SDSS-II WBS - Supernova Project

as of 02/09/05

WBS	Task Name
3	**New Development**
3.2	**Supernova Project Development**
3.2.1	**SN Survey Planning and Coordination**
3.2.1.1	**SN Science Requirements Document**
3.2.1.1.1	Develop SN Science Requirements Document
3.2.1.1.2	Develop requirements on accuracy of stripe 82 template photometry
3.2.1.1.3	Review of SN Science Requirements Document
3.2.1.1.4	SN Science Requirements Document approved by MC
3.2.1.2	**SN Quality Assurance Plan**
3.2.1.2.1	Develop QA plan for on-mountain reductions
3.2.1.2.2	Develop QA plan for off-mountain reductions
3.2.1.2.3	Develop QA plan for data loaded into SN Public Archive
3.2.1.2.4	Assemble QA sub-plans into single QA document for SN Project
3.2.1.2.5	Review of SN Quality Assurance plan by affected parties
3.2.1.2.6	SN Quality Assurance plan approved by MC
3.2.1.3	**SN Software Requirements Document**
3.2.1.3.1	Develop PHOTO software requirements (SN)
3.2.1.3.2	Develop Frame Subtraction pipeline requirements (SN)
3.2.1.3.3	Develop doObjects software requirements (SN)
3.2.1.3.4	Develop hand-scan software requirements (SN)
3.2.1.3.5	Develop requirements for candidate webserver, including color selection (SN)
3.2.1.3.6	Develop requirements for follow-up obervations software and selection criteria (SN)
3.2.1.3.7	Develop requirements for public web server
3.2.1.3.8	Review of software requirements document
3.2.1.3.9	Software requirements document approved by MC
3.2.1.4	**SN Proposal for Bright-time Operations in 2005-07**
3.2.1.4.1	Evaluate bright-time data from Fall 2004 and earlier
3.2.1.4.2	Review 2.5m schedule w/ Legacy and SEGUE Teams, Observers, and MC
3.2.1.4.3	Develop proposal for bright-time operations in 2005-07
3.2.1.4.4	Review of SN bright-time operations proposal by observers, Survey Coordinator, MC
3.2.1.4.5	SN bright-time operations proposal approved by MC
3.2.1.5	**2.5m SN Observing Plans**
3.2.1.5.1	Develop SN observing plans/protocols in coord with survey mgmt
3.2.1.5.2	Review of SN observing plan by MC
3.2.1.5.3	SN Observing Plan approved by MC
3.2.1.6	**SN Project Operations Plan**
3.2.1.6.1	Develop SN operations plan with data flow diagrams
3.2.1.6.2	Review of SN Operations Plan by observers, Survey Coordinator, MC
3.2.1.6.3	SN Operations Plan approved by MC
3.2.1.7	**SN Software Development Plan**
3.2.1.7.1	Develop software development plan
3.2.1.7.2	Review of SN software development plan by MC
3.2.1.7.3	Initial software development plan approved by MC
3.2.1.8	**SN On-mountain Computer Hardware Plan**
3.2.1.8.1	Determine computing requirements for on-mountain SN data reduction system
3.2.1.8.2	Benchmark machines for APO cluster
3.2.1.8.3	Assess impact of SN computing requirements on APO infrastructure
3.2.1.8.4	Develop computer hardware plan and cost est for SN on-mountain data reduction ops
3.2.1.8.5	Review of SN on-mountain computer hardware plan by APO & FNAL staff, MC
3.2.1.8.6	SN On-mountain Computer Hardware Plan approved by MC
3.2.1.9	**APO Computer Room Cooling Upgrade Plan**
3.2.1.9.1	Develop APO computer room cooling upgrade requirements
3.2.1.9.2	Develop APO computer room cooling upgrade plan with cost estimate
3.2.1.9.3	Review of APO computer room cooling upgrade plan
3.2.1.9.4	APO computer room cooling upgrade plan approved
3.2.1.10	**SN Off-mountain Computer Hardware Plan**
3.2.1.10.1	Determine computing requirements for off-mountain SN data reduction system
3.2.1.10.2	Assess impact of SN computing requirements on FNAL/FCC infrastructure
3.2.1.10.3	Develop computer hardware plan for SN off-mountain data reduction operations

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3.2.1.10.4	Review of SN off-mountain computer hardware plan by FNAL staff, MC
3.2.1.10.5	SN Off-mountain Computer Hardware Plan approved by MC
3.2.1.11	**SN Database Development Plan**
3.2.1.11.1	Develop requirements for SN databases (loading, hosting, maintaining, etc.)
3.2.1.11.2	Determine compute resources at Fermilab to host SN databases
3.2.1.11.3	Develop plan for hosting SN databases at Fermilab
3.2.1.11.4	Review of SN database plan by Fermilab, MC
3.2.1.11.5	SN database plan approved.
3.2.1.12	**SN Candidate Rapid Dissemination Plan**
3.2.1.12.1	Develop plan for rapid dissemination of SN candidates to the community
3.2.1.12.2	Rapid dissemination plan approved by SN Project Team Leaders
3.2.1.13	**Coordination of Follow-up Observations**
3.2.1.13.1	Compose and submit observing proposals
3.2.1.13.2	Develop collaboration to carry out follow-up on ARC and non-ARC telescopes
3.2.1.13.3	Coordinate with collaborators submitting observer proposals
3.2.1.13.4	Develop priorities for different follow-up telescopes
3.2.1.13.5	Develop dissemination procedures for candidates for follow-up observers/teams
3.2.1.13.6	Develop plan for coordinating follow-up information received from collaborators
3.2.1.14	**SN Public Dissemination Plan**
3.2.1.14.1	Develop plan for timely public dissemination of SN data (corrected frames and catalogs)
3.2.1.14.2	Develop computer hardware plan and cost estimate for SN public data archive
3.2.1.14.3	Review of SN public dissemination plan by affected parties
3.2.1.14.4	SN Public Dissemination Plan approved by MC
3.2.2	**SN Project Computing Hardware Implementation**
3.2.2.1	**APO Computer Room Cooling Upgrade**
3.2.2.1.1	Prepare RFQ for APO computer room upgrade based on approved upgrade plan
3.2.2.1.2	RFQ for APO computer room upgrade out for bids
3.2.2.1.3	Bids due for APO computer room upgrade
3.2.2.1.4	Review bids and award contract for APO computer room upgrade
3.2.2.1.5	APO computer room upgrade work by contractor
3.2.2.1.6	APO computer room cooling upgrade finished
3.2.2.1.7	APO computer room cooling upgrade punchlist work by contractor
3.2.2.1.8	APO computer room cooling upgrade punchlist work complete
3.2.2.2	**SN On-mountain Computer Hardware Implementation**
3.2.2.2.1	Purchase computer hardware for on-mountain system
3.2.2.2.2	Assemble, configure and test on-mountain compute system at Fermilab
3.2.2.2.3	Pack on-mountain compute cluster and ship from Fermilab to APO
3.2.2.2.4	On-mountain compute cluster delivered to APO
3.2.2.2.5	Re-configure and re-test on-mountain compute cluster at APO
3.2.2.2.6	On-mountain compute cluster ready for SN operations at APO
3.2.2.3	**SN Off-mountain Computer Hardware Implementation**
3.2.2.3.1	Purchase computer hardware for off-mountain data analysis system
3.2.2.3.2	Assemble, configure and test off-mountain compute system at Fermilab
3.2.2.3.3	On-mountain compute cluster ready for SN operations at APO
3.2.2.4	**Supernova Database Computer Hardware Implementation**
3.2.2.4.1	Purchase computer hardware for supernova database at (host institution name)
3.2.2.4.2	Assemble, configure and verify supernova database cluster setup
3.2.2.4.3	Supernova database cluster ready for software loading
3.2.2.5	**SN Public Archive Computer Hardware Implementation**
3.2.2.5.1	Purchase computer hardware for SN Public Archive
3.2.2.5.2	Assemble, configure and verify SN Public Archive hardware setup
3.2.2.5.3	SN public archive database cluster ready for software loading
3.2.3	**SN Software Development for 2.5m Survey Operations**
3.2.3.1	**SN Software Script Development**
3.2.3.1.1	Port scripts to scientific Linux
3.2.3.1.2	Develop scripts to automate tape spooling
3.2.3.1.3	Develop script to automate pipeline running at APO
3.2.3.1.4	Develop script to monitor progress of pipelines during data processing
3.2.3.2	**Improved Stripe 82 Photo-Z Implementation**

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3.2.3.2.1	Implement improved stripe 82 photo-z's from other SDSS collaborators into database, for improved targ selection
3.2.3.3	**PHOTO Module Improvements (only if necessary to meet processing-time req.)**
3.2.3.3.1	Develop list of PHOTO modules to be modifed to run in parallel fashion
3.2.3.3.2	Develop plan for modifying PHOTO modules based on processing requirements
3.2.3.3.3	Implement plan as necessary (placeholder)
3.2.3.4	**SN Software Tools**
3.2.3.4.1	Develop software tools to monitor SN detection efficiency
3.2.3.4.2	Develop software tools to test accuracy of SN photometry
3.2.3.4.3	Test and validate SN software tool by putting artificial Sne into the data-stream
3.2.3.4.4	Development of SN software tools finished
3.2.3.5	**Frame Subtraction Pipeline Development**
3.2.3.5.1	Develop improved re-mapping algorithm between search and template frames
3.2.3.5.2	Develop improved characterization of noise properties of the subtracted image
3.2.3.5.3	Implement screening/flagging and improved masking within the frame subtraction pipeline of artifacts
3.2.3.5.4	Implement better resampling methods
3.2.3.5.5	Implement masked pixels
3.2.3.5.6	Include PHOTO Info on astrometry, PSF, masks
3.2.3.5.7	Frame subtraction pipeline development work complete
3.2.3.6	**Co-Added Template Frames (enhanced goal)**
3.2.3.6.1	Develop/test co-added template frames for stripe 82 to reach required depth of SN search
3.2.3.6.2	Co-added template frame development complete
3.2.3.7	**Production and preparation of Templates**
3.2.3.7.1	Choose, Process, Zero-point templates for 82S and 82N
3.2.3.7.2	template development complete
3.2.3.8	**I-Band Frame Subtraction**
3.2.3.8.1	Implement I-band frame subtraction for all processed frames as part of normal operations
3.2.3.8.2	I-band frame subtraction code complete
3.2.3.9	**Forced Object Measurement**
3.2.3.9.1	Implement frame subration and forced object detection for candidates in u and z and for earlier/later exposure in g,r,i if not found
3.2.3.9.2	Forced object measurement code complete
3.2.3.10	**Veto Catalogs and Objects Database**
3.2.3.10.1	Construct/test bright star masks for both strips of stripe 82
3.2.3.10.2	Cross-correlate stellar and QSO veto catalogs with other catalogs
3.2.3.10.3	Conduct further tests on input variability catalogs
3.2.3.10.4	Star list for frame subtraction fitting
3.2.3.10.5	List of galaxy photo-z's in database
3.2.3.10.6	Veto catalogs and database work complete
3.2.3.11	**SN Candidates Database**
3.2.3.11.1	Define scope of work for further development work on SN Candidates Database
3.2.3.11.2	Further development work on SN Candidates Database
3.2.3.11.3	First round of development work on SN Candidates Database complete
3.2.3.12	**doObjects Pipeline**
3.2.3.12.1	Define scope of work for additional development work on doObjects pipeline
3.2.3.12.2	Further development on doObjects pipeline
3.2.3.12.3	First round of development work on doObjects pipeline complete
3.2.3.13	**HandScan Tool Development**
3.2.3.13.1	Make framesub diagnostics available for field around each object being scanned
3.2.3.13.2	Develop web-based HandScan tool
3.2.3.13.3	HandScan tool development complete
3.2.3.14	**Target Selection Development**
3.2.3.14.1	Develop color-color and color-mag pre-selection using models and color/mags of nearby SN
3.2.3.14.2	Develop real-time light-curve fitting and estimated current mag.
3.2.3.14.3	Test color-color and multi-night vs. single-epoch selection using Fall 2004 data and artificial Sne
3.2.3.14.4	Refine selection criteria for SN brightness relative to host, separation from host, etc.
3.2.3.14.5	SN target selection development complete
3.2.3.15	**Selection Criteria**
3.2.3.15.1	Develop selection criteria for subsample of multii-epoch spectrophotometry
3.2.3.15.2	Develop selection criteria for optical and NIR imaging follow-up
3.2.3.15.3	Selection criteria developed

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WBS	Task Name
3.2.3.16	**Target Selection Web Interface**
3.2.3.16.1	Develop web interface for target selection
3.2.3.16.2	Implement improved finding charts on target selection web interface
3.2.3.16.3	Implement improved consolidation of information on target selection web interface
3.2.3.16.4	Target selection web interface finished
3.2.3.17	**Public SN Candidate Web Server**
3.2.3.17.1	Develop public version of SN candidate web server
3.2.3.17.2	Link Public SN Candidate Web Server to www.sdss.org
3.2.3.17.3	Public SN candidate web server ready for use
3.2.4	**Software Development for Follow-up Observations**
3.2.4.1	**Follow-up Candidates and Observed Objects Database**
3.2.4.1.1	Develop database for follow-up candidates and observed objects
3.2.4.1.2	Develop web interface for Follow-up Candidates database
3.2.4.1.3	Link Follow-up Candidates database web interface to candidate pages
3.2.4.1.4	Follow-up Candidates DB development complete
3.2.4.2	**SN Observing Tools**
3.2.4.2.1	Develop tools to determine if sufficient spectro S/N achieved after given exposure time
3.2.4.2.2	Develop tool to do "on-the-fly" SN typing and redshift determination
3.2.4.2.3	SN Observing Tools developed
3.2.4.3	**SN Typing Tools**
3.2.4.3.1	Develop tools for galaxy spectroscopic subtraction for improved SN typing
3.2.4.3.2	SN Typing tools developed
3.2.4.4	**Auxiliary Imaging Data Reduction Tools**
3.2.4.4.1	Further develop tools for reducing aux imaging data from NMSU 1m, 3.5m SPIcam, etc.
3.2.4.4.2	Tools for reducing auxiliary imaging data developed
3.2.4.5	**SN Intercalibration Framework**
3.2.4.5.1	Determine level of framework required for intercalibration between 2.5m, NMSU 1m, and 3.5m imaging
3.2.4.5.2	Develop required framework for intercalibration between 2.5m, NMSU 1m, and 3.5m imaging
3.2.4.5.3	SN intercalibration framework developed
3.2.5	**Software Development for SN Off-mountain Analysis**
3.2.5.1	**SN Photometry Pipeline**
3.2.5.1.1	Develop initial precision SN photometry pipeline (aperture and PSF photometry)
3.2.5.1.2	Develop final precision SN photometry pipeline (aperture and PSF photometry)
3.2.5.1.3	Test/characterize SN Photometry Pipeline with artificial supernovae
3.2.5.1.4	SN Photometry Pipeline development complete
3.2.5.2	**Improved Stripe 82 Object/Image Calibrations**
3.2.5.2.1	Implement improved calibrations of stripe 82 objects/images based on multiple observations
3.2.5.2.2	Improved stripe 82 calibrations implemented
3.2.6	**SN Database Development**
3.2.6.1	**Collaboration Archive of Repeat Imaging Data and/or Catalogs**
3.2.6.1.1	Create framework for collaboration archive of repeat imaging data and/or catalogs
3.2.6.1.2	Framework in place for collaboration archive of repeat imaging data and/or catalogs
3.2.6.2	**Public Archive of Repeat Imaging Data and/or Catalogs**
3.2.6.2.1	Create framework for public archive of repeat imaging data and/or catalogs
3.2.6.2.2	Framework in place for public archive of repeat imaging data and/or catalogs
3.2.6.3	**SN Database Development**
3.2.6.3.1	Develop database for collaboration and public dissemination of SN data
3.2.6.3.2	Test and verify SN database ready for production use
3.2.6.3.3	SN database development complete; database ready for use