



BSI Standards Publication

Information technology — Process assessment — An integrated process capability assessment model for Enterprise processes

National foreword

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Information technology — Process assessment — An integrated process capability assessment model for Enterprise processes

*Technologies de l'information — Évaluation des processus — Modèle
d'évaluation de la capacité des processus intégrés pour les processus
d'entreprise*



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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

ISO/IEC 33071 was prepared by SPICE User Group and was adopted, under the PAS procedure, by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, in parallel with its approval by national bodies of ISO and IEC.

About Enterprise SPICE

The process community recognized the need for an integrated standards-based enterprise process assessment model and requested an international activity to develop such a model. The initiative was first proposed and discussed at SPICE 2006 conference in Luxembourg and formally launched at SPICE 2007 conference in Seoul, Korea.

A call for participation resulted in the community signing up to support the project in various roles (e.g. advisory board member, author, reviewer, and assessor). Over 120 project team members from 31 different countries participated in developing the Enterprise SPICE integrated process assessment model for enterprise processes (Enterprise SPICE process assessment model).

The Enterprise SPICE project is hosted by the SPICE User Group, and it is governed by a 15 member Advisory Board voted in by the project stakeholders every two years. The Advisory Board has reserved seats for representatives from various geographical regions, for the SPICE User Group, and for the SPICE Academy. The Enterprise SPICE project is guided by the Enterprise SPICE strategy, which identifies goals, objectives and activities, and is led by an International Project Leader who coordinates several authoring teams. A charter governs the working of the Advisory Board.

The Enterprise SPICE process assessment model was developed and released in review cycles. In 2008, the project team developed the draft process reference model, providing a description of the proposed architecture/high-level relationship of processes, the names, purposes, and outcomes for those processes, and a list of the sources and references integrated to develop each process. All process reference model review comments were adjudicated, and accepted comments were included in the next major review cycle which provided a draft process assessment model. This 2009 release of the process assessment model elaborated the process reference model with indicators (base practices and work products), a new section on relationship notes, plus a detailed mapping table for all processes indicating the sources and references integrated at the purpose, outcome, and base practice level. All comments were adjudicated by the project team and approved comments are reflected in *Enterprise SPICE® An Integrated Model for Enterprise-wide Assessment and Improvement, Technical Report – Issue 1*, The Enterprise SPICE Project Team, September 2010. This document which provides an integrated process capability assessment model for enterprise processes is based on that Technical Report.

The public website for information about the Enterprise SPICE project is: www.enterprisespice.com.

Introduction

This document provides an integrated process capability assessment model for enterprise processes (process assessment model) that integrates and harmonizes selected process models and standards into a single enterprise improvement model. By bringing together best practices from several disciplines and several models and standards into a comprehensive improvement model, this document provides an efficient effective mechanism for assessing and improving processes deployed across a typical, large or small, enterprise.

This document provides the following benefits to stakeholders:

- **Single Unified Model:** the model integrates practices from the widely recognized standards and sources of best practice; no need to use many separate standards and models concurrently - they are consolidated into a single unified model
- **Pick and Choose:** select from the model those areas relevant to your business needs
- **Authoritative:** provides best guidance available drawn from widely recognized standards and sources, with detailed mapping tables tracing each practice to sources if further information is desired/required
- **Comprehensive:** addresses a broad, and expanding, range of disciplines
- **Synergized:** the sources are integrated, harmonized, and synergized; each source contributes important perspectives
- **Reduced Costs:**
 - Training on one model, not several
 - Improvement using one model, not several, leading to simultaneous improvement vs. all sources; compliant processes address best practice from multiple standards concurrently
 - Avoids duplication of effort
 - Appraisals vs. one model, not several, leading to simultaneous multiple ratings/ certification if desired, assuming required assessment practices are followed
- **Enhanced Effectiveness via Integrated Guidance:**
 - For all levels from enterprise to team processes
 - For large or small business units
 - Across disciplines for multidisciplinary teams
 - Aligns business and technical processes
 - Across all product and service life cycle phases/activities
 - Improvement initiatives can be aligned across the enterprise
- **Conformity Assessment:** conformity assessment services from accredited bodies.

This document can be used by any enterprise or organization that seeks to improve its business performance in an integrated way. Both large and small enterprises can use the model and reap the benefits outlined above. Individuals can use the model to get an overview of best practices and to understand how various standards and models fit together.

Information technology — Process assessment — An integrated process capability assessment model for Enterprise processes

1 Scope

This document defines an integrated process assessment model for enterprise processes (process assessment model) for use in performing a conformant assessment of process capability in accordance with the requirements of ISO/IEC 33002.

The process assessment model integrates and harmonizes existing standards, as determined by stakeholders, and provides in a single document a process reference model and process assessment model that addresses broad enterprise processes and which provide an efficient and effective mechanism for assessing and improving processes deployed across an enterprise.

NOTE: Copyright release: Users of this document may reproduce subclauses 6.1 to 6.5 and 7.1 to 7.2 as part of any tool or other material to support the performance of process assessments, so that it can be used for its intended purpose.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 33001:2014, *Information technology — Process assessment — Concepts and terminology*

ISO/IEC 33004:2014, *Information technology — Process assessment — Requirements for process reference, process assessment and maturity models*

ISO/IEC 33020:2014, *Information technology — Process assessment — Process measurement framework for assessment of process capability*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 33001 and ISO/IEC 33020 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

4 General

The Enterprise SPICE process assessment model which forms the basis for this integrated process capability assessment model for enterprise processes (process assessment model) was built on an existing baseline enterprise model, the Federal Aviation Administration (FAA) integrated Capability Maturity Model® (iCMM®)

v2.0, which integrated a set of disciplines and source standards/models. Additional disciplines and sources were identified via a formal survey of stakeholders. These were then vetted against a set of criteria and a smaller set chosen for integration into the Enterprise SPICE process assessment model.

Criteria for discipline selection

- **Priority** criticality, importance or urgency for inclusion (should this be in first release (high), next set of disciplines (medium), sometime in future (low)?)
- **Relevance** to enterprise operations and success (how relevant is this to your business?)
- **Perceived need, value or risk reduction** for including this discipline in enterprise assessments (does this discipline need to be assessed? will risks to enterprise success be reduced by including this discipline? how valuable to the enterprise will assessments be with respect to this discipline?)
- **Existence/maturity** of process standards and best practices in the discipline (does this discipline have mature best practices?)
- **Compliance** requirements regarding these disciplines in stakeholder enterprises (do you need to comply with requirements regarding this discipline?)

Criteria for source material selection

- Only major, essential, widely-recognized process standards/models/documents should be selected as source* documents (others may be useful reference** documents).
- The number of sources for a discipline should be limited to 3 to 5 for a given area.
- Process source documents should be generic rather than method specific improvement approaches (i.e. sources indicate what, not how).

* Source documents are documents from which the process descriptions are derived. Mapping of the processes to source practices is required, along with coverage of source documents, at an appropriate level of detail.

** Reference documents are documents identified as useful in developing best practice in certain areas, but full coverage and detailed mapping are not required.

The Enterprise SPICE process assessment model addresses the following disciplines by integrating the following sources.

Disciplines: enterprise management, investment management, general management, service management, human resource management, acquisition, quality management systems, full lifecycle engineering for products and services, knowledge management, environment, safety and security, and core supporting disciplines

Sources: FAA-iCMM (baseline model, integrating ISO 9001, ISO/IEC 12207, ISO/IEC 15288, ISO/IEC 15504, Malcolm Baldrige National Quality Award, CMMI®, EIA 731, previous CMMs, MIL-STD-882C, MIL-STD-882D, IEC 61508: DEF STAN 00-56, ISO 17799, ISO 15408, ISO/IEC 21827, NIST 800-30); plus: ITIL®; ISO/IEC 20000; CobIT®; People-CMM (P-CMM®); ITIM, ISO 14000. Additional references include ISO 31000, eSCM-CL, eSCM-SP, PMI Standard for Portfolio Management, PMBOK, and FEA Practice Guidance.

See Bibliography for a full description of all the above sources and references.

5 Process assessment model architecture

5.1 Two dimensional model

This process assessment model is structured as a two-dimensional model of process capability containing a process dimension and a capability dimension.

The process dimension includes the process descriptions, purpose and outcomes of the processes from a process reference model. This process assessment model provides the defined process reference model as an integral part the process dimension in the process assessment model.

The capability dimension includes a set of process capability levels and process attributes. A process attribute is a feature of a process that can be evaluated on a scale of achievement, providing a measure of the capability of any process. The capability dimension of this process assessment model incorporates the measurement framework for process capability as defined in ISO/IEC 33020 for process Capability Levels 0 and 1.

Note that this process assessment model is a process capability model, not an maturity model, and does not describe staging or ordering of processes or practices.

This process assessment model expands upon the process reference model and process measurement framework for assessing process by including a defined set of assessment indicators. Assessment indicators comprise indicators of process performance and process capability and are defined to support an assessor's judgment of the performance and capability of an implemented process.

ISO/IEC 33004 specifies requirements for conformance of process reference models and process assessment models. Statements of conformance of the process reference model and the process assessment model to ISO/IEC 33004 requirements are provided in Annex A: Conformity of the process reference model and process assessment model with ISO/IEC 33004 Requirements.

There are 29 processes in the model which are grouped into three Process Categories and one Special Applications Area. The process categories and special application area are described below.

Governance/Management Process Category	The governance/management category includes processes that govern the enterprise and manage the business. These processes set vision and direction and oversee execution of other processes. They can be used at the enterprise, project or team level. Included in this category are processes that establish and manage relationships and partnerships among business owners, acquirers, and suppliers.
Life Cycle Process Category	The life cycle category includes processes that develop, deploy, operate and maintain a product or service to meet customer needs. These processes cover the typical life cycle of a product or service, from inception to disposal.
Support Process Category	The support category includes processes that are used by other processes when needed, and contribute to the success and quality of all the processes.
Special Applications Area	The special "application areas" provide ways of applying the processes in a particular context. The practices, called "application practices", are implemented by using other processes in the context of the special application of the model. This new construct facilitates the re-use of the model without recreating processes that are already well established.

Each process is defined in terms of a process purpose statement and process outcomes. The process purpose statements contain the unique functional objectives of the process when performed in a particular environment. The process outcomes associated with each of the process purpose statements is a list of expected positive results of the performance of the processes.

5.2 Assessment indicators

The process assessment model is based on the principle that the capability of a performed process can be assessed by demonstrating the achievement of process attribute on the basis of evidence related to assessment indicators.

There are two types of assessment indicators: process capability indicators, and process performance indicators.

The process attribute in the capability dimension has a set of process capability indicators that provide an indication of the extent of achievement of the attribute in the instantiated process. These indicators concern significant activities, resources or results associated with the achievement of the attribute purpose by a process.

The process capability indicators are:

- Generic Practice (GP);
- Generic Resource (GR);
- Generic Work Product (GWP).

Each process in the process dimension has a set of process performance indicators which are used to support the measure of the degree of achievement of the process performance attribute for the process assessed.

The process performance indicators are:

- Base Practice (BP);
- Work Products (WP).

The performance of base practices provides an indication of the extent of achievement of the process purpose and process outcomes. Work products both input and output are either used or produced (or both), when performing the process.

The process performance and process capability indicators defined in the process assessment model represent types of objective evidence that might be found in an instantiation of a process and therefore could be used to judge achievement of capability.

6 The process dimension and process performance indicators

6.1 General

This clause defines the processes and the process performance indicators, also known as the process dimension, of the process assessment model.

The process dimension includes process reference model elements (purpose and outcomes) plus process assessment model elements related to process performance indicators (base practices and work products). Additionally, it includes for each process a set of relationship notes.

The individual processes are described in terms of process ID, process name, process purpose, and process outcomes:

Process ID: This is a process category identifier, followed by a sequential number assigned to process descriptions within that category.

Process name: This is the name given to the process.

Process purpose: This is a statement of the purpose of the process.

Process outcomes: These are the outcomes expected as a result of successful implementation of the process.

In addition, the process dimension provides information in the form of:

Base practices: A set of base practices are identified by appending sequential numbers to the Process ID, followed by the practice name, followed by the practice description. Each base practice description indicates the outcome(s) addressed by the practice.

Relationship notes: Relationship notes are used to describe how the processes are related. Relationships can be of various forms, such as providing input to another process, receiving output from another process, indicating general relationships for clarification purposes, or describing when another process might be used in relation to carrying out the process being described.

Work products: Work products are provided as both input work products and output work products, each are associated with related outcome(s). They are only examples and are not intended to be prescriptive. Nor do they necessarily list all possible input or output work products. The identification of example work products is intended to help the enterprise when defining their own processes, to provide clarification for interpretation of the outcomes and base practices in the model, and to help assessors regarding potential artifacts to look for when assessing a particular process.

Work products are further used to clarify relationships between processes. For example, an input work product may be provided by a producer outside the scope of the model (such as a customer, or an external legal requirement imposed on the enterprise), or it may be provided from another process within the model. In the latter case, this relationship is noted by Relationship notes and also in Annex C: Relationship Tables which captures all such relationships. Output work products similarly fall in different categories. Some are supplied to other processes in the model, and denoted as such in Relationship notes and Annex C: Relationship Tables. Other outputs are used as records indicating achievement of outcomes and purpose.

Informative notes are provided for any of the above elements, as appropriate.

Sources and mapping: Each process description has been mapped to the source and reference documents that were brought together to derive the purpose, outcomes, and base practices. The sources and references used in developing the process descriptions are described in the Bibliography, and the specific elements integrated to derive the process descriptions are included in Annex D: High Level Mapping Tables.

Note that Annex B: Application and use of the process assessment model provides information on its use in relation to its sources.

The processes are listed below with their process ID and process name grouped into the process categories and special application area.

Figure 1 —Processes Grouped by Process Categories and Special Application Area

Governance/Management Process Category
GVM.1 Enterprise Governance GVM.2 Investment Management GVM.3 Human Resource Management GVM.4 Enterprise Architecture GVM.5 Business Relationship Management GVM.6 Supplier Agreement Management GVM.7 Tendering GVM.8 Project Management GVM.9 Risk Management
Life Cycle Process Category
LFC.1 Needs LFC.2 Requirements LFC.3 Design

LFC.4 Design Implementation LFC.5 Integration LFC.6 Evaluation LFC.7 Operation and Support LFC.8 Deployment and Disposal
Support Process Category
SUP.1 Alternatives Analysis SUP.2 Measurement and Analysis SUP.3 Quality Assurance and Management SUP.4 Change and Configuration Management SUP.5 Information Management SUP.6 Knowledge Management SUP.7 Training SUP.8 Research and Innovation SUP.9 Work Environment SUP.10 Process Definition SUP.11 Process Improvement
Special Applications Area
SAP.1 Safety and Security

6.2 Governance/Management Category

6.2.1 Enterprise Governance

Process ID	GVM.1
Process name	Enterprise Governance
Process purpose	The purpose of the Enterprise Governance process is to establish strategic enterprise direction and ensure the enterprise achieves its goals and objectives. NOTE: This process provides enterprise and corporate governance.
Process outcomes	As a result of successful implementation of the Enterprise Governance process: 1) Vision, mission, values, performance goals, objectives, and targets are established, maintained, and communicated to all employees and stakeholders. 2) Enterprise policies and directives are established, maintained, and communicated to all employees and stakeholders. 3) The organization is structured and aligned to operate in order to achieve the vision, goals, and objectives. 4) Employees share a common vision, culture, and understanding of enterprise goals and objectives and their role in achieving them. 5) Strategies are developed, budgets are formulated and aligned to strategic goals, and actions to achieve goals and objectives are established and reviewed. 6) Societal impacts, regulatory and legal requirements, environmental impacts, and risks are recognized and addressed when operating the enterprise.

	7) Employees and stakeholders are informed about enterprise performance.
Base practices	GVM.1.BP1: Establish and Maintain Strategic Vision. Establish, maintain, and communicate a strategic vision that identifies long-term goals, values, performance expectations, and core activities. [Outcome: 1] GVM.1.BP2: Establish and Maintain Policies. Establish, maintain and communicate policies and directives. [Outcome: 2] GVM.1.BP3: Align to Achieve the Vision. Align the enterprise to operate in order to achieve the vision. Establish leadership systems, control systems and structures for decision making, empowerment, compliance and conflict resolution. Provide incentives for contributing to enterprise vision and strategy. Provide consequences for contravening enterprise directives and policies. [Outcome: 3] GVM.1.BP4: Ensure sharing of common culture and vision. Ensure that individuals in the enterprise share a common culture, understand the common vision, and are committed and empowered to perform their functions effectively. [Outcome: 4] GVM.1.BP5: Establish and Maintain Strategy. Establish and maintain the enterprise strategic plans that identify business objectives to be achieved, areas of business to be pursued and their interrelationships, and the significant goals to be accomplished. [Outcome: 5] GVM.1.BP6: Formulate and Align Enterprise Budgets. Formulate enterprise budgets to ensure alignment with strategic goals. Ensure congruency with action plans. [Outcome: 5] GVM.1.BP7: Develop and Deploy Action Plans. Establish, integrate, and deploy tactical action plans to accomplish enterprise business objectives. [Outcome: 5] GVM.1.BP8: Review Performance. Review performance relative to goals and changing needs across the enterprise. [Outcome: 5] NOTE: Performance review information is provided by related management levels, as appropriate. GVM.1.BP9: Act on Results of Review. Translate performance review findings into action plans. [Outcome: 5] GVM.1.BP10: Fulfil Public Responsibility. Address the impacts on society and the environment of planned activities, products, services, and operations, considering regulatory and legal requirements and risks associated with products, services, and operations. Ensure corporate social responsibility, and take specific actions to address relevant findings. [Outcome: 6] GVM.1.BP11: Inform Employees Regarding Enterprise Performance. Regularly inform employees and stakeholders regarding enterprise performance [Outcome: 7]
Relationship notes	NOTE 1: The Investment Management process manages the portfolio of enterprise investments to align with achievement of enterprise goals and objectives. NOTE 2: The Measurement and Analysis process supports the establishment

	and use of measures to evaluate performance. NOTE 3: Apply the Risk Management process for assessing risks associated with operating the enterprise. NOTE 4: The Process Definition process addresses alignment of processes to achieve enterprise business objectives. NOTE 5: The Process Improvement process addresses capability assessment, development, deployment, and evaluation of best practices for efficient effective management. NOTE 6: Products from the Enterprise Architecture process are useful in developing the enterprise strategy.
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Work products	
Inputs	Outputs
Market analysis [Outcome: 1]	Strategic Vision [Outcome: 1]
Customer satisfaction reports [Outcome: 1]	Evaluations of the strategic vision [Outcome:1]
Past enterprise performance [Outcome: 1]	Long-term goals [Outcome: 1]
Technology forecasts [Outcome: 1]	Performance expectations [Outcomes: 1, 2]
Regulatory and legal requirements [Outcome: 6]	Business objectives [Outcome: 1]
Enterprise risk assessment reports [Outcome: 6]	Values [Outcome: 1]
Budget [Outcome: 5]	Core activities [Outcome: 1]
Measurements [Outcome: 5]	Product lines [Outcome: 1]
Performance information [Outcome: 5]	Targets [Outcome: 1]
Enterprise architecture [Outcome: 1, 5]	Communication plan [Outcomes: 1, 2, 4, 7]
	Policies [Outcome: 2]
	Directives [Outcome: 2]
	Leadership system [Outcome: 3]
	Unified goals [Outcome: 3]
	Conflict/issue resolution methods [Outcome: 3]

Work products	
Inputs	Outputs
	Organization charts [Outcome: 3]
	Guidelines for empowerment and decision making [Outcome: 3]
	Management structures [Outcome: 3]
	Monetary and non-monetary incentives [Outcome: 3]
	Performance plans aligned with enterprise goals and objectives [Outcome: 4]
	Strategy; Strategic plans [Outcome: 5]
	Aligned budgets; Allocated resources [Outcome: 5]
	Action Plans; Tactical Plans [Outcome: 5]
	Key performance measures/indicators [Outcome: 5]
	Performance results; Performance evaluations [Outcome: 5]
	Adjusted Plans [Outcome: 5]
	Results of regulatory or legal compliance reviews [Outcome: 6]
	Environmental improvements [Outcome: 6]
	Risk assessments [Outcome: 6]
	Enterprise performance reports [Outcome: 7]

6.2.2 Investment Management

Process ID	GVM.2
Process name	Investment Management
Process purpose	The purpose of the Investment Management process is to ensure that organizations realize optimal value from strategically aligned business investments at an affordable cost with a known and acceptable level of risk. NOTE 1: Investments may be internal or external to the enterprise. NOTE 2: Investment Management addresses management of a portfolio of investments, where a portfolio may include projects or programs or other related activities.
Process	As a result of successful implementation of the Investment Management

outcomes	process: 1) Criteria are established for categorizing, selecting and evaluating potential investment opportunities. 2) Business cases are prepared for potential investments. 3) Potential investments are prioritized for consideration in the investment portfolio. 4) An investment portfolio is established and maintained that collectively supports enterprise objectives. 5) Resources and budgets are identified and allocated. 6) The investment portfolio is reviewed based on agreed performance indicators, and is adjusted as needed to ensure alignment with enterprise objectives, acceptable risk levels, and resource constraints.
Base practices	GVM.2.BP1: Establish Criteria. Establish and maintain criteria for selecting and evaluating potential investments. [Outcome: 1] NOTE 1: For example, include alignment with business vision, enterprise strategy, enterprise architecture, cost, benefit, risk, performance, available resources, and business development opportunities. GVM.2.BP2: Identify Investment Proposals. Collect business cases, identifying and describing investment proposals. [Outcome: 2] GVM.2.BP3: Categorize Proposals. Define investment categories, categorization criteria, and categorize proposals. [Outcomes: 1, 3] GVM.2.BP4: Prioritize and Evaluate Investment Proposals. Evaluate and prioritize investment proposals. [Outcome: 3] GVM.2.BP5: Establish and Maintain the Investment Portfolio. Select proposals to be included in the investment portfolio. Establish and maintain the investment portfolio. [Outcome: 4] NOTE 2: The investment portfolio should provide a balanced mix with the greatest potential, to collectively support the organization's strategic initiatives and achieve strategic objectives in accordance with established criteria. GVM.2.BP6: Identify and Allocate Resources. Allocate resources to execute selected investments. Reallocate resources from deactivated and terminated investments. [Outcome: 5] GVM.2.BP7: Review/evaluate Performance. Review and evaluate ongoing investments versus stated criteria to determine whether to continue with, add to, or terminate specific investments. [Outcome: 6] GVM.2.BP8: Adjust Investment Portfolio. Adjust the investment portfolio in response to actual portfolio performance. [Outcome: 6] GVM.2.BP9: Communicate Portfolio Adjustment. Communicate results of portfolio adjustment to relevant stakeholders. [Outcome: 6] GVM.2.BP10: Monitor Changes. Monitor changes in strategy, risk levels, and resource constraints to assure appropriate alignment. [Outcome: 6]

Relationship notes	NOTE 1: Enterprise strategies and objectives are determined by means of the Enterprise Governance process. This process also reviews investment decisions to ensure alignment with changing enterprise needs. NOTE 2: Apply the Alternatives Analysis process for evaluating alternative investment choices. NOTE 3: Investment performance indicators can be developed by means of the Measurement and Analysis process. NOTE 4: Business cases may be prepared by means of the Project Management process. Performance indicators regarding funded investments are provided through the Project Management process. NOTE 5: Potential investments are represented in the to-be architecture developed by means of the Enterprise Architecture process. NOTE 6: Business cases for proposed innovations are from the Research and Innovation process.
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Work products	
Inputs	Outputs
Enterprise strategy and objectives [Outcomes: 1, 4, 6]	Criteria for categorizing investments [Outcome: 1]
Enterprise architecture [Outcome: 1]	Criteria for selecting investments [Outcome: 1]
Portfolio risk assessments [Outcome: 6]	Criteria for evaluating investments [Outcome: 1]
Business cases [Outcome: 2]	Business cases [Outcome: 2]
	Prioritized investments [Outcome: 3]
	Investment portfolio [Outcome: 4]
	Resources and budgets [Outcome: 5]
Investment performance indicators [Outcome: 6]	Adjusted investment portfolio [Outcome: 6]

6.2.3 Human Resource Management

Process ID	GVM.3
Process name	Human Resource Management
Process purpose	The purpose of the Human Resource Management process is to provide the organization with individuals who possess skills and knowledge to perform their roles effectively and to work together as a cohesive group.

Process outcomes	As a result of successful implementation of the Human Resource Management process: 1) Committed work is matched to human resources, and qualified individuals are recruited, selected, and transitioned into assignments. 2) Objectives related to committed work are defined against which performance can be measured. 3) Individual and group workforce activities are efficiently and effectively coordinated. 4) Individuals are compensated and rewarded based on their contribution and value to the organization. 5) Skills and competencies are developed, maintained or enhanced. 6) Knowledge is shared for efficient and effective interaction. 7) Workforce performance is monitored against objectives.
Base practices	GVM.3.BP1: Develop a Strategy for Human Resource Management. Develop a strategy for human resource management, including how needed skills and competencies will be identified, developed or acquired, personnel performance evaluated, career development established, and personnel are motivated and matched to current and future business needs, at both the organizational and unit levels. [Outcomes: 1, 2, 5] GVM.3.BP2: Identify Needed Skills and Competencies. Identify and evaluate skills and competencies needed by the organization to achieve its goals. [Outcomes: 1, 2] GVM.3.BP3: Define Evaluation Criteria. Define objective criteria that can be used to evaluate candidates and assess staff performance. [Outcome: 2] GVM.3.BP4: Recruit Qualified Staff. Establish a systematic program for recruitment of staff competent to meet the needs of the organization. [Outcome: 1] GVM.3.BP5: Develop Staff Skills and Competencies. Define and provide opportunities for staff to develop skills and competencies. [Outcome: 5] GVM.3.BP6: Support Staff Interaction and Collaboration. Support staff interaction and collaboration to enable staff to work together as a cohesive group. [Outcomes: 3, 4, 6] GVM.3.BP7: Empower Project Teams. Empower teams to perform their job, by ensuring that they have: - an understanding of their job; - a shared vision or sense of common interest; - appropriate mechanisms or facilities for communication; and - support from management for what they are trying to accomplish. [Outcomes: 1, 3, 6, 7] GVM.3.BP8: Evaluate Staff Performance. Evaluate performance of the staff with respect to their contributions toward the goals of the organization as a whole. Ensure feedback is discussed with the staff.

	[Outcomes: 2, 4, 7] GVM.3.BP9: Provide Feedback on Performance. Ensure feedback is provided, at least annually, to the staff through formal personnel evaluations on results of their performance. [Outcomes: 2, 3, 4, 7] GVM.3.BP10: Provide Adequate Recognition to Employees. Provide adequate remuneration and benefits to employees in accordance with their individual contributions and value produced for the organization. [Outcome: 4] GVM.3.BP11: Maintain Staff Records. Maintain adequate records of staff, including personnel details, information on skills, training completed, and on performance evaluations. [Outcomes: 3, 4, 5, 7]
Relationship notes	NOTE 1: Enterprise Governance process provides the vision, mission, values, performance goals, objectives, targets, policies, directives and enterprise performance, and the Human Resource Management process supports sharing a common vision, culture, understanding of enterprise goals and objectives, and the role of employees in achieving them. NOTE 2: Project Management process determines the needed skills and competencies for the staff. NOTE 3: Needs and Requirements processes support the elaboration of identification of personnel needed skills and competencies. NOTE 4: Tendering and Supplier Agreement Management processes support the acquisition of services to address Human Resource Management process needs. NOTE 5: Human Resource Management process is applied to support Process Improvement process. NOTE 6: Knowledge Management process supports the Human Resource Management process to obtain the skills to share expertise of individuals and groups. NOTE 7: Human Resource Management process interacts with Training process.

Work products	
Inputs	Outputs
Personnel policy [Outcomes: 1, 2, 4, 5, 7]	
Human resource management plan [Outcome: 1]	Human resource management plan [Outcome: 1]
Human resource needs analysis [Outcome: 1]	Human resource needs analysis [Outcome: 1]
Project Management plan [Outcomes: 1, 2]	

Work products	
Inputs	Outputs
	Acquisition plan [Outcomes: 1, 2]
	Personnel performance criteria [Outcome: 2]
National Privacy laws [Outcome: 1]	
Personnel record [Outcomes: 1, 2]	Personnel record [Outcomes: 1, 2, 4, 5, 7]
	Organization, project, individual training needs [Outcomes: 1, 2, 5, 6]
Training record [Outcomes: 3, 5, 6]	Training record [Outcomes: 3, 5, 6, 7]
	Personnel performance evaluation [Outcomes: 2, 7]
	Personnel performance review record [Outcome: 7]

6.2.4 Enterprise Architecture

Process ID	GVM.4
Process name	Enterprise Architecture
Process purpose	The purpose of the Enterprise Architecture process is to establish and maintain an enterprise-wide architecture to facilitate mission success. NOTE: Enterprise Architecture is a means to describe an enterprise-wide structure that aligns its information flow, planning and operating processes, and infrastructure to achieve the organization's goals. The description should be comprehensive enough to include the enterprise's mission, strategy, business processes, and technological components and their relationships to the organization's environment and evolution.
Process outcomes	As a result of successful implementation of the Enterprise Architecture process: 1) Based upon adopted, recognized, and credible models and standards, an enterprise architectural framework is established and maintained. 2) A description of the current enterprise architecture is maintained in terms of the selected architecture framework. 3) A description of the target enterprise architecture is established and maintained that is based on analysis of mission needs. 4) Transition planning to achieve the target enterprise architecture is maintained and executed.
Base practices	GVM.4.BP1: Adopt Standards. Adopt standards to guide the enterprise architecture program. [Outcome: 1]

	GVM.4.BP2: Establish a Framework. Based upon adopted standards, establish dimensions, appropriate to each organizational segment, that constitute the state of the enterprise and that will be used to define its nature and performance. [Outcome: 2] GVM.4.BP3: Maintain Architecture Description. Document and maintain a description of the architecture and its components that will be used as a baseline to measure and improve performance. [Outcome: 3] GVM.4.BP4: Identify Opportunities and Technologies. Analyze mission needs and technologies to identify new products and technologies to support them. [Outcome: 3] GVM.4.BP5: Determine Desired State. Determine and maintain a description of the desired characteristics and performance of the architecture components based on mission needs and the current performance. [Outcome: 4] GVM.4.BP6: Establish Benchmarks. Establish measurable increments or phases in achieving the target architecture. [Outcome: 4] GVM.4.BP7: Achieve the Target Architecture. Plan and execute a program to achieve the targeted architecture increments. [Outcome: 4]
Relationship notes	NOTE 1: A number of processes are employed in support of Enterprise Architecture, especially Enterprise Governance to establish the desired architecture, Measurement and Analysis to measure progress, and Change and Configuration Management to manage changes. NOTE 2: Enterprise Architecture also helps define potential investments that are realized through Investment Management.

Work products	
Inputs	Outputs
Candidate standards and models: [Outcome: 1]	Selected standards and models [Outcome: 1]
Enterprise mission needs: [Outcome: 3]	Architectural framework and its components: [Outcome: 1]
Analysis of standards and models [Outcome: 1]	Enterprise architecture description [Outcomes: 2 & 3]
Enterprise architecture description: [Outcomes: 2 & 3]	Transition plan [Outcome: 4]

6.2.5 Business Relationship Management

Process ID	GVM.5
Process name	Business Relationship Management
Process purpose	The purpose of the Business Relationship Management process is to establish and maintain a mutually satisfying relationship between the product or service supplier and the business partner based on understanding the business partner and its business drivers. NOTE: This process is closely aligned with the Needs process, but focuses on business relationships. Business relationships pertain to relationships among internal and external stakeholders and partners.
Process outcomes	As a result of successful implementation of the Business Relationship Management process: 1) Business needs and drivers are understood and used as the basis for providing products and services. 2) Interactions and collaborative relationships are established and maintained. 3) Customer demand is influenced. 4) Complaints and compliments are collected, recorded and managed to resolution. 5) A focus on value creation is established. 6) Contacts and communication with stakeholders and the business are established and retained.
Base practices	GVM.5.BP1: Develop Relationships. Develop and document contacts and relationships with the business, customers and stakeholders. [Outcomes: 1, 2, 3, 6] GVM.5BP2: Establish Interactive Communication Methodologies and Structures with Stakeholders and Partners. Name an individual or individuals who are responsible for collaboratively managing customer satisfaction and the whole Business Relationship Management process. [Outcomes: 2, 6] GVM.5BP3: Identify Relationship Attributes. Identify and manage cultural, market, loyalty and beneficiaries attributes. [Outcomes: 3, 5] NOTE 1: Attributes are human characteristics in the business context, as needed and determined by the enterprise. They are used to develop relationships. GVM.5.BP4: Identify Value Creation Opportunities. Proactively identify value creation opportunities and communicate them to the customer. [Outcomes: 5, 6] GVM.5.BP5: Manage Complaints and Compliments. Log and manage all complaints and compliments by analyzing existing information, obtaining feedback from customers and performing service reviews. [Outcomes: 4, 6] GVM.5.BP6: Create Service Level Agreements. Create Service Level Agreements between the business owner and the product/service

	supplier. [Outcomes: 2, 4] GVM.5.BP7: Establish a Service Catalog. Establish and maintain a service catalog for communicating with the business. [Outcome: 6]
Relationship notes	NOTE 1: Relationship attributes and value creation opportunities should be refined based on the goals, objectives and strategies identified by the Needs process. NOTE 2: Communication methodologies and structures should be used in the Tendering process.

Work products	
Inputs	Outputs
Market Analysis [Outcomes: 1, 3, 5]	Customer Attributes [Outcomes: 1, 2, 3]
Customer Loyalty Analysis [Outcomes: 2, 4]	Contact List [Outcomes: 2, 6]
Customer Feedback [Outcomes: 3, 4, 6]	Value Creation Opportunities [Outcomes: 3, 5]
	Service Level Agreements [Outcomes: 2, 4]
	Storyboards [Outcomes: 1, 3, 5]
Communication Plan [Outcomes: 2, 6]	Communication Plan [Outcomes: 2, 6]
	Complaints and Compliment Register [Outcome: 4]
	Service Catalog [Outcome: 6]

6.2.6 Supplier Agreement Management

Process ID	GVM.6
Process name	Supplier Agreement Management
Process purpose	The purpose of the Supplier Agreement Management process is to identify, select, and manage suppliers of products and services according to documented criteria and formal agreements. NOTE: A supplier is an enterprise or an individual that enters into an agreement with the acquirer or customer for providing a product or service under the terms of the agreement. The supplier can be either external or internal to the acquirer organization.
Process outcomes	As a result of successful implementation of the Supplier Agreement Management process: 1) Needs and requirements for outsourcing to suppliers are

	determined. 2) A supplier selection strategy with selection criteria is documented and implemented to evaluate possible suppliers. 3) Qualified suppliers are selected according to documented criteria to provide product components and/or solution components. 4) Qualified suppliers are managed and their performance and risks are monitored according to documented objectives in formal agreements in order to encourage clear documentation of allocated objectives and associated requirements. 5) The established agreement is documented, maintained and kept consistent with the acquirer's requirements and relevant laws, policies, regulations, and other applicable guidance. 6) Acquired products and services are accepted based on suppliers meeting the terms and conditions described in the agreement. 7) Supplier invoices are approved and paid as defined in the supplier agreement. 8) A productive communications environment, including consideration of the impact of national language and cultural factors, is established and maintained with all suppliers.
Base practices	GVM.6.BP1: Identify Needed Products or Services. Identify needed products and/or solutions that may be provided by internal or external supplier organizations. [Outcome: 1] GVM.6.BP2: Prepare for the Solicitation or Tasking. Prepare for the solicitation/tasking and the selection of a supplier, including objective review of estimates of cost for the services/products to be outsourced, a clear description of tasking, development of a supplier selection strategy, and inclusion of evaluation criteria in the solicitation/tasking package. [Outcome: 2] NOTE: Align the supplier selection strategy with enterprise vision and goals. GVM.6.BP3: Identify Competent Suppliers. Identify suppliers that have shown expertise or capability in the identified areas. [Outcome: 3] GVM.6.BP4: Select Supplier. Choose suppliers in accordance with the selection strategy and criteria. [Outcome: 3] GVM.6.BP5: Document Supplier Agreement. Establish a documented supplier agreement with each supplier that complies with current laws, policies and regulations, and incorporates all necessary and mutually approved supplier requirements. [Outcome: 5] GVM.6.BP6: Administer Supplier Agreement. Ensure the agreement is being maintained and followed, and all changes and records are properly processed, controlled and maintained. [Outcomes: 4, 5] GVM.6.BP7: Review and Monitor Agreement Performance. Review and monitor supplier activities through periodic formal reviews and informal, technical issue interchanges with the supplier, and by quantitative means to continuously determine agreement outcomes versus plans and requirements. [Outcome: 4] GVM.6.BP8: Monitor Supplier's Plans, Processes, Activities and Products. Monitor supplier's quality assurance, configuration management, test, corrective action and risk management systems,

	plans and process activities, results, and products according to the specified contractual quality model. Analyze and direct the cost, quality, and schedule performance of supplier activities against work plans. [Outcome: 4] GVM.6.BP9: Foster Cooperative and Collaborative Environment. Perform activities to foster a partnership between the acquiring organization and the supplier that promotes collaborative discussion, collaborative peer review, and continual process improvement. [Outcome: 8] GVM.6.BP10: Determine Product or Service Acceptance. Determine whether to accept the supplier's product or service, based on acceptance conditions stipulated in the agreement. [Outcomes: 6, 7] GVM.6.BP11: Pay Supplier. Approve and pay invoices as defined in the supplier agreement. [Outcome: 7]
Relationship notes	NOTE 1: Product or service components to be outsourced may be based on inputs from the Design Implementation process. NOTE 2: Make-versus-buy decisions and supplier selection decisions should be made in accordance with the Alternatives Analysis process. NOTE 3: Measurement requirements relating to outsourced products and services are obtained from the Measurement and Analysis process. NOTE 4: Project Management activities determine needed skills, which may be made available by training resident staff or by obtaining those skills from sources external to the acquirer organization via Supplier Agreement Management. NOTE 5: Products and services developed by a supplier are transitioned after acceptance by means of the Deployment and Disposal process. NOTE 6: Risk Management practices are useful in identifying, assessing, and mitigating acquisition risks as well as risks related to supplier tasks once acquired. NOTE 7: All supplier requirements information is recorded and change controlled throughout the life cycle according to the Requirements process. NOTE 8: In preparation for supplier selection, needs and expectations are analyzed according to the Needs process in the context of the suppliers intended operational environment. NOTE 9: Enterprise vision and goals used for developing the supplier selection strategy are developed in the Enterprise Governance process.

Work products	
Inputs	Outputs
Make-versus-buy analysis [Outcome: 1]	Needed product or service components [Outcome: 1]

Project requirements [Outcome: 1]	
Enterprise vision and goals [Outcome: 2]	Acquisition or supplier selection strategy [Outcome: 2]
Supplier selection criteria [Outcome: 2]	Supplier evaluation results
Supplier evaluation [Outcome: 3]	Selected supplier [Outcome: 3]
Agreements are documented [Outcome: 4]	Formal agreements established [Outcomes: 4,5]
Supplier performance measures [Outcome: 4]	Supplier performance review records [Outcome: 4]
Risk analysis [Outcome: 4]	Identified, assessing, and mitigating acquisition risks [Outcome: 4]
Supplier meets terms of agreement [Outcome: 6]	Accepted products and services [Outcome: 6]
Supplier invoices approved [Outcome: 7]	Paid invoices [Outcome: 7]
Communications planning [Outcome: 8]	Technical exchange meeting minutes [Outcome: 8]

6.2.7 Tendering

Process ID	GVM.7
Process name	Tendering
Process purpose	The purpose of the Tendering Process is to identify, select and bid for acquirer requests for information, quotations and proposals based on decisions that appropriately consider customer needs, risks, organizational abilities and competitor capabilities.
Process outcomes	As a result of successful implementation of the Tendering process: 1) Knowledge of skills, services, and products to be offered is established and maintained. 2) An assessment of organizational goals and target customer markets to pursue is documented, including criteria for bid submission. 3) Targeted acquirers for products and services are proactively identified based on established criteria, and targeted acquirer requests for proposals are evaluated. 4) Research and development or trade studies, related to anticipated needs of customers, are established and maintained, to fulfil needs in requests for proposals. 5) A decision, based on established criteria and risk analysis, is made to prepare, or not pursue, a proposal from an acquirer. 6) A proposal team with required skills is identified and enlisted. 7) Communication between the supplier and the acquirer is established and maintained, including dialog on customer needs,

	additional requests for proposals, and research and development opportunities. 8) A targeted proposal, that meets the need of the acquirer, is prepared and submitted. 9) Upon acceptance of proposals, formal confirmation of agreement is obtained.
Base practices	GVM.7.BP1: Evaluate Organizational Skills, Services and Products. Examine and document the organizational goals, service catalog, resumes and existing products to determine what target markets to pursue or develop. [Outcome: 1] GVM.7.BP2: Establish Criteria and Risk Analysis for Submission. Document the basis for determining a bid or no bid decision for responding to requests for proposals. [Outcome: 2] NOTE: A Request for Proposal (RFP) is a common example of an acquirer request for information. GVM.7.BP3: Evaluate Acquirer Requests for Proposals and Inquiries. Determine that proposed effort is in accordance with potential targets identified in organizational goals. Determine if the requested task is in line with existing organizational skills and talents or if these skills will have to be acquired. Review overall requirements to determine if they are consistent, concise and clearly defined. Document any questions that need to be posed to the acquirer for clarification. Determine the probability that the organization can be successful in this bid according to established criteria. Identify the logical contenders for the proposal and their advantages. [Outcome: 3] GVM.7.BP4: Perform any Preliminary Research and Development, Surveys or Trade Studies. Determine if the request requires investigation of key product or service components that may prove to be high risk when providing the requested product or service. Investigate trade studies or surveys covering the expected work involved. [Outcomes: 3, 4] GVM.7.BP5: Make a Go/No Go Decision. Based on established criteria and risk analysis, including preliminary research, decide whether to pursue or not pursue a request for a proposal. [Outcome: 5] GVM.7.BP6: Identify Resources to Perform Proposed Work and Form Proposal Team. Identify needed skills and form a qualified team to develop the proposal, and to perform the proposed work. [Outcome: 6] GVM.7.BP7: Establish and Maintain Supplier/acquirer Communications Interface. Assign an individual or organizational entity to establish a communications interface with the potential acquirers. Review the acquirer's schedule of events and point of contact to assure adherence to proposal preparation and delivery schedule. [Outcome: 7] GVM.7.BP8: Perform Estimation. Estimate costs and resources needed to satisfy the request. [Outcome: 8] GVM.7.BP9: Prepare and Submit Proposal in Response to

	Acquirer Request. Prepare proposal in accordance with guidelines in the acquirer's request document or request. [Outcome: 8] GVM.7.BP10: Negotiate and Confirm Agreement. Negotiate relevant aspects of the agreement and formally confirm the agreement. [Outcome: 9]
Relationship notes	NOTE 1: Use the Supplier Agreement Management process if product or service components for proposals need to be outsourced. NOTE 2: In preparation for tendering, needs and expectations are analyzed according to the Needs process in the context of the organizational goals identified in Enterprise Governance. NOTE 3: Use the Evaluation process to review proposals. NOTE 4: Service catalog is developed using the Business Relationship Management process. NOTE 5: Proposal documentation can be retained using the Information Management process. NOTE 6: Successful or unsuccessful experiences can be recorded and retained using the Knowledge Management process. NOTE 7: If the bid developed during the Tendering process is accepted, the practices of Supplier Agreement Management would be used to manage the agreement reached

Work products	
Inputs	Outputs
Inventory of Organizational assets [Outcome: 1]	Inventory of products and services [Outcome: 1]
Personnel Resumes [Outcome: 1]	Personnel Resumes [Outcome: 1]
Service catalog [Outcome: 1]	
Goal Analysis Results [Outcome: 2]	Organizational Goals and Targets [Outcome: 2]
	Established criteria for Proposal Selections [Outcome: 2, 3]
	Targeted acquirers [Outcome: 3]
Research and Development capabilities [Outcome: 4]	Identified and improved capabilities for proposals [Outcome: 4]
Requests for proposals [Outcome: 5]	
Risk/Benefit analysis [Outcome: 5]	Identified, mitigated risk list and associated analysis for

	each proposal [Outcome: 5]
	Selection of target proposal [Outcome: 5]
Skill set and requirements for proposal [Outcome: 6]	Roster of proposal team members with required skills and experience [Outcome: 6]
	Proposal review team meeting minutes [Outcome: 6]
	Communication records [Outcome: 7]
	Final Proposal [Outcome: 8]
	Contract or agreement [Outcome: 9]

6.2.8 Project Management

Process ID	
Process name	Project Management
Process purpose	The purpose of the Project Management process is to ensure the project achieves its objectives within given resource constraints by initiating, planning, executing, monitoring, controlling and closing the project activities and resources NOTE 1: Project Management pertains to managing any undertaking that develops and/or maintains one or more products or provides a service. This includes managing operational projects (groups of operational activities). NOTE 2: Projects may be called by various names in different organizational contexts, such as product teams, service teams, business units, or programs for managing operational projects (groups of operational activities managed as projects) or managing business units.
Process outcomes	As a result of successful implementation of the Project Management process: 1) The project is initiated and authorized, moving from the feasibility study. 2) Project plan(s) are established and maintained in order to attain the objectives and scope that the project was undertaken to address. 3) Estimates of schedule and task resources are provided with supportable rationale. 4) People and other resources are managed to carry out the project plan. 5) Progress is regularly measured and monitored to identify deviations from the project plan. 6) Corrective actions are taken when necessary to meet project objectives and are managed to closure.

	7) Completion of the product, service or results is formalized and the project or project phase is brought to an orderly end.
Base practices	GVM.8.BP1: Define Project Objectives, Scope, and Outputs. Define project objectives, scope, and the work products and services that are to be provided by the project. [Outcome: 1] GVM.8.BP2: Define the Life-Cycle Approach and Activities. Define the life-cycle approach that will be used and define and sequence the activities needed to achieve project outputs. [Outcome: 2] GVM.8.BP3: Define Stakeholders. Identify stakeholders and interfaces between project elements and with other project and organizational units. [Outcomes: 1, 2] GVM.8.BP4: Estimate Planning Parameters. Estimate and document the work product and task planning parameters that provide a basis for resource estimates. [Outcomes: 2, 3] GVM.8.BP5: Estimate Project Resource Requirements. Estimate the project effort, cost, schedule and other resource requirements. [Outcome: 3] GVM.8.BP6: Establish Schedules. Develop schedules for the project. [Outcome: 2] GVM.8.BP7: Establish Budget. Develop a budget for the project. [Outcome: 2] GVM.8.BP8: Plan the Quality. Identify the quality requirements and/or standards for the project or product and document how the project will demonstrate compliance. [Outcome: 2] GVM.8.BP9: Develop the Human Resource Plan. Identify the experience, knowledge and skill requirements for the project and apply them to the selection of individuals and teams. Identify the specific individuals and groups contributing to, and impacted by, the project, allocate their specific responsibilities, and ensure that commitments are understood, accepted, funded and achievable. [Outcome: 2] GVM.8.BP10: Plan Communications. Determine project stakeholder information needs and define a communication approach. [Outcome: 2] GVM.8.BP11: Plan Risks. Identify and analyze risks which may affect the project. Develop alternatives and actions in order to enhance opportunities and to reduce threats to the project objectives. [Outcome: 2] GVM.8.BP12: Plan Procurements. Plan and document project purchasing decisions. [Outcome: 2] GVM.8.BP13: Establish and Maintain Plans. Establish and maintain a complete set of plans for providing the products and services throughout the project life cycle. Plans should be sufficient to commit and manage the next phase of the project while remaining consistent with the overall scope, objectives, outputs and planning framework of the project. [Outcome: 2] GVM.8.BP14: Establish Commitment. Establish and maintain

	commitment of affected groups and individuals to project objectives and plans and commitment of resources as identified in the plan. [Outcome: 2] GVM.8.BP15: Acquire, Develop and Manage Project Team. Identify individuals or teams that will be assigned the resources and responsibilities for meeting project objectives. Improve the competencies of the team. Track team member performance, provide feedback, resolve issues and manage changes to optimize project performance. [Outcome: 4] GVM.8.BP16: Direct and Manage Project Execution. Perform the work defined in the project plan to achieve the project's objectives. [Outcome: 4] GVM.8.BP17: Distribute Information. Make relevant or established information available to project stakeholders as planned. [Outcome: 4] GVM.8.BP18: Manage Stakeholder Expectations. Communicate and work with stakeholders to meet their needs and address issues as they occur. [Outcome: 4] GVM.8.BP19: Monitor Project Performance. Monitor and track project activities and results against plans and baseline. [Outcome: 5] GVM.8.BP20: Review and Analyze Project Performance. Conduct formal and informal reviews of project performance and analyze variances from the plans. [Outcome: 5] GVM.8.BP21: Take Corrective Action. Take corrective actions to address problems. [Outcome: 6] GVM.8.BP22: Close Project. Close the project formally using appropriate organizational mechanisms and update organizational process assets. [Outcome: 7]
Relationship notes	Project Management establishes and maintains the schedules, resources, and integration of the activities of all process areas. Project Management gathers information and provides information to the processes engaged in providing the products and services through all life cycle phases. NOTE 1: Projects are chartered and supported by Enterprise Governance and Investment Management processes. NOTE 2: The customers and stakeholders for the project, and their expectations, are identified in the Needs process. NOTE 3: Project plans and schedules depend upon critical project requirements from the Requirements process. Integrity of the requirements and ongoing consistency between requirements and project plans depends on close coordination of Project Management and the Requirements processes. NOTE 4: The activities of Project Management interface with Supplier Agreement Management to plan and monitor acquisition of products, services, skills, or other solution components from external sources. NOTE 5: The Change & Configuration Management process is essential

	to provide Project Management with configuration control and status of the evolving products or services. NOTE 6: Project Management coordinates with the Training process regarding project training needs and individual training plans. NOTE 7: The Quality Assurance and Management process feeds process and product quality information and non-conformance issues to Project Management. NOTE 8: The Measurement and Analysis process provides measurement data in support of project monitoring and tracking and Quality Assurance and Management. NOTE 9: Integrated teaming practices are included in Project Management for establishing and supporting teams to achieve coordination and communication among stakeholders and the integration of effort necessary for timely, effective execution of the project. NOTE 10: The Risk Management process is crucial in managing risk areas that could adversely affect planned performance. NOTE 11: The business cases are used by the Investment Management process to make decisions regarding whether to invest in the proposed project (also relates to Tendering process).
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Work products	
Inputs	Outputs
Request for proposal [Outcome: 1]	
Contract [Outcome: 1, 2]	
Project charter [Outcome 2,3]	Project charter [Outcome 1]
	Business case [Outcome 1]
	Scope baseline [Outcome 1]
	Estimations [Outcome 2, 3]
Process performance data [Outcome: 4, 6]	
Project measure [Outcome: 5]	
Life cycle model [Outcome: 2]	
	Work Breakdown Structure [Outcome 2]
Project activity network [Outcome: 2]	Project activity network [Outcome: 2]
	Schedule baseline [Outcome 2]
	Cost baseline [Outcome 2]

	Budget [Outcome 2]
	Quality plan [Outcome 2]
Human resource management plan [Outcome: 2]	Human resource plan [Outcome: 1]
Project plan [Outcome: 2,3]	Project plan [Outcome: 2, 3]
Risk management plan [Outcome: 2]	Risk management plan [Outcome: 2]
	Procurements plan [Outcome 2]
	Communications plan [Outcome 2]
	Work performance information [Outcome 4]
	Project staff assignments [Outcome 4]
	Team performance assessments [Outcome 4]
	Communication record [Outcome: 5]
Problem record [Outcome: 6]	
	Work performance measurements [Outcome 5]
	Quality control measurements [Outcome 5]
	Performance reports [Outcome 5]
	Risk register [Outcome 5, 7]
	Corrective action [Outcome 6]
	Lessons learned [Outcome 7]

6.2.9 Risk Management

Process ID	GVM.9
Process name	Risk Management
Process purpose	The purpose of the Risk Management process is to aid decision making by taking account of uncertainty and the possibility of future events or circumstances (intended or unintended) and their effects on agreed objectives.
Process outcomes	As a result of successful implementation of the Risk Management process: 1) A risk management strategy is established and used that includes plans covering mitigation and contingency measures, methods, criteria, (including criteria for acceptance of residual risk after risk mitigation actions) and parameters for management of risk.

	2) Risks are identified and assessed for their risk attributes, such as likelihood and consequence. 3) Risk mitigation is performed when analysis indicates action. 4) Risk mitigation actions and risk status are monitored to determine their effectiveness and corrective action is taken as needed.
Base practices	GVM.9.BP1: Define Risk Management Strategies. Define appropriate strategies and risk measures to identify, analyze, treat and monitor each risk or set of risks, both at the project and organizational level. NOTE 1: The context of the Risk Management process will vary according to the needs of an organization. It can involve, but is not limited to: • defining responsibilities for the Risk Management process; • defining the scope, as well as the depth and breadth, of the risk management activities to be carried out; • including specific inclusions and exclusions; • defining the activity, process, function, project, product, service or asset in terms of time and location as well as its goal and objectives; • defining the relationships between a particular project or activity and other projects or activities of the organization; • defining the risk assessment methodologies; • defining the way performance is evaluated in the management of risk; • identifying and specifying the decisions that have to be made; and • identifying, scoping or framing studies needed, their extent and objectives, and the resources required for such studies. NOTE 2: According to the context of the Risk Management process the strategy might include such aspects as approach, methods, measures, risk action and acceptance criteria, risk attributes and parameters. [Outcome: 1] GVM.9.BP2: Identify Risks. Identify sources of risks, areas of impacts, events and their causes both initially and repeatedly as they may develop. [Outcome: 2] GVM.9.BP3: Assess Risks. Assess risks to determine their risk attributes, such as likelihood of occurrence and the consequences if they occur. [Outcome: 2] GVM.9.BP4: Develop Risk Mitigation Plans. Develop risk mitigation plans for risks that meet risk action criteria defined by the risk management approach. [Outcome: 1] GVM.9.BP5: Perform Risk Mitigation Actions. Implement risk mitigation activities in accordance with risk mitigation plans. [Outcomes: 3, 4] GVM.9.BP6: Monitor and Review Risks and their Mitigation Actions. Monitor the current state of each risk, determine changes in the status of risk and assess the effectiveness of risk treatment actions. [Outcome: 4]
Relationship notes	NOTE 1: Risk management is part of decision making. Risk management helps decision makers make informed choices. Risk management can help prioritize actions and distinguish among alternative courses of action. Ultimately, risk management can help with

	decisions on whether a risk is unacceptable and whether risk treatment will be adequate and effective. All decision making within the organization, whatever the level of importance and significance, involves the explicit consideration of risks and the application of risk management to some appropriate degree. NOTE 2: Risk management explicitly addresses uncertainty. Risk management deals with those aspects of decision making that are uncertain, the nature of that uncertainty, and how it can be addressed. NOTE 3: The risk management approach is incorporated into risk management plans by activities of the Project Management process. NOTE 4: Risks associated with incomplete, poorly stated, or ill-defined requirements should be identified during performance of the Requirements process activities. NOTE 5: The activities of Design Implementation process should be reviewed for risks associated with the development of product and service technical approaches and design solutions. NOTE 6: The level of risk should be a consideration in Alternatives Analysis process activities and selection criteria. NOTE 7: Risk should be considered when establishing strategies in Integration and Evaluation processes. NOTE 8: Supplier Agreement Management process activities should be reviewed for risks relating to acquisition of products and services from external sources. NOTE 9: Risk management practices should be applied to assess, analyze and mitigate risks to work environment continuity within Work Environment process. NOTE 10: Risk Management process provides the mechanism to identify issues to be measured by Measurement and Analysis process. NOTE 11: Risk Management process should be used to assess the risks related to insertion of innovation by Research and Innovation process.
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Work products	
Inputs	Outputs
Business goals [Outcome: 1]	Risk management strategy [Outcome: 1]
Project plan [Outcome: 1]	Definition of method and parameters for assigning risk [Outcome: 1]
Risk management plan [Outcomes: 2, 3]	Risk management plan [Outcomes: 1, 2]
Risk mitigation plan [Outcomes: 2, 3]	Risk mitigation plan [Outcomes: 1, 2]
Communication record [Outcomes: 1, 2, 3, 4]	Communication record [Outcomes: 1, 2, 3, 4]

Risk action request [Outcomes: 2, 3]	Risk action request [Outcomes: 2, 4]
Tracking system [Outcomes: 2, 4]	Tracking system [Outcomes: 2, 4]
	Risk sources list [Outcome: 2]
	Categories of risk [Outcome: 2]
	Prioritized risk list, including likelihood and consequence [Outcomes: 2, 4]
	Criteria for initiating risk mitigation actions [Outcomes: 1, 2]
	Risk root cause [Outcomes: 2, 4]
	Risk analysis report [Outcome: 2]
	Risk status report [Outcomes: 2, 4]

6.3 Life Cycle Category

6.3.1 Needs

Process ID	LFC.1
Process name	Needs
Process purpose	The purpose of the Needs process is to elicit, analyze, clarify, and document evolving customer and other stakeholder needs and expectations.
Process outcomes	As a result of successful implementation of the Needs process: 1) A statement of customer and other stakeholder needs and expectations is established and maintained. 2) The rationale for the need is established. 3) The interaction and scenarios for use of products and services with users in the intended environment is described. 4) Communication with the customer and other stakeholders is established and maintained throughout the product/service life cycle. 5) Customer satisfaction with products and services is determined, monitored and measured against customer satisfaction targets, quality and environmental aspects, service level and previous surveys.
Base practices	LFC.1.BP1: Identify Customers and Stakeholders. Identify customers and stakeholders. [Outcomes: 1, 4] LFC.1.BP2: Elicit Needs. Elicit customer and other stakeholders' needs, expectations, and measures of effectiveness. [Outcomes: 1, 2] NOTE: Needs may pertain to business value, quality, environmental

	needs and needed service levels. LFC.1.BP3: Analyze Needs. Analyze needs and expectations in the context of the intended operational environment. [Outcome: 3] LFC.1.BP4: Establish and Maintain a Statement of Need. Establish and maintain a statement of customer and other stakeholder needs and expectations that is understood and agreed upon by the customer and other stakeholders. [Outcome: 1] LFC.1.BP5: Communicate with Customers. Communicate and interact with customers and other stakeholders throughout the life cycle to assure a common understanding of the status and disposition of needs, expectations, and measures of effectiveness. [Outcome: 4] LFC.1.BP6: Determine Customer Satisfaction. Determine customer satisfaction with products and services. [Outcome: 5]
Relationship notes	NOTE 1: Needs elicitation and analysis should be performed based on the relationship attributes identified by the Business Relationship Management process. NOTE 2: When the Needs process establishes an expression of a new potential problem to be solved, further efforts to meet these needs are initiated according to the practices of the Investment Management process, which assures alignment of stated needs with enterprise goals, objectives, priorities, and resource availability. Needs so “approved” become input to the Requirements process. NOTE 3: As the problem to be solved becomes more clearly understood, the Needs process is performed iteratively with the Requirements process. NOTE 4: The statement of needs and expectations is baselined and controlled using the practices of the Change and Configuration Management. It forms a basis for the development of requirements in the Requirements process. NOTE 5: The practices of the Alternatives Analysis process can be used to resolve conflicting needs and expectations. NOTE 6: Customer satisfaction can be measured using practices of the Measurement and Analysis process. NOTE 7: Customer satisfaction information is useful in measuring performance of a quality management system as described in Quality Assurance and Management. It can also be used as input for management review and action at the enterprise or project level by means of the Enterprise Governance or Project Management processes. NOTE 8: Products and services are validated in the operational environment to assure that customer needs and expectations are met using the practices of Evaluation. NOTE 9: Practices of Project Management are useful in coordinating and communicating with the customer and other stakeholders. NOTE 10: Demonstrations of potential new technologies as a result of

	the Research and Innovation process are ways of eliciting needs. NOTE 11: Practices of Operation and Support are useful in establishing mechanisms for receiving customer satisfaction information as well as feedback on changing needs. NOTE 12: The Needs process provides information used in the Supplier Agreement Management process. NOTE 13: The Needs process provides information on needed skills to the Human Resource Management process and the Training process. NOTE 14: Customer needs and expectations are used by the Tendering process. NOTE 15: Since the Needs process supports the dialogue between product and service suppliers and the customer, all other processes will use it to communicate with the customer throughout the life cycle. NOTE 16: The Alternative Analysis process can be useful for resolving issues related to concurrence on items to include in the statement of needs and expectations. NOTE 17: The Measurement and Analysis process can be useful when determining customer satisfaction. NOTE 18: Needs regarding the work environment are provided to the Work Environment process.
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Work products	
Inputs	Outputs
List of interested parties [Outcome: 1]	Definition of customer and stakeholders [Outcome: 1]
Criteria for customer and stakeholder selection [Outcome: 1]	
Satisfaction criteria [Outcome: 2]	Justification and rationale for needs [Outcome: 2]
Customer attributes [Outcome: 1]	Statement of Needs and Expectations [Outcome: 1]
New technology demonstrations [Outcome: 1]	
Refined requirements [Outcome: 1]	
Questionnaires, interviews, operational scenarios obtained from users [Outcome: 3]	Storyboards [Outcome: 3]
Reverse engineering (for legacy products) [Outcome: 3]	Customer needs cases [Outcome: 3]

	Concept of enterprise operations [Outcome: 3]
Business case [Outcome: 3]	Business case analysis [Outcome: 3]
Customer communication process [Outcome: 4]	Problem reporting mechanism [Outcome: 4]
	Requirement traceability tables [Outcome: 4]
Customer feedback [Outcome: 5]	Customer survey results [Outcome: 5]
	Customer and stakeholder satisfaction measures and levels [Outcome: 5]

6.3.2 Requirements

Process ID	LFC.2
Process name	Requirements
Process purpose	The purpose of the Requirements process is to develop a detailed and precise set of requirements that meet customer needs and expectations and manage those requirements throughout the life cycle.
Process outcomes	As a result of successful implementation of the Requirements process: 1) Unambiguous, complete, traceable, feasible, consistent and verifiable requirements are derived from customer and other stakeholder needs and expectations. 2) All requirements information is recorded and change controlled to establish a baseline that is maintained throughout the life cycle. 3) Plans, products, activities, and agreements are traced for consistency with requirements, and any inconsistencies are identified for correction.
Base practices	LFC.2.BP1: Identify Requirements. Identify all types of requirements applicable to customer needs and expectations. [Outcome: 1] NOTE: Requirement types may be, but are not limited to, functional, non-functional, safety, security, human factors, interface, user, environmental, business, legal, regulatory and contractual. LFC.2.BP2: Derive Requirements. Derive requirements that may be identified as necessary implications of the identified requirements. [Outcome: 1] LFC.2.BP3: Analyze Requirements. Analyze requirements to ensure that they satisfy established quality criteria, including unambiguity, completeness, traceability, feasibility, and verifiability. [Outcome: 1] LFC.2.BP4: Baseline Requirements. Record, approve, baseline, and place under change control all requirements. [Outcome: 2] LFC.2.BP5: Analyze Requirements Risks. Document and analyze

	risks associated with the requirements. [Outcomes: 1, 2] LFC.2.BP6: Manage Requirements Changes. Analyze all requirements change requests for impact on the product or service and, upon approval, incorporate the approved changes into the requirements baseline. [Outcome: 2] LFC.2.BP7: Ensure and Maintain Requirements Traceability across the Life Cycle. Maintain traceability among requirements and between requirements and plans, work products, and activities initiating corrective action if inconsistencies are identified. [Outcome: 3] NOTE: Requirements may evolve throughout the lifecycle and are kept consistent with project plans.
Relationship notes	NOTE 1: Requirements identification is based on the results of the Needs process. NOTE 2: Requirements baseline and changes are controlled using the practices of the Change and Configuration Management process. NOTE 3: Requirements traceability has to be ensured to the work products of the Project Management process and the Life Cycle Category processes. NOTE 4: Requirements Risk Analysis is performed using the practices of the Risk Management Process. NOTE 5: Requirements form the basis of Service Level Agreements developed in the Business Relationship Management process. NOTE 6: Requirements documents are input to the Design process. NOTE 7: Products and services are verified to assure that requirements are met using the practices of Evaluation. NOTE 8: The Requirements process provides information used in the Supplier Agreement Management process. NOTE 9: Requirements change requests may come from the Operation and Support process. NOTE 10: Requirements for skills and competencies are provided to the Human Resource Management and Training process.

Work products	
Inputs	Outputs
Storyboards [Outcome: 1]	Requirements documents [Outcomes: 1, 2]
Requirements risk analysis [Outcome: 1]	Requirements risks [Outcome: 1]
Use cases [Outcome: 1]	Requirements traceability tables [Outcome: 3]
Business case analysis [Outcome: 1]	Requirements change log [Outcomes: 2, 3]

Statement of needs and expectations [Outcome: 1]	
Requirements traceability tables [Outcomes: 2, 3]	Requirements baseline [Outcome: 2]
Requirements change requests [Outcome: 2]	Risk register [Outcomes: 1, 2]

6.3.3 Design

Process ID	LFC.3
Process name	Design
Process purpose	The purpose of the Design process is to establish and maintain an architectural design and detailed design solution for the requirements of the customer and other stakeholders.
Process outcomes	As a result of successful implementation of the Design process: 1) A product or service architectural and detailed design solution that will meet the defined requirements and service level agreements is established and maintained. 2) The established product or service design is based on an analysis of alternatives against criteria that represent the requirements, including capacity, availability and risk considerations. 3) Allocations and traceability of requirements to the design elements are established and maintained.
Base practices	LFC.3.BP1: Develop Design Structure. Evaluate alternatives against established criteria, including capacity and availability considerations to select the architecture, structure, and elements for the product or service design. [Outcomes: 1, 2] LFC.3.BP2: Develop Interface Specifications. Develop interface specifications for the selected product and service elements. [Outcome: 1] LFC.3.BP3: Allocate Requirements. Allocate product and derived requirements to the design elements and interfaces and to personnel or processes where appropriate. [Outcomes: 2, 3] LFC.3.BP4: Establish Component Specifications. Establish design specifications for each element of the product or service. [Outcomes: 1, 2] LFC.3.BP5: Establish and Use a Strategy for Non-Developmental Items. Establish and use a strategy for managing issues relating to the use of non-developmental item (NDI) product and service elements. [Outcomes: 1, 3] NOTE: Non-developmental items may also be known as previously developed items of supply, components off-the-shelf, or commercial off-the-site items.

	LFC.3.BP6: Establish and Maintain Design Description. Establish and maintain a complete description of the product and service design. [Outcomes: 1, 2, 3]
Relationship notes	NOTE 1: Primary inputs to this process come from the Requirements process, including capacity and availability considerations. The Requirements process establishes the required functions of the product or service and how well the product or service is expected to perform the functions. NOTE 2: Traceability is maintained between requirements and work products throughout the life cycle by means of the Requirements process. NOTE 3: The Design process uses the Alternatives Analysis process to seek alternatives that meet established criteria for the product or service, and prioritize and/or recommend preferred alternatives. NOTE 4: Critical technical issues are considered in the Risk Management process. NOTE 5: Work products of the process are evaluated according to practices of Evaluation process and Quality Assurance and Management process. NOTE 6: Product or service elements defined in Design process are implemented by practices of the Design Implementation process or acquired through the practices of Supplier Agreement Management including outsourcing practices. NOTE 7: Baselines for the work products are established and maintained by the Change and Configuration Management process practices. NOTE 8: Formal and informal design information, whether placed under configuration management or not, is preserved for reference by the practices of Information Management process. NOTE 9: Architectural features and structures that support evolution of the product or service can be useful for Research and Innovation process. NOTE 10: Design constraints uncovered during Integration are input to the Design process.

Work products	
Inputs	Outputs
Implementation strategy [Outcomes: 1, 2, 3]	Physical architecture [Outcome: 1]
Customer requirements [Outcomes: 1, 2, 3]	Architectural design [Outcome: 1]

Interface requirements [Outcomes: 1, 2, 3]	Design alternatives [Outcome: 2]
System requirements [Outcomes: 1, 2, 3]	Interface specifications [Outcome: 1]
Maintenance requirements [Outcomes: 1, 2, 3]	Component specifications [Outcome: 1]
Detailed design [Outcomes: 1, 2]	Detailed design [Outcomes: 1, 2]
Analysis of design alternatives [Outcome: 2]	
Risk analysis of design issues [Outcome: 2]	Criteria for evaluating and selecting commercial off-the-shelf products [Outcome: 1]
Design constraints [Outcome: 1]	Function and performance requirements allocated to architecture and design components [Outcome: 3]
	Traceability record [Outcome: 3]

6.3.4 Design Implementation

Process ID	LFC.4
Process name	Design Implementation
Process purpose	The purpose of the Design Implementation process is to produce specified product or service solution components.
Process outcomes	As a result of successful implementation of the Design Implementation process: 1) An implementation strategy is defined. 2) Solution component(s) are developed. 3) Documentation to support solution component(s) installation, maintenance and use is established and maintained.
Base practices	LFC.4.BP1: Establish the Implementation Strategy. Establish the methods, standards, and tools to be used to implement the solution component(s), identifying any constraints associated with this strategy. [Outcome: 1] LFC.4.BP2: Formulate Product or Service Components. Formulate solution components according to the specifications and the implementation strategy. [Outcome: 2] LFC.4.BP3: Develop Documentation. Develop and maintain the documentation that will be used to install, operate and maintain the product or service components. [Outcome: 3]
Relationship notes	NOTE 1: Solution components have been previously specified by means of the Design process.

	NOTE 2: Solution components are validated and verified by means of the Evaluation process. NOTE 3: Traceability is maintained between requirements and work products throughout the life cycle by means of the Requirements process. NOTE 4: The enterprise infrastructure of facilities, tools and equipment is established and maintained by means of the Work Environment process. NOTE 5: Documentation developed in the Design Implementation process is used in the Deployment and Disposal process and in the Operation and Support process. NOTE 6: The Alternatives Analysis process may be useful in selection of tools for Design Implementation.
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Work products	
Inputs	Outputs
Work environment standards [Outcome: 1]	Implementation strategy [Outcome: 1]
Current facilities, tools and equipment [Outcome: 1]	Product component [Outcome: 2]
Component specification [Outcome: 2]	Service component [Outcome: 2]
	Traceability record [Outcome: 2]
	User documentation [Outcome: 3]
	Installation instructions [Outcome: 3]
	Operator's manual [Outcome: 3]
	Maintenance manual [Outcome: 3]

6.3.5 Integration

Process ID	LFC.5
Process name	Integration
Process purpose	The purpose of the Integration process is to ensure that product and service components will function as a whole.
Process outcomes	As a result of successful implementation of the Integration process: 1) A strategy for integrating the product and service components is defined. 2) Readiness of the integration facilities and product and service

	components for integration is verified. NOTE1: This includes demonstrating compatibility of interfaces. 3) The product or service is integrated in accordance with the integration strategy.
Base practices	LFC.5.BP1: Develop Integration Strategy. Develop an integration strategy and supporting documentation that identify the sequence for receipt, assembly, and activation of the various components making up the product or service. [Outcome: 1] NOTE 1: The integration strategy should address items such as schedules for integration activities and component readiness, resource requirements, any special shipping and handling of components, procedures, and communication. LFC.5.BP2: Obtain Integration Resources. Obtain integration enabling systems, such as integration facilities, personnel, and specified materials, according to the integration procedures. [Outcome: 2] LFC.5.BP3: Obtain and Confirm Readiness of Product and Service Components. Obtain and confirm the readiness of each product and service component in accordance with the integration strategy schedule and quality standards. [Outcome: 2] NOTE2: Components that do not pass quality standards are identified as such and handled in accordance with defined procedures. NOTE3: Components are handled in accordance with relevant health, environmental, safety, security and privacy considerations. LFC.5.BP4: Review and Coordinate Interface Definitions. Review and coordinate product and service element interface definitions, designs, and changes with affected groups and individuals throughout the life cycle. [Outcome: 2] LFC.5.BP5: Assemble Product and Service Components. Assemble or integrate product and service elements in accordance with the integration strategy. [Outcome: 3] LFC.5.BP6: Confirm Integrated Product or Service Operation. Confirm that the integrated product or service functions to the extent required for evaluation. [Outcome: 3] LFC.5.BP7: Record Integration Information. Record integration information such as issues, problems, assembly errors, or any design constraints arising. [Outcome: 3]
Relationship notes	NOTE 1: The integration strategy and sequencing is coordinated with the planning and scheduling practices of Project Management. NOTE 2: Product and service components are received from Design Implementation or Supplier Agreement Management processes. NOTE 3: The product and service components are verified by means of the Evaluation process prior to integration. NOTE 4: Coordinating, reviewing and maintaining the integrity of

	interface definitions, developed in the Design process, relies on using the Change and Configuration Management process if interface integrity issues arise. NOTE 5: Problems or issues identified during integration are input to Project Management and Risk Management processes. NOTE 6: Integration risks are considered when developing the integration strategy. NOTE 7: The practices of the Evaluation process are performed on the integrated product and service. NOTE 8: Any design or solution constraints uncovered during Integration are provided to the Design process. NOTE 9: The Alternative Analysis process may be useful in determining the integration strategy.
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Work products	
Inputs	Outputs
Project plan [Outcome: 1]	Integration strategy [Outcome: 1]
Risk analysis [Outcome: 1]	Integration procedures [Outcome: 1]
	Integration facilities and environment [Outcome: 2]
	Coordination records [Outcome: 2]
Quality standards [Outcome: 2]	
Component quality records [Outcome: 2]	Component evaluation report [Outcome: 2]
Product and service components [Outcome: 3]	Integrated product or service [Outcome: 3]
	Integration report [Outcome: 3]
	Integration record [Outcome: 3]
	Integration constraints on solution [Outcome: 3]

6.3.6 Evaluation

Process ID	LFC.6
Process name	Evaluation
Process purpose	The purpose of the Evaluation process is to provide confidence that developed and acquired products and services satisfy specified