

# Computing Sector All hands meeting

Vicky White  
Associate Lab Director for  
Computing & CIO

July 10, 2013

# Why a Computing Sector all-hands?

- Last one was ~6 months ago – important to meet regularly as a group
- **Everyone in Computing Sector shares in supporting the mission of the lab** via a focus on how “Computing” (of all types, including engineering and software) is used
  - To support and improve business processes
  - To acquire, interpret, and get results from science data
  - To drive forward with new ideas
- All parts of the Computing Sector are dependent on other parts of the sector for their success

# Computing is everywhere

- The very high level goals and initiatives of the lab are captured in the (still developing) one page Lab Agenda at
  - <http://www.fnal.gov/directorate/IPPM>
- Please take a moment to look at it – with an eye to see how “Computing” underpins and slots in all over the place in science and lab operations.
- One really big initiative we are championing this year is replacing the lab’s old HR system (and business processes) using a modern cloud-based product – Workday.

# A time of change

- **New Director**
  - He will need to concentrate on the big issues of the future physics program (Rob will talk more on this)
- **Exciting times** – Accelerator turns back on, NOvA and MicroBooNE turn on, DES to take data, CMS upgrades, many projects really on a fast path.
- **We can help most by doing business as usual** and doing our best every day to move the lab forward, bring up the new experiments, publish results, provide excellent services.
- Lots of **personnel changes** in our sector

# New people since December 2012

Bob Sieloff

Alexei Strelchenko

David Lowell

Tim Skirvin

Christophe Bonnaud

Santo Campione

Olga Terlyga

Jeffery Blaha

Nathan Colson

Gregory Stonehocker

Scott Neill

Murthy Nunna

Geoffrey Cluts

Saba Sehrish

Sriram Sankaranarayanan

Lita Scott (July)

Don Watson (July)

Krishna Yarrapragava (July)

Chad Klopfenstein (July)

Sharan Kalwani  
(August)

Mikhail Zakharov  
(August)

4 Pending Offers

## WELCOME

# Our Organization(s) and Successes

- Many org. changes— since December 2012
  - It's the norm – and gives people opportunities to change/grow/learn new things
  - Agility in doing what the lab needs is key
  - **No plans** for more outsourcing or reductions
  - We always need people to learn new skills and adapt
- Providing **services and solutions and innovations is what we do** – taking a broad view of how all the pieces fit together.
- **We have had very many successes – THANKS to everyone – many many people share in every success.**

# 'Tis the Season

- For final purchases for current year budget (should be all done by now!)
- For Planning and Budget preparation – including community planning for Science (Rob will talk about).
- For Working safely (that's all year)
- For Performance reviews
- For our picnic – September 9, 2013

# Q&A

- I will take questions at the end and be happy to stay as long as anyone wants (if some people want to ask questions one-on-one rather than in public)
- But I would like to let **Jon, Amy and Rob** talk first
- At the next all hands (late October) we will hear primarily from **Tammy, Bill, Valena and Irwin** on what Office of CIO is up to.

Jon Bakken, Head

# **CORE COMPUTING DIVISION**

# Core Computing Division

## People are the key to CS success

- Everyone's job is important, we need the full suite of tasks to be accomplished in order to be successful
- We are all incredibly busy – **Thanks** to everyone for their dedication and great work!
- **All your work on all the past year's accomplishments is much appreciated**
- 10 new CCD staff since last CS All-Hands: Welcome!
  - R Sieloff, D Lowell, S Campione, J Blaha, O Terlyga, G Stonehocker, N Colson, S Neill, M Narsimha, G Cluts

## What is CCD working on?

- CCD FY14-17 Strategic Plan in DocDB - #5146
- Rest of my slides are focused on CCD current and near-term future projects

# Facilities

## GCC Cooling:

- Detailed GCC cooling engineering study: ~Complete
  - Condensers move to roof - use existing piping (no roof holes)
- Funds to proceed: GPP approved, applying now
- Construction starts this Fall, **Completion by Spring 2014**

## GCC cold aisle containment

- Adding top & doors to racks
- Increases separation between cool and warm air
- Allows CRACs to operate more efficiently

## WH5NW Data Center = Retired as of July 19

- Equipment moved to FCC and LCC
- Consolidation is a DOE core energy efficiency measure
- Space will be re-purposed to offices. (400-500 sq ft)

# Facilities

## Energy Saving Performance Contracts (ESPC)

- Fund capital investments with energy savings that allow for a return on investment in 2-5 years
- To accommodate changing room conditions, plan is to develop automated load balanced cooling:
  - Install variable speed fans in the CRAC units
  - Upgrade to CRAC smart controller units

## Building 7 FCC1 fountain window enclosed offices

- Construction starts in July, completed in September
- Hope to add coffee-break lounge and gathering area

## Studying FCC domestic water issue

- Will have to replace main pipe (~\$150-250K)

# Networking

## 100 Gbit Networking

- Scientific 100 Gbit/sec router is installed and tested
  - Test Rate = 93-99 Gbit/sec, Meant for scientific data traffic
- Network Research 100 Gbit/sec router installed
  - Meant for investigating ways to optimize high speed traffic

## IARC, XOC, $\mu$ Campus, EOC & end-of-life fiber/equip

- New or upgraded centers that require substantial networking infrastructure, design, purchase/install and ongoing operations.

## WH wireless upgrade project

- Vendor selection based on pilot project stability, performance and overall costs. PO being created now

## Guest Wireless

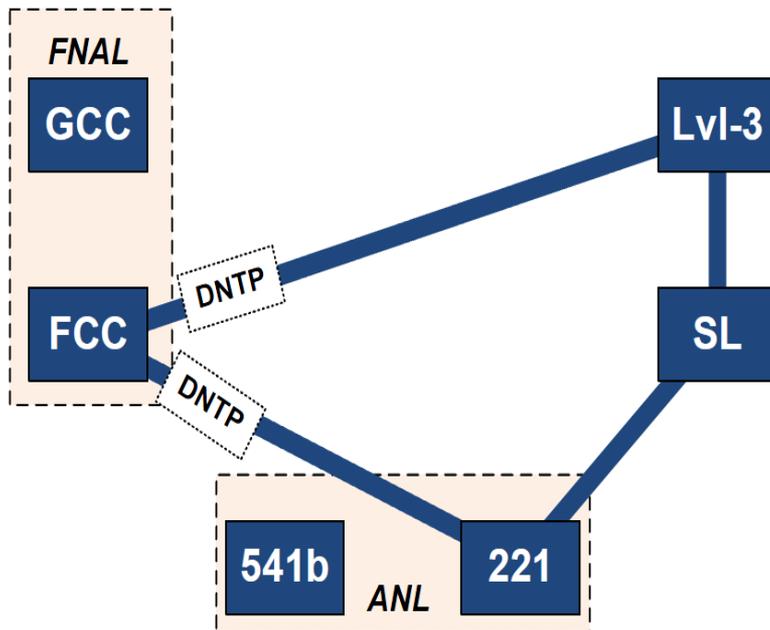
- Deployed and being tested.
- Improves security by segregating visitors on special network

# Networking

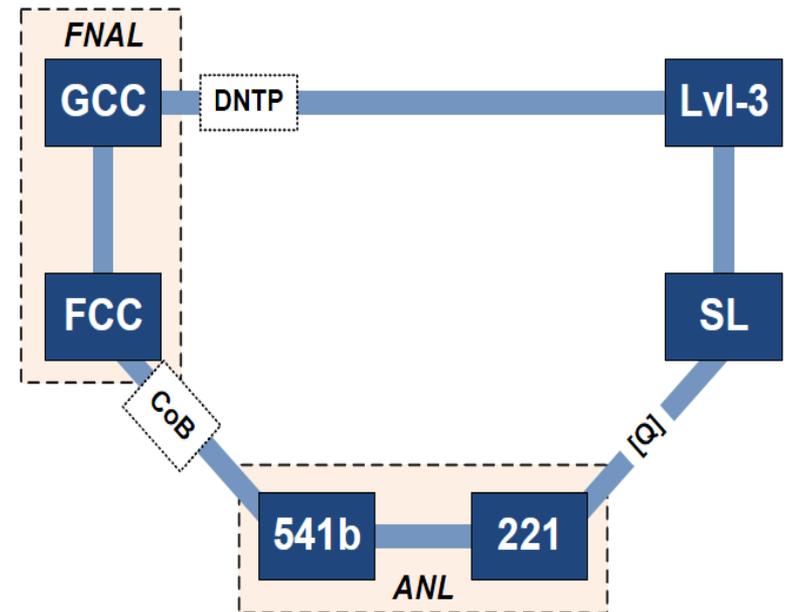
**ChiExpress** – Offsite WAN connections will be provided by 100 Gb waves

- GCC link goes to DuPage Tech Park and on to Lvl3
- FCC link goes over **geographically disperse fiber** goes to ANL on to SL (negotiating with City of Batavia)

Current ChiExpress Ring Configuration



Target ChiExpress Ring Configuration



# Unified Communications

## Listserv upgrade – in progress

- Supporting ~15 years of archives and 4000+ lists
  - Planning on migrating them all to a upgraded system
- Upgraded version will have better performance due to multi-threading, and a much improved admin GUI

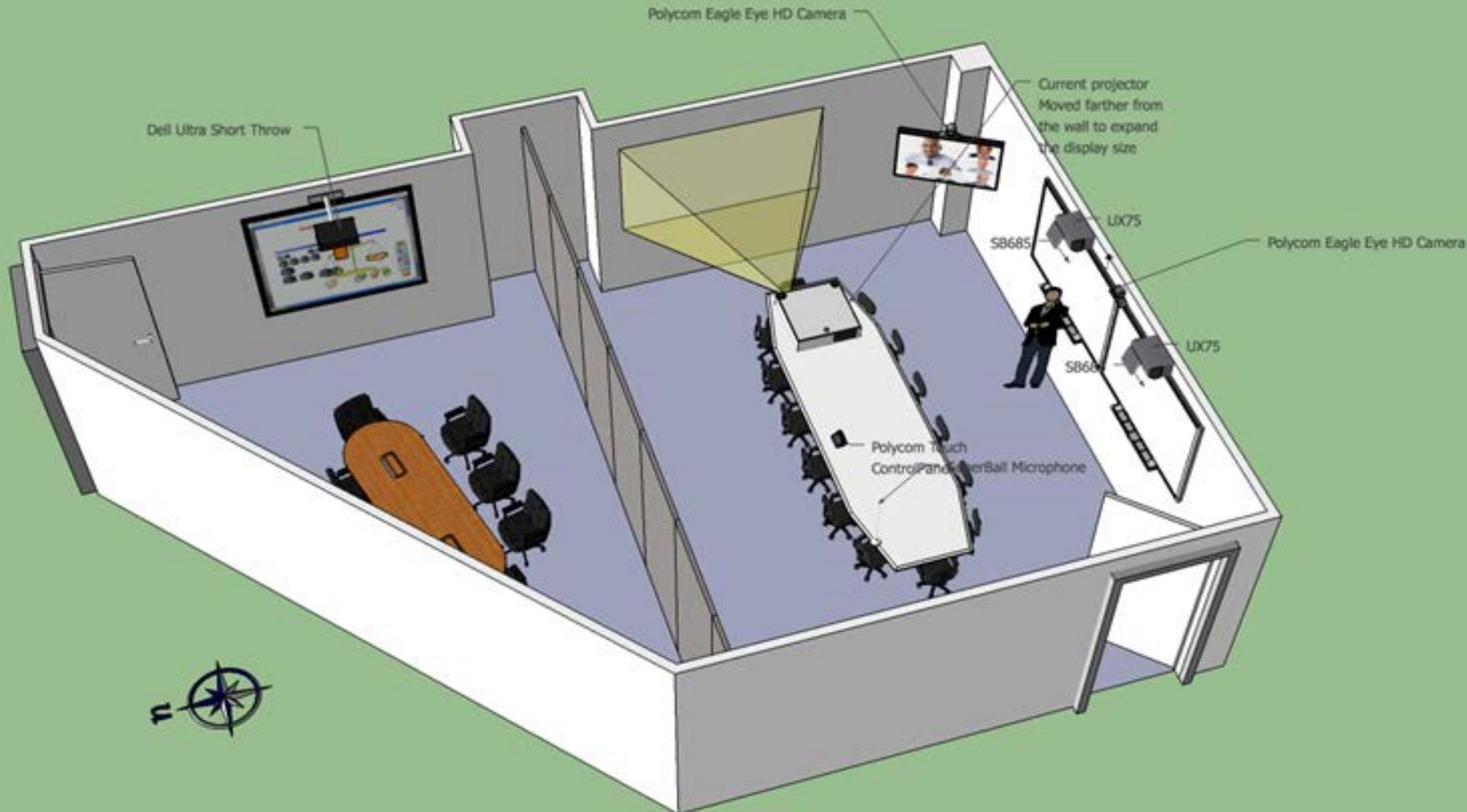
## Unified Communications

- Still researching best way to unify calendaring, email, voicemail, audio/video conferencing, IM, presence
- New tool must be compatible with legacy systems and leverage other common systems, like Skype, ReadyTalk

# Unified Communications

FCC2 Conference Room Upgrade pilot room for possible technologies

- Smart Boards, HD cameras, short throw projectors, etc.



# Security

## Password Reset Tool

- Expanding service to allow for password resets from offsite (without VPN) and also for special (user-admin) accounts

## Two-Factor Authentication:

- Evaluating SecurID – looks promising and will make authentication environment more secure and easier to manage
- SecurID also allows for secure (and temporary) elevated privileges

## Identity Management:

- Quest product – onsite evaluation later this month – also provides for streamlined Active Directory management

## Implementing antivirus scanning to the web proxy service

## Virtualization – expansion continues

- Adding 1 TB of ram to accommodate FY14 growth
- Adding 3 new hosts – expect 40:1 consolidation
- High end graphics
- Greater network redundancy

## CrashPlan Pro for desktop backups

- Onsite redundant/dual repositories
- Data duplication
- Self-service backup/recovery

# Core IT: Managed Printing Service

Deploy a site wide optimized modern print service at reduced costs consistent with industry best practices

- CCD will purchase all printers and execute a MPS

**Why?** Because the current state is simply not reasonable

- **Time consuming and difficult to manage:**
  - 662 printers, utilization 30% (90% utilization industry standard)
  - 283 different models (15 models industry standard for FNAL)
  - 30% are standalone (10% standalone industry standard)
- **Printing inefficiently and wasting money:**
  - 691K pages printed each month – almost none in draft mode
  - 50% color (5% industry standard, 9.5¢/color, 1.4¢/BW)
- **Old printers are energy inefficient and lack modern features such as secure printing and mobile printing.**
  - Average printer age is 6 yrs, many outliers at 20+ yrs
- **No central monitoring or servicing**
  - Many FTEs perform care of feeding of printers

# Information Systems

- HR project** – major initiative, as described previously
- Immediate goal is to be ready to do online benefits enrollment in November (means being ready in October)

- Migrate Lotus Domino** services to strategic platforms
- 18 projects, 5 completed. Finish by March 2014
  - Major effort required for PTA, Bid publication, & Travel

## **Kronos**

- 3 month upgrade starting in mid January
- Adding mobility features

## **Sunflower**

- 6 month upgrade starting in mid April

# Information Systems

**NCIS/Tissue/FBI** - update scheduled for late summer

- Framework that allows for FNAL “open-campus” approach
- New design is supportable and extensible

**Node Registration v2** – Phase 1 update scheduled for late summer

- Modernized user interface
- Integrated with CMDB

**TeamCenter**

- Upgrading to latest rev
- Adding engineering requirements module
- On boarding to ISO20K

**SharePoint**

- NewsCenter – pilot underway
- PFX Documents and DocDB
- Upgrade to 2013 version. Re-architect infrastructure

**Invenio search engine in InDiCo**

# From our Senior Safety Officer

- Amy Pavnica, Office of the CIO
  - Serving the entire Computing Sector

# Road Rules



# Driving at Fermilab



- No cell phone use! (FESHM 9010)
- Speed Limit – 40 mph, unless posted otherwise
  - Road B – 30 mph
  - Village – 25 mph
  - IARC – 25 mph
  - Conditions might demand a slower speed
- Rolling stops(oxymoron?)



# IARC Construction



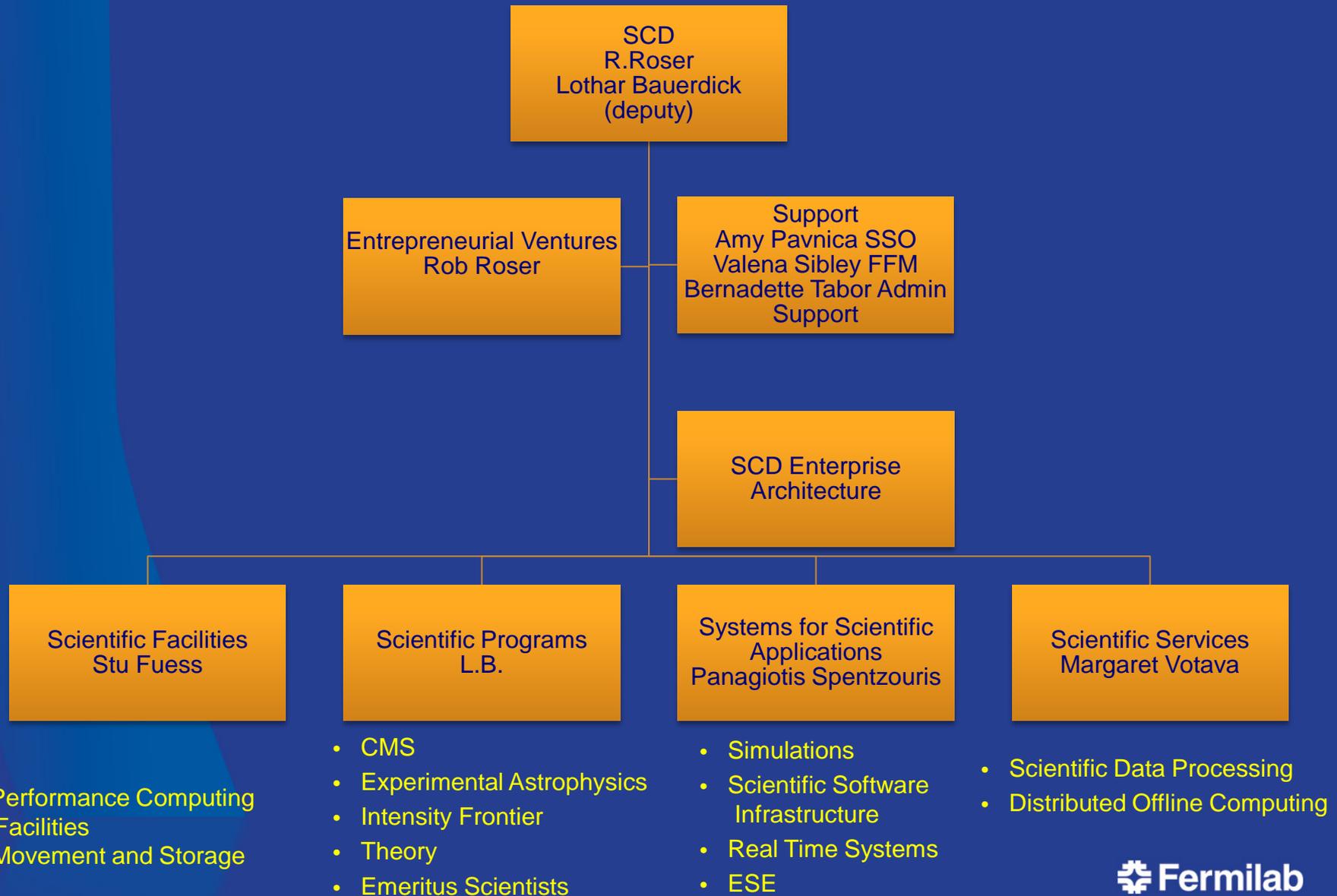
**Where not to ride or walk!**

All Hands  
Rob Roser, Head  
Scientific Computing Division  
July 2013

## Many Success stories

- CMS tier 1 consistently the best in performance worldwide
- OSG leadership
- Leadership of US Lattice QCD Project and outstanding customer satisfaction of our facility
- Other scientific enterprises (ice cube) inquiring about our storage solutions
- CERN now using as its accelerator simulation package SYNERGIA – developed here
- DAQ Real Time software and science frameworks well integrated into Intensity Frontier experiments
- Numerous engineering/R&D efforts being carried out, some lie outside what is traditionally HEP technologies
- Many many others...

# New SCD Org Chart – high level



# ITIL Service Lifecycle

- Taking a page from Core Computing
- Want to adapt this methodology in SCD
- Define our scope of work within a set of “service offerings”
- Starting with change control, incident, problem
- Have a few early adapters who will be on-boarded this year
- Process that will take several years to complete but will provide tremendous value as we go forward

# SCD Strategy Document

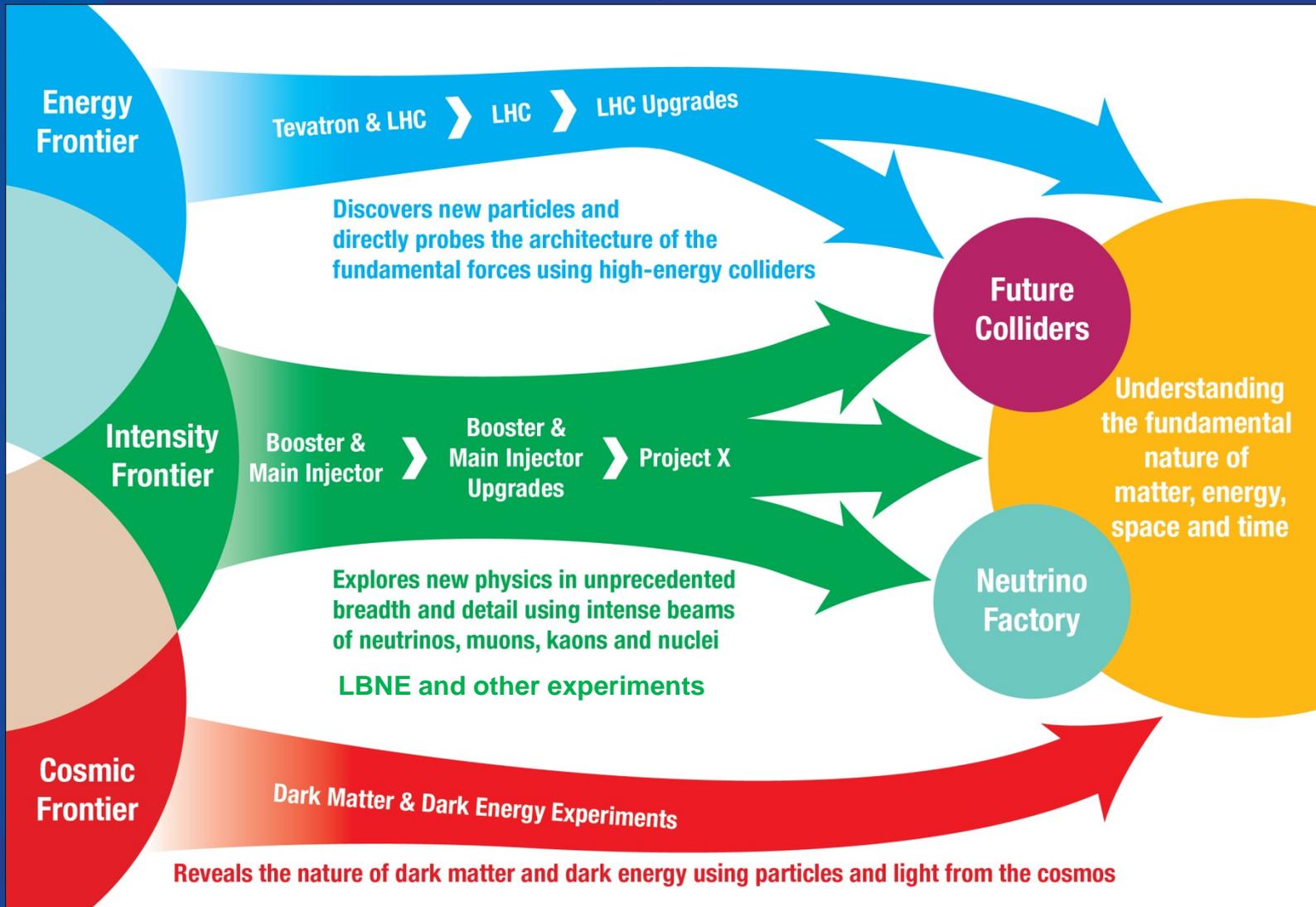
- Now Available in DocDB
- Will serve to guide dept heads in setting their plans for 2014 and beyond
- Several new initiatives
  - Data Archive Facility for Scientific Data
  - Data Processing as a Service
  - Computational Physics Analysis Facility
- Pilot project with Tech Transfer office to engage industry
- Position ourselves for changing paradigm of computing where the lines start to blur between High Throughput and High Performance Computing

## “Snowmass Process”

- Designed to look broadly at the field and identify the scientific opportunities of the next decade
- Started a year ago – culminating this August in Minneapolis
- Sponsored by DPF
- Follow up will be a P5 – a group of people that will set priorities based on Snowmass input and several funding scenarios – to be given
- Key Fermilab Deliverable has been both a 6 page plan outlining Fermilab’s plans  
<https://indico.fnal.gov/materialDisplay.py?materialId=10&confId=6973>

# Science and Facility Roadmap

Short- and medium-term efforts at the three frontiers fit together to support long-term strategy for science and facilities.



# Nigel Lockyer – (circa 2001)

