

# Status Report for April 15, 2009

[Previous Month](#) [Next Month](#)

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## Summary of progress

Work activity; whether it reached associated milestones.

### NCSA

**Bill (submitted on 4/20/2009)**

From MS Project Waterfall

	description	start	end	slice	completion	comments
27/569	Maintain automated testing structure	12/1/08	6/16/09	10%	(ongoing)	All my systems are functioning perfectly, Dave
28/41	(BB) support distributable VMs for new developers	8/11/08	7/9/09	5%	50%	Waiting for Ray to install stack on latest VMs (I need an hour warning or so beforehand, to start the VMs from a clean state)
34/517	test that the trunk always works	3/9/09	3/20/09	50%	100%	Currently functioning
35/74	configure test sytem for automated V&V	9/4/08	2/4/09	45%	50%	Robyn and I are both working on it; me mostly the sysadmin and software install stuff; she the actual test configuration

#### Unlisted Assignments

- Working on simple version of system to map data to slice workers in pex\_harness.
- Still trying to finish security document -- plan to give finished draft to Jeff before all-hands

**David (submitted on 4/xx/2009)**

2/194: DC3 coordination Start: 5/1/08; End 3/20/09; Assigned Gehrig David[20%] % Done: 85%

3/467: Infrastructure maintenance Start: 7/14/08; End 3/20/09; Assigned Gehrig David[20%] % Done: 80%

20/39: update software distribution server Start: 6/2/08; End 1/30/09; Assigned Gehrig David[61%],Plante Ray[50%] % Done: 88%

22/60: convert to new package build mechanism (remove dependency on pacman) Start: 6/16/08; End 5/5/09; Assigned Gehrig David[80%] % Done: 90%

39/46: build warnings if coding standards check fails Start: 7/14/08; End 5/7/09; Assigned Gehrig David[80%] % Done: 10%

40/47: build warnings if unittest doesn't satisfy DC3 coverage requirement Start: 7/16/08; End 5/12/09; Assigned Gehrig David[80%] % Done: 10%

42/49: build failure if unittest doesn't satisfy DC3 coverage requirement Start: 7/21/08; End 5/13/09; Assigned Gehrig David[80%] % Done: 10%

43/50: build failure if coding standards check fails Start: 7/23/08; End 5/18/09; Assigned Gehrig David[80%] % Done: 10%

45/52: any failures cause automatic 'Failed Nightly Build' ticket at high priority Start: 7/28/08; End 5/25/09; Assigned Gehrig David[80%] % Done: 10%

112/573: Prepare and stage test data Start: 3/23/09; End 3/23/09; Assigned Gehrig David % Done: 0%

120/579: Stage test data to software stack Start: 3/12/09; End 3/12/09; Assigned Gehrig David % Done: 0%

123/583: Stage data to Abe, UW Start: 3/16/09; End 3/17/09; Assigned Gehrig David % Done: 0%

### **Greg (submitted on 4/28/2009)**

91/99: identify neighbors of a Slice: known in advance, or dynamic? Start: 5/27/08; End 10/15/09; Assigned Daues Greg[50%] % Done: 2%

95/106: Work to support communication of general serializable types over MPI Start: 11/20/08; End 2/5/09; Assigned Daues Greg[50%] % Done: 75%

96/107: Develop mechanisms for identifying/accessing Start: 2/5/09; End 3/5/09; Assigned Daues Greg[50%] % Done: 0%

- Attended NCSA Accelerator Conference on application of GPUs and Cell technology based systems to the areas of the geosciences, chemistry and astronomy.
- Minor pex\_harness modifications and testing of examples in support of DC3a 'production' runs
- Worked on installation and testing of orchestration infrastructure on an LSST cluster node to enable the launching of DC3a pipelines to other collaboration clusters (NCSA Abe, UW). This includes Globus and Condor installation and testing. This level of software will operate beneath, in support of, the ctrl\_orca package.

### **Steve (submitted on 4/16/2009)**

Start: 5/27/08; End 5/4/09; Assigned Pietrowicz Steve[25%] % Done: 94%

104/112: implement an orchestration layer Start: 3/23/09; End 4/9/09; Assigned Pietrowicz Steve[50%] % Done: 100%

105/536: migrate DC2 functionality Start: 3/23/09; End 4/9/09; Assigned Pietrowicz Steve % Done: 100%

106/229: ""life-support"" services Start: 4/10/09; End 7/24/09; Assigned Pietrowicz Steve % Done: 0%

119/582: Stand up DC3 services Start: 3/12/09; End 3/13/09; Assigned Pietrowicz Steve,Becla Jacek % Done: 0%

124/537: Add Abe, UW support for orchestration layer Start: 3/18/09; End 3/24/09; Assigned Pietrowicz Steve[25%],Daues Greg[75%] % Done: 0%

- Additional post integration meeting changes to orchestration layer
- Working on setting up event monitor scripts for event logging, and DC3 timing w/Ray
- Fixed bugs within Orca
- Additional objects added to the Event Monitor, and adding better error messages/handling

**Ray (submitted on 3/18/2009)**

- Running integrated DC3a pipelines
- Developed `launchDC3a.py` to launch pipelines via `ctrl_orca` and send data events (#740). This also involved:
  - ◆ overhauling logging in `pex_harness` and `ctrl_orca` to provide uniform logging for event monitor
- Worked with Steve on integration of the event monitor to calculate performance measurements
- Worked with Freemon and Cribbs on hardware infrastructure reference design

Task	%Done*	Task Title	Comments
28/39	90%	update distribution server	little bit of clean up left
103/111	96%	fill out the design of the orchestration layer...	
111/572	100%	Stand up DC2 pipeline under DMS on cluster	
113/574	25%	Perform Timing Runs	
117/576	100%	Install software stack on cluster	
118/580	100%	Stand up DC3 Pipelines	
122/577	10%	Install software stack on Abe, UW	Some planning and testing underway
126/586	25%	DC3 Runs on NCSA Cluster	In progress
127/587	0%	DC3 Runs on UW Cluster	
128/588	0%	DC3 Runs on Abe	

**LSSTC**

**Robyn (submitted on 4/16/2009)**

Status	NL = Not Lead	NW = No work done		
Id	PM = Project Management Plan	DC = Data Challenge Plan	AP = Applications Plan	MW = Middleware Plan

.Status.	Id	.....Title.....	.....Comment.....
NL NW	PM50	...Update SysML/UML models and prepare Technical Documents	
98%	PM51	.....Complete LSST Software Development Plan	Waiting on final review
NL NW	PM60	...Complete DM Inputs to System Level Requirements and Design	
NL NW	PM67	.....Create document templates, recipes, tools for Enterprise Architect output/gen	as needed, prepared various EA Report templates

Steve (submitted on 4/16/2009)

NL NW	PM68	...Complete Data Management Reference Design	
70%	PM69	.....Clean up DC3 UML Model, Update LSST Reference Design UML Model	Merged old DC3 EA Models into restructured Model.
70%	PM70	.....Update EA and UML Modeling Conventions Document for Activity Diagrams	Wording OK'ed by UML Gurus
	PM75	...Create draft DM Integration Test Plan	
10%	PM77	.....Generate test cases	Exercising prototype TestGen using DC3 model
NL NW	PM86	Complete DM Inputs to Risk Management, System Integration, Commissioning, and Operations Plans	
0%	PM87	...Update DMS Integration and Test Plan	
0%	PM90	...Contribute DM sections to LSST Risk Management, Commissioning, I&T, and Operations Plans	
	DC56	Data Challenge 3 Software Development Plan	
50%	DC58	...DC3 Configuration Management Plan	no more on DC3a, will transition to DC3b
	DC60	...DC3 Verification and Validation Plan	
75%		.....DC3a Verification and Validation Plan	Continued refinement: updated DC3a TestCases
0%		.....DC3b Verification and Validation Plan	

Becoming familiar with Parasoft C++ Coding Standard Checker which will probably be used for DC3b.

## Database Group

### K-T (submitted on 4/20/2009)

55/161: DC2 Policy capture Start: 7/23/08; End 3/30/09; Assigned Lim KT[10%] % Done: 100%

56/469: DC3 provenance capture [at DC3a level] Start: 9/8/08; End 7/10/09; Assigned Lim KT[10%] % Done: 100%

61/166: support persistence and retrieval of nightly pipeline products and inputs [i.e. Functions, Kernels, PSFs, image metadata, various image types] Start: 9/15/08; End 2/10/09; Assigned Lim KT[20%] % Done: 100%

71/531: Full integration of PropertySet? into packages Start: 9/1/08; End 4/27/09; Assigned Lim KT[20%],Plante Ray[10%] % Done: 100%

73/534: Full integration of exception changes Start: 1/29/09; End 2/19/09; Assigned Lim KT[20%] % Done: 100%

74/180: persistence framework refinement Start: 2/19/09; End 3/5/09; Assigned Lim KT[20%] % Done: 0% [postponed] 2008-03-24 to 2009-04-20:

44/43 (build templates): Ticket [#334](#), stalled at 25%

Robyn (submitted on 4/16/2009)

## Major accomplishments:

- DC3a integration, including SDQA output and pipeline for simulated data.
  - ◆ Lots of minor fixes too numerous to list here.
  - ◆ [#667](#): Properly persist `pcaPsf` objects via PSF base class pointer.
  - ◆ [#671](#): Implemented TAN-SIP input from FITS.
- Post-DC3a cleanups not yet merged to trunk:
  - ◆ Fix bad XML tag name in `KernelFormatter`.
  - ◆ [#472](#): Update formatters and add `CcdMetadataStage`.
  - ◆ [#745](#): Started thinking about persistence for self-registered objects.
- Extracted list of "after-DC3a" discussion topics from chat logs.
- [#482](#): Implemented time conversion database stored functions.
- Implemented generic SQL script execution from Python using `DbStorage`.
- [#706](#): Implement `DateTime` <-> ISO8601 and fix bug in constructor.
- [#731](#): Allow expressions for SELECT and FROM in queries using `DbStorage`.
- Scalable database architecture
  - ◆ Discussed compression of MySQL tables.
  - ◆ Discussed partitioning of tables for near-neighbor queries.
  - ◆ Investigated Gearman.
  - ◆ Started implementing xrootd-based prototype.
- More high-bandwidth database cluster hardware design (using Sun X4540s).

## Minor accomplishments:

- Made comments on SDQA persistence tests.
- Discussed post-Davis tables, especially `FaintSource?`.
- Discussed design of CFHT-specific astrometry indexes.
- Edited documentation of `Input/OutputStages`.
- Suggested splitting of `cat` package.
- Discussed impact of removal of "test" MySQL account.
- Participated in XLDB3 planning.
- Participated in DC3a/DC3b All Hands planning.

## Andy H (submitted on 4/xx/2009)

### Serge (submitted on 4/xx/2009)

- post-integration wrap-up ([#669](#), [#694](#))
- scalable architecture discussion
- DataAccWG telecons
- add preliminary !Source matching capabilities to `afw` ([#754](#))

## Daniel (submitted on 4/17/2009)

Compression estimates for MySQL/myisam w/ mixed int/float and mostly float data

## Scalable queries:

- Discussions re: parallel work dispatcher (`gearman` or `xrd`)

## K-T (submitted on 4/20/2009)

- High-level design of API
- Skeleton implementation of:
  - ◆ Frontend server
  - ◆ Xrd file-based message-passing
  - ◆ sql parsing
  - ◆ chunk partition metadata table

## SciDB

- observation group algorithm work
  - ◆ algorithm design, feasibility of moving objects
  - ◆ distributed execution plan
- helping test and refine the storage manager
- provenance model discussions

## Jacek (submitted on 4/14/2009)

- work related to the FRS Davis meeting and the follow-up DMS document
  - ◆ reviewed the DMS doc
  - ◆ reworking schema accordingly, captured at [dbSchemaUpdateApr09](#)
  - ◆ updating storage estimates accordingly
    - ◇ trying to find ways to minimize the impact
    - ◇ run FaintSource compression tests, see [faintSourceCompression](#)
- scalable architecture
  - ◆ design discussions and planning
  - ◆ testing various options and configurations
  - ◆ also tested postgres and finished gridsql tests
  - ◆ all documented, see [dbScalableArch](#)
- work on splitting cat package
- discussions with the infrastructure team about database hardware
- work on standardizing names, proposal approved by TCT, see [CcbMeeting20090401](#)
- various minor schema tweaks and admin scripts related to DC3a integration
- organized four DataAccWG telecons
- scidb
  - ◆ discussions related to NSF proposals
  - ◆ working on SLAC budget for the NSF proposal
  - ◆ discussed funding with slac management
  - ◆ discussions with PNNL on open provenance
  - ◆ discussions with Argonne Lab on collaboration
  - ◆ arranging quotes/statements from science for website
- xldb
  - ◆ assembled draft agenda for XLDB3
  - ◆ compiling list of people to invite to XLDB3
  - ◆ organized the organizing committee meeting, discussing agenda/invites/logistics

# Major Accomplishments

Significant breakthroughs, issues resolved.

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# Objectives for the Next Period

What you expect to accomplish.

**NCSA**

**LSSTC**

**Database Group**

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**Problems Encountered and Solutions Being Pursued**

Budget or schedule variance, technical issues, management issues

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