

<b>Title:</b> NRAO ALMA Development Project Plan - Template	<b>Author:</b> W. Randolph	<b>Date:</b> 03 June 2013
<b>NA ALMA Development Doc. No.</b> T – 006.00		<b>Revision:</b> 0.0



North American  
ALMA Science  
Center



## Development Upgrades of the Atacama Large Millimeter/submillimeter Array (ALMA)

### **NRAO Project Plan Template**

Prepared by	Organization	Date
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### **Change Record**

Version	Date	Reason
0.0	03 June 2013	Initial Release

**Delete this entire page from your submitted Project Proposal.**



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ALMA Science  
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## Development Upgrades of the Atacama Large Millimeter/submillimeter Array (ALMA)

### **NRAO PROJECT PLAN**

*Insert **TITLE** here*

**PRINCIPAL INVESTIGATOR:**

INSTITUTION:

ADDRESS:

PI CONTACT INFORMATION:

*Telephone Number*

*Email address*

**ABSTRACT**

*Present a one page (or less) description of the work scope and objectives of the proposed Project.*

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## **1.0 SCIENCE CASE**

*Present the scientific rationale for the proposed Project and the significance for ALMA.*

## **2.0 PROJECT DELIVERABLES**

*Describe the products that will be delivered at the conclusion of the proposed Project.*

### **2.1 Hardware:**

### **2.2 Software:**

### **2.3 Services:**

### **2.4 Documents:**

- Monthly “4-square” Progress Reports
- Specifications
- Hardware design documentation
- Software design documentation
- Interface Control Documents (ICDs)
- Technical manuals and procedures
- Quality Assurance procedures
- Safety procedures
- Final Report
- Outcomes Report

## **3.0 INTERFACES TO ALMA**

*Note the ALMA hardware and/or software control interfaces that may be affected if the proposed design or control scheme is implemented.*

## **4.0 SITE LOCATION IMPACT STATEMENT (if applicable)**

*Describe any new facilities, significant modifications to existing facilities, or use of NRAO facilities that are required. Also indicate when these facilities and/or modification are required.*

## **5.0 PROGRAM OPERATING PLAN IMPACT**

*Describe impact(s) in terms of reduced labor and/or facilities capacity within the proposed period of performance.*

## **6.0 PERIOD OF PERFORMANCE**

*Define the anticipated period of performance (**twenty-four maximum**).*

## **7.0 STAFFING**

*Estimate the level of effort (unit of measure = Full Time Equivalent) to be deployed by the NRAO and Collaborating Institutions/Subcontractors (Table 1.0 items 1 through 4) until completion of the proposed Project, as well as the corresponding total cost to be incurred by the NRAO (Table 2.0). Identify essential (key) NRAO personnel required to ensure success. If two, or more, persons*

of equivalent labor grade are capable of performing any given task, leave the corresponding Key Personnel cell blank and note the FTE level of effort only.

**7.1 NRAO Staffing:**

Complete Table 1.0, below.

Table 1.0; **NRAO Labor Estimate.**

Title	Key Personnel (leave blank if inapplicable)	Labor Budget (FTE)		Duration (Months)
		FY2014	FY2015	
Principal Investigator				
Scientific Lead *				
Engineering Lead				
Scientist *				
Sr. Research Engineer				
Research Engineer				
Sr. Engineer				
Engineer 1				
Engineer 2				
Engineer 3				
Technician 1				
Technician 2				
Technician 3				
Machinist				
Other				
<b>SubTotal FTEs</b>		<b>0.00</b>	<b>0.00</b>	
<b>TOTAL FTEs</b>		<b>0.00</b>		

**\* Apply Science Time allowance factor (1.33) to labor estimate; e.g., if Level of Effort for the Scientific Lead (or Scientist) is 0.5 FTE, then the Budgeted LOE = 0.5 FTE x 1.33 = 0.665 FTE.**

**7.2 External Staffing:**

Complete Table 2.0, below.

*Table 2.0; External Staffing and Contact Information.*

Title	Name	Institution	Email	Telephone
Co-Investigator				
Vendor point of contact				
Customer tech. point of contact				

**8.0 COST BREAKDOWN**

The total Award Pool for the FY2014 Call for Development Project Proposals is \$4.3M. The total Award Pool amount (\$4.3M) will fund all NA ALMA Partnership Project Proposals. **The maximum cost allowance for an individual Project Proposal is \$1.5M.**

**8.1 NRAO Cost:**

Complete Table 3.0, below. Work Breakdown Structure (WBS) Number should correspond to Level 1 tasks/activities in the Project schedule. Insert additional rows as required.

<p><b><i>THIS AREA INTENTIONALLY LEFT BLANK.</i></b></p>
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**Table 3.0; NRAO Cost Breakdown.**

WBS No.	Task Description	Labor (\$)		M & S (\$)		Travel (\$)	
		FY14	FY15	FY14	FY15	FY14	FY15
1.0							
2.0							
3.0							
4.0							
5.0							
6.0							
7.0							
8.0							
9.0							
10.0							
n.0							
	<b>Yearly SubTotals</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
	<b>Total Labor</b>	<b>0.00</b>					
	<b>Total Burdened Labor = Total Labor x 1.2 leave pool factor x 1.35 benefits factor</b>	<b>0.00</b>					
	<b>Materials &amp; Services, and Travel Totals</b>			<b>0.00</b>		<b>0.00</b>	
	<b>Total = Burdened Labor + Materials &amp; Services + Travel</b>			<b>0.00</b>			
	<b>NRAO Total Burdened Cost = Total (above) x 1.3 cost recovery factor x 1.0484 AUI IDC factor x 1.02 AUI fee</b>			<b>0.00</b>			



**8.2 Collaborating Institution / Subcontractor Cost:**

Complete Table 4.0, below. Insert additional rows as required. Note the value of any In-Kind Contributions.

Table 4.0; *Collaborating Institution / Subcontractor Cost.*

<i>Collaborating Institution / Subcontractor</i>	<i>USD (\$)</i>	<i>In-Kind Contribution Value in USD (\$)</i>
<i>Subcontract "A" Base Cost</i>		
<i>Subcontract "A" Burden *</i>		
<b><i>Subcontract "A" Total Cost (\$)</i></b>	<b><i>0.00</i></b>	
<i>Subcontract "B" Base Cost</i>		
<i>Subcontract "B" Burden *</i>		
<b><i>Subcontract "B" Total Cost (\$)</i></b>	<b><i>0.00</i></b>	
<b><i>Total Subcontracts Cost (\$)</i></b>	<b><i>0.00</i></b>	
<b><i>Total Value of In-Kind Contributions (\$)</i></b>		<b><i>0.00</i></b>

**\* Calculate Burden on the first \$25K of Base Cost only; i.e., there is no Burden on Base cost greater than \$25K. Use the factor "0.3684" to calculate the Burden on Base Cost ≤ \$25K. If X = Base cost, then Burden = 0.3684 X. Maximum Burden per contract = \$25K \* 0.3684 = \$9.21K**

**8.3 Total Project Cost:**

Complete Table 5.0, below.

Table 5.0; *Total Project Cost.*

<i>Project Participants</i>	<i>USD (\$)</i>
<i>NRAO Total Burdened Cost (Table 3.0)</i>	
<i>Total Subcontracts Cost (Table 4.0)</i>	
<i>NRAO Project Contingency (reference Table 7.0)</i>	
<b><i>Total Project Cost (\$)</i></b>	<b><i>0.00</i></b>

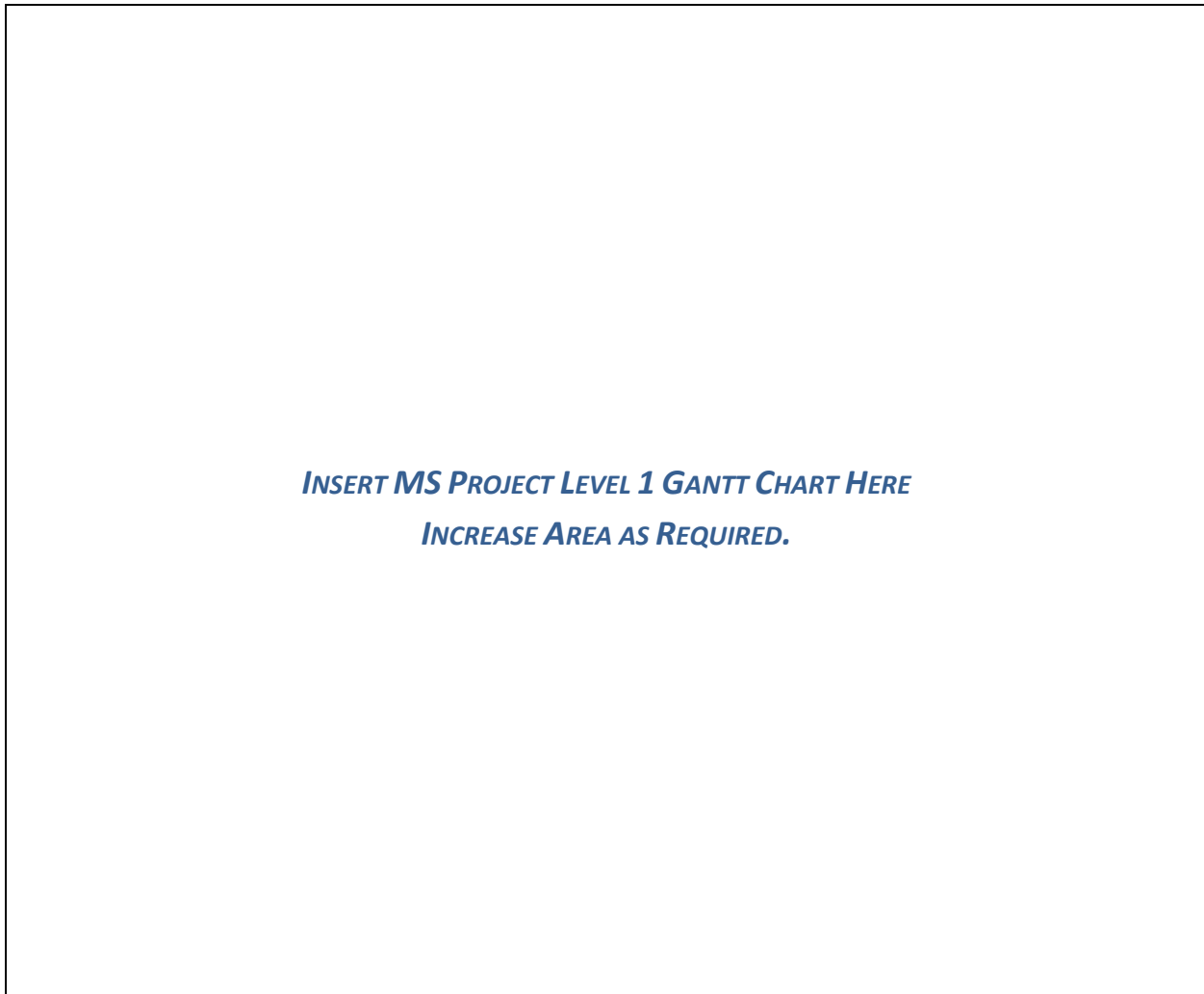
**8.4 Total Project Value:**

Complete Table 6.0, below.

*Table 6.0; Total Project Value.*

<i>Category</i>	<i>USD (\$)</i>
Total Project Cost (Table 5.0)	
Total Value of In-Kind Contributions (Table 4.0)	
<b>Total Project Value (\$)</b>	<b>0.00</b>

**9.0 SCHEDULE**



*Figure 1.0; Project Schedule.*

## 10.0 PROJECT MANAGEMENT

### 10.1 Systems/Configuration Control

#### 10.1.1 Systems Requirement and Specification Control

Development engineering and design activities will be conducted in accord with established ALMA Systems Engineering policies, practices and procedures.

#### 10.1.2 Documentation Control

All shared documents will be dated and bear a revision level number.

#### 10.1.3 Product & Quality Assurance Control

Development engineering and design activities will be conducted in accord with established ALMA PA/QA policies, practices and procedures. A unique Product Assurance Plan is unnecessary.

### 10.2 Performance to Schedule

The Principal Investigator has primary responsibility for schedule development and performance to schedule. The NA ALMA Development Program office will provide support to the PI in establishment of a revision-controlled Project schedule and monthly preparation of performance to schedule status. In the event of a schedule variance, the PI and the NA ALMA Development Program Manager will assess the impact and develop the appropriate recovery action(s).

### 10.3 Performance to Budget

The Principal Investigator has primary responsibility for intra-project budget allocation and cost performance. The NA ALMA Development Program office will provide support to the PI in establishment of cost accounts, budget load, and the preparation of a revision-controlled, monthly Budget Status Report. In the event of a cost variance, the PI and the NA ALMA Development Program Manager will assess the impact and develop the appropriate recovery action(s).

### 10.4 Measures of Success

*Describe the measures of success (performance metrics and outcomes) for this Project. Describe the process that will be used to address experiment prioritization, evaluate experiment results, and to modify the approach/redirect experiments.*

### 10.5 Risk Management

*Identify the primary areas of uncertainty (risk) foreseen at the outset of the Project. Estimate the probability of occurrence and associated cost impact of each identified risk. Also, briefly note the means by which each primary risk may be mitigated or retired altogether.*

**Table 7.0; Project Risk Assessment.**

No.	Primary Risk(s)	Prob. (%)	Impact (\$)	Mitigation
1				
2				
3				
<b>Total Cost Impact (\$)</b>			<b>0.00</b>	

## **10.6 Communication Plan and Progress Reporting**

A monthly, “Four-square” progress report will be prepared by the Principal Investigator in accord with Observatory Program Management practices and procedures. Informal reviews will be conducted by the NA ALMA Development Program Manager upon the completion of Level I milestones.

## **11.0 PROJECT CLOSEOUT**

Upon conclusion of this Project, the NA ALMA Development Program Office will coordinate the orderly closeout of activities; or, the transition of activities to implementation. At a minimum, this will include the following:

- verification of compliance with established procurement policies and procedures;
- verification of Purchase Order final payments;
- verification of compliance with established labor charging practices;
- verification of labor charging accuracy;
- cost and schedule variance analysis;
- resolution of any inventory and/or property control issues;
- inactivation of cost accounts;
- preparation of a Final Report;
- preparation of a Project Outcomes Report; and
- archiving of Project records.

## **APPENDIX A - REFERENCE DOCUMENTS**

**APPENDIX B – CURRICULUM VITAE OF KEY PERSONNEL**