

**George Mason University
GMU-1700-21 RFP Submission**

**IT Consulting Services
Michele Rogers, Senior Buyer
Katherine Sirotin, Assistant Director**

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Website	www.datastrong.com
Point of Contact	Tim Igo, Chief Operating Officer tim.igo@datastrong.com 617-462-3785 (mobile)
Small Business Status	SWaM Certified - Certificate # 718067 Certification Start Date - March 5, 2018 Certification End Date - March 5 ,2023

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Proposal Cover Page



Purchasing Department
4400 University Drive, Mailstop 3C5
Fairfax, VA 22030
Voice: 703.993.2580 | Fax: 703.993.2589
<http://fiscal.gmu.edu/purchasing/>



REQUEST FOR PROPOSALS
GMU-1700-21

ISSUE DATE: November 13, 2020

TITLE: IT Consulting Services

PRIMARY PROCUREMENT OFFICER: Michele Rogers, Senior Buyer, mroger19@gmu.edu

SECONDARY PROCUREMENT OFFICER: Katherine Sirotin, Assistant Director, ksirotin@gmu.edu

QUESTIONS/INQUIRIES: E-mail all inquiries to both Procurement Officers listed above, no later than 4:00 PM EST on December 4, 2020. All questions must be submitted in writing. Responses to questions will be posted on the [Mason Purchasing Website](#) by 5:00 PM EST on December 10, 2020. Note: Questions must be submitted in WORD format. Also see section III. COMMUNICATION, herein.

PROPOSAL DUE DATE AND TIME: January 22, 2021 @ 2:00 PM EST. SEE SECTION XIII.A.1 FOR DETAILS ON ELECTRONIC PROPOSAL SUBMISSION.

In Compliance With This Request For Proposal And To All The Conditions Imposed Therein And Hereby Incorporated By Reference, The Undersigned Offers And Agrees To Furnish The Goods/Services In Accordance With The Attached Signed Proposal Or As Mutually Agreed Upon By Subsequent Negotiations.

Name and Address of Firm:

Legal Name: Datastrong, LLC

Date: January 22, 2021

DBA:

Address: 8315 Lee Highway, Suite 600
Fairfax, VA 22031

By: 
Signature

FBI/FIN No. 26-3391770

Name: Tim Igo

Fax No. 703.822.4211

Title: Chief Operating Officer

Email: tim.igo@datastrong.com

Telephone No. 617.462.3785

SWaM Certified: Yes: ☒ No: ☐ (See Section VII. SWaM CERTIFICATION for complete details).

SWaM Certification Number: 718067

This public body does not discriminate against faith-based organizations in accordance with the *Governing Rules*, § 36 or against a Bidder/Offeree because of race, religion, color, sex, national origin, age, disability, or any other prohibited by state law relating to discrimination in employment.

Proposal Cover Letter

January 22, 2021

George Mason University
4400 George Mason Boulevard, Mailstop C35
Fairfax, VA 22030

RE: RFP GMU-1700-21

Dear Ms. Rogers/Ms. Sirotin :

Datastrong, LLC is pleased to submit our response to the George Mason University's RFP GMU-1700-21. Datastrong is an established consulting and software organization, headquartered in Fairfax, VA., which provides IT support services in the areas of Digital transformation/Cloud, Enterprise Architecture, Data Management, Analytics, Security, and Custom development across both Government and Commercial clients.

Datastrong is prepared to support George Mason University (Mason) upon award with the team necessary to deliver against the services requested in the RFP. Our past performance at George Mason as well as with clients such as Virginia Tech, American Public University System, The College Board, FBI, Department of State, and the Federal Transit Administration allow us to bring expertise from over 10 industries including education. We also bring senior, experienced, and talented resources to our clients that can work autonomously and with minimal oversight from Mason stakeholders. Datastrong will staff our project teams to meet Mason requirements for future programs and will call upon additional staff availability within the company for emergent projects.

We believe our past performance at George Mason and commitment to our customers uniquely qualifies us to continue to support Mason with its' of On-Demand Consulting resources. Thank you in advance for your consideration, and we look forward to hearing back from you soon.

Sincerely,



Tim Igo
Chief Operating Officer
Datastrong, LLC
617.462.3785
Tim.Igo@datastrong.com

Attachment A: Small Business Subcontracting Plan

ATTACHMENT A SMALL BUSINESS SUBCONTRACTING PLAN TO BE COMPLETED BY OFFEROR

It is the goal of the Commonwealth that over 42% of its purchases be made from small businesses. All potential offerors are required to include this document with their proposal in order to be considered responsive.

Small Business: "Small business (including micro)" means a business which holds a certification as such by the Virginia Department of Small Business and Supplier Diversity (DSBSD) on the due date and time for proposals. This shall also include DSBSD certified women- owned and minority-owned businesses and businesses with DSBSD service disabled veteran owned status when they also hold a DSBSD certification as a small business on the proposal due date. Currently, DSBSD offers small business certification and micro business designation to firms that qualify.

Certification applications are available through DSBSD online at www.SBSD.virginia.gov (Customer Service).

Offeror Name: Datastrong, LLC

Preparer Name: Tim Igo **Date:** January 22, 2021

Who will be doing the work: ☐ I plan to use subcontractors ☒ I plan to complete all work

Instructions

- A. If you are certified by the DSBSD as a micro/small business, complete only Section A of this form.
- B. If you are not a DSBSD-certified small business, complete Section B of this form. For the proposal to be considered and the offeror to be declared responsive, the offeror shall identify the portions of the contract that will be subcontracted to DSBSD certified small business for the initial contract period in relation to the offeror's total price for the initial contract period in Section B.

Section A

If your firm is certified by the DSBSD provide your certification number and the date of certification.

Certification Number: 718067 Certification Date: March 3, 2018

Section B

If the "I plan to use subcontractors" box is checked, populate the requested information below, per subcontractor to show your firm's plans for utilization of DSBSD-certified small businesses in the performance of this contract for the initial contract period in relation to the offeror's total price for the initial contract period. Certified small businesses include but are not limited to DSBSD-certified women-owned and minority-owned businesses and businesses with DSBSD service disabled veteran-owned status that have also received the DSBSD small business certification. Include plans to utilize small businesses as part of joint ventures, partnerships, subcontractors, suppliers, etc. It is important to note that these proposed participation will be incorporated into the subsequent contract and will be a requirement of the contract. Failure to obtain the proposed participation dollar value or percentages may result in breach of the contract.

B. Plans for Utilization of DSBSD-Certified Small Businesses for this Procurement

Subcontract #1

Company Name: _____ SBSD Cert #: _____
Contact Name: _____ SBSD Certification: _____
Contact Phone: _____ Contact Email: _____
Value % or \$ (Initial Term): _____ Contact Address: _____
Description of Work: _____

Subcontract #2

Company Name: _____ SBSD Cert #: _____
Contact Name: _____ SBSD Certification: _____
Contact Phone: _____ Contact Email: _____
Value % or \$ (Initial Term): _____ Contact Address: _____
Description of Work: _____

Proposal Payment Term Preference:

Datastrong prefers to be paid using Option #3 (Net 30 via Paymode-X)

Datastrong exceptions to Standard Two-Party contract:

Datastrong requests the addition of a sentence to the end of paragraph 8(b) of the Data Security Addendum stating, "However, in no event will the liability of the Vendor exceed 2X the amount paid to the vendor." If this is not acceptable, Datastrong is open to additional discussions on how to adjust this language to meet George Mason's requirements while addressing Datastrong's concerns.

Introduction:

Datastrong is the best suited industry business partner for George Mason with the skills and experience that encompass the entire RFP Statement of Needs. Founded in 2010, Datastrong's purpose was to bring Business Management, Enterprise architecture, Advanced Data Analytic, Data Management, Data Science, and Security capabilities to our customers. Datastrong is a Certified Small Business with the Small Business Administration (SBA) as well as a Virginia SWaM certified small business. Datastrong's customer base includes major Federal Government Agencies as well as Commercial and Fortune 500 clients.


[Graphic Redacted]

Datastrong has a long and consistent track record of successfully deploying Enterprise Solutions built on four pillars focused on IT Service capabilities. Those four pillars are:

- Digital Transformation
- Enterprise Analytics
- Data Engineering and Management
- Advanced Analytics and Data Science

Datastrong brings the knowledge, skills, expertise, and experience associated with the four pillars and leverages it along with our Data PMO best practices to ensure our customers' success. The following provides an overview of our advanced capabilities:

Datastrong's Four Foundational Pillars

 DATASTRONG			
Data and Analytics Capabilities			
Digital Transformation	Enterprise Analytics	Data Engineering and Management	Advanced Analytics and Data Science
<ul style="list-style-type: none"> • Analytics for the Public and Private Cloud – Strategy <ul style="list-style-type: none"> • Strategy • Migration & Implementation • Operations & Maintenance • Cloud Technology Extensibility • Mobile Analytics Enabled • Analytics Portals • Bespoke Custom Development 	<ul style="list-style-type: none"> • Enterprise Dashboards & Scorecards • Advanced Visualizations • Self-Service Data Discovery • Guided Data Discovery • UI/UX Design • Operational Reporting 	<ul style="list-style-type: none"> • Data integration • Data Governance and Stewardship • Big Data Architecture and Design • Enterprise Data Warehouse Architecture and Design • Data acquisition and curation 	<ul style="list-style-type: none"> • Artificial Intelligence • Machine Learning • Natural Language Processing • Predictive Analytics • Robotic Process Automation • Social Media & Targeted Analytics • Model Development
Data Project and Program Management Office (PMO)			
<ul style="list-style-type: none"> • Communication Plan Development • User Adoption Planning • Training • Data Literacy • PMBOK Best Practice • Agile Best Practices 			

Awards: In 2019, Datastrong was named the 2019 GovCon Contractor of the Year (Revenue < \$25m) as well as awarded 2019 GovCon Program of the Year for the Department of State – PEPFAR project. In addition, Datastrong was named MicroStrategy Federal Partner of the Year for 2019 and Solutions Partner of the Year for 2018. The 2018 award was based on our patented analytic tool consolidation solution, Tool Translator, which allows customers to automate the migration and conversion of legacy reporting platforms to accelerate the path to Digital Transformation and modernization.



Government Agency Awards:

- Federal Transit Administration - Award for Innovation for the Transit Agency Profile Dashboard (5/19)
- FBI - Advancement in Human Capital Analytics Award - Special Agent Analytics Team, (8/2019)
- US Department of State - Ambassador award (OGAC, 6/2018)
- US Department of State - Ambassador award (OGAC, 6/2017)
- FBI - Human Capital Outstanding Team/Project Award – Data Team (9/2016)
- FBI Human Capital Outstanding Team/Project Award (8/2015)

Industry Awards:

- Government Contractor of the Year (Northern Virginia Chamber of Commerce GovCon, 2019)
- Government Contractor Program of the Year (Northern Virginia Chamber GovCon, 2019)
- Microsoft Competency in Data Analytics and Cloud Solution Provider (CSP)
- Federal Systems Integrator of the Year (MicroStrategy, 2019)
- Solutions Partner of the Year (MicroStrategy, 2018)

George Mason Experience:

Since August of 2016, Datastrong has supported GMU across a variety of task orders, largely in the areas of data management, governance, analytics, and integration. Datastrong has delivered on these efforts in the past leveraging the GMU-1288-16-02 contract vehicle that was awarded on May 31, 2016, and for which this solicitation serves as the recompetes. In addition to GMU-1288-16-02, Datastrong holds VITA contract VA-150195-DATS (expires September 2021 – submitted recompetes response in October 2020) as well as GSA Contract GS35F502GA (initial term ends June 2022 but has three (3) five-year option periods).

Statement of Needs:**A: Corporate Competencies and Experience****Item I: Business Management Services:**

Operational Assessments, Business Process Improvements, Benchmarking, IT Strategic Planning, and Implementation Services including Technical Change Management

Datastrong competencies:

- Functional Analysis: One of the benefits of working with Datastrong resources is that many of them have experience across a variety of industry verticals as well as across multiple functional areas within organizations. Datastrong has experience across verticals such as Higher Education, Financial Services, Supply chain, Hospitality, Retail, as well Government, including State and Local supporting internal functions such as HR, IT Service management, Financial Planning & Analysis, Treasury operations, and Risk management. As a result, Datastrong brings resources to the table that not only have the industry and functional experience relevant to George Mason, but who can also bring other experience to the table to provide a different perspective on solving George Mason's challenges. In addition, these resources are versed in analyzing how each piece of the puzzle (people, process, technology) is being utilized into serving the mission of the University and identifying and documenting gaps/risks in each and helping drive plans for addressing those findings. Datastrong resources also bring to the table experience with traditional Education applications such as Banner and Salesforce as well as line of business knowledge related to Student Information systems, affairs, & programs, University Life, Finance and Budgeting, and Institutional Research and Reporting.
- Requirements Analysis/Iterative Development: The key to success in implementing any capabilities

- within an organization is by having a clear picture of the requirements and ensuring that the drivers behind all project activities are clear across all levels of the stakeholder community. Datastrong's ability to quickly understand the functional aspects of the business as represented above drive the way in which we are able to capture, refine, and communicate requirements back to the customer to ensure all team members are in lock step on the mission, purpose, approach, and activities to be delivered. This includes establishing clear charters for the work to be done to include overall objectives, stakeholders involved, team membership, roles and responsibilities, communication plans, and change management approach. From there, our teams focus on defining and refining requirements that involve working in a constant feedback loop with the business stakeholders. From developing rapid prototypes to sample datasets, our team is looking to constantly validate and refine requirements throughout the entire project lifecycle. The result is a work product that has been continually evaluated at each step of the way by stakeholders with decisions on changes that have happened along the way documented and signed off on prior to implementation.
- Business Process Re-engineering: As mentioned above, our wide range of industry and functional experience allow Datastrong resources to look at the way in which organizations operate in a variety of lenses. As our name would indicate, in many instances, we leverage the data that is captured to assess the way in which companies operate. Leveraging our functional capabilities, we can look at overall goals and objectives, break down the processes in place that support them and identify gaps/weaknesses that can be addressed in a variety of ways to either mitigate risks or improve operations. As part of implementing change, we look to incorporate metrics that will assess if those activities are meeting their desired outcome and put in place periodic reviews of these metrics to benchmark progress and to continually improve results.
 - KPI Development, refinement, benchmarking, and continuous improvements: Part of managing any business is understanding how the efforts of the organization are moving the needle against goals and objectives. Datastrong is well versed in understanding business goals, identifying the data needed to measure performance against those goals and working with the business to establish Key Performance Indicators (KPI's) that will not only provide high level visibility into progress being made but that also have the appropriate follow-on detail that will allow decision makers to course correct as needed. Focus is put on ensuring that the KPI's are truly reflective of the goals of the organization and that benchmarks are developed leveraging stakeholder input and historical trends that will provide an accurate litmus test if the organization is on the right track. As goals and targets change, there will need to be a continuous process for re-evaluating not only if the benchmarks are still applicable but if KPI's need to change as well. Datastrong resources have implemented and lead numerous efforts across a variety of clients in defining and refining KPI's and benchmarks throughout the organization.
 - IT Strategic Roadmap development: The goal of technology is to make individuals within the organization more efficient in driving the goals of the enterprise while ensuring continuity of operations, reducing risk, and enabling automation that can speed up progress towards meeting objectives. However, most organizations have limited assets in order to institute technological change (budget, resources, time) and as such it becomes necessary to prioritize and plan for effective rollout of these changes. Datastrong resources are adept at helping project stakeholders evaluate where technology can help drive business results, whether it be through cost savings or improved visibility to performance drivers. Our focus is on understanding the technology blueprint that exists, how does that blueprint enable the goals of the organization, and what gaps/risks exist in that blueprint that will limit the organizations ability to meet its' goals. Our experience spans from enterprise architecture design (infrastructure, data architecture, security) down to end user tool selection and implementation. The goal is to ensure that as the organization evolves so does the ability of the IT landscape to continue to serve its' needs.

- Application implementation/Training/adoption: As organizations make investments in technology, they want to ensure that they are maximizing the return on investment from the spend on applications/infrastructure. However, in many cases, users may be wary of change and/or uncertain how to leverage the technology to gain value for their organization. As part of our approach, we focus on engaging with the users in a variety of fashions and channels to break down any hesitation they may have and to teach them to be empowered by what the technology can do for them. Datastrong has experience in developing customized content that allows users to visualize how technology can be used in their environment to produce results and can deliver this both in the classroom setting as well as in a one-on-one fashion. Likewise, we've developed FAQ's, job aids, and other reference documentation that users can access inside of the tools that give them additional guidance on how to navigate and interpret what is contained within the application. In addition, we have delivered road shows and user groups that showcase new and expanded functionality and give users that opportunity to get hands on experience with the technology as well as collaborate with other end users on use cases for employing it.

Relevant Corporate experience:

Customer	Description	Services Provided
[Customer Name Redacted]	Review of overall data strategy related to the Department of Revenue	Assessment of Current State, Desired State Requirements, and GAP Analysis on people, process, and technology. Performed tool inventory and recommendations on best practices for implementing data governance, data warehouse, data lake, and AI/Data Science. Delivered Strategic roadmap, prioritized by importance and impact, with business initiative and projects, detailed effort estimates, and Gantt charts. Made staffing recommendations, and formal and informal training and development plans.
George Mason University	Review of University approach to management, usage, and access to corporate data assets.	Interviews with various business stakeholders and University leadership on accessibility, quality, and approach to delivering data assets to the business community. Provided assessment of current state, limitations/risks/gaps, desired end state, and high-level roadmap for implementing improvements.
[Customer Name Redacted]	Provided assessment of Talent Management process leveraging data captured via Peoplesoft	Development of analytic capabilities that provided insight into overall hiring process that allowed [Customer Name Redacted] to implement business process improvements to streamline the recruiting and hiring process by benchmarking timelines, establishing KPI's for performance against benchmarks, and identifying activities that were either no longer needed / redundant or could be done in parallel to other activities.
[Customer Name Redacted]	Assessment of data collection and technical architecture needed to support the [project name redacted]	Assessment of functional needs in collecting, analyzing, and sharing of data at the local, country, and global level and for the development and implementing of a roadmap for the redesign of the entire technology platform used to support the mission.

Item II: Enterprise Applications Services

Programming, Business Analysis, Software Solutions Architecture, Enterprise Resource Planning (ERP) Analysis and Development, Salesforce Development, Database Administration, and Website Development

Datastrong Competencies:

- **Functional Analysis:** As stated, we bring a breadth of knowledge in working across a variety of verticals and functional areas. As such, our resources can hit the ground running in looking at how client needs map to enterprise application capabilities. Our resources know how to break down tasks/processes in order to map them to meeting client goals and how those tasks map to current application capabilities. Whether it be applications that support transaction level data entry/workflow management to those that support reporting and analytic capabilities, understanding what needs to get done and how that moves the business goals are critical to being able to align application functionality to the needs of the business. The flip side of this is that our resources also have a solid baseline in a variety of applications and technology and what they bring to the table. By pairing the functional with technical acumen, our resources can help business users better articulate their needs to the IT side of the house and can help the business in understanding what the tools can do and how they can leverage technical functionality to improve the way in which they perform their daily operations.
- **Requirements/Business Analysis:** This is one of the areas where the merging of our functional and technical capabilities provides the most value. Understanding business objectives and leveraging our approach to solve technical challenges gives our team the ability to define requirements in such a way that the business users can see that their needs are being met while providing the level of detail that they IT teams need in order to develop to those requirements.
- **Data Analysis:** As our name would imply, we have built our reputation on how to leverage data to drive the mission of organizations. Our focus spans on developing or enhancing applications to capture data that will allow the business to meet or measure how effective they are in moving goals, ensuring the data that is captured is well defined and has quality enforced at every step of the way, providing recommendations on how that data is organized and stored for retention requirements and analytical needs, as well as how the data is served up to the user community for them to use to make decisions based on historical trends or predicative outputs. We look to leverage automation for delivery of content as well as automating analytics to focus on the areas where action is needed versus summarizing what has happened.
- **Solution Architecture:** From high level design to detailed application architecture, our resources have the capability to provide design recommendations that address technical requirements related to infrastructure, application, database, network, and security needs as well as UI/UX components of how end users will interact with specific applications depending on their user profile. We are versed in providing recommendations for digital transformation that include cloud migration and planning, web/application/database/integration modernization, as well as plans for disaster recovery and continuity planning.
- **ERP Analysis –** Our team is versed in working with tools like Peoplesoft, SAP, Oracle, and Salesforce in developing and integrating with applications that manage workflows and maintain information related to the resources required to run an organization.
- **Salesforce Development –** At clients such as [customer name redacted], we provide SAP development capabilities that focus on CRM tasks related to their clients and product inventory.

These applications focus on capturing interactions between the doctors prescribing [customer name redacted] products as well as creating a centralized repository for maintaining and tracking the various product lines [customer name redacted] markets to the public.

- Data architecture/governance/management – For clients such as George Mason and [customer name redacted], Datastrong has developed frameworks for setting up and managing data governance organizations, defining the charters for how they operate, as well as templates for capturing artifacts critical to maintaining enterprise data assets (such as logical/physical model repositories, source to target mappings, critical data element tagging and mapping, master data management inventories / system of record identification). In addition, we have resources certified in technologies such as Collibra that are used to manage data governance capabilities.
- Web Development – Our team is versed in a variety of web technologies and have supported development of both internally and externally facing sites that provide secure access to information and embed content from a variety of sources. The team brings experience with frameworks such as REACT and coding experience leveraging CSS, HTML 5, JSP, JavaScript, .NET, and ASP as well as UI/UX talents focused on ensuring that navigation and aesthetics are easy and pleasing to the end user.

Relevant Corporate experience:

Customer	Description	Services Provided
[Customer Name Redacted]	Salesforce Development support	Provide business analyst and project management support in efforts to build Salesforce capabilities related to [Customer Name Redacted] product master and telephone support applications.
[Customer Name Redacted]	Enterprise Analytics Platform support	Full lifecycle support (Requirements, Project management, testing, architecture, design, development [reporting & data integration], and training) for the redesign and ongoing support of [Customer Name Redacted] Enterprise analytics capabilities
George Mason University	Informatica tool selection and implementation	Engaged to develop the content needed to issue an RFP for Enterprise Data Integration software. Interviewed various IT stakeholders to understand the requirements for the new tool. Created RFP draft and final products that were reviewed and approved by George Mason. Led RFP vendor evaluation and managed tool selection process.
George Mason University	Enterprise Analytics support	Support of George Mason's Enterprise analytics capabilities using MicroStrategy. Assist with schema, configuration, and report & dashboard development. Train Mason staff on tool use and best practices. Triage report performance and report output issues as well support ad hoc report development.
[Customer Name Redacted]	HR Analytics	Full lifecycle support (Requirements, Project management, testing, architecture, design, development [reporting & data integration], and training) for the initial development and ongoing support of the [Customer Name Redacted] HR analytics capabilities.

Customer	Description	Services Provided
[Customer Name Redacted]	[Website name redacted] website development	Full lifecycle support (Requirements, Project management, testing, architecture, design, development [reporting & data integration], and training) for the redesign and ongoing support of the [Customer Name Redacted] public facing analytics capabilities [website name redacted]. Includes the development and ongoing maintenance of the web portal on which the content is delivered.
[Customer Name Redacted]	Analytics portal, warehouse design, and cloud implementation	Full lifecycle support (Requirements, Project management, testing, architecture, design, development [reporting & data integration], and training) for the redesign [Customer Name Redacted] capabilities (both internal and external).

Item III: Enterprise Infrastructure Services

Cisco Network and Connectivity Technologies, Microsoft Enterprise Support Services, Virtualization, Cloud Architecture and Engineering, Systems Administration, and Voice and Video Collaboration

Datastrong competencies:

- Cloud migration – Not so long ago, many organizations still were trepid about moving to the cloud especially focused on security concerns and loss of control of data and application functionality. As the capabilities of AWS, Azure, and Google platforms have evolved and with the focus on third party certifications verifying their security protocols (FedRamp, ISO, GovCloud), organization are flocking to take advantage of the ease in which environments and applications can be implemented in the cloud as well as the cost savings that can be realized from their pay as you go and only for what you use approach. Our team is versed in helping customers standing up virtual infrastructure and using a bring your own license approach to migrating to the cloud to completely managing their organizational infrastructure via the cloud provider’s consoles. We help customer’s navigate common challenges they may face such as communications between on prem and cloud-based applications such as securing connections and integrating cloud and on prem security protocols to migration planning for moving on prem applications to the cloud. Datastrong is an AWS and Azure partner.
- Cloud development & engineering – As the move to cloud has become increasingly popular, so too has the use of tools and technologies created specifically for the cloud. Tools such as S3, Glu and Lambda for data integration to RDS, Redshift, and Azure Data Factory for database technologies, to Cloudwatch for monitoring of usage – the point being that the ability to be deploy serverless applications that are not tied to any one piece of infrastructure and can be scaled both up and down the same way infrastructure has become a critical piece of many organizations digital transformation efforts. Datastrong has invested in the people and partnerships that have allowed us to grow these capabilities and have leveraged these skillsets at customers like Department of State, FBI, and the Massachusetts State Lottery.
- Cloud Architecture and Engineering – Datastrong has Cloud Architects that can lead the architecture of Servers, Storage, Networking, Security, Data Flows, and application best practices to address architecture considerations including high availability, capacity planning, disaster recovery, performance optimization, and overall system architecture.

- Systems Administration – While many of our customers tend to leverage our expertise in the implementation and development stages of projects, some also look to Datastrong to administer the capabilities we deliver to customers. From monitoring and tuning, to upgrades and maintenance, our teams provide capabilities that are critical to ensuring the applications we support are performing optimally and are leveraging current state features of the tools implemented. Our teams proactively monitor performance and set notification thresholds that alert our team of performance issues or system interruption. We stay current on new technology releases and work with our clients to articulate feature adds that satisfy business requirements and plan for future upgrades to the application supported.

Relevant Corporate experience:

Customer	Description	Services Provided
[Customer Name Redacted]	GovCloud Migration	Responsible for the migration of the [Customer Name Redacted] HR Analytics platform from on-premise to AWS' GovCloud environment to include installation and configuration of software, connectivity and security integration between [Customer Name Redacted] on premise data sources and the newly developed AWS GovCloud analytics environment.
[Customer Name Redacted]	Marketing Analytics Development	Development of a Marketing data warehouse for the [Customer Name Redacted] on AWS leveraging RDS (Postgres DB), S3, Glu, Lambda functions, and Cloudwatch.
[Customer Name Redacted]	Alexa skill implementation	Developed and published multiple skills certified and deployed by Amazon that allow [Customer Name Redacted] clients to access their travel related analytics via Alexa skills they download from the Amazon store.
[Customer Name Redacted]	[project name redacted] infrastructure modernization	Redesigned the entire architecture used to store, transmit, share, and access data and analytics related to the [Customer Name Redacted] program.

Item IV: Project, Program, and Portfolio Management Services

Resource Capacity Planning, Resource Sourcing and Management, Time Management, Demand Management, Reporting Services, and Integration

Datastrong competencies:

- Project/Program Management – Datastrong brings to the table project and program management capabilities that address the following key areas:
 - Charter development – defining the project objectives, goals, roles & responsibilities, expected outcomes and stakeholders prior to kicking off a project is key to ensuring all parties involved are moving in the same direction.
 - Change management and communication planning – inevitably there will be change that happens once projects are in flight and the ability to assess the impacts of change from a scope,

schedule, and budget perspective are key to providing stakeholders the necessary information needed in order to address one or more of the impacts to the triple constraint and to determine how the change is addressed (adding more resources/budget and/or removing scope from other areas).

- Budget and scope management – Providing regular visibility to the project stakeholders on how progress is being made towards scope against timelines and budget is key to ensuring there are no surprises as the project progresses. Likewise, it provides a clear backdrop to discuss impacts as unforeseen issues/risks or missed scope present themselves along the way
- Resource planning, onboarding, and project assimilation – Depending on the project, one or more participants in the project may not be involved from the beginning of the project. Having documentation (charter, requirements, weekly status reports, design documents, etc.) will provide new team members with the necessary information that they can review prior to joining the team so that they can hit the ground running. Having checklists of meetings and necessary system access to provide to team members ensures that new team members are provided the resources they need to immediately provide value.
- Weekly/daily project collaboration and status reporting – Daily scrum meetings and weekly status meetings provide team members and project stakeholders the forum by which to raise and address issues and risks that present themselves, highlight project milestones and forecast upcoming tasks to be completed. It gives the team the opportunity to course correct where needed, escalate issues as needed and to ask for assistance in managing upcoming tasks. Scope and budget progress are highlighted in order to provide stakeholders with a clear picture as to project progress.
- Risk/Issue management, mitigation, and escalation process development
- Project team coordination and cross collaboration
- Project artifact/SDLC management
- Resource forecasting/planning/management – evaluating backlog on a constant basis based on prioritization and LOE's will require the project managers and team members to evaluate future backlog commitments and to discuss future resource needs required to deliver backlog capabilities based on requested timelines and current staff utilization.
- Time tracking – Time tracking is critical to not only understanding the effort and spend on current deliverables but serves as mechanism by which project managers can use historical data to help in estimating future work in order to plan resources and timelines for projects.
- Demand Management – the process by which items are added to the backlog and are prioritized needs to be developed in order to ensure team members have the cycles needed to appropriately address backlog tasks, stakeholders are given proper delivery timelines, and so project managers have the necessary runway to onboard additional staff needed to meet project commitments
- Reporting and Analytics development and Integration

Relevant Corporate experience:

Customer	Description	Services Provided
Datastrong	Internal resource analytics, forecasting and management	Internal tracking and analytics related to resource activity against project deliverables, allocation to projects/tasks, and forecasting of resource availability
[Customer Name Redacted]	Resource Planning and Management	Development of analytics in support of [Customer Name Redacted] staffing management business. Provide reporting and dashboard capabilities related

Customer	Description	Services Provided
		to current and historical resource allocation to projects, time entry, cost and revenue performance.
[Customer Name Redacted]	HR Analytics	Recruiting / staffing data science project (predicting staffing needs) that uses key pieces of data related to [Customer Name Redacted] personnel to predict the probability of employees leaving the [Customer Name Redacted] in order for the [Customer Name Redacted] to proactively manage their recruiting pipeline. Due to the unpredictable nature of the clearance process, the [Customer Name Redacted] has consistently been challenged in their reactive hiring practices. As a result of this project, the [Customer Name Redacted] has hit full capacity for the first time in many years.
[Customer Name Redacted]	Backlog analytics	Development of analytics on top of JIRA information in order to provide metrics to [Customer Name Redacted] management on the demand for support requests from the various end user constituencies in order to plan appropriately for staffing and budget requests.

Item V: Security Services

Threat Management, Perimeter Security, Internal Network Security, Endpoint Security, Application Security, and Data Security

The Datastrong Team has been delivering fully functioning enterprise solutions in geographically dispersed, complex and secure environments for our clients. Our solutions cover physical, virtual, and cloud infrastructures across private, public, and hybrid environments. Our corporate expertise has closely followed the progression in technology—from our foundation in delivering solutions using physical infrastructure through the introduction and as an early adopter of virtualization technologies. With security at the core of all our designs, we focus on minimizing attack surfaces through use of internet & NAT gateways, access to private subnets, incorporation of security groups and network access control lists (NACLs), and numerous other cloud-native services used to track and audit access at every level. The precise mixture of these security elements is determined based on the functional requirements, the security best-practices identified by the chosen CSP, and all compliance constraints that GMU is required to follow.

Third-Party Security Tools – In addition to using Cloud Native security tools, we are also well versed with third-party security tools to complement and enhance our customers' operations in the cloud. There are hundreds of industry-leading products that are equivalent to, identical to, or integrate with existing controls in a customer's on-premises environments. We support our customers in identifying and acquiring these products to complement existing their services to enable customers to deploy a comprehensive security architecture and a more seamless experience across their cloud and on-premises environments. The following are examples of projects Team Datastrong including our parent organization have successfully completed for customers:

Customer	Description	Services Provided
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Customer	Description	Services Provided
[Customer Name Redacted]	Threat Management	CSP account/perimeter security, DevSecOps, cloud network operations, App container/cluster endpoint security, threat management, Special Access Programs data security and segregation.
[Customer Name Redacted]	Perimeter Security	CSP account/perimeter security, DevSecOps, hybrid cloud network operations, threat management, App container/cluster endpoint security.
[Customer Name Redacted]	Internal Network Security	CSP account/perimeter security, DevSecOps, hybrid cloud network operations, App container/cluster endpoint security.
[Customer Name Redacted]	Endpoint Security	CSP account/perimeter security, DevSecOps, cloud network operations, threat management, App container/cluster endpoint security.
[Customer Name Redacted]	Application Security	CSP account/perimeter security, DevSecOps, App container/cluster endpoint security.
[Customer Name Redacted]	Data Security	CSP account/perimeter security, DevSecOps, App container/cluster endpoint security, multi-level security cloud monitoring, Special Access Programs data security and segregation.
[Customer Name Redacted]	security audit controls	Provide support for third party audits of [Customer Name Redacted] externally facing analytics infrastructure and tuning of any security controls needed to meet changing requirements.
Multiple Clients	Application integration with enterprise security access controls	Single Sign on – integration with OKTA, AD, Kerberos, and other authentication/authorization mechanisms

Qualified personnel with relevant Security experience:

Below is an overview of the various security certifications our employees have obtained:

- Security+
- Certified Information Systems Security Professional
- Cisco Certified Network Associate Security
- CompTIA Advanced Security Practitioner
- Certified Ethical Hacker
- Certified Cloud Security Professional
- Certified Information Security Manager
- CompTIA Secure Infrastructure Specialist (CSIS)
- Certificate of Cloud Security Knowledge
- Certified Information Systems Auditor

B: Approach/Methodology to providing IT Services

The first step in our approach to IT Services delivery would be to either develop or understand the charter

behind the tasks for which Datastrong is being engaged. In either establishing or reviewing the charter, Datastrong would evaluate the goals of the project, roles and responsibilities for the team members involved (both Datastrong, George Mason, and any other vendor responsible for supporting the project) as well as the anticipated outcomes, risks and assumptions, project timelines, communication plans and stakeholders. If not developed, Datastrong would document and get sign off from George Mason stakeholders and sponsors of the items laid out above.

In the event a charter is already developed, Datastrong would provide feedback or request clarification on any gaps we see as it relates to goals and objectives, anticipated scope, roles and responsibilities, timelines, communication plans, and escalation paths.

Once the charter was agreed upon and understood by all parties, Datastrong would develop an SOW for providing support to the project. In the SOW, Datastrong would reiterate the goals laid out in the project charter, and detail the tasks involved in supporting the roles and responsibilities laid out in the charter that would be assigned to Datastrong. Datastrong would provide a level of effort in man hours and provide pricing for completing the tasks in the SOW. In addition, Datastrong would document any assumptions it has made in the development of the level of effort as well as clearly calling out any items that it considers to be out of scope. Datastrong will also include a formal process that will be used to manage items that are not explicitly called out as being in scope and how those items will be assessed and agreed upon for inclusion in a formal change request to be included in scope, regardless if it results in additional time or budget being added to the project. Datastrong will work with project sponsor to refine the SOW until both parties are comfortable with the tasks, assumptions, timelines, and LOE's provided. Upon agreement, Datastrong will submit the SOW for signoff, and once formally accepted by both parties, Datastrong will assign resources to begin executing on project tasks.

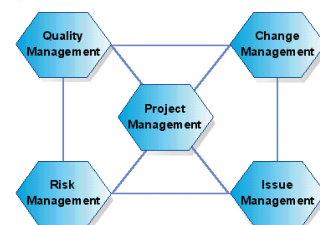
Datastrong's IT service delivery and project management discipline will ensure that scope objectives are achieved with the highest level of quality, on schedule and on budget. Datastrong's best practices and delivery management techniques were developed from extensive project experience and we are aware that without a strong project management approach, that even the best methodology can fail on key issues. Datastrong's project engagement manager will work closely with the GMU team to ensure the initial and subsequent projects are conducted on schedule and within budget.

Our mission will be to stay aligned with the George Mason's strategy, integrate with George Mason's enablers, ensure consistent execution of delivery, provide value to George Mason, and establish processes to ensure continuous improvement. Upon each engagement initiation Datastrong documents, provides, and mutually agrees with its client the following:

- Scope Management Plan
- Scope Management Plan
- Requirements Management Plan
- Schedule management Plan
- Financial management Plan
- Quality management Plan
- Resource management Plan
- Stakeholder Management Plan
- Communications management
- Task Order/Project change management
- Risk management Plan
- Continuous Improvement Plan

Datastrong's management approach for projects is based on the Project Management Institutes (PMI) Project Management Body of Knowledge (PMBOK) best practices and Agile best practices. Our approach will include five key interrelated project management components as illustrated in the Figure:

1. Project Management
2. Quality Management
3. Issue Management
4. Change Management



5. Risk Management

Project Management Methodology

Project management functions are applied to all phases of projects undertaken by Datastrong. These functions support the initiating, planning, executing, monitoring, and controlling, and closing of projects.

The following key tools / techniques are used in Datastrong's project management methodology to support the planning, management and monitoring of projects:

- Project management tracking
- Status reports
- Status meetings
- GMU Milestone review and signoff

Project Management Tracking

Project management tools will be used to support the project management function for the GMU IT Consulting program and its projects. The work plan for each project is developed and maintained to allow for schedule and resource management, communication of project status and reporting of project information.

Status Reports

For each task order (project) the project manager will prepare status reports that will be delivered to the GMU project sponsor or designate in accordance with the schedule and process agreed to in the project charter. On contract award, the project manager, in consultation with the project sponsor, will create a status report template that will reflect the project requirements. Status reports will be prepared and submitted to the project sponsor on or before the regularly scheduled status meeting for review and acceptance. During the status meeting, the contents of the status report will be discussed.

Included within the status report are:

- A summary of progress to date of major tasks and deliverables
- Work to be accomplished in the next reporting period.
- Schedule and budget changes
- Significant risks, incidents and problems encountered during the period together with recommended mitigating and corrective action.
- Status of action items resulting from previous progress review meetings.
- Where applicable the reports will also include monthly usage and platform/domain performance statistics, as well as to-date statistics, as appropriate.

The Datastrong project manager will review progress against the established schedules and deliverables per the Scope of Work.

Status Meetings

The project manager participates in regularly scheduled project status meetings. The timing of these meetings will be set and agreed to by all parties during the development of the project charter. During the status meeting, the project manager and project sponsor review the project progress. A typical agenda for these meetings may include:

- Technical progress during the reporting period
- Activities planned for the next period.
- Problems encountered or expected together with recommended corrective action.
- Review significant risk areas.
- Work-around plans to recoup any slippage in schedule.
- Action items and the individual(s) assigned responsibility for them.

Datastrong will prepare and circulate minutes of status meetings in an MS Word based document.

Client Review and Signoff

As specified milestones in this project are reached, the project manager will meet with the project sponsor to review the milestone item or deliverable. Milestone “sign-off” will be conducted to ensure that all specified expectations have been met with regards to professional design, functionality and quality.

Quality Management

During the project, any deliverables will be reviewed by senior Datastrong personnel through formal quality assurance processes. These reviews will be conducted to provide the opportunity to ensure the project performance satisfies Datastrong quality standards.

In addition, the Datastrong Project Manager will undertake the following quality assurance activities:

- Preparation of regular progress reports that accurately reflect project status
- Review with the Project Sponsor on a regular basis and at milestones in the work plan
- Address project risk factors as they are identified
- Identify, monitor, and verify all stakeholders’ expectations.

Issue Management

An issue is anything that has the potential to impact the success of a project. Most issues impact one or more of scope, budget, schedule or quality, but can impact other “softer” areas such as expectations and morale. Issue management covers the procedures defined to address and resolve issues.

Datastrong promotes proactive identification and resolution of issues therefore, rather than reacting to issues once they arise, the Datastrong Project Manager will scan all project-related activities for potential issues. The earlier an issue is addressed, the less likely the chance of damage to the project. As with change management strategies and approach, communication and coordination of issue resolution is key.

Issues that arise will be tracked and reported as part of the status reporting process or based on criticality will be addressed directly with the Project Sponsor as appropriate.

Change Management

Change management is the process used to control changes to a project’s boundaries (scope, budget, schedule and expectations) to ensure that a project is delivered on time and meets requirements.

Change management procedures are necessary to ensure that all involved parties are aware of the impact that the project may have on them and of the impact of change on project costs and schedules. For each requested change or enhancement not specified in current project boundaries, as confirmed in the Project Charter, a Change Request form will be prepared. Either client or Datastrong can initiate a change request, however, both the client Project Sponsor and the Datastrong Project Manager must grant approval to proceed before the Project Team conducts an analysis of the impact of the project schedule and cost.

The steps to be followed for each Change Request are:

- Change identification
- Change analysis
- Change authorization
- Change planning
- Change implementation

Risk Management

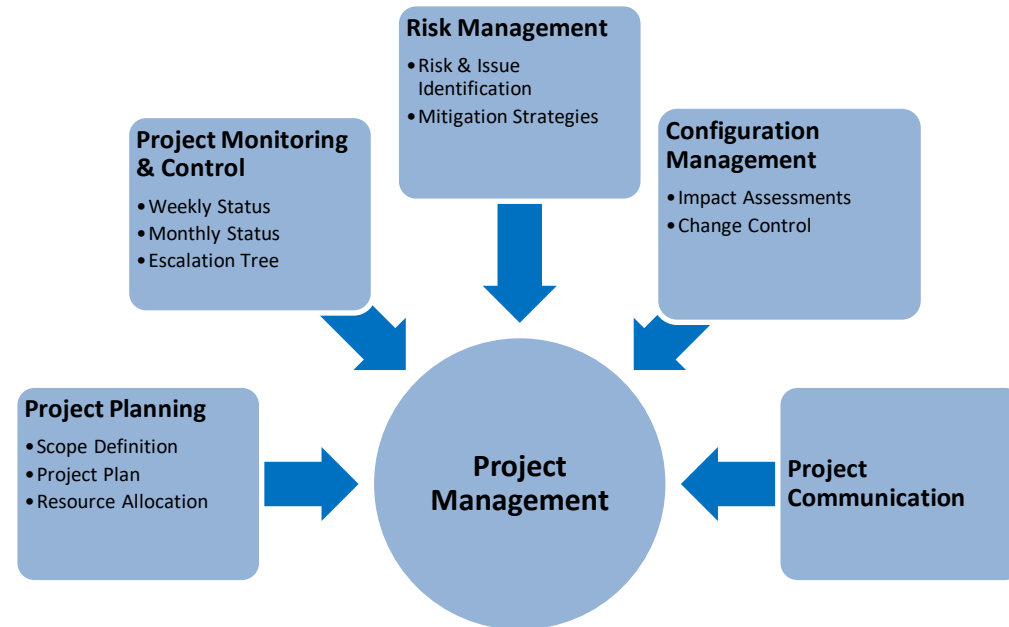
A major focus of Project Management is on the management of risk within a project. Risk management is concerned with identifying, analyzing and responding to project risk. It is an iterative process requiring regular definition and re-definition, monitoring, and action focused on maximizing the results of positive events and minimizing the consequences of adverse events.

There are three general categories of project risk:

- Business
- Technical

- Environmental

Client and Datastrong have a mutual interest in the successful outcome all work completed under the contract, so both parties must play an active role in managing risk over the life of the project. Risks identified during the project will be documented and jointly managed by client and the Datastrong Project Manager. As part of the project status reports and meetings, or more frequently if required, new risks and the status of major risk areas will be communicated and discussed.



Upon project completion, Datastrong will ensure any required documentation and/or artifacts are completed, reviewed, and signed off by GMU project sponsors.

C: Personnel Qualifications/Experience and Relationship Management

Datastrong possesses some of the strongest functional, technical and management professionals working in the industry today. Our expertise is recognized across the Washington, DC metropolitan area as we are called upon for experienced consultants from large systems integrators such as Accenture. We bring senior, experienced, and talented consultants to our clients that can work autonomously and with minimal oversight from Mason leadership.

The Datastrong team will work with Mason to understand the project and recommend a lean, experienced team to deliver success. We can best support Mason in this area for several reasons:

1. We have extensive staff available locally in the Washington, DC metro area.
2. Our business is centered on the four pillars we discussed in the introduction section, which align with the services Mason has requested.
3. Our employees are active in industry and commercial forums and stay abreast of technology, management, industry, and process advancements.
4. Our recruiting and talent acquisition processes ensure that we have a deep pipeline and a cadre of

qualified resources in all areas of expertise.

5. Commitment to Mason exceeds that from larger companies as we plan to fully dedicate one of the three Datastrong founders to provide a personal, hands-on commitment to the success of future projects.

Assigned Team

Once awarded Project #3, Datastrong will assign two executives to work with George Mason University on understanding, scoping, and identifying solutions where Datastrong may be able to provide consultative support.

- The Account Manager will be the primary point of contact for Mason's future consulting services. He/She will review future projects to understand scope and work within Mason IT processes to deliver against the project's stakeholder objectives and expectations.

The Account/Relationship manager for George Mason University will be Andrew Patterson. Mr. Patterson is a founder and Principal at Datastrong. He has over 23 years' experience working in architecting, implementing, and leading data centric solutions to include data warehouses/marts, data migration/ETL solutions, and business intelligence front ends. In addition, he has helped organizations with the development of their data program roadmaps as well as with software selection in a variety of different areas (business intelligence, ETL, and metadata management). He's managed teams of consultants and client resources in addition to running an internal department comprised of over 40 resources responsible for delivery data solutions to their business partners. Mr. Patterson will bring his expertise across the Educational, Finance, Security, and Regulatory industries to the benefit of Mason. Mr. Patterson has a degree in Business Administration from Shepherd College.

Datastrong traditionally hires only experienced personnel; our consultants possess over 11 years of experience on average. As of this submission, we have over 75 consultants and unlike traditional IT companies we staff consultants who are able to perform across multiple roles. All of our consultants:

- Possess the interpersonal skills necessary to engage with customers across the Software development lifecycle including requirements gathering, design, development, testing, and training
- Are trained across a variety of technologies and development frameworks (Cloud, Data, Web design, Enterprise Architecture, Security)
- Provide time, budget, and add goals for training into each employee's annual assessment to ensure they are staying current with the latest technology and/or approaches to delivering projects to clients
- Partnerships with leading providers across a variety of platforms (Cloud, Database, Analytics, Data integration) that provide additional training access to our resources as well as environments where we can prototype new technologies to drive innovation for our clients

We operate under a lean staffing model which helps keep our rates lower than larger management consulting companies. We do maintain a bench of resources and will hire folks to the bench based on expected quarterly project forecast. The resources we deploy to our projects include:

Role	Skills / Tools
Functional, Business and Data Analysts	Functional expertise, Interpersonal and writing skills, SQL, prior development experience, Business Intelligence SDLC, Data Analysis
Analytics Developers	Reports, Dashboards, Scorecards, and Visualizations using MicroStrategy, Power BI, Tableau, and Business Objects, Cognos, and ThoughtSpot

Data integration Engineers	Development and administration using COTS tools such as Informatica, Datastage, SSIS, and Pentaho, scripting languages such as PL SQL and Python, and Cloud capabilities such as S3, Glu, Lambda, and SQL Information Factory
Database Administrators	Multi-environment experience using Oracle, SQL Server, Redshift, Postgres as well as data federation/virtualization vendors such as SAP Hanna and Denodo
Data Architects and Data Modelers	Data models that ensure compliance with standards and project requirements; unify source data, eliminate redundancy, and support fast query response
Project Managers	Works closely with executive stakeholders and sets plans for all team activities needed to meet objectives; provides forward-thinking project roadmap; responsible for efficient use of resources and on-time delivery
Solutions Architects	Enterprise Architecture across applications, data, infrastructure, and security to address capacity management, financial management, performance management, service portfolio and catalogue requirements, availability, and service continuity planning.
Cloud Engineers	Implement, configure, deploy, and manage cloud technologies and solutions to support business requirements, data requirements, and application workload requirements.
Security Architects and Engineers	Security Design, Planning, and Architecture to address threats, vulnerabilities, and apply best practices on perimeter defense, access and identity management, security monitoring and alerting, and data and system protection strategy and design,

Below are the biographies of some of our staff who are already engaged at GMU or who could be used to support the projects needed at Mason. Complete resumes can be provided upon request.

Business Management/Reporting & Analytics focus:

[Resource Name redacted]: [Resource name redacted] background includes over 20 years of experience in the development of reporting and analytics applications as well as developing and delivering training content in support of analytics applications. [Resource name redacted] has been supporting George Mason University for over 4 years in support of the development of analytic capabilities and training and adoption of Enterprise information assets.

Project/Program Management:

[Resource name redacted]: [Resource name redacted] brings over 30 years of experience of developing, implementing, and managing resources across a variety of technologies, with a focus over the last 20 years in managing data delivery teams ranging from a few resources to teams of up to 20. He brings over 10 years higher education experience from his time managing the data warehouse operations for Sallie Mae. [Resource name redacted] has been engaged at George Mason for the past years and is currently supporting their Project Management office.

Enterprise Architecture / Cloud

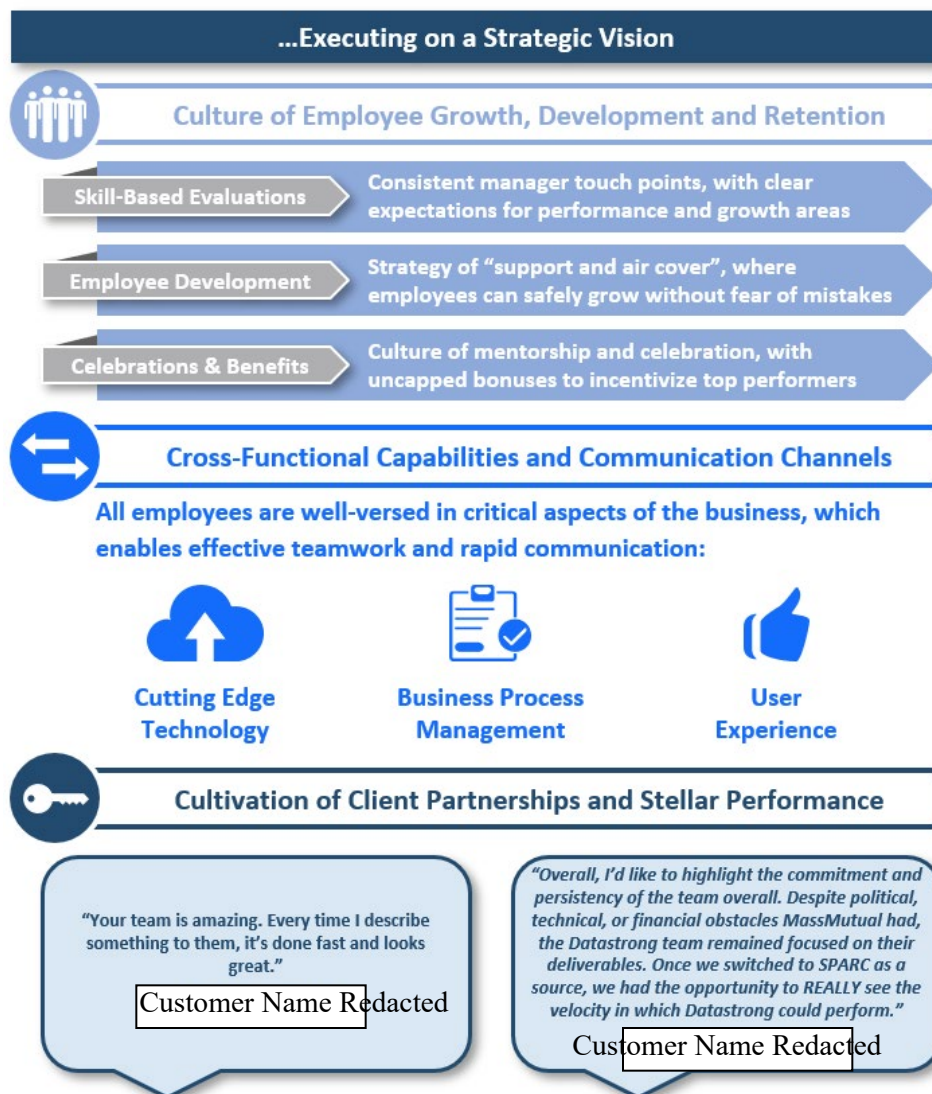
[Resource Name redacted]: [Resource name redacted] brings over 25 years of experience of technology experience from database, data architecture, and analytics design with the last 10 years being spent in developing solution architecture to include infrastructure, database, data integration and analytics technology and frameworks. He has led our largest federal client on their journey from an antiquated on prem, COTS based solution framework to an entirely Cloud based, serverless, flexible footprint to where they can grow and expand the solutions architecture dynamically as client needs change.

Datastrong Management team and Approach to Talent Management:

The Datastrong Management team bring a diverse set of expertise across a variety of technology platforms and have hands on expertise in implementation, development, and delivery of enterprise class solutions. As such, they are keenly aware of the challenges that face our clients and understand the resource requirements for addressing those needs. Included below is quick overview of the Management team and their bios:

[Management team graphic redacted]

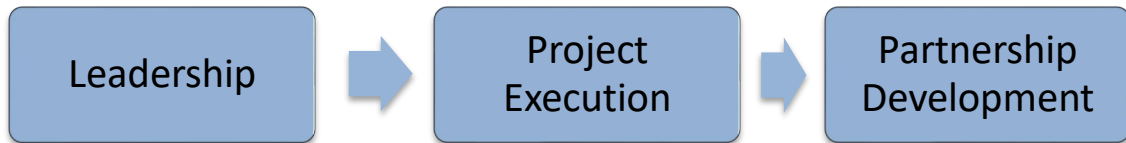
As was mentioned above, Datastrong invests heavily in providing opportunities for our staff to continually grow. The graphic below illustrates our strategic vision towards enabling those ideals:



D: Continuity of Personnel

Describe the ability to provide continuity of consultants throughout the duration of a project. Provide examples of both on-site and remote teams that would work with George Mason University

At Datastrong, we believe there are three levels to Project Continuity with our clients.



Leadership. Datastrong believes that continuity begins with the leadership dedicated to the client team. As discussed in Section C, Datastrong executives will be a constant for Mason across all projects which provides a consistent executive leadership chain for Mason stakeholders to use pre-, during, and post-project delivery.

Project Execution. On-demand consulting projects can be separate engagements with unrelated scope/objectives or multi-phase initiatives geared toward a related end-goal. Datastrong's goal for either is to provide *consistent* commitment. Scope and budget permitting, our preference is to assign our consultants full-time in support a project until it is completed and executive stakeholders' expectations have been met. Breaks in the commitment introduce unnecessary risks to a project's delivery.

Partnership Development. Datastrong resources strive to develop depth and subject matter expertise in our client's business, processes, and organization. As a result, consultant consistency across projects or phases is traditionally imperative to the long-term success of our clients. Datastrong employs a focus on partnership development by striving to re-deploy consultants where past client or project expertise is valuable. For Mason, this would provide first right of refusal of our consultants during project planning and a commitment from Datastrong to leveraging past expertise where practical.

E: Services Available

E.1 Digital Transformation Services

E.1.1 *Analytics for Public and Private Cloud - Strategy*

Datastrong has proven record of successfully planning, deploying, and managing cloud services for our customers. We pride ourselves on being a consistent industry technology leader consulting firm and for helping its customers invest in the right cloud solutions and services. We are passionate about customer satisfaction, and we value that each organization has a unique journey to the cloud based on its own starting point, history, culture, and goals. We have established strong partnerships while continuously monitor industry technology leaders, to always provide cutting edge technology solutions, using a customer led approach.

Currently Datastrong has established partnerships with Amazon Web Services (Premier), Microsoft (Premier) and Google (Premier), is a Cloud Service/Solutions and Managed Services Provider for both commercial and government cloud services. In addition, Datastrong has partnerships with ThoughtSpot, Databricks, Snowflake and MicroStrategy.



Strategy

Datastrong brings its Advanced Analytics, Data Science, and Cloud capabilities to provide customers with strategic advisory services that translate our customer vision into actionable people, processes, and technology roadmaps focused on cloud services adoption from an outcome perspective. Our deliverables include pros and cons of private, hybrid and public cloud options, Total Cost of Ownership (TCO) analysis for each scenario, workload readiness and in what fashion, capacity planning, resource mix, training needed, and the step-by-step execution plan on establishing, optimizing, or migrating services into the cloud.

During our strategic engagements we work with our customers to analyze the culture, define the business outcomes, perform detail assessments on current environment, systems, services and security, document risks and tradeoffs, and perform gap analyses on governance, IT services, tools, and skills. We follow a customer led approach, share our results every step of the way and ask for feedback to ensure alignment of deliverables to our customers goals.

Our mission is to provide clarity, help our customers navigate through the perplexities of the Cloud journey and propose solutions from the entire cloud spectrum that align with business objectives.

Upon engaging Datastrong's strategic advisory services we will:

- Discover customer on premises footprint (VMs, networks, apps etc.).
- Map dependencies and determine network topology.
- Recommend optimization path for workloads.
- Determine best cloud computing service model.
- Develop the operations model for the cloud services.
- Provide cloud migration strategy and plan.
- Develop the Strategic Roadmap on people, process, and technology.

But we do not stop there. Datastrong's is adept at helping organizations assess their IT Service Management and Information Security readiness, Data Science maturity standing and Business Disaster Recovery posture.

Costs for Cloud strategy and cloud assessment services may be covered from existing customer license agreements or can start at \$15,000 and will scale based on the scope and complexity of the work.

Migration & Implementation

Datastrong starts each migration & implementation engagement by reviewing our customer's vision and strategy plan and continues by gaining granular visibility of the current environment. The approach we take is customer led rather than technology led, and our cloud activities consider existing governance, procedures, operational tasks, and responsibilities to make sure our customer's IT and Enterprise stay in control of the cloud journey. We have over a decade experience in defining migration plans, considering the several key areas of migration planning, and building resilient cloud services for our customers. During a digital transformation execution, Datastrong's experts review with our customers the:

- Application components

- Type of migration needed for each (i.e. lift-n-shift, re-platforming, or code factoring)
- Availability, scalability, and auto-scaling patterns to be introduced.
- Security and processes based on compliance and privacy requirements.
- Migration automation and scripting
- Licensing

Our migration plan and execution include frequent pilots and tests and customer feedback sessions, prior to implementation of new technology, but does not stop there. We continue post-deployment analysis of effectiveness (impact analysis) and to refine in coordination with IT operations teams.

Costs for migration and implementation services start from \$20,000 and can exceed \$2,000,000 depending on amount of workload to be migrated.

Operations & Maintenance (Managed Services)

Datastrong helps its customers navigate the superior functionality of cloud offerings, and manage their production workloads running on private, hybrid or public cloud solutions. The Datastrong managed services teams work closely with our customers and the cloud provider to keep IT services running 24/7/365, so our customers can stay focused on innovation rather than operations.

Datastrong works with the customer to define the scope and portfolio of services and select the right managed service tier offering and pricing model that best serves customer needs. Datastrong offers pricing models per user, per device, per instance, per app, or simply on a fixed fee basis. Our customers have the flexibility to choose a U.S. only or Hybrid engagement model, using resources from our national talent pool and our strategic partners.

On top of any cloud provided support services, our customers entrust us to provide automation and orchestration, patching updates, configuration management, backup and disaster recovery, and identity management. On engagement initiation, Datastrong reviews with the customer the scope and portfolio of services, identify roles and resources, and agree on the engagement plan. The engagement plan may cover:

- 1) Managed Services Response time,
- 2) System Down Time responsibilities,
- 3) Documentation and Reporting requirements,
- 4) Incident and Request priorities,
- 5) SLAs and Tier support as outlined by the cloud provider,
- 6) Governance and key deliverables.
- 7) Access to personalized Service Health Dashboards & Health API
- 8) Unlimited 24x7 technical support and access to Support Engineers via email and phone which include:
 - a. Tier 1 and Tier 2 Technical Support and System Issue triage,
 - b. Tier 3 Technical support to ensure proper system functionality and hardware error prevention and fixes.
 - c. Service Level Agreements (SLAs) for all Level 1, 2 & 3 Support issues, which include service levels, and method by which each of the levels is measured.
- 9) Third-Party Software Support: Interoperability and configuration guidance and troubleshooting.
- 10) Escalation management
- 11) Advisory services
 - d. Plan for deployments and migrations
 - e. Plan for hybrid cloud solutions
 - f. Boost performance
 - g. Improve reliability and recoverability.
 - h. Enhance security.

- 12) Initial response time of less than hour
- 13) Daily monitoring of the ingest points.
- 14) Software upgraded/patching as needed to ensure compliance with and capability to meet state and federal housing law.
- 15) Ad-hoc Enhancement Requests

Managed services engagements start from \$3,000 per month and increases based on the size and scope of the services.

E.1.2 Cloud Technology Extensibility Services

Datastrong understands that users want to adopt newer technologies that solve their problems faster. Combining them with existing technologies may seem like an unsurmountable task. It is this complexity that our customers entrust us to untangle and, with our demonstrated award-winning experience, leverage cloud-based services to extend technical capabilities and ensure that cloud deployments are customized to fit their business requirements. Datastrong's customers are confident that the solutions they are adopting will seamlessly integrate with their current private IT services and allow them to differentiate. Our goal is to remove the complexity barrier, explain to our customers the many benefits of adopting an extensibility model and to help them determine which services, if any, may make sense for the organization to increase productivity.

Datastrong has extensive experience in integrating cloud services with existing systems, on multiple deployments for government and commercial customers. We currently do not offer any prepackaged solutions in this area. Prices will vary depending on the scope of the project and hours needed from Datastrong resources that will be required to support the project.

E.1.3 Mobile Analytics Enablement

In today's mobile workforce, the ability to get to information even when not at one's desk is critical to business operations. Extending the analytics capabilities to where critical information can be delivered to a tablet, a phone, or a disconnected device help extend the workforce's ability to be productive while on the go. For the last 10 years, Datastrong technical professionals have numerously developed and implemented applications to enable mobile analytic capabilities for its customers and ensured that the vendors analytics capabilities are customized to fit business specific requirements of the mobile workforce.

Datastrong is adept in leveraging technologies such as MicroStrategy, Amazon QuickSight, Microsoft PowerBI, Tableau to deliver the right information assets and functionality to the right users, globally. Our deployed solutions include search capabilities, external application integration, reporting tagging and slick landing page design.

E.1.4 Analytics Portals

Since 2010, Datastrong has been developing and implementing application portals that bridge the gaps between the disparate reporting tools and bring reports out of obscurity with a tagging and discovery, within the customer intranet or published on the extranet, for both government and commercial customers. Datastrong senior technology experts design portal geared towards the consumers and securely present data to end users, using SSO with technologies such as OKTA, AWS IAM, Azure AD and integrate security between REACT framework portals and BI tools such as Microstrategy, Amazon QuickSight, Microsoft PowerBI and Tableau.

Datastrong works side by side with its customers to develop portals that go beyond convenience, result in a better overall data governance and enhance the overall effectiveness of an enterprise data analytics environment.

E.1.5 Bespoke Custom Development

In some cases, the business may want to provide a guided approach to providing information to its' end users, based on specific style, scenarios and behavior of portals and dashboards. There are others where an organization simply wants to differentiate from completion or even provide solutions to challenges such as internet connectivity unavailability. There may be a scripted fashion need in how data is presented, with buttons or guided drill paths that allow the user to drill down/across/into the data set feeding custom KPIs all while not having to think about how they got there or how they get back up to the top. Datastrong has delivered multiple custom solutions to its customers, from extending dashboard development to enable seamless navigation between dashboards, to real simulation of entire Analytics portals, dashboards, and reports without that need of internet/network connectivity or access to data.

Datastrong understands that differentiation is the lifeblood of a business and its critical to the survival, growth and profit margins for our customers. That is why we build tailored innovative solutions and ensure a faster time to market following an agile incremental approach. Datastrong are adept in tailored software development, mobile applications development, and dedicated cloud solutions development. Datastrong's custom solutions have been developed using a variety of languages such as React.js, Node.js, Python, and Java, with customizations to meet the customer needs.

E.2 Data Engineering and Management

The Datastrong team's experience in enterprise data engineering and management methodologies predates the formation of the Company in 2010. Over 70% of Datastrong's personnel have over a dozen years of experience in designing, developing, and maintaining enterprise data engineering solutions. The Company's knowledge of and experience in data engineering covers both the implementation of the traditional enterprise data warehouse, as well as the logical data warehouse design.

E.2.1 Data Integration

Even with ERP systems, Operations, Marketing/Sales, HR, Finance, and other organizational unit systems rarely are pre-built for an enterprise's analytical needs. The data integration services provided by the Datastrong team help connect the underlying data, improve accuracy, increase integrity, and support enhanced BI reporting. Our employees have experience using Informatica, Ab Initio, Datastage, Pentaho, and Microsoft SQL Server Integration Services.

E.2.2 Data Governance and Stewardship

The Datastrong team has the resources with experience in helping to create and optimize data governance process that conceptualize stewardship responsibilities. Our team works hand in hand with our clients and provide guidance on establishing and refining governance boards and executive steering committees. These groups help drive the path for data management, broad policies, and permissible use of data throughout the organization. Datastrong works the client stakeholders identify and implement the methods and procedures necessary and establishes the criteria of those who would use the data, along with the conditions under which data will be granted.

E.2.3 Big Data Architecture and Design

Big Data can have many definitions in the data management space. Datastrong filters through the murky 'Big Data' marketing hype to identify the real data challenges and recommend solutions that address unstructured and structured data issues. As Mason has grown increasingly 'social' and expanded the services provided to students, schools, and departments, the need to analyze and identify impactful trends in unstructured data grows. Datastrong consultants can help determine the right approach to Big Data for Mason and help implement the right solution using a variety of technologies including Hadoop, MongoDB, or other leading Big Data software vendors.

E.2.4 Enterprise Data Warehouse Architecture Design

From the ground up or built upon an existing foundation, our data architects help our clients consolidate, integrate, and access data from all areas of an organization. We participate in the technical aspects of sizing and scoping a back end database as well establish and shape the goals of an enterprise data warehouse plan. Our architects have worked with the leading data warehouse vendors including AWS, Microsoft, Oracle, Teradata, Microsoft, Netezza, and Par Accel to implement solutions that impacts hundreds of thousands of users.

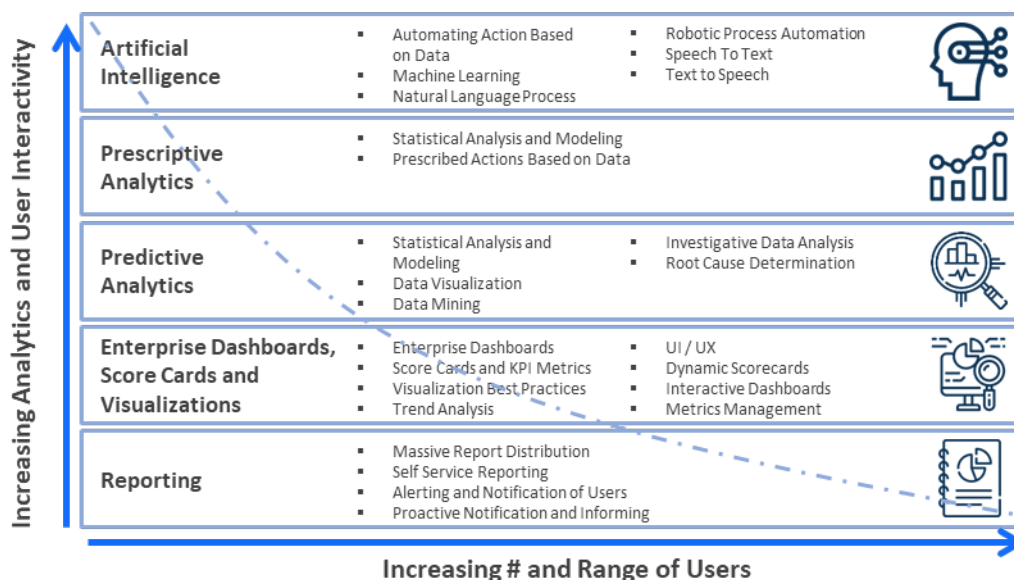
Reporting off structured and unstructured data requires a holistic integration understanding. We provide data modelling services which enable enterprise reporting and rapid data processing. We can produce Conceptual, Logical, and Physical data models that structure an organizations data by business unit, geography, or other dimensions.

E.2.5 Data Acquisition and Curation

Datastrong's Data Engineers create architectural prototypes to identify the current gaps in our client program's processes for exporting, tagging and curating data, with a goal to assess whether industry standard methodologies, techniques and tools are being utilized and if they are built in a technology agnostic way to allow for smooth innovation in the future, as needed. They then proceed with assessing the data exchange and storage processes, to evaluate how data is synthesized for AI/ML model trainings, data quality checks and how effectively data can be processed to accurately test the exchanges and transports between other systems (to include evaluation of storage constraints, formatting consistencies, processing time variability, machine readability and the like).

E.3 Enterprise Analytics

Datastrong's enterprise analytics services create data-driven processes combined with business process improvement methodologies to empower clients to change their trajectories. Enterprise analytics capabilities are founded on the fundamentals of collecting, analyzing, and processing data across all functions of the business to enable the organization's mission and objectives.



Our Enterprise Analytics services include the development of:

- Enterprise Dashboards & Scorecards
- Advanced Visualizations

- Self- Service Data Discovery
- Guided Data Discovery
- UI/UX Design
- Operational Reporting

E.4 Advanced Analytics and Data Science

E.4.1 Data Science

Datastrong has been helping government and commercial clients become data-driven and intelligently empowered. We help our customers tackle the architectural failure modes of centralized and monolithic data management ecosystems by evolving their environment to a modern domain driven architecture, considering business domains as the first-class concern, applying platform thinking to create self-serve data infrastructure and treating data as a product. Datastrong's data scientist leverage expertise in statistics, data analytics and domain knowledge to explain the world with data. Datastrong applies advanced modeling techniques, mathematics, statistics, and computer programming to mine and harvest the vast amount of data generated and unleash their power for our clients.

E.4.2 Social Media Analytics

A considerable amount of data and information can be harvested via social media. Datastrong applies social media sentiment analysis to support the U.S. Government's foreign diplomacy initiatives. We help our clients leverage the right tools to monitor, collect and harmonize social media data, and prepare it for further analysis.

E.4.3 Applied Intelligence / Artificial Intelligence

Datastrong leverages data to program and train a computer system to function like a high-powered human. The underlying approach to AI codifies reasoning, perception and linguistic intelligence into a process that allows for learning from inputs, making decisions, and solving problems; these concepts are then codified into the development of computer systems.

E.5 Security Services

The Datastrong team provides security services to manage the full threat lifecycle. Our services can help George Mason protect critical assets, detect advanced threats, and quickly respond and recover from disruptions.

E.5.1 Endpoint Security (ES)

Datastrong Team's Managed Host IDS/IPS (HIPS) service provides 24 x 7 security event alerting, investigation and response to potential security incidents identified by our HIPS capability. The HIPS service leverages industry managed known attack signatures to detect and prevent endpoint data/systems from being compromised. Datastrong reports identified attacks to the customer identified security point of contact. Basic containment of the event is supported as part of this defined service.

Datastrong Team's Host File Integrity Monitoring (FIM) service can send alerts when changes happen to key operating systems and application files, as well as essential processes and ports. Integrity monitoring detects unauthorized changes that introduce operational as well as security risks by identifying system incompatibilities and potential indicators of compromise (IOCs). The service leverages our FIM capability to provide alerts and responses to identified events 24x7. The identification of protected files can be customized to meet customer security concerns. Basic containment of the event is supported as part of this defined

service. Endpoint forensics is provided separately under the Advanced Security Incident Response service.

E.5.1 Vulnerability Management – Security Center -Weekly

Vulnerability and compliance scanning of endpoints is provided to identify compliance drift and potential security vulnerabilities in guest operating systems. Other known identified vulnerabilities are reported to the customer applications team. Currently, Datastrong does not perform vulnerability management/remediation of customer application compliance/vulnerabilities under this defined service. Datastrong can support these requirements as needed under a professional services engagement.

Datastrong offers visibility to the Security state of the AAFES environment through our Vulnerability Management portal. In this portal, both the current state of the environment can be viewed along with historical references to what vulnerabilities previously existed and when they were mitigated.

E.6 Project Management

Datastrong has an established Program Management Office (PMO) that assist our clients engage on projects that are strategically aligned and make the best use of the organization's talent, time, and budget. Our project managers understand the impact and vitality of projects for client success. Our project management services include but are not limited to:

- Project Portfolio Management
- Change Management
- Strategy Realization
- Capital Project Management
- Communication Plan Development
- Requirements Management Plan Development
- User Adoption Planning
- Training
- Data Literacy
- PMBOK Best Practices
- Agile Best Practices

F: Training Support

Describe the ability to assist in the development and offering of training and documentation.

Datastrong's goal is always to help the customer become self-sufficient and limit our ongoing engagement. Mason must understand that training needs vary based on size, complexity, project timelines, and ability to identify/train key support staff.

As part all engagements, Datastrong's approach will be based on Mason's ability to:

- Identify Roles and resources requiring training.
- Communicate the preferred training options for Mason (Instructor Led, Train the Trainer, Training Documents)
- Review timelines, available resources, and project budget to determine what approach best aligns to the current project.

For most of our clients, our approach to training is primarily influenced by the end-user population. Training can be an expensive, often over-looked, aspect of a project's success. Datastrong believes in simplistic, but thorough approach.

- For large groups of users, we recommend using:

- A Train-the-Trainer approach – Datastrong provides in-depth training to a specific number of Mason SMEs (ex. Department Supervisor, Power-User, or Team Lead). Once trained, the Mason SMEs conduct training sessions to smaller teams across The University. This approach establishes Mason resources as the primary support team related to the project and helps foster strong relationships between end-users and training staff.
 - Datastrong would also develop the initial training material (PowerPoint, Job-Aids, Videos, FAQs) used by the Mason SMEs during training
 - Depending on the complexity of the application and roles required to support the application, Datastrong may need to create Role Specific training materials.
- For a smaller number of users, we recommend using:
 - Centralized Training – Datastrong develops and conducts training directly with the end-user in classroom or via WebEx. This approach reduces Mason resources from primary support, but ensures users receive the necessary training to utilize the application.
 - Datastrong would also develop the initial training material (PowerPoint, Job-Aids, Videos, FAQs) used by the Mason SMEs during training
 - Depending on the complexity of the application and roles required to support the application, Datastrong may need to create Role Specific training materials

Datastrong employs a number of trainers who are capable of delivering either training approach and creating the supporting documentation.

G: Recent Projects

Provide examples of recent projects at representative agencies comparable to George Mason University. Describe the project, time frame, end result, etc. Prior higher education experience is preferred but not required.

Datastrong at GMU:

Over the past five years Datastrong has served as a trusted partner for GMU and has provided resources in support of the following efforts:

- Enterprise Analytics platform implementation, development, and training: Have been supporting this since the start at GMU with a team of up to three resources augmenting Mason's business intelligence development staff. Engaged in development across all aspects of the MicroStrategy platform. Responsible for best practices development for implementation of MicroStrategy capabilities. Develop, test, and deploy schema, report, and configuration objects in MicroStrategy. Collaborate with database architects on physical data model design in order to optimize data model for MicroStrategy performance and scalability. Develop schedules and alerts for automated distribution of analytics based on either time or event-based needs. Work with business users on analytics requirements, develop rapid prototypes for requirements validation and refinement. Unit test and deploy UAT validated reports into production. Develop and deliver personalized training in both group and individual user environments. Engage with new users to orient them to the enterprise analytic capabilities.
- Enterprise data integration tool requirements, solicitation, evaluation, implementation, development & integration: Led the development of requirements for acquisition of an enterprise data integration tool through interviews focused on the key features GMU was looking to gain by moving away from traditional script-based data integration methodology. Review included looking at aspects such as data lineage, metadata management, business rule transparency, reusability, API capabilities, as well as market availability of resources familiar with implementing and developing in the tool. Managed the development and issuance of the RFP that put the requirements to market. Oversaw the assessment of

the RFP responses and managed the evaluation process leading to the selection of data integration vendor. Helped in sourcing technologists with expertise in the vendor in support of developing best practices in the newly selected tool. Since vendor selection, Datastrong has led the implementation and development within the newly selected tool as well as provided project management support for managing data integration activities.

- **Enterprise Data Governance assessment:** Led initiative that involved interviewing key stakeholders from both the business and technology and reviewing the way in which data is provisioned, shared, modified, curated, and cared for across the University. Reviewed the tools used in support of making data available across the university primarily focused on data integration and analytics capabilities as well as the repositories in which the data is stored and made available to end users for business functions. Provided recommendations and a roadmap around data governance, metadata management, access, and analytics focused on reducing time for end user access, improving the quality of the data provided (accuracy, timeliness, completeness), reducing the redundancy of common data sets being perpetuated across the University, as well as documenting definitions of the data being provided.
- **Department level API implementation & development in support of University Life data repository & reporting:** Development of new API integration in support of University life and the various campus systems that provide data needed by the department. Migration of legacy data from sunset application leveraging historical API's into University Life's Oracle data repository. Leveraged new data integration tool API ingestion capabilities and best practices to provide seamless transition into enterprise production O&M support. Provide design recommendations and issue resolution as needed when API documentation and/or functionality differed than what was described/planned.
- **Business Continuity Planning and Disaster Recovery (BCP/DR) audit and mitigation response development:** Interviewed Key Stakeholders including the resources responsible for the current technologies including Servers, Storage Arrays, Replication Software, Networks, Databases, Backup and Recovery, Security Solutions). Reviewed existing documentation including the COOP, RACI, and current environment documents. Analyzed the collection of system documentation from the key stakeholder. Review GMU CMDB and current DR Infrastructure components. Identified gaps in available documentation. Identified present GMU Resource/Roles involved in Disaster Recovery responsibilities. Assist with the creation of Visio diagrams and documents for the environment. Created Disaster Recovery Plan documents and consolidating information from the resources into one document covering the various technical domains.

Other Education Case Studies:

Case Study #1: [Customer name redacted]

Brief Description: Project STAR began as an initiative to completely re-engineer both the existing EDW and reporting front-end for [customer name redacted]. The existing BI infrastructure was built using Microsoft's SSRS, Tableau, Stored Procedures, and SQL Server. When the project initiated, the front-end reporting system included over 250 hard-coded SSRS reports and 100 Tableau dashboards which the user community was frustrated with due to performance, reliability, and accuracy in an Operational and Finance system. The software limited [customer name redacted] from implementing a strong governance and master data management process which led to an extensive change control log which had requests going back over one year.

20 Resources Provided

- Functional/Business/Data Analysts
- BI Report Developers
- ETL Developers
- Data Architects & Data Modeler
- Project and Resource Manager
- Testers

Services Provided: Datastrong was contracted to partner with the existing Data Warehouse resources to replace the failing data warehouse with MicroStrategy, SSIS, and SQL Server 2012. Datastrong provided business analyst and technical resources to help support the [customer name redacted] transition to a new BI

platform. Datastrong services included all standard BI SDLC functions including program management, data analysis, requirements, design, testing, and support of production deployments. Datastrong provided guidance on BI best practices, organizational structure, and helped prioritize the work effort across the teams. In addition, Datastrong also helped [customer name redacted] address widespread inconsistencies between KPIs across departments. Datastrong worked with executive stakeholders to establish a BI Competency Center which included users from all departments and helped formulate enterprise data governance standards which improved the consistency across the organization.

Results Achieved: An end-to-end BI Solution which addressed the performance, reliability, and accuracy of the previous system was rolled out to users in October 2013. Datastrong delivered an EDW solution to the user community at [customer name redacted] that provided a more self-service based reporting interface which has drastically decreased the extensive change control log that existed before the project began. The redesigned ETL process provided a stable platform which addressed the previous problems with elongated and unsuccessful data loads. The implementation of MicroStrategy and ETL layer have helped to establish an infrastructure which supports a faster turn-around time for user report and data enhancements. Many users were impressed with the corrective measures taken to define business concepts consistently and accurately. The performance improvements were noted across the board and it is immensely easier for users to access the data they require within the [customer name redacted] MicroStrategy reporting system.

Nearly 20 Datastrong resources contributed to the success of the project. Moving forward, Datastrong continue to help [customer name redacted] maximize their BI investment and train/build analytical skills necessary to support their growing user base. We presently provide a team of MicroStrategy, ETL, and Business Analyst SMEs to complement the growing APUS team.

Case Study #2: [Customer name redacted]

Brief Description: After doing an extensive business intelligence platform evaluation, [customer name redacted] made the decision to make an investment the MicroStrategy platform. Their internal technology team didn't have experience with MicroStrategy, so in order to show an immediate return on their investment, [customer name redacted] looked for a partner who could help them stand up their environment and establish best practices while their internal team was trained in MicroStrategy. Datastrong was selected in April of 2014 to be that partner.

~12 Resources Provided

- BI Report Developers
- SDK Developer
- Data Architects & Data Modeler
- BI Strategist
- Trainer

Services Provided: Datastrong has provided the following services to [customer name redacted] over the course of the partnership:

- Review and guidance on MicroStrategy installation (security, infrastructure, performance tuning)
- Review and development of project planning templates and MicroStrategy roll out strategy
- Data modeling review and design recommendations
- Requirements gathering for consolidating HR and Finance reporting requirements
- MicroStrategy architecture, report and dashboard development support
- Automation of migration activities leveraging out of the box MicroStrategy capabilities
- Integration of externally managed metadata into the MicroStrategy suite
- Development and delivery of end user training materials and courses
- Upgrade of [customer name redacted] environment for 9.4.1 to 10.1 to 10.4 (Planned 2020 upgrade slated for Q1 2021)

Results Achieved: Datastrong helped [customer name redacted] establish their business intelligence best practices while providing them with resources capable of helping them show immediate results for their initial

POC as well as other high visibility subject areas in a very short time frame. The HR and Finance subject areas were the most heavily used data sources, and within a 2 month time frame, Datastrong was able to identify the most heavily used reports for each area and migrate them into MicroStrategy. This effort was critical to getting buy in from the end user community on the benefits of MicroStrategy to [customer name redacted]. Roughly a dozen Datastrong resources have worked with [customer name redacted] over the course of their partnership. [customer name redacted] continues to include Datastrong in its' plans for helping grow the footprint of MicroStrategy campus wide.

Case Study #3: [Customer name redacted]

Brief Description: [customer name redacted] provides programs and services to help students prepare for a successful transition to college. Its offerings include the SAT, PSAT, and Advanced Placement Program, as well as education advocacy and research. The organization chose to undertake a comprehensive redesign of all of its business programs and the data infrastructure that supports them, while continuing to support baseline operations (BOPS) for all existing assessments. This redesign was highly visible to the public, and therefore required a significant increase in business systems analysis capability, which previously was performed by a small number of SMEs with extensive [customer name redacted] systems experience.

10 Resources Provided

- Business/Information Analysts
- Team Lead
- Data Architect
- Resource Management

Services Provided: Datastrong was tasked with building a team of Information Analysts (IA) to provide business and technical analysis expertise. While the [customer name redacted] has historically relied on staffing vendors to meet past contracting needs, the critical nature of the Assessment Redesign created a requirement for a consistent, reliable source of experienced analysts. Datastrong was selected to partner with the [customer name redacted] to identify, acquire, and ramp up team members on an accelerated schedule across more than 8 mission-critical workstreams.

Results Achieved: The Assessment Redesign began rolling out successfully with the redesigned PSAT examination in October 2015, with the redesigned SAT to follow in March 2016. Datastrong resources have integrated seamlessly with the [customer name redacted] capability teams, providing analytical and business expertise that has helped to drive the successful deployment of the redesigned assessments. Datastrong's information analysts played a key role in creating the systems that process assessment data for millions of students who take [customer name redacted] assessments.

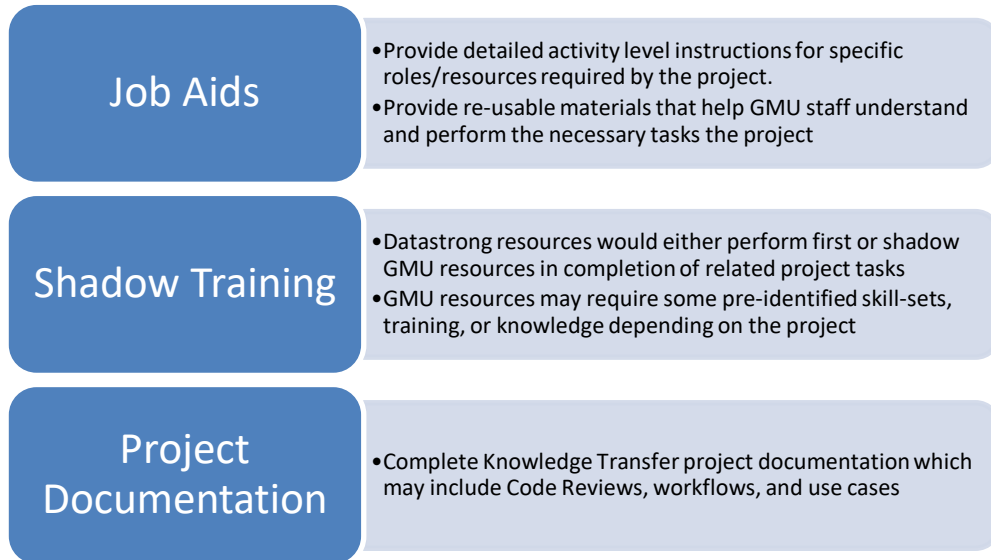
See Appendix B for Case Studies outside of the Education space.

H: Knowledge Transfer

Describe the ability to provide for a thorough transfer of knowledge to Mason IT on any given project.

The typical engagement and knowledge transfer activities will be ultimately be based on project timelines and Mason's resource support options. As part of Datastrong's project implementation, we will help The University assess resources and project timelines to account for all necessary knowledge sharing activities. Datastrong's goal through knowledge transfer is to identify and resolve resource weaknesses which would prohibit Mason from taking ownership of the project deliverables.

Depending on the engagement and scope requested by Mason, Datastrong may one or multiple tools for knowledge transfer.



Below is an example of the knowledge transfer expectations for a custom developed application:

- Business Users required skills include how to access the application, run/execute job-specific functionality, perform basic troubleshooting, and locate FAQs & Help files
- Architects will require expertise with the application and/or toolset used as part of development. They require additional expertise in the data model and University application requirements to be able to support future requests. Architects should develop SME-like knowledge related to how business users interact with the application
- Developers will require an understanding of application, data structures, and workflows used within the application. They also should understand the use-cases performed by Business Users and have a thorough understanding of the stakeholder goals.
- Administrators will require detailed knowledge of actions necessary to ensure the application remains 'production ready', understand performance expectations and methods to address fluctuations, and be able to maintain user and security functions

Recommendations of when to conduct knowledge sharing is also based timelines and staffing plans.

- If timelines are aggressive, we recommend knowledge transfer occur once the project is nearing completion so that all information remains relevant to Mason staff. The knowledge transfer activities would be focused on getting personnel comfortable with the roles and base knowledge identified above.
- If timelines can leverage in-house staff during the development tasks, knowledge transfer would occur at key phases in the development cycle to help the team with phase specific tasks (architecture, development, migrations).

Mason and Datastrong will plan knowledge transfer from the onset a project to best fit within existing Mason resource constraints and project deadlines.

I: Functional Staffing Plan

Describe how your firm would propose a functional staffing plan indicating the number, characteristics, and schedule for the consultants.

Staffing plans are dependent on project scope and complexity. Datastrong will review and evaluate each

OnDemand Consulting Service request to determine what is required by our consultants and under what timelines.

The Datastrong Account Manager, Executive Sponsor, and assigned Project Lead will identify a high-level project plan which includes major deliverables, resource levels, number of consultants, and duration/schedule. Where possible, Datastrong staffing estimates will be based on a bottom-up plan which identifies all required project tasks evaluated as Difficult, High, Medium, or Low. Each project task is assigned a weighted point value which is then used to increase the accuracy of the project estimates. We will account for Mason staff participation where permitted and available in the estimates to more accurately reflect deliverable input and reviews.

Below is a proposed staffing plan for a new Analytics project with scope determined to be 3 months in duration.

Function:	Level:	Relative Importance	Hours	Person	Qty
Report Developer	Developer II – IV	Critical	PT for 8-10 weeks	Consultant	1
Architect	Architect IV	Critical	FT for 12 weeks	Consultant	1
Program Manager	Team Lead III – IV	Important	PT for 12 weeks	Mason or Consultant	1
End User/Stakeholder	N/A	Critical	PT for 4 weeks	Mason	2-4
Account Manager	Account Manager	Organizational Support	PT for 12 weeks	Consultant	1
Executive Sponsor	Executive Sponsor	Organizational Support	PT for 12 Weeks	Consultant	1

J: Subcontractor Credentials

For RFP GMU-1700-21, Datastrong does not anticipate subcontracting work under this RFP unless Mason requests additional or consolidated tasks from their future professional services initiatives. Datastrong's priority will be to deploy our direct employees in support of Mason projects. We may call upon our deep network of 1099 resources for specific project skills depending on scope, timelines, and priorities.

Cost of Services:

Please provide hourly pricing for any and all rates associated with consulting, planning, install, implementation, development project management,

Included below are the labor categories, rates, and rate escalations related to the competencies we intend to provide to George Mason. Labor category minimum education requirements and functional responsibilities will be included in Appendix A.

Labor Category	Year Experience	CY 2021	CY 2022	CY 2023	CY 2024	CY 2025	CY 2026
Account Manager	>10	\$ 187.30	\$ 191.05	\$ 194.87	\$ 198.77	\$ 202.74	\$ 206.80
Principal/Architect	>7	\$ 164.61	\$ 167.90	\$ 171.26	\$ 174.68	\$ 178.17	\$ 181.74
Project Manager	>5	\$ 153.26	\$ 156.33	\$ 159.45	\$ 162.64	\$ 165.90	\$ 169.21
Senior Consultant	4-7	\$ 153.26	\$ 156.33	\$ 159.45	\$ 162.64	\$ 165.90	\$ 169.21
Consultant	2-4	\$ 141.90	\$ 144.74	\$ 147.63	\$ 150.58	\$ 153.60	\$ 156.67
Jr. Consultant	0-2	\$ 119.21	\$ 121.60	\$ 124.03	\$ 126.51	\$ 129.04	\$ 131.62
Business Process Reengineering Specialist I	0-3	\$ 78.63	\$ 80.20	\$ 81.80	\$ 83.44	\$ 85.11	\$ 86.81
Business Process Reengineering Specialist II	>3	\$ 97.74	\$ 99.69	\$ 101.69	\$ 103.72	\$ 105.80	\$ 107.91
Business Process Reengineering Specialist III	>6	\$ 142.06	\$ 144.90	\$ 147.79	\$ 150.75	\$ 153.77	\$ 156.84
Business Process Reengineering Specialist IV	>10	\$ 165.06	\$ 168.36	\$ 171.72	\$ 175.16	\$ 178.66	\$ 182.23
Configuration Specialist I	0-3	\$ 60.33	\$ 61.54	\$ 62.77	\$ 64.03	\$ 65.31	\$ 66.61
Configuration Specialist II	>3	\$ 92.43	\$ 94.28	\$ 96.16	\$ 98.09	\$ 100.05	\$ 102.05
Configuration Specialist III	>6	\$ 130.63	\$ 133.24	\$ 135.91	\$ 138.62	\$ 141.40	\$ 144.22
Configuration Specialist IV	>10	\$ 150.13	\$ 153.13	\$ 156.19	\$ 159.32	\$ 162.50	\$ 165.75
Database Administrator I	0-3	\$ 61.65	\$ 62.88	\$ 64.14	\$ 65.42	\$ 66.73	\$ 68.07
Database Administrator II	>3	\$ 105.92	\$ 108.04	\$ 110.20	\$ 112.41	\$ 114.66	\$ 116.95
Deployment Specialist I	0-3	\$ 75.75	\$ 77.27	\$ 78.81	\$ 80.39	\$ 82.00	\$ 83.64
Deployment Specialist II	>3	\$ 93.77	\$ 95.64	\$ 97.55	\$ 99.51	\$ 101.50	\$ 103.53
Deployment Specialist III	>6	\$ 123.62	\$ 126.10	\$ 128.62	\$ 131.19	\$ 133.82	\$ 136.49
Developer I	0-3	\$ 60.90	\$ 62.12	\$ 63.36	\$ 64.62	\$ 65.92	\$ 67.24
Developer II	>3	\$ 105.51	\$ 107.62	\$ 109.77	\$ 111.96	\$ 114.20	\$ 116.49
Developer III	>6	\$ 129.24	\$ 131.82	\$ 134.46	\$ 137.15	\$ 139.89	\$ 142.69
Developer IV	>10	\$ 150.63	\$ 153.64	\$ 156.71	\$ 159.85	\$ 163.05	\$ 166.31
Developer V	>12	\$ 164.54	\$ 167.83	\$ 171.19	\$ 174.61	\$ 178.11	\$ 181.67
Developer VI	>14	\$ 182.25	\$ 185.90	\$ 189.62	\$ 193.41	\$ 197.28	\$ 201.22
Functional Analyst I	0-3	\$ 61.34	\$ 62.56	\$ 63.81	\$ 65.09	\$ 66.39	\$ 67.72
Functional Analyst II	>3	\$ 99.89	\$ 101.89	\$ 103.93	\$ 106.01	\$ 108.13	\$ 110.29
Functional Analyst III	>6	\$ 124.71	\$ 127.21	\$ 129.75	\$ 132.35	\$ 134.99	\$ 137.69
Functional Analyst IV	>10	\$ 145.65	\$ 148.57	\$ 151.54	\$ 154.57	\$ 157.66	\$ 160.81
Integration Solution Architect I	0-3	\$ 77.34	\$ 78.89	\$ 80.47	\$ 82.08	\$ 83.72	\$ 85.39
Integration Solution Architect II	>3	\$ 102.04	\$ 104.08	\$ 106.16	\$ 108.28	\$ 110.45	\$ 112.66
Integration Solution Architect III	>6	\$ 137.66	\$ 140.42	\$ 143.23	\$ 146.09	\$ 149.01	\$ 151.99
System Administrator I	0-3	\$ 64.91	\$ 66.21	\$ 67.53	\$ 68.89	\$ 70.26	\$ 71.67
System Administrator II	>3	\$ 88.73	\$ 90.50	\$ 92.31	\$ 94.16	\$ 96.04	\$ 97.96

Labor Category	Year Experience	CY 2021	CY 2022	CY 2023	CY 2024	CY 2025	CY 2026
System Administrator III	>6	\$ 107.11	\$ 109.25	\$ 111.43	\$ 113.66	\$ 115.94	\$ 118.25
System Administrator IV	>10	\$ 156.43	\$ 159.56	\$ 162.75	\$ 166.01	\$ 169.33	\$ 172.71
Team Lead I	0-3	\$ 60.72	\$ 61.93	\$ 63.17	\$ 64.44	\$ 65.72	\$ 67.04
Team Lead II	>3	\$ 99.60	\$ 101.59	\$ 103.62	\$ 105.70	\$ 107.81	\$ 109.97
Team Lead III	>6	\$ 134.17	\$ 136.86	\$ 139.59	\$ 142.39	\$ 145.23	\$ 148.14
Team Lead IV	>10	\$ 172.51	\$ 175.96	\$ 179.48	\$ 183.07	\$ 186.73	\$ 190.46
Technical Architect I	0-3	\$ 60.72	\$ 61.93	\$ 63.17	\$ 64.44	\$ 65.72	\$ 67.04
Technical Architect II	>3	\$ 101.07	\$ 103.10	\$ 105.16	\$ 107.26	\$ 109.41	\$ 111.59
Technical Architect III	>6	\$ 148.60	\$ 151.57	\$ 154.60	\$ 157.70	\$ 160.85	\$ 164.07
Technical Architect IV	>10	\$ 176.25	\$ 179.78	\$ 183.37	\$ 187.04	\$ 190.78	\$ 194.60
Training Specialist I	0-3	\$ 61.03	\$ 62.25	\$ 63.50	\$ 64.77	\$ 66.06	\$ 67.39
Training Specialist II	>3	\$ 96.92	\$ 98.86	\$ 100.84	\$ 102.86	\$ 104.91	\$ 107.01
Training Specialist III	>6	\$ 116.11	\$ 118.43	\$ 120.80	\$ 123.21	\$ 125.68	\$ 128.19
Training Specialist IV	>10	\$ 159.39	\$ 162.58	\$ 165.83	\$ 169.15	\$ 172.53	\$ 175.98

Travel:

Datastrong confirms that travel expenses will be reimbursed at cost with no markup and may not exceed Commonwealth of Virginia expense guidelines and per diem rates which are available here:

<https://fiscal.gmu.edu/travel/learn-about-meals-per-diem-rates/>

Training:

Datastrong training will be delivered on an hourly basis – there is no catalogue of prebuilt training Datastrong plans to leverage at George Mason.

Recent Project Cost Illustration: (Last 10)

Project Type	Original estimated hours	Final Hours Billed	Original Project Cost	Final Project Cost
Business process re-engineering: Assessment of impact of analytics automation in order to reduce man hours spent manually producing content in order to rationalize investment and prioritize order of automation	981.00	960.00	\$ 139,160.00	\$ 136,160.00
Enterprise data integration support services	1,308.00	1,222.00	\$ 156,319.08	\$ 146,089.38
Enterprise analytics support services	1,812.00	1,785.00	\$ 236,725.72	\$ 233,146.36
Requirements management/scrums support	968.00	941.00	\$ 121,968.00	\$ 118,566.00
Business requirements development	1,376.00	1,384.00	\$ 182,045.00	\$ 182,964.80
Salesforce automation development	2,301.00	1,967.00	\$ 286,445.64	\$ 244,821.15
Data product development in support of Pharmaceutical marketing	822.00	819.00	\$ 114,669.00	\$ 114,250.50
MicroStrategy analytics development support	514.00	512.00	\$ 78,056.04	\$ 77,752.32
Data visualization project using Tableau	880.00	646.25	\$ 138,800.00	\$ 102,221.25

Project Type	Original estimated hours	Final Hours Billed	Original Project Cost	Final Project Cost
Data modeling, architecture, and integration design services	2,080.00	2,101.00	\$ 298,480.00	\$ 301,493.50

References:

Reference 1: [Reference Letter Redacted]

Reference 2: Reference Letter Redacted

Reference 3: Reference Letter Redacted

Sample Sales Report:

Included below are the list of fields and the description of the content that would be presented on a Sales Report to George Mason:

Column	Description
Year of Service	Year in which Services were delivered to George Mason
Month of Service	Month in which services were delivered to George Mason
PO Number	The George Mason Purchase order number associated with the services delivered
Project	The name of the project associated with the services delivered
Resource	The name of the resource delivering services to George Mason
GMU Rate	The hourly rate for the resource delivering services to George Mason
Budgeted Hours	The hours budgeted for the Year and Month of service for the resource on the project
Actual Hours	The actual hours delivered for the Year and Month of service for the resource on the project
Budget Cost	The budgeted cost associated with delivering services in the Year and Month for the resource on the project
Actual Cost	The actual cost associated with delivering services in the Year and Month for the resource on the project
Project to Date Budgeted Hours	The budgeted hours from project start through the Year and Month for the resource on the project
Project to Date Actual Hours	The actual hours from project start through the Year and Month for the resource on the project
Project to Date Budgeted Cost	The budgeted cost from project start through the Year and Month for the resource on the project
Project to Date Actual Cost	The actual cost from project start through the Year and Month for the resource on the project
Total Project Hours Budgeted	The Total budget of hours for the resource on the project
Total Remaining Project Hours	The Remaining budget of hours for the resource on the project as of the Year and Month
Total Budget	The Total budget of dollars for the resource on the project
Remaining Budget	The Remaining budget of dollars for the resource on the project as of the Year and Month

Appendix A: Labor Category Descriptions

Labor Category	Years of Experience	Minimum Education Required	Functional Responsibilities
Account Manager	>10	B.A. or B.S. in Engineering, Mathematics, Computer Science, Operations Research, Economics, Finance, Business.	An account manager provides strong executive level management and direction and has served in this position for several years and possesses a broad understanding of the client's industry. An account manager also has an extensive set of skills to solve the client's problems and help the customer visualize future state goals. This position serves in an advisory capacity, providing members of the project team and the client organization a level of quality review to help guide the project to remain on schedule and within budget while providing management and technical review, industry insight, issue resolution.
Architect	>7	B.A. or B.S. in Engineering, Mathematics, Computer Science, Operations Research, Economics, Finance, Business.	Designs and develops complex solutions for clients using specific technical expertise. Work includes application development, infrastructure planning, and system integration activities. Focuses on the delivery of engagement results to the client; may require involvement in several engagements simultaneously and the coordination of other consultants involved in a specific project phase.
Project Manager	>5	B.A. or B.S. in Engineering, Mathematics, Computer Science, Operations Research, Economics, Finance, Business.	Project Managers have experience managing personnel from various functional areas, both technical and non-technical, including both in-house personnel and outside contractors. Over 3 years of experience managing or leading Business Intelligence Projects. Functional Responsibility: A Project Manager serves as the overall leader responsible for successful execution of project objectives. The Project Manager works closely with the Program Manager (if any), the Government's Contracting Officer's Representative (COR), other government management personnel, and customer agency representatives. The PM has overall responsibility for project/task planning, determination of costs, assigning/scheduling resources, and ensuring a high quality of work. This work includes the selection/motivation/evaluation of team members, definition of budgets and schedules, monitoring of schedules and budgets, and keeping the project on track. The PM is responsible for clear and efficient communication with all levels of Government management personnel (e.g. CIO's), other contract personnel, technical stakeholders (e.g. Data Warehousing Managers, IT personnel), and customer agency representatives (e.g. system users).
Senior Consultant	4-7	B.A. or B.S. in Engineering, Mathematics, Computer Science, Operations Research, Economics, Finance, Business.	Work includes application development, infrastructure planning, and system integration activities. Plans the activities and resource requirements of assigned phases of an engagement(s) which impact a segment of the client's business; focuses on the delivery of engagement results to the client; may require involvement in several engagements simultaneously and the coordination of other consultants involved in a specific project phase.

Labor Category	Years of Experience	Minimum Education Required	Functional Responsibilities
Consultant	2-4	B.A. or B.S. in Engineering, Mathematics, Computer Science, Operations Research, Economics, Finance, Business.	A consultant should have, at a minimum, in depth knowledge of design, coding and debugging of programs on standard systems as well as the practical application of business system analysis. A consultant typically contributes to the functional and technical specifications for development of a discrete project deliverable of moderate complexity. A consultant is typically involved with several phases of the technical systems integration (coding, testing, & documenting).
Junior Consultant	0-2	B.A. or B.S. in Engineering, Mathematics, Computer Science, Operations Research, Economics, Finance, Business.	The junior consultant typically works on client engagements in a supporting capacity (e.g. research, data collection, analysis, preparation of system documentation). This level is responsible for defined components or specific deliverables of an engagement. Interaction with the client organization is to gather or exchange information related to specific project assignments. Executes project assignments to support overall objectives of the engagement project plan; analyzes and resolves technical problems on standard systems or selected platforms. Completes all assigned engagement tasks within defined parameters; identifies roadblocks, problems or client issues which may impact the quality of the engagement product; ensures that all engagement documentation is kept in accordance with guidelines. Plans the activities and resource requirement of own portion of an engagement; focuses on the delivery of short-term results to the client; ensures that personal workflow is aligned with the engagement timetables. Performs assignments in support of the organization's overall revenue objectives, participates in the preparation of proposals and sales presentations; complies with requirements to project and maximize billable hours.
Business Process Reengineering Specialist I	0-3	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Business Process Reengineering Specialist I's support change management efforts and business process modernization projects by applying process improvement and reengineering methodologies and principles. Business Process Reengineering Specialist I's are qualified to perform such tasks as: - Assist business process redesign teams in the development of new business process architecture. - Develop teamwork plans - Design new organizational structures
Business Process Reengineering Specialist II	>3	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Business Process Reengineering Specialist II's apply process improvement and reengineering methodologies and principles to conduct change management efforts and business process modernization projects. They apply their management skills and functional expertise to lead the day-to-day operations of BPR projects. Business Process Reengineering Specialist II's are qualified to perform such tasks as: -Plan and manage the work of Business Process Reengineering teams. -Design and implement new organizational structures -Assist an organization translate its vision and strategy into core

Labor Category	Years of Experience	Minimum Education Required	Functional Responsibilities
			<p>human resources and business processes</p> <ul style="list-style-type: none"> -Lead clients through streamlining, reengineering and transforming business processes -Develop and execute project budgets.
Business Process Reengineering Specialist III	>6	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	<p>Business Process Reengineering Specialist III's apply process improvement and reengineering methodologies and principles to conduct change management efforts and business process modernization projects.</p> <p>They apply their management skills and functional expertise to lead the day-to-day operations of BPR projects. Business Process Reengineering Specialist III's are qualified to perform such tasks as:</p> <ul style="list-style-type: none"> -Plan and manage the work of Business Process Reengineering teams. -Design and implement new organizational structures -Assist an organization translate its vision and strategy into core human resources and business processes -Lead clients through streamlining, reengineering and transforming business processes -Develop and execute project budgets.
Business Process Reengineering Specialist IV	>10	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	<p>Business Process Reengineering Specialist IV's apply process improvement and reengineering methodologies and principles to conduct change management efforts and business process modernization projects.</p> <p>They apply their broad management skills and functional expertise to lead complex BPR projects. Business Process Reengineering Specialist IV's are qualified to perform such tasks as:</p> <ul style="list-style-type: none"> -Lead clients through streamlining, reengineering and transforming business processes -Work with client executives to facilitate organizational change programs and realize business goals -Provide group facilitation, interviewing, training, and provides additional forms of knowledge transfer -Serve as key coordinator between multiple project teams for enterprise-wide integration of reengineering efforts -Provide daily supervision and direction to the Business Process Reengineering team members.

Labor Category	Years of Experience	Minimum Education Required	Functional Responsibilities
Configuration Specialist I	0-3	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Configuration Specialist configures IT equipment and maintains records of configuration, parts specifications, receiving documents and other related information, and is qualified to perform such tasks as: -Log, tack and maintain changes against system baseline -Distribute all changed packages and components resulting from a Configuration Change Action -Train personnel on Configuration Management policies and procedures -Support development and configuration staff with change status requirements and deadlines.
Configuration Specialist II	>3	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Configuration Specialist configures IT equipment and maintains records of configuration, parts specifications, receiving documents and other related information, and is qualified to perform such tasks as: -Log, tack and maintain changes against system baseline -Distribute all changed packages and components resulting from a Configuration Change Action -Train personnel on Configuration Management policies and procedures -Support development and configuration staff with change status requirements and deadlines.
Configuration Specialist III	>6	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Configuration Specialist configures IT equipment and maintains records of configuration, parts specifications, receiving documents and other related information, and is qualified to perform such tasks as: -Log, tack and maintain changes against system baseline -Distribute all changed packages and components resulting from a Configuration Change Action -Train personnel on Configuration Management policies and procedures -Support development and configuration staff with change status requirements and deadlines.
Configuration Specialist IV	>10	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Configuration Specialist configures IT equipment and maintains records of configuration, parts specifications, receiving documents and other related information, and is qualified to perform such tasks as: -Log, tack and maintain changes against system baseline -Distribute all changed packages and components resulting from a Configuration Change Action -Train personnel on Configuration Management policies and procedures -Support development and configuration staff with change status requirements and deadlines.

Labor Category	Years of Experience	Minimum Education Required	Functional Responsibilities
Database Administrator I	0-3	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Database Administrators applies technical expertise in the use and configuration of DBMS and is qualified to perform such tasks as: -Develop functional and technical database designs -Define data and database requirements based on overall information systems requirements -Evaluate and recommend available DBMS products to support validated user requirements. -Define file organization, indexing methods, and security procedures for specific user applications -Assist in project budget preparation
Database Administrator II	>3	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Database Administrators applies technical expertise in the use and configuration of DBMS and is qualified to perform such tasks as: -Develop functional and technical database designs -Define data and database requirements based on overall information systems requirements -Evaluate and recommend available DBMS products to support validated user requirements. -Define file organization, indexing methods, and security procedures for specific user applications -Assist in project budget preparation
Deployment Specialist I	0-3	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Deployment specialists deploy application to users using web-based training and on-site support. Additional Responsibilities include: -Work with functional lead to learn applications to an "expert" level -Work with deployment site teams at overseas locations to successfully train and deploy ILMS -Develop a strong functional knowledge of the application and the clients we deploy to so that the resource can integrate into the existing deployment team -Travel on deployments as necessary to facilitate training classes and provide onsite support -Assist production support and change request teams with functional design and testing -Assist with site deployment and communication activities including attending meetings, participating in change management efforts, and updating and maintaining training materials -Raise any issues identified while on-site to appropriate team lead
Deployment Specialist II	>3	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Deployment specialists deploy application to users using web-based training and on-site support. Additional Responsibilities include: -Work with functional lead to learn applications to an "expert" level -Work with deployment site teams at overseas locations to successfully train and deploy ILMS -Develop a strong functional knowledge of the application and the clients we deploy to so that the resource can integrate into the existing deployment team -Travel on deployments as necessary to facilitate training classes and provide onsite support -Assist production support and change request teams with functional design and testing

Labor Category	Years of Experience	Minimum Education Required	Functional Responsibilities
			<ul style="list-style-type: none"> -Assist with site deployment and communication activities including attending meetings, participating in change management efforts, and updating and maintaining training materials -Raise any issues identified while on-site to appropriate team lead
Deployment Specialist III	>6	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	<p>Deployment specialists deploy application to users using web-based training and on-site support. Additional Responsibilities include:</p> <ul style="list-style-type: none"> -Work with functional lead to learn applications to an “expert” level -Work with deployment site teams at overseas locations to successfully train and deploy ILMS -Develop a strong functional knowledge of the application and the clients we deploy to so that the resource can integrate into the existing deployment team -Travel on deployments as necessary to facilitate training classes and provide onsite support -Assist production support and change request teams with functional design and testing -Assist with site deployment and communication activities including attending meetings, participating in change management efforts, and updating and maintaining training materials -Raise any issues identified while on-site to appropriate team lead
Developer I	0-3	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	<p>Developer I’s modify software based upon software specifications and designs:</p> <ul style="list-style-type: none"> -Use sound software engineering principles to develop and test incremental code that is modifiable, efficient, reliable, and understandable -Design code and test functional components of information systems according to project specifications -Develop project documentation and user training materials according to program specifications -Produce database extracts.
Developer II	>3	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	<p>Developer II’s modify software based upon software specifications and designs:</p> <ul style="list-style-type: none"> -Use sound software engineering principles to develop and test incremental code that is modifiable, efficient, reliable, and understandable -Design code and test functional components of information systems according to project specifications -Develop project documentation and user training materials according to program specifications -Produce database extracts.

Labor Category	Years of Experience	Minimum Education Required	Functional Responsibilities
Developer III	>6	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Developer III's design and build software based upon software specifications and designs: -Use sound software engineering principles to develop and test code that is modifiable, efficient, reliable, and understandable -Design code and test functional components of information systems according to project specifications -Design and manage databases -Define information systems requirements -Develop project documentation and user training materials according to program specifications -Assist in project budget preparation.
Developer IV	>10	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Developer IV's design and build software based upon software specifications and designs: -Plan and manage the work of information systems project teams. -Use sound software engineering principles to develop and test code that is modifiable, efficient, reliable, and understandable -Design code and test functional components of information systems according to project specifications -Design and manage databases -Define information systems requirements -Develop project documentation and user training materials according to program specifications -Develop and execute project budgets.
Developer V	>12	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Developer V's design and build software based upon software specifications and designs: -Plan and manage the work of information systems project teams. -Use sound software engineering principles to develop and test code that is modifiable, efficient, reliable, and understandable -Design code and test functional components of information systems according to project specifications -Design and manage databases -Define information systems requirements -Develop project documentation and user training materials according to program specifications -Develop and execute project budgets.
Developer VI	>14	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Developer VI's design and build software based upon software specifications and designs: -Plan and manage the work of information systems project teams. -Use sound software engineering principles to develop and test code that is modifiable, efficient, reliable, and understandable -Design code and test functional components of information systems according to project specifications -Design and manage databases -Define information systems requirements -Develop project documentation and user training materials according to program specifications -Develop and execute project budgets.

Labor Category	Years of Experience	Minimum Education Required	Functional Responsibilities
Functional Analyst I	0-3	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Functional Analyst I's apply their strong analytical skills to assist in implementing business solutions. The Functional Analyst I is qualified to perform tasks such as: -Document an organization's current business process flows -Identify and document functional requirements for information systems -Provide technical support to software development teams -Perform program management support tasks, such as status reporting and work plan maintenance.
Functional Analyst II	>3	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Functional Analyst II's apply their strong analytical skills to assist in implementing business solutions. The Functional Analyst II is qualified to perform tasks such as: -Develop functional and technical information system designs -Supervise Functional Analysts I and Financial Configuration Specialists and Programmers in the development of software designs, computer programming, system testing or training curricula. -Lead business process redesign teams in the development of new business process architectures -Develop team work plans -Perform workflow analyses -Define information systems requirements -Assist in project budget preparation
Functional Analyst III	>6	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Functional Analyst III's apply their strong analytical skills to assist in implementing business solutions. The Functional Analyst III is qualified to perform tasks such as: -Develop functional and technical information systems design -Supervise Functional Analysts I, Financial Configuration Specialists I and Programmers in the development of software designs, computer programming, system testing or training curricula. -Lead business process redesign teams in the development of new business process architectures. -Perform workflow analyses -Define information systems requirements -Assist in project budget preparation
Functional Analyst IV	>10	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Functional Analyst IV's apply their strong analytical skills to assist in implementing business solutions. The Functional Analyst IV is qualified to perform tasks such as: -Plan and manage the work of information systems teams -Design and implement new organization structures -Assist an organization translate its vision and strategy into core human resource and business processes -Lead clients through streamlining, reengineering and transforming business processes -Develop and execute project budgets

Labor Category	Years of Experience	Minimum Education Required	Functional Responsibilities
Integration Solution Architect I	0-3	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Integration Solution Architects are responsible for overall system requirements and development of all components of the solution and are qualified to perform such task as: -Determine and identify high level functional and technical requirements based on interactions with the user community and knowledge of the enterprise architecture. -Design architecture to include software, hardware and communications to support the requirements as well as provide for present and future cross-functional requirements and interfaces. -Identify, assess, and present options for meeting functional and technical requirements. -Plan and manage the work of information systems project teams
Integration Solution Architect II	>3	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Integration Solution Designer I's are responsible for system requirements and development of components of the solution and are qualified to perform such task as: -Support the identification of high level functional and technical requirements based on interactions with the user community and knowledge of the enterprise architecture. -Design architecture components to include software, hardware and communications to support the requirements as well as provide for present and future cross-functional requirements and interfaces. -Identify and assess options for meeting functional and technical requirements.
Integration Solution Architect III	>6	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Integration Solution Designer II's are responsible for system requirements and development of components of the solution and are qualified to perform such task as: -Support the identification of high level functional and technical requirements based on interactions with the user community and knowledge of the enterprise architecture. -Design architecture components to include software, hardware and communications to support the requirements as well as provide for present and future cross-functional requirements and interfaces. -Identify and assess options for meeting functional and technical requirements. -Develop team work plans.
System Administrator I	0-3	Associates Degree in Business, Information Systems, or Related Engineering or Related or 2 years related Experience	Systems Administrator I's are responsible for activities related to system administration and are qualified to perform such tasks as: -Perform software installations and operating system upgrades -Install, configure and maintain the operating systems on workstations and servers -Monitor and tune system parameters to achieve optimum performance -Ensure data integrity of server and workstations by implementing disaster recovery procedures -Implements standard operating procedures -Provide assistance to users in accessing and using business systems

Labor Category	Years of Experience	Minimum Education Required	Functional Responsibilities
System Administrator II	>3	Associates Degree in Business, Information Systems, or Related Engineering or Related or 2 years related Experience	Systems Administrator II's are responsible for activities related to system administration and are qualified to perform such tasks as: -Perform software installations and operating system upgrades -Install, configure and maintain the operating systems on workstations and servers -Monitor and tune system parameters to achieve optimum performance -Ensure data integrity of server and workstations by implementing disaster recovery procedures -Implements standard operating procedures -Provide assistance to users in accessing and using business systems -Maintain comprehensive database of hardware and software configuration and supporting documentation
System Administrator III	>6	Associates Degree in Business, Information Systems, or Related Engineering or Related or 2 years related Experience	Systems Administrator III's are responsible for activities related to system administration and are qualified to perform such tasks as: -Perform software installations and operating system upgrades -Install, configure and maintain the operating systems on workstations and servers -Monitor and tune system parameters to achieve optimum performance -Ensure data integrity of server and workstations by implementing disaster recovery procedures -Implements standard operating procedures -Provide assistance to users in accessing and using business systems -Maintain comprehensive database of hardware and software configuration and supporting documentation -Provides supervision and assignments to System Administrators.
System Administrator IV	>10	Associates Degree in Business, Information Systems, or Related Engineering or Related or 2 years related Experience	Systems Administrator IV's are responsible for activities related to system administration and are qualified to perform such tasks as: -Perform software installations and operating system upgrades -Install, configure and maintain the operating systems on workstations and servers -Monitor and tune system parameters to achieve optimum performance -Ensure data integrity of server and workstations by implementing disaster recovery procedures -Implements standard operating procedures -Provide assistance to users in accessing and using business systems -Maintain comprehensive database of hardware and software configuration and supporting documentation -Provides supervision and assignments to System Administrators.

Labor Category	Years of Experience	Minimum Education Required	Functional Responsibilities
Team Lead I	0-3	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Team Lead I's oversee the design, build, and test phases of IT solutions which incorporate technical infrastructure, hardware, and software and are qualified to perform such tasks as: -Defines necessary interfaces between enterprise solution applications and legacy IT environment -Supports all program/project planning and milestone development -Supports business case analysis and identification of alternative solutions and resulting business impacts -Provides ongoing supervision and direction to staff -Performs as part of long-term application management support team doing support, break-fix, and minor enhancement work
Team Lead II	>3	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Team Lead II's oversee the design, build, and test phases of IT solutions which incorporate technical infrastructure, hardware, and software and are qualified to perform such tasks as: -Defines necessary interfaces between enterprise solution applications and legacy IT environment -Supports all program/project planning and milestone development -Supports business case analysis and identification of alternative solutions and resulting business impacts -Provides ongoing supervision and direction to staff -Performs as part of long-term application management support team doing support, break-fix, and minor enhancement work -Develop and execute project budgets
Team Lead III	>6	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Team Lead III's oversee the design, build, and test phases of IT solutions which incorporate technical infrastructure, hardware, and software and are qualified to perform such tasks as: -Defines necessary interfaces between enterprise solution applications and legacy IT environment -Supports all program/project planning and milestone development -Supports business case analysis and identification of alternative solutions and resulting business impacts -Provides ongoing supervision and direction to staff -Performs as part of long-term application management support team doing support, break-fix, and minor enhancement work -Develop and execute project budgets
Team Lead IV	>10	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Team Lead IV's oversee the design, build, and test phases of IT solutions which incorporate technical infrastructure, hardware, and software and are qualified to perform such tasks as: -Defines necessary interfaces between enterprise solution applications and legacy IT environment -Develops program/project plans and defines associated milestones -Supports business case analysis and identification of alternative solutions and resulting business impacts -Provides ongoing supervision and direction to staff -Performs as part of long-term application management support team doing support, break-fix, and minor enhancement work -Develop and execute project budgets

Labor Category	Years of Experience	Minimum Education Required	Functional Responsibilities
Technical Architect I	0-3	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Technical Architects identify necessary interfaces between complex enterprise solution applications and legacy IT environment and are qualified to perform such tasks as: -Design architecture to include software, hardware, and communications to support total requirements as well as provide for present and future cross-functional requirements and interfaces -Provide complex business case analysis and identification of alternative solutions and resulting business impacts. -Establish system information requirements in developing enterprise-wide or large-scale information systems -Evaluate analytically and systematically problems of work flows, organization, and planning and develops appropriate corrective action -Define information systems requirements.
Technical Architect II	>3	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Technical Architects identify necessary interfaces between complex enterprise solution applications and legacy IT environment and are qualified to perform such tasks as: -Design architecture to include software, hardware, and communications to support total requirements as well as provide for present and future cross-functional requirements and interfaces -Provide complex business case analysis and identification of alternative solutions and resulting business impacts. -Establish system information requirements in developing enterprise-wide or large-scale information systems -Evaluate analytically and systematically problems of work flows, organization, and planning and develops appropriate corrective action -Define information systems requirements.
Technical Architect III	>6	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Technical Architects identify necessary interfaces between complex enterprise solution applications and legacy IT environment and are qualified to perform such tasks as: -Design architecture to include software, hardware, and communications to support total requirements as well as provide for present and future cross-functional requirements and interfaces -Provide complex business case analysis and identification of alternative solutions and resulting business impacts. -Establish system information requirements in developing enterprise-wide or large-scale information systems -Evaluate analytically and systematically problems of work flows, organization, and planning and develops appropriate corrective action -Define information systems requirements.
Technical Architect IV	>10	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Technical Architects identify necessary interfaces between complex enterprise solution applications and legacy IT environment and are qualified to perform such tasks as: -Design architecture to include software, hardware, and communications to support total requirements as well as provide for present and future cross-functional requirements and interfaces -Provide complex business case analysis and identification of alternative solutions and resulting business impacts. -Establish system information requirements in developing enterprise-wide or large-scale information systems

Labor Category	Years of Experience	Minimum Education Required	Functional Responsibilities
			<ul style="list-style-type: none"> -Evaluate analytically and systematically problems of work flows, organization, and planning and develops appropriate corrective action -Define information systems requirements.
Training Specialist I	0-3	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Training Specialists serve as lead instructors in delivering training programs and are qualified to perform such tasks as: <ul style="list-style-type: none"> -Prepare training catalogs -Develop instructor materials, such as course outlines, background material, and training aids -Develop student materials, such as course manuals workbooks, handouts, completion certificates, and course critique forms -Conduct formal classroom courses, workshops seminars, and computer-based training
Training Specialist II	>3	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Training Specialists serve as lead instructors in delivering training programs and are qualified to perform such tasks as: <ul style="list-style-type: none"> -Prepare training catalogs -Develop instructor materials, such as course outlines, background material, and training aids -Develop student materials, such as course manuals workbooks, handouts, completion certificates, and course critique forms -Conduct formal classroom courses, workshops seminars, and computer-based training
Training Specialist III	>6	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Training Specialists serve as lead instructors in delivering training programs and are qualified to perform such tasks as: <ul style="list-style-type: none"> -Prepare training catalogs -Develop instructor materials, such as course outlines, background material, and training aids -Develop student materials, such as course manuals workbooks, handouts, completion certificates, and course critique forms -Conduct formal classroom courses, workshops seminars, and computer-based training
Training Specialist IV	>10	BA or BS in Business, Information Systems, or Related Engineering or Related or 3 years related Experience	Training Specialists serve as lead instructors in delivering training programs and are qualified to perform such tasks as: <ul style="list-style-type: none"> -Prepare training catalogs -Develop instructor materials, such as course outlines, background material, and training aids -Develop student materials, such as course manuals workbooks, handouts, completion certificates, and course critique forms -Conduct formal classroom courses, workshops seminars, and computer-based training

Appendix B: Additional Case Studies

[Case Study content Redacted]