

# GEMMA

Gemini in the Era of Multi-Messenger Astronomy

## Gemini in the Era of Multi Messenger Astronomy

### Progress Report

October 1, 2018 - March 31, 2019

B-GPM-001

Program Manager: Catherine Blough



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# Summary

The receipt of the award October 1, 2018 prompted the Gemini Directorate to create the “GEMMA” program to improve the ability to deliver the benefits of the individual projects funded by the CSA, and as the most efficient mechanism to provide oversight for the budget, resources, scope and schedule. The program will provide continuity with the project management methodology. This ensures consistency in reporting across the projects, benefits management, and stakeholder engagement. Since the receipt of the award there has been substantial progress with developing the “GEMMA” program; beginning with the required Program Execution Plan at the end of Q1 2019 to defining the domains of program management in Q2 of 2019.

## Program Highlights

- Projects authorized by the Directorate - Program and Project Execution Plans submitted
- Program Kickoff meetings held for Gemini North & Gemini South
- Defined the scope of O&M staff resources impacted by GEMMA program and projects
- Defined and published the program master deliverable schedule for reporting to governance and NSF
- Identify financial framework - internal procedures adopted to prevent co-mingling of funds between CSAs
- Program domains identified and domain WBS schedule created
- Implementation of Resource Allocation procedures for projects
- Revised program and project budgets approved by the Directorate and submitted to NSF for approval
- GEMMA roles and responsibilities document drafted under directorate review
- GEMMA logo, web page, and AAS presentations completed
- Projects procurement schedule submitted to CAS to aid in procurement planning
- Created layout of the GEMMA Award Management Guide that will incorporate the program management plans, define the procedures for configuration management, escalation and approval paths, change management and decision making and the EVM process.

# Budget Reporting

The GEMMA program will follow the current Gemini financial management practices governing CSA1. Specific procedures related to “Home Departments and cross CSA charging,” risk and complexity fund management, budget and schedule tolerance procedures are ongoing.

Current budget versus Fiscal year to date (FTD) total expense shows under spending, illustrated by the following budget detail per program and project. The underspending is primarily due to a prolonged hiring process for the new employees expected to staff the GEMMA projects, (exacerbated by the government shutdown) and a prolonged planning process. The expectation is spending will substantially increase in Q3 and Q4.

Total Program Budget							
Variables	Approved Budget	Budget Changes	Current Forecast	Total Expense FYTD	Current Open Commits	Spend Remaining	% Remaining
TOTAL WAGE & BENEFITS	1,793,714	123,591	1,917,304	232,915		1,684,389	87.85%
TOTAL TRAVEL	170,967		170,967	19,106	4,329	147,532	86.29%
TOTAL OTHER DIRECT COSTS	772,798		772,798	18,727	7,835	746,236	96.56%
TOTAL INDIRECT COSTS	195,288		195,288	19,753		175,535	89.89%
TOTAL EXPENSE	2,932,767	123,591	3,056,357	290,501	12,164	2,753,693	90.10%
GRAND TOTAL	2,932,767	123,591	3,056,357	290,501	12,164	2,753,693	90.10%
TOTAL EXPENSE LESS LABOR	1,139,053		1,139,053	57,586	12,164	1,069,303	93.88%

Table 01 - GEMMA Program Total Budget detail

GR2110000 Mgmt Account							
Variables	Approved Budget	Budget Changes	Current Forecast	Total Expense FYTD	Current Open Commits	Spend Remaining	% Remaining
TOTAL WAGE & BENEFITS	381,830	140,688	522,518	96,607		425,912	81.51%
TOTAL TRAVEL	4,942		4,942	13,445	2,654	(11,157)	-225.76%
TOTAL OTHER DIRECT COSTS				6,797	4,235	(11,032)	
TOTAL EXPENSE	386,772	140,688	527,460	116,848	6,889	403,723	76.54%
GRAND TOTAL	386,772	140,688	527,460	116,848	6,889	403,723	76.54%
TOTAL EXPENSE LESS LABOR	4,942		4,942	20,242	6,889	(22,189)	-448.99%

Table 02 - GEMMA Program Management account detail

GR1111000 External Fees							
Variables	Approved Budget	Budget Changes	Current Forecast	Total Expense FYTD	Current Open Commits	Spend Remaining	% Remaining
TOTAL INDIRECT COSTS	195,288		195,288	19,753		175,535	89.89%
TOTAL EXPENSE	195,288		195,288	19,753		175,535	89.89%
GRAND TOTAL	195,288		195,288	19,753		175,535	89.89%
TOTAL EXPENSE LESS LABOR	195,288		195,288	19,753		175,535	89.89%

Table 03 - GEMMA Program External Fees account detail

<b>PIO</b>							
Variables	Approved Budget	Budget Changes	Current Forecast	Total Expense FYTD	Current Open Commits	Spend Remaining	% Remaining
TOTAL WAGE & BENEFITS	124,929	(1,513)	123,416	8,207		115,209	93.35%
TOTAL TRAVEL	69,127		69,127			69,127	100.00%
TOTAL OTHER DIRECT COSTS	251,000		251,000			251,000	100.00%
TOTAL EXPENSE	445,056	(1,513)	443,543	8,207		435,336	98.15%
GRAND TOTAL	445,056	(1,513)	443,543	8,207		435,336	98.15%
TOTAL EXPENSE LESS LABOR	320,127		320,127			320,127	100.00%

Table 04 - Public Information and Outreach projects account detail

<b>RTC</b>							
Variables	Approved Budget	Budget Changes	Current Forecast	Total Expense FYTD	Current Open Commits	Spend Remaining	% Remaining
TOTAL WAGE & BENEFITS	65,929	(798)	65,130	25,540		39,590	60.79%
TOTAL TRAVEL				5,661		(5,661)	
TOTAL OTHER DIRECT COSTS	180,000		180,000	150	3,600	176,250	97.92%
TOTAL EXPENSE	245,929	(798)	245,130	31,351	3,600	210,179	85.74%
GRAND TOTAL	245,929	(798)	245,130	31,351	3,600	210,179	85.74%
TOTAL EXPENSE LESS LABOR	180,000		180,000	5,811	3,600	170,589	94.77%

Table 05 - Adaptive Optics Real-Time Controller project account detail

<b>TDA</b>							
Variables	Approved Budget	Budget Changes	Current Forecast	Total Expense FYTD	Current Open Commits	Spend Remaining	% Remaining
TOTAL WAGE & BENEFITS	561,474	(6,799)	554,674	22,280		532,394	95.98%
TOTAL TRAVEL	40,406		40,406			40,406	100.00%
TOTAL EXPENSE	601,880	(6,799)	595,080	22,280		572,800	96.26%
GRAND TOTAL	601,880	(6,799)	595,080	22,280		572,800	96.26%
TOTAL EXPENSE LESS LABOR	40,406		40,406			40,406	100.00%

Table 06 - Time Domain Astronomy project account detail

<b>GNAO</b>							
Variables	Approved Budget	Budget Changes	Current Forecast	Total Expense FYTD	Current Open Commits	Spend Remaining	% Remaining
TOTAL WAGE & BENEFITS	659,553	(7,987)	651,566	80,282		571,284	87.68%
TOTAL TRAVEL	56,492		56,492		1,675	54,817	97.03%
TOTAL OTHER DIRECT COSTS	341,798		341,798	11,780		330,018	96.55%
TOTAL EXPENSE	1,057,843	(7,987)	1,049,856	92,061	1,675	956,119	91.07%
GRAND TOTAL	1,057,843	(7,987)	1,049,856	92,061	1,675	956,119	91.07%
TOTAL EXPENSE LESS LABOR	398,290	0	398,290	11,780	1,675	384,835	96.62%

Table 07 - Gemini North Adaptive Optics System project account detail

# Program Management

The goal of the program is to achieve the program objectives and obtain benefits not easily achieved by managing the projects individually and ensure project and program benefits are appropriately delivered and sustained after the program ends. The overall management approach for GEMMA is to integrate into the existing Gemini Portfolio Management structure, complying with established communication channels, and regular reporting and monitoring practices. The utilization of established budget, portfolio and project management policies and procedures will ensure that resources are allocated adequately across the observatory. Reports utilized to track and monitor program and project status are delivered monthly to the Directorate via the Portfolio manager.

The Program Manager ensures the effective alignment, integration and control of the GEMMA projects. Formal monthly updates and monitoring, and continual informal monitoring assist the Program Manager in closely monitoring resources, schedule and cost.

## Program Life Cycle

The Program Strategy graphic depicts the three program phases consisting of activities that create and authorize the program, in which the program mandate and business case are formulated, including benefits identification, project coordination and oversight, and program closure. The program utilizes five management domains for the formal monitoring and control process. The GEMMA program is still in the planning phase although required deliverables are being met (see Program Highlights).

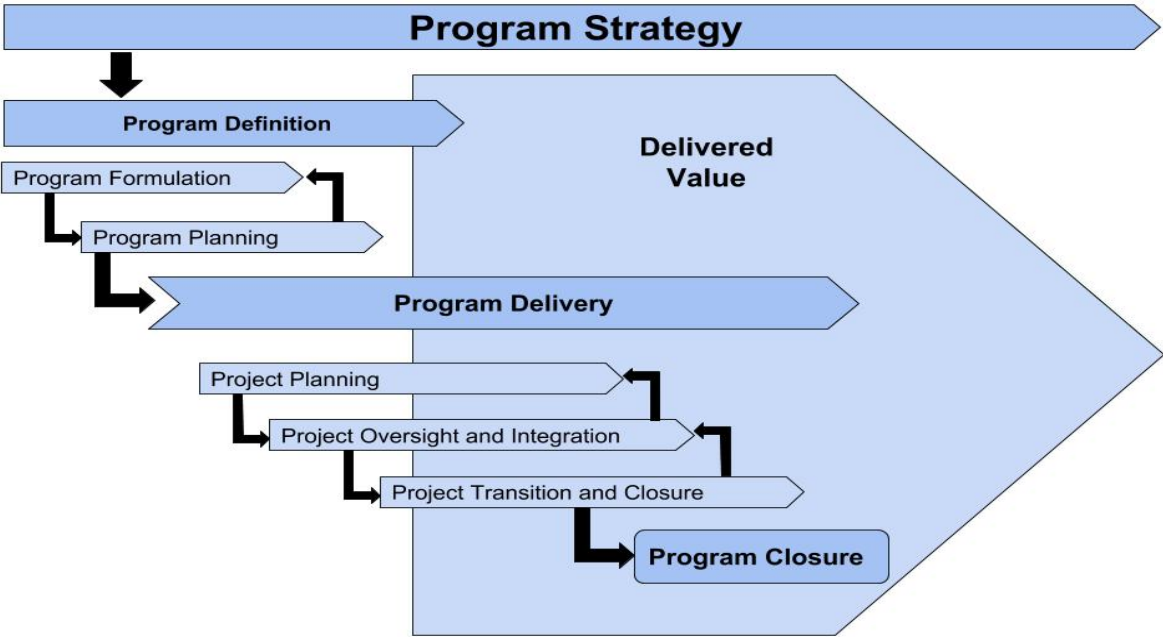


Figure 01 - Program Lifecycle



WBS number	Milestone/Deliverable	Start Date	End Date	Variance/Comments
1.1	Program Mandate & Business Case	10/1/2018	6/30/2019	Draft begun
1.2	Program Roadmap	1/1/2019	6/30/2019	Creation of Portfolio Office, Appt. of PortM and ProgM
1.3	Environmental Assessments	1/6/2019	5/18/2019	Inputs from community and governance
1.3.1	Identify external environmental factors	10/1/2018	9/30/2019	Draft needed to identify what is outside the control of the observatory, i.e. funding, economy, geographic diversity, etc.
1.3.2	Environmental analysis	1/1/2019	9/30/2019	Draft needed for SWOT analysis, feasibility studies, historical information analysis
1.4	Risk Management Strategy	10/1/2018	12/30/2019	Risk Management Plan included in PEP
1.4.1	Strategic Alignment	10/24/2018	5/30/2019	Portfolio Management Office created 10/2018 begins identifying strategic objectives
1.4.2	Risk thresholds	4/1/2019	9/30/2019	Yet to be identified, to be based on strategic goals and risk tolerance
1.4.3	Initial risk assessment	10/1/2018	12/31/2018	Identified in Risk Register
1.4.4	Risk response strategy	10/1/2018	12/31/2018	Identified in Risk Register

**Table 09 - Strategic Alignment Milestones and Deliverables, includes dates and latest updates**

**Benefits Management**

A baseline document will be created that guides the delivery of benefits during the program’s performance. It will define key performance indicators, establish performance baseline, and detail the process for using the benefit scoring. The document will be included in the GEMMA award management guide.

Gemini ensures that its project portfolio is aligned with observatory goals through the use of a balanced scorecard at the point where each new project is proposed. The purpose of the balanced scorecard (completed during Request For Change submission) is to ensure that Gemini’s project portfolio meets the strategic objectives of the Observatory using a predefined balance of project types. It is used to evaluate the project benefits when there is competition for resources. The balanced scorecard is divided into four areas: Science Outcomes, Staff and Institutional Growth, Internal Processes, and Stewardship. All project escalations are reviewed against the current project portfolio through a report available in the Project Management Knowledge Base. The program benefits will be integrated into this process.



WBS number	Milestone/Deliverable	Start Date	End Date	Variance/Comments
2.1	Benefits identification	1/1/2019	6/30/2019	Included in mandate
2.1.1	Risk Register	10/1/2018	12/31/2018	Reviewed monthly by the Program and Portfolio Manager
2.2	Benefit analysis and planning	1/1/2019	6/30/2019	Contingent on written mandate
2.2.1	Benefits management plan			Contingent on benefits identified in mandate
2.2.2	Benefits management and program roadmap			Contingent on benefits identified in mandate
2.2.3	Benefits register update			Contingent on benefits identified in mandate
2.3	Benefits delivery	1/1/2019	6/30/2019	Defining activities to ensure portfolio alignment
2.3.1	Benefits and program projects			Integrating project outputs - reflecting incremental program benefits
2.3.2	Benefits and program governance			Monitoring continuous alignment with strategic objectives
2.4	Benefits transition	10/1/2023	9/30/2024	Ensure transition of benefits to ops
2.5	Benefits statement	10/1/2023	9/30/2024	Ongoing maintenance beyond program end

**Table 10 - Benefits Management Milestones and Deliverables, includes dates and latest updates**

## **Stakeholder Engagement**

Stakeholders are both internal and external to the program and they have the ability to influence the outcome of the program. Analyzing stakeholders' interest and establishing appropriate communication channels is important to the success of the program and the projects and to maintaining a positive relationship with the Gemini user community.

WBS number	Milestone/Deliverable	Start Date	End Date	Variance/Comments
3.1	Stakeholder engagement	10/1/2018	12/31/2018	Engagement plan included in PEP
3.2	Stakeholder analysis	1/1/2019	6/1/2019	TBD
3.3	Planning	10/1/2018	6/30/2019	Engagement plan included in PEP
3.4	Engagement	1/1/2019	9/30/2024	Continuous activities
3.5	Communication	1/1/2019	9/30/2024	Continuous activities

**Table 11 - Stakeholder Engagement Milestones and Deliverables, includes dates and latest updates**

## Governance

The program framework is based on established Gemini policies and procedures used to monitor and manage the projects. The project management methodology is established and the GEMMA projects are required by the Gemini Portfolio Management office to supply key documents used to monitor the projects. Some documents are required as a key to success to be agreed upon by the project sponsor and program manager and maintained on the project team sites. All projects in the portfolio maintain a team site and are updated at least monthly.

WBS number	Milestone/Deliverable	Start Date	End Date	Variance/Comments
4.1	Governance practices	10/24/2018	10/24/2018	Creation of portfolio office/Creation of GEMMA Program
4.2	Governance Roles	1/1/2019	6/30/2019	Initial draft completed
4.3	Design and Implementation	1/1/2019	6/30/2019	Framework for monitoring program initiated

Table12 - Governance Milestones and Deliverables, includes dates and latest updates

## Program Life Cycle Management

The program's lifecycle is similar to project lifecycles and provides the broader view to ensure benefits realization, to provide the necessary alignment to strategic goals, and to ensure continuity in processes and observatory policies.

WBS number	Milestone/Deliverable	Start Date	End Date	Variance/Comments
5.1	Program Life Cycle	10/1/2018	9/30/2024	Ongoing maintenance beyond program end
5.1.1	Phases overview	10/1/2018	12/30/2018	
5.1.2	Definition phase	10/1/2018	6/30/2019	
5.1.3	Delivery phase	10/1/2018	6/30/2024	
5.1.4	Closure phase	10/1/2023	9/30/2024	
5.2	Program activities and integration management	1/1/2019	9/30/2024	Collectively utilizing resources, budget, interdependencies etc.
5.2.1	Activities overview	1/1/2019	3/30/2019	
5.2.2	Integration management	1/1/2019	9/30/2024	

5.2.3	Mapping lifecycle to activities	1/1/2019	9/30/2019	
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Table 13 - Program Life Cycle Management Milestones and Deliverables, includes dates and latest updates

## **Program Activities**

The activities are the specific tasks and work conducted during the program lifecycle. Of central importance is integration management by monitoring the projects and collectively utilizing resources, knowledge, funding, and skills to inform governance when making key decisions regarding risk, resource allocations, and changes due to project complexities.

<b>WBS number</b>	<b>Milestone/Deliverable</b>	<b>Start Date</b>	<b>End Date</b>	<b>Variance/Comments</b>
6.1	Program definition phase activities	1/1/2019	9/30/2024	Program RFC submitted 9/28/18
6.1.2	Formulation activities			
6.1.3	Planning activities	10/1/2019	5/18/2019	
6.2	Program Delivery Phase Activities	1/1/2019	9/30/2024	Continuous activities
6.2.1	Change monitoring	1/1/2019	9/30/2024	
6.2.2	Communications management	10/1/2018	5/30/2019	Initiated during PEP
6.2.3	Financial management	10/1/2018	9/30/2024	Incorporating observatory policies and procedures in program
6.2.4	Information management	10/1/2018	9/30/2024	
6.2.5	Procurement management	10/1/2018	9/30/2024	Incorporating CAS policies in program
6.2.6	Quality assurance	10/1/2018	9/30/2024	
6.2.7	Resource management	10/1/2018	9/30/2024	Incorporating Portfolio policies in program, shared services activities
6.2.8	Risk monitoring	10/1/2018	9/30/2024	Incorporating AURA policies in program
6.2.9	Schedule monitoring	10/1/2018	9/30/2024	Assessment of expectations of delivery dates
6.2.10	Scope monitoring	10/1/2018	9/30/2024	Assessment of expectations of deliverables & interface management plan
7.1	Program Closure Activities	1/1/2019	9/30/2024	Benefits sustaining activities
7.1.1	Financial Closure	10/1/2023	9/30/2024	
7.1.2	Information archiving & transition	7/1/2024	9/30/2024	
7.1.3	Procurement closure	10/1/2023	9/30/2024	
7.1.4	Resource transition	10/1/2020	9/30/2024	

7.1.5	Risk management transition	10/1/2023	9/30/2024	
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Table 14 - Program Activities Milestones and Deliverables, includes dates and latest updates

## **Issues and Risk Summary**

<b>Issue/Risk</b>	<b>Risk Level</b>	<b>Mitigation</b>
NCOA COE staffing assignments could impact availability of GEMMA staff during program and project lifecycle.	Moderate	Designate point person within NCOA transition program to relay planning efforts impacting GEMMA and O&M staff to help plan future potential staff shortages
Delay in new hires	Moderate	Continued use of O&M staff until new hires are trained will help keep schedule milestones

## **Project Progress Reports**

The project progress reports follow the above program report and include, the Gemini North Adaptive Optics (GNAO), Real Time Computer (RTC), Time Domain Astronomy (TDA) and Public Information and Outreach (PIO).