PB&J Sample Document Guide

For this sample, we used a recent solicitation for an Agile Software Development Services acquisition. We analyzed the RFP to develop an outline for the proposal, which we pasted into the PB&J input template:

RFP Section L:

Quoters shall provide an overview of the proposed solution to deliver services as listed in the Scope of Services for the Blanket Purchase Agreement.
The proposed solution should (1) meet one or more of the Agile styles in alignment with the principles discussed in the United States Digital Services Playbook (https://playbook.cio.gov/), (2) be scalable to an enterprise agency-wide level, (3) explain all the tools, management practices, and sizing the vendor uses with the proposed methodology, and (4) clearly demonstrate the roles, responsibilities, and actions that will be taken to provide continuous release of a functional product. The solution should also address:

- Your organization's approach to the composition of Agile teams.
- Your organization's techniques for release management.
  - Within the release management discussion provided by your firm, your methodology for release planning, testing, applying lessons learned, configuration management and project management should be discussed.
- Your organization's approach to stakeholder and end user engagement.
- Your organization's approach to Human Centered Design and "DevSecOps."

PB&J Inputs (subset of total outline shown for sample):

#	Outline
1	Application scalability to an enterprise agency-wide level
2	Techniques for Release Management
3	Approach to Human Centered Design

The outline template can include your actual proposal outline, or even just a list of topics in the RFP that you want material on.

We then uploaded the following files into the PB&J Engine:

1. The outline template
2. The Statement of Work document
3. The RFQ instructions document

For all PB&Js, there will be two pages of content for each outline section. The content will include ideas for Solution Approaches, Customer Benefits, Graphics, and Add-on Solution Features. The following pages contain the output created by PB&J for the above outline and RFP documents.

Application scalability to an enterprise agency-wide level

Ideas for Solution Approaches and Understanding

- Implementing digital services and Collaboration Workflow systems using cloud-based or SaaS platforms using microservices architecture, automated testing, and continuous integration and deployment for efficient, secure operations, application consolidation, and cost savings.
- Prioritizing improved analytics and data management capabilities through the adoption of containerization and microservices solutions, streamlined application delivery, conversion of legacy platforms, and embedding security in the code development processes.
- Enhancing customer engagement and user experience with high business values by creating partnerships with industry leaders, endorsing agency-wide agile methodologies, assisting TSA program offices with various software development projects in alignment with the federal government's strategic approaches.
- Collaborating seamlessly with federal employees, product owners, government project managers, and other contractors to ensure parallel development efforts comply with applicable TSA and DHS Enterprise Architecture and security standards in all activities.

Ideas for Customer Benefits

- Implementing digital services and cloud-based workflow systems addresses the customer challenge of the need for customized mission support systems and software solutions, facilitating costs savings and swift operations.
- With an emphasis on enhanced data management and analytics, the Approach significantly aligns with customer's objectives to improve business intelligence platforms, providing an answer to the challenge of data operation strategy execution.
- A commitment to customer partnership, assists in reaching the aim of benefiting from industry best practices and innovative solutions, helping tackle the challenge of modernizing legacy applications and systems.

Ideas for Graphics and Tables

- Graphic: "Diagram illustrating the process of implementing digital services and Collaboration Workflow systems incorporating cloud-based or SaaS platforms, microservices architecture, automated testing, and continuous integration and deployment."
- Table: "Listing priority of improved analytics and data management capabilities, with sub-entries detailing how elements like containerization, microservices solutions, streamlined application delivery and other factors are involved."
- Graphic: "Flowchart showing the process of collaboration among federal employees, product owners, government project managers, and other contractors to ensure compliance with applicable TSA and DHS Enterprise Architecture and security standards."

Application scalability to an enterprise agency-wide level

Ideas for Add-on Solution Features

- **Usage of Real-time Analytics and Reporting Tools**
  This feature will enhance the scalability by providing real-time insights about the system's performance, user engagement, and potential bottlenecks. It will allow TSA to quickly identify and address issues, leading to improved system performance and user experience.

— Tools like Google Analytics, Apache Kafka, and AWS Kinesis can be used for real-time analytics and reporting.

- **Implementation of Advanced Load Balancing Strategies**
  Effective load balancing strategies will ensure optimal distribution of network traffic, ensuring each user gets the best possible experience. This will be particularly beneficial as the system scales up to enterprise-wide usage, maintaining high performance and availability.

— Load balancer solutions like AWS Elastic Load Balancer or F5 BIG-IP can be used.

- **Automated System Scaling Through Machine Learning Algorithms**
  Machine learning algorithms can predict system load based on historical data and automatically scale resources up or down as needed. This can optimize resource use, reduce costs, and ensure high performance and availability even as system usage spikes.

— Tools like Amazon SageMaker for building machine learning models and AWS Auto Scaling for automated scaling can be used.

- **Use of Container Orchestration Systems**
  Container orchestration systems allow automated deployment, scaling, management, and networking of containers. These systems can greatly simplify system scaling and maintenance.

— Container orchestration tools like Kubernetes or Docker Swarm can be used to handle these tasks.

- **Adoption of Serverless computing frameworks**
  Serverless computing allows businesses to build and run applications and services without thinking about servers. It eliminates infrastructure management tasks such as server or cluster provisioning, patching, operating system maintenance, and capacity provisioning. In this model, TSA can build applications from individual functions that are each triggered by specific events, which can scale independently.

— Tools like AWS Lambda, Google Cloud Functions, and Microsoft Azure Functions can be used for this purpose.

Techniques for Release Management

Ideas for Solution Approaches and Understanding

- Comprehensive Release Management Plan and Methodology: This combines detailing the steps and approaches for application deployment, our chosen method for release planning, and how project management integrates with this process. This methodology ensures efficient system roll out with room for revisions and contingencies, maintaining control over project scope, time, cost, and quality.
- Thorough Testing, Training, and Data Migration Approach: This encompasses our user-centered training alongside essential job aids, ensuring system sturdiness through comprehensive testing techniques and efficient data migration from on-premise to SaaS/PaaS solutions, ensuring accurate and reliable data transference.
- Robust Configuration Management and Security Measures: Highlights the configuration management process for system tracking and changes management, and emphasis on security and 508 POA&M remediation via deployment of updates/patches. Also points out the active role of a dedicated Production Support Team in application/system maintenance and support.
- Performance Measurement and Continuous Improvement: This expounds our approach towards developing a Quality Management Plan (QMP) within stipulated time-frames, tracking performance metrics/KPIs, and our culture of continuous learning for spotting trends, supporting corrective actions, and applying lessons learned.

Ideas for Customer Benefits

- "Comprehensive Release Management Plan and Methodology" directly addresses the customer objective to incorporate O&M into the agile development lifecycle and the challenge of transitioning to modern practices; the approach provides a streamlined process and integrates project management to ensure project scope, time, cost, and quality.
- Through "Thorough Testing, Training, and Data Migration Approach", the customer challenges of employee training, data migration and database restructuring are tackled; the approach ensures accurate and reliable data transfer as the systems shift to SaaS/PaaS solutions along with providing user-centered training.
- The "Robust Configuration Management and Security Measures" approach meets the TSA's challenge of security and remediation, specifically the 508 POA&M issues, as well as the goal of application/system maintenance and support, through dedicated Production Support Team and deployment of updates/patches.

Ideas for Graphics and Tables

- Table: "Steps and Approaches for Release Management": This table can detail each step in the release management plan and methodology, specify the chosen method for release planning, and highlight the integration of project management with the process.
- Graphic: "Testing, Training, and Data Migration Process": This graphic could visually outline the user-centered training process, testing techniques, and the pathway of data migration from on-premise to SaaS/PaaS solutions.
- Graphic: "Performance Measurement and Continuous Improvement Cycle": This could be a cyclic graphic demonstrating how Quality Management Plan develops, how performance is tracked, and how continuous learning leads to spotting trends and corrective actions.

Techniques for Release Management

Ideas for Add-on Solution Features

- **Automated Release Rollback: Providing a system that automatically reverts changes when disruptions or failures occur during the release**
  This would solve the problem of handling disruptions and failures during the release, avoiding downtime, maintaining system stability, and ensuring a reliable release management process without compromising service quality

— Tools such as Spinnaker by Netflix made for multi-cloud continuous delivery platform can be utilized for automated rollback capabilities

- **Environment Monitoring: Real-time visibility into the performance of the deployment environment**
  This solution safeguards the stability and reliability of the deployed systems, thereby improving the quality of software releases and reducing the chances of unexpected issues after deployment

— Monitoring tools like New Relic or Datadog provide comprehensive Application Performance Monitoring (APM) capabilities

- **Automated Documentation: A system that generates automatic documentation covering deployment details each time a release is made**
  Ensures the availability of up-to-date and accurate documentation, facilitating compliance and auditing requirements and improving traceability. This eradicates human error in missing out updating the document and saves time

— Tools like Doxygen can present source code comments as a part of the systematic documentation

- **Annotation-based Configuration Management: A system that allows for annotating configuration items and tracking these annotations over time**
  Allows for a fine-grained understanding of changes made to configurations, when these changes were made, and who made these changes. This could reduce debugging time during release failures and improve the auditability of configuration changes

— Tools like Chef or Ansible can be used for configuration management, though annotation tracking may require additional custom tooling

- **Automated Canary Releasing: Automating the practice of rolling out releases to a subset of users or servers**
  This allows for real-world testing and monitoring of the new release before full deployment. This can catch and minimize the impact of potential issues with the new release, reducing risks during the release process

— Tools like Istio, a service mesh platform, can provide automated Canary releasing capabilities

Approach to Human Centered Design

Ideas for Solution Approaches and Understanding

- Combining our expertise in Human Centered Design (HCD) with a participatory design process, we promote inclusive collaboration at all levels which includes empathizing, defining, ideation, prototyping, and testing phases. This rigorously iterative approach ensures optimized usability and user satisfaction.
- Our commitment to DevSecOps is evidenced in the secure code that forms an integral part of our continuous integration, continuous delivery (CI/CD) pipelines, enabled through a "Shift-left" approach. This front-loaded security strategy reduces time-to-market, cuts costs, eliminates security debt, ensures secure operations, and facilitates the rapid, agile adaptation needed in shifting environments and evolving user needs.
- To maintain the highest security standards while optimizing efficiency, we have automated numerous aspects of the development life-cycle, which frees up resources and reduces vulnerabilities.
- Our portfolio showcases previous design and development projects completed for various government clients, highlighting our ability to manage complex projects, ensure security, and satisfy the requirements of discerning customers.

Ideas for Customer Benefits

- The customer's challenge of customizing mission support systems and developing proprietary software solutions when none are available is addressed by our approach of combining Human Centered Design with a participatory design process, ensuring optimized usability and user satisfaction in these custom solutions.
- The customer's objective to adopt and integrate agile methodologies across the agency is met by our commitment to DevSecOps and “Shift-left” approach, allowing for rapid, agile adaptation in shifting environments and evolving user needs.
- To address the customer's challenge of ensuring the security of its operations, our approach includes maintaining the highest security standards and automating numerous aspects of the development life-cycle, significantly reducing vulnerabilities.

Ideas for Graphics and Tables

- Table: "Human Centered Design (HCD) participatory process", detailing each included phase such as empathizing, defining, ideation, prototyping, and testing along with descriptions of how these would enhance user satisfaction.
- Graphic: "Shift-left approach and Secure Continuous Integration/Continuous Delivery (CI/CD)" illustrating how this method works to reduce time-to-market, cut costs, and facilitate agile adaptation.
- Table: "Portfolio Overview" presenting data on previous projects, their complexity, incorporated security measures, and customer satisfaction outcomes.

Approach to Human Centered Design

Ideas for Add-on Solution Features

- **User Journey Mapping: Visual representation of user interactions**
  This visual tool shows every step the user takes while interacting with the application. This can help specialists understand the user's needs and enhance their experience in the future.

— Cloud-based mind-mapping tools such as Miro or MindMeister

- **Low-Fidelity Prototyping: Rapid production of potential interfaces**
  This cost-effective approach allows for the creation of interface sketches that can be shown to users to ensure that the intended design meets their needs before any coding begins. Future challenges can be mitigated by addressing any issues users might have with the interface.

— Sketching tools such as Sketch or Figma

- **Iterative Data-Driven Design: Continuous design updates based on analytics data**
  Making design decisions based on data can help enhance user experience. Implementing updates iteratively and reviewing user interaction data after each update will allow for continuous improvement.

— Analytics tools such as Google Analytics

- **Seamless User Onboarding: Simplifying initial application usage**
  By developing intuitive onboarding processes and tutorials, the customer experience when first using the application can be enhanced. This can lead to increased user adoption rates for the software.

— Onboarding toolkits such as Appcues or Userpilot

- **Personalization and Customization: Tailoring user experience based on preferences and behavior**
  By allowing the user to customize the application to their liking or by leveraging machine learning to personalize their experience based on behavior, user satisfaction can significantly increase.

— AI platforms such as TensorFlow or PyTorch