



Title: SRDP Project Management Plan	Authors: Treacy, Kern	06/30/2018
Document No. 530-SRDP-003-MGMT		Version: 1.01

Science Ready Data Products

Project Management Plan Project 530 Released

PREPARED BY	ORGANIZATION
Robert Treacy	NRAO, Project Management Department
VERSION RELEASE BY	ORGANIZATION
Bob Treacy, Project Manager	NRAO

APPROVALS	ORGANIZATION	SIGNATURE
Lewis Ball	Assistant Director Science Support and Research NRAO	
Jeffrey Kern	Project Director Science Ready Data Products NRAO	



Title: SRDP Project Management Plan	Authors: Treacy, Kern	06/30/2018
Document No. 530-SRDP-003-MGMT		Version: 1.01

Change Record

VERSION	DATE	REASON
1.0	4/16/2018	Released on content in draft Ver .7, 4/9/2018 Approved as part of document set defined in 530-SRDP-033-MGMT SRDP CoDR Package Approval by SharePoint workflow
1.01	6/25/2018	Incorporate edits from StRR & CoDR



Title: SRDP Project Management Plan	Authors: Treacy, Kern	06/30/2018
Document No. 530-SRDP-003-MGMT		Version: 1.01

Table of Contents

1. OVERVIEW:	4
1.1. Applicable Documents.....	4
1.2. Reference Documents.....	4
2. SCOPE MANAGEMENT	5
2.1. Scope and Contingency.....	6
3. SCHEDULE MANAGEMENT:	6
3.1. Project Initiation.....	6
3.2. Project Execution.....	7
3.3. Project Transition.....	8
3.4. Schedule and Contingency.....	8
4. COST MANAGEMENT:	9
5. THE PROJECT BASELINE	9
6. CHANGE MANAGEMENT	10
7. QUALITY MANAGEMENT:	10
8. HUMAN RESOURCE MANAGEMENT:	11
8.1. SRDP Heuristics Group.....	12
8.2. SRDP Operations Group.....	12
9. COMMUNICATIONS MANAGEMENT:	12
10. RISK AND ISSUE MANAGEMENT	17
11. PROCUREMENT MANAGEMENT:	18
12. STAKEHOLDER MANAGEMENT	18
13. PROJECT Transition:	18
14. Operations Management Plan	18



Title: SRDP Project Management Plan	Authors: Treacy, Kern	06/30/2018
Document No. 530-SRDP-003-MGMT		Version: 1.01

I. OVERVIEW:

The high-level goal of the SRDP project is to maximize NRAO’s science impact, the impact of the telescopes we operate, and to be accessible to the broadest cross-section of the U.S. and international astronomy community. Development of SRDPs is a key deliverable under AUI’s Cooperative Agreement with the NSF and the Program Operating Plan, supported by internal funding.

Science Ready Data Products is a functional definition, and part of the SRDP project is to refine the technical definition. Science Ready Data Products span the range from calibrated visibilities, through imaged and de-convolved data cubes, to “value added” products such as source catalogs and moment maps. The initiative will remove a significant amount of burden and overhead from the user that is associated with data calibration and imaging, allowing users of NRAO instruments to focus much less on data reduction and much more on the cutting-edge science enabled by the VLA and ALMA. As such, SRDPs are an important means of expanding the NRAO user base.

The SRDP project (in collaboration with existing observatory management structures) will develop and implement the software tools, scientific heuristics, and operations structures to deliver science quality data product to the NRAO user community, both as it exists now, and the foreseen expansion of the community to include non-traditional radio astronomers.

The SRDP project management plan draws from the Project Charter and consists of multiple subsidiary documents which are referenced and linked below. The SRDP Document tree outlines the project organization, including system engineering processes which address requirements, design and development of deliverables, test and verification, validation, and other technical processes. The Project Management Plan and subsidiaries address the programmatic processes.

1.1. Applicable Documents

- [AD01] SRDP Project Charter 530-SRDP-001-MGMT
- [AD02] SRDP Lifecycle Phases and Concepts 530-SRDP-009-MGMT
- [AD03] SRDP System Concept 530-SRDP-014-MGMT

1.2. Reference Documents

- [RD01] SRDP System Engineering Management Plan 530-SRDP-010-MGMT
- [RD02] SRDP Stakeholder Register 530-SRDP-005-MGMT
- [RD03] Work Breakdown Structure and WBS Dictionary 530-SRDP-021-MGMT
- [RD04] SRDP Scope Statement 530-SRDP-032-MGMT
- [RD05] SRDP Project Schedule 530-SRDP-018-MGMT
- [RD06] SRDP Cost Management Plan 530-SRDP-026-MGMT
- [RD07] SRDP Project Budget 530-SRDP-026-MGMT
- [RD08] SRDP Risk Register 530-SRDP-006-MGMT
- [RD09] SRDP Issue Log 530-SRDP-007-MGMT
- [RD10] SRDP Project Lexicon and Acronym List 530-SRDP-028-MGMT
- [RD11] SRDP Change Request Form



Title: SRDP Project Management Plan	Authors: Treacy, Kern	06/30/2018
Document No. 530-SRDP-003-MGMT		Version: 1.01

- [RD12] NRAO SOP Observatory Risk Management PMD00163
- [RD13] NRAO SOP Project Risk Management PMD00153
- [RD14] SRDP System Requirements Description [TBD]

2. SCOPE MANAGEMENT

In order to accommodate a flexible development environment, while at the same time providing adequate definition to inform the SRDP architecture; scope is managed and delivered under a rolling wave planning strategy. Scope is broadly identified as project objectives in the Project Charter [AD01]. The most critical aspect of managing project scope is to establish a well defined set of requirements, with clear traceability through verification and validation, as executed in the requirements management process described in the System Engineering Management Plan [RD01]. The Requirements Management Process will ensure that the defined scope (and only the defined scope) will be delivered. Requirements are defined and managed on three levels, L0, L1, and L2.

- L0 - System Concepts. The System Concepts Document reflects the complete scope for the SRDP Project period of performance. The SRDP Requirements Committee has compiled a set of use cases, coupled with observatory policies, assumptions, and constraints, all consistent with achieving project objectives; resulting in the SRDP System Concepts Document [AD03]. Scope is partitioned in the SRDP Roadmap, which reflects the progressive delivery of SRDP capability over successive deployment phases. Concepts are translated to traceable format in the Stakeholder Requirements Document. Project scope includes capabilities, interfaces, and operations requirements.
- L1 - System Level Requirements are progressively decomposed from L0 requirements for the execution cycle in which they are to be implemented. The Project Scientist continues to manage the requirements breakdown through the SRDP Requirements Committee to deliver capabilities defined in the SRDP Roadmap (See Figure 1). L1 requirements are captured in the System Requirements Document, which is revised and extended to reflect the evolution of System Requirements with each implementation cycle.
- L2 - Task level requirements are broken down to accompany L1 requirements for each planning wave. Requirements at this level inform the development tasks which are implemented and verified within DMS. Decomposition of L1 to L2 requirements is the responsibility of the DMS Software Architect.

A distinction is made here between the rolling wave process for requirements management and Agile processes for implementation within DMS. The flexibility in the application of these processes across teams allows delivery of different goals to different stakeholders.

Agile processes will be used to deliver the scope within DMS, therefore lower level requirements will be progressively elaborated throughout the lifecycle of the project, with oversight of scope provided by the SRDP Requirements committee, Project Scientist, and Project Manager. Rolling wave planning cycles will coincide with DMS software release cycles, such that the planned capability for a release cycle (as reflected in the SRDP Roadmap) results in the decomposition of requirements and planning packages sufficient to deliver the planned capability within the current planning horizon.

Many existing Observatory processes and assets will be reused by SRDP including: risk management, configuration management, algorithm research, hardware infrastructure and data processing, user



Title: SRDP Project Management Plan	Authors: Treacy, Kern	06/30/2018
Document No. 530-SRDP-003-MGMT		Version: 1.01

support, and the NRAO Helpdesk.

Stakeholder requirements (L0) are anticipated to be relatively stable throughout the SRDP project lifecycle, where any changes are subject to project change control. System level requirements (L1) will be progressively derived from the stakeholder requirements (L0) until the capability defined in the SRDP Roadmap has been delivered and the project objectives have been met. Following project closeout, an ongoing effort to elicit requirements, develop, improve, deploy software, and deliver data products will continue into observatory operations. Whether during the project lifecycle or following the transition to operations, L0 and L1 requirements will be decomposed into L2 requirements and work tasks managed within the DMS department under established DMS processes.

At the beginning of each planning wave, L0 requirements that correspond to the current Roadmap Capability are decomposed to L1 requirements, which inform DMS at the system level the functionality that must be scheduled for the current planning wave. L1 requirements established for a planning wave are decomposed to L2 requirements and prioritized in rank order, assigning a threshold to establish the Minimum Viable Product (MVP). The SRDP Requirements Committee is responsible for the progressive requirement decomposition, in collaboration with the Project Office to ensure scope is held within the baseline and project objectives are met. L1 and L2 requirements, including the MVP will be jointly decided and recommended by the SRDP Requirements Committee DMS Manager to the Project Director and Project Sponsor for their approval. The MVP is not intended to descope capability, but to allow some flexibility in managing lower level requirements in order to preserve pre-determined release dates.

2.1. Scope and Contingency

Deliverables are defined as capability, described at a high level in the Project Roadmap [AD03]. The roadmap is further detailed in the SRDP System Requirements Description [RD14], which is revised at the beginning of each planning wave to define the requirements, capabilities, and minimum viable product planned for completion within the current planning horizon (i.e. next release). Since the project is spend-rate limited based on annual budgets, and in-kind resources are subject to other priorities; scope is the remaining corner of the triangle that can provide contingency to meet release milestones within the constraints of available resources. The SRDP schedule must align with pre-defined release schedules within DMS and delivery depends upon the availability and commitment of necessary resources. Scope is the only primary constraint with adequate flexibility to assure SRDP meets release dates using available resources.

3. SCHEDULE MANAGEMENT:

At the highest level the SRDP project has three stages: initiation, execution, and transition. A detailed schedule for each of these stages will be developed and maintained in a separate document by the Project Manager.

3.1. Project Initiation

The project initiation phase began in March 2017 with the appointment of the SRDP project director and will end in Q3 FY18 with the successful completion of the Conceptual Design Review. Deliverables from this phase of the project are:

- Creation of the project office, definition of roles within the office, and standard processes. These



Title: SRDP Project Management Plan	Authors: Treacy, Kern	06/30/2018
Document No. 530-SRDP-003-MGMT		Version: 1.01

will be delivered in the following documents:

- Project Management Plan, including the following subsidiaries:
 - Project Baseline (Schedule, Scope, and Budget)
 - Stakeholder Management
 - Risk Management, Risk Register, and Issue Log
 - Human Resource Management, Organizational Chart, and RACI
 - Communications Planning
- Project Lifecycle Phases and Concepts
 - System Concept
- Systems Engineering Plan
 - Requirements Management
 - Architectural Description
 - Implementation and Integration
 - Test, Verification, and Validation
 - Project Quality Management
 - Data Process Quality Management
 - Data Product Quality Management
- Definition of the Stakeholder Requirements (L0). To accomplish this the following roles in the project must be filled:
 - SRDP Project Scientist (or interim service by project director)
 - SRDP Requirements Committee (see 530-SRDP-012-HEUR)

3.2. Project Execution

Project execution will be carried out in a series of implementation phases. The current concept is that a phase will extend for 24 months, with approximately 12 months of overlap between successive phases. As the project progresses this cadence will be re-evaluated in consideration of the experience provided by the first cycles.

Each implementation phase will start with an agreed set of System Requirements (L1) that evaluates the delivered capabilities for shortcomings and refines the requirement, or elucidates new requirements to further address Stakeholder Requirement (L0) functionality that has not yet been delivered.

Steps in each implementation phase follow:

1. Deconstruction of System Requirements (L1) to System Element Requirements (L2). The management of the L2 requirements is expected to be agile in nature with close connection between the SRDP and DMS teams. L2 requirements for pipeline heuristics in particular may require significant research effort and may not be immediately ready for implementation.
2. Scheduling: The Project Manager will develop a preliminary schedule based on input from all stakeholders. This schedule will likely include the exploration and refinement of L2 requirements. This defines the baseline scope for each implementation phase.
3. Implementation and Verification: New capabilities, heuristics, and operations process are developed. Much of this effort will be done by groups within the DMS department and will follow the standard processes of the group doing the work. The SRDP project will follow the development to access impact on the global SRDP schedule.
4. Validation: The SRDP Heuristics team under the leadership of the Project Scientist will perform



Title: SRDP Project Management Plan	Authors: Treacy, Kern	06/30/2018
Document No. 530-SRDP-003-MGMT		Version: 1.01

validation. Ensuring scientific correctness of the full system and working with the implementation teams to address defects. The Project Scientist is responsible for acceptance of the implemented software.

5. **Deployment:** Deployment of the software is the responsibility of the Operations Manager, working with the head of the SIS division. Prior to new features being deployed on production system, an operational readiness assessment shall be performed. Rollout will be coordinated with the NRAO Science User Support to ensure suitable documentation and training is in place as the software is deployed.
6. **Review:** Approximately 3 months after each deployment, SRDP will conduct an internal review of the current deployment identifying high priority defects or enhancements which need to be added to the current development cycle.

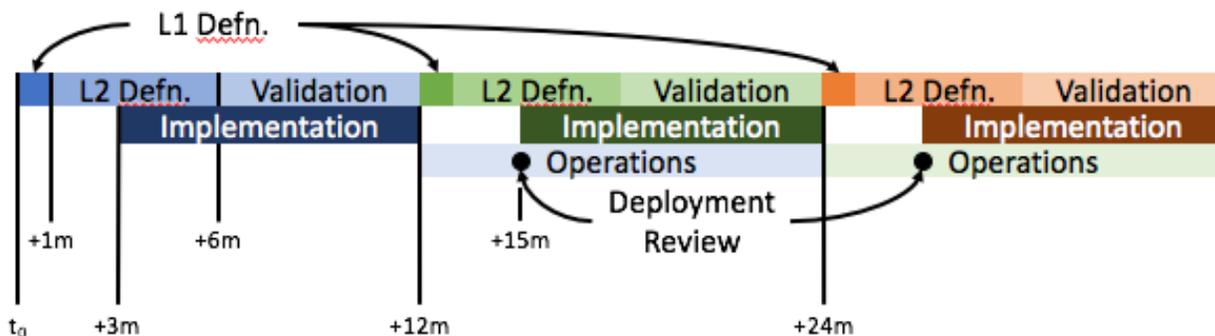


Figure 1 Planned block schedule showing tasks the heuristics group (top), implementation (middle) and operations (bottom) for three successive implementation cycles. Color coding designates activities associated with a particular cycle.

3.3. Project Transition

At the end of the SRDP project, delivery of science ready products to the user community will be part of NRAO standard operations. During the transition phase, responsibilities will need to be divested from the SRDP project office and assigned to other groups or individuals within the observatory.

It is premature to define how this transition will proceed, at this point it is sufficient to simply note that there will need to be a final period of closeout.

3.4. Schedule and Contingency

Schedule contingency is broadly considered two primary areas:

- Implementation
 - Schedule contingency during development is held within DMS by scheduling workloads at 80% capacity, reserving one day a week for unplanned tasks
- Operations
 - Production of data products is generally not mission critical.



Title: SRDP Project Management Plan	Authors: Treacy, Kern	06/30/2018
Document No. 530-SRDP-003-MGMT		Version: 1.01

- Most work in operations can be delayed until resources and staff are available.
- Exception to this is Time Critical Observations.
 - Staff and resources needed for Time Critical Observations are typically a small fraction of the whole
 - Contingency is to grant priority on a case by case basis as needed.

4. COST MANAGEMENT:

SRDP project resources are matrix managed from other departments across the observatory and thus direct budgetary authority resides in those departments. The SRDP project will maintain a staffing model within the SRDP Cost Management Plan [RD06] as a means to inform other departments of the resource needs critical to meet SRDP project objectives. The Cost Management Plan also informs the SRDP Budget [RD07] of resource needs within the project office. Project costs are largely driven by staffing levels, there is no direct procurement anticipated within the SRDP Project Office.

5. THE PROJECT BASELINE

The project baseline is reflected in the Scope Statement [RD04], the Project Schedule [RD05], and the Project Budget [RD07]. The high level baseline is given in the Project Charter [AD01]. A preliminary baseline is developed from provisions in the Project Charter and serves through the Initiation Phase. The preliminary baseline is not under change control. The baseline is updated after all the RIDs from the CoDR are satisfied and is then subject to observatory change control. The final baseline is adopted at the commencement of the first deployment phase when the L1 and L2 requirements are approved. Documents that define the baseline which are subject to change control are as follows:

- Scope Baseline – The Scope Statement is a brief document which summarizes project objectives, describes what is in scope, and what is out of scope. The Scope Statement can be viewed as an executive summary of the L0 Requirements, which includes the approved use cases and SRDP Roadmap.
- Schedule Baseline – The period of performance for the project includes the initiation phase, a target for five planning waves, and then a transition to operations. The initiation phase includes milestones for documentation, planning, and high level requirement definition. The initiation phase includes a Stakeholder Requirement Review (StRR) and concludes with a successful Conceptual Design Review (CoDR) At the time of this writing, the StRR is being planned and the document set preparation for CoDR is in progress. Each deployment phase is completed approximately on annual cycle boundaries. SRDP has dependencies on several other software releases which present a challenge to maintaining a rigid schedule during the deployment phase. Figure 1 illustrate several activities that overlap and execute in parallel during a planning wave. The Requirements Committee will review the requirements decomposition on no less than annual basis in order to sustain the regular cadence of development cycles,
- Cost Baseline – The cost baseline is reflected in the SRDP budget [RD07] and managed according to the Cost Management Plan [RD06]. The more significant burden of project cost extends to DMS and Observatory Operations, which provide staffing for development, deployment, and test. The Cost Management Plan provides extended staffing estimates to departments supporting the



Title: SRDP Project Management Plan	Authors: Treacy, Kern	06/30/2018
Document No. 530-SRDP-003-MGMT		Version: 1.01

SRDP project to guide their budgeting processes. Supporting departments are independently responsible to budget resources to meet SRDP project objectives.

6. CHANGE MANAGEMENT

SRDP Change Management is defined on several levels as follows:

- Changes to controlled documents which do not impact the project baseline are approved in accordance with the document content. In order to ensure documentation conforms to project standards, all documents shall be approved by the Project Manager. All document changes shall also be approved by the Project Director. In addition to these approvals, the following also applies
 - Documents with scientific content or implications shall also be approved by the Project Scientist
 - Documents that have operational impact shall be approved by the Operations Manager
 - Note that some documents may have both scientific and operational impact
- Changes to documents that define the project baseline, but proposed change do not alter the approved baseline shall be approved by the Project Manager, Project Director, and the Project Sponsor.
- Changes to documents that define the project baseline and the proposed changes alter the approved baseline shall be approved by the Project Manager, Project Director, and the Project Sponsor and shall subsequently be submitted to the NRAO Change Control Board
- Changes to Configuration are addressed under the SEMP [RD01] in the section on Configuration Management

7. QUALITY MANAGEMENT:

To avoid confusion, it is important to recognize that there are several types of quality management associated with the SRDP project. The following types of quality management although in scope for the project are out of scope for this document:

- Data Product Quality Management (or Quality Assurance): This is a process developed by the SRDP project and implemented as part of SRDP operations. The objective of this process is to ensure the quality of every delivered data product, and is a deliverable of the SRDP project. The Data Product Quality Management will be described in a separate document.
- Data Process Quality Management: This is the quality management of the process of delivering products to the user community. Again, this is a process which will be developed by the SRDP project and implemented by SRDP operations. A separate document describing the process and implementation will be delivered by the project.

Note: Processes for the Data Product Quality Management and Data Process Quality Management are addressed separately as a function of operations and are subject to review at the time of the Operations Readiness Review.

We use the term *project quality management* to refer to the process by which we ensure the quality of the



Title: SRDP Project Management Plan	Authors: Treacy, Kern	06/30/2018
Document No. 530-SRDP-003-MGMT		Version: 1.01

deliverables from the project. The quality of the deliverables from the SRDP project is measured by the extent to which they achieve the key drivers. We will use a metric driven approach to measure and track project quality, on timescales commensurate with the implementation phases. The applicable metrics are defined in the Requirements Management section of the SEMP (530-SRDP-010-MGMT).

8. HUMAN RESOURCE MANAGEMENT:

The internal organizational chart of the SRDP is shown in Figure 2. There are two groups internal to the SRDP project, the heuristics group (led by the Project Scientist) and the operations group (led by the SRDP Operations Manager). The staff responsible for the software and hardware implementation of SRDP are managed by the DMS department, following standard processes of that group.

Project roles and responsibilities are further clarified in the SRDP Responsibility Matrix (530-SRDP-008-MGMT). In summary there are four roles within the SRDP project office:

- Project Director: Accountable for the overall design and execution of the SRDP Project.
- Project Manager: Responsible for project management and system engineering disciplines. Ensures compliance with Observatory processes and reporting standards.
- Project Scientist: Accountable for the leadership of the SRDP Heuristics group, chairing of the SRDP Requirements Committee, and definition and validation of scientific requirements. Assists the Project Director and AD of Science Support and Research in community engagement.
- Operations Manager: Leads the SRDP Operations group in creation of SRDPs, quality assessment, and SRDP related user support.

Science Ready Data Products: April 2017

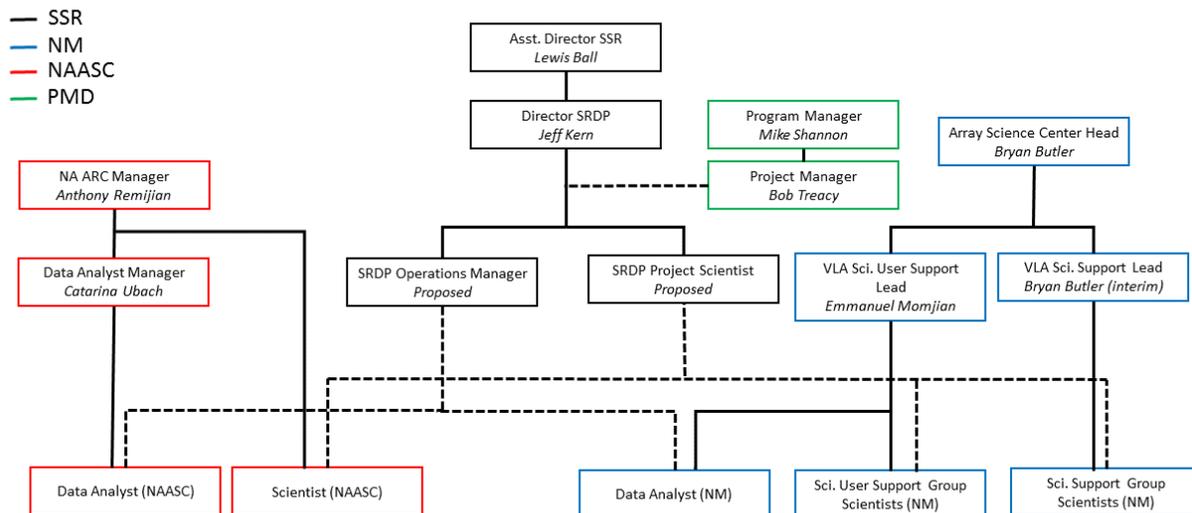


Figure 2 Project organizational chart showing direct and matrixed lines of reporting. Colors designate NRAO departments.



Title: SRDP Project Management Plan	Authors: Treacy, Kern	06/30/2018
Document No. 530-SRDP-003-MGMT		Version: 1.01

8.1. SRDP Heuristics Group

The heuristics group is responsible for the scientific decomposition of the L1 requirements to the L2 requirements. The DMS architect has responsibility for the functional decomposition of L1 to L2 requirements. In practice it is anticipated that these activities are highly iterative and will interact. Additionally, the heuristics group has responsibility for the validation of the delivered implementation.

The Project Scientist is directly managed by the SRDP Director, and provides functional management (but not line management) to the resources allocated to this group. Resources to accomplish the tasks of requirements definition and validation will be drawn from the existing staff of the observatory. The members of the heuristics group will mostly be scientific staff, although data analysts may be included to assist in the validation process where possible.

8.2. SRDP Operations Group

The SRDP operations group is responsible for the deployment and day to day operations of the SRDP pipelines. This includes routine operations of the ALMA and VLA pipelines, as well as workflows and processes developed by the SRDP project. The operations group will primarily be comprised of data analysts, although some scientific staff resources will need to supply scientific support as required.

Currently data analysts at the NAASC spend approximation 60% of their time doing data processing and the remainder assigned to other tasks. At the array operations center in Socorro the effort allocated to data processing currently is a much smaller fraction of the data analysts time, although with VLASS and SRDP processes coming online this fraction must increase. It is not feasible to build and sustain a group based on 100% allocation to data processing review, some variety in the data analyst position is necessary.

The data analysts will continue to be line managed by their respective groups in the NAASC and NMOps hierarchies, but functional management of effort allocated to data processing will be provided by the SRDP operation manager¹.

The SRDP project leadership will provide FTE projections to the annual Budget / Resourcing summit. Recommendation for changes in staffing levels will be developed in agreement with groups providing the resources. Quarterly reviews of requested resource levels, and delivered levels from other groups within the observatory will be conducted.

9. COMMUNICATIONS MANAGEMENT:

The SRDP project will use several collaboration tools to facilitate communication throughout the project.

¹ Both the first epoch of VLASS observations, and ALMA Cycle 5 will begin before the SRDP project has completed the project initiation phase. These operations will continue to be managed external to the SRDP project until an operations manager is appointed and a transition plan is agreed upon. This is currently projected for Q4 FY18.



Title: SRDP Project Management Plan	Authors: Treacy, Kern	06/30/2018
Document No. 530-SRDP-003-MGMT		Version: 1.01

As a general principle, project level documents which are slow to change and are subject to the NRAO approval process will be maintained in the NRAO SharePoint instance under Project 530 Science Ready Data Products. Intra-project documents such as the cyclical requirements (L1) or design documents will be maintained on the SRDP web on the NRAO public wiki (safe.nrao.edu). The technical requirements (L2) will be communicated using the issue tracking system appropriate for the delivering group (usually Jira).

Table I contains the regularly scheduled meetings for the SRDP project. Additional meetings will be scheduled on an as needed basis. Project staff will assist NRAO management in preparing for and presenting status at reviews, committee meetings, and other such forums upon request.

Action Items (AIs) identified in weekly meetings, emails, personal communication, and other sources are tracked in a spreadsheet and reviewed on a regular basis. AIs are assigned to blockers, conflicts, and other tasks that require either immediate action or disciplined follow up; for which a clear course of action is known. The AI list supplements tracking of scheduled tasks, but does not capture or track routine work otherwise included in the project schedule. The spreadsheet will include the source and date of discovery, the owner, due date, status, and other comments. As actions are addressed they are not deleted, but moved to a closed tab in the spreadsheet with any notes related to the resolution. The AI list will be archived as part of the project document set.

An Issue Log [RD09], differentiated from the action items, will also be maintained. Issues may arise from triggered risk or discovery during execution of project tasks. Issues arising from triggered risk will initiate the mitigation plan, which is incorporated into the project schedule. Issues arising from discovery may not immediately have a known course of action and are carried in the log until a plan is developed. Once a plan is developed; it is incorporated into the project schedule and tracked as normal work. Retired issues are not deleted, but are assigned retired status. The Issue Log will be archived as part of the project document set.



Title: SRDP Project Management Plan	Authors: Treacy, Kern	06/30/2018
Document No. 530-SRDP-003-MGMT		Version: 1.01

Table I Planned periodic meetings for the SRDP project.

Project Communications							
Communication Type	Objective of Communication	Medium	Frequency	Audience	Owner	Deliverable	Format
Team Meeting	Review requirements and objectives with members of Science, Operations, and Implementation Teams	<ul style="list-style-type: none"> • Face to Face 	Yearly	<ul style="list-style-type: none"> • Selected Project Team Members • Selected Members of DMS 	PD	<ul style="list-style-type: none"> • Agenda • Meeting Minutes • 	<ul style="list-style-type: none"> • Soft copy on SRDP Wiki
SRDP Requirements Committee Meeting	Develop L0 requirements, concept of operations, and cyclical LI requirements.	<ul style="list-style-type: none"> • Face to Face • Conference Call 	As needed, but no less than yearly	<ul style="list-style-type: none"> • Project Scientist • Committee Members • Project Manager 	PS / PM	<ul style="list-style-type: none"> • L0 Requirements and Con-Ops • LI Cyclical Requirements 	<ul style="list-style-type: none"> • Soft copy archived on SharePoint • Soft copy archived on SRDP Wiki
Operating Plan Program Updates	Report progress relative to NRAO POP	<ul style="list-style-type: none"> • Report 	Quarterly	<ul style="list-style-type: none"> • Project Sponsor • NRAO Management 	PD / PM	<ul style="list-style-type: none"> • Quarterly Status Update 	<ul style="list-style-type: none"> • FourSquare slides delivered to PMO
Project Status Reports	Report the status of the project including activities, progress, costs and issues.	<ul style="list-style-type: none"> • Report 	Monthly	<ul style="list-style-type: none"> • Project Sponsor • Project Team • PMO 	PM	<ul style="list-style-type: none"> • Project Status Report • Project schedule 	<ul style="list-style-type: none"> • Soft copy archived on SharePoint



Title: SRDP Project Management Plan	Authors: Treacy, Kern	06/30/2018
Document No. 530-SRDP-003-MGMT		Version: 1.01

Project Communications							
Communication Type	Objective of Communication	Medium	Frequency	Audience	Owner	Deliverable	Format
Project Coordination Meeting	Review project status, baseline, and risk with the team, feedback issues to project leads	<ul style="list-style-type: none"> • Face to Face • Conference Call 	Bi-weekly	<ul style="list-style-type: none"> • Project Director • Project Manager • Project Scientist • Operations Manager • DMS Architect • DMS: Head of Software • DMS: Head of SIS 	PM / PD	<ul style="list-style-type: none"> • Agenda • Meeting Minutes • Project schedule 	<ul style="list-style-type: none"> • Soft copy archived on SRDP Wiki
Operations Status Meeting	Report status and issues from SRDP Operations	<ul style="list-style-type: none"> • Conference Call 	Weekly	<ul style="list-style-type: none"> • SRDP Operations Team • Project Manager • VLASS Director 	OM	<ul style="list-style-type: none"> • Agenda • Meeting Minutes 	<ul style="list-style-type: none"> • Soft copy on SRDP Wiki
Heuristics Team Coordination Meeting	Report status and issues from SRDP heuristics development and validation.	<ul style="list-style-type: none"> • Conference Call 	Weekly	<ul style="list-style-type: none"> • SRDP Operations Team • Project Manager • VLASS Director 	PS	<ul style="list-style-type: none"> • Agenda SRDP • Meeting Minutes 	<ul style="list-style-type: none"> • Soft copy on SRDP Wiki
AAS / Scientific Topical Meetings	Opportunities to engage the non-R.A Community and promote use of SRDP	<ul style="list-style-type: none"> • Face to Face 	Annual	<ul style="list-style-type: none"> • Astronomers and Scientists (Non-Radio Astronomy) 	PS	<ul style="list-style-type: none"> • Posters • Papers • Presentations 	<ul style="list-style-type: none"> • Various presentation materials
User Committee and CASA User Committee	Opportunities to engage the Radio Astronomy Community and promote use of SRDP	<ul style="list-style-type: none"> • Face to Face 	As requested	<ul style="list-style-type: none"> • Astronomers and Scientists in the Radio Astronomy Community 	PD	<ul style="list-style-type: none"> • Presentations 	<ul style="list-style-type: none"> • Various presentation materials
Community Days / Workshops	Educate users on SRDP capabilities.	<ul style="list-style-type: none"> • Face to Face 	As possible	<ul style="list-style-type: none"> • Astronomers and Scientists in the community 	PD/PS	<ul style="list-style-type: none"> • Presentations • Examples 	<ul style="list-style-type: none"> • Workshop



Title: SRDP Project Management Plan	Authors: Treacy, Kern	06/30/2018
Document No. 530-SRDP-003-MGMT		Version: 1.01

Project Communications							
Communication Type	Objective of Communication	Medium	Frequency	Audience	Owner	Deliverable	Format
Community testing and evaluation	Early user feedback on capabilities	<ul style="list-style-type: none"> E-mail or similar 	As necessary	<ul style="list-style-type: none"> Astronomers and Scientists in the community 	PS	<ul style="list-style-type: none"> Evaluation Summary 	<ul style="list-style-type: none"> Online validation



Title: SRDP Project Management Plan	Authors: Treacy, Kern	06/30/2018
Document No. 530-SRDP-003-MGMT		Version: 1.01

10. RISK AND ISSUE MANAGEMENT

SRDP risk management begins with identification of risks presented in the Project Charter, which are used to initially populate the project risk register. Risk is weighted according to impact and probability, coupled with mitigation strategies and secondary risk identified where applicable. Weighting and scoring of risks are the responsibility of the Project Manager, with input solicited from domain experts. Subsequent risks that are identified are added to the risk register, weighted, and mitigated in the same manner. Risks are reviewed in regular meetings of the project office team, monitoring triggers, impact and probability, mitigation strategy, secondary risk, and other criteria which may require updates as the risk environment changes. Risks that are triggered are entered into the Issue Log and the mitigation plan is integrated into ongoing project planning. An assessment is made when risks are triggered to determine if a change request against the project baseline is necessary. The Project Manager is responsible for risk management (with input from domain experts), closing and retiring risks which no longer pose a threat, and moving triggered risk to the issue log. Additional entries to the SRDP Risk Register [RD08] are not subject to change control but are incorporated at the discretion of the Project Manager following processes outlined in [RD13]. Once a risk is triggered, it is entered into the SRDP Issue Log [RD09] and managed according to the approved mitigation strategy. Risk by nature, is in the future. Issues by definition are in the present. Issues that are identified apart from triggered risk are entered in the issue log and managed in the same manner.

Rolling wave planning by nature has increased uncertainty over projects planned under a predictive methodology. The increased uncertainty accompanied by rolling wave planning must be taken into account wave by wave, where the project schedule is particularly vulnerable to this risk. For this reason, the

Decision making authority for issues within the SRDP project resides with the Project Director. For issues arising at interface boundaries with other departments at NRAO, the Project Scientist or Operations Manager should work with the appropriate Group Lead to develop a consensus response. If agreement cannot be reached at this organizational level the issue is escalated to the SRDP Project Director and either Division Head or Deputy-AD as appropriate. The next step in escalation is to the Assistant Director level with the AD for Science Support and Research representing the SRDP project interests. Final decision authority if agreement is not reach at the AD level is the Observatory Director

At the discretion of the Project Director and Project Sponsor, risks from the SRDP Risk Register may be promoted to the Observatory Risk Register (under provisions of [RD12]) as part of the Science Support and Research Department or DMS reporting process. These risks will be reviewed no less than quarterly as part of the observatory Risk Management process [RD12].

SRDP risk that involves supporting departments will be entered in the SRDP Risk Register for reference and the supporting departments shall be advised to track their risk independently within the Observatory Risk Management process. When assessing risk at the project level, a consideration should be made to escalate to the Observatory Risk Register if the risk is to the project baseline. Triggered risk that could undermine the project baseline must be carried on the Observatory Risk Register in order to draw on any observatory level contingency that may be available.



Title: SRDP Project Management Plan	Authors: Treacy, Kern	06/30/2018
Document No. 530-SRDP-003-MGMT		Version: 1.01

11. PROCUREMENT MANAGEMENT:

The SRDP project does not foresee a need for an independent procurement process. Individual computing resources (desktops) will be provisioned following the standard NRAO process. Shared resources (cluster nodes, lustre storage, network infrastructure) will be provisioned by the DMS department.

12. STAKEHOLDER MANAGEMENT

SRDP Stakeholders have been identified within various groups both internal and external to NRAO as anyone that SRDP Project work has the potential to impact. Primary groups include NRAO Scientists, Data Analysts, management, developers, and Operations Staff; both within VLA and ALMA. There is interest in SRDP within the VLBA and GBO, however these organizations are not yet supported by the NRAO SRDP Project. External to NRAO are the CASA Users Committee, the NRAO Users Committee, AUI, and of course NSF. A detailed list has been compiled in the SRDP Stakeholder Register [RD02]. Stakeholder management includes work within the SRDP Requirements Committee which serves as a proxy for communicating needs from the User Community to the Project. Needs within the stakeholder base inform the Communications Plan in Section 9 of this document, as well as the requirements management planning. The primary focus of the Project Communications in Table I is internal to NRAO, however members of the Project Office use every opportunity to socialize the objectives of SRDP and manage expectations within the User Community, inform NSF through the Program Operating Plan and QSU reporting, and through EPO.

13. PROJECT Transition:

SRDP project activities will eventually transition to routine SRDP Operations. This is anticipated to occur after several phases of cyclical development. At that time, the project management strategies for establishing the SRDP processes will yield to operational strategies, which will allow for continuous enhancement and improvement to the SRDP processes. A project closeout report shall be submitted to the Project Sponsor and NRAO Director affirming that SRDP has met all high-level deliverables. The report shall address the degree to which the project performed against its original plan, budget, schedule and technical parameters and also capture lessons learned.

14. Operations Management Plan

The SRDP project defines and enhances processes necessary for the continued production of data products and access to them through the archive. An operations management plan is required to execute the SRDP processes, produce, and deliver data products. The Operations Manager is responsible for developing, executing, maintaining, and improving this plan. The Operations Manager will join the project prior to wave one deployment and work under direction of the project office until the transition to Operations is complete.

The Operations Plan shall include the Data Quality and Data Process Quality Plans and a definition of the processes needed to execute those plans. The plan shall also address the scope of user documentation required, who is responsible for the documentation, and when it needs to be ready in the project lifecycle. In most cases, existing documentation will be updated to cover capabilities as they are added in



Title: SRDP Project Management Plan	Authors: Treacy, Kern	06/30/2018
Document No. 530-SRDP-003-MGMT		Version: 1.01

each wave.

The Algorithm Research and Development Group (ARDG) will support development during the SRDP Project execution period and continue to support SRDP through operations.

Once capabilities in the SRDP Roadmap have been delivered and the Project Office is dissolved, the SRDP processes will continue into operations with enhancements and updates to the original roadmap. The SRDP Operations Management Plan shall address the post project activities in the context of operations to ensure the SRDPs continue to execute and improve the requirements management process, ongoing architectural, heuristic, and algorithmic development, and the QA processes to ensure SRDPs are supported to meet the needs of the user communities.