VHA IT Program Funding Sheet
For
Health Data and Analytics Platform

Section 1. Program Description - Summarize the program's purpose, goals, and current or anticipated benefits (qualitative and/or quantitative). Separate paragraphs should be used to describe multi sub-programs, projects, or capabilities. For goals, please include at least one Critical Success Factor (key area where an organization must perform well on a consistent basis to achieve its mission); and pertinent Key Results Indicators (KRIs) (measures of the results from your business actions which are critical in tracking progress and defining success). KRIs are typically developed for the areas of Mission Essential Function, Process Improvement, Financial, Learning & Growth, Veteran Satisfaction, Employee Satisfaction.

A. Program Summary (short - limit 2500 char):

The Health Data and Analytics Program is an overarching program for management of IT-funded data and analysis capabilities. This program will include the spectrum of capabilities for management of healthcare delivery. A single funding program will allow VA to flexibly meet requirements for multiyear planning, strategic planning, and tactical acquisition of capabilities which benefitting from a rapidly developing market for data management and analytical solutions. As a rule, the program will provide a platform-based approach for capability provisioning. Acquisition of capabilities will be guided by a strategic enterprise architectural approach prioritized by VHA need balanced by costs/benefit constraints of market evolution and VA's system development. (For example, it may be better to satisfy many lower business priorities with a few basic capabilities/platforms than one high business priority that requires a highly specialized solution.)

B. Program Description: Please clearly identify and include descriptions of any sub-programs in your description.

The Health Data and Analytics Program includes IT-funded activities that support enterprise capabilities of managing data and knowledge, discovering new knowledge, using algorithms to make inferences on individuals or cohorts, and managing reports and inferences in clinical and administrative workflows. Capabilities for these activities may be supplied by platforms or vertically integrated solutions. However, in all cases, capabilities must allow enterprise integration and secondary use of data and analytical products. Whereas the VA currently has three de facto subprograms (business intelligence and reporting, advanced discovery and inferencing, and registries), these divisions are somewhat old fashioned and limiting. Current market offerings are blending these capabilities into more useful products. It no longer makes sense to strictly segregate acquisition of capabilities along these lines. Useful but evolving subprograms can start with the following: data aggregation and access, master data and knowledge management, discovery of new knowledge, producing reports and inferences, and managing individuals and cohorts. - Data aggregation and access: data aggregation including warehousing, and channels for data access including data orchestration and APIs. As VA moves from custom

to commercial data systems, VA will have to develop new ways of aggregating, warehousing or on-demand accessing of data. Data orchestration is about getting data to go where it is needed. Event-driven data orchestration will become increasingly relevant for analytics. - Master data and knowledge management. Master data management is eventual consistency regarding the semantics and accessibility of enterprise data for the purposes of consistent and flexible use of those data. For data sources and aggregations of sources, capabilities are required to manage terminologies, ontologies, data models, and information models. Importantly, these capabilities must operate across data aggregation/access platforms. Master knowledge management is similar but targets higher-level objects such as data forms, phenotypes, and algorithms. - Knowledge discovery. This is primarily about creating new algorithms from decision logics, statistics, or artificial intelligence. In most current health analytics products, knowledge development occurs separately from inferencing. However, products already exist that dynamically retrain or produce new models as the products create inferences. - Inferencing. This is about running data through an algorithm to produce a result to be used in a report or be consumed by another algorithm. - Workflow management. This is about using the data in administrative or clinical workflows. In general, clinical workflow management is governed by another capability management board. However, cohort managementincluding registriesis a hybrid analytics/clinical function that has traditionally fit under this board. Analytical workflows are poorly supported by current reporting products. Workflows consist of diagnostic and management activities with the following phases: focusing attention on potential issues that need to be addressed by a human, understanding the issues, identifying points of management, and following through on various steps of the management which might include further data entry by the user or collection from other sources. The program will develop principles of governance, management, and acquisitions for maximally productive use of resources across IT, informatics, contracting, and users. By the end of 2020, VA should have the technical maturity to be able to identify subprograms based on major technical platforms with a grab-bag subprogram for minor, vertically integrated, specialty solutions. This program will also identify partnerships among government agencies, FFRDCs, healthcare systems, and vendors to guide strategy and development/acquisition of cost effective solutions and content.

C. Program Benefits - Describe how this effort will benefit Veterans or the organization. Succinctly state the benefits by completing the statement, "This program is beneficial because..."; addressing either:
1. The degree to which the program improves access, experience, and health data transportability for the Veteran.

As proposed, this program is critical to the mission of VHA, as it will include all enterprise capabilities for data and analytics. As a new proposal, this program will allow VA to transition from outdated, expensive, custom vertically integrated solutions to a best-practice approach of enterprise data integration and management based on a system of commercial platforms with custom integration, as required. This approach will also allow VHA to focus on creation of new methods and algorithms and management of its operations. Including VHA researchers, VHA may have the most impressive collection of analyst and data scientists of any healthcare-oriented organization. VA must free these individuals to focus on content generation and healthcare management, not on repeatedly creating solutions for every solution/application.

And/or... -
2. The degree to which this program reduces operational costs (examples might include reduction of staff time/cost, supplies, equipment, workflow, etc.).

This program will reduce per-capability costs from the perspective of VA (IT plus VHA) because it will focus on general IT capabilities and fully supported workflows for management of healthcare. The proposal to bundle several sub-programs (Renal Dialysis, Health Registries, Cancer Care Tracking, Data Warehouse and Reporting platform for Office of Mental Health and Suicide Prevention, Anesthesia Quality Improvement Program and Analytics Database, Public Health Surveillance, and Advanced Inference and Discovery Environment) has a tremendous potential to conserve resources on several fronts - not least of which is in assignment of scarce project management resources. Additionally using a shared platform greatly reduces infrastructure costs.

Section 2: Program Business Needs and Outcomes - Describe the business problems or opportunities that this program will address. If the requested IT solution is associated with a mandate or legislative directive, please indicate which and cite specific references.

1. VHA strategy for High Reliability Organization (see benefits above) 2. GAO directive for management (Jim Warner). In the spirit of a number of Executive, Congressional, and Federal orders, laws, and regulations sharing IT resources among several sub-programs will greatly reduce overall platform costs. Specific laws are the (Brooks Act and Warner Amendment).

Section 3: Envisioned IT Solution - In narrative form, describe the IT solution being requested.

The several sub-programs within this proposal will be bundled (Renal Dialysis, Health Registries, Cancer Care Tracking, Data Warehouse and Reporting platform for Office of Mental Health and Suicide Prevention, Anesthesia Quality Improvement Program and Analytics Database, Public Health Surveillance, and Advanced Inference and Discovery Environment) into a shared platform and services environment.

A. If known, list the applications/systems affected, and whether the application/system is new, modified, or retired. Also, describe any other programs that may be affected by this solution; and/or any previous similar efforts (if known).

This is a totally new Advanced Analytics tool to be developed at ORNL. There are no known applications or systems that are sharing Health Data and Analytics platforms and services within the VA - or the DoD (the two largest healthcare organizations within the Federal government).

B. Explain whether changes are required to user interfaces, business logic, data content, or interfaces, as applicable.

Changes are required to all of the above but build on a functioning platform. However, UX and business logic are contained in the platform. Interfaces other than ETL are contained in the platform. Eventually, interfaces between the platform and other internal and external systems will need to be developed but should use the enterprise platforms for orchestration and APIs. Medium-term APIs will need to be developed between the ORNL platform and other data-analysis platforms such as those run by VSSC.

C. Include in the narrative corresponding transformations to non-IT assets (e.g. staffing, staff skill sets, business processes, physical plant/facilities, etc.) required to fully achieve the outcomes needed.

New staff will be required for surveillance of systems and processes. OHI has planned a budget for surveillance of hazards related to Health Information Technology (HIT) systems. Staffing will need to be made at facility, VISN, and national levels for process surveillance for the purposes of continuous process improvement. However, this system will make analysts more efficient and effective for each targeted process. Analysts will need additional training in hazard investigation and continuous process improvement or be teamed with others with skills found in VHA's group practice managers.

Section 4: Program Assessments -
Provide information on strategic alignment, quality of service, efficiencies, risk mitigation, number of Veterans affected, and number of staff affected that will support an assessment of the desired outcomes for the programs and sub-programs.

A. Strategic Alignment - Provide a justification for how the proposed IT capability supports each of the four VA Strategic Goals (as published in the VA Strategic Plan FY2018-2024), as applicable. When providing a justification, think of the strategic alignment of your program in its entirety to each of the goals. Justification descriptions may include references to applicable sub-programs. Provide specific examples and performance metrics where known.

VA Goal 1: Veterans choose VA for easy access, greater choices, and clear information to make informed decisions. (Aligns to the following VA Secretary Priorities: Greater Choice)

This supports VA goal 1., by providing advanced analytics, decision support, and expert systems supporting clinical decisions. Other health care systems will strive to emulate these advanced capabilities. This is yet another example of VA setting the standard for the United States, and the World. Consistent data and valid/understandable analytical products will help Veterans choose how to configure their healthcare providers.

VA Goal 2: Veterans receive timely and integrated care and support that emphasizes their well-being and independence throughout their life journey. *(Aligns to the following VA Secretary Priorities: Improve Timeliness and Suicide Prevention)*

This supports VA goal 2., by providing the capacity for predictive analytics (for example predictive analytics may improve the capability to forecast veterans who may be more susceptible to life threating circumstances). Workflow support will speed risk-stratification, diagnosis, and management of issues for cohorts and individual patients including issues of suicide.

VA Goal 3: Veterans trust VA to be consistently accountable and transparent. *(Aligns to the following VA Secretary Priorities: Focus Resources and Greater Choice)*

This supports VA goal 3., by providing more advanced information enabling veterans greater latitude for decision making and choices. Consistency and transparency are the goals of master data management and knowledge management.

VA Goal 4: VA will modernize systems and focus resources more efficiently to be competitive and to provide world class capabilities to Veterans and its employees. *(Aligns to the following VA Secretary Priorities: Modernize Systems and Focus Resources)*

This supports VA goal 4., by providing the most advance capability for predictive analytics and decision support available anywhere. These industry best practices, when followed, are demonstrated to result in greater organizational agility and competitiveness.

B. Quality of Service - Describe the expected quality of service and benefits to the Veteran for the desired program and sub-program. Specifically, include an assessment

of how the proposed IT capability is expected to improve Veteran experience, outcomes, and/or patient safety. Narratives are preferred that contain bulleted, clear examples of measures and outcomes that are quantifiable and measurable including success criteria, the current baseline, and expected improvement in any performance measures defined in the program.

Veteran experience and satisfaction (Example: improved communication between Veterans and providers or improved ability to identify and leverage community providers in a timely manner)

Advance analytics may provide more information quicker enabling more choice of specialty care.

Outcomes (Example: reduced readmissions, reduction in billing errors, or enhanced data sharing capability)

Advanced analytics and predictive capabilities may lead to better health care decisions.

Patient Safety (Example: reduction in medication errors)

Advanced analytics and predictive capabilities may reduce the potential for errors.

C. Efficiencies - Describe how the proposed IT capability provides efficiencies regarding workflow, resources, and/or end user satisfaction. Clearly identify relevant measures, describe the current baseline, and quantify expected improvements.

Operation and/or Clinical Workflows (Example: process improvements, time savings, etc.)

Advanced analytics may provide greater insights enabling discovery of enhanced capabilities.

Resources (Example: reduction in labor, supplies, tools, and/or equipment)

Advanced analytics may provide greater insights enabling discovery of enhanced capabilities, leading to less rework and more efficient processes.

End User Satisfaction (provider and/or personnel) (Example: improved user interface or ease of use)

Advanced analytics may provide greater insights enabling discovery of enhanced capabilities, leading to less rework and more efficient processes.

D. Risk Mitigation - Describe the probability of operationally successful outcomes for the desired program by describing risk analysis activities and highlighting major risks and associated mitigation strategies.

1. Describe the status of risk analysis activities including: conduct of an operational risk analysis; identification of risks; and development of mitigation strategies to deter or limit the effect of, or exposure to, those risks.

Where possible, include examples of identified operational-related risk factors and their impact on the program. Example risk factors which may be worth highlighting include: program dependencies; business requirements identification and documentation; continuity of operations in the event of failure; loss of productivity from learning curve; VHA reputation in the event of failure; and identification of VHA leadership program sponsor/champion.

This will be an advanced analytics and discovery capability that will be developed at ORNL. Because of the nature of the program there will be very little risk. The greatest risks are the risk of not acting on the opportunities to bundle sub-programs producing advanced inference and predictive analytics capabilities.

2. Provide evidence of the completeness and strength of your risk mitigation plans by describing the top three risks associated with the program and providing detailed mitigation strategies for each.

Highlight the consequences in terms of what outcomes would be unachievable for each risk. Recommend using a "Risk-If...then...; Mitigation-" format. (e.g. "Risk-If technical solution is not implementedâ€¦then there will be a gap inâ€¦resulting in loss ofâ€¦ Mitigation - Short term work around with...").

a. Risk and Mitigation #1:

Risk-If consistent VHA and IT funding is not maintained over a 5-year period, then this program will have limited success due to loss of interest by highly-qualified talent at ORNL and failure to acquire/integrate with a complete tool set to support clinical and managerial workflows. Mitigation-Commitment by PDUSH or higher for 5-year VHA budget.

b. Risk and Mitigation #2:

Risk-If VA SMEs (targeted users) do not participate in acquisition/development/governance, then inferior tools will result that don't address high-priority issues or realized other benefits above. Mitigation-Communication plan with decision makers and engagement plan with participants (including Agile approach with early benefit realization) will maintain commitment. Note that this requires joint OIT and VHA managements

c. Risk and Mitigation #3:

Risk-If VA does not execute an effective commercial-cloud analytics strategy within 3 years, then, because of restrictions on FFRDC competition with commercial sector, the benefits of these tools may not reach all intended users and Veterans. Mitigation-1. Enterprise architecture group that addresses business needs, platform needs, and cloud strategy will be formed to address strategy and roadmap gaps. Planning meeting is scheduled. 2. OIT will need platform and program governance that conforms to the enterprise architecture.

E. Number of Veterans Affected - Enter the estimated number of Veterans that the proposed IT capability will serve.

F. Number of Staff Affected - Enter the estimated number of VHA staff that the proposed IT capability will serve.

Section 5: Costing the IT Capability – - Provide details regarding the estimated IT costs to complete this program, as well as requested funding plans (provide data as applicable to your program and sub-programs).

A. Has the Cost Basis of Estimate / Independent Government Cost Estimate been developed with the Office of Information and Technology (OIT)? No

How were the funding estimates derived?

Cost estimates were developed with ORNL, sub-program business owners, and OIT. $1.2m is the minimum requirement for significant progress in 1 year and the minimum that ORNL will consider for a project. This amount provides 3 FTE for software architects, software designers, software engineers, database analysts; software licenses; and project management. This amount will allow focus on informatics patient safety and mental health use cases with deployment for limited use (targeted geographic mental health use) after 1 year. $2m is a reasonable amount that will allow more complete design/architecture and consideration/integration of commercial software, which will result in a more robust/expandable design for enterprise use of several use cases at 1 year and reduce the cost of future modules.

B. Describe the expected return on investment (ROI) for the IT capability, and the year it will be fully realized. In lieu of a formal ROI, describe in general or program-specific terms how the investment of resources will be expected to yield cost savings or efficiencies.

System will be operational within 1 year for initial use cases. Jeanie need estimates of effort and adverse events we could have avoided in last 2 years, had we had this system in place. Also estimate cost for ROI analysis. I am pretty sure that we will break even within the first year of the project. Jodie, maybe estimate time savings for having better workflow tools for mental health.

C. Impacts of partial or non-funding - Describe the impacts relative to achieving the outcomes in section 2 under the following scenarios:

1. If partially funded? (50 - 75% of request)

See A above

2. If funding only sustains current capability (Marginal Sustainment) (applies to programs funded in previous years):

N/A

D. Identification of Operation and Maintenance (OM) funding?

1. Amount of OM Funding allocated to **hardware** support. (Please provide to THREE decimal places including trailing 0s, in $M; i.e. $25.324M or $0.653M): $0M

2. Describe **hardware** needs (i.e. replacement of critical infrastructure or equipment).

Leasing capabilities (Platform as a Service PaaS))

3. Amount of OM Funding allocated to **software** sustainment. (Please provide to THREE decimal places including trailing 0s, in $M; i.e. $25.324M or $0.653M): $0M

4. Describe **software** needs (i.e. software licenses or patch updates).

Oakridge National Research Laboratories (ORNL) staff will develop algorithms within the existing PaaS

E. Funding Requirement at sub-program level (non-pay) for FY2022. If the program has no sub-programs, enter the DME and O&M program costs in the respective FY fields below.

If the program has sub-programs, enter each sub-program using the Add Sub-program button. The Program Total Cost row will automatically populate with calculations from sub-program costs and this total will pre-populate to the applicable cost years in Table F. (Please provide to THREE decimal places including trailing 0s, in $M; i.e. $25.324M or $0.653M):

(DME: Development, Modernization, Enhancement; O&M: Operation and Maintenance)

Display Note : to see the entire table, please either 1) change the page layout from Portrait to Landscape, or 2) highlight the entire table and reduce the font size.

			FY 2022	FY 2023	FY 2024	FY 2025	

	Program/Sub-program name	Priority	DME Costs	O & M Costs	DME Costs	O & M Costs	DME Costs	O & M Costs	DME Costs	O & M Costs	DM Cos
Program Total Cost	Health Data and Analytics Platform		10.371M	12.074M	9.411M	13.835M	8.492M	14.197M	6.533M	14.461M	6.53
(Sub Program:)	Mental Health		0M	2.024M	0M	2.085M	0M	2.147M	0M	2.211M	
(Sub Program:)	Dialysis/Renal		2M	2M	1M	2M	0M	2M	0M	2M	
(Sub Program:)	Health Registries		1M	3M	1M	3M	1M	3M	1M	3M	
(Sub Program:)	Advanced Inferencing and Discovery Environment		1M	3M	1M	3M	1M	3M	1M	3M	
(Sub Program:)	Anesthesia Quality		2.5M	0.8M	2.5M	1M	2.5M	1.3M	2.5M	1.5M	2.5
(Sub Program:)	Public Health		2M	0.5M	2M	2M	2M	2M	0M	2M	
(Sub Program:)	Cancer Care Tracking		1.871M	0.75M	1.911M	0.75M	1.992M	0.75M	2.033M	0.75M	2.03

F. Program Funding Sources (non-pay) The DME AND O&M Costs will pre-populate from Program Total Cost in table in Section E. Provide other Appropriations (if applicable) and Total Cost will automatically calculate. (Please provide to THREE decimal places including trailing 0s, in $M; i.e. $25.324M or $0.653M):

	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
DME Costs	**$10.371M**	**$9.411M**	**$8.492M**	**$6.533M**	**$6.533M**
O & M Costs	**$12.074M**	**$13.835M**	**$14.197M**	**$14.461M**	**$14.461M**
Total IT Costs	**$22.445M**	**$23.246M**	**$22.689M**	**$20.994M**	**$20.994M**
Other Appropriations (i.e. Medical)	$0.000M	$0.000M	$0.000M	$0.000M	$0.000M
Total Cost	**22.445M**	**23.246M**	**22.689M**	**20.994M**	**20.994M**

Section 6. Additional Information

A. Business Requirements Documentation - provide information regarding the development of business requirements.

1. Has a New Service Request (NSR) been submitted for this business need? No

Request ID	Request Name	VIP Business Epic	Business Summary Report	BRD Document	Traceability Document

2. If there is not an NSR, has a Business Requirements Document (BRD) or have EPICS been developed by the Program Office or another source?	No

B. Program Schedule Planning - Describe the high-level schedule developed for this effort (please do not complete if submitting a new program).

1. Year in which Program will go to deployment for testing:	2021
2. Year in which Program will be fully developed and moved to sustainment:	2026
3. If the program is under Veteran Focused Integration Process (VIP), has it gone through Intake and Initiation, and Project Planning steps?	

No

If yes to either question above, what is the current VIP status?

N/A

C. Program Accomplishments, Goals and Objectives -Describe the accomplishments achieved in the prior year, and the planned objectives for the current year and budget year. Include specific accomplishments to achieve, realize, or continue progress. New programs are not required to complete prior and current fiscal year information. These should tie to outcomes in Section 2 above.

1. Prior year progress and accomplishments FY2019:

High level discussions with stakeholders.

2. Current and next fiscal year goals and objectives (FY2020 and FY2021):

Develop the base infrastructure, data structures, analytics tools, and develop a prototype model using one of the underlying clinical test cases (e.g. Anesthesia Quality)

3. Program goals and objectives (FY2022):

Continue developing the next test case (e.g., Cancer Care Tracking).

D. Program Resource Planning - List the individuals that have been assigned to support this effort (IT PM information is not required if submitting a new program).

1. Has OIT assigned an IT program manager to this effort?	No
If yes, what is the PMAS EPS or VIP #?	

2. Identify the key individuals representing this business case submission.

The VHA ITC Governance Multi-Year Programming (MYP) process has several milestones throughout the year such as the initial data call, prioritization, notification of results and quarterly Business Owner Forums. To facilitate communication for such events each program is asked to identify the key individuals who will serve as the main Points of Contact (POCs) representing this business case.

The Primary POC is the program lead who is ultimately responsible to prepare and submit this business case content and will assist the Capability Management Board (CMB) Support Staff with any edits or additional information needed throughout the MYP process.

Primary POC Name

James M. Blum, MD

Primary POC Email

Blum, James ; James M. Blum (jmblum@emory.edu)

The Alternate POC is a delegate or assistant within the program who acts on the Primary POC's behalf and is equally familiar with the business case content. For larger programs this individual will often be contacted first by the CMB Support Staff; for smaller programs the Primary and Alternate POC may be the same individual.

Is there an Alternate POC for this business case? Yes

Alternate POC Name

Jonathan Nebeker, MD

Alternate POC Email

Jonathan R. Nebeker ; Nebeker, Jonathan

3. Complete the table below to provide contact information regarding the program's assigned members and stakeholders.

Initiative	Name	Office	Email	Phone
Business Owner	Jonathan Nebeker	Director, Clinical Informatics and Data Management Office	Jonathan.Nebeker@va.gov	801-582-1565
Product Owner	James M. Blum	Clinical Informatics and Data Management Office	James.Blum@va.gov	404-321-6111

ARIWG Review

Review Comments	Review Comments