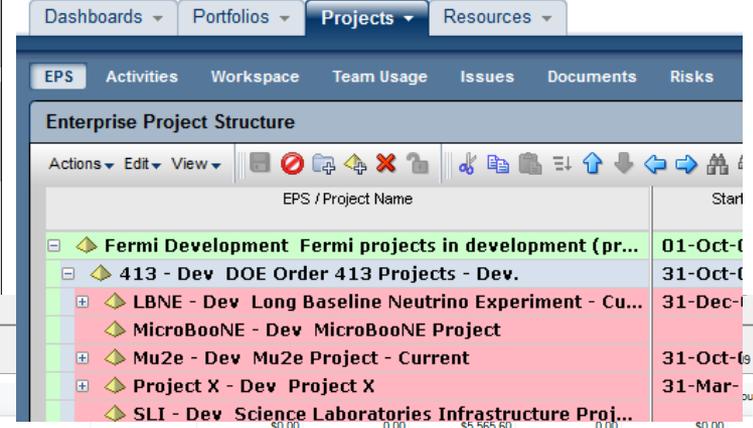
Pawel Grawender

- CS/CCD/INF – Business Infrastructure Applications Group
- Support Enterprise Project Management System (EPMS or PROMISE). Used by experiment projects/Office of Project Support Services (OPSS)
- **Accomplishment:**
 - Implemented Project Schedule and Earned Value Analysis solution (Oracle Primavera P6 and Deltek Cobra)
 - In production since January 2013; 20-40 daily users; no unscheduled downtimes
- **Significance / Value-add**
 - Improved reliability and availability of the solution
- **Thanks!**
 - Tim Doody, Kevin True, Sripada Joshi and Steve Schultz



Oracle Primavera P6 – schedule and resource loading of project activities

ORACLE Primavera P6



Deltak Cobra – cost processing and earned value analysis

FUNDING TYPE

Code	Description	CTC	WP	Description
AR	Accounts Receiv			
DOE		401.02.03.03	H2450	M&S for single chip tester
EC	Early Career Gr	401.02.03.03	H2460	Test on Bench
In Kind	In-Kind Contribu	401.02.03.03	H2470	Design/Fabrication of robot chip tester
NSF	National Science	401.02.03.03	H2480	Software development for single chip tester
State IL-Part 1	State of Illinois F	401.02.03.03	H2490	M&S for robot chip tester
State IL-Part 2	State of Illinois F	401.02.03.03	H2500	Packaging of prototype QIE10 ASIC for HF
WFO	Work for Others	401.02.03.03	H2510	QC of Prototype
		401.02.03.03	H2520	Radiation hardness testing for prototype QIE (M&S)
		401.02.03.03	H2530	Longevity testing of prototype QIE10 ASIC for HF (

Resource Assignment:

Resource	Description	Class	Class Description	Result	Units	TOTAL	30APR2013	31MAY2013	30JUN2013	31JUL2013	31AUG2013	30SEP2013
FNPD_ELEC_TECH	Electrical Technician	CB	Current Budget (BCW)	Percent		100.00	16.67	16.67	16.67	16.67	16.67	16.67
FNPD_ENGRNGR_PHYST	Engineering Physicist	CB	Current Budget (BCW)	HOURS	HOURS	160.00	26.67	26.67	26.67	26.67	26.67	26.67
FNPD_ELEC_TECH	Electrical Technician	CL	Contingency - Labor	FTEM	HEADS	1.07	0.17	0.17	0.19	0.17	0.17	0.19
FNPD_ENGRNGR_PHYST	Engineering Physicist	CL	Contingency - Labor	FTEY	HEADS	0.09	0.02	0.02	0.02	0.02	0.02	0.02
				DIRECT	\$	4,897.60	816.27	816.27	816.27	816.27	816.27	816.27
				ESCA	\$	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				FRINGE	\$	2,988.03	498.00	498.00	498.00	498.00	498.00	498.00
				OVERHEAD	\$	5,777.01	962.83	962.83	962.83	962.83	962.83	962.83
				Total Currency		13,662.64	2,277.11	2,277.11	2,277.11	2,277.11	2,277.11	2,277.11

Going forward

- **Lessons Learned**
 - Microsoft SQL vs. Oracle as a backend database
 - Offer more training, more frequently
- **Future Initiative – PROMISE Phase 2**
 - Implement an Electronic CAM notebook
 - Improve project collaboration capabilities (e.g., change management, documents, issue tracking, lessons learned)
 - Enable Primavera P6 project status updates by Control Account Managers (CAM)

Penelope Constanta

Penelope Constanta

- Work in CCD / INF / Business Infrastructure Applications
- Installation/configuration of CERN's open source software: **invenio as indico's search engine** (installed Jan 11, 2014).
- indico is a web based event organization system as well as an archive of event metadata and related documents.
- Why invenio and not google or bing or ...?
 - indico has public and private events. invenio respects privacy
 - indico events have uploaded files. invenio indexes them
 - invenio returned results are categorized: events/contributions
 - invenio search engine is designed for bibliographic data
- Many thanks to Mike Woods who helped with the linux system and answered my many questions, as well as Maurine Mihalek and Steven Kovich

Click to search inside SciBooNE

SciBooNE x

Advanced options

Search in ▾

Search for ▾

Start Date

End Date

Search

Warning: since you are not logged in, only results from public events will appear.

Search powered by 

[Show advanced options](#)

Hits: 870

-

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MAP Monthly Status: Systems Tests
2013-12-20 13:00:00 (CST)

[Event details](#)

Logo Test CLONE
2013-12-20 08:00:00 (CST)

[Event details](#)

test conf
2013-11-28 08:00:00 (WET)

[Event details](#)

Tammy Whited

Tammy Whited

- Service Manager, Service Management Head in OCIO
- Implementation and management of the Service Management System started in 2006 and came to fruition in 2010 and continuing to improve.
- Provides consistent practices for managing Computing Sector Services.
 - ISO20000 provides Contractor Assurance System assurance were are doing what we say we are doing.
 - We have capabilities that others outside of Fermilab use or may want to use. Our program provides assurance that we operate quality services that are operated efficiently and cost effectively.
- Many people rolled up their sleeves and made this happen
 - Vicky had the vision
 - Service Owners/Providers
 - Management Supported
 - Process Owners



Fermilab IT Service Management

<https://sharepoint.fnal.gov/cd/sites/sm/SitePages/Home.aspx>

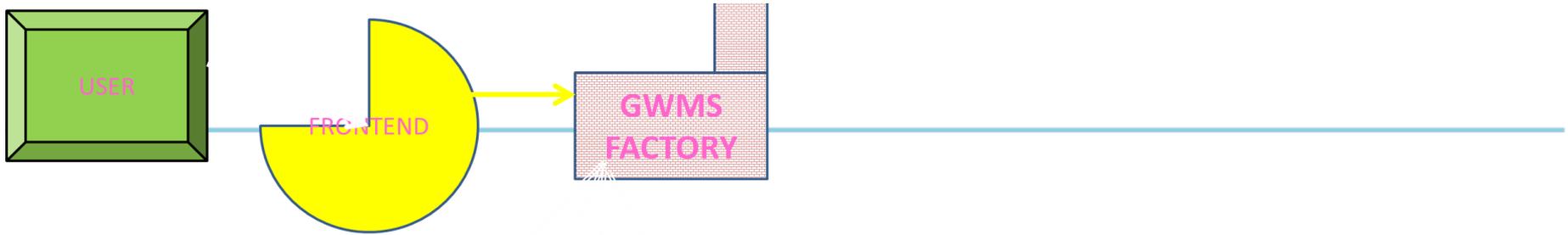
Going forward

- Continue to onboard services to Service Management processes.
- Maintain and improve Service Management System
- Extend additional training to service owners and providers

Steve Timm

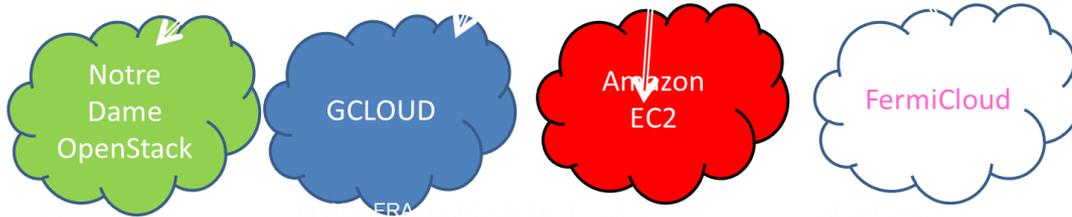
Steven Timm

- Key Problem Grid and Cloud Services is solving:
 - Experiments are resource limited
 - Provide portfolio of solutions to access external resources
 - Grid, leadership-class HPC, **commercial and science clouds.**
- Accomplishment: Successful scale tests for NOvA on Amazon AWS and FermiCloud at O(100) concurrent VMs.
 - Average completion time and reliability comparable to off-site OSG site (see table on visuals).
 - Collaborative work with NOvA and SCD (P. Mhashilkar, J. Boyd, T. Levshina, H. Kim, G. Bernabeu, et al.)



CLOUD
BURSTING
VIA GWMS

Paper
accepted
P. Mhashilkar
et al, Cloud
Bursting with
GlideinWMS



Site	Failed (jobs)	RAM (GB)	Wall (min) Avg	Wall (min) min/max	Total (hr)	Trans (GB)	Cost
UNL	0	2.16	28.95	22/44	3.05	8.3	
Fermi Cloud	3	2.05	38.03	20/72	3.3	8.2	
AWS	0	2.1	34.1	25/44	3.25	8.2	\$42

Going forward

- Next Steps:
 - Test spot pricing and 1000-VM scale plus actual users
- Cloud computing is highly collaborative project
 - Existing CRADA with KISTI
 - Discussions under way with ANL, BNL, LBNL and vendors
 - Need continuing management involvement to best utilize new funding opportunities and new external resources.

Rob Roser

Safety First

Days/Hours without DART
(Days away, restricted or transferred)

Current Record Days/Hours		
SCD	792	576,777
CCD	850	1,061,151

- Big numbers are great! But (IMPORTANT TAKE HOME MESSAGE) reporting your injuries as soon as possible is more important AND
- Reporting near misses (or “Whew! That was a close one” moment) is just as important!

My One Slide....

- About Me
- Nigel Story
- Priorities
 - Facilities need to operate such that people take them for granted – and keep finding efficiencies
 - Deliver on what we have promised
 - Will need to align with the lab's shifting priorities
 - Continue to raise our game and take on projects that are strategic and directional for the lab's mission
- Some Changes...
 - Quarterly all-hands meetings for a while
 - New format
 - Deputy CIO
 - Value

My best friends



THANK YOU VICKY!!!

