

6.4.10 Transition process

6.4.10.1 Purpose

The purpose of the Transition process is to establish a capability for a system to provide services specified by stakeholder requirements in the operational environment.

This process moves the system in an orderly, planned manner into the operational status, such that the system is functional, operable and compatible with other operational systems. It installs a verified system, together with relevant enabling systems, e.g., planning system, support system, operator training system, user training system, as defined in agreements. This process is used at each level in the system structure and in each stage to complete the criteria established for exiting the stage. It includes preparing applicable storage, handling, and shipping enabling systems.

For software systems, the purpose of the Transition process is to establish a capability for a system to provide services in a different environment.

The Transition process is often used for recurring deployments of software to different environments, e.g., from a development environment to a test or maintenance environment, or between various test environments, or from one operational environment to another (e.g., rehosting or use of cloud services). Transitions to backup or contingent sites are typically planned and rehearsed for business continuity and disaster recovery. Transition for software systems can involve the physical relocation of hardware, the installation and activation or deactivation of physical or virtual infrastructure or enabling systems in different locations, or no change to the physical infrastructure. Transition can involve changes to the data sources, data structure, or updates or upgrades of functional software. Transition includes recurring scheduled or emergency patches and fixes for security and other concerns. Transition can involve transfer between organizations and also encompasses the addition of a large group of new users to an existing software system or service. Transition to a new system often is performed concurrently with retirement and disposal of an existing system, entailing data migration from the old system to its replacement.

NOTE Transition can involve knowledge transfer using the Knowledge Management process.

6.4.10.2 Outcomes

As a result of the successful implementation of the Transition process:

- a) Transition constraints that influence system/software requirements, architecture, or design are identified.
- b) Any enabling systems or services needed for transition are available.
- c) The site is prepared.
- d) The system, as installed in its operational location, is capable of delivering its specified functions.
- e) Operators, users and other stakeholders necessary to the system utilization and support are trained.
- f) Transition results and anomalies are identified.
- g) The installed system is activated and ready for operation.
- h) Traceability of the transitioned elements is established.

6.4.10.3 Activities and tasks

The project shall implement the following activities and tasks in accordance with applicable organization policies and procedures with respect to the Transition process.

a) **Prepare for the software system transition.** This activity consists of the following tasks:

- 1) Define a strategy for managing software releases and other software system transitions, including the following considerations:
 - i) establishing the type of transition and transition success criteria;
 - ii) determining the frequency of recurring transitions, such as updates and upgrades to development, test, and operational software systems;
 - iii) minimizing security risks, disruption, and downtime during transition;
 - iv) archiving, destroying, or converting and validating data from previous systems to the new system; including data received through external interfaces;
 - v) contingency planning for problem resolution, backup and return to the last working system version;
 - vi) scheduling transitions consistent with ongoing business processing, with phased or synchronized transition of systems
 - vii) change management for stakeholders, including interface partners, human operators, system administrators, and software system or service users;

NOTE Change management activities are often conducted to design changes in business processes associated with the new system, plan the transition in business processes, and gain user commitment to productive use of the new system.

- viii) associated strategies for validation of the transitioning system or element;
- ix) initiating user support and maintenance activities with the transfer and update of system design documentation, user documentation, and test procedures; and
- x) concurrent execution of the Transition, Operations, and Disposal processes, when a new system is commissioned and an old system is decommissioned.

NOTE The strategy includes roles and responsibilities, approval authority, use of readiness reviews and training.

- 2) Identify and define facility, site, communications network, or target environment changes needed for software system installation or transition.

NOTE For each transition, identify and define any needed changes in infrastructure or enabling systems. A site survey can be performed to identify needed changes in the physical environment to install or use the software system, such as changes to maintain the physical and information security of the system.

- 3) Identify information needs and arrange for user documentation and training of operators, users, and other stakeholders necessary for system utilization and support.

NOTE Transition includes migration or activation of user access to the software system. User roles are established and user accounts and access controls are implemented.

- 4) Prepare detailed transition information, such as plans, schedules, and procedures.

NOTE 1 The transition strategy is commonly recorded in a plan, e.g., a transition plan, or a project's SDP or SEMP. Transition schedules help validate that sufficient resources and infrastructure are available to support the transition, so that activities can be executed within a reasonable timeframe to minimize disruption. Schedules can include rehearsals

for complex transitions, in which procedures, such as database and system backup and restore and software installation, are tested to verify durations and correct results.

NOTE 2 During a specified period of changeover or concurrent operation, the transfer of services is managed so that continuing conformance to persistent stakeholder needs or an agreed level of service is achieved. If a period of parallel operations for both the old and new systems is needed, special procedures are identified and developed for receiving and utilizing data from interface partners.

- 5) Identify system constraints from transition to be incorporated in the software system requirements, architecture or design.
- 6) Identify and plan for the necessary enabling systems or services needed to support transition.

NOTE 1 This includes identification of requirements and interfaces for the enabling systems. Transition often involves the use of highly automated infrastructure to deliver, install, and activate or inactivate software. For electronic software distribution, temporary or continuing changes in connectivity are often needed for software and data migration and continuing sustainment. Enabling systems can include backup or alternate systems for use during a transitional period.

- 7) Obtain or acquire access to the enabling systems or services to be used.

NOTE The Validation process is used to objectively confirm that the transition enabling system achieves its intended use for its enabling functions.

b) **Perform the transition.** This activity consists of the following tasks:

- 1) Prepare the site of operation or virtual environment in accordance with installation requirements.

NOTE Site preparation is conducted in accordance with applicable health, safety, security and environmental regulations. Virtual environments and new communication resources are initialized and verified. Shipping and receiving of physical system elements and enabling systems is arranged.

- 2) Deliver the software system or element for installation at the correct location and time.

NOTE 1 Typically software is delivered electronically. For physical media, hardware, and embedded software systems, it is sometimes necessary to account for temporary storage prior to delivery or installation.

NOTE 2 Deliver agreed information items in electronic or physical form, such as training material, logistics support packages, or user documentation.

- 3) Install the product in its physical or virtual operational location and interface to its environment.

NOTE The product installation includes configuring it with required operational data, changes to the environment, or business process changes. Databases are instantiated and data migration is performed as applicable. Licenses and maintenance agreements for system elements, and other intellectual property, are transferred according to agreements.

- 4) Provide user documentation and training for the operators, users, and other stakeholders necessary for product utilization and support.

- 5) Perform activation and check-out, including the following as agreed:

NOTE 1 This task takes the steps needed to activate the product to an operational state, including start-up, assessment of environmental conditions, and other readiness evaluations, in accordance with operational procedures, organizational policies, and regulations. Where the exact location or environment of operation is not available or when software will be accessed from multiple or mobile locations, a representative example is selected.

NOTE 2 Acceptance tests are sometimes defined in the agreement to demonstrate satisfactory installation. This task interacts with the Validation process to objectively confirm that the system fulfills stakeholder requirements in the operational environment. Acceptance tests, as specified in agreements, can define the criteria that demonstrate that the software system entity possesses the capability to deliver the required functions and services when installed and sustained in its operational environment. Specific attention is given to the key functions and logical interfaces.

NOTE 3 As part of the Configuration Management process, a physical configuration audit (PCA) and update of as-built documentation is often performed at the time of system activation. Anti-counterfeit provisions can be confirmed.

- i) Demonstrate proper installation of the software system.

NOTE This task can include integrity checks of data and operations, e.g., that the software code and data representations properly initialize, execute, and terminate as specified.

- ii) Demonstrate the installed or transitioned product is capable of delivering its required functions.

NOTE This is an operational readiness task that examines readiness of functional capability for an operational state. Specific attention is given to the data interfaces and security concerns: information assurance and interoperability functions are exercised.

- iii) Demonstrate the functions provided by the system are sustainable by the enabling systems.

NOTE This is an operational readiness task that examines readiness of enabling systems for an operational state. For example, activation of monitoring, problem reporting, access control, backup and recovery, and user assistance (customer support) are demonstrated.

- iv) Review the software system for operational readiness.

NOTE This includes the results of functional demonstrations, validation activities, and sustainment demonstrations. A readiness review can be conducted. Deficiencies, risks, and problems that impact the success of the transition are resolved, accepted for waiver, or closed.

- v) Commission the software system for operations.

NOTE This includes providing support to the users, administrators, and operators during the operations commencement (commissioning) of the system.

c) **Manage results of transition.** This activity consists of the following tasks:

- 1) Record transition results and anomalies encountered.

NOTE This includes anomalies due to the transition strategy, the transition enabling systems, execution of the transition or incorrect software system or database system definition. Where inconsistencies exist between the system, its operational environment, and enabling systems, the deviations are resolved through corrective actions, including requirement changes. The Project Assessment and Control and Quality Assurance processes are used to analyze the data to identify the root cause, enable corrective or improvement actions, and to record lessons learned.

- 2) Record transition incidents and problems and track their resolution.

NOTE Performing problem resolution is handled through the Quality Assurance and Project Assessment and Control processes. During transition, the conditions under which the problem occurred are documented so that if possible, the problem can be duplicated and the root cause of the defect identified. Changes to the requirements, architecture, design, or software system elements are done using other Technical processes.

- 3) Maintain traceability of the transitioned software system elements.

NOTE Bidirectional traceability is maintained between the transitioned and deployed system and elements and the approved and controlled versions of the software system and enabling systems.

- 4) Provide key artifacts and information items that have been selected for baselines.

NOTE The Configuration Management process is used to establish and maintain configuration items and baselines, including transitioned software system elements. This process identifies candidates for the baseline, and the Information Management process controls the information items. For this process, the transition strategy, training material, and installation, transition and data migration procedures, and user documentation are typical information items that are baselined.