

# MINERVA OVERVIEW V2

4/8/14

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# Experiment has been running since 2009

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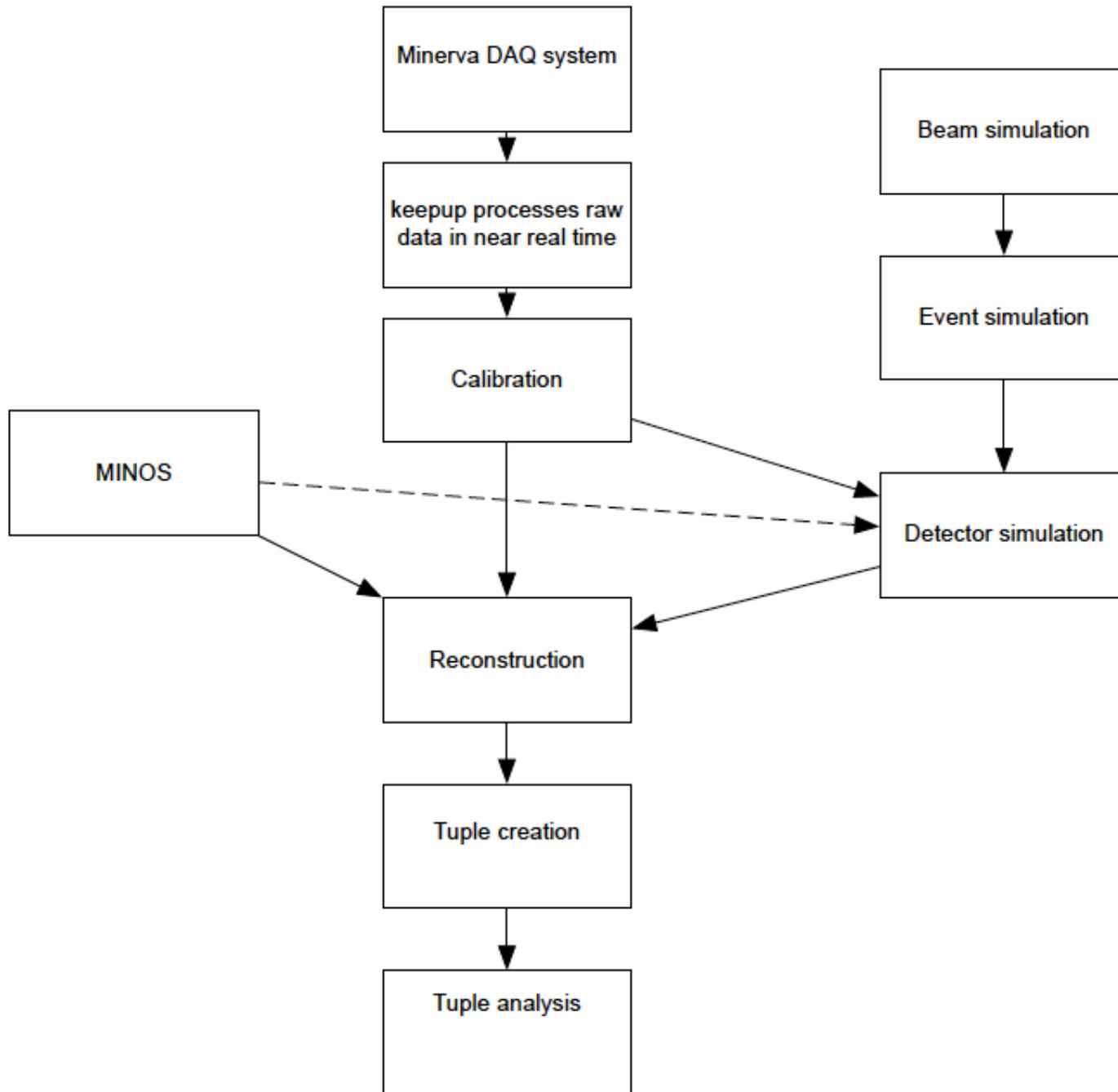
## □ Evolution:

- Sam -> samweb
- Homebrew tar file backup -> SFA
- Bluearc -> dcache
- COOL db -> UNCOOL db
- Minervajobsub -> our python tools + jobsub

# Inputs

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- Minerva experiment writes binary data to a shared disk
- March 1, 2014 as an example
  - 72 files
  - ~700 “spills/file” = 20 minutes of data
  - 400 MB/file
- These must be backed up
- And reformatted !



# Requirements for Data

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- Needs to be safe or reproducible
  - ▣ Raw data must be backed up quickly
  - ▣ Reconstruction must be either backed up or fully reproducible
  - ▣ Need to be able to understand what we did!
- Need to be able to find it!

# Look at the data flow table now...

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# Time scales

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- Raw data – catalog and backup in a couple days
- Preliminary processing (keepup) ~ 1 week
  - ▣ Data intensive – mainly automated
- Calibration - can take several months but done only once (or twice)
  - ▣ CPU, data and human intensive
- Reconstruction – iterative, done every 6-12 months as algorithms and simulations evolve
  - ▣ CPU and data intensive
- Analysis – very iterative, mainly driven by user/physics group needs
  - ▣ Data and person intensive
- Other – beam flux studies etc...

# Roles

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- minervadat does the preliminary processing
- minervacal does the calibration
- minervapro does the reconstruction
- minervasam does the nitty gritty of data storage
- minervaana does the analysis
  
- First 4 are in the minervaofficial group
- Users are in the e938 group

# Data file types

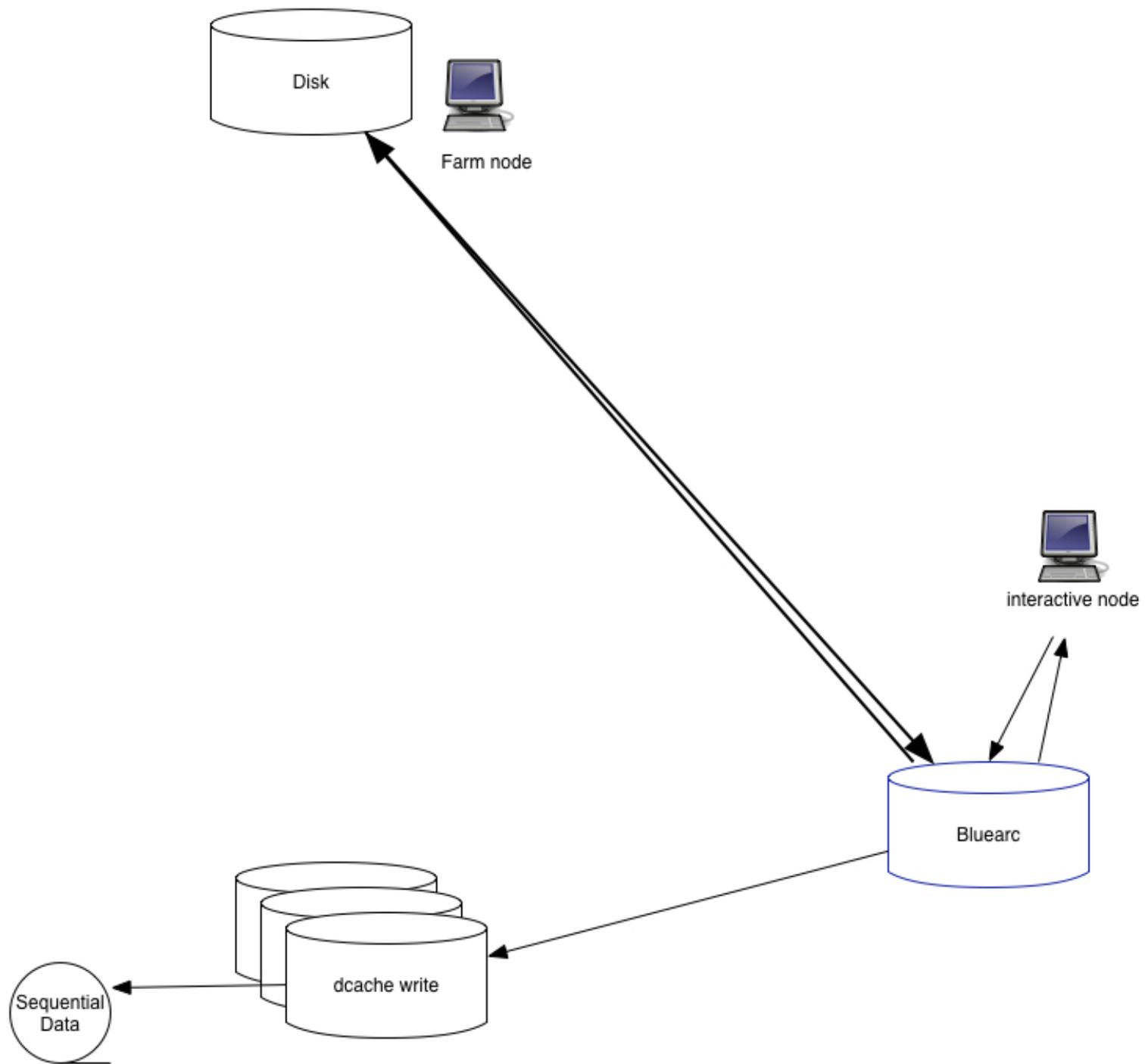
9

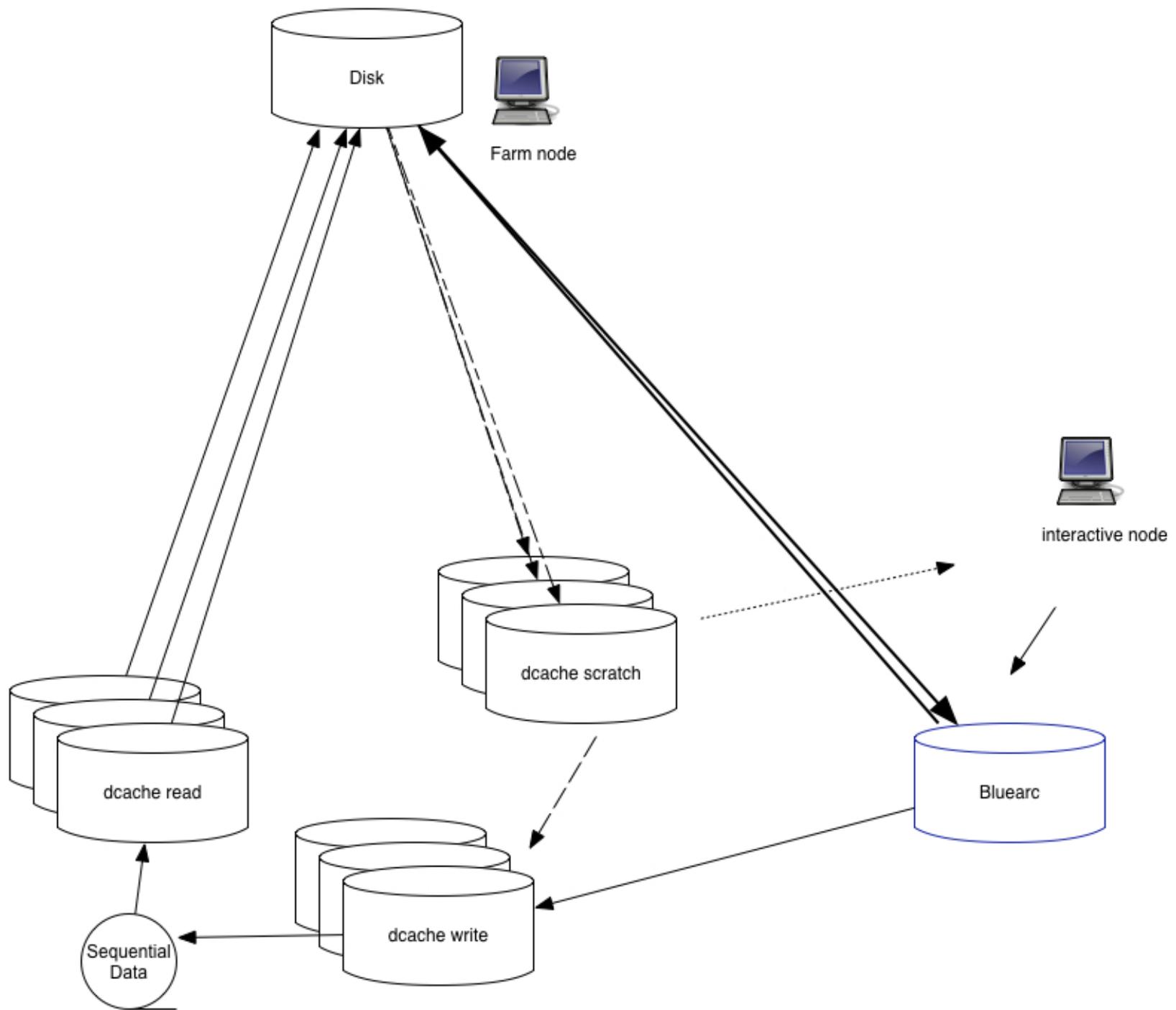
- ❑ Binary raw files
- ❑ Root/POOL output
- ❑ Histogram output
- ❑ MINOS files
- ❑ GENIE files
- ❑ Logfiles
- ❑ Option files
- ❑ Metadata files
- ❑ Gain/pedestal tables

# How we store data files

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- ❑ Create file on grid
- ❑ Hopefully create metadata on grid
- ❑ Copy back to temporary area on bluearc
- ❑ Decide its ok and/or use as intermediate step in processing chain
- ❑ Declare to sam, declare disk location
- ❑ Link to FTS
- ❑ FTS moves to dcache/tape
- ❑ Wait for valid enstore
- ❑ Remove from disk





# Failure/delay modes

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- ❑ Grid job fails to copy file back
- ❑ Grid job retries and overwrites cataloged file
- ❑ Metadata not created properly
- ❑ Bluearc fills
- ❑ FTS backups
- ❑ cpn lock backups
- ❑ Grid stoppages (glidein shortages?)

# Status

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- All production phases write metadata but some in old `sam` format. Keepup has been fully upgraded to samweb
- All production phases write output to bluearc first but then into pnfs using FTS, sooner or later
- User analysis can now use sam catalog and pnfs for input
- Working on making production scripts get info from sam catalog and files from pnfs
- Working on getting productions scripts to write to dcache instead of bluearc
  - ▣ Dcache FTS dropbox in testing – monitoring?
- Testing/reliability/user uptake remain an issue.

# Global issues

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- Documentation
  - ▣ Minerva – this review helped a lot!
  - ▣ FNAL Products
    - Uniform location for pointers?
    - Minimum standard for documentation?
  - ▣ How they work together
- Monitoring logs and web tools
  - ▣ FTS
  - ▣ Batch
  - ▣ Sam delivery
- Multiple layers of products/experts