Manual for In-kind Contributors and Recipients

Phil Marshall, Bob Blum, Greg Madejski, Knut Olsen, Steve Ridgway, Aprajita Verma

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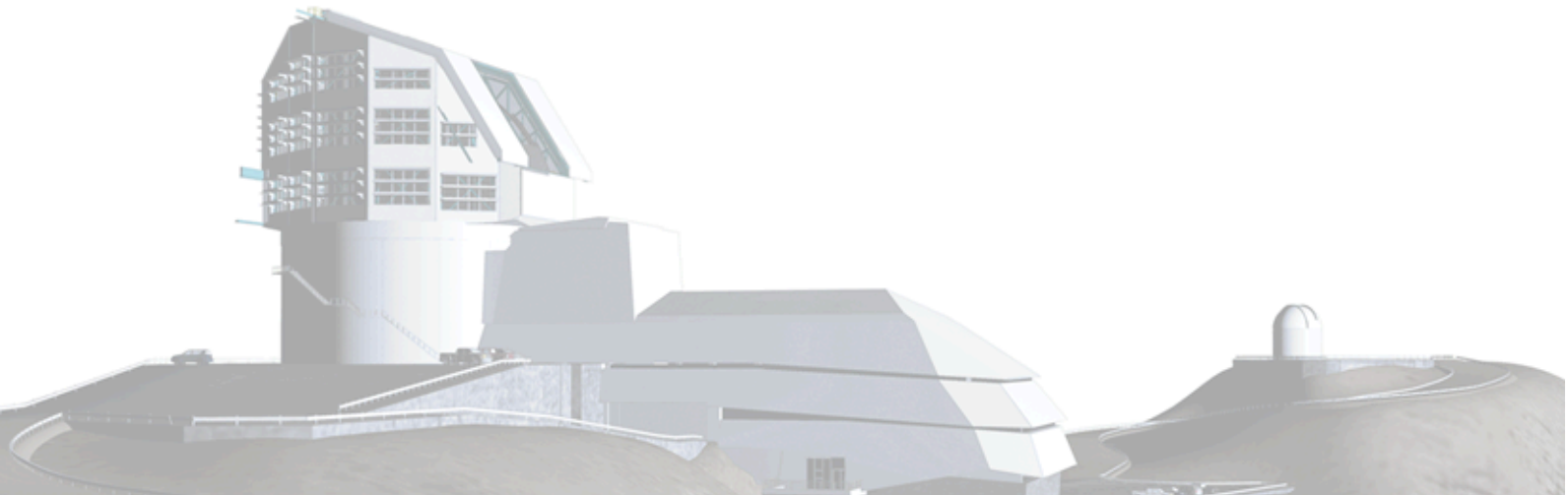

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Rubin LSST International In-Kind Contribution Program

Manual for In-kind Contributors and Recipients

This document is a reference manual for all in-kind contribution teams and their recipient groups, to provide guidance in the implementation of the in-kind contributions outlined in the contribution teams' statements of work. This Manual is a living document, maintained by the Rubin In-kind Program Coordination (IPC) Team. Your suggestions for improvement and raising of issues is most welcome: please use the Manual's feedback form.

1 Introduction

Phil Marshall, Bob Blum

The Rubin Observatory in-kind program was initiated in May 2019 following a set of talking points circulated by Rubin's US agencies, NSF and DOE, that focused on the principle that in-kind contributions from teams outside the US and Chile should, in return for LSST data rights, "expand the resources available to the U.S. astrophysical and high energy physics communities." To achieve this, each in-kind contribution must be "embedded" within one or more "Recipient" groups, which can be one of the LSST science collaborations, Rubin Observatory teams, or Rubin's operating partners (NOIRLab and SLAC), so as to ensure that the contribution brings significant benefit to the wider US-based LSST science community. In practice, doing so strengthens the ability of the whole LSST science community to achieve its collective goals. In-kind contributions from teams in the US and Chile are also possible: while those teams already have LSST data rights, they may still choose to propose and execute a contribution that similarly expands the resources available to the LSST science community.

This Manual provides brief guidance both to the contribution teams within individual in-kind programs, and also to the recipient groups within which the program teams' contributions are embedded. It is a sequel to its companion document, the Handbook for Proposal Teams, picking up the thread at the point when a contribution has been approved for capture in a suitable data rights agreement with one of Rubin Observatory's managing organizations or funding agencies, and covering the implementation of the contribution and its reception. It is designed to be a reference manual rather than a cover-to-cover read: participants in the in-kind program may find it most useful to visit Appendix B first, for a step by step checklist of what will be involved for them, before referring back to the Table of Contents to look up the detailed guidance they need.

1.1 Roles, Acronyms and Definitions[1]

All people associated with any part of the In-kind program including those providing, receiving or supporting contributions and programs are expected to adhere to the Rubin Code of Conduct.

[1] These will be added to the Rubin Glossary at https://www.lsst.org/scientists/glossary-acronyms

1.1.1 General

International: neither US nor Chilean

1.1.2 Pertaining to In-kind Contributions

In-kind Contribution: a self-contained item of value provided to Rubin Observatory or the LSST Science Community that expands the resources available to the US and Chilean science community. In-kind contributions can take the form of (a) Telescope time, (b) Datasets, (c) Computing Resources, (d) Independent Data Access Centers (IDACs), (e) Contribution to Rubin construction and operations (including commissioning), (f) software development for Rubin operations and/or Science Collaborations. International in-kind contributions will have been evaluated and recommended for acceptance by the Contribution Evaluation Committee (CEC) and be acknowledged in the data rights agreement for that international program.

In-kind Program: a set of in-kind contributions compiled by the community or group making them.

Program Lead (PL): The Program Lead is the individual who coordinated the in-kind Program and led the initial in-kind proposal. They are the main contact for any program level discussions with Rubin.

Program Manager (PM): The Program Manager is the individual responsible for ensuring the contributions within their program are on track and that the relevant reporting has been completed and submitted on time. The Program Manager maintains the list of data rights holders covered by their program, and provides regular updates of this list to Rubin.

Contribution Lead (CL): The lead scientist or developer responsible for the delivery of a single contribution, that is part of a wider program, and for reporting on its progress. They are the primary contact for the contribution for the PM (defined above) and IPC team (defined in S 1.1.2), and may nominate one of their contribution team as primary contact for the recipients to enable more direct technical communication. The CL is responsible for reaching out and engaging their contribution's"recipients" (see below) to jointly initiate and then develop a work plan, including specific deliverables and seeing the contribution through to completion. The "embedding" of in-kind contributions in their recipient groups is key to ensuring that the value of the contribution is fully realized. The CL is responsible for ensuring that their team act as good citizens in the recipient group and the wider Rubin/LSST community, being both communicative and open to collaboration.

1.1.2 Pertaining to Rubin and Science Collaborations

Recipient group: The group for which the contribution is designed, and in which the contribution and the contributing team is "embedded". The recipients are typically LSST science collaborations, Rubin Observatory teams, or Rubin's operating partners (NOIRLab and SLAC). There may be more than one recipient group for any contribution: the **primary recipients** are responsible for the direction and tracking of the work and their feedback carries most weight. The other recipient groups are referred to as **secondary recipients**.

In-kind Program Coordinator (IPC): This is a Rubin operations role in the Directors Office. The IPC team works with and reports to the Rubin Directorate to facilitate the in-kind contributions. They act as liaisons between Rubin, the contribution teams, and the recipients. Each contribution has an IPC contact, typically one who specializes in that contribution's type. Each program has an IPC contact too, who works with the Program Manager to make sure work is planned and performance reviewed. IPCs

will also provide infrastructure to report on the work, collate and distribute feedback, facilitate discussions between contributors and recipients, and report on status and any issues arising in the in-kind program to the Rubin Director of Operations. IPCs will reply to in-kind enquiries on a best effort basis, with at least an acknowledgement of reading the enquiry within 3-5 working days during the evaluation and update periods of the annual cycle where queries are expected to be higher. Exceptions to this may occur at e.g. other less busy times within the annual cycle, periods of other workload for staff, or staff absences etc. If possible, an alternate contact may be identified.

Rubin LSST In-kind Contribution Evaluation Committee (CEC): The CEC, chaired by one of the Rubin Deputy Directors of Operations, makes recommendations to the **Rubin Observatory Operations Director** about the scientific utility of in-kind contributions that have been proposed by international groups in return for LSST data rights. The CEC website holds more information on the Committee, its membership and remit.

Rubin Coordination Groups: Rubin has setup a few community groups such as those for Photometric Redshifts, Crowded Fields and IDACs that aim to assist with coordinating effort in these cross-cutting themes with multiple stakeholders within the Rubin ecosystem. The groups are organised, supported, and overseen by Rubin staff, including **Rubin Community Scientists** from the Rubin Observatory Community Engagement Team led by Melissa Graham. Many of the in-kind contributions are relevant to these groups. Further information about the community groups are given in this community post, and the linked text above leads you to the community page for each existing group. New groups will be added to this as needed, these may originate from Rubin and/or the science user community, and will be announced on the community forum. The community group contacts are listed in the contacts table.

Rubin Resource Board: The Rubin "Resource Board" or "Resource Forum" will monitor the overall performance of the Rubin in kinds, as presented to it by the Rubin Operations Director, and provides a discussion forum for in-kind programs to solve problems together. The board or forum may concern itself more generally with overall Rubin performance, but this has not been established. The main goal of the board or forum will be to ensure the major in kinds, and in particular the offsets to operations, are performing as agreed to by all stakeholders. This body is currently being designed by the Rubin managing organizations. This Manual will be updated later with its final name and more details on how it will work; for now, we use the name "Rubin Resource Board" since this is what was specified in the May 2019 agency talking points. The Resource Board is not a part of the formal Rubin Observatory governance structure, but will serve as a forum to inform the US and international funding agencies on the in-kind program performance and allow them to assist in addressing issues that may arise.

1.1.3 In-kind Contribution Key Documentation

Statement of Work (SOW) and Implementation Plan (IP): The SOW is a short summary describing the deliverable(s) of an in-kind contribution. Its IP provides an explanation of the SOW. Together, they include the background for the proposed contribution, a summary of the planned activity, the technical objectives and deliverables, a calculation of the number of PIs with data rights expected for the contribution, and a list of the key personnel involved in the Contribution, including the Recipients. The SOW and IP are based on the submitted in-kind proposal but may include additional and/or updated information. In-kind proposals consist of an initial IP, and a summary that constitutes the SOW. (NB. The 2020 in-kind proposal template used the term "Detailed Plan" for the initial IP.)

Work Plan: Following approval of a proposed In-kind Contribution, the Contribution Lead is expected to initiate the development of a Work Plan based on the SoW and the IP. The Work Plan should be developed in consultation and with the approval of the Recipients with the goal of establishing how and when the work will be done to deliver the Contribution. The IPC team may facilitate the development of this Work Plan and will also provide a template for the Work Plan visible to the contribution teams, the recipient(s) and Rubin. After initializing with a summary, the Work Plan is developed via a series of Quarterly Updates, to enable flexibility in planning. Further details on developing the Work Plan are given in Section 2.2.

Data Rights Agreement (DRA): The document that formalizes the exchange of international In-Kind Contributions for LSST data rights for some number of PIs.

1.2 Agreements

Each in-kind contribution is defined in a specific section of its program's statement of work (SOW), which is attached to an agreement between the program and Rubin, its managing organizations, or its funding agencies. For an international program, this agreement specifies the number of PIs with LSST data rights the program can have in return for the resource proposed. As well as the main body of the agreement and the SOW annex, each contribution has an Implementation Plan (IP) held by Rubin and maintained by the Contribution Lead.

While many in-kind contributions will have descriptions, timelines and deliverables that remain stable throughout the period of their implementation, some contributions' SOWs and IP will need amending as the needs of the recipient and the circumstances of the contributors change (see Section 2.1 below).

2 In-kind Contribution Management

Phil Marshall, Bob Blum, Aprajita Verma

The overarching goal of the Rubin LSST in-kind program is to "expand the resources available to the U.S. astrophysical and high energy physics communities" (and consequently the LSST science community). Where possible, then, the burden for managing the in-kind contributions should be shouldered by the contributing programs and/or Rubin Observatory and its operating partners NOIRLab and SLAC (who can request resources from the US agencies to carry out the necessary work). In this section we outline the processes for managing Rubin in-kind contributions.

2.1 Contribution Definition and Amendment

New proposed contributions, and amendments to existing contributions, are expected to be rare, and there will not be an annual call for proposals of either. If a program's circumstances change significantly, or a new and pressing need is identified by either a recipient group or a program, changes to a program are possible, as follows.

Defining new contributions

- Program teams should first discuss possible new contributions informally with their IPC or the Rubin Operations Director to check for approximate suitability.
- If invited to develop a full proposal by the Rubin Operations Director after the informal

discussion, program teams should then propose their new contribution(s) in a document following a Rubin-supplied in-kind proposal contribution template. (A new proposal template is being prepared, to replace the one in the Handbook for Proposal Teams). Rubin Observatory will consider new proposals via the review process outlined in Section 2.4.3 below, but is not obligated to accept or act on them. Especially in the early part of the survey, Rubin will concentrate on implementing the initial set of contributions solicited in 2019.

- Proposals are reviewed by the Rubin Operations Director (advised by the CEC and in consultation with the proposed Recipients). If a proposal is deemed appropriate and needed, the Director will recommend either a new agreement (if one does not already exist) or the addition of a new contribution section to an existing agreement, for signature by the program lead and Rubin signatory.

Amending existing contributions

- The Statement of Work and Implementation Plan for a given contribution may be amended following a request for change made to Rubin by the Program Manager or by Rubin to the Program Manager. (See the In-kind Contribution Management section below.) Such requests are reviewed by the Rubin Operations Director (advised by the CEC and in consultation with the Recipients), who then recommends changes to the agreement for renewed signature by both parties.

Conflicts of Interest

- In some cases a contributing program may have members who are also members of a recipient group (most likely a LSST Science Collaboration). Any person in a recipient group for a contribution that includes members of the same institution as the person in the recipient group shall declare that conflict of interest (COI) with the recipient group leadership and contribution Program Manager. The PM will identify the COI to the associated IPC member. In no case will the conflicted recipient group member participate in the review or acceptance of the contribution. The conflicted recipient group member will not participate in directing the contribution or developing the contribution in detail (e.g., will not propose the contribution in the case of general pooled software). The conflicted recipient group member may join general discussions about the contribution with others in the recipient group to support clarifications or other factual input but should not present as an advocate for the development of the contribution.

2.2 Contribution Work Planning

Approved contributions will initially be planned by the contribution team under the leadership of the Contribution Lead and other appropriate persons in the team, and following an initial discussion with the Recipients. **It is the responsibility of the Contribution Lead (CL to reach out and engage the Recipients.** Initial contact regarding a contribution, should be made no later than three months and no earlier than four months before the start of work for the contribution. These Work Plans will then be further developed collaboratively with the Recipients over the subsequent weeks with a goal to have a near complete draft no later than two months before the start of the contribution. The draft will then need to be agreed upon with and approved by the Recipients before the contribution starts.

It is envisaged that the Work Plan itself will contain key objectives, milestones, and deliverables, and

the actual work towards these will be planned each quarter and progress logged as part of the quarterly reporting structure. The initial Work Plan should also contain the more detailed activities planned for the first quarter. See Contribution Performance Tracking for more information.

Each contribution has a Rubin In-kind Program Coordinator (IPC) assigned to it. A Work Plan template (Appendix C) will be provided by the IPCs and the Work Plans will be held by Rubin. The initial work planning discussion may (but does not have to) be facilitated by the IPC.

Appropriate changes and additions from the Recipients will be built into the current contribution Work Plan, within the available resources specified in the SOW for the contribution. It is expected that contributions in different categories will require more or less planning (at least initially) depending on the nature of the contribution. Telescope time, for example, will involve establishing logistical connections between NOIRLab and the contributing institution and will follow a regular sequence of annual events and deadlines; work planning for telescope time contributions will typically need to begin some time in advance of the contribution start (see the Telescope Time and Datasets Section below) . Directable software development effort (including that which is allocated through the General Pool) will require detailed work planning to be carried out with strong collaboration with the recipient group (e.g. a Science Collaboration, or a Rubin team).

Disputes that cannot be resolved by the Contribution Lead and Recipients may be raised to the relevant Rubin In-kind Program Coordinator who will work with both parties and the Program Manager to find a solution. Escalation is to the Rubin Operations Director.

2.3 Contribution Performance Tracking

In-kind contribution performance is evaluated on an annual basis, following quarterly progress updates. In this section we will describe both of these elements separately.

The *quarterly update* allows an evaluation of the progress made in the preceding quarter and allows responsive planning of the work to be undertaken in the next quarter.

The fall quarterly update is replaced by an *annual evaluation* that allows a broader view of the annual progress of the contribution.

In order to minimize the burden on the recipients, the quarterly and annual progress is self-reported by the Contribution Leads, following a template form developed by the Rubin IPC Team (Appendix C). It is expected that the reporting will focus on exceptions to progress as planned, and any issues that pertain to changes of direction. I.e. This means that activities being carried out as planned will be assumed to be so, and do not need to be reported on. The goal is to minimise reporting and reviewing and to efficiently identify and solve problems with the contribution. This approach will be encouraged through the template form.

The annual and quarterly self-reporting cycles are initiated by the IPCs; the Program Managers bear the responsibility to ensure that their teams complete and submit reports by the due dates.

The annual evaluation responses and quarterly updates are reviewed by the IPC and Recipients. In the annual performance evaluation, significant issues are raised by the IPCs to the Rubin Operations Director, who, advised by the CEC, may request changes to the program's statement of work (i.e. in the Data Rights Agreement) and implementation plan.

The Rubin Resource Board monitors in-kind contributions, as presented to it by the Rubin Operations

Director. The Resource Board provides a discussion forum for programs and their agencies to solve problems together.

Quarterly Update Guidelines

- Each quarter, the IPC assigned to the program will request a brief progress update for each contribution from the Program Manager, who will collect them using a quarterly update form provided by the IPC (Appendix C).
- The quarterly update is foreseen to complement the work plan with a summary of work or issues arising in the last quarter, along with a plan for work or activities for the next quarter.
- Once in hand, the recipients will be notified and provided with a collated list of their contribution reports. Recipients will review the updates and note any comments or issues to the CL as feedback or confidentially to the IPCs as issues arising with the contribution(s), via the quarterly report form.
- For any issues arising from the CL or Recipients, the IPC will provide feedback to either the Program Manager or the Recipients, as needed.

Annual Performance Evaluation Guidelines

- At the beginning of the annual reporting cycle, the IPC assigned to the program will provide the Program Manager with an evaluation form (Appendix C) for each contribution with its due date.
- The Program Manager will work with each Contribution Lead to complete the report, and then return that to the IPC by the due date.
- The IPC will arrange for review of each contribution's report by its Recipients, following a form developed by the IPC team. This review will include feedback to be given to the CL and Program Manager, and additional comments for the Rubin Operations Director, all of which the IPC will transmit.
- The IPCs will summarize the results of the above reporting process to the Rubin Operations Director, and flag any particular problems arising so that the Director can ask the CEC to recommend solutions. We expect the number of such problems to be few and will therefore place a correspondingly low burden on the CEC's time.
- The Rubin Operations Director reports to the Rubin Resource Board on the programs' performance, and proposes changes to the programs' contributions as needed. This report, or relevant parts of it, will be shared with the Program Managers as well as the programs' Resource Board representatives[2]: the Program Manager is responsible for reporting on contribution progress to the program's leadership, as well as briefing their Resource Board representative on the issues and potential solutions.
- Each program's Program Manager and IPC then work together to orchestrate the needed modifications to its statement of work. These modifications are treated as requests for change that are then reviewed by the Rubin Operations Director (advised by the CEC and in consultation with the Recipients), who then recommends changes to the agreement for renewed signature by both parties. (At this point, additional requests for change are handled as well - see the section on Contribution Definition and Amendment above.)

[2] Note that the Resource Board representatives may represent multiple programs. The design of the Resource Board is still under development.

- Each contribution has a midpoint, according to the timeline in its statement of work. The annual performance evaluation before this mid-point may, if needed, serve as a **mid-term assessment,** that provides an opportunity for both the Program Manager and the IPC to take stock of the contribution, and, if desired, propose changes to the contribution above and beyond the usual quarterly evolution in the work plan, in response to the evolving needs of the Observatory, the LSST Science Community, and the contributors. The IPC will check in with the Recipients, and PM and CL, to see whether any such strategic changes are warranted and feasible.

Enforcing the terms of the DRA

Rubin Observatory and the contributing programs are both planning for success. Rubin will do everything within its power and resources to help contributing programs succeed. The quarterly and annual performance updates will guide Rubin in interactions with teams whose contributions are falling behind or otherwise failing to meet the terms laid out in the formal DRA. The DRA will specify actions that may be taken in the event that one or more of a program's contributions is not meeting the expected deliverables for those contributions. Actions include up to rescinding some or all of a program's data rights for the remainder of the survey. Deliverables will often not be a specific scientific outcome, but rather a good faith level of effort performed, telescope time delivered, or operations tasks performed.

- It is expected that delays will occur in the normal course of development. Rubin IPCs will work with programs to find ways to adapt to delays. Delays are not in and of themselves a reason to modify the data rights exchanged, but significant delays that result in significantly reduced value of a contribution to Rubin and the US community could result in a revised DRA.

- It is expected programs will promptly deliver required reports and otherwise complete their administrative tasks as laid out in the DRA and this manual. Consistently delayed reports or tasks will result in the Rubin IPC making a formal communication to Rubin leadership. Rubin leadership will work with the program's institutional leadership to resolve the issue. If it continues, the program may lose their future data rights.

- It is expected once a program agrees to deliver a contribution to a recipient group that the members of the program will work effectively and collegially with the recipient group to deliver the contribution. If the program team does not engage effectively with the recipient group, Rubin IPCs will try to mediate a solution. If the problem persists, the IPC will call upon Rubin leadership to address the issue with the program lead. If that does not solve the problem, Rubin leadership will go to the program institution leadership to negotiate a solution up to and including rescinding future data rights associated with the contribution. If the recipient group is not effectively engaging, Rubin IPCs and/or leadership will intervene with the recipient group lead to mediate a solution.

2.4 Annual Cycle Timeline

Here we summarize the timing of the annual cycle of contribution definition, update, evaluation, and amendment, as described in the sections above. Specific dates are given for illustration purposes only;

in practice, due dates will be chosen year by year. (This schedule is provisional, in that both the starting month and the time periods for each activity may be adjusted based on feedback from the recipients and the Rubin Management Board, as well as following the experience from the first annual review.)

2.4.1 Annual Performance Evaluation (September)

- Early September: Annual Contribution Self-report (CLs coordinated by PMs, 2 weeks)
  - IPCs circulates form for Annual Contribution Self-report to PMs, end of August
  - **Submission by mid September**
- September week 3 & 4: Annual Recipient Review (Recipients with IPCs, 2 weeks)
  - Recipient satisfaction is the primary metric for success.
  - **Recipient review complete by end of September**
- October week 1 - October week 4: Annual Performance Evaluation Report Production and Collation of Issues (IPCs, 3 weeks)
  - Week 1 & 2: IPCs review reports and write recipient feedback to CLs and any programmatic level comments for the PM, flagging issues for Rubin.
  - Week 3: IPCs to check all feedback for consistency and style, review and produce report for the Rubin Operations Director.
  - Week 4: Share collated feedback text & report with recipients & Rubin Operations Director
- November week 1 - November Week 3: Annual Report Consideration and Finalization (Directorate, CEC with IPCs, 3 weeks)
  - IPCs with Directorate: IPC presentation on report, discuss issues, request additional information, collate any issues for CEC
  - CEC meeting (if needed) or communication as required by Rubin Operations Director, IPCs incorporate any CEC feedback and prepare recommendations for the Rubin Operations Director.
  - **Transmit feedback to recipients, PMs and CLs by mid November**
  - Implement any recommendations into the Annual Report. These will define and explain all proposed amendments to the Rubin Resource Board. **Annual Report finalized by end of November**
- Late November to mid-December:
  - Send Annual Performance Evaluation Report to the Rubin Resource Board (Rubin Operations Director with IPCs, 1 weeks)
  - Rubin Resource Board Meeting including presentation and discussion of key points from the submitted report
  - **SOWs amended by mid December** (PMs & CLs with IPCs and Rubin Operations Director and Recipients, as needed)

2.4.2 Quarterly Updates

- Reporting periods
  - Reporting for the quarter/year starts in week 1 or 2 of the last month in the quarter. While we understand this won't include work carried out in the last month this allows the work for the next quarter to be developed and checked by the recipient.

Quarter	Due by	Covers work done	Plan of work for (inclusive)
Q1	Week 1 December	October-December	January-March
Q2	Week 1 March	January-March	April-June
Q3	Week 1 June	April-June	July-September
Q4 / Annual Evaluation	Week 2 September	October preceding year to current September	October-December

- Typical 3-week timeline:
    - End of November: IPCs release quarterly update form to PMs
    - December week 1: PMs request updates (a brief summary and/or issues arising from the previous quarter, and the expected work plan over the next quarter) from CLs.
        - **Updates submitted by CLs December week 1**
    - December week 2: IPCs share updates with Recipients and request a) comments and b) modifications to the proposed quarterly work plan (in collaboration with the CLs)
        - **Recipient review complete by mid December**
    - December week 3: IPCs collect issues arising, and flag to the Rubin Operations Director as needed.

At all review stages, CLs, PMs and Recipients will be able to make confidential comments to the IPCs if needed, and the IPCs will act (either directly or with the Rubin Operations Director) to facilitate progress with the contribution.

2.4.3 March Proposal Review

- The IPCs will field enquiries from program teams regarding new contributions, or proposed amendments to contributions prompted by circumstances other than contribution performance, and determine whether proposal review is required. IPCs facilitate interactions between CLs and Recipients, encouraging prospective CLs to reach out to their intended Recipients early. The IPCs will maintain a running list of proposed new contributions and amendments, including whether they have been approved for development by the Rubin Operations Director. *NB. New proposed contributions, and program-side amendments, are expected to be rare. There will not be an annual call for proposals.*
- February/March: Annual Proposal Development (CLs coordinated by PMs, 6 weeks)
    - IPCs re-issue Handbook and proposal template to PMs, end of January
    - **Proposal submission by PMs by mid March**
- Mid-March to April: Recipient and Rubin Review (Recipients and IPCs, 3 weeks)

    - Recipient satisfaction is the primary metric for success. It is expected that recipient teams will therefore provide an evaluation of the proposal in a format provided by the IPCs. At their discretion, the Recipient contact can solicit advice from their CEC representatives and/or other key members of their SCs/community.
    - In parallel, the IPCs will perform the Rubin review for technical feasibility and Handbook compliance.
    - Once these reviews are complete, the IPCs will brief the CEC on the proposals received but no CEC review action on individual proposals is needed at this stage.
    - **Recipient Review and parallel Rubin Review both complete by end of April week 1**
- April week 2 - 4: Proposal Review Report Production (IPCs, 3 weeks)
    - Week 2 & 3: IPCs synthesize review reports to CLs and any programmatic level comments for the PM, flagging issues for Rubin and the CEC
    - Week 4: IPC leads to check all feedback for consistency and style, review and produce proposal review report for the Rubin Operations Director. IPCs share proposal review report with recipients.
- May week 1 - 2: Proposal Review Report Consideration and Finalization (Directorate, CEC with IPCs, 2 weeks)
    - May week 1: IPCs present proposal review report to Rubin Operations Director, discuss issues, request additional information, collate any issues for CEC
    - May week 2: CEC meeting (if needed) or communication as required by the Rubin Operations Director. IPCs incorporate CEC feedback and prepare review recommendations for the Rubin Operations Director.
    - **Transmit review feedback to PMs and CLs by mid May**
- Mid-May to mid-June: Proposal modification and program approval
    - Implement any recommended modifications in the proposal documents. **Proposals modified by end of May**
    - June week 2: Rubin Operations Director presents revisions to the in-kind program (new contributions and proposed amendments) to the Rubin Management Board for approval.
    - June week 4: Following Management Board approval, Rubin Operations Director sends Proposal Review Report to the Rubin Resource Board
    - **SOWs amended by mid July** (PMs & CLs with IPCs and Rubin Operations Director and Recipients, as needed) in time for work planning prior to the year start in October.

2.5 Management Overhead

A very rough estimate for the overall level of project management effort needed for any given in-kind contribution is the standard 10%. We expect the majority of that effort to be provided by the Contribution Lead and Program Manager, with additional facilitation from the Rubin IPC Team. The management of an in-kind contribution can be divided into a technical direction piece, handled by the Recipient and Contribution Lead, and a logistical piece, handled by the contribution's IPC and the contribution's Program Manager (e.g., Recipients do not need to chase reports, Program Managers are not expected to plan work.) A key goal of both the Rubin in-kind program and the IPC Team is to minimize logistical management burden on the Recipients, preserving their time for the essential

technical direction time. We anticipate the small amount of technical direction effort needed from the Recipients to be able to be distributed (among a working group, for example), and for Contribution Leads to be the primary developers of work plan documents, following verbal direction from the Recipients. If the system is working well, the technical direction time needed should appear to the Recipients as being time well invested.

We expect Contribution Leads to spend not more than 5% of their time reporting to Rubin on progress. We expect orchestration of the CLs' reports, working with the IPCs on amendments to contributions etc, and general oversight of the program, to take between 0.1 and 0.5 full time equivalent (FTE) effort by the Program Manager, depending on the size of the program. For the largest programs the workload may be higher still, and require an assistant Program Manager as well.

3 Telescope Time and Dataset Contributions

Steve Ridgway, Knut Olsen

In-kind contributions of telescope access will be managed by the NOIRLab Telescope Allocation Committee (TAC) process unless otherwise noted in the approved proposal SOW. In kind telescope resources will be available preferentially to proposals with a U.S. PI. Otherwise, proposals for In kind telescope access will be handled very similarly to other facility access. Salient features are described below.

3.1 NOIRLab Proposal Management

NOIRLab manages telescope proposals for access to NOIRLab facilities (including those of Kitt Peak National Observatory, Cerro Tololo Interamerican Observatory, and the U.S. share of the Gemini Observatory). It also manages proposals for the use of a number of private facilities that, from time to time, offer open access to their observatory capabilities through agreements with NOIRLab. As described below, the NOIRLab relationship with In kind facility operators will be similar to NOIRLab's relationship with private facilities.

3.2 The NOIRLab Telescope Allocation Process

Twice annually, NOIRLab publishes a call for proposals, with deadlines the last day in March for the observing period August - January ("B semester") and the last day of September for the observing period February-July ("A semester"). Proposals are exported for review by facility experts for technical feasibility. Scientific reviews are provided by a set of topical panels composed of community experts on a Telescope Allocation Committee (the TAC). The TAC meets approximately one month after the proposal deadlines. NOIRLab is not able to support a different review cadence. It will be necessary for In kind facilities to accommodate this schedule.

Each panel establishes relative ranking of the proposals that it reviews, and a recommended time allocation. A Merging TAC formed from representatives of each panel produces a combined roster of recommended programs. This is advisory to NOIRLab management (the Program Directors), and is normally implemented as closely as possible given boundary conditions (count of available nights,

ephemeris, etc.).

NOIRLab Telescope schedules are prepared by NOIRLab scientists. External facilities generally have science program input from one or more other TACs, and local facility experts merge requests into a combined schedule. It is expected that In kind facilities will follow this latter practice and include the NOIRLab recommended proposals in their scheduling process. NOIRLab will forward more proposals than can be allocated so that the external facility scheduler has a ranked list and will be able to accommodate scheduling conflicts that typically arise. (Real schedules cannot always satisfy all TAC requests.) For this reason, PIs are not notified of the decision on their proposals until after an actual schedule has been composed and approved – approximately 2 months after the proposal deadline.

In addition to regular observing requests, NOIRLab also invites proposals in several special categories, including from graduate students, and for long term status. Targets of opportunity are welcome. Proposals for execution in the AEON framework (see Section on AEON below) are invited. Data rights and proprietary periods will follow normal NOIRLab practices. For additional details and a few further policy considerations, please review the NOIR Lab Policies for the Allocation of Observing Time (https://legacy.noirlab.edu/noaoprop/help/policies.html).

3.3 Scientific Programs and Peer Review

NOIRLab welcomes the broadest range of scientific programs. Peer review is the basis for ranking program priority, which will depend on scientific objectives, proposal quality and clarity, and other factors. NOIRLab does not have a policy on handling duplication or redundancy of competing programs, which peer review may judge advantageous or otherwise in any particular case. In the event of recommended programs with considerable similarity, NOIRLab scientific management may choose to consult with PIs in order to respect scientific initiative, data rights and community interests.

For most of its telescope allocation activities, NOIRLab operates under an “Open Skies” policy, whereby proposals are welcome from qualified scientists of any nationality and affiliation, and all proposals are completed on a level playing field. Under the in kind program, resources are intended to support specifically the U.S. community. NOIRLab will follow the terms of in-kind negotiated agreements and IPC advisories in allocating the in-kind observing access. It is expected that this will give priority to U.S. PIs.

3.4 Responsibilities

In kind facility access participants and responsibilities

NOIRLab TAC Chair: The NOIRLab TAC process chair will represent NOIRLab in organizing detailed arrangements with each In kind provider, for timely communications and processing of proposals.

Contribution Lead: The CL will work with the NOIRLab TAC Chair to establish channels for allocation support and scheduling. Prior to the first increment of telescope access, the CL will develop an agreed work plan in consultation with NOIRLab representatives.

The **work plan** for telescope time should include the following. (Links to existing open resources or

documentation may suffice where available.)

- List of the facilities and a timeline of their planned amount of availability.
- Contact information for the responsible that will provide timely statements of In-kind availability – to be advertised through NOIRLab and other channels.
- Facility information
    - Since each facility is in general not familiar to the applicant, thorough basic information or information sources should be provided. Contacts for assistance in specific areas may be specified - otherwise the CL agrees to serve as conduit to relevant information.
    - Any special conditions to In-kind access (previously agreed with the IPC) which differ from conventional open-access observing should be fully explained.
- Information for In-kind telescope applicants should include description of facility capabilities, consultation on facilities, support of proposal preparation, Phase I observing planning, etc.
- The Information Page should address all of the deliverables and supporting activities required for the contribution.
- The work plan should describe any CL activities in support of observing operations. This may include essential information for Phase II observing preparation, observing mode options, ToO or AEON/TOM interfaces where appropriate, options for observing plan update, scientist participation in observing program, data distribution, and any other relevant topics. The work plan should describe any CL activities in support of data access/reduction, including expected time lag in data (and where appropriate reduced data) access. (Depending on the facility, some of all of this may be provided by the facility staff.)
- The work plan should accommodate support/participation as needed for the telescope access semester-based schedule that follows below.

Facility Liaison: All in kind proposers must identify a Facility Liaison. The Liaison will be the lead contact for the practical matters of facility access. The Liaison will ensure that web pages and other user resources are current and adequate for preparation of competitive science programs. The Liaison will provide or arrange for technical review of all proposals in the time window between proposal receipt and TAC meetings. The Liaison will monitor the integration of the approved In kind proposals into the facility scheduling process. In the event of conflicting programs from different TACs, the Liaison will contact the NOIRLab Chair for consideration of an equitable resolution. The Liaison will communicate the schedule to the NOIRLab Chair, and will also report on any unavoidable deviations from TAC recommendations.

NOIRLab role in operation of external facilities
While NOIRLab staff fully support operations on NOIRLab telescopes, operation of non-NOIRLab facilities is the responsibility of their local staff. Thus once a program has been entered into the observing schedule of an external facility, the PI will be expected to interact directly with the facility liaison in implementing these observing programs. Since all In kind programs are expected to concern external facilities, this will be the practice here.

Observing Support, Time Domain and AEON
NOIRLab TAC invites new proposals that will exploit time domain opportunities. Time domain and also conventional programs that utilize AEON capabilities are also welcome.

Operational reviews
The NOIRLab Chair or a representative will meet with the Facility Liaison before and after each semester TAC operation to review preparation of materials prior to the call for proposals, communications during TAC operations, and implementation of TAC prioritization in scheduling and operations. Scientific and technical success of activities will be reviewed according to the schedule in section 2.

Rubin performance evaluation
The in kind Facilities will support annual performance evaluation and quarterly updates as described in Section 2.4 above. At these reviews, the accomplishments of the contribution will be evaluated with respect to the approved proposal and the agreed work plan.

Exceptions
Any proposed exceptions to the processes described here will require NOIRLab concurrence before the in kind offer can be accepted and supported.

3.5 Schedule

From the Handbook for Proposal Teams: "*the definition of resources available for in-kind allocations must be fully defined during the proposal review and acceptance process. Terms of facility use and obligations of both the facility hosts and of recipients must also be agreed at that time. Any subsequent proposed changes are subject to review.*"

Preparatory to the first telescope allocation cycle, each contribution should fulfill the step on the schedule sumarized in the Checklist for Contribution Leads, culminating on the contribution start date, T0, which coincides with the beginning of the telesscope allocation proposal cycle.

Event dates in each proposal cycle, once per semester:

-8 weeks: Proposal cycle begins; Facility Liaison confirms to NOIRLab Chair list and amount of available resources
-6 weeks: Instrument and facility guides fully updated for use by proposal PIs
-4 weeks: NOIRLab Chair and Facility Liaison meet to confirm semester readiness
0 weeks: deadline for proposals submitted to NOIRLab

+2 weeks: Technical reviews competed by In kind facility
+4 weeks TAC meets
+5 weeks: TAC recommendations provided to facility
+8 weeks: Facility schedule returned to NOIRLab TAC chair; PIs notified
+8 weeks: NOIRLab Chair and Facility Liaison meet to review activity and document lessons learned

3.6 AEON

In-kind proposals for telescope access which promised to support facility compatibility with AEON (https://lco.global/aeon/) have been ranked higher in consideration of this expectation. There are several proven options for implementation.

- Facilities may choose to make use of the LCO scheduler while in AEON mode, taking advantage of its existing infrastructure for observation requests and to provide automated queue scheduling. The SOAR 4m telescope currently operates in this mode for selected AEON nights.
- Interfaces to AEON-compatible facilities are also provided in the TOM Toolkit (https://lco.global/tomtoolkit/), a software package designed to help astronomers manage observing programs. Compatibility with this package would provide added value to proposed in-kind contributions.

Additional information is available in the *Implementation Plan* section of the *In-Kind Contribution Program Handbook for Proposal Teams*. A breakdown of major AEON considerations is available in the *AEON technical questionnaire* at https://lco.global/aeon/lsst-international-contributors/.

For interface design and other technical issues, and for designing the operation of AEON-accessible facilities via the NOIRLab TAC, please consult with the following contacts.

AEON Primary Contacts	
AEON design, interfaces and function	Rachel Street <rstreet@lco.global>
TAC access to AEON-accessible facilities	Steve Ridgway <stephen.ridgway@noirlab.edu>

In-kind teams should now move promptly to firm up their AEON technical implementation strategy, plan, timeline and budget. It is expected that teams will compile written Preliminary Design Documentation outlining in detail their planned technical implementation and their solutions to the questions posed in the AEON technical questionnaire, together with a development timeline, technical milestones and budget for both development and operation. Teams are strongly advised to develop this in collaboration with the AEON representatives. AEON implementation plans are subject to review by AEON and NOIRLab, and approval by the Rubin CEC. Teams should provide, **no later than September 2021,** a schedule for a conceptual design review and a preliminary design review. The latter should include a timeline for completion and a plan for functional testing.

3.7 Datasets

It is the responsibility of the Contributors to secure the computing and storage resources needed to produce datasets, including those derived from Rubin observations. (This question should have been considered at the proposal stage, particularly for large datasets, and included in the SOW.) The Rubin Data Access Center (DAC) provides limited resources to all users, which may be sufficient for smaller datasets. Contributors may also seek to partner with IDACs or other computing centers to support dataset production.

As described in the Handbook for Proposal Teams, datasets may be hosted by one or more of the Rubin DAC, an IDAC, or by the Contributors themselves. The decision on where the dataset will be hosted should have been made at the proposal stage and be described in the SOW. Should a change in the dataset hosting location or dataset production plan be required, it must be done in coordination with the IPC Team and submitted as an Amendment, as defined in section 2.1.

Note that contributed datasets will generally be made available to any IDAC that wishes to host the dataset, unless a specific agreement restricts its distribution to a particular hosting institution.

Responsibilities of Contributors

As a first step, Contributors will need to make a work plan, using a template provided by the IPC, for how they will prepare their dataset for distribution, following the requirements of the chosen hosting location. This plan should include:

- Any steps needed for dataset production
- Schema design for catalog tables
- Specifications and format of non-catalog data such as images or spectra
- What metadata will be included
- How catalog columns and metadata fields will be documented
- Description of what written documentation, including web documentation, that will be provided
- Description of the range of example use cases that will be included, including examples in the form of Jupyter notebooks
- A detailed schedule for dataset delivery, following the constraints of the approved proposal
- Planned updates, and a plan for documenting the version history of the dataset
- Description of data and documentation attribution and verification
- Description of compression/decompression algorithms used
- Estimated size of data products to guide storage requirements

Following approval of the work plan by the Recipients and the IPC Team, the contribution will be tracked according to the process and schedule laid out in section 2. Because obtaining Recipient approval of the work plan is likely to require some iteration, Contributors need to allow ample time for this to occur; as described in Section 2.2, the time for iteration should be at least two months before the anticipated start of the contribution. It is ultimately the responsibility of the Contributors to

develop an acceptable work plan, and to avoid placing Recipients under excessive time pressure.

Responsibilities of Recipients

The first responsibility of the Recipients is to review the proposed work plan for dataset delivery. While all Recipients are welcome to provide input on any aspect of the work plan, for Recipients that are dataset hosts, this review should particularly focus on the technical feasibility of the plan, asking questions such as:

- Is the schema design for catalog tables sufficiently described and technically appropriate for the provided use cases?
- Are the non-catalog data sufficiently described?
- Are the resources needed to host and serve the data available and of reasonable cost?
- Is the data documentation sufficient to allow straightforward data ingest?
- Is the detailed schedule for dataset delivery realistic and achievable?
- Are the planned updates manageable by the hosting center(s) and Contributors?

For Recipients that represent the scientific user community, the review of the work plan should address the scientific value provided, asking questions such as:

- Are the data provided in a format that will allow straightforward scientific use?
- For catalog tables, is the schema design appropriate for the scientific use cases?
- Are the metadata and documentation provided sufficient?
- Are the range of scientific use examples broad enough for the targeted user community?
- Is the dataset delivery schedule consistent with achieving high scientific value for the dataset?
- Do the planned updates maintain scientific value of the dataset?

Following approval of the proposed work plan by the Recipients, Recipients will participate in the contribution tracking process as described in section 2.

4 Software Development Contributions

Aprajita Verma, Greg Madejski, Phil Marshall

Specific Responsibilities for Software Contributions

The Contribution Lead is responsible for developing the software contribution Work Plan in liaison with the recipients, including developing detailed software requirements from information (e.g. a set of high-level user stories[3]) provided by the Recipients (both primary and secondary), and coordinating the team of contributors. They ensure that progress and the outlined milestones are being met, and are responsible for planning the work for the next quarter in the quarterly updates. It is their responsibility to make sure, in collaboration with the Recipients, that the criteria which must be met by the contribution are well defined, to ensure the timeliness of delivery of the final product, and to oversee the validation / verification of the software, presumably also in close contact with the

[3] Paraphrasing from https://www.atlassian.com/agile/project-management/user-stories, a user story is an informal, general explanation of a software feature, written (or dictated) by the recipients from the perspective of an end user in the recipient group. Its purpose is to articulate how the work to develop that feature will provide the needed value to the recipients.

Recipients. The Contribution Lead needs to identify the **Contribution Developers** who will be developing the software and provide information on their planned effort levels and funding status. Finally, the CL is responsible to assure that the software is developed in accordance with the coding standards (see the end of this section). CLs should be proactive in seeking input from their Recipients.

The Program Manager will ensure that their Contribution Leads have sufficient resources to conduct the requisite software effort, that software requirements have been adequately specified by the CLs and Recipients, and that the contributing team is in reasonably frequent contact with the Recipients. They should also have an overview of the requirements for different types of software contributions in their programs, and may take a stronger management role in non-directable software contributions, ensuring timelines are met and deliverables are successfully made, so that this responsibility does not fall on the recipient groups. Finally, the Program Manager is responsible for coordinating and ensuring timely submission of the program's quarterly updates and annual reports. The PM is also responsible for keeping the status and level of FTE effort towards software contribution up to date once hires are made and reviewed quarterly as part of the quarterly updates (an FTE effort sheet will be distributed per program).

Primary recipients are expected to (1) provide assistance and advice in developing work plans for software contributions, including developing the user stories about the needed features from which software requirements will be derived, (2) approve the work plans (3) provide functional direction, oversight and (4) review quarterly and annual self-reporting by the contribution leads.

Secondary recipients will also have the opportunity to review quarterly and annual reports but this review is not mandatory but encouraged. It is noted that the quarterly and annual reporting structure may be the easiest way for a secondary recipient to keep up with the work being undertaken. It is expected that secondary recipients wanting to provide input on the direction of work for software contributions will liaise with the primary recipient and the Contribution Lead to reach a mutually agreeable plan. The Contribution Leads are expected to follow the software development guidelines of the primary recipient first and foremost. In practice, it is envisaged that good collaboration between multiple recipients and contribution will lead to a mutually beneficial product.

Recipients can name individuals from their teams as the main contacts for software contributions who will act as a main point of contact for that contribution for the contribution lead and for the IPC team. Recipients may also request assistance and advice from the assigned IPC to assist with management and/or resolution of issues arising from software contributions.

International Program Coordinators (IPCs) assigned to software development contributions will provide support to the contributors and recipients as required, and can help facilitate discussions between software contributors and the recipient groups(s), and reduce the management overhead for the software contributions from the recipient groups(s). They will collate all reporting including the FTE effort tables for each program.

Rubin Coordination Groups such as those already established for Photometric Redshifts and Crowded Fields, are relevant for many software contributions. These groups are defined above. The coordinators of these groups, and the Rubin Community Scientists associated with them, are essential contact points for in-kind software teams to ensure that the developed software is compatible with the overall goals of the Observatory, and highlight any enhanced functionality over the released pipelines developed as a part of the in-kind software contributions, to the wider Rubin community.

Software Contribution Types: We recap the software types here but please refer to the Handbook for In-kind contributions for detailed information.

- **Directable software**: This is defined in the Handbook as "Software assigned to some recipient SC/subsystem(s) or working groups within them, with the intention that efforts will be prioritized and planned via mutual agreement based on the needs of the recipients at the time the effort is being contributed and the effort and skill level offered by the contributors."
- **Non-directable software**: This included software specifically dedicated to some task(s) selected by the proposers, but which is applicable to the Rubin mission.
- **General Pool development effort**: This includes essentially services of a scientist or a software professional to work within a team preparing general-use software packages; an example might be to provide pieces of a data reduction pipeline.

Work Planning & Evaluation

Each software contribution should start with an initial work plan, which should include activity to develop the initial set of software requirements. It is the responsibility of the Contribution Lead to instigate development of the plan and they are expected to contact the relevant recipient group. The Work Plan template (Appendix C) will be sent to the program manager by the IPC. The Program manager should distribute the template to the contribution leads.

The work plan contains

- key objectives,
- milestones and
- deliverables

that reflect the primary goals of the contribution.

The Work Plan should also include

- the anticipated effort - this will be collected through the FTE profiles sheet by the IPCs and associated to the work plan by the IPCs
- hardware resources needed to operate the software and to serve any data products that it produces.

The guidance described for dataset contributions apply to data products derived from software contributions as well.

This will be supplemented by the quarterly report that, as well as highlighting any issues arising, will carry the detailed plan of work for the forthcoming quarter.

The primary recipients will be expected to review the plan and make amendments or comments as needed. Any secondary recipients will be strongly encouraged to review the plan and discuss any proposed amendments with the primary recipients and CL. It Is anticipated that the directable and general pool contributions will follow the technical guidance of the primary recipient group, where the primary recipients are responsible for the direction of the work undertaken along their own, but possibly evolving, priorities.

Non-directable contributions will have less direction but should still be embedded in the recipient groups(s) such that the contribution team develops the software in collaboration with the recipients

(see below for more details). The reporting for these is likely to be a check that things are progressing as planned. Secondary recipients will also have access to the quarterly reports and have the option to comment.

Software contributions will follow the procedures and evaluation cycles defined in the In-kind contribution Management and Evaluation section above, including a quarterly update that includes the plan of software work for the following quarter. As such, this means the work plan for software contributions will evolve each quarter. The following section describes any differences owing to software contribution types. The September (Q4) update will be part of the Annual Evaluation but it will still have the detailed software work plan for the forthcoming quarter. Any overarching or general issues can be raised in the Annual Evaluation by the contribution leads, program managers and/or the recipient teams. Provisions will also be made for confidential comments from the Recipients or Contributors to be also transmitted to the IPC team.

In terms of software in-kind contributions, the summary section of the Workplan template may additionally be used for (a) new contributions from US/Chilean in-kind infrastructure or software contributions (b) for recipients to define gaps in software and/or infrastructure work that they can advertise missing work or welcome additions within the Rubin data rights holders community. The IPCs will provide support and guidance to any recipients who wish to use the Workplan summary for the alternative purposes outlined above.

Contribution Types

Directable Software Development Effort

As outlined above, it is **very important** for contribution leads of directable effort to contact the recipient teams no later than 3 months and no sooner than 4 months before the start of the work. The workplan must be developed with the recipients and available for recipient approval at least 2 months before the start of the contribution. An accompanying effort profile sheet that lays out the effort plan will be provided by the IPCs and should be completed by the contribution leads/program managers.

It is understood that the teams offering directable effort retain and agree to flexibility in their work model and are open to redirection by the recipient group. As such, the work plan can only be defined in collaboration with the primary recipient from the outset and the detailed quarterly work planning for the duration of the contribution. The *primary recipient* will provide functional direction for the contribution. For contributions with multiple recipients, each will be given access to the work plan once this has been developed and approved by the *primary recipient*. In practice, we expect the contribution team to act as members of the recipient group, presenting regular updates on progress in a suitable forum and taking feedback from the group. (The above is what it means for a directable contribution to be “embedded” in the recipient groups.)

It is anticipated that the work plan outlines top-level objectives, requirements, milestones and deliverables for the software contributions, while the specific work for the next quarter will be bulleted in the quarterly reports. The quarterly and annual reporting cycles will permit any redirections as necessary and foreseen by the primary recipient. Any redirections will always be on the basis of mutual agreement between the recipient(s) and the contribution teams.

As well as providing the infrastructure to remove the management and reporting overhead on the recipient teams (see Responsibilities for software contributions above), the IPCs are available to

facilitate any discussions or concerns, and can be requested to mediate between contributors and recipients as needed.

General Pooled Software Development Effort

General pool software contributions are those where directable developer effort has been offered without an associated recipient group defined ahead of time. This pool of effort can be drawn on by any recipient group finding gaps within their infrastructure or analysis software plans that are not covered by the current in-kind contributions. As such, it is therefore possible for recipient group(s) to request general pooled software development effort for specific tasks. Note that such requests may come from either a single group or multiple groups who would benefit from the proposed development, and recipient groups can be either Rubin teams or LSST Science Collaborations, in the usual way.

While we are still working on the process to allocate general pool effort, we have outlined a draft working scheme below. The details will be clarified in a call for proposals for the General pool software effort that we plan to issue over the summer. We will hold general pool information sessions around the time of the release of the call to help recipients prepare to respond to the call. Depending on the resources available after the initial call this year, general pool effort requests can be made at any time, but we expect there to be only one annual evaluation of the proposals received. We are also considering the possibility of having a responsive mode whereby urgent or time critical requests for software developer time can be requested.

The IPCs are also responsible for managing the process of allocating the general pool resource. They will issue a simple form where general pool requests can be submitted, and indicate the level of effort available for the call. The typical information requested will include an outline of the proposed S/W development project, the requirements in terms of S/W skills set, the length of time the dev is needed, and at what fraction of effort, as well as any other pertinent information the recipients would like to highlight.

Once the proposals have been received, the IPC team will endeavor to match the recipient requests and requirements to the skills set of the developers offering general pool software effort. In the event of oversubscription, the IPCs will work on the basis of defined priorities in allocation and implement any guidance on prioritization provided by the Rubin Operations Director (e.g. Rubin Operations needs), take account of the overall distribution of in-kind value among the different recipient groups, and consult the CEC when necessary. The priorities and the process to allocate the resources will be defined in the call for proposals.

Once the accepted proposal has been assigned developer effort, the execution of the work and its planning will follow the same protocols and procedures as directable software contributions described above. It is foreseen that the submitted project description in the proposals should easily be turned into the beginnings of a work plan but this will be refined by the proposing recipient with the allocated developer. The IPCs can facilitate discussions between the recipients and the assigned engineer to plan out the work in more detail (milestones, deliverables, requirements) and the work for the next quarter, which will then be updated each quarter by the engineer in collaboration with the recipient group(s).

Non-directable Software Development Effort

The non-directable software contributions are defined as those initiated and developed by the contributing team. The teams are expected to be “embedded” within the recipient groups the products are designed for, in the manner described here. The developed software is of high interest to the recipient group(s) who have endorsed them as part of the proposal review process.

Contrary to the directable and general pool software contributions, these software contributions do not take functional direction from the recipient group(s). However, it is still expected that they follow the same reporting structure as the other software contributions. In particular, a work plan should still be written by the CLs outlining the key objectives, milestones and deliverables. The quarterly updates and annual reporting cycles will also be followed with issues raised and work for the next quarter. The recipient review of these will check that the contribution is moving forward and remains of value to the recipient team(s).

Frequent contact between the contributors and recipients will be very important, to avoid instances where the contribution misses the Rubin-specific purpose, or, is an unplanned duplication of effort already taking place by recipients or other groups. The contribution team will be expected to present progress to the recipients in a suitable forum as they go, similar to directable contributions (although perhaps less frequently). Work plans can be more detailed ahead of time than for directable SW, with just small changes being made in quarterly updates.

Local In-kind Contribution Management

For all software contributions, it is anticipated that much of the local (day-to-day and programmatic) management of these contributions is undertaken by the CL and Program managers who remain responsible for the contributors, contributions and the overall program. As such, **this managerial role should not be left to the recipient group** who should contact their IPCs if this becomes an issue. Simply engaging with the recipient group(s) or taking technical direction from them, do not equate to management of the contribution team.

Defining software requirements

Requirements for software contributions can be difficult to pin down, because, like for a research project, next steps in software development often depend on the outcomes of previous ones. This is not an excuse, however, for not defining requirements at all. Without requirements, the goals of a software development project may be misinterpreted by developers or lead to poor overall design and performance.

It is the responsibility of the Contribution Leads to develop the initial set of technical requirements when developing the work plan. It is the responsibility of the Recipients, however, to provide the high-level goals needed to define these technical requirements. The easiest way for the Recipients to identify these goals is to develop a set of User Stories that describe what the software should allow users to do. As described e.g. in this guide to software requirements by PJ Srivastava (A Short Guide to Writing Software Requirements — PJ Srivastava), User Stories describe who the software is written for, what they will do with it, and why they need it. A User Story could be as short as a single sentence, e.g., “As a SMWLV member, I want a machine-learning based classifier that gives me the probability that a given source is a star.” The software contribution is likely to need a set of User Stories that cover

the full range of people expected to use the software, what they want to do with it, and why they want to do it. A concise summary of the user stories could be input in the Workplan Summary.

From the set of User Stories provided by the Recipients for directable and General Pool S/W contributions and by the CL for non-directables, the Contribution Leads should develop a sketch of the proposed software contribution and an initial set of technical requirements. The Contribution Leads should iterate with the Recipients to add further detail to the User Stories or to add new ones, until both groups agree that the work is ready to start. The CLs should use the quarterly updates to revisit, as needed, the initial set of User Stories, the sketch of the contribution, and its requirements, with input from the Recipients.

Coding Guidelines

In order for contributions of software development effort to expand (and not consume) the resources available to the US science community, *the code developed by each contribution team must be straightforwardly useable by (at least) its recipient group, be properly and thoroughly documented (e.g. using protocols for technical documentation such as readthedocs) and published (i.e. described in a journal article and made publicly available) as soon as is appropriate*. This means that the development of in-kind software should follow any coding guidelines, and adhere to any coding standards, defined by the recipients. If no such "local" guidelines exist, then the minimal set of coding guidelines given below should be used. In special cases, the recipients may explicitly waive some of these guidelines.

Examples of local coding guidelines include the Rubin Observatory Developer Guide at https://developer.lsst.io/, and the LSST DESC Software Policy (available from https://lsstdesc.org/pages/policies.html).

At minimum, and in the absence of further local coding guidelines, software developed as a Rubin LSST in-kind contribution should:

1. Be **designed in collaboration with the recipients,** following the recipients' standard practices.
    a. Use cases, algorithm choices, interfaces (to other packages and target datasets), and (as needed) code structure should all be discussed using the recipients' communication channels (e.g. LSSTC Slack, recipient Jira or GitHub, working group meetings, etc).
2. Be **developed collaboratively, in a shared version-controlled repository accessible to the recipient group**, such that the recipients can follow progress, comment and query, and make contributions of their own.
    a. Commits should represent atomic (i.e. small and indivisible) changes in functionality.
    b. The code should compile, and its tests should pass, before the change is committed.
    c. The commit message should be an informative summary of the change.
    d. Pull requests should be limited to a single feature, and code review practices should be agreed in advance with the recipients (e.g. to prevent reviewer overload)
    e. New contributors should be encouraged and assisted, as a way of ensuring the maintenance and reusability of the code.
    f. Ideally the repository should be open (i.e. publicly visible or available to the Rubin Community) or, as a minimum accessible to the recipient group(s) during package

development. One of these must be agreed on with the recipient(s) and noted in the contribution work plan.

3. Be **packaged using common, easily used tools** (such as setuptools and pip/pypi in Python, Autotools and cmake in C++, etc).
4. **All functions, packages, dependencies and datasets** of or related to the software and necessary for it to function, should also be easily available to the community without licensing or other restriction.
5. Adhere to **reasonable standards**, such as those already adopted by the recipients' related packages, or PEP 8 (Python) and LSSTDM (C++), with style optimized for readability.
6. **Include a test suite** that uses common testing tools, and which is either used by a continuous integration service (like GitHub or travis-CI) or could be used by one.
7. Be **demonstrated and validated** following the recipients' recommendations, preferably via reusable notebooks or scripts that are checked into the package repository.
8. Be **fully documented at all times,** such that at any point in time the package can be picked up and contributed to by any skilled developer in the recipient group. In addition, a simpler User Guide must be provided for those not accessing the software for development but as end users.
    a. The set of function, class and module docstrings should contain everything the user needs to understand in order to use the code. The set of in-line comments should provide a complete explanation of (and citations to) the algorithms implemented.
    b. The README should enable the recipients to understand what is being developed and how to get involved.
    c. Tutorials should show what the package does, by leading the user through the set of use cases that define the goals of the package. Jupyter notebooks are particularly powerful for teaching Python packages in this way, and can even be used as system tests.
    d. Technical notes (and potentially a journal paper) describe the problem that the package is intended to solve, and what algorithms it implements to solve it.
9. Be **versioned** semantically (using e.g. GitHub releases) to improve communication about the code and reproducibility of its outputs.
10. If appropriate, be **published in a suitable journal** (such as the Astronomical Journal, which encourages method papers with associated software packages), with the recipients who made significant contributions to the development of the code as co-authors, in accordance with the recipients' publication policy. The main developers are responsible for publishing the code, but can optionally delegate the paper writing to a recipient collaborator(s). In this case the developers should be credited as early authors on the paper based on the code.
11. Be **released publicly** no later than the time of its **first application in a journal paper**, unless the recipients have scientific reasons for postponing and successfully petition the Rubin Operations Director (via their IPC) for an exception. (The Rubin Operations Director will take the CEC's advice on the requested exception, and may delegate their ruling to the Rubin data policy committee or publication board.)
12. Carry **a permissive open source license** such as BSD-3-Clause. This is to maximize the re-useability of in-kind generated code by the LSST Science Community (and has the added benefit of high visibility for the code's authors).

5 Computing Resource Contributions

Knut Olsen

Technical Requirements

For contributions of computing resources, proposers should already be familiar with the technical requirements for such contributions, as explained in the Vera C. Rubin Observatory Data Management Guidelines for Rubin Independent Data Access Centers. In particular, Appendix C contains a technical checklist for each of the categories of computing resource contributions.

IDACs Coordination Group

The recipient of computing resource contributions is the IDACs Coordination Group, which as described in the Community.lsst.org category "Science - Independent Data Access Centers", has the purpose of establishing a coordinated network of computing resources.

The coordination group aims to help international teams and others within the community of Rubin data rights holders towards the delivery, integration, and maintenance of their computing resource contributions. It maintains an IDAC Knowledge Base that will grow with time as contributors develop their contributions and share their experiences.

Work plan development

The work plan for computing resource contributions, for which the IPC team will provide a template, will include descriptions and schedule for:

- Any development needed to meet the requirements of the technical checklist in RTN-003
- Planned installation of computing and storage resources, refreshes, and maintenance
- Data transfer and ingestion
- Pre-operations testing
- Anticipated user support tasks
- Anticipated interactions with the IDACs Coordination Group

Advertising Resources

In order to help advertise the computing resources available to the Rubin community, contributors will be expected to maintain and share up-to-date information regarding:

- Available datasets
- Available services
- Total storage
- Total computing cycles

- Available storage
- Available computing cycles
- Number of current users
- Benchmark results for standard database queries and compute jobs
- Specialized software (e.g. extensions to the Rubin Science Platform) available
- Specialized hardware (e.g. GPUs) available

A goal of the IDACs Coordination Group is to make it easy for users to connect to the appropriate IDAC for them, and doing so will rely on having the information outlined above..

Tracking Contributions

For tracking the delivery, integration, and maintenance of computing resource contributions, contributors should expect to follow the evaluation and reporting cycle outlined in section 2. The reporting will be anticipated to include results of a small number of agreed-upon basic performance metrics.

6 Contributions to Rubin Observatory

This section provides guidelines for in kind contributions of staff effort in the Rubin Commissioning and operations teams (EPO, CET, and others). Essentially, in-kind staff will "join the team," and be expected to take functional direction, plan, and carry out the work in the same way that the other team members do. Performance will be evaluated as described in Section 2, just as any other in-kind contribution will be; this process provides an analog for the Rubin staff's institutional performance evaluation.

6.1 Contribution Team Management and Accountability

- The Contribution Lead will act as the designated group leader for their contribution team, and will be the primary point of contact to Rubin Observatory. The CL is responsible for management of their contribution team and for the timely completion of assigned tasks.
- While on-boarding and task-specific training and guidance will be provided, together with access to Rubin communication tools and documentation resources, Rubin is only able to provide limited one-on-one training and support for non-Rubin-staff members. Participating individuals/groups should plan to prepare as needed for their specific contributions.
- The CL will be assigned a functional point of contact within Rubin to help integrate their efforts: this will be the relevant Rubin Team Leader or their designate.

6.2 In-kind Contributions to the Commissioning Team

The Commissioning Team will include a number of members from outside the Rubin Project, contributing effort and expertise to "add value" to the required staff activity that the Project has planned. US and Chilean scientists who participate in the Commissioning Team in this way will be

accepted via the Announcement of Opportunity detailed in SITCOMTN-10, while international Commissioning Team members will do so under the in-kind program. (The Commissioning Team will also include staff from institutions affiliated with the Rubin Project.)

All Commissioning Team members will be expected to follow the Terms and Conditions outlined in Section 4 of SITCOMTN-10, and members of Commissioning in-kind contribution teams should familiarize themselves with this text. (It is consistent with the LOI feedback given to prospective in-kind teams prior to their full proposals.) We reproduce some particular highlights here, for convenience.

Rights and Responsibilities

- All members of the Commissioning Team agree to the Rubin Project's publication policies. In particular, no scientific publication based on the commissioning data shall be made prior to that data being released to the science community.
- Commissioning Team members are expected to use approved Project tools and processes for communication, data access and analysis, documentation, software development, work management, etc. For example, nearly all high-level science analysis tasks will use Python programming language, and many will make use of the Rubin Software Stack and Rubin Science Platform. Training opportunities will be provided by the Project to increase proficiency with these tools.
- All source code created by Rubin Observatory Data Management is publicly-available open source and carries an Open Source Initiative (OSI)-approved license. All software developed for the commissioning effort is expected to follow the Project's open source policy.
- Depending on their assigned task(s), some participants may be expected to spend extended periods at one of three primary Rubin Observatory sites: 1) Chile – either La Serena and/or Cerro Pachón (see additional requirement below); 2) Rubin Observatory offices in Tucson; and 3) the US Data Facility located at SLAC. In addition, participants will be invited to attend periodic workshops, bootcamps, and/or meetings for training and focused working sessions. It is expected that remote participation in these events will also be possible in cases where the work can be completed remotely.
- Members of the Commissioning Team are expected to follow guidance regarding types of internal communications and information that may be shared with the wider Rubin community. All members of the Commissioning Team are expected to follow professional standards of conduct adopted by the Project.

Note that US and Chilean Commissioning Team members will not undergo the same level of performance evaluation as the in-kind program staff will: their contributions can be thought of as best-effort research (without the quid pro quo of LSST data rights).

Requirements for working on-site in Chile

- Demonstrate a working understanding of the observing systems in Chile including but not limited to:
    - Observatory Command-Control interface and scripting (Python based)
    - Observational constraints given current environmental conditions
- Commit to providing 3 months remote observing support prior to scheduled time in Chile
- Willingness and ability to spend at least 3 months in Chile to support on-site observations and

technical activities both on the Summit and in La Serena. This includes extended continuous periods (e.g. week or more) at the Summit Facility.

6.3 In-kind Contributions to Rubin Operations

Contributions to Rubin Operations come in three categories:

1) Data Release Processing, in the Data Production department Infrastructure & Support team.
2) Directable software development effort in the Algorithms & Pipelines, SQuARE or EPO teams.
3) Staff effort in Rubin's Community Engagement or EPO teams.

In each case, the contribution is embedded in one of the listed Rubin Teams, where the Team Leader (or their designated Group Leader) provides the technical direction needed in the contribution work planning. In most cases, in-kind staff will be onboarded as if they were Rubin staff, and likewise expected to follow Rubin policies and procedures. In some cases, the standard in-kind program work plan template may not be appropriate: the contribution IPC will work with the CL and the recipients to find and work with an efficient alternative.

In the case of directable software development, Contribution Leads should follow the guidance in Section 4 above, but pay attention to the additional requirement that the Rubin Developer Guide be followed.

End of main text, appendices follow.

Appendix A: Recipient Group Contacts

For use by CLs and PMs when initiating communications.

Recipient Group	Point of Contact	Email
LSST AGN Science Collaboration	Sebastian Hoenig	S.Hoenig@soton.ac.uk
LSST Dark Energy Science Collaboration	DESC In-kind Coordination Group	lsst-desc-in-kind@slac.stanford.edu
LSST Galaxies Science Collaboration	Sugata Kaviraj	s.kaviraj@herts.ac.uk
LSST ISSC	Chad Schafer	cschafer@stat.cmu.edu
LSST Science Collaborations	Will Clarkson	wiclarks@umich.edu
LSST Solar System Science Collaboration	Henry Hsieh	hhsieh@psi.edu
LSST Stars Milky Way and Local Volume Science Collaboration	Peregrine McGehee	peregrine.mcgehee@gmail.com
LSST Strong Lensing Science Collaboration	Timo Anguita	sl-ikc-group@googlegroups.com
LSST Transients and Variable Stars Science Collaboration	Rachel Street	rstreet@lco.global
NOIRLab CSDC	Knut Olsen	knut.olsen@noirlab.edu
NOIRLab Observatories	Steve Margheim	steven.margheim@noirlab.edu
AEON network	Steve Margheim	steven.margheim@noirlab.edu
Rubin Algorithms & Pipelines Team	Yusra Alsayyad	yusra@astro.princeton.edu
Rubin Commissioning Team	Keith Bechtol	kbechtol@lsst.org
Rubin Community Engagement Team	Melissa Graham	mlg3k@uw.edu
Rubin Data Production Dept.	Wil O'Mullane	womullan@lsst.org
Rubin EPO Dept.	Bob Blum	bob.blum@noirlab.edu
Rubin IDACs Coordination Group	Knut Olsen	knut.olsen@noirlab.edu
Rubin SQuaRE Team	Frossie Economou	frossie@lsst.org
Rubin Telescope & Site Team	Chuck Claver	cclaver@lsst.org
Rubin Prompt/Solar System Processing Group	Eric Bellm	ecbellm@uw.edu
Rubin System Performance Dept.	Leanne Guy	lguy@lsst.org
Rubin Photo-z Coordination Group	Melissa Graham	mlg3k@uw.edu

Rubin Crowded Field Coordination Group	Colin Slater	ctslater@uw.edu
Rubin Operations Director's Office	Bob Blum	bob.blum@noirlab.edu
Rubin International Program Coordinator (Software Development)	Aprajita Verma	aprajitaverma1@gmail.com
Rubin Observatory Science Team	Kevin Reil	reil@slac.stanford.edu

* Note that Lauren Corlies took over from Amanda Bauer in the EPO Dept in Nov. 2021

Appendix B: Checklists

This checklist is designed to distill key stages for developing and carrying out your contribution, managing your program and receiving contributions.

As such three checklists are available (these may be added to r amended in the future) for

- Appendix B1: Contribution Leads (CL)
- Appendix B2: Program Managers (PM)
- Appendix B3: Primary Recipients (Recipients)

The actions in the tables are expected to be carried out by the relevant actors.

Please note that these are aimed to be a quickstart guide that goes **hand-in-hand with the Manual for In-kind Contributions**, i.e. you must refer to the manual for more details. Relevant sections of the manual have been linked to in the checklist.

KEY DATES appearing in the checklists are

T0 is the start date of the contribution. **

T1 is the end of the contribution.

**** Important: Please note that for telescope time contributions, T0 starts 8 weeks before the first proposal deadline.**

When activities differ between contribution types, please refer to the appropriate column in the table below. Cells spanning all three columns indicate when the activities for that stage are the same for all contribution types.

It is expected that IPCs and PMs are available to answer any questions or address issues throughout the lifetime of the in-kind programs.

Checklist for Contribution Leads				
When	**Action**	**Description**		
		Software/Datasets/Staff Effort	**Telescope Time**	**Computing Resources/IDACs**
T0 minus 3-4 months	Initial Contact with Recipient	The CL should initiate the first contact with the recipient group(s). If there are multiple recipients, please also copy in the contacts addresses for the secondary recipient(s) Please consult the contact list in the manual for recipient email addresses. The main interaction will be with the primary recipient.	For telescope time, the contribution start date, T0, corresponds to the start of the first proposal cycle, which is **8 weeks before the first proposal deadline.** No action is required for these contributions at this time.	The CL should initiate the first contact with the recipient group(s) If there are multiple recipients, please also copy in the contacts addresses for the secondary recipient(s) Please consult the contact list in the manual for recipient email addresses. The main interaction will be with the primary recipient.
T0 minus 2- 3 months	Drafting the work plan	The work plan should outline the foreseen work following the description for S/W contributions in the manual Directable and General Pool S/W contributions would require more input from the recipient groups than other types of contributions.	Carry out the activities listed in this cell **8 weeks before the first proposal deadline.** The CL should initiate the first contact with the recipient group(s). If there are multiple recipients, please also copy in the contacts addresses for the secondary recipient(s). The main interaction will be with the primary recipient. Please consult the contact list in the manual for recipient email addresses. Please see the requirements of the work plan for telescope time in the Manual.	Work plan should include descriptions and schedule as described in the work plan development for computing resources
	Complete work plan	The CL and Primary recipient will iterate on the work plan until both parties have agreed on its content.		
T0 minus 1-2 months	Plan for the next three months	Once agreed, the deliverables/work foreseen for the next 3 months should be defined. This, plus the work plan, should be submitted (via the interface prepared by the IPCs) at least 1 month before the start date of the contribution. Once complete, the CL emails the primary and secondary recipient(s) & Contribution IPC to mark that the work has been defined.		

T0	Start of work	CL emails the recipient(s), Contribution IPC and PM to mark the start date of the contribution. Please make sure all secondary recipients are cc'd on the email.		
T0 plus 1 quarter: 3 week window starting weeks 1-3 of month 3 This step occurs in Q2, Q3, and Q4	Quarterly update	To minimise the reporting effort and the associated review, we expect that any work that has proceeded to plan does not need to be reported on, rather summarise any issues that have occurred that have meant that the work planned in the previous quarter has changed. If there are items still to do, move them to the plan for the next quarter. This is "exception based" reporting. Elements: (1) Note any exceptions, changes or issues with the work as described in the preceding month. (2) Highlight any milestones reached. (3) Confirm level of effort spent or nights observed in the last quarter. (4) Plan for the following three months including any actions needed to resolve issues Plans submitted by CLs by the announced due date (they are then checked by the recipients)		
T0 plus 1 quarter: end of week 3 of month 3	Quarterly update feedback	Review any feedback from the recipient and liaise with the recipient, PM, IPC to amend as necessary.		
Mid September	Annual Performance Evaluation	This evaluation is an opportunity to take a more holistic view of the progress of the contribution over the past year. Please complete the form provided by the IPC by the given due date. The annual evaluation cycle closest to the midpoint of the contribution can be used as a mid-term review.		
Mid November	Check Feedback	Receive feedback from the IPCs. Respond to any issues arising from the feedback, if any. This may involve iteration with the Contribution IPC, the Program Manager and/or the Recipient(s).		
T1	Completion	Please email the contribution IPC and recipient contacts to indicate the contribution has come to an end Please complete the final report for the contribution in the quarterly report or annual evaluation closest to the completion date.		
T1	Completion reporting	Summarise the final products compared to the deliverables outlined in the SoW and the workplan. Provide location of code and documentation pertaining to the contribution. Indicate if a publication has been written	Summarise the total number of nights achieved in comparison to the deliverables outlined in the SoW and the workplan.	Describe the IDACs status or use of CPU resources in comparison to the deliverables outlined in the SoW and the workplan.

		or is being written and who the lead author will be.		

Checklist for Program Managers				
When	**Action**	**Description**		
		Software/Datasets/Staff Effort	**Telescope Time**	**Computing Resources/IDACs**
T0 minus 3 months	Initial Contact with the contribution lead (CL)	Check in with your CLs that work plan conversations have started.		
T0 minus 1 month	Plan for the next three months & acceptance	Confirm with CLs that work plan and plan for the next three months are accepted or check on status. .		
T0	Start of work	Verify and log receipt of start notification. Check that secondary recipients have been included in the email to start the work		
T0 plus 1 quarter - week 1 to 3 of month 3 This step occurs in Q2, Q3, and Q4	Recipients review of the Quarterly update	Be available to the CLs for any issues arising. Ensure that all reports have been submitted by the deadline - it is the responsibility of the PM to ensure contributions are submitted by the deadline (usually at the end of week 2).		
T0 plus 1 quarter: end of week 3 of month 3	Quarterly update feedback	Review any feedback on the quarterly update from the recipient, consult with the Cl to ensure any amendments have been made. Engage with the recipient and/or IPC as necessary.		
End of September - week 2	Annual Performance Evaluation	Ensure that all the program CLs have submitted the annual report by the deadline. It is the responsibility of the PM to ensure contributions are submitted by the deadline (usually at the end of week 2). The annual evaluation cycle closest to the midpoint of the contribution can be used as a mid-term review. It is the PM 's responsibility to flag to the CL, Recipients and IPCs that which evaluation period corresponds to the mid-term review.		
Mid - late November	Annual Performance Evaluation - feedback and implementation	Review any feedback from the annual review and ensure that any amendments have been implemented by your CLs. Notify the recipients and IPCs when the amendments have been made		
T1	Completion reporting review	PMs review the final report for the contribution in the quarterly report or annual evaluation closest to the completion date. And ensure these have been submitted by no later than 1 weeks after the completion of the contributions. See the		

		CL checklist for the requirements for the completion reporting, Ensure that all requirements have been met and then submit the report to the IPCs. Any outstanding issues will be reported to the Director of Operations by the IPCs.

Checklist for Primary Recipients				
When	**Action**	**Description**		
		Software/Datasets/Staff Effort	**Telescope Time**	**Computing Resources/IDACs**
T0 minus 3-4 months	Initial Contact with the contribution lead (CL)	Recipients should be prepared to respond to emails from CLs to start the work planning for the contribution. If some CLs are not contacting you within this period, please contact the contribution IPC who will prompt the team to contact you.		
T0 minus 2-3 months T0 minus 2-3 months	Iterate with the CL on the initial work plan	Iteration with the CL until both parties have agreed on its content. The recipient should review the proposed work plans for consistency with the approved contribution and the recipient's expectations and requirements.		
		The work plan should outline the foreseen work following the description for S/W contributions in the manual Directable and general pool S/W contributions will need more input from the recipient group(s) than other types of contributions.	Please see the requirements of the work plan for telescope time in the Manual.	Work plan should include descriptions and schedule as described in the work plan development for computing resources
T0 minus 1-2 months	Plan for the next three months & acceptance	On receipt of the CLs email to mark that the plan for the next three months is ready for approval, the recipient reviews, amend/comments if needed and then accepts this and the work plan through the interface provided by the IPC team. .		
T0	Start of work	Recipients will receive and email from the CL to mark the start date of the contribution. Primary recipients can help check that secondary recipients have been included.		
T0 plus 1 quarter - week 3 of month 3 This step occurs in Q2, Q3, and Q4	Recipients review of the Quarterly update	To minimise the reporting effort and the associated review is "exception based" reporting (see see Quarterly update and the CL checklist). The IPCs will contact Recipients to review quarterly updates and include the work plan for the next three months once the reports have been received. Recipients should 1. Check for consistency with the approved previous 3-month plan. And note any expectations oor delays reported 2. Review the 3 month plan for the next quarter. 3. Iterate with the CL if modifications are needed to either the 3 month plan r the overall work plan as a result of the previous quarters work		

		CLs, PMs and IPCs are available for consultation as needed.
End of September - weeks 3 and 4	Annual Performance Evaluation	Recipients review the CL's report, prompted by the IPC at the end of Sept week 2. This evaluation is an opportunity to take a more holistic view of the progress of the contribution over the past year and may require more substantial reviews and amendments than the light-touch quarterly review. The feedback including recipient recommended amendments are sent to the IPCs for review and collation for reporting to the Director of Operations. The annual evaluation cycle closest to the midpoint of the contribution can be used as a mid-term review.
Mid - late November	Annual Performance Evaluation - feedback and implementation	Recipients may be contacted by CLs or IPCs to check any modifications to be implemented as needed. Any further feedback from the Director of Operations and/or CEC will be communicated to the Recipients by the IPCs. Implementation of recommended modifications may involve communication between the secondary recipients, CL, PM and/or IPC.
T1	Completion reporting review	Recipients review the final report for the contribution in the quarterly report or annual evaluation closest to the completion date. And provide any feedback to the IPCs. Any outstanding issues will be reported to the Director of Operations by the IPCs.

Appendix C: Templates

Templates for the Workplan, Quarterly Update and Annual Evaluation form are below. In each case, these forms will be filled out by the Contribution Lead for review by the recipient(s).

Work Plan

The work plan outlines the primary goals, milestones and deliverables generated by the contribution.

This should be read in conjunction with the quarterly updates, which summarise any issues arising in the previous quarter, and lays out the work for the forthcoming quarter.

The September quarterly update will be replaced by an annual evaluation of the contribution, and there is scope to redirect the work if advised as such by the recipient group.

Refer to the Manual for in-kind contributions to complete this form.

Time Line

Due	Contribution Lead	Recipient (following CL action)
3-4 months prior to the start date	• Complete the first version of the workplan • Submit to the Recipient group via this form/page by no later than 3 months and no earlier than 4 months before the start of the contribution • It is expected teams and FTE effort profiles will follow the timeline sheet. • Check that the contributors stated are up-to-date with contact emails provided. • Confirm that all contributors are engaged with the relevant recipient groups.	Review & comment on submitted work plan
By 2 months prior to the start date	Make any amendments requested by the recipients	Approve work plan
By 1 month prior to the start date	Submit plan of work for first quarter	Approve work for the first quarter

Workplan

Contribution Leads will use this form to develop and update the Workplan for your contribution. Please ensure that you keep the link to your submission, it will also be posted on your contribution web pages. Please refer to the specific instructions for different contribution types in the Manual for In-Kind Contributions (https://ls.st/RDO-41).

*Required

Email *

Your email address

Contribution ID

Your answer

Completed by

Please give your name

Your answer

Date

Date of completion of the Work Plan

Date

dd/mm/yyyy

Top-level Requirements

Summarise the top-level goal(s) for this contribution

Your answer

Workplan Summary

Please summarise the main objectives, deliverables and milestones for your contribution, identifying the work of the stated contributors to the proposal. The Workplan summarises the top-level goals of the work with more specific tasks documented through the work for the next quarter.

Your answer

Plan of work for the first quarter

Please itemise the main tasks to be carried out by the contributors in the next quarter. This will be appended to the top-level work plan summary and added to each new quarter through the quarterly updates and annual evaluation forms.

Your answer

A copy of your responses will be emailed to the address that you provided.

Submit

Quarterly Update

Please submit your quarterly update here

A historical log of your quarterly and annual updates will also be accessible here.

Due	Contribution Lead	Recipient (following CL action)
Reporting due end of week 1 for Q1: Dec, Q2: March, Q3: June	• Complete the Quarterly Update form • Submit to the Recipient group/IPC via this form/page by given deadline (end of week 1)	Review & comment on submitted plan 1 week after the deadline (end of week 2)

Quarterly Update

Contribution Leads will use this form to provide the quarterly update on your contribution. Note that to keep the process streamlined, we are expecting that this report focusses on any issues arising from the previous quarters work, otherwise assumes activities described in the previous quarter were carried out as planned. Please refer to the specific instructions for different contribution types in the Manual for In-Kind Contributions (https://ls.st/RDO-41).

The primary audience for the report are your Recipient group(s) and the contribution IPCs. The Program Manager and IPCs may also view this report. The Primary recipient group will accept and provide feedback, if any, on the update.

You are welcome to make any confidential comments to your contribution IPC by email, if needed.

*Required

Submitted by *

Your answer

Submitted on *

Date

dd/mm/yyyy

Issues arising from the previous quarter

Please list any issues you wish to bring the attention of the RG and/or IPC. For example, "Deliverable X could not be completed because of .... and will be focussed on next quarter, or will be refined to ....". You are also welcome to note any success or milestones achieved.

Your answer

Summarise interactions with the recipient groups in the last quarter *

e.g. attendance of regular meetings, engagement with wider SC or Rubin recipient teams, community coordination groups etc.

Your answer

Plan of work for the next quarter *

Please itemise the main tasks to be carried out by the contributors in the next quarter. Note any minor differences from the list of deliverables the Workplan Summary.

Your answer

Any other comments?

If there are any issues you would like to raise or help requests, please add them here. Any confidential comments should be sent by email to the contribution IPC.

Your answer

Submit

Annual Evaluation

Please submit your annual evlauation here

A historical log of your quarterly and annual updates will also be accessible here.

Due	Contribuition Lead	Recipient (following CL action)
Reporting due end of week 2 for Q4: Sep	• Complete the Annual Evaluation Form • Submit to the Recipient group/IPC via this form/page by given deadline (end of Sep week 2)	Review & comment on submitted plan 2 weeks after the deadline (end of Sep week 4)

Annual Evaluation

Contribution Leads will use this form to provide information towards the annual evaluation of your contribution. Please refer to the specific instructions for different contribution types in the Manual for In-Kind Contributions (https://ls.st/RDO-41).

The primary audience for the report is your Recipient group and the contribution IPCs. The Program Manager and IPCs may also view this report.

You are also welcome to make any confidential comments to your contribution IPC by email, if needed.

*Required

Submitted by *

Your answer

Submitted on *

Date

dd/mm/yyyy

Milestones and/or successes achieved

Please list any success or milestones achieved over the past year.

Your answer

Issues arising from the previous quarter and unresolved from previous quarters

Please list any issues you wish to bring the attention of the Recipient Group(s) and/or IPC arising from the previous quarter along with a summary of any issues that remain unresolved from the previous quarters. For example, "Deliverable X could not be completed because of .... and will be focussed on next quarter, or will be refined to ....".

Your answer

Summarise interactions with the recipient groups in the last quarter *

The work must be embedded within the recipient group, this could include attendance of regular meetings with the recipient team, engagement with wider SC or Rubin recipient teams, community coordination groups etc.

Your answer

Plan of work for the next quarter *

Please itemise the main tasks to be carried out by the contributors in the next quarter.

Your answer

Change requests to the Workplan Summary

Please list any major change requests to the work plan summary including deliverables here. If this affects the DRA, change requests will be logged and considered by the recipient group and IPCs and will also be summarised to the Rubin Director of Operations. The evaluation feedback will confirm if the change requests are accepted and any amendments that should be implemented.

Your answer

Any other comments?

If there are any issues you would like to raise or help requests, please add them here. Any confidential comments should be sent by email to the contribution IPC.

Your answer

Submit