



GOVERNANCE

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EQUITABLE GROWTH, FINANCE & INSTITUTIONS INSIGHT

# GovTech Procurement Practice Note

Supported by the GovTech Global Partnership



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# Contents

<b>Acknowledgments</b>	<b>4</b>
<b>Acronyms</b>	<b>5</b>
<b>1. Executive Summary</b>	<b>7</b>
<b>2. GovTech and Procurement</b>	<b>10</b>
2.1 GovTech Procurement and Key Challenges	10
2.2 World Bank Public Procurement Principles	12
2.3. GovTech and the Procurement Process	13
<b>3. GovTech Procurement Framework</b>	<b>14</b>
3.1. STEP 1 – Technology Readiness Assessment and Gap Analysis	15
3.2. STEP 2 – Requirements Definition	21
3.3. STEP 3 – Procurement Strategy Development	27
3.4. STEP 4 – Implementation and Execution	39
3.5. STEP 5 – Ongoing Management and Technology Evolution	40
<b>4. Disruptive Technologies in Procurement</b>	<b>42</b>
<b>Bibliography</b>	<b>46</b>
<b>ANNEX I: Sample Technology Assessment Interview and Survey Questions</b>	<b>48</b>
<b>ANNEX II: e-Procurement Toolkit Templates</b>	<b>51</b>
<b>ANNEX III: Example Service-Level Agreement (SLA) Terms</b>	<b>60</b>



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# Acronyms



ACT – IAC	American Council for Technology and Industry Advisory Council
AI	Artificial Intelligence
Bank	The World Bank
BPA	Blanket Purchase Agreement
BPSCM	Budget, Performance Review, and Strategic Planning Vice Presidency Corporate and Middle Office
CapEx	Capital Expenditure
Circular Economy	A model of production and consumption that involves sharing, leasing, reusing, repairing, refurbishing, and recycling existing materials and products as long as possible
CLMS	Contract Lifecycle Management System
COTS	Commercial off-the-Shelf
CSO	Civil Society Organization
DEC	Development Economics Vice Presidency
Disruptive Technologies	Emerging technologies that result in a step change in the cost of or access to products or services or that dramatically change how people gather information, make products, or interact
DDOS	Distributed Denial-of-Service
DOS	Denial-of-Service
EAP	East Asia and Pacific
ECA	Europe and Central Asia
eConsultant2	World Bank Electronic Government Procurement solution for advertising, tendering, and contract award of consulting services
eGP	Electronic Government Procurement
EO	Economic Operator
EOI	Expression of Interest
e-Procurement	Electronic procurement, referring to the process of requisitioning, ordering, and purchasing goods and services online
ETT	The Emerging Technologies Team, which operates within the United Nations Office of Information Communications Technology
EU	European Union
FCV	Fragility, Conflict, and Violence
Framework Agreement	A contracting mechanism in which long-term contracts provide the terms and conditions under which smaller repeat purchasing orders (or call-off orders) may be issued for a defined period of time
GGP	Global Governance Practice
GIS	Geographic Information System
GP	Global Practice
GPDR	General Data Privacy Regulation

GPPD	Global Public Procurement Database
GPS	Global Positioning System
GPVP	Global Practice Vice Presidency
IaaS	Infrastructure as a Service
IBRD	International Bank for Reconstruction and Development
ICT	Information and Communications Technology
IDA	International Development Association
IoT	Internet of Things
IP	Intellectual Property
ITS	Information and Technology Solutions
KPI	Key Performance Indicator
LAC	Latin America and Caribbean
LLI	Leadership, Learning, and Innovation
LTA	Long Term Agreement
MDTF	Multi-Donor Trust Fund
MENA	Middle East and North Africa
NLP	Natural Language Processing
OICT	United Nations Office of Information and Communications Technology
OpEx	Operating Expenditure
PaaS	Platform as a Service
PII	Personal Identifying Information
PPP	Public-Private Partnership
PPSD	Project Procurement Strategy for Development
RFI	Request for Information
RFP	Request for Proposal
RPA	Robotic Process Automation
SaaS	Software-as-a-Service
SAR	South Asia
SBIR	Small Business Innovation Research: programs that encourage small businesses to engage in federal research/research and development with the potential for commercialization
SLA	Service-Level Agreement
SQL	Structured Query Language, a programming language that is typically used in relational database or data stream management systems
TCO	Total Cost of Ownership: an estimate of the total costs associated with a solution over the whole of the operational life, including final disposal
UN	United Nations
VfM	Value for Money
VPU	Vice Presidential Unit
WIPO	World Intellectual Property Organization
XSS	Cross-site scripting, a type of injection security attack in which an attacker injects data, such as a malicious script, into content from otherwise trusted websites



## Executive Summary

The objective of the GovTech Procurement Practice Note is to explore how to better procure GovTech solutions. The note provides recommendations to World Bank teams and client countries on how to assess and prepare for the application of GovTech systems. GovTech is defined as the use of technology to support government operations, service delivery and transparency. It is a mechanism for whole of government public sector modernization that places the citizen at the center of the reform (World Bank 2020). As an example, e-Government Procurement (eGP), which is discussed in detail in this paper is a specific technology sub-category of GovTech that is applied to manage and automate public procurement processes.

The GovTech procurement practice note aims to inform clients and teams for more efficient GovTech procurement by:

- Providing a five-step framework to systematically prepare and execute a procurement process for GovTech solutions.
- Identifying key requirements necessary for implementing GovTech solutions.
- Identifying procurement options for supporting client countries in different areas with the procurement of disruptive technologies.
- Utilizing best practice approaches using disruptive technologies in the public procurement area and inform the Multi-Donor Trust Fund (MDTF) and the Global Governance Practice (GGP) about opportunities for scaling.
- Offering strategic direction for the coordination of donor and government resources on disruptive technologies in procurement, providing strategies to integrate procurement reform actions using disruptive technologies.
- Introducing innovative technologies that will help government procurement systems to increase competition and identify business process efficiency and technological solutions.

Governments face several key challenges in the GovTech procurement process, which include:

1. Lack of industry knowledge about the complexities and unique characteristics of public sector operations.
2. Identification of data sources for proper current state assessment and that inform an implementation plan.
3. Interoperability requirements with a multitude of legacy systems can be complex and complicate solution options; this includes standards of data communication with both national and international systems.
4. Lack of existing technology infrastructure and resource capacity can inhibit the ability to implement certain solutions.
5. Lack of understanding of Total Cost of Ownership (TCO) or limited ability to budget for systems maintenance can inhibit sustainability of the solution.
6. Large technology providers that can move technology market innovation tend to adhere to their existing technologies and are less flexible than smaller firms in generating Proofs of Concept (PoCs) outside of their established technology infrastructure.
7. Existing technology solutions are rarely based on open source technology, which can lead to vendor-lock in and make it difficult to innovate away from proprietary solutions and technologies.

This note enables countries to confront these challenges and to assess and implement potential GovTech solutions and to fill the knowledge gap regarding a usable and replicable approach to exploring and procuring GovTech to improve government services and core information systems. A five-step GovTech procurement framework is presented that guides readers through a strategic and holistic plan for the design, procurement, and implementation of GovTech solutions. The steps in this framework are listed below and discussed in greater detail in section 3 of this document.

- **Stage 1 – Technology Assessment and Gap Analysis** - A technology readiness assessment is a systematic analysis of an organization's ability to successfully implement transformational processes or change. The assessment identifies the potential challenges that might arise when introducing new technology and any accompanying procedures, structures, and processes within a current organizational context. As part of a readiness assessment, a gap analysis is performed to identify gaps or risk areas that should be addressed and remedied before or as part of the implementation plan.

- **Stage 2 – Requirements Definition** - When defining technology requirements, there are four foundational items that should be considered – (i) Business Model (e.g. Government Owned and Operated, Government Managed Service, Public-Private Partnership (PPP)), (ii) System Implementation Approach (e.g. Software as a Service (SaaS), Commercial Off the Shelf (COTS), Custom-Build), (iii) System Security, and (iv) Hosting Solutions. After addressing each of the foundational items for consideration, a requirements document should be compiled. The document should capture all the requirements in a format that can be shared with vendors for their review and response.
- **Stage 3 – Procurement Strategy Development** - Procurement strategy development begins with market research. Market research involves the collection, recording, and evaluation of data about a specific market that offers a desired product or service. The primary purpose of market research is to inform the decision-making process, leading to a gain in competitive advantage, reduced risks, and increased productivity in a future investment. Common private sector procurement practices, such as competitive dialogue and pre-procurement market engagement, are critical to developing both the right solution requirements and procurement strategy approach. GovTech solutions may also require non-traditional procurement strategies, such as competitions, funded research programs (e.g. Small Business Innovation Research (SBIR)), or PPPs to promote new technologies and provide a government-sponsored avenue for micro, small, and medium enterprises to participate in GovTech procurement opportunities.
- **Stage 4 – Implementation and Execution** - The implementation and execution of GovTech procurement begins with the preparation of tender documents and ends with the integration of the system. After the acquisition is executed, the focus shifts to supplier performance monitoring.
- **Stage 5 – Ongoing Management and Technology Evolution** - Ongoing support, maintenance, and development is critical to long-term implementation and service offering. Contract management is therefore an important lever for a procurement strategy to ensure the long-term results of any GovTech solution. As GovTech solutions progress through the procurement process, it is recommended that solutions focus on total cost of ownership (TCO) over the life of the project and incorporate rigorous service-level agreements (SLAs) to qualify and evaluate suppliers as well as manage mission-critical service performance.



This practice note puts a further subject matter focus on Gov-Tech as a specific means to improve the public procurement process, using a template that can be applied to other functional areas and sectors. An additional focus on innovation and disruptive technologies further positions the initiative at the forefront of the digitization of government.

Disruptive technologies can be defined as emerging technologies that result in a step change in the cost of or access to products or services, or that dramatically change how people gather information, make products, or interact. Disruptive technologies will fundamentally change the way in which public procurement value is realized over the next decade. Existing supply chain delivery mechanisms will be enhanced by drone delivery (e.g., medicine to inaccessible locations), supply chains will be increasingly and securely monitored via Geo-tagging, and contracts and payments will be made transparent via blockchain. The value creation for developing countries is unlimited; however, to capture this value, countries need to understand when and how best to implement disruptive technologies based on their unique operating environments.

The procurement of disruptive technologies involves more complex approaches than traditional tendering methods. Design Thinking, which moves tasks through a complex business

problem is a method used by the Information Technology Solutions (ITS) Technology and Innovation Lab and the Global Governance Practice (GGP) procurement units collaborated to test the possibility and feasibility of using blockchain to increase the transparency and efficiency of eGP systems. Activities included problem framing and preparation of a disruptive technology research plan, followed by case analysis and delivery of a prototype solution, which can then be used to develop procurement requirements.

Procurement requirements can be as classified conformance or performance specifications. Conformance specifications are used where a thorough understanding of the requirements already exists, and there is little desire for a supplier to innovate. Performance specifications are used where the understanding of what is required in terms of outcomes can be described, but it is less certain as to the best process or method to deliver the requirements, or there is a desire for suppliers to innovate. For the procurement of disruptive technologies, which by definition are new and innovative, performance specifications should be used wherever possible to maximize the possibilities for innovation as developed in a Design Thinking approach.



# GovTech and Procurement

## 2.1 GovTech Procurement and Key Challenges

### Criticality of GovTech Procurement

Government services are the lifeblood of the citizens and businesses that fuel a country's growth. The delivery of services—or lack thereof—has a direct impact on both the economy and citizen well-being. Governments and international institutions globally have recognized the criticality of GovTech in improving government service delivery and have moved to institute both smart and resilient city programs. As ongoing digital transformation efforts work to modernize the public sector, the appropriation of public funds via procurement or open competitions is even more critical. Because citizens rightly hold digital government services to the highest standards, a robust procurement process is crucial to achieving successful outcomes. However, many governments, businesses, and regulators historically have taken a cautious approach to technology, delaying or even inhibiting its adoption out of fear of job losses and in the process, hindering entrepreneurship and the scaled development of technologies. A well thought out GovTech procurement strategy can provide the right programming and mitigation strategies to allow the government to more confidently develop and use all the leading and disruptive technologies.



## Key Challenges in GovTech Procurement

Governments face several key challenges in the GovTech procurement process. According to studies conducted in Europe by consulting firms Accenture (Masson and Margot-Duclot 2018) and PwC (PwC 2016), these include:

1. Excessive controls on spending and burdensome procurement procedures can lead to delays that inhibit the adoption of new technologies.
2. Governments may be locked into fixed, long-term contracts with obsolete technology systems that impede commercial partnerships with new software providers.
3. There is a significant digital skills gap, as recent Accenture research has found that 59 percent of agencies in Europe have trouble finding people with the right skills to support innovation.
4. Sales cycles are lengthy, as selling technology to government and the public sector requires sourcing leads, submitting proposals and organizational and financial data, and waiting for official and public comments and frequently delayed outcomes.

Additionally, there are many challenges identified in World Bank GovTech project procurement and implementations, which include:

1. Lack of industry knowledge about the complexities and unique characteristics of public sector operations.
2. Identification of data sources for proper current state assessment and that inform an implementation plan.
3. Interoperability requirements with a multitude of legacy systems can be complex and complicate solution options; this includes standards of data communication with both national and international systems
4. Lack of existing technology infrastructure and resource capacity can inhibit the ability to implement certain solutions
5. Lack of understanding of Total Cost of Ownership (TCO) or limited ability to budget for systems maintenance can inhibit sustainability of the solution
6. Large technology providers that can move technology market innovation tend to adhere to their existing technologies and are less flexible than smaller firms in generating Proofs of Concept (PoCs) outside of their established technology infrastructure
7. Existing technology solutions are rarely based on open source technology, which can lead to vendor-lock in and make it difficult to innovate away from proprietary solutions and technologies

## 2.2 World Bank Public Procurement Principles

The GovTech procurement practice note will reinforce the World Bank's established public procurement principles (World Bank 2017a), which are outlined below.

> > >

**FIGURE 1 - World Bank Public Procurement Principles**

1. **Value for Money (VfM).** In simple terms, VfM refers to the net value of total lifetime benefit minus total lifetime cost. An economic use of resources requires an evaluation of the relevant costs and benefits. Included for consideration should be transactional, transition, and contingency costs. Contract management risks should also be considered. If aiming to achieve the greatest VfM, the lowest price or highest quality product or service may not be the most desirable.
2. **Fit for Purpose.** Fit for purpose implies that a purchased product and service must be able to deliver its intended purpose and provide a satisfactory level of service, taking into account the risk, value, and complexity of the procurement.
3. **Economy.** Economy takes into consideration non-price attributes, such as sustainability, quality, and environmental and social concerns.
4. **Efficiency.** Procurement must be proportional to the value and risks of underlying project activities. Procurement arrangements are generally time sensitive and strive to avoid delays.
5. **Integrity.** The integrity of the procurement process assures confidence in the procurement system. All stakeholders, including potential suppliers, must be able to rely on any information disseminated by the procuring entity. Additionally, all personnel involved in the procurement process must operate with integrity and professionalism and observe the highest standards of ethics throughout, including refraining from fraud and corruption.
6. **Transparency.** Procurement information, including spending and transaction data, should be regularly reported to and accessible by the general public unless there are legal or security reasons for maintaining confidentiality.
7. **Fairness.** The procurement process should provide an equal opportunity for all potential suppliers to win business contracts. There should also be a transparent means for stakeholders to voice any concerns and for the procurement organization to provide an adequate response in a timely fashion.

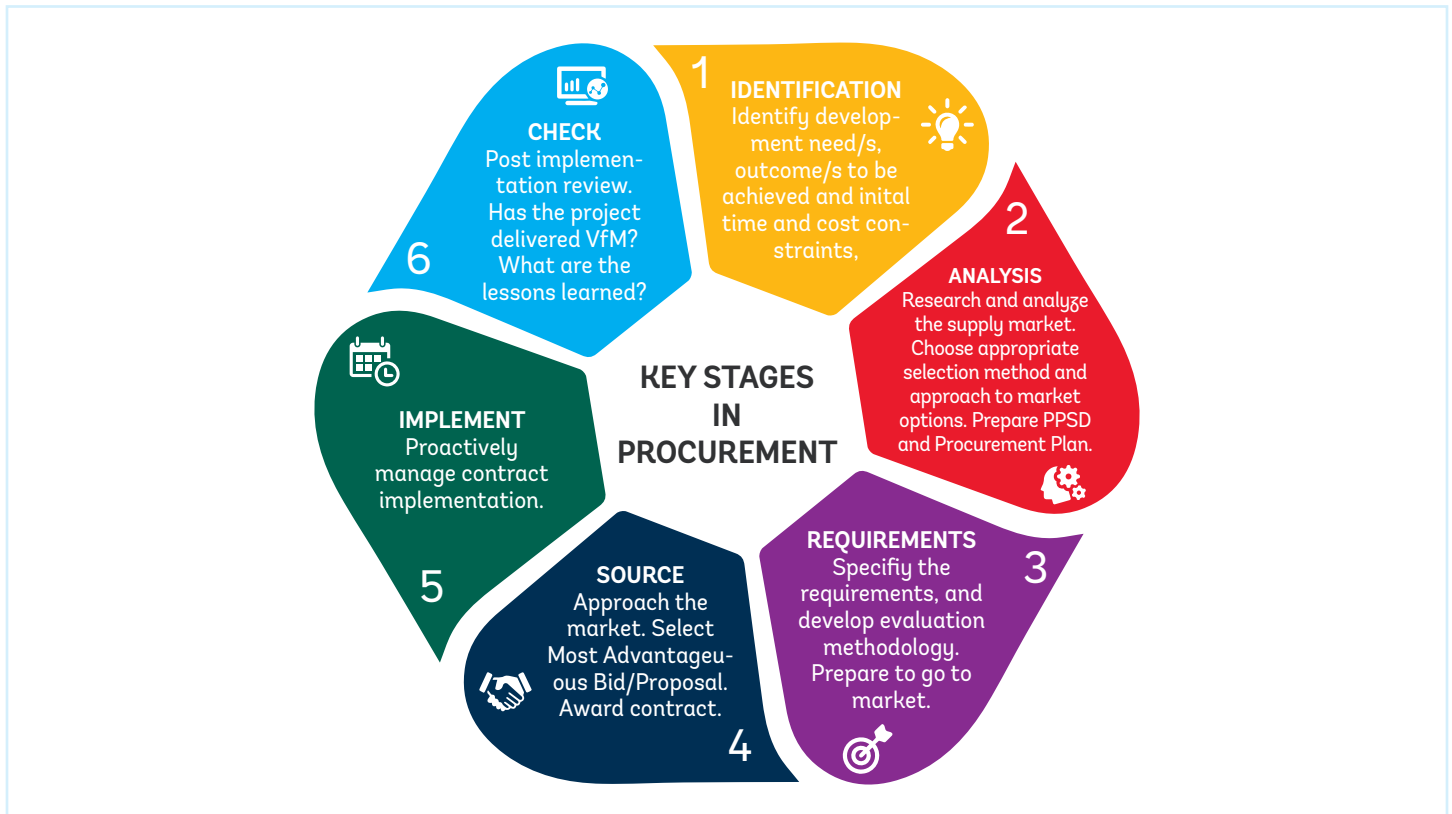
## 2.3 GovTech and the Procurement Process

In addition to establishing procurement principles, the World Bank has also documented the key stages in the procurement process, which act as helpful guidelines for both those new to procurement and for World Bank procurement specialists, Task Team Leaders, client country government officials and international experts.

The figure below depicts the key stages of a standard procurement process as documented by the World Bank (World Bank 2019b):

> > >

**FIGURE 2 - Key Stages in Procurement**



Specific activities in each procurement process stage include:

1. Identification. Activities in this stage involve identifying procurement needs and gaining an understanding of cost constraints and time limitations.
2. Analysis. In this stage, research is conducted to identify potential suppliers, and the sourcing strategy is selected and documented.
3. Requirements. Here, specific requirements that the acquired product or service needs to meet are generated. A request for information (RFI) may be released at this stage to learn more about the market and suppliers' ability to meet the requirements. The evaluation criteria that will be used to evaluate supplier proposals are also created.
4. Source. This stage includes the creation and deployment of a request for proposals (RFP) and the analysis of proposals within the context of the evaluation criteria. After

analysis, negotiations with potential suppliers may be necessary, resulting in the awarding of a contract.

5. Implement. The supplier's performance is monitored for continuous improvement and a supplier performance review is carried out.
6. Check. In this stage, the overall procurement process is reviewed, and lessons learned are documented to inform the next procurement operation.

Although this process may be implemented to purchase the most common products and services, it is suggested that a more robust and specialized framework be implemented for GovTech that is more customized to the unique characteristics of procuring technology for governments. This framework, discussed in section 3, utilizes elements from the standard procurement process but tailors activities specifically to GovTech acquisition.

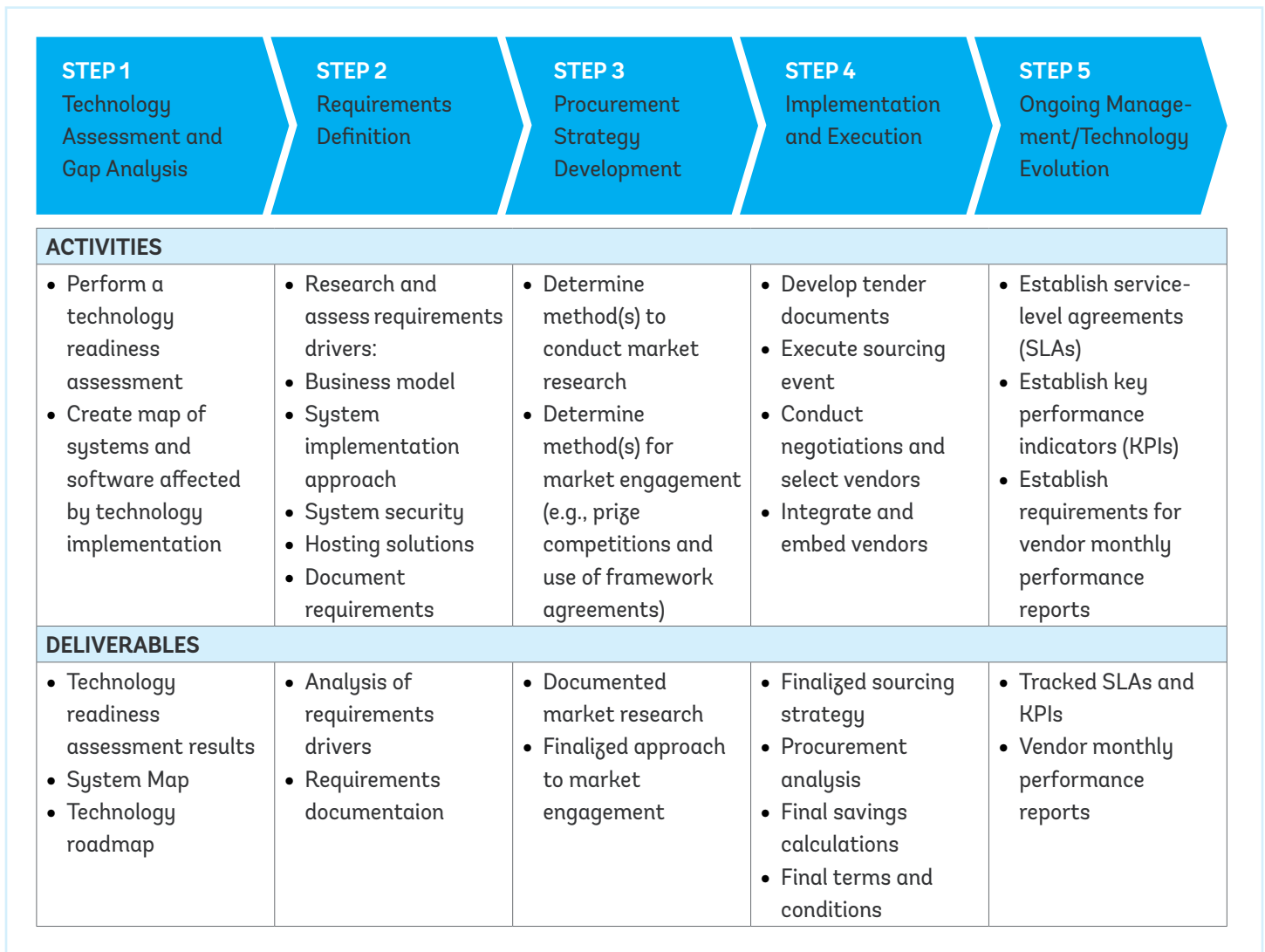


## GovTech Procurement Framework

The figure below displays a five-step GovTech procurement framework that provides a strategic and holistic plan for the design, procurement, and implementation of GovTech solutions, with key activities and deliverables for each step. Execution details and considerations for each step are contained in the succeeding sections. Prior to undertaking a GovTech acquisition, it is imperative to establish a business case for the project that considers the following items.

1. Anticipated project benefits and business value including how it aligns to country priorities.
2. Projected costs and proposed high-level implementation plan.
3. Project assumptions, dependencies, and key stakeholders.
4. Project risks and potential mitigation strategies.
5. Expected outcomes if the project is not funded.

**FIGURE 3 - Five-Step GovTech Procurement Framework**



### 3.1 STEP 1 – Technology Readiness Assessment and Gap Analysis

A technology readiness assessment is a systematic analysis of an organization’s ability to successfully implement transformational processes or change. The assessment identifies the potential challenges that might arise when introducing new technology and any accompanying procedures, structures, and processes within a current organizational context. As part of a readiness assessment, a gap analysis is performed to identify gaps or risk areas that should be addressed and remedied before or as part of the implementation plan.

An example of a technology readiness assessment is the “Electronic Government Procurement (e-GP) Readiness Self-Assessment,” which is “intended to assist a jurisdiction to conduct a high level review of its procurement environment to determine its level of readiness to make a transition to e-GP in a sustainable manner” (ADB, IADB, and World Bank 2004). A summary of the strategic foundations and accompanying components of the readiness assessment are contained in the table below. Each component is assessed on a scale from 1 (no readiness) to 4 (adequate degree of readiness).

**TABLE 1 - eGP Readiness Assessment Strategic Foundations and Components**

STRATEGIC FOUNDATIONS	COMPONENTS
<b>INSTITUTIONAL CAPACITY</b> The capacity of government to set directions and lead and resource the changes required	<ul style="list-style-type: none"> <li>• <b>Government Leadership:</b> vision, sponsorship, resources, stakeholder and implementation support</li> <li>• <b>Human Resource Management:</b> education, skills development, expertise, and career development</li> </ul>
<b>GOVERNANCE</b> Putting in place the rules, management support, and performance monitoring and evaluation to support eGP	<ul style="list-style-type: none"> <li>• <b>Planning and Management:</b> strategic planning and re-engineering of management protocols and processes</li> <li>• <b>Policy:</b> setting intent and guidelines that can be consistently applied</li> <li>• <b>Legislation and Regulation:</b> supporting rules and the external and internal monitoring of efficiency, performance, and compliance in relation to the total approach to eGP</li> </ul>
<b>BUSINESS FUNCTIONALITY AND STANDARDS</b> Sustainable infrastructure, support services, and common standards developed to ensure that accessible, integrated, and consistent procurement services can be put in place	<ul style="list-style-type: none"> <li>• <b>Infrastructure and Web Services:</b> ensuring the reasonable access to and quality of e-services and their sustainable development and maintenance</li> <li>• <b>Standards:</b> development of management, procurement, and technical standards to ensure the consistency of the approach to eGP and interoperability across the systems involved</li> </ul>
<b>THIRD-PARTY INVOLVEMENT</b> Ensuring the private sector can participate in eGP	<ul style="list-style-type: none"> <li>• <b>Private Sector Integration:</b> suppliers are enabled and have incentives to participate in eGP</li> </ul>
<b>APPLICATION OF TECHNOLOGY</b> Appropriate, integrated, sustainable, and modifiable technology phased in to provide tendering, contract management, and purchasing services	<ul style="list-style-type: none"> <li>• <b>Systems:</b> the planning, selection, development, implementation, and support of e-Procurement systems to provide tendering, contract management, and purchasing services</li> </ul>

The outputs of a technology readiness assessment can take many forms. It should conform to a dashboard format that allows for decision-level data to be communicated effectively to leaders. The below figure depicts a “traffic-light” dashboard assessment<sup>1</sup> of a technology organization showing the relative performance status of different areas of the organization. It is equally important to demonstrate to leaders what is working and to identify any gaps to be solved via the introduction of new GovTech technologies.

**FIGURE 4 - Readiness Assessment Framework (Illustrative Example)**

Structure		Process		People		Leadership		Infrastructure		Change Management	
Procurement Alignment w/ Strategic Objectives	●	Procurement Planning	●	Resources	●	Vision and Strategic Plan	●	Market Research / Business Intelligence	●	Capability to Implement Change	●
Organization Structure	●	Category Management	●	Skill-sets	●	Executive Buy-In from the Business	●	Procurement Technology	●	Required Resources for Change	●
Governance	●	Procure to Pay	●	Training	●						
Strategic Communications	●	Contract Performance / Vendor Management	●								

● Operating at a high standard    ● Some opportunity for improvement    ● High opportunity for improvement    ○ Focus Area

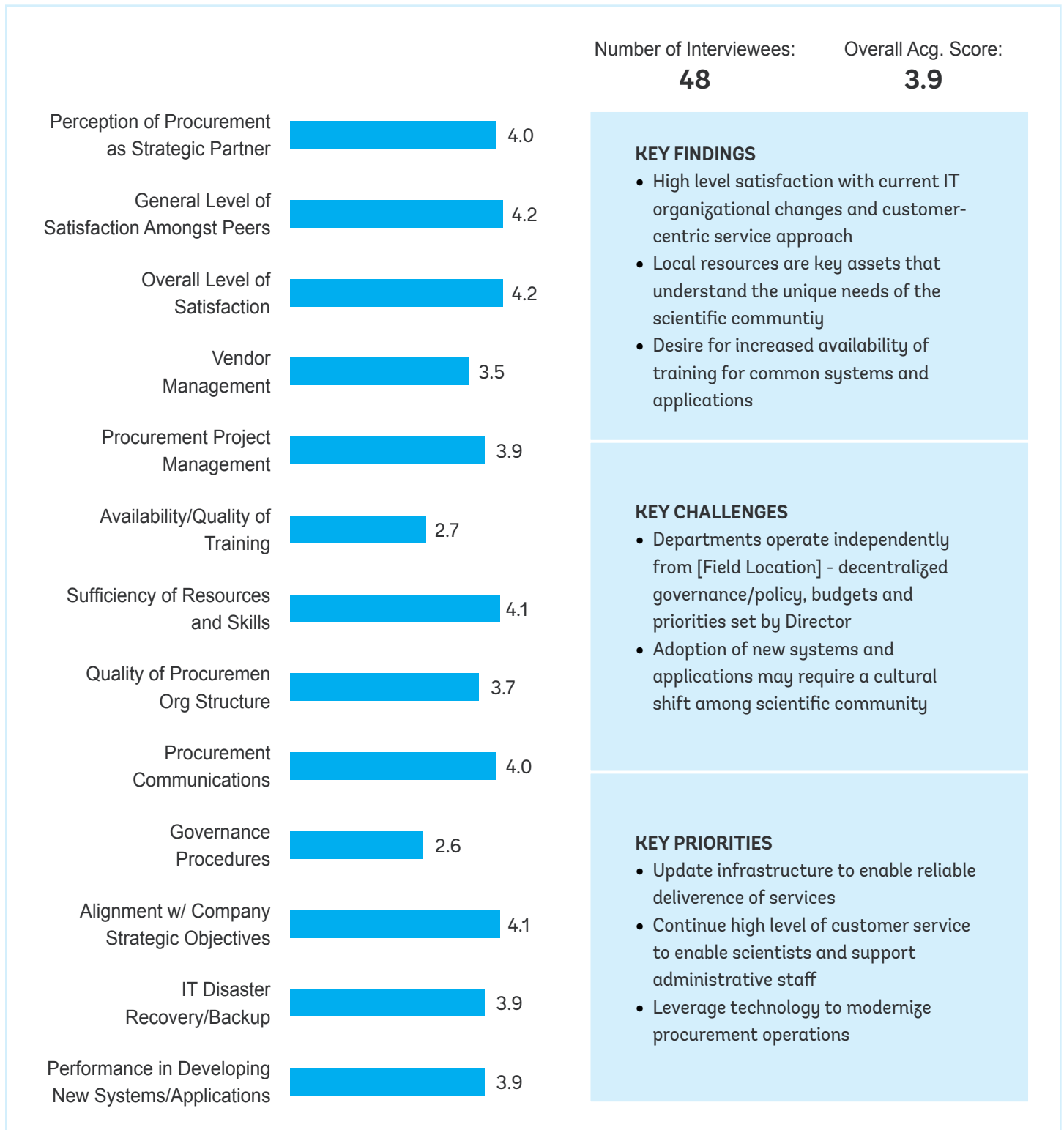
1. Developed by Valent. See <https://www.valent.com/>.



The dashboard-level output is created through the collection of both qualitative and quantitative data. An enterprise survey is a key tool that can be used to generate this type of data and is accurate and hyper-local to the situation being evaluated. A survey can be used to determine gaps as part of a readiness assessment. The figure below shows the results of a survey<sup>2</sup> that identified key gaps and areas for improvement for an IT organization that directly helped generate the dashboard in figure III. A sample list of a technology assessment interview and survey questions can be found in Annex I.

> > >

**FIGURE 5 - Survey Results as Part of a Readiness Assessment (Illustrative Example)**



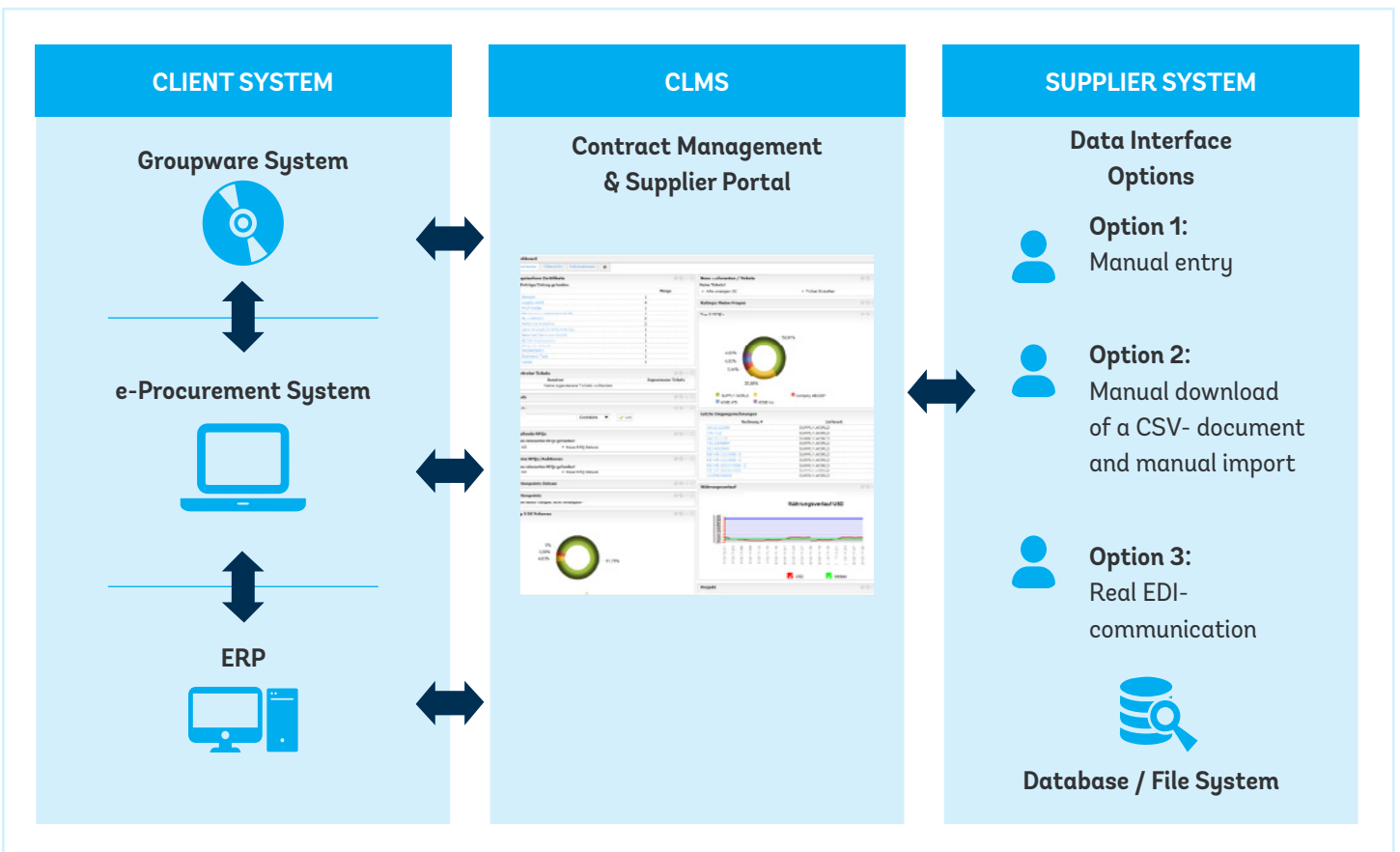
2. Ibid.



Another important exercise is the mapping of any systems and software that will be affected by the incoming technology. The graphic below is a notional example of the mapping of a procurement system environment.

> > >

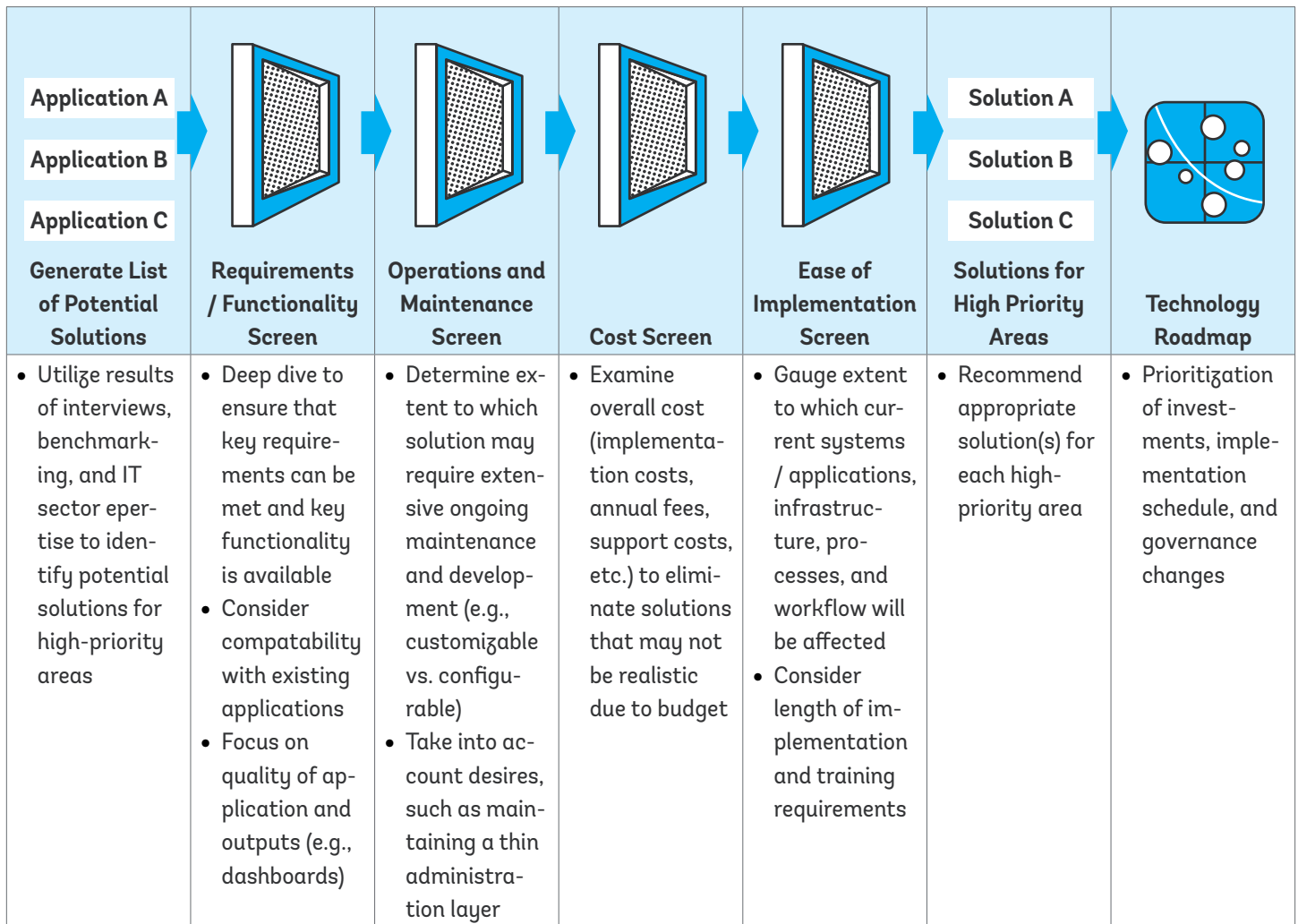
**FIGURE 6 - Example e-Procurement System Map**



Once a system map and gap analysis are completed, the next step is to create a digital transformation and modernization roadmap. One way to sequence the roadmap is to use a screening process to prioritize GovTech initiatives. The screening process is most effective when the GovTech team creates customized screening criteria that consider the resources and capabilities available to execute projects. The below figure presents an example of how to prioritize initiatives in pursuit of a digital transformation and modernization roadmap.<sup>3</sup>

> > >

**FIGURE 7 - Technology Screening Process**

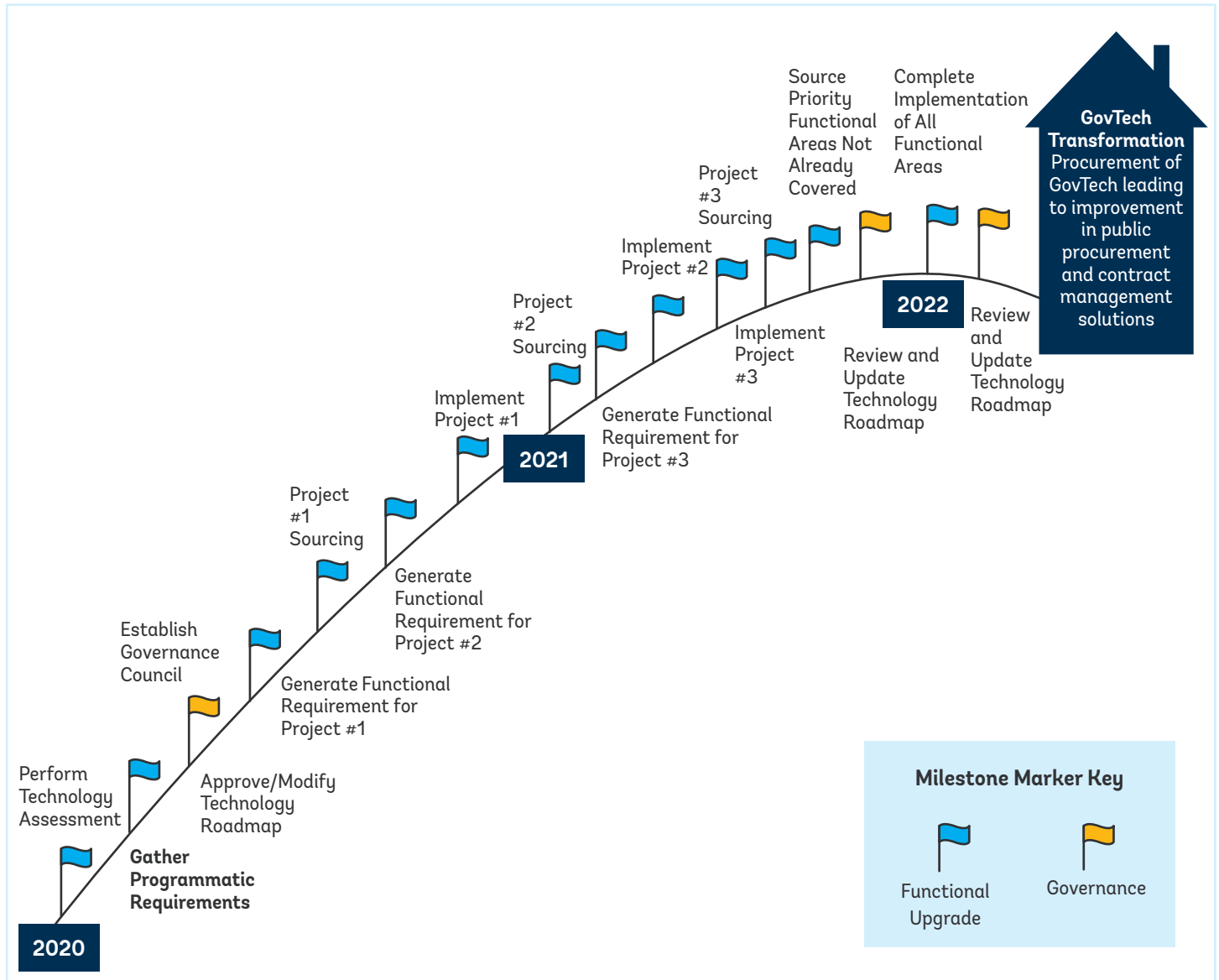


3. Ibid.

The result of the screening process should be a prioritization of initiatives based on unique criteria developed by the GovTech team to ensure that the roadmap is customized to the organization’s actual needs, requirements, and implementation capabilities rather than to general market recommendations. The output of the roadmap should be simple enough to communicate to internal and external stakeholders; it should also be a dynamic document that can be modified throughout the duration of a GovTech project. The below figure presents an example of a potential GovTech digital transformation and modernization roadmap.<sup>4</sup>

> > >

**FIGURE 8 - Digital Transformation and Modernization Roadmap (Illustrative Example)**



The development of the complete set of documents in Step 1 – Technology Assessment and Gap Analysis will directly lead to improved outcomes throughout the rest of the process. Establishing an agreed understanding of gaps and a roadmap to the future is critical to the long-term success of any GovTech initiative.

4. Ibid.

## 3.2 STEP 2 – Requirements Definition

When defining technology requirements, there are four foundational items that should be considered (World Bank n.d.).

### Foundation #1 – Business Model

After the initial funding phase, a government should embrace a specific business model to ensure the sustainability of operations, including software/hardware maintenance, promotion/marketing activities, help desk operations, training services, and the continuous evolution of strategic objectives. Obtaining funding to support the system must be a shared responsibility among the various stakeholder groups that use the system. When designing the model, it is critically important to ensure that all the underlying costs of running the system are understood and accounted for.

The most common business models used by governments to establish GovTech systems include the following:

- **Government Owned and Operated.** The government owns and operates the GovTech system, which is built by its own information and communications technology (ICT) team. Alternatively, external partners may be used during the development or support phases of the project, but these partners have no rights to any part of the system. They are compensated for their services based on contracted fees.
- **Government-Managed Service.** In this approach, the system is operated, supported, and owned by a third-party partner, but the government retains ownership of all the data and support services, such as a user help desk and training. A dedicated unit within the government is responsible for managing the service, including the performance of the third-party partner as well as any other government departments that provide support services such as training.
- **Public-Private Partnership (PPP).** In this model, the GovTech system is owned and operated by a third-party service provider. The intention of this model is that at some time in the future as specified in the agreement, the service will be transferred to the government. In the interim, the service provider is compensated either through a fixed monthly fee or transactional revenues based on the usage of the system.

When the PPP business model is implemented, the operator of the service defines the charges that will be levied against the government to cover system sustainment. The government should review and understand all costs to ensure that they are fair and equitable. The government may rely on external expertise or project benchmarking firms to confirm costs are in line with similar PPP projects and business models prior to the execution of the PPP.

When implementing any of the three business models (government owned and operated, government-managed service, or PPP shared service), the government is exclusively responsible for elaborating a plan that ensures sustainability. While sustainability and operational efficiency requirements can be introduced into bidding documents and vendor contracts, long-term sustainability outcomes rely on political and leadership commitment to change management efforts with a long-term outlook and focus on project and organizational sustainability. Operations may become sustainable through a combination of fixed capital funding and ongoing operational revenue generation. From a human resource perspective, a combination of government employees as well as specialist service providers can be used to ensure a smooth operation. These providers may be involved in many aspects of the system, including technical operations and maintenance, end-user training, and end-user support through a dedicated help desk. Regular upgrades to the underlying technology platforms should be planned to ensure that the system continues to operate over a lifetime that exceeds that of the physical technology components.

### Foundation #2 – System Implementation Approach

The table below summarizes the advantages and disadvantages of three acquisition approaches to establishing a GovTech system, including implementation of a software-as-a-service (SaaS), commercial-off-the-shelf (COTS), or custom-built solution. The information is applicable to a broad range of GovTech systems.

**TABLE 2 - SaaS/COTS/Custom Build System Acquisition Considerations**

ATTRIBUTE	SAAS	COTS	CUSTOM BUILD
Quality	<ul style="list-style-type: none"> <li>System based on an already tested and used GovTech platform</li> <li>Vendor has know-how on analyzing, configuring, and rolling out GovTech systems</li> <li>Mature product as a foundation for a system that can be maintained virtually</li> <li>Lower risk of technological obsolescence</li> <li>Limited customization because of the other users of the platform</li> <li>System may impose functional constraints as it is already pre-built</li> <li>System may adopt standards that may be incompatible with existing government systems and/or infrastructure</li> <li>Risk of lock-in by module vendors, mitigated by simplicity and serviceability of module</li> </ul>	<ul style="list-style-type: none"> <li>System based on an already tested and used GovTech platform</li> <li>Vendor has know-how on analyzing, configuring, and rolling out GovTech systems</li> <li>Mature product as a foundation for a system that can be maintained locally</li> <li>Lower risk of technological obsolescence</li> <li>System may impose functional constraints as it is already pre-built</li> <li>System may adopt standards that may be incompatible with existing government systems and/or infrastructure</li> <li>Risk of lock-in by module vendors, mitigated by simplicity and serviceability of modules</li> </ul>	<ul style="list-style-type: none"> <li>Software is owned by government</li> <li>Software is built for purpose</li> <li>System development know-how would be accumulated</li> <li>Government may have difficulties in retaining ICT experts in its team since the private sector can offer more competitive salaries</li> <li>The possibility of risks to the success of system development</li> <li>Lack of proven skills (offset by including foreign specialists)</li> <li>Potential of fragmented developments between agencies unless carefully managed by the steering committee</li> <li>Moderate risk of lock-in by local developers (mitigated by systems portability)</li> <li>If government has proven, internal ICT capacity, high-quality product can be achieved; otherwise, in-house development may be risky</li> </ul>
Time	<ul style="list-style-type: none"> <li>Core system functions are already available in the vendor's GovTech platform</li> <li>Very short period required for relevant and practical functionality to be operational.</li> <li>Vendor may require more time than in-house staff to understand the country-specific requirements</li> </ul>	<ul style="list-style-type: none"> <li>Core system functions are already available in the vendor's GovTech platform</li> <li>Relatively short period required for relevant and practical functionality to be operational</li> <li>Vendor may require more time than in-house staff to understand the country-specific requirements</li> </ul>	<ul style="list-style-type: none"> <li>Time required for the development of from-scratch implementation can be expected to be more than for a COTS-based system</li> <li>If government has proven internal ICT capacity, analysis, development, and rollout of the system can be achieved in reasonable time; otherwise, excessive time may be required</li> </ul>
Cost	<ul style="list-style-type: none"> <li>Economies of scale created by a shared service often make it a very cost-effective choice</li> <li>Purchase would only be for the functionality for which there is capacity to utilize</li> <li>Low initial implementation costs</li> <li>Low-risk system development and maintenance costs</li> <li>Government will be contractually bound to the vendor and system; if a clear financial arrangement is not defined right from the start, maintenance/evolution cost may be large</li> <li>At the end of the contractual term with the vendor, process for contracting and migrating to a new GovTech system may be costly</li> </ul>	<ul style="list-style-type: none"> <li>Purchase would only be for the functionality for which there is capacity to utilize</li> <li>Low initial implementation costs</li> <li>Low-risk system development and maintenance costs</li> <li>Government will be contractually bound to the vendor and system; if a clear financial arrangement is not defined right from the start, maintenance/evolution cost may be large</li> <li>At the end of the contractual term with the vendor, process for contracting and migrating to a new GovTech system may be costly</li> </ul>	<ul style="list-style-type: none"> <li>Maintenance/evolution of the system will be cost efficient, since all required expertise related to the system architecture will already exist</li> <li>Government may need to make special financial arrangements for retaining experts for the development and maintenance/support of the system</li> </ul>
Security and Access	<ul style="list-style-type: none"> <li>Solution must be hosted in vendor's IT environment, which often resides outside of client country's geographical borders, which may violate security or data privacy laws</li> </ul>	<ul style="list-style-type: none"> <li>Solution can be hosted on-premise or in domestic cloud to control access and conform to national data privacy laws</li> </ul>	<ul style="list-style-type: none"> <li>Solution can be hosted on-premise or in domestic cloud to control access and conform to national data privacy laws</li> </ul>

A universal best practice for a GovTech system acquisition does not exist; rather each model suggested in the above table has different pros and cons that are dependent on the country environment and implementing agency technical and financial capacity.

**SaaS** models present the most efficient time-to-market option if the implementing country can accept configurations vs. customizations to meet technical and functional requirements. Existing system training materials can also quickly be adapted to increase the pace of implementation and roll-out. A competitive procurement action can result in market-based pricing for an initial period in production, which should keep costs reasonable.

**COTS** models can also be quick to implement but allow for greater individual client customization. This can be both beneficial as the system can be adapted to specific functional requirements and business process needs, but there is both a cost and implementation delay associated with this practice. System Operations & Maintenance (O&M) costs may increase significantly over time as the number of customizations increases.

**Custom-Build** will take the longest period to implement but is the most flexible model to conform the system to specific country functional and technical requirements. Cost may also be quite efficient if the local IT labor market is robust and costs are low. The uses of external system development consultants could drive costs up significantly during the custom build and over the lifecycle of the system.

A client country's current and forecasted IT technical capacity is also an important factor in considering different types of system acquisition models. SaaS systems are the easiest to manage over time as the majority of the system IP and support resides with the system provider or a 3rd party service provider. COTS systems may require more in-house IT expertise to manage the system and any customizations. Custom Build systems require the most internal IT capacity as the systems must be maintained by the implementing agency and meet operational standards such as continuous uptime, which requires both technical expertise and personnel resources.

### Foundation #3 System Security

Security is an essential feature of any GovTech system, especially one that hosts confidential, commercially sensitive information or personal identifying information (PII). The European Union (EU) has taken the global lead in data privacy with its

General Data Privacy Regulation (GDPR), and any GovTech system should have the ability to meet this requirement, or at a minimum meet the established data privacy laws in the implementing country. Other security requirements include:

- The system should be able to store sensitive information in encrypted formats.
- Information must be made available only to authorized users. This should be ensured using a role-based security model that will limit user access following a pre-defined set of access rights. This approach will ensure that the data are not disclosed to any unauthorized person or process.
- All communications with end-user browsers must be performed over a secure and encrypted communications protocol (e.g., HTTPS).
- The system must be safeguarded against all known security threats (e.g., buffer overflows, Structured Query Language [SQL] injection, cross-site scripting [XSS], denial-of-service [DoS], distributed denial-of-service [DDoS], etc.).
- A proven anti-virus protection system should also be deployed.

### Foundation #4 Hosting Solutions

Cloud technologies are now mainstream, as they are used heavily in the private sector and gaining traction in the public sector. The cloud technology to be considered for replacing a data center is platform as a service (PaaS), which allows customers to create, run, and manage applications without the complexity of building and maintaining the infrastructure typically associated with developing and launching such applications.

By using the PaaS model instead of designing, building, owning, and operating a data center, government agencies can move from capital expenditures (CapEx) to operating expenditures (OpEx). By using cloud technologies, agencies can “leap-frog” the need to build their own ICT server infrastructure. One excellent feature of cloud technologies is that as one pays only for what is used, there is no wasted processing or storage. Cloud technologies can easily scale. Any GovTech procurement strategy should investigate the use of cloud services and have a cloud category strategy to manage the evolving use of the space. Governments may consider building a domestic cloud solution to be compliant with any national security or data privacy considerations.

A critical enabler of GovTech solutions is an appropriate legal and regulatory framework that enables adherence to interna-

tional standards on open government and data transparency, while recognizing country specific constraints posed by national security and data privacy laws. Sustained political and leadership commitment are key to both the creation and evolution of these frameworks as well as providing the financial resources to allow for both the build and sustainable maintenance of GovTech systems. Policymakers have dual responsibility to create an environment suited to both GovTech innovation and conducive to significant change management that must occur to take advantage of the benefits of public sector modernization.

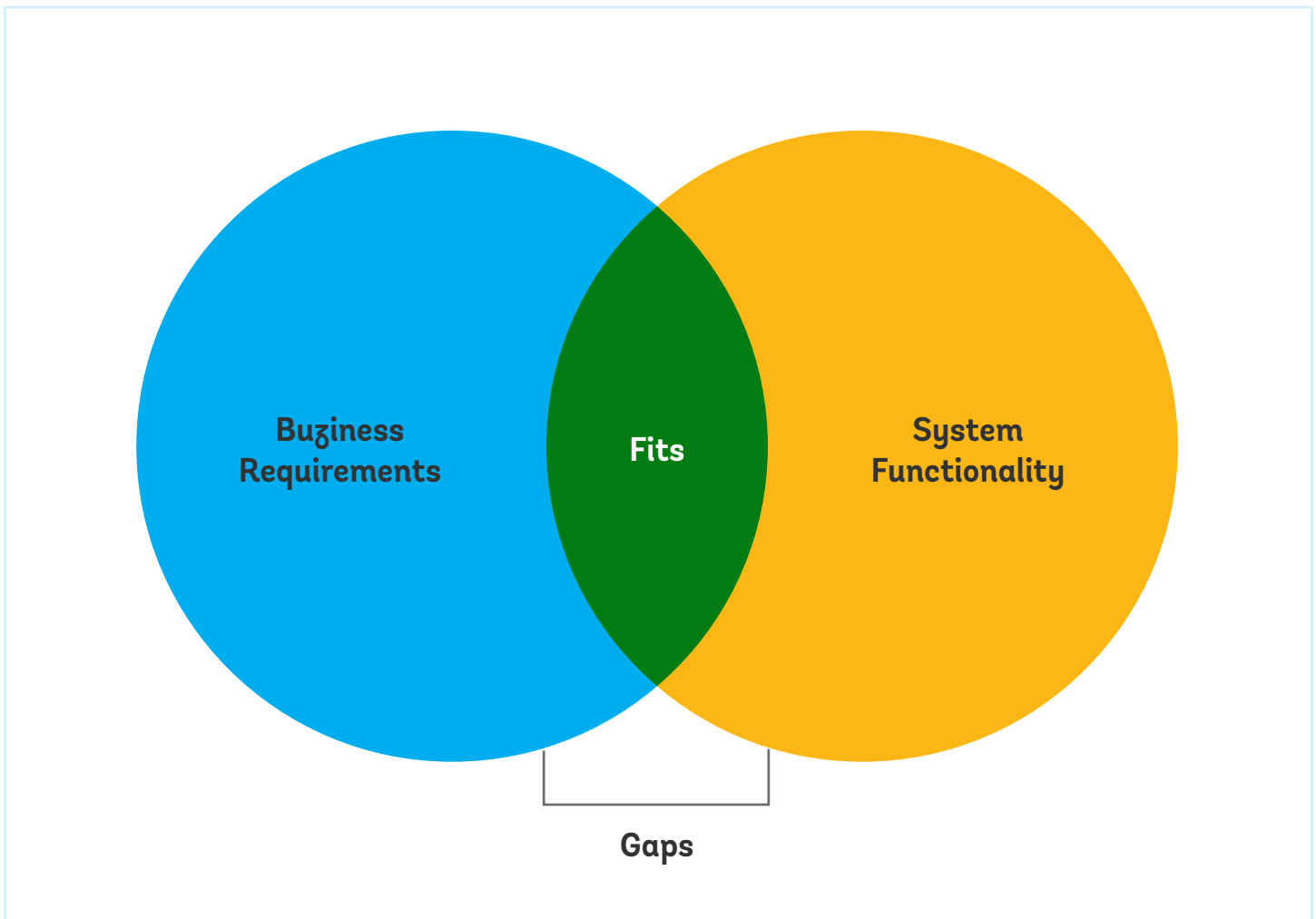
## Requirements Documentation

After addressing each of the foundational items for consideration, a requirements document should be compiled. The document should capture all the requirements in a format that can be shared with vendors for their review and response. Requirements documentation is especially important if there is a need to pursue a custom-built solution.

To evaluate if existing SaaS or COTS systems meet requirements, a fit gap analysis can be performed. Fit gap analysis involves comparing existing requirements to the functionality of systems to identify which requirements are met (fit) and which are not met and may require customization or an alternative solution (gap). The figure below shows a representation of fit-gap analysis<sup>5</sup>.

> > >

**FIGURE 9 - Fit Gap Analysis**



5. Adapted from Ancveire 2018



Alternatively, the requirements documents can be shared with vendors of SaaS or COTS systems to collect their feedback on how well the software meets requirements, as shown in the figure below<sup>6</sup>. Typically, vendors are allowed to respond that 1) they can meet the requirement, 2) they cannot meet the requirement, or 3) there is a notable “exception” to the re-

quirement that should be explained. The requirements document is critical as it will drive decisions around the eventual procurement of a system. The figure below captures a sample of requirements for a contract lifecycle management system (CLMS) and vendor responses.

> > >

**FIGURE 10 - System Requirements Document with Vendor Responses (Illustrative Example)**

ID	Category	Sub-Category	Requirement Description	Vendor 1	Vendor 2	Vendor 3	Vendor 4
1	Business Intelligence/ Reporting	Charts and Graphs	The system has the ability to generate graphs and charts (exporting data to Excel is not necessary)	Comply	Comply	Comply	Comply
2	Business Intelligence/ Reporting	Data Restrictions	The system allows restricted users to generate reports based on their role based data access	Comply	Comply	Comply	Comply
3	Business Intelligence/ Reporting	Data Restrictions	The system provides read-only and drill down access for specified end users (e.g., Contract Officers)	Comply	Comply	Comply	Comply
4	Business Intelligence/ Reporting	Data Restrictions	The system provides dynami reporting (drag and drop capabilities)	Exception	Comply	Comply	Comply
5	Business Intelligence/ Reporting	Fields and Dimensions	The system can generate reports using any available field or dimension (including data flags)	Comply	Comply	Comply	Comply
6	Business Intelligence/ Reporting	Scheduled Reports	The system allows users to schedule when customized reports are run and provides notification via email that the report was run	Comply	Comply	Comply	Comply
7	Business Intelligence/ Reporting	Self-Service	The system can provide a self-service dashboard for end users (e.g., contract versus actual, spend by ADB group, spend by vendor, etc.)	Comply	Comply	Comply	Comply
8	Document Management	Document Association	The system has the ability to associate any scanned document with any particular record	Does Not Comply	Exception	Comply	Comply
9	Document Management	Document Storage	The system provides the capability to store, retrieve (e.g., transaction clicking), display and print imaged documents. The solution must provide the capability to receive scanned documents from document scanners having industry-standard connection protocols	Does Not Comply	Exception	Comply	Comply
10	Document Management	Document Storage	The system can accept scanned or electronic documents in any format (.pdf,.xlsx,.doc) and link them to a data record	Comply	Exception	Comply	Comply
11	Document Management	Electronic Files	The system can generate report files in delimited, ASCII, JSON, PDF, MS Word, MS EXCEL, and XML formats	Exception	Comply	Comply	Comply
12	Document Management	Record Retention	The system can produce an electronic file that will maintain records per ADB’s Retention Schedules	Comply	Comply	Comply	Comply
13	Document Management	System Integration	The system has the ability to link to files located in a document management system (e.g. SharePoint, OneDrive etc.)	Comply	Comply	Does Not Comply	Comply
14	General	Audit	The system provides field level edits to ensure validity of the data being entered into the system	Comply	Comply	Comply	Comply

6. Developed by Valent



The requirements are critical to determining a comparative technical evaluation of GovTech functionalities and technical architecture. The below figure shows an example of a summary table of an evaluation<sup>7</sup> indicating that Vendor 4 is the

most technically compliant, while also allowing for a ranking of all participating vendors. This evaluation is critical to the overall procurement selection process.

> > >

**FIGURE 11 - Example Summary Technical Evaluation (Illustrative Example)**

Requirements Categories	Vendor 1			Vendor 2			Vendor 3			Vendor 4		
	Comply	Exception	Does Not Comply	Comply	Exception	Does Not Comply	Comply	Exception	Does Not Comply	Comply	Exception	Does Not Comply
Business Intelligence/ Reporting 7 Requirements	6	1	0	7	0	0	7	0	0	7	0	0
Contract Managements 8 Requirements	8	0	0	6	2	0	5	1	2	8	0	0
Document Management 6 Requirements	3	1	2	3	3	0	5	0	1	6	0	0
General (e.g. Audit) 25 Requirements	23	2	0	23	2	0	24	1	0	25	0	0
Procurement 14 Requirements	12	2	0	14	0	0	13	0	1	14	0	0
Information Security 8 Requirements	6	2	0	8	0	0	6	1	1	8	0	0
<b>Total</b>	<b>58</b>	<b>8</b>	<b>2</b>	<b>61</b>	<b>7</b>	<b>0</b>	<b>60</b>	<b>3</b>	<b>5</b>	<b>68</b>	<b>0</b>	<b>0</b>
<b>Total Percentage</b>	<b>85%</b>	<b>12%</b>	<b>3%</b>	<b>90%</b>	<b>10%</b>	<b>0%</b>	<b>88%</b>	<b>4%</b>	<b>7%</b>	<b>100%</b>	<b>0%</b>	<b>0%</b>

7. Ibid.

## 3.3 STEP 3 – Procurement Strategy Development

### 3.3.1 Conducting Market Research

Procurement strategy development begins with market research. Market research involves the collection, recording, and evaluation of data about a specific market that offers a desired product or service. The primary purpose of market research is to inform the decision-making process, leading to a gain in competitive advantage, reduced risks, and increased productivity in a future investment. Conducting market research increases the awareness of the involved stakeholders and assists them in understanding a market's presence, capacity, product or service offerings, and associated costs. A successful undertaking of market research contributes to the definition and refinement of product or service requirements and to a better understanding of the available vendors and their offerings. By conducting market research, governments can better position themselves to successfully execute a public procurement action.

In 2016, the World Bank issued strategy paper entitled, "Guidelines for Conducting Market Analysis for e-Procurement Systems" (World Bank 2016). Although this document was developed specifically for e-Procurement systems, the underlying process and templates can be extended to other technologies. There are several methods available for market research as summarized in the table below. The method that is selected should depend on such factors as the availability of information (e.g., via internet research), the amount of time a buyer has to accomplish the task, and the availability of financial and personnel resources to complete the research activities. Although completing a single approach may provide enough information for decision-making purposes, completing multiple approaches will provide the most comprehensive insight into a market.

> > >

**TABLE 3 - Methods for Conducting Market Research**

METHOD	DESCRIPTION
Desk-Based Research	<ul style="list-style-type: none"> <li>Involves investigation and analysis of information that is readily available and easily accessible, mainly through the internet. Published reports, industry/government/supplier websites, interviews with industry experts, and discussions with institutional representatives in other countries are among the sources of information that can be used. This method is both time and cost effective.</li> </ul>
Surveys/ Questionnaires	<ul style="list-style-type: none"> <li>Surveys and questionnaires are effective means to collect information when other methods (e.g., desk-based research) do not yield the required information. Surveys and questionnaires allow for quantitative measurements for processing (such as the number of potential local vendors that support a specific requirement). Also, web-based surveys are easily distributed, and respondents can reply via e-mail.</li> </ul>
System Demonstration	<ul style="list-style-type: none"> <li>System demonstrations allow vendors to present the functionality of their system to the potential buyer in an interactive manner. Demonstrations may be performed in face-to-face meetings or remotely (e.g., WebEx). Demonstrations also help buyers understand a systems graphical user interface (GUI), usability, translation capabilities, and help features.</li> </ul>
Communication Methods with Vendors	<ul style="list-style-type: none"> <li>Direct communication with vendors is a powerful technique in performing market research. Several processes and tools can be used to formally or informally communicate with vendors, as outlined below:</li> <li>Formal communication methods include issuing a request for an expression of interest and a request for information (RFI) to collect information on the vendors and their ability to deliver a desired solution. Issuing a request may also stimulate interest in potential vendors.</li> <li>Informal communication methods include e-mail communications, advertisements in publications, and social media (e.g., Twitter, Facebook, LinkedIn), which can be used to leverage any interest in and familiarization with potential vendors regarding the advertised project. In this context, potential vendors are informed about a country's intention to procure a product or service and can closely follow any future announcements related to the project.</li> </ul>
Involvement and/or Full Assignment to External Consultant/ Specialist	<ul style="list-style-type: none"> <li>External consultants and specialists can typically complete some or all market research activities in a timely and accurate manner. Use of consultants and specialists may not be as cost effective as completing market research activities with internal resources.</li> </ul>

The primary activities involved in completing market research include developing a product or service profile, researching suppliers, and identifying key market indicators. Conducting market research also involves gaining an understanding of industry trends and analyzing industry forces. A number of research analyses and tools used extensively in industry are

referenced in the table below. The resulting analysis of these market components can be used to gain an understanding of the external environment in which specific products are produced and sold and will enable the creation of a comprehensive and in-depth supply market strategy.

> > >

**TABLE 4 - Key Market Research Components**

MARKET COMPONENT	DESCRIPTION
Category Supplier Summary	An overview of the supplier market detailing different characteristics and their varying impact on the overall market. Insightful conclusions should be drawn based on a full understanding of the researched data.
Market Overview/Segmentation	Summary and descriptions of market characteristics and conditions, company market position, potential challenges, industry success factors, industry cost structure, etc.
Five Forces Analysis	Methodology and diagram detailing five competitive forces that shape each industry: rivalry among existing competitors, bargaining power of suppliers, threat of new entrants, bargaining power of buyers, and threat of substitute products or services
Market Trends	Analysis addressing such topics as general market conditions and potential supplier impact (e.g., technology advancements, capacity issues); competitor analyses (e.g., entrance of new industry players); economic impacts; economic demand for a product/service; market trends and forecasts; financial analyses and reports (e.g., overall market revenue, profit margins); government regulations
Supplier Chain/Distribution Market	Investigation of different distribution channels; supplier market size; distribution landscape; product/service alternatives
Value Chain/Cost Structure	Analysis identifying the cost of each activity within a company and determining the importance of each activity through the entire process (e.g., manufacturing, transportation). Additionally, the value chain details the overall cost of sourcing a product/good and helps to identify links between activities.
Major Players	Detailed list of industry leaders as well as their financial profiles and product/service offerings
Profiles of Major Suppliers	Company profiles include general company overview (e.g., mission, headquarters, flagship products/services), financial profile (e.g., profits, historical performance, assets), company capabilities, company leaders

The table below contains key areas to investigate and corresponding questions that will assist in forming a comprehensive view of the supply market.

> > >

**TABLE 5 - Key Areas for Market Research**

MARKET COMPONENT	DESCRIPTION
Market Size and Growth	<ul style="list-style-type: none"> <li>• How large is the market for this category?</li> <li>• What is the growth history and predicted growth of this category?</li> <li>• Is this market regional, national, global?</li> </ul>
Product Substitution	<ul style="list-style-type: none"> <li>• Are there acceptable substitute products for this category?</li> <li>• Has a formal “value analysis” of category substitutes been completed?</li> </ul>
Industry Profitability	<ul style="list-style-type: none"> <li>• How profitable is the industry supplying this category?</li> </ul>
Industry Structure	<ul style="list-style-type: none"> <li>• How concentrated or fragmented is this category’s industry?</li> <li>• Do a few leaders dominate the industry?</li> </ul>
Technology Trends	<ul style="list-style-type: none"> <li>• Are there technology leaders?</li> <li>• What has been the impact of technology on costs, pricing, quality, and service?</li> </ul>
Buyer Profiles	<ul style="list-style-type: none"> <li>• What effects do customers have on the competitive environment?</li> <li>• Do a few large customers dominate the suppliers?</li> <li>• How high are switching costs for the customers?</li> </ul>
Supplier Profiles	<ul style="list-style-type: none"> <li>• Who are the main suppliers in the market?</li> <li>• Does the supply base in this category create any type of supply risk?</li> <li>• Are there any issues with delivery, cost, quality, or responsiveness from suppliers?</li> </ul>

In the event that additional market research recommendations are required, the World Bank's "Guidance for Conducting Market Analysis for e-Procurement Systems" includes a number of templates that a buyer can use to aid in conducting market research activities (World Bank 2016). Excerpts from each template can be found in Annex II of this document. The templates include:

- **Invitation Template.** This template can be tailored and sent to a select set of vendors invited to participate in market analysis activities. It provides the vendors with important information, including the purpose and objectives of the analysis and any procedural and contact information.
- **Questionnaire Template.** This template includes a suggested set of questions for vendors. It contains questions related to the vendors' profile (experience, geographical coverage, etc.) and to their system offering.

- **Market Analysis Report Template.** The results of market research activities should be documented in a way that points to the main conclusions. This template comprises four proposed sections: purpose of the analysis and its participants, a brief description of the methodology, core results, and main conclusions.
- **Request for Expression of Interest.** This template is a suggested letter from the buyer to vendors that invites them to express their interest in implementing the desired product or service.

Established market research can be used to accelerate the understanding of a key market. As an example, a Gartner Magic Quadrant Analysis is shown in the figure below (Gartner 2019). The analysis provides a graphical competitive positioning of four types of technology providers in markets where growth is high and provider differentiation is distinct.

> > >

**FIGURE 12 - Gartner Magic Quadrant, Procure-to-Pay Suites (June 2019)**



Additional sources that may be useful in conducting market research include Forrester, Kennedy Information, Factiva, IBISWorld, and industry papers and trade association research.

### 3.3.2 Competitive Dialogue as a Process for GovTech Procurement

For complex contracts, the use of competitive dialogue should be considered. Competitive dialogue is an interactive multi-stage selection process that facilitates dynamic engagement between buyers and vendors. In 2017, the World Bank issued procurement guidance entitled, “Competitive Dialogue – How to Undertake a Competitive Dialogue Procurement Process” (World Bank 2017b), which outlines that this kind of dialogue is most suitable for undertaking procurements where:

1. A number of alternative solutions that satisfy requirements may be possible, and the detailed technical and commercial arrangements required to support those solutions require discussion and development between the procuring organization and the supplier.
2. Due to the nature and complexity of the procurement, the procuring organization is not objectively able to:
  - a. Adequately define the technical or performance specifications and scope to satisfy its requirements; or
  - b. Adequately specify the legal and/or financial arrangements of the contract.

The tests used to establish if a competitive dialogue is the optimum fit-for-purpose procurement approach include:

- Are the needs clear, but the means of delivering these needs undefined?

- Does the procuring organization want to encourage and allow innovation and refrain from defining the means through which the needs should be delivered?
- Could the needs be met through several different solutions?
- Are there several potential options that could be adopted to provide the commercial element of the overall solution?
- Is the contract unique or unusual, that is, no previous procurements have been undertaken by the procuring organization for similar requirements?
- Is the procuring organization sure that other procurement selection methods and arrangements do not allow for the required level of collaboration between the procuring organization and supplier to enable the development of an acceptable solution?
- Does the procuring organization have sufficient resources to devote to an intensive procurement process that may last 12–18 months and require a high level of inputs, resources, and costs (especially in relation to preparation, rounds of dialogue, and proposal evaluation)?
- Is there the potential for a high level of market interest and therefore strong competition?
- Have other procurement selection methods and arrangements, such as the use of an RFP, with a negotiation stage, been assessed and discounted as not appropriate for the contract?

> > >

**FIGURE 13 - Six Stages in the Competitive Dialogue Procurement Process**

	STAGE NAME	DESCRIPTION
STAGE 1	<b>Planning for a Competitive Dialogue</b>	Before buyers begin a Competitive Dialogue, they should ensure that they have fully planned for the complexity and duration of the process. This includes establishing appropriate work streams, appropriate resources, and dedicated teams.
STAGE 2	<b>Early market engagement</b>	Buyers should consider how to prepare the market and stimulate competition
STAGE 3	<b>Advertise and Initial Selection</b>	The use of Initial Selection is mandatory in a Competitive Dialogue. Rated criteria are used and only the best Applicants (normally not less than 3 and not more than 6) are Initially Selected
STAGE 4	<b>Request Interim Proposals and Dialogue</b>	Proposers submit Interim Proposals that address the buyers “needs”. One-on-one dialogue between the buyer and each vendor leads to a refinement of the proposed solutions.
STAGE 5	<b>Request Final Proposals, Evaluation and Contract Award</b>	Once that dialogue stage closes, the buyer invites the submission of final proposals and undertakes final evaluation of the proposals.
STAGE 6	<b>Contract Implementation</b>	During contract implementation, the buyer needs to have strong oversight in place, supported by active and well-resourced contract management.

As with an RFP, the procurement arrangements for competitive dialogue need to be combined with pre-market engagement, the choice of specification type (performance), the pricing and costing mechanism, the total cost of ownership (TCO) methodology, and the evaluation methodology in order to complete the full contract strategy. There are no award value limitations to competitive dialogue for acquisitions; a single large award or multiple smaller proof-of-concept award can be made using this method.

### 3.3.3 Government Prize Competitions

Government prize competitions are a way to bring scientific and technological innovation to benefit citizens by offering monetary and other benefits (e.g., recognition) to the winning participants. Prize competitions have a long history in both the public and private sectors and have risen in popularity in recent years. Prize competition awards are typically under US\$1 million for winning submissions.

#### United States

In the United States, the America COMPETES Act, passed by Congress in 2010, gives all federal government agencies the authority to conduct prize competitions, making “it dramatically easier for agencies to use prizes and challenges to spur innovation, solve tough problems, and advance their core missions” (White House 2010). According to government leadership, the use of prizes and challenges allows the federal government to:

- Pay only for success and establish an ambitious goal without having to predict which team or approach is most likely to succeed.

- Reach beyond the “usual stakeholders” to increase the number of perspectives working to develop solutions for a specific problem.
- Foster interdisciplinary collaboration and perspectives, reflective of the modern research environment.
- Inspire the next generation of scientists, engineers, and entrepreneurs to work on difficult and important problems.

The U.S. government has set up the website challenge.gov, the official site for prize competitions across the federal government. Since 2010, nearly 1,000 challenges have been posted by more than 100 federal agencies. Among the challenge types listed on the website are:

- **Analytics:** Analytics, visualization, and algorithm challenges focus on finding better ways to interpret or communicate data.
- **Software:** In a software and app development challenge, an organization asks solvers to create a software application to solve an existing problem or draw attention to potential uses of available datasets.
- **Technology:** Technology demonstration and hardware challenges seek prototypes or fully developed solutions to catalyze and demonstrate breakthrough technical innovations.

Challenges are structured into five phases as outlined in the figure below, which is presented from the perspective of a government agency.<sup>8</sup>

> > >

**FIGURE 14 - Five Phases Challenge Structure**



8. See <https://www.challenge.gov/toolkit/>.



## European Union

The EU has established a number of awards and cash prizes to spur innovative solutions for society.<sup>9</sup> In particular, the Horizon Prizes are “challenge prizes (also known as inducement prizes) offering a cash reward to whoever can most effectively meet a defined challenge. The aim is to stimulate innovation and come up with solutions to problems that matter to European citizens.”<sup>10</sup> The key benefits for society, as outlined by the European Commission, include:

- Providing a way to advance innovations that would not ordinarily develop through traditional routes, such as grants or procurement.
- Attracting a wider range of innovators, not the ‘usual suspects’, because they have low entry barriers including not requiring a track record and because they are often exciting and inspiring.
- Providing an opportunity for innovators to take a risk and to forge new partnerships.
- Leading to sustainable new products and services spurring interest in a particular issue<sup>11</sup>.

## The World Bank

The World Bank recognizes the use of prizes and awards as an incentive for innovation and collaboration with industry, academia, and civil society organizations (CSOs) in pursuit of common development objectives and permits their use via the provision of Bank administrative funds and/or Trust Funds for International Bank for Reconstruction and Development (IBRD) or International Development Association (IDA) activities.<sup>12</sup>

The Budget, Performance Review, and Strategic Planning Vice Presidency Corporate and Middle Office (BPSCM) determines the budget cap for any individual prize and the aggregate budget cap for a vice presidential unit (VPU) for prizes or awards per fiscal year. The budget cap for any single prize is US\$100,000 per fiscal year, and the aggregate budget cap per fiscal year is as follows:

- US\$1 million for the Global Practice Vice Presidency (GPVP) (all GPs combined)
- US\$100,000 for each region, Development Economics Vice Presidency (DEC), and Leadership, Learning, and Innovation (LLI)

Any expenses incurred as part of the contest or prize program by the Bank are exempted from the award cap amounts. Prizes and awards are intended to foster innovation from third parties, and Bank staff and consultants are ineligible for awards under this program.

## Country Example

GovTech Polska, the Polish government’s technology agency, recently launched a virtual prize competition with the aim of combatting the effects of the coronavirus epidemic<sup>13</sup>. The competition was attended by almost 2,000 developers who were competing for a prize pool of EUR 21,920. Participants developed solutions over the course of three days for five key challenges areas, including security during an epidemic; business, science and technology during the crisis; e-commerce and logistics; education and leisure; and freestyle (open category).

9. For more information, see the European Commission’s “EU Awards and Cash Prizes for Innovative Solutions to Societal Challenges,” [https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/prizes\\_en](https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/prizes_en).

10. See [https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/prizes/horizon-prizes\\_en](https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/prizes/horizon-prizes_en).

11. Ibid.

12. This process is outlined in World Bank (2014a) and (2014b).

13. For more information, see <https://www.thefirstnews.com/article/polish-government-launches-virtual-hackathon-to-fight-coronavirus-11641>



### 3.3.4 Small Business Innovation Research Funding and Grant Opportunities

The highly competitive Small Business Innovation Research (SBIR) program encourages small businesses to take part in research and development activities with the potential for commercialization, providing an incentive for participation.<sup>14</sup> The mission of an SBIR program is to support scientific excellence and technological innovation through the investment of research funds in areas of critical importance to the funding organization. From a government perspective, typical goals of an SBIR program include:

- Stimulating technological innovation
- Meeting government research and development needs
- Fostering and encouraging participation in innovation and entrepreneurship
- Increasing the private sector commercialization of innovations derived from government research and development funding

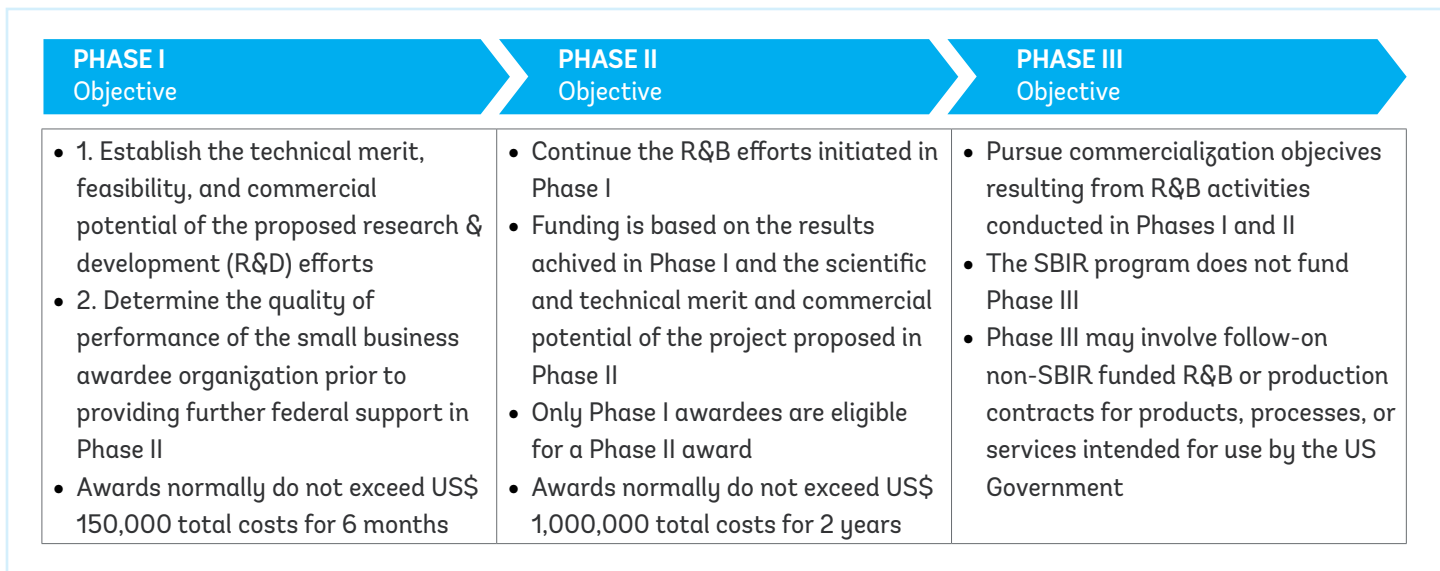
SBIR programs can be implemented to develop products and services across many sectors, including technology, agricul-

ture, education, energy, health care, and transportation. A notable benefit for the small businesses that participate in an SBIR program is access, via the government and large businesses that partner with the government, to local knowledge and logistical strengths to scale-up innovative solution pilots and proof-of-concepts across large geographical regions of the country, for which start-ups do not typically have the relevant experience or the logistical strength. Direct sub-contracting with large businesses can help small businesses scale quickly and efficiently. SBIR-like programs have been established in several countries to spur innovation, including India<sup>15</sup>, Japan, and Sweden.

The United States is widely considered the most successful in establishing an SBIR. The program was launched in 1982 and currently supports activities in 12 agencies across the government, including the Department of Energy, Department of Health and Human Services, Environmental Protection Agency, and National Science Foundation. The SBIR program is structured in three phases, as shown in the figure below.

> > >

**FIGURE 15 - Phases of the U.S. SBIR Program**



Under the most recent SBIR policy, a program participant has 20 years of data rights and IP protections from the results of an SBIR award. During this time, the government has limited rights to use the data or software internally while the participant can pursue opportunities in the private sector. At the end of the 20 years, the participant maintains ownership of all data and software, while the government obtains a royalty-free license to use the data for government purposes, including the right to authorize other organizations to have access to it (Morlock 2019).

As an example of an SBIR program success story, the U.S. National Institutes of Health funded Sanaria,<sup>16</sup> a biotechnology company that was working on a malaria vaccine. SBIR funding supported the company in obtaining laboratory and office space and hiring personnel. As a result of the initial funding, the company transitioned to securing the additional funds required to scale up and optimize manufacturing, plan for approval from the U.S. Food and Drug Administration and other regulatory authorities and launch the vaccine as a commercial product.

14. For more information, see <https://www.sbir.gov>.

15. For more information, see [https://birac.nic.in/desc\\_new.php?id=217](https://birac.nic.in/desc_new.php?id=217)

16. See <https://www.sbir.gov/node/1193461>.

### 3.3.5 Public Private Partnerships for GovTech Implementation

The World Bank and client partners can explore technology improvements in partnership with private sector technology firms and CSOs engaged in government modernization without compromising the integrity of the public procurement process. A PPP can be formed when working with technology firms. In this partnership, the technology developed by the firm is deployed within its partner organization, but the firm maintains ownership and is responsible for technology operations. The intention is that at some future time as specified in the agreement, the technology will be transferred to the public sector partner. In the interim, the technology firm is compensated either through a fixed monthly fee or transactional revenues based on the usage of the technology.

Due to the technological complexity typically associated with a GovTech initiative, it is imperative that the project team engage with the market early and often to amplify the procurement opportunities for market leaders to help craft GovTech solutions with optimal outcomes. Equally critical to any public procurement initiative is the need to adhere to well-established regulations, policies, and procedures aimed at preserving procurement principles, such as fairness and transparency, and to avoid conflict of interest.

Once a formal public procurement process has begun, an arms-length relationship is necessarily established between the procuring entity and industry. Therefore, when undertak-

ing a complex GovTech initiative, a pre-procurement market approach should be taken that allows the procuring entity to interact with industry in an open and transparent manner while avoiding conflict of interest.

One method of executing this market approach is to hold a pre-procurement conference at which the procuring entity will present a:

- I. Project summary
- II. Project timeline, including anticipated solicitation dates
- III. Draft procurement package of technical and functional requirements for industry comment.

Although the pre-procurement conference schedule and logistics are unique to each project, the common objectives of each conference are:

1. To inform the market of the opportunity
2. To solicit market feedback on the draft functional and technical requirements

Pre-procurement conferences should be held in person when possible, with participating industry members able to review physical and electronic copies of technical and functional specifications in order to provide input and comment. The procuring entity, at its sole discretion, can choose to alter or enhance specifications based on industry feedback prior to engaging in the formal procurement process.

> > >

**TABLE 6 - Pre-Procurement Market Engagement Process**

PRE-PROCUREMENT MARKET ENGAGEMENT PROCESS	SPECIFIC ACTIVITIES
Pre-Procurement Market Engagement (3 weeks)	<ol style="list-style-type: none"> <li>1. Outreach to market leaders</li> <li>2. Outreach to industry associations and chambers of commerce</li> <li>3. Outreach to peer organizations and development banks</li> </ol>
Pre-Procurement Conference (1-Day Event)	<ol style="list-style-type: none"> <li>1. Presentation of project summary</li> <li>2. Presentation of procurement package opportunity</li> <li>3. Discussion of draft functional and technical requirements</li> </ol>
Industry Feedback and Review (TBD, based on results of conference)	<ol style="list-style-type: none"> <li>1. Process and publish industry comment and feedback</li> <li>2. Update requirements</li> <li>3. Prepare procurement documents for formal procurement process</li> </ol>

The result of the pre-procurement market engagement should be both improved functional and technical requirements via expert industry feedback and the greater participation of market leaders in an eventual procurement. Both factors will directly enhance the procurement outcome of any GovTech initiative.

An example of a partnership with a CSO is the **American Council for Technology (ACT) and Industry Advisory Council (IAC)**.<sup>17</sup> ACT-IAC is a non-profit PPP dedicated to improving government through the application of information technology. ACT-IAC provides a forum in which government and industry exchange information and collaborate on technology issues. The ACT-IAC group holds numerous conferences each year focused on improving GovTech and provides a platform for professionals to interact and share best practices. ACT-IAC creates working groups focused on particular challenges or new technologies and their application to GovTech. One of the more recent working groups on blockchain technology developed a rubric to assess whether blockchain should be used in GovTech applications and made it available globally. The rubric helped to push the World Bank's Global Public Procurement Database (GPPD)<sup>18</sup> away from blockchain toward more traditional technologies.

### 3.3.6 Use of Framework Agreements

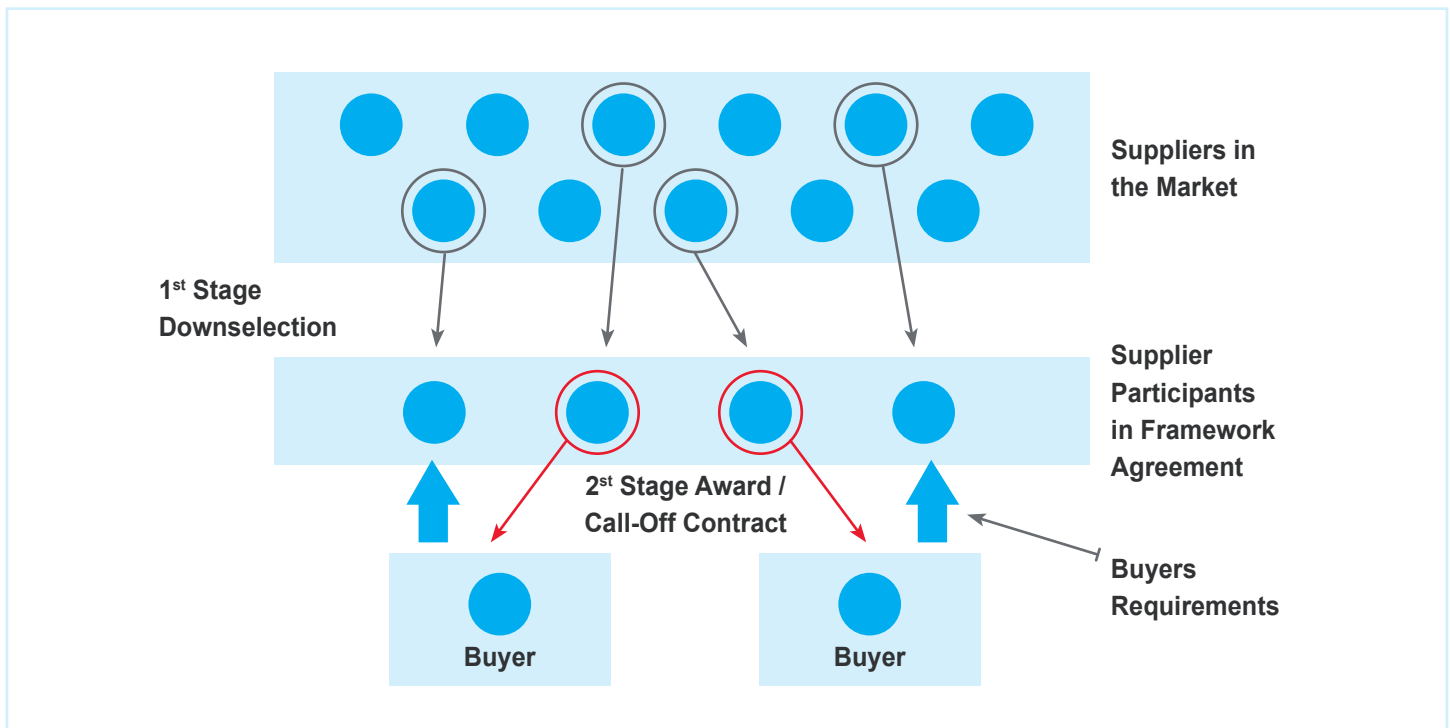
The use of framework agreements should be considered an instrument for GovTech procurement. Framework agreements can be defined as a “contracting mechanism in which long-term contracts provide the terms and conditions under which smaller repeat purchasing orders (or call-off orders) may be issued for a defined period of time” (Arney et al. 2014). Frame-

work agreements may go by several different names, including blanket purchase agreements (BPAs), long-term agreements (LTAs), call-off contracts, or umbrella contracts. Framework agreements make it easier for a procurement organization to fill the requirements for products that are routinely purchased over a specified period of time. For GovTech procurement purposes, framework agreements can be established across countries, states, and local jurisdictions that share similar GovTech requirements. For example, the World Bank and certain UN agencies are authorized to take advantage of schedules of the U.S. General Services Administration, which are framework agreements for various products and services.

The process of acquisition via framework agreement occurs in two stages. In the first stage, all suppliers in a market can be engaged and respond to a buyer's RFP. Proposal analysis is then performed, and a down selected list of suppliers is added to a framework agreement. The second stage is initiated when a purchase needs to be completed. The buyer will then issue requirements to the suppliers who have signed on to the framework agreement and receive quotes for review and supplier selection. Once the supplier is selected, an award is made and structured via a call-off contract. The figure below<sup>19</sup> is an illustrative depiction of how a framework agreement works.

> > >

**FIGURE 16 - Framework Agreement Illustration**



17. For more information, see <https://www.actiac.org/>.

18. See <https://www.worldbank.org/en/topic/governance/brief/global-public-procurement-database>.

19. Adapted from Consip (2017).

There are several key advantages to implementing framework agreements, including:

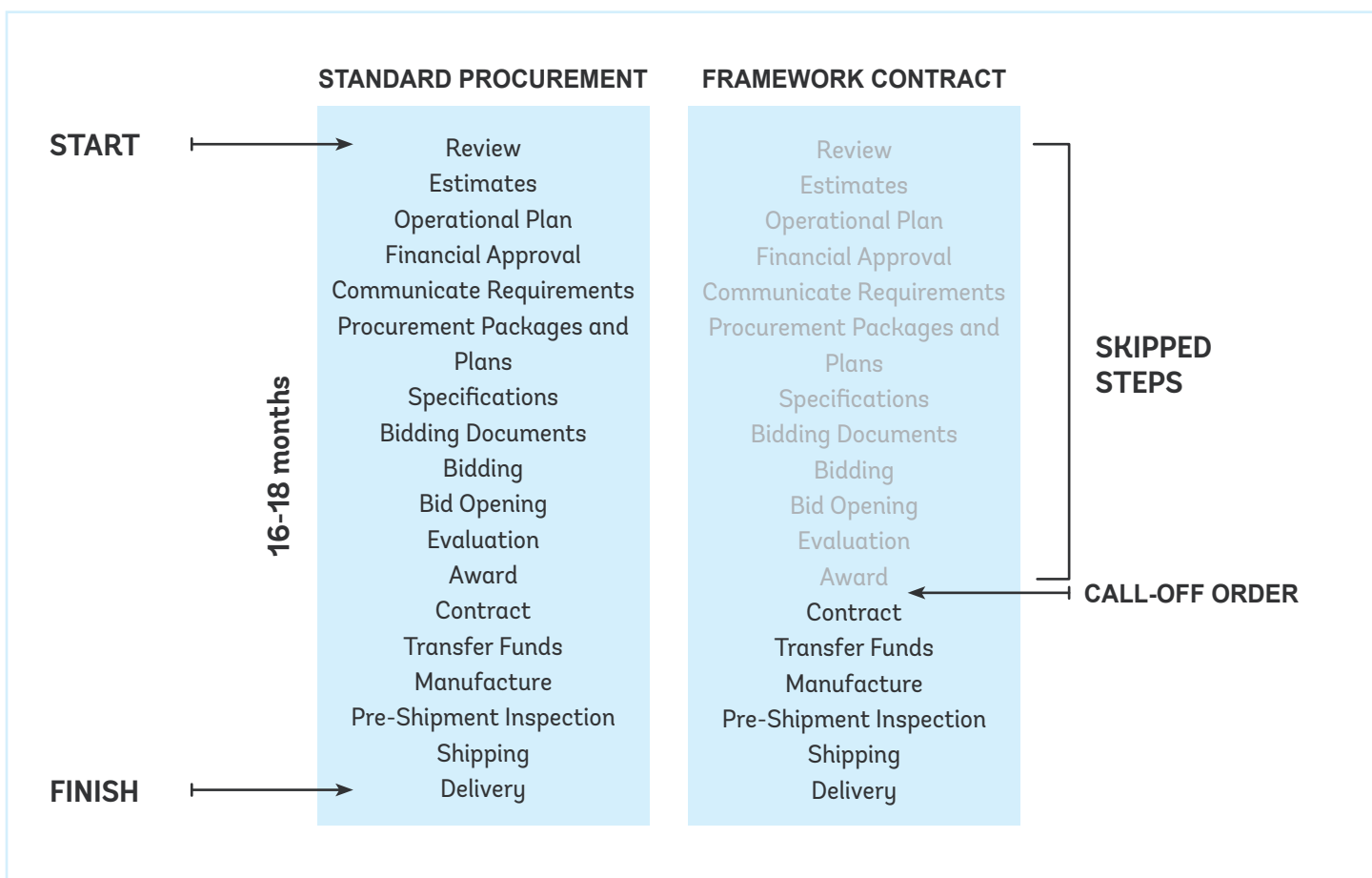
- The administrative burden is reduced as the sourcing process is shortened, resulting in saved time and resources (e.g., reduction in supplier research and issuance of RFPs).
- The shortened sourcing process leads to financial efficiency as time is shaved from each acquisition and the buyer has the ability to purchase products as they are needed, reducing product holding costs.
- Under the framework agreement, suppliers compete for each procurement, resulting in a transparent and fair procurement process.

- Cost savings can be captured via economies of scale and competition among suppliers.

The figure below shows how efficiencies are gained via the use of framework agreements and call-off orders (Arney et al. 2014). Many of the steps in a standard procurement process are skipped when completing a call-off order as they were already achieved when the framework agreement was concluded. As such, greater efficiencies are gained as more call-off orders are executed.

> > >

**FIGURE 17 - Framework Agreement Efficiency Illustration**



An example of a successful deployment of a framework agreement for GovTech procurement comes from Nigeria, where the Kaduna State Public Procurement Authority served as the lead purchaser and represented a group of purchasers to procure an SaaS electronic government procurement (eGP) suite.<sup>20</sup> The framework agreement was structured for award to a single vendor for a period of three years. By using the framework agreement approach, the purchasing group was able to streamline the procurement procedure for all 36 states in Nigeria. As a result, instead of each state running its own individual procurement process, all Nigerian states can sign call-off contracts with the winning vendor.

20. See Kaduna State Procurement Authority, "Request for Bids, Framework Agreement(s) for Procurement of Information Service – Software as a Service," December 18, 2019, <https://lagospa.gov.ng/wp-content/uploads/2019/12/SaaS-e-Procurement-Solution-Invitation-for-Bids-IFB-Final-Version.pdf>

### 3.3.7 Technology and Intellectual Property Transfer

A key area to consider for GovTech is the process by which technology and intellectual property (IP) are managed and shared for the benefit of government, industry, and society. The World Intellectual Property Organization (WIPO),<sup>21</sup> a UN Agency established in 1967 with 193 country members, holds the global mandate for services, policy, information, and cooperation as it relates to IP. Its mission is to “lead the development of a balanced and effective international IP system that enables innovation and creativity for the benefit of all.”<sup>22</sup>

WIPO provides several services that can help organizations that are exploring GovTech solutions to navigate any technology or IP access and/or transfer issues. The WIPO Technology and Innovation Support Center program provides innovators in developing countries with access to locally based, high-quality technology information and related services, helping them to exploit their innovative potential and to create, protect, and manage their IP rights. WIPO is also in the process of developing international guidance on how artificial intelligence (AI) and machine learning (ML) are addressed within the context of IP. WIPO publishes several resources regarding technology transfer, including “**Technology Transfer in Countries in Transition: Policy and Recommendations.**”

Countries should consider the ownership of IP and future technology transfer as part of their GovTech procurement strategy so that they can embed IP Ownership requirements in bidding documents.

### 3.3.8 Cost Estimates in GovTech

Cost estimates are critical to any organization as it must efficiently use its limited resources to achieve its objectives. This is even more important in GovTech as procurers are governments or international organizations that are mandated to effectively and efficiently use their funds.

Cost estimation procedures may differ based on whether the procurement is for goods, services, technology, plant, or works. Specifically, for complex GovTech solutions, the cost estimation process should take into account the following concepts:

- Total cost of ownership
- Sustainability

**TCO** involves all direct and indirect costs for the acquisition and use of a system or product. This includes any upfront development and CapEx as well as any operations and maintenance expenditure or other OpEx over a defined period.

Oftentimes procurement teams may balk at the initial cost of a GovTech solution without realizing that operations and maintenance costs over the planned life of a project can make an initially cheaper CapEx investment more expensive over time. In the below simplified example of TCO, although Solution B is initially cheaper, it incurs operations and maintenance costs that are three times higher than Solution A, making it a more expensive solution over a five-year period. As GovTech solutions often have long project life spans to continuously deliver government services, a focus on a TCO evaluation model is critical to determining VfM.

> > >

**TABLE 7 - GovTech Solution Total Cost of Ownership (TCO) Example**

GOVTECH SOLUTIONS	CapEx Costs	OpEx Costs (Operations and Maintenance)					Total
	Initial Purchase Cost	Year 1	Year 2	Year 3	Year 4	Year 5	
GovTech System Solution A	\$ 100,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 125,000
GovTech System Solution B	\$ 75,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 150,000

21. See <https://www.wipo.int/>.

22. See <https://www.wipo.int/about-wipo/en/>.



**Sustainability** cost estimates take into account concepts such as the circular economy, defined as a model of production and consumption that involves sharing, leasing, reusing, repairing, refurbishing, and recycling existing materials and products as long as possible. In this way, the life cycle of products is extended. A sustainability cost estimate would involve exploring alternatives to the simple purchase and disposal approach; rather, it allows for other purchase strategies, such as the purchase of after-market or refurbished equipment.

### **Use of Public Procurement Technologies to Achieve Gov-Tech Cost Estimates**

eGP can be a tool to improve the project procurement process through the structured management of CapEx requests and approvals throughout the duration of a project and their systematic integration with the supporting budget and documents.

The use of such eGP tools as request management and approval authorities can further project monitoring and oversight,

leading to better management decisions and preventing procurement cost overruns. If tasks are not completed in specified days, reminder e-mails are sent out to help prevent delays in project activities that often lead to cost overruns.

Assigned managers can approve, reject, or ask for additional information about the authorization request at each stage of the approval process. Every stakeholder is thus informed about the progress of the request.

eGP would be beneficial in achieving the following for CapEx procurements:

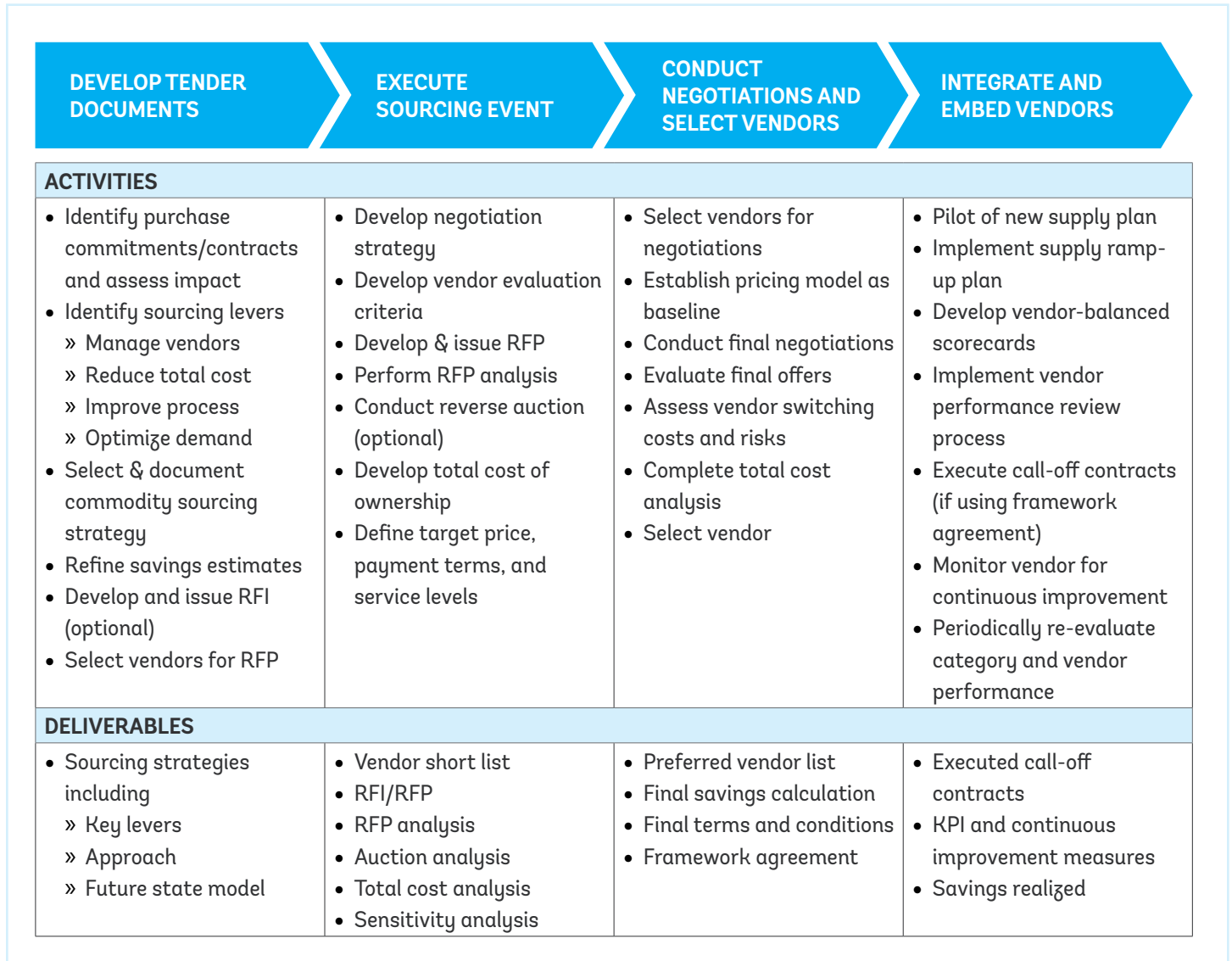
- significantly increase the speed of the approval process without any manual routing
- improve productivity by eliminating system delays and other routing errors
- promote transparency in CapEx request status (pending approval, completion, or rejection)
- certify systematic documentation of all processed CapEx requests for later reuse
- ensure the project's process and audit compliance

### 3.4 STEP 4 – Implementation and Execution

The implementation and execution of GovTech procurement begins with the preparation of tender documents and ends with the integration of the system. Key activities and deliverables related to the process are illustrated in the figure below.

> > >

**FIGURE 18 - Key Activities and Deliverables for Implementation and Execution**



After the acquisition is executed, the focus shifts to supplier performance monitoring. Note that the implementation and execution process is applicable whether using a standing tendering process or implementing a framework agreement.

## 3.5 STEP 5 – Ongoing Management and Technology Evolution

As with any technology solution, ongoing support, maintenance, and development is critical to long-term implementation and service offering. Contract management is therefore an important lever for a procurement strategy to ensure the long-term results of any GovTech solution.

The primary accepted methodology is the use of **service-level agreements (SLAs) and key performance indicators (KPIs)** to measure and monitor contract performance. Both SLAs and KPIs should be carefully designed to measure performance in order to meaningfully impact the ongoing management of the solution. Any SLA methodology and governance framework should allow for the addition, deletion, and continuous improvement of service levels over the course of a contract. This process can be built on specific calculations that are based on best practices in both the public and private sectors as well as customized by the government and its technology suppliers. Service levels are typically measured and reported monthly. Suppliers, as part of their **monthly performance reports**, should provide electronic reports generated from systems where available or delivered manually in the absence of a system measurement. The inclusion of SLAs and KPIs into GovTech contracts is critical to their long-term success and sustainability. Therefore, it is highly recommended to define SLAs and KPIs during the development of tender documents so that suppliers can be informed upfront and their proposed solution can be evaluated against these requirements.

The following concepts are recommended for incorporation into any GovTech SLA:

- **Service-Level Credits:** These allow for financial compensation when service levels are not met.
- **Earn backs:** These allow suppliers to earn back financial penalties for improved performance.
- **Termination for Repeated Service-Level Failure:** Government should have the ability to terminate service for any repeated failure of service levels.
- **Updates and Corrections:** Supplier should be responsible for any updates or corrections required to meet service levels.
- **Investigation:** Supplier should be responsible for root cause analysis and investigation of any service-level failures.

- **Regulatory Compliance:** Supplier's hosted services should remain in compliance with all applicable laws.

One of the most critical service levels for any GovTech initiative is system availability. As more and more industry service offerings are in the cloud or provided as a service (e.g., SaaS, PaaS, or infrastructure as a service [IaaS]), connectivity and availability are the most critical service levels. It is imperative that this service-level requirement be properly documented and put in as a mandatory requirement in solicitation documents so industry can appropriately scope a solution.

In order to do so, it is helpful to understand how the system availability measurement is calculated and measured.

### **Service Availability as an SLA Example:**

**Performance Criteria.** Hosted services will be available to the client in all material respects and as measured against the criteria listed below (collectively the “**availability requirements**”):

- During any 24-hour period, the services will be available 99.95 percent of the time.
- During any seven-day period, the services will be available 99.95 percent of the time.
- During any 30-day period, the services will be available 99.95 percent of the time.

To determine whether a service level is achievable, it is common practice to ask for historical data from prospective suppliers in order to evaluate and qualify them for the specific project. In the event the GovTech initiative is for a new technology or solution where historical data may not exist, one option is to ask prospective suppliers to provide system availability historical data across existing clients (anonymized) in order to evaluate their technical solutions, including their performance. The below table presents an illustrative example of the system availability performance of a single supplier over a six-month period across 10 clients. It is important for evaluation purposes that the historical data request cover both a broad client base and lengthy time period so a proper performance evaluation can be carried out.



**TABLE 8 - Example of System Availability Performance Data (Illustrative Example)**

CLIENT	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE
A	100.000	100.000	100.000	100.000	100.000	100.000
B	99.901	99.956	99.950	99.959	99.899	99.952
C	100.00	100.000	100.000	100.000	100.000	100.000
D	99.995	99.995	100.000	100.000	99.991	99.990
E		100.000	100.000	99.948	100.000	100.000
F	99.953	99.992	100.000	100.000	100.000	100.000
G	99.983	99.967	100.000	99.768	99.963	100.000
H	99.958	100.000	99.943	99.965	100.000	100.000
I	99.875	99.927	99.972	100.000	100.000	100.000
J	100.000	100.000	100.000	99.645	100.000	100.000

The calculation for system availability itself is very straightforward, and the measurement should come from system-generated (and not manual) data. This is a common practice and easily achievable automatically via existing measurement systems and technologies.

Measurement. System availability expressed as a percentage of the scheduled system availability for the measurement window (i.e., availability % = ((actual uptime) / (scheduled uptime)) x 100%).

Compliance Calculation. Supplier shall calculate the system availability service level for each month in accordance with the following formula:

$$A = \frac{B}{C} \times 100\%$$

- A = the service level;
- B = actual measured system availability in milliseconds in the measurement window month; and
- C = the total number of available milliseconds in a measurement window month

In a world of complex financial dealings where thousands of transactions are happening every second of every day, availability is extremely critical and often measured in milliseconds. To better understand the concept, however, it may be more useful to think of system availability occurring over a single 24-hour period when the system is not accessible for 10 minutes within that period.

A simplified example of the above service-level calculation for a single day would be the following:

(B) **Actual system uptime:** 23 hours 50 minutes / (C) **scheduled uptime:** 24 hours in a day x 100% = **99.31% system availability**

For certain low-priority GovTech systems (e.g., traffic ticket payment processing), a lack of system availability of 10 minutes per day may be acceptable. However, for more mission critical systems, such as citizen purchases of pharmaceuticals via a country’s public health system, 10 minutes of downtime may be unacceptable. It is therefore important when developing GovTech solution requirements to understand and contract for the right levels of system availability.

The purpose of the SLA is to provide a monitoring framework to ensure that the contracted GovTech solution is meeting the performance standards required to deliver the service to the end user—often a country’s citizens, business community, or both. The framework also allows for the quick resolution of system performance issues that may otherwise go unnoticed if not vigorously monitored with an incentive/penalty framework in place to ensure and incentivize compliance.

An example SLA framework for system availability and problem support terms, including measurement and remedies, is contained in **Annex III**.



# GovTech and Procurement

Disruptive technologies can be defined as emerging technologies that result in a step change in the cost of or access to products or services, or that dramatically change how people gather information, make products, or interact. Disruptive technologies will fundamentally change the way in which public procurement value is realized over the next decade. Existing supply chain delivery mechanisms will be enhanced by drone delivery (e.g., medicine to inaccessible locations), supply chains will be increasingly and securely monitored via Geotagging, and contracts and payments will be made transparent via blockchain. The value creation for developing countries is unlimited; however, to capture this value, countries need to understand when and how best to implement disruptive technologies based on their unique operating environments.

## GovTech Procurement Practice Note for Disruptive Technologies

A GovTech strategy focused on disruptive technologies in procurement should use the GovTech procurement framework as described in section 3 of this document to promote procurement system improvements and innovation. Countries and purchasing organizations can apply the framework to assess and implement potential procurement and contract management solutions using blockchain, drones, GPS tagging, AI, robotic process automation (RPA), big data, GIS mapping, and other technologies.

The GovTech procurement framework assists in the procurement of disruptive technologies by addressing the need to:

- Identify key requirements necessary for implementing disruptive technologies in the public procurement space
- Identify investment opportunities for supporting client countries in different areas of procurement reform using disruptive technologies
- Utilize best practice approaches using disruptive technologies in the public procurement area and inform the Multi-Donor Trust Fund (MDTF) and the Global Governance Practice (GGP) about opportunities for scaling
- Offer strategic direction for the coordination of donor and government resources on disruptive technologies in procurement, providing strategies to integrate procurement reform actions using disruptive technologies
- Introduce innovative technologies that will help government procurement systems to increase competition and identify business process efficiency and technological solutions

## Disruptive Technology and Performance Specifications

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Technology requirements may be classified as either conformance or performance specifications.

**Conformance specifications** are used where a thorough understanding of the requirements already exists, and there is little desire for a supplier to innovate. **Performance specifications** are used where the understanding of what is required in terms of outcomes can be described, but it is less certain as to the best process or method to deliver the requirements, or there is a desire for suppliers to innovate. For the procurement of disruptive technologies, which by definition are new and innovative, it is highly recommended to use performance specifications wherever possible to maximize the possibilities for innovation. Conformance specifications may also be used for certain solution components where the requirements are known or where there is a known reliance on existing technologies.

## Disruptive Technology Innovation at the World Bank

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The World Bank has released key policy papers in recent years that illustrate that effective use of disruptive technologies is a priority. In 2018, a Development Committee paper titled, “Dis-

ruptive Technologies and the World Bank Group: Creating Opportunities—Mitigating Risks” (World Bank 2018), discussed the Bank’s ability to assist client countries in harnessing disruptive technologies while also helping them to address the downside risks and impacts of that disruption. The paper lays out the “Build-Boost-Broker” framework, which requires support from the private sector and development partners, as listed below.

- **Build** the infrastructure and regulatory foundations to expand the diffusion of and access to new technologies.
- **Boost** the capacity of individuals, institutions, businesses, and governments to pursue new opportunities and to thrive in the face of change.
- **Broker** the use of technologies to address specific development challenges and to shape the global dialogue and standard setting associated with disruptive technologies.

In 2019, an additional Development Committee paper, “Mainstreaming the Approach to Disruptive and Transformative Technologies at the World Bank Group” (World Bank 2019a), improved the “Build-Boost-Broker” framework by identifying five mechanisms that will help to mainstream the Bank’s approach to disruptive technologies:

1. Support country diagnostics that help chart the new drivers of growth.
2. Support the formulation and implementation of agile regulations for the new economy.
3. Scale up universal, affordable digital connectivity.
4. Support the provision of transparent, efficient, and accountable digital government services.
5. Support the development of skills and capabilities for the new economy.

Recognizing that technological advancement is central to its mission as technology impacts all aspects of the global economy, the Bank is working with global partners to implement its disruptive technology agenda.

Within the World Bank, the Information and Technology Solutions (ITS) Technology and Innovation Lab is a centralized department that is accessible to staff to test, prototype, and deploy pilot projects using leading edge and developing technologies (e.g., AI, ML, blockchain). The purpose of the lab is to provide an organizational structure and resources to efficiently deploy and share knowledge around technological solutions that can improve the delivery of Bank and client services.

In relation to the GovTech procurement practice note, the ITS lab can be used to test and assist with the development of different technology solutions, leading to the generation of require-

ments that can then be plugged into a procurement plan. For example, the ITS lab tested both the feasibility and applicability of blockchain and AI technologies for the GPPD; the results of these prototype and feasibility tests were then incorporated into the final procurement technical and functional requirements before the Bank formally issued a competitive solicitation. Specifically, ITS prototype and feasibility tests showed that blockchain technology was not the right requirement fit for the GPPD, and this technical architecture and functionality was eliminated from the product and solicitation requirements.

The ITS Lab also participated in a project on behalf of the World Bank's Sindh Agricultural Growth Project for Pakistan is to improve the productivity and market access of small and medium producers in important commodity value chains. The ITS lab in collaboration with World Bank and client country teams prototyped a Blockchain based platform to help manage the agricultural equipment supply chain. The prototype served as a PoC and the basis for a market competition that was launched with an initial product implementation occurring in June 2020.

It is recommended that governments and other organizations that are investigating the potential use of GovTech establish an organization like the Bank's ITS lab to explore innovation, prototyping, and feasibility tests using disruptive technologies. Centralizing this knowledge in a single lab allows multiple government agencies to access this resource without having to duplicate it across multiple agencies.

The World Bank chose to centralize its lab within its ITS department as the enterprise-level department responsible for IT implementations across the entire WBG. Dependent on country context and purpose of the lab, it can be centralized into an existing independent agency or placed within the appropriate ministry. For example, the Government of Singapore has created a Government Technology Agency<sup>23</sup> that sits directly under the Prime Minister's Office and is responsible for implementing GovTech solutions and operating a variety of GovTech focused labs that are similar to the World Bank's ITS lab.

## Disruptive Technology at the United Nations

In 2018, the Secretary-General of the UN issued a Strategy on New Technologies. The goal of the strategy was to "define

how the United Nations system will support the use of new technologies like AI, biotechnology, blockchain, and robotics to accelerate the achievement of the 2030 Sustainable Development Agenda and to facilitate their alignment with the values enshrined in the UN Charter, the Universal Declaration of Human Rights, and the norms and standards of international law." (UN 2018). The Emerging Technologies Team (ETT)<sup>24</sup> within the UN Office of Information and Communications Technology (OICT) investigates technologies and their applications that can facilitate the core work of the UN. ETT has investigated technologies in four areas:

1. Artificial Intelligence. ETT focuses on AI subdomains, such as ML and natural language processing (NLP). Prototypes have been built for various applications, including Unite Cognition Extractive Text Classification, Unite Cognition Answer Finder, and Unite Cognition Extractive Video Summarization.
2. Computer Vision. ETT applies computer vision techniques to better understand environments and situations while exposing data in unique ways. Prototypes have been built for various applications, including Low Connectivity Asset Tracking and Unite Cognition Extractive Video Summarization.
3. Distributed Ledger Technology. Defined as a peer-to-peer network of interaction and transaction that is replicated and distributed among many participants, ETT has built prototypes for Low Connectivity Asset Tracking and Unite Token (cryptocurrency).
4. Internet of Things (IoT). Defined as the interconnection via the internet of computer devices embedded in objects, allowing them to send and receive data, ETT is currently developing IoT solutions for Low Connectivity Asset Tracking and Unite Cognition Smart Cities.

The UN has already deployed disruptive technologies in support of its mission (UN 2018). For example, in Malawi, the UN has established the world's largest drone test corridor for humanitarian applications covering over 13,000 square kilometers. In Zambia, the UN is supporting the creation of "virtual farmers markets," where an app-based e-commerce platform connects farmers' surplus with buyers' demand for crops. The UN has also recently established the United Nations Technology Bank for Least Developed Countries, a global organization dedicated to enhancing the contribution of science, technology, and innovation to sustainable development in the world's most impoverished states.<sup>25</sup>

23. See <http://tech.gov.sg>

24. See <https://unite.un.org/emerging-tech>.

25. For more information, see <https://www.un.org/technologybank/>.

# World Bank Case Study – Blockchain Use in eGP

The ITS Technology and Innovation Lab and the GGP procurement units collaborated to test the possibility and feasibility of using blockchain to increase the transparency and efficiency of eGP systems (World Bank forthcoming). The expected outcome and benefits of the concept developed include:

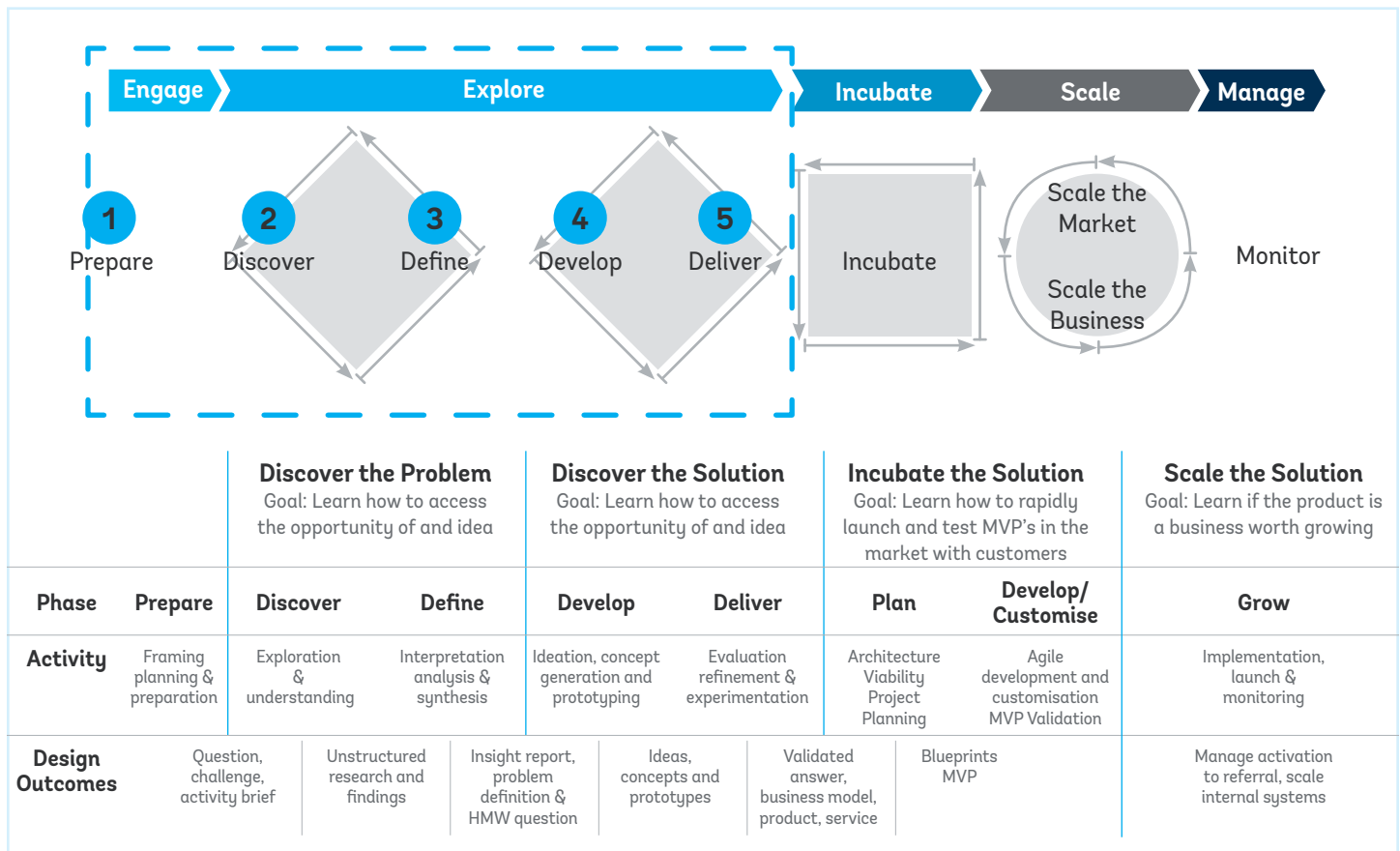
1. The experience and validity of suppliers is recorded in a standardized format that could help create a sense of competition among the supplier community, potentially leading to improved ratings and better quality in government contracting.
2. Expedited procurement and reduced transaction costs are likely as purchasing agencies will find it easier to evaluate suppliers. Automated bid evaluation is possible when the data required for an assessment of a supplier's expertise can be pulled in a standardized format from authenticated sources.

3. Suppliers can input their work experiences and other capability information in one place, after which bid submission can be done with less effort. Consequently, the supplier community would find working with the government much easier, resulting in greater competition for government tenders.

The exploration team leveraged design thinking methodology, as shown in the figure below<sup>26</sup>. Implementing the double diamond design approach, which moves tasks through a complex business problem, helped the team to better explore the case. Initial activities included problem framing and preparation of the research plan, followed by case analysis and delivery of a tested prototype.

> > >

**FIGURE 19 - Design Thinking Approach**



The team agreed to implement an approach that provides access to both purchasing agencies and suppliers via global blockchain for the purposes of a prototype. Through the selected design solution, the team anticipates that supplier information will not be duplicated. The ITS lab recommends planning for the de-duplication of past supplier information migration separately, as part of project implementation.

26. Figure is sourced from forthcoming World Bank document



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## **ANNEX I: Sample Technology Assessment Interview and Survey Questions**



## Interview and Survey Questions

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Note. For most questions, participants will be asked to provide responses on a scale of 1 to 5, where 1 is the weakest score and 5 is the strongest score. The actual scale will be specified for each question.

In the instructions, we will also specify that participants should provide their evaluations and feedback based on:

- Their experience at <BUYING ORGANIZATION>
- Their experience and knowledge of other similar IT organizations
- Their expectations based on common practices and communicated performance standards

In the upfront collection of background details, we will ask for the individual's level of interaction with the IT organization (1 = very limited, 5 = very extensive).

## Infrastructure and Operations

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- 1. What common activities do you primarily perform in the completion of your job?** Please specify the top 3 activities where you spend a significant amount of time:
  - a. Procurement
  - b. Travel Management
  - c. Reporting
  - d. Grants Management
  - e. Human Resources and Payroll
  - f. Finance and Accounting
  - g. Investment Management
  - h. Facilities or Asset Management
  - i. Time and Attendance
  - j. Other (please specify)
- 2. For each of the top 3 activities that you specified in Question #1, please rate the quality of the current IT systems and applications that you leverage to perform each activity.**
  - a. Activity #1: \_\_\_\_\_
    - i. Application/System Name (if one exists): \_\_\_\_\_
    - ii. Quality Rating (1=poor, 5=excellent, or "n/a" if no application exists): \_\_\_\_\_
    - iii. Additional comments: \_\_\_\_\_
  - b. Activity #2: \_\_\_\_\_
    - i. Application/System Name (if one exists): \_\_\_\_\_
    - ii. Quality Rating (1=poor, 5=excellent, or "n/a" if no application exists): \_\_\_\_\_

- iii. Additional comments: \_\_\_\_\_
- c. Activity #3: \_\_\_\_\_
    - i. Application/System Name (if one exists): \_\_\_\_\_
    - ii. Quality Rating (1=poor, 5=excellent, or "n/a" if no application exists): \_\_\_\_\_
    - iii. Additional comments: \_\_\_\_\_

- 3. How would you rate the IT organization's performance in developing new systems and applications?** Consider such elements as alignment with customer requirements; development cycle time; application roadmaps; application quality and performance; application support. (1=poor; 5=excellent)

Please explain and provide specific examples/instances if possible.

- 4. How satisfied are you with the level and quality of the IT disaster recovery and backup systems and applications?** Consider such elements as response times; ability to store and recover critical data. (1=poor; 5=excellent)

Please explain and provide specific examples/instances if possible.

## IT Strategy and Leadership

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- 5. How would you rate the IT organization's alignment with <buying organization>'s overall strategic objectives?** Consider such elements as the technology roadmap; alignment with overall <BUYING ORGANIZATION> mission; how well the IT strategy is communicated; how well it is executed. (1=poorly aligned; 5=very well aligned)

Please explain and provide specific examples/instances if possible.

- 6. How would you rate the IT organization's Governance procedures?** Consider elements of IT governance, such as creating IT technology standards, decisions on IT investment prioritization, allowance of beta tests (e.g., Procurify), IT, and SW asset management. (1=distributed governance; 5=centralized governance)

Please explain and provide specific examples/instances if possible.

- 7. How would you rate the IT organization's Communications?** Consider elements of IT governance, such as

communications on: service interruptions, new product introductions, new service implementations, IT strategic vision/technology roadmaps.

(1=poor communication; 5=excellent communication)

Please explain and provide specific examples/instances if possible.

extent to which projects are delivered on time and on budget; status reporting; issues management; whether IT is keeping the lights running or introducing new projects.

(1=poor; 5=excellent)

Please explain and provide specific examples/instances if possible.

## People and Organization

---

8. **[FOR IT PERSONNEL ONLY] How would you rate the quality of the organizational structure in the IT organization?** Consider such elements as your perception of how a distributed IT organization impacts service levels versus your knowledge of IT organizational structure at other organizations.

(1=poor; 5=excellent)

Please explain and provide specific examples/instances if possible.

9. **Do you think the IT organization has sufficient resources and skills to meet the needs of your organization?** Consider such elements as the availability of resources across the IT organization. Do resource availability and skill sets differ across the organization (i.e., resources differ between P Street and departments)?

(1=poor; 5=excellent)

Please explain and provide specific examples/instances if possible.

10. **How would you rate the availability and quality of training from the IT organization?** Consider such elements as your perception of the availability and quality of the training. Is training available in person or online (e.g., when new applications or systems are released, do you feel you have been adequately trained on how to utilize them)? Do training manuals exist? How is IT knowledge transferred?

(1=poor; 5=excellent)

Please explain and provide specific examples/instances if possible.

## Project/Portfolio Management

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11. **How would you rate the quality of project management in the IT organization?** Consider such elements as the

12. **How would you rate the quality of vendor management in the IT organization?** Consider such elements as the responsiveness of vendors, adjustment in vendor performance based on IT department feedback, quality of IT vendors.

(1=poor; 5=excellent)

Please explain and provide specific examples/instances if possible.

## Customer and Stakeholder Relationships

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13. **What is your overall level of satisfaction with the services provided by the IT department?**

(1=very dissatisfied, 5=very satisfied)

Please explain and provide specific examples/instances if possible.

14. **What is your perception of the general level of satisfaction with the services provided by the IT organization amongst your peers?**

(1=very dissatisfied, 5=very satisfied)

Please explain and provide specific examples/instances if possible.

15. **What is your perception of the IT Organization as a Strategic Partner?**

(1=not considered strategic partner, 5=considered strategic partner)

Please explain and provide specific examples/instances if possible.

16. **General comments and feedback.** We welcome any additional comments or feedback that you would like to provide regarding your experience with the IT organization at <BUYING ORGANIZATION>. Any suggestions and/or recommendations for improvement that you would like to share are also welcome and greatly appreciated.



## **ANNEX II: e-Procurement Toolkit Templates**

The e-Procurement Toolkit can be found at: <http://eprocurementtoolkit.org/>.

# Invitation Template

---

## **Recipient's address:**

Name  
Department/Organization  
Address  
Country

## **Sender's details:**

Name  
Department/Organization  
Address  
Country

[Date]  
Dear Sir/Madam,

Our organization, in line with its mandate to modernize the [Information Technology (IT) system environment], is undertaking a market analysis exercise in the field of [Information Technology (IT) systems], aiming to obtain a better understanding of the market landscape. The ultimate objective of the market analysis is to refine our requirements in preparation for a tendering procedure to contract with the most suitable vendor(s) to implement the [country]'s IT system]. The tendering procedure is planned to take place in the [number] quarter of [year].<sup>1</sup> Your company is asked to participate in the market analysis exercise because of its expertise, reputation, and past performance record in the field.

The mission of our organization is to modernize the [Information Technology (IT) system environment] in the whole country, with the goal of improving in five strategic areas: governance, institutional capacity, functionality and infrastructure, interoperability, and adoption. All five strategic areas are being addressed in an organized and thorough manner, as per the elaborated Action Plan published at [website], which also describes the achievements so far.

The market analysis is a central component of the third strategic area of the Action Plan, that of functionality and infrastructure. A solid market analysis on [Information Technology (IT) systems] and their respective vendors is crucial to our understanding of the current state of the market, including the latest trends, best practices, industry capabilities, delivery approaches, and likely costs. The analysis will be based primarily on a questionnaire that raises five topics for profiling vendors (such as experience and methodology) and five topics for profiling e-Procurement solutions (such as system modules and maintenance support). In addition to these specific topics, you may submit any supplementary information you consider important for our better understanding of the market, including brochures, case studies, methodologies, pricing schemes, and so forth.

I wish to emphasize that the market research is not a tendering competition. Any information obtained will be treated as confidential and will be used solely by government officials for the purposes outlined above. Furthermore, the identity of the vendors invited and those that respond will not be disclosed, and no formal evaluation of the submitted information will be performed. Finally, this invitation does not constitute a commitment for future business cooperation, and vendors will not be financially compensated their response. Any contractual arrangement with any organization(s) may be concluded only following the forthcoming tendering exercise.

If you are interested in participating in the market analysis, please visit the following Internet location in order to obtain access to the terms, list of requirements, and questionnaire.

[website]

Your responses should be sent via e-mail to: [e-mail address]

Any questions, objections, and/or concerns should be communicated via e-mail to the aforementioned e-mail address.

I wish to thank you in advance for your cooperation and look forward to receiving your response.

Sincerely  
[name]  
[role]  
[signature]

## **Notes**

1. If the time plan for the tendering exercise is not decided yet, this sentence should read "There is currently no specific date for commencing the tendering exercise."
2. If the material is not intended to be published, this sentence should read "If you are interested in participating in the market analysis, please send a respective e-mail to [e-mail address]; we will then respond back to you, attaching all relevant material."

# Questionnaire Template

## Vendor Questionnaire

### 1. Profile

1.1 Name	
1.2 Website	
1.2 Field of expertise (free text up to 200 words)	

### 2. Relevant Experience

	Country	Client	Project	Budget
2.1 Experience in public sector systems (last 5 projects)				
2.2 Experience in public sector information systems (last 5 projects)				
2.3 Experience in private sector information systems (last 5 projects)				

### 3. Eligibility to Participate in Public Procurement Proceedings

3.1 Eligibility in public procurement proceedings (i.e., not convicted of participation in any criminal activity, corruption, fraud, terrorist offenses, money laundering, or child labor; not subject to exclusion due to nonpayment of taxes or social security; not in the process of bankruptcy; not convicted of misconduct, etc.) (check as appropriate)	I confirm that the organization is eligible.	I do not confirm that the organization is eligible.	
3.2 Average annual turnover in the past 5 years (number)			
3.3 Average annual manpower (number)			
3.4 Certificates by independent bodies	Independent until Body	Certificate	Valid

## 4. Geographical Coverage

4.1 Physical presence in the region	<b>Continent X</b>	<b>Country Y</b>
4.2 Experience in delivering software solutions in region (If you cover [country], then simply check that box. If not, write the main countries covered in [region].)	<b>Continent X</b>	<b>Country Y</b>
4.3 Experience in delivering end-user training services in region (If you cover [country], then simply check that box. If not, write the main countries covered in [region].)	<b>Continent X</b>	<b>Country Y</b>
4.4 Experience in delivering software support/maintenance services in region (If you cover [country], then simply check that box. If not, write the main countries covered in [region].)	<b>Continent X</b>	<b>Country Y</b>
4.5 Experience in delivering help desk services in region (If you cover [country], then simply check that box. If not, write the main countries covered in [region].)	<b>Continent X</b>	<b>Country Y</b>

## 5. Engagement Methods with Clients and Typical Service-Level Agreement (SLA)

5.1 Delivery of software ownership and source codes (check as appropriate)	<b>Yes</b>	<b>No</b>
5.2 Delivery of software-as-a-service (SaaS) (check as appropriate)	<b>Yes</b>	<b>No</b>
5.3 Engagement in a public-private partnership (PPP) (check as appropriate)	<b>Yes</b>	<b>No</b>
5.4 Delivery of service in the form of a shared service (check as appropriate)	<b>Yes</b>	<b>No</b>
5.5 Indicative SLA provided (e.g., response time for minor/major issues, availability %, re- sponse to security issues, etc.) (free text up to 200 words)	<b>Yes</b>	<b>No</b>

## 6. Profile

6.1 Name		
6.2 Website		
6.3 Description of the system (free text up to 200 words)		

## 7. System Modules

(Note.\* This section provides examples of eGP Modules. Template users should substitute actual IT System Modules based on their unique project design.)

7.1 e-Registration	<b>Supported (Yes/No)</b>	
7.2 e-Procurement Plan	<b>Supported (Yes/No)</b>	
	Process Management	
	Group/consolidation	
	Publication	
7.3 e-Publication/Notification	<b>Supported (Yes/No)</b>	
	Tender workspace creation and workflow setup	
	Officer association	
	Tender documentation	
	Tender questionnaire	
	Completion Publication/ Activation	
7.4 e-Tendering	<b>Supported (Yes/No)</b>	
	Questions/answers	
	Creation/submission of bids	
	Securities/guarantees	
7.5 e-Evaluation/e-Awarding	<b>Supported (Yes/No)</b>	
	Bid opening	
	Offline tenders	
	Evaluation	
	Complaints	
	Award	
7.6 e-Reverse Auctions	<b>Supported (Yes/No)</b>	
7.7 Contract Management	<b>Supported (Yes/No)</b>	
	Contract workspace management	
	Contract negotiations, amendments, renewals	
	Deliverables	
	Actions	
	Key Performance Indicators	
	Financials	
7.8 e-Catalogues	<b>Supported (Yes/No)</b>	
	Catalogue workspace management	
	Catalog browsing	
	Cart management	
7.9 Catalogue Management	<b>Supported (Yes/No)</b>	
	Catalogue preparation	
	Catalogue submission	
	Catalogue approval	
	Catalogue versioning	
	Catalogue activation	

7.10 e-Purchasing	<b>Supported (Yes/No)</b>	
	Requisition	
	Quotation	
	Purchase order	
	Invoice	
	Payment	
	Good receipt note	
7.11 Vendor Management	<b>Supported (Yes/No)</b>	
	e-Attestations	
	Prequalification	
	Vendor performance	
7.12 Procurement Monitoring and Reporting	<b>Supported (Yes/No)</b>	
	Notifications	
	Auditing	
	Business Intelligence Reporting & Dashboard	
	Open Contracting Data Standard (OCDS)	
	World Bank Indicators	

## 8. Nonfunctional Features

8.1 Programming language(s), database, supported operating system and technologies(bulleted list)	
8.2 Technical characteristics of special interest (free text up to 200 words)	
8.3 Use of standards (bulleted list)	
8.4 Interoperability capabilities and technical setup for integrations (free text up to 200 words)	
8.5 Adaptation/customization capabilities and methodology used (free text up to 200 words)	

## 9. Support/Maintenance Procedures

9.1 Methodology to support system and ensure a responsive, reliable, and available service (free text up to 500 words)	
9.2 Methodology for risk management and disaster recovery (free text up to 500 words)	

## 10. Nonfunctional Features

10.1 Indicative system baseline/license cost (USD range in thousands)	
10.2 Indicative system annual license and maintenance fee (USD range in thousands)	
10.3 Indicative cost for adaptation (USD range in thousands)	
10.4 Indicative cost for SaaS model	



# Supplemental Information

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Vendors are invited to deliver any further documentation deemed relevant to this inquiry or any additional information that may supplement the provided answers. This can include:

- Vendor profile brochures
- System brochures
- Case studies on the practical application of the system
- Technical documentation of the system
- Operational/procedural documentation on employed methodologies
- Pricing scheme

## Market Analysis Report Template

*Note.\* Example data analysis and charts for various sections of the Market Analysis Report Template can be found in the e-Procurement Toolkit.*

### 1 INTRODUCTION

#### 1.1 Purpose of the report

Description of the current market analysis (i.e., the incentive for performing it and next steps)

#### 1.2 Stakeholders and audience

Description of the personnel involved in the market analysis and its intended audience

#### 1.3 Structure of the report

Description of the report chapters

### 2 METHODOLOGY

#### 2.1 Market analysis phases

Brief description of the phases followed for conducting the market analysis:

- Inception
- Material preparation
- Vendor involvement/communications
- Consolidation/synthesis
- Conclusions

#### 2.2 Material shared with vendors

Documentation of the material provided to vendors

##### 2.2.1 Invitation

Attachment

##### 2.2.2 Description of the requirements

Attachment

##### 2.2.3 Questionnaire(s)

Attachment(s)

##### 2.2.4 Other material

Attachment(s)

#### 2.3 Consolidation/synthesis

Description of the processing performed to synthesize the collected data and extract the information needed for the next steps (including attachments of any “consolidation” templates used)

### 3 SYNTHESIZED INFORMATION

#### 3.1 Relevant experience

Relates to information collected from section 2 of the questionnaire.

Conclusion to be drawn: do the economic operators (EOs) that provided data have experience in delivering public sector IT systems and other such large-scale projects?

#### 3.2 Eligibility

Relates to information collected from section 3 of the questionnaire.

Conclusion to be drawn: are the EOs that responded to the market analysis eligible to support an IT system implementation project?

#### 3.3 Geographical coverage

Relates to information collected from section 4 of the questionnaire.

Conclusion to be drawn: do the EOs that responded to the market analysis provide the necessary regional coverage to support the full cycle of an IT system implementation project?

#### 3.4 Engagement method

Relates to information collected from section 5 of the questionnaire.

Conclusion to be drawn: which engagement methods are used most by the EOs that responded to the market analysis?

#### 3.5 System modules

Relates to information collected from section 7 of the questionnaire.

Conclusion to be drawn: which system modules are widely available on the market and which would most probably require a substantial implementation/configuration effort as per the information provided by the EOs that responded to the market analysis?

#### 3.6 Nonfunctional features

Relates to information collected from section 8 of the questionnaire.

Conclusion to be drawn: which are the most prominent programming languages and the most commonly used standards as per the information provided by the EOs that responded to the market analysis?

#### 3.7 Support/maintenance procedures

Relates to information collected from section 9 of the questionnaire. Since responses here involve free text provided by the EOs, a graph is not envisaged. Still, a conclusion should be drawn as to the most common management standards used by the EOs that responded to the market analysis. Support methodologies, tools, and communication mediums should be captured in order to identify commonalities, trends, and best practices.

#### 3.8 Financial considerations

Relates to information collected from section 10 of the questionnaire.

Conclusion to be drawn: what are the envisaged costs for configuration/deployment, annual maintenance fees, and typical adaptation costs as per the information provided by the EOs that responded to the market analysis?

### 4 MAIN CONCLUSIONS

This section should list the main conclusions of the market analysis, typically covering:

- Number, eligibility/technical/financial status, and experience of EOs that responded to the market analysis, which can indicate the EO interest and capacity that could be expected in the tendering process for the e-Procurement system (unless wider advertisement schemes or improved communication methods are used)
- Geographical coverage of EOs that responded to the market analysis, which can indicate whether the tendering process could explicitly require a local presence, subcontracting with a local partner, specific methodologies for long-distance cooperation, and so on
- Engagement methods that are most preferred or used by vendors, which can be taken into account when determining the exact requirements for the tendering process
- Commonalities and expertise in functionalities, technologies, and standards that can also be taken into account in concluding the tender's exact requirements
- Rough financial estimates that can be used to estimate the budget for the tendering process

## REQUEST FOR EXPRESSION OF INTEREST

[COUNTRY]

[PROGRAM NAME]

[PROJECT/TENDER NAME]

[PROJECT/TENDER REFERENCE NUMBER]

The [agency] of the Government of [country] intends to obtain ICT consulting services for the establishment of the country's national IT system (hereafter "IT system"). The consulting services would include analysis, design, configuration/parameterization, testing, and delivery of the IT system. In addition to the above, the service provider should expect to engage in various support activities, such as pilot operation, rollout, end-user training and capacity building, promotion/marketing, help desk operation, hosting, and system support/maintenance. The solution must be based on a prebuilt, commercial-off-the-shelf (COTS) system that will need to be configured/parameterized to meet the specific project requirements.

The [agency] now invites eligible firms to express their interest in providing the requested consulting services. Interested consultants should present evidence of their qualification status and demonstrate their financial and technical capacity. Eligible consultants will be short-listed using the following criteria:

Experience in public sector ICT projects

Evidence of having delivered at least one national public e-Procurement system of similar size

Evidence of adhering to industry-accepted quality methods

By submitting their Expression of Interest (EOI) in the current request, consultants implicitly confirm that there is no conflict of interest in relation to their past, current, and/or forthcoming assignments. If there is a potential conflict of interest, together with the EOI, consultants are required to submit a detailed description of the potential conflict to the agency so that we can investigate further and take it into consideration during the qualification/shortlisting process.

Consultants may submit their EOI as individual firms or in a joint venture with other firms in the form of consortia or subconsultants. In the latter case, one expression must be submitted on behalf of the entire joint venture, which should include evidence of the qualification status of all the firms involved. Furthermore, a thorough description of the roles and responsibilities of each of the firms should be provided, along with a clear justification of each firm's involvement and the value it brings to the project implementation.

Following the qualification/short-listing process, successful consultants will be invited to submit their bids, which will be evaluated using the Quality and Cost-Based Selection method.

EOIs must be delivered in person, by mail, by fax, or by e-mail to the addresses below by [date] [time] [time zone].

Physical address: [physical address]

E-mail address: [e-mail address]

Fax number: [fax number]

Detailed information on the process, terms and conditions, and requirements can be found on the following website: [website]



## **ANNEX III: Example Service-Level Agreement (SLA) Terms**

Service Level Target	Standard	Description/Measurement	Environment	Service Credit	Comments
Solution Availability	99.75%	The Client's production database, processing environment, and solution are designated to be available for online access 24 hours per day, 7 days per week, as measured by software through SiteScope. This standard represents the average of uptime across all Omni-hosted products.	Production	12.5% of Recurring Monthly Service charge for month in which failure occurred	<ul style="list-style-type: none"> <li>• Exceptions (communicated through ASP alerts):</li> <li>• Scheduled monthly server patching (Sunday 12:00 to 5:00 window)</li> <li>• Scheduled backups (a few moments pre- and post-cycle) each night</li> <li>• Scheduled application code promotions (Tuesday mornings before 6 :00)</li> <li>• Annual/semi-annual maintenance tasks, such as database reorganization and history archive</li> <li>• Other scheduled outages (as agreed between Client and Supplier on a case-by-case basis)</li> </ul>
Backups	100%	Supplier shall be responsible for performing master file backups of the production environment in accordance with the following schedule: <ul style="list-style-type: none"> <li>• A minimum of 34 daily backups (daily rolling backups in production)</li> <li>• A minimum of 18 monthly backups (monthly rolling backups in production)</li> <li>• A minimum of 7 annual backups (annual rolling backups in production)</li> <li>• Production backups delivered to the off-site storage facility each business day</li> </ul>	Production	12.5% of Recurring Monthly Service charge for month in which failure occurred	Upon termination, all Supplier database backup processes and storage obligations to the Client shall cease in accordance with the provisions of the Agreement.
Full or Partial Database Recovery	100%	In the event that the restore of one or more files or the database in the production environment is required, Supplier shall perform the restore of the file(s) or database. Initiate restore of production data in 2 business hours from notification from Client if backup is <24 hours old.	Production	12.5% of Recurring Monthly Service charge for month in which failure occurred	<ul style="list-style-type: none"> <li>• Supplier maintains a local copy of the database refreshed within the prior twenty-four (24) hours.</li> <li>• Restoration of production data in 6 business hours from notification from Client if backup is &lt;24 hours old.</li> <li>• Restoration of production data older than 24 hours (excluding holidays and non-business days) will be restored within 2 business days.</li> </ul>
Disaster Recovery	100%	In the event that a regional or data center-wide outage occurs and a disaster is declared by Supplier, Supplier shall have Client's production database restored and available for processing at a Supplier Disaster Recovery site within twenty-four (24) hours of the declaration. The Recovery Point Objective (RPO) is four (4) hours.	Production	12.5% of Recurring Monthly Service charge for month in which failure occurred	<p>The Recovery Point will include all pending transactions through the Recovery Point. Full recovery is subject to:</p> <ul style="list-style-type: none"> <li>• Availability of interface feeds and source data.</li> <li>• Source systems that reside in Client's environment or on Client's desktops will not be available at Supplier's disaster recovery site. Supplier will ensure connectivity to all external sites included in the Solution.</li> <li>• TEST or DEV databases are not hosted at Disaster Recovery sites.</li> </ul>

Service Level Target	Standard	Description/Measurement	Environment	Service Credit	Comments
Disaster Recovery Test	100%	This Service Level measures Supplier's successful test or actual execution of the Disaster Recovery Plan, as required by the Order, consistent with the requirement for a Recovery Point Objective (RPO) of four (4) hours.	---	---	---
Network Availability	99.9%	The network, for purposes of this document, is defined as those portions of the network that are monitored and maintained by Supplier up to the point of entry into the Client's network. The network providing connectivity into Client's processing environment is designated to be available 24 hours per day, 7 days per week, as measured by Supplier's corporate wide area network monitor.	Production	12.5% of Recurring Monthly Service charge for month in which failure occurred	Exceptions (communicated through ASP alerts): <ul style="list-style-type: none"> <li>Scheduled maintenance (defined as 12:00 to 5:00 daily for non-customer impacting changes; 12:00 to 5:00 on Sunday's for customer impacting changes)</li> <li>Scheduled outages for testing or installation of new equipment (as agreed between Client and Supplier on a case-by-case basis)</li> </ul>
Solution Performance	Response times for Omni ports must be less than 2.0 seconds for more than 97.5% of the available time in the month	The client's production application ports will respond to requests in a timely manner 24 hours per day, 7 days per week, as measured by software through SiteScope. The standard represents the average response time across Omni-hosted products.	Production	12.5% of Recurring Monthly Service charge for month in which failure occurred	Exceptions (communicated through ASP alerts): <ul style="list-style-type: none"> <li>Scheduled monthly server patching (Sunday 12:00 to 5:00 window)</li> <li>Scheduled backups (a few moments pre- and post-cycle) each night</li> <li>Scheduled application code promotions (Tuesday mornings before 6:00)</li> <li>Annual/semi-annual maintenance tasks, such as database reorganization and history archive</li> <li>Other scheduled outages (as agreed between Client and Supplier on a case-by-case basis)</li> </ul>
Batch Job/ File Transfer	Expected: TBD Minimum: TBD	This Service Level measures on-time processing of batch jobs and file transfer operations. The Service Level will be stated in terms of either the percentage of number of batch jobs and file transfers completed on time or the number of minutes late Supplier is allowed in processing the batch jobs and file transfers.	Production	---	The parties will agree and develop a detailed listing of critical batch jobs and file transfers with associated processing completion deadlines once details regarding the technical solution have been finalized.
Batch Job/ File Transfer –Extended Delay	Expected: 100% Minimum: 100%	This Service Level measures the number of minutes utilized by Supplier to complete processing of any specific batch job or file transfer beyond the processing completion deadline identified for that batch job or file transfer versus a requirement that no single delay for any batch job or file transfer exceed the number of minutes determined for the Batch Job/ File Transfer SLA.	Production	---	---

Service Level Target	Standard	Description/Measurement	Environment	Service Credit	Comments
Message Processing Reject Rate	Expected: 100% Minimum: 99%	This Service Level measures the percentage of inbound messages that are rejected or fail to be processed by the Omni Platform, measured as messages diverted to the reject queue.	Production	---	---
Reject Queue Message Processing	Expected: 99% Minimum: 90%	This Service Level measures Supplier's percentage compliance with Client's service requirement to process reject queue messages within X hours measured monthly. For purposes of this Service Level, Supplier shall consider a reject queue message to have been processed once Supplier has: (i) identified the error or problem that resulted in the message being diverted to the reject queue, and (ii) corrected the error or problem that resulted in the message being diverted to the reject queue, and (iii) processed/actioned / responded to such message in a manner consistent with the manner in which the service would have processed/ actioned/ responded to such message had it not been diverted to the reject queue.	Production	---	---
Service Level Report Delivery	Expected: 100% Minimum: 100%	This Service Level measures the completeness and on-time delivery by Supplier of the monthly Service Level Report.	N/A	---	---

# Problem Support

Incident Type	Standard	Environment	Service Credit	Comments
Priority 1	Refers to any Solution downtime that prevents the accomplishment of an operational or mission-critical function as well as any material functionality inoperable or functioning improperly. Production critical or Solution down issues that affect Client and/or multiple production users.	<u>Examples of Priority 1 Issues:</u> <ul style="list-style-type: none"> <li>Covered application is unavailable (e.g., OMNI DC).</li> <li>Expected port access is unavailable (e.g., web ports are down).</li> <li>Mission critical jobs are not providing workable results (e.g., trade files are not generating).</li> </ul>	<ul style="list-style-type: none"> <li>Client must phone issue into support and document specifics in a support ticket.</li> <li>Supplier shall acknowledge receipt of the notice within thirty (30) minutes of its delivery. Supplier will utilize all necessary resources until the problem has been addressed and a resolution or workaround has been provided. Client will receive timely updates on the status of the reported failure.</li> </ul>	<ul style="list-style-type: none"> <li>---Supplier will utilize all necessary resources until the incident has been addressed and a resolution or workaround has been provided (24x7, including nights, weekends, and holidays).</li> <li>Client will receive timely updates on the status of the reported failure.</li> </ul>
Priority 2	An incident that is not a Priority 1 Incident that either (i) adversely impacts Client's use of any material or essential component of the Solution or (ii) renders Client's use of any immaterial or non-essential component of the Solution impossible or impracticable.	<u>Examples of Priority 2 Issues:</u> <ul style="list-style-type: none"> <li>Response time degraded from standard.</li> <li>Performance degradation prohibits users from using the Solution efficiently.</li> <li>Solution performance or port is operational but unstable.</li> <li>Client and/or Third-Party Users have impacted access to covered application.</li> <li>Some jobs did not provide preferred results (e.g., certain reports are running late).</li> </ul>	Supplier shall acknowledge receipt of the notice within 2 hours of its delivery.	Supplier shall employ continuous efforts until the incident has been addressed and a resolution or workaround has been provided during supplier's normal business hours. Client will receive timely updates on the status of the reported failure, and Client agrees to test and install the Solution resolution.



Incident Type	Standard	Environment	Service Credit	Comments
Priority 3	An incident that is not a Priority 1 Incident or Priority 2 incident that has a high degree of urgency that requires immediate attention. Moderate-High business impact to any environment that requires a response.	<u>Examples of Priority 3 Issue:</u> <ul style="list-style-type: none"> <li>Any incident that impacts a single user's ability to perform their job function</li> <li>Any recurring incident that causes the user inconvenience but does not impact their ability to do their job</li> <li>Any recurring incident that is cosmetic in nature and has no direct impact on the service's functionality or the user's ability to perform their job function</li> <li>Client and/or its Third-Party Users have no or unacceptable access to the test website or VRU</li> <li>Client and/or its Third-Party Users have functionality questions or other research queries</li> <li>Client and/or its Third-Party Users require software/patches for a non-emergency break-fix situation.</li> <li>Test Environment restore/ backup.</li> <li>Need a password reset.</li> </ul>	<ul style="list-style-type: none"> <li>Supplier shall acknowledge receipt of the notice within one (1) business day of its delivery.</li> <li>Tickets opened outside Supplier's normal business hours will be prioritized accordingly.</li> </ul>	<ul style="list-style-type: none"> <li>Upon supplier's receipt of reasonably sufficient documentation evidencing the issue, supplier will schedule correction of the incident to correspond with the nature of the incident and the timing of an available release.</li> <li>Client will receive a recommended workaround for use until a fix is available, as well as the release in which the resolution will be provided.</li> </ul>
Priority 4	<ul style="list-style-type: none"> <li>Any other outages, technical problems, or technical questions with a low degree of urgency.</li> <li>Priority 4 issues may affect a single functional aspect of the application and a workaround may be put in place.</li> <li>Priority 4 issue may be a problem that can exist for more than a few days in any application with minimal impact to the Client and/or the Third-Party Users.</li> <li>Moderate-low business impact to any application.</li> </ul>	<u>Examples of Priority 4 Issue:</u> <ul style="list-style-type: none"> <li>Minor Solution Enhancements</li> <li>Add link to Spanish Plan Highlights</li> <li>Change to work order listing in DVW</li> <li>Change to system notifications or alerts</li> <li>Systemic change to accommodate for off-cycle payroll schedules</li> <li>Support Items</li> <li>Update to non-financial reports</li> <li>Activity and transaction log changes</li> <li>Adding an OMNI data element to transactional folders.</li> <li>Update tags on an XML file</li> </ul>	<ul style="list-style-type: none"> <li>Supplier shall acknowledge receipt of the notice within two (2) business days of its delivery.</li> <li>Requests received outside of supplier's normal business hours will be taken into consideration on the following business day or as soon as feasible based on the impact of the issue.</li> </ul>	Upon supplier's receipt of reasonably sufficient documentation describing the issue, supplier will provide written notice to the Client of either their intention to change the Solution or provide an alternative resolution.

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