

CMU 2811
REQUEST FOR PROPOSAL
5.5.3: Config-Build-Test

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1.0 Introduction

5.5.3 provides activity and responsibility guidance to the System Integrator as it prepares its response and is not meant to replace or dictate the System Integrator's methodology or approach. CMU asks that the System Integrator clearly indicate any material exceptions to the contents of this exhibit to CMU. The System Integrator shall review all RFP documents, including other Schedules and Exhibits, to understand the expected services represented in this document.

Services Overview

5.5.3 Configure-Build-Test services include the applicable activities required to precede the rollout.

It is expected that the Supplier will leverage the work and deliverables created during the Planning & Design phase to deliver Configuration, Build, Test and Deploy services and deliverables that are specific to the ERP software and will include any other third party and legacy solutions that will be retained by CMU. 5.5.3 also includes the appropriate evolution and continuation of Value Realization services as well. It is critical that throughout the configure-build-test processes, the Supplier will collaborate with CMU IT, Project Management, Business Process Leads, Functional Leads, and SMEs so that knowledge transfer naturally occurs.

5.5.3 Services will be delivered in collaboration with the CMU team and other relevant third parties as necessary or required by CMU. These Services include the following:

- **Configuration Services** include leveraging built-in ERP best/leading practices that allow for standardization and flexibility to meet common and unique needs without customization. Supplier will fully leverage out-of-the-box or accelerated capabilities available and relevant to CMU's needs.
- **Build Services** include coding, unit testing, and specification/documentation maintenance of the following (as defined and approved during the Planning & Design phase with respect to development object inventories):
 - Reporting/Analytics
 - Integration
 - Data Normalization/Rationalization/Conversion/Migration/Retention/Archiving
 - Extensions/Customizations
 - Forms
 - Workflows
 - Security & Controls
 - Mobile Applications Development
- **Testing Services** include functional testing, system integration testing, mock migration testing, performance / load testing, disaster recovery and redundancy testing, security testing, automated testing, and user acceptance testing (UAT).
- **Value Realization Services** include continued management and refinement of the business case to ensure alignment with the solution being configured, built, and tested with the overall goal to drive benefit accountability and to act as a key change lever.

CMU does not have a prescribed Configuration/Build/Test methodology, and expects the Supplier proposal to include appropriate methodology and rationale, based on the CMU’s technical architecture, industry, and business drivers.

CMU is looking to standardize best practices across the organization, in order to minimize the amount of custom configurations required. Business processes at CMU are largely centralized and ideally would remain so via the enablement of an ERP.

The term “knowledge transfer”, as used in this Schedule, includes: (a) “hands-on” training throughout all core activities through collaboration and working collaboratively with CMU team members; (b) proactively pointing out and explaining best practices related to methods/tools being used, process improvement opportunities, and technology leverage opportunities; (c) providing full transparency via clear documentation of configuration, build, and test work products and deliverables to the point where the relevant CMU team member(s) are satisfied that they understand the content; and (d) providing templates, methods, documentation, contextual knowledge, and other assets to a third-party (such as an Application Managed Services (AMS) provider) during or at the conclusion of the project.

1.1 Coordination with Other Planned/In-Process Initiatives

The CMU Program Leads, working with the ERP Steering Committee as well as CMU project managers assigned to other relevant projects, and PMO group will coordinate with other planned or in-process initiatives and inform the Supplier of any potential impacts. CMU’s planned governance structure and processes will provide support to any key decisions that result from any associated inter-dependencies.

2.0 Configuration Services

In addition to the various ways that business rules can be configured via, parameter, algorithm settings and calculations, Configuration Services also include workflow/alert/notification, embedded analytics, and role-based security setup.

The Supplier will utilize a proven methodology and associated tools to support the Configuration effort. Furthermore, the Supplier will proactively apply industry, process, and solution expertise, with knowledge transfer to CMU (and third-party providers as required), to minimize downstream re-work and to optimize the end-to-end business process and technical performance of the deployed solution.

Table 1 identifies the roles and responsibilities associated with the configuration services. Supplier should strongly consider CMU’s expectations set forth in Table 1 when developing the Supplier’s proposal response.

Table 1. Configuration Roles and Responsibilities

Configuration Roles and Responsibilities	Supplier	CMU
1. Provide ongoing guidance and knowledge transfer to the CMU Business Process Leads, Functional Leads, and SMEs regarding configuration best practices, standards, methodologies, understanding of embedded business rules, etc. throughout the configuration effort.	X	
2. Proactively provide industry, solution, and process-specific expertise that will fully leverage best practices into the configured solution to	X	

Configuration Roles and Responsibilities	Supplier	CMU
minimize downstream re-work or sub-optimal business process or technical performance.		
3. Based on Design results, clearly document the Baseline Configuration	X	
4. Configure the baseline solution within the agreed upon scope, to be specified in the SOW. In addition to the various ways that business rules can be configured via; parameter, algorithm, etc. Settings and calculations, workflow/alert/notification, embedded analytics, and role-based security setup is also included.	X	
5. Facilitate and lead configuration reviews within and across process teams. Help the CMU Business Process Leads, Functional Leads, and SMEs understand, consider, and implement in an optimal fashion the cross-functional configuration impact.	X	
6. Complete unit testing of each configured component, utilizing the appropriate tools and documentation.	X	
7. Provide documentation in agreed to configuration management toolset/method for configuration decisions and parameter set-up. CMU ideally would like to leverage any pre-configured industry solution that is available either through the software vendor or provided by the Supplier.	X	
8. Update requirements traceability matrix based on configuration decisions.	X	
9. Identify configuration decisions that will require process changes that stakeholders need to be prepared for.	X	
10. Analyze and approve process changes recommended.		X
11. Work with the Organizational Change Management team to document and execute specific process change management training and communications activities required.	X	
12. Provide documentation of SI quality and governance processes for Configuration.	X	
13. Throughout the configuration process, the Supplier will consider CMU business context and impacts by working collaboratively with CMU Business Process Leads, Functional Leads, and SMEs.	X	
14. Review, refine, and approve or reject completion of Configuration activities (e.g., configuration, unit testing, documentation, knowledge transfer) across all functional domains.		X

3.0 Build Services

Build Services include coding, unit testing, and specification/documentation maintenance of an approved inventory of development objects agreed to during the Design phase.

Any code developed by the Supplier must adhere to coding standards aligned with the development environment and associated standards embedded in the ERP software toolset.

The Supplier will utilize a proven methodology and associated tools to support the Build effort. Furthermore, the Supplier will proactively apply industry, process, and solution expertise to minimize downstream re-work and to optimize the end-to-end business process and technical performance of the deployed solution.

Table 2 identifies the roles and responsibilities associated with the Build services. The Supplier should strongly consider CMU’s services expectations set forth in Table 2 when developing the Supplier’s proposal response.

Table 2. Build Roles and Responsibilities

Build Roles and Responsibilities	Supplier	CMU
A. Core Build Activities		
1. In collaboration with the CMU Project Manager, co-manage the Build schedule and resource plan.	X	X
2. Provide ongoing guidance and knowledge transfer to the CMU Business Process Leads, Functional Leads, and SMEs regarding Build best practices, standards, methodologies, and tools inherent in the chosen solution and associated development environment.	X	
3. Proactively provide solution-specific expertise that will fully leverage best practices into all built components to provide for agility, scalability and technical performance	X	
4. Review and approve or reject any changes or additions to CMU’s current development standards, methodologies, policies, procedures, etc.		X
5. Manage the Build schedule and resource plan	X	
6. Help establish and manage systems and database operations procedures related to the chosen software	X	
7. Build required CMU environments (infrastructure).	X	
8. In collaboration with the software vendor, ensure that systems operations are stable and managed.	X	
9. In collaboration with the CMU IT Lead, establish operations and administration procedures and tools related to code migration, including version control.	X	X
10. In collaboration with the CMU IT Lead, ensure that all configuration and build effort adheres to security and control requirements.	X	X
11. Establish development and test access to all required legacy applications, middleware, data, reports, and tools that need to interact with the chosen solution.		X

Build Roles and Responsibilities	Supplier	CMU
12. Identify build approaches, methods, tools, and role changes that will require Operating Model and competency/skill changes that IT stakeholders need to be prepared for.	X	
13. Analyze impact of changes, approve and act on the changes or otherwise suggest alternatives to the recommendations.		X
14. Work with the Organizational Change Management team to execute specific change management training and communications activities required to transition to the new IT support model.		X
15. Throughout the Build process, the Supplier will consider CMU's business contexts and impacts by working collaboratively with CMU Business Process Leads, Functional Leads, and SMEs.	X	
16. Throughout the Build process, the Supplier will consider CMU's IT data, security, infrastructure, integration, and support context and impacts by working collaboratively with CMU IT process owners, leads, and SMEs in all Build activities.	X	
17. Maintain / refine Design deliverables and Specifications / documents	X	
18. Provide documentation of SI quality and governance processes for all Build services (e.g., coding standards).	X	
19. Complete and/or participate in Quality or Delivery Assurance reviews internal to SI or external with software vendor as an audit of the prototype and/or production environments.	X	
20. Review and approve or reject Design deliverables and Specifications / documents		X
B. Reporting/Analytics Development		
21. Provide proactive guidance and work collaboratively with CMU Reporting/Analytics Lead and Business Process Leads to embed reporting capabilities in the end-to-end process and leverage ERP software's embedded analytics capabilities to the fullest extent.	X	
22. Rationalize existing reports as determined during the planning stage	X	
23. Provide proactive guidance and work collaboratively with CMU Reporting/Analytics Lead and Business Process Leads to fully develop mobile reporting capabilities where relevant.	X	
24. Provide proactive guidance and work collaboratively with CMU Analytics Lead and Business Process Leads to fully leverage exception and alert-based reporting capabilities, supported by workflow, delivered out-of-the box with the chosen software solution.	X	
25. Participate in/facilitate reporting/analytics development work sessions, as needed.		X
26. Develop non-standard / customized reports	X	
27. As needed, build flexible and high performing data integrations required to utilize data stored in BI, Data Warehouse, Data Mart, etc. Solutions that are part of the approved Reporting/Analytics design. This would include any data rebuild components for any new fields added.	X	

Build Roles and Responsibilities	Supplier	CMU
28. Develop programs and jobs that meet Data Retention and Archiving requirements approved during the Design.	X	
29. Unit test all developed reporting objects. Fix any defects until passed or test case has been closed as successful.	X	
30. Update all applicable functional and technical specifications for Supplier-developed reporting objects.	X	
31. Unit test all CMU-developed reporting objects. Re-test as necessary until passed or closed successfully.		X
32. Update all applicable functional and technical specifications for CMU-developed reporting objects.		X
33. Provide knowledge transfer to CMU IT (and CMU third-party providers as needed) for all Supplier-developed reporting objects and associated tools/operating/support procedures.	X	
34. Review and approve or reject all unit-tested Reporting/Analytics objects and associated capabilities.		X
C. Interface Development		
35. Provide proactive guidance and work collaboratively with CMU Technical Lead to fully leverage available ERP software APIs, pre-built integration code, services-oriented architectures, etc. into integration capabilities, with also a view to simplifying the IT footprint through retirement of unnecessary edge applications.	X	
36. Provide expertise that can effectively collaborate with CMU's internal and 3 rd party personnel supporting key known integration platforms and endpoints.	X	
37. Provide technical expertise and work collaboratively with CMU Technical Lead to provide proactive guidance to identify potential integration bottlenecks that could cause performance issues as CMU scales up.	X	
38. Participate in/facilitate interface development work sessions, as needed. Provide timely decisions or provide resolution as needed.		X
39. Participate in/facilitate discussions with Information Security /Cyber Security on required permissions for integrations.	X	
40. Ensure proper licensing for external / connector Integrations are in place and a test or Sandbox environment has been provided for testing.		X
41. Develop all approved interfaces that are assigned to the Supplier.	X	
42. Unit test all Supplier-developed interface objects. Fix any defects until passed or test case has been closed as successful.	X	
43. Update all applicable functional and technical specifications for Supplier-developed interface objects.	X	
44. Unit test all CMU-developed interface objects. Re-test as necessary until passed or can be closed as successful.		X
45. Update all applicable functional and technical specifications for CMU-developed interface objects.		X

Build Roles and Responsibilities	Supplier	CMU
46. Provide knowledge transfer to CMU IT (and CMU third-party providers as needed) for all Supplier-developed interface objects and associated tools/operating/support procedures.	X	
47. Review and approve or reject all unit-tested Interface objects and associated capabilities.		X
E. Data Conversion & Migration		
48. Provide proactive guidance and work collaboratively with CMU on data management and integration development that needs to be included in the Build effort.	X	
49. Provide proactive guidance and work collaboratively with CMU Analytics Lead and Business Process Leads on data governance best practices that may be incorporated into CMU’s business and IT data creation and maintenance processes.	X	
50. Provide target state data knowledge and expertise to help guide CMU’s data normalization and extract-transform-load (ETL) development effort. Participate in/facilitate data conversion work sessions, as needed.	X	
51. Develop all approved automated data conversion transform/load programs, preferably leveraging pre-configured data import acceleration tools and scripts.	X	
52. Recommend data extract strategy.	X	
53. Perform data extract from legacy systems.		X
54. Apply the data extract programs and tools to migrate the data into the staging environment.		X
55. Coordinate and execute manual loads.		X
56. Manage and execute all data normalization activities, including any modifications needed to legacy applications that are the source of converted data.		X
57. Review and resolve any data related issues as indicated by conversion validation, audit reports provided or findings as a result of functional workstream testing.		X
58. Provide support during the data extraction, testing and loading activities, preferably using preconfigured test acceleration tools and scripts.	X	
59. Unit-test all developed data conversion objects. Fix any defects until test has passed or can be closed successfully.	X	
60. Update all applicable functional and technical specifications for developed data conversion objects.	X	
61. Unit test all CMU-developed automated data cleanse and data conversion objects. Fix any defects until unit tests have passed or can be closed successfully.		X
62. Update all applicable functional and technical specifications for CMU-developed data cleanse and data conversion objects.		X
63. Provide knowledge transfer to CMU IT (and CMU third-party providers as needed) for all developed data cleanse and data conversion objects and associated tools/operating/support procedures.	X	

Build Roles and Responsibilities	Supplier	CMU
64. Review and approve or reject all unit-tested data cleanse and data conversion objects and associated capabilities.		X
65. Validate and approve or reject converted data loaded into the new solution.		X
66. Prepare an overall data migration related configurations plan.	X	
67. Approve the overall data migration related configurations plan.		X
68. Execute overall data migration related configurations.	X	
69. In collaboration with the CMU IT Lead, establish operations and administration procedures and tools related to data migration.	X	
70. Lead execution and document the results of all mock data migration test cycles, including creation and management of test cases (preferably from a start point of predesigned test cases).	X	
71. Manage the testing schedule and environment and all related code migration and version control.	X	
F. Extension / Customization Development		
72. Provide proactive guidance and work collaboratively with CMU Technical Lead to leverage best practices into extensions and customizations within the extensibility toolset provided by the chosen solution.	X	
73. Provide technical expertise and work collaboratively with CMU Technical Lead to identify potential bottlenecks that could cause performance issues.	X	
74. Lead extension/customization development work sessions.	X	
75. Develop all approved extensions/customizations that are assigned to the Supplier.	X	
76. Unit test all Supplier-developed extension/customized objects. Fix any defects until test has passed or can be closed successfully.	X	
77. Update all applicable functional and technical specifications for Supplier-developed extension/customized objects.	X	
78. Develop all approved extensions/customizations that are assigned to CMU.		X
79. Unit test all CMU-developed extension/customized objects. Re-test as needed until test has passed or can be closed successfully.		X
80. Update all applicable functional and technical specifications for CMU-developed extension/customized objects.		X
81. Provide knowledge transfer to CMU IT (and CMU third-party providers as needed) for all Supplier-developed extension/customized objects and associated tools/operating/support procedures.	X	
82. Review and approve or reject all unit-tested extension/customized objects and associated capabilities.		X
G. Forms Development		

Build Roles and Responsibilities	Supplier	CMU
83. Provide proactive guidance and work collaboratively with CMU Technical Lead to leverage out-of-the-box capabilities and templates within the chosen solution for forms development.	X	
84. Provide technical expertise and work collaboratively with CMU Technical Lead to identify potential bottlenecks that could cause performance issues.	X	
85. Lead forms development work sessions, as needed.	X	
86. Develop all approved forms that are assigned to the Supplier.	X	
87. Unit test all Supplier-developed forms. Fix any defects until unit test has passed or can be closed successfully.	X	
88. Update all applicable functional and technical specifications for Supplier-developed forms.	X	
89. Develop all approved forms that are assigned to CMU.		X
90. Unit test all CMU-developed forms. Re-test defects until unit test has passed or can be closed successfully.		X
91. Update all applicable functional and technical specifications for CMU-developed forms.		X
92. Provide knowledge transfer to CMU IT (and CMU third-party providers as needed) for all Supplier-developed forms and associated tools/operating/support procedures.	X	
93. Ensure proper licensing for external forms or signature solutions are in place and a test or Sandbox environment has been provided for testing.		X
94. Review and approve or reject all unit-tested forms and associated capabilities.		X
H. Workflow Development		
95. Provide proactive guidance and work collaboratively with CMU Technical Lead to leverage out-of-the-box capabilities and templates within the chosen solution for development of workflows.	X	
96. Provide technical expertise and work collaboratively with CMU Technical Lead to identify potential bottlenecks that could cause performance issues related to workflows.	X	
97. Participate in/facilitate workflow development work sessions, as needed.	X	
98. Develop all approved workflows that are assigned to the Supplier.	X	
99. Unit test all Supplier-developed workflows. Fix any defects until unit test has passed.	X	
100. Update all applicable functional and technical specifications for Supplier-developed workflows.	X	
101. Develop all approved workflows that are assigned to CMU.		X
102. Unit test all CMU-developed workflows. Re-test any defects until unit test has passed or can be closed successfully.		X
103. Update all applicable functional and technical specifications for CMU-developed workflows.		X

Build Roles and Responsibilities	Supplier	CMU
104. Provide knowledge transfer to CMU IT (and CMU third-party providers as needed) for all Supplier-developed workflows and associated tools/operating/support procedures.	X	
105. Review and approve or reject all Supplier unit-tested workflows and associated capabilities.		X
I. Mobile Applications Development		
106. Provide proactive guidance and work collaboratively with CMU's Technical Lead to leverage available mobile applications, templates, and development tools inherent within the chosen solutions. CMU will ultimately decide which mobile functionality it would like to enable and utilize.	X	
107. Provide technical expertise and work collaboratively with CMU's Technical Lead to identify potential device-specific constraints that could cause performance or user issues	X	
108. Facilitate mobile development work sessions, as needed.	X	
109. Develop all approved mobile features & functionalities that are assigned to the Supplier	X	
110. Thoroughly unit test all developed mobile applications. Fix any defects until unit test has passed.	X	
111. Unit test all CMU-mobile features. Re-test any defects until unit test has passed or can be closed successfully.		X
112. Update all applicable functional and technical specifications for developed mobile applications	X	
113. Provide knowledge transfer to CMU's IT (and CMU third-party providers as needed) for all Supplier developed mobile applications and associated tools/operating/support procedures	X	
114. Review and approve or reject all Supplier unit-tested mobile applications and associated capabilities		X

4.0 Testing Services

Testing Services include functional testing, system integration testing, mock migration testing, performance/load testing, security & controls testing, regression testing and user acceptance testing (UAT).

The Supplier will utilize a proven methodology and associated tools to support the testing effort. Furthermore, the Supplier will proactively apply industry, process, and solution expertise to minimize downstream re-work and to optimize the end-to-end business process and technical performance of the deployed solution. Supplier Test Lead and Testers cannot be developers of this same project.

Table 3 identifies the roles and responsibilities associated with the testing services. The Supplier should strongly consider CMU's services expectations when developing the Supplier's proposal response.

Table 3. Testing Roles and Responsibilities

Testing Roles and Responsibilities	Supplier	CMU
1. Provide proactive guidance to leverage Supplier or third-party testing tools, automations and methods agreed to by both parties.	X	
2. Oversee that the Supplier is properly utilizing any CMU recommended or provided testing tools and methods agreed to by both parties.		X
3. Provide CMU IT resource to work collaboratively with the Supplier for testing activities.		X
4. Define success criteria and expected results.	X	
5. Provide inputs and approvals during success criteria definition.		X
6. Create the testing plan and schedule.	X	
7. Bring in pre-existing test cases from prior ERP implementations within the industry.	X	
8. Provide inputs to modify test scripts to suit specific business / organizational requirements as needed.		X
9. Work collaboratively with the CMU Testing/IT Lead to assign and make available Supplier resources to meet testing due dates.	X	
10. Lead the execution and document the results of all functional and system integration test cycles. This includes creation and management of test cases and test data. Maintain defect log and monitor for resolution.	X	
11. Lead the execution and document the results of all mock migration and parallel run test cycles. This includes creation and management of test cases and test data. Maintain defect log and monitor for resolution.	X	
12. Lead the execution and document the results of all performance / load test cycles. This includes creation and management of test cases and test data.	X	
13. Lead the execution and document the results of all security testing. This includes creation and management of test cases and test data.	X	
14. Lead the execution of and document the results of user acceptance testing (UAT). This includes creation and management of test cases and test data.		X
15. Provide documentation of SI quality and governance processes for all Testing services. Including expected resolution times for client reported defects.	X	
16. Utilize agreed upon tools and methods, such that all test cases are repeatable. This includes the ability to do regression testing. Create automated test scripts where possible.	X	
17. Transfer ownership of all SI-developed automated testing assets (e.g., scripts, testbed) to CMU for ongoing use.	X	
18. Manage the testing environment and all related code migration and version control.		X
19. Manage access to all legacy applications where integration is required to enable completion of end-to-end integration and performance testing.		X

Testing Roles and Responsibilities	Supplier	CMU
20. As dispositioned, fix all defects related to objects developed by Supplier.	X	
21. Provided expedited resolution to escalated problems identified during testing	X	
22. As dispositioned, fix all defects related to objects developed by CMU.		X
23. Testing approval or rejection and sign-off.		X

5.0 Value Realization Services

Value Realization is a work stream that begins during Planning & Design and continues through final deployment, initial support, and ongoing stabilization. This section deals only with Value Realization activities for the Configuration/Build/Test phase.

The Supplier will utilize a proven methodology and associated tools to deliver Value Realization services aligned with the scope, key strategic themes/drivers, and priorities. Furthermore, the Supplier will proactively apply industry, process, and solution expertise to optimize the engagement and alignment of CMU business and IT stakeholders to the expected benefits.

Table 4. Value Realization Roles and Responsibilities

Value Realization Roles and Responsibilities	Supplier	CMU
1. Provide Value Realization methodology and tools and provide timely education of the use of the methods/tools to the CMU Project Manager(s), Business Process Leads, Functional Leads, and SMEs.	X	
2. Proactively provide industry, solution, and process-specific expertise that will build best practices into the Value Realization activities to optimize business process performance and solution adoption.	X	
3. Working with CMU Program Leads, PMO, Technical Leads, Business Process Leads, Functional Leads, and SMEs, facilitate the development of quantified benefits that are specifically linked to the solution being built.	X	
4. Provide ongoing insights into quantified value opportunities from Supplier's experience with similar clients and/or benchmark data.	X	
5. Provide current state baseline cost, volume, effort, and Objectives and Key Results (OKRs) and/or KPI information related to the existing metrics measured by CMU, as well as previously completed materials related to Value Realization.		X
6. Business Value Drivers: For each end-to-end process provide future state governance, SLAs, and measurable OKRs, leveraging previously completed materials.	X	
7. Throughout the effort, Supplier will consider CMU business context and impacts by working collaboratively with CMU Business Process Leads, Functional Leads, and SMEs.	X	
8. Review, refine, and approve or reject Value Realization deliverables.		X