

**Draft Copy**

# **Change Management**

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## **10. Change Management**

### **10.1. Introduction to Change Management**

#### **10.1.1. Purpose of Section**

This document section is intended to be the main source of information for the Change Management Process. It outlines:

- What the Change Management process is;
- Requirements associated with the Change Management process; and,
- All necessary information pertinent to Change Management.

#### **10.1.2. Scope of Section**

This document section describes the process used to perform the Change Management function. It is not intended to provide the detailed data entry requirements needed for each area to perform their day-to-day tasks. It is assumed that these areas will maintain individual desk procedures outlining, in detail, those requirements. It is the responsibility of the Department Manager to ensure that individual desk procedures are maintained and available for general use and that the desk procedures comply with the process described here.

### 10.1.3. Document Section Format

**This document section addresses the following topics of information:**

- It provides an overview of the Change Management **process** which includes its; definition, scope, and objective(s).
- It describes the Change Management Process and the **responsibilities** that are associated with it.
- It describes the **meetings** which directly relate to the process.
- It provides a more **detailed process description** than that given in the overview. This description includes the process decomposition diagram, data flow diagrams, inputs, outputs, entry points, exit points, etc.
- It describes the various **relationships** that this process has with other processes.
- It lists all **productivity** aids that are used, along with a brief explanation of how they are used.
- It describes the **education** process.
- It describes the **key measures** of process effectiveness.
- It provides a description of the **management reporting process**.
- It contains a copy of the blank **compliance checklist** that should be completed annually by the Change Coordinator.

#### 10.1.4. Change Management Process Definition

The definition of Change Management is the process of planning, coordinating, and monitoring changes affecting the managed computing resources.

#### 10.1.5. Process Scope

The Change Management process, described within this document, details the procedures for changes to the following resources, which are inclusive, but not limited to:

- **Hardware**: Host Mainframe Computers, Channels, Control Units, Devices, etc.;
- **System Software**: Operating Systems, Sub-Systems, Access Methods, Data Bases, Utility and Vendor Products, etc.;
- The **Data Communications Network**: Software, Communications Controllers, Terminals, etc.;
- **Application Software**: On-Line and Batch applications, etc.;
- The **Environment**: Electrical, Heating, Ventilation, Air Conditioning; and
- **Procedures**: Documentation used to support systems, applications and processes.

### 10.1.6. Change Definition

A change is defined as any installation or alteration to:

- Hardware;
- Software;
- Procedures;
- Environmental Facilities; or,
- Application Software.

Change activity is defined as any action that:

- Adds to;
- Deletes from; or,
- Modifies the computing environment or its attached network.

Reasons for making changes could be:

- New Function;
- New Hardware;
- Performance Tuning;
- Growth;
- Technology;
- Fix Problems; or to
- Prevent Problems.



### 10.1.7. Scope of Change Management

**The Change Management process begins with the creation of a change request. A change is defined as any alteration to:**

- Hardware;
- Software;
- Network;
- Application;
- Operational Procedure, or
- Environmental Component.

**The change must either add to, delete from, or otherwise modify:**

- The Mainframe Host Computer Environment; or,
- The Data Network.

A **successful change** is defined as a change that becomes operational on the first installation attempt within the allotted time and does not need to be backed-out, circumvented, or modified; and, does not alter or effect any operation or user component of the system other than intended.

An **unsuccessful change** is defined as a change that does not become operational on the first installation attempt within the allotted time. It requires back-out, or modification.

The **process** includes Change Management for both the hardware and software components of the following systems:

**Host** - This includes the primary data processing system used to support batch, on-line and data base operations.

**Communications Data Network** - Including host attached and controller attached devices utilizing modems that communicate between company locations/clients and the host computer. The Data Network does not include Voice Communications (i.e., Phones), but does include PC's that communicate to the mainframe via Transmission Control Units that are channel attached to the host computer.

### **10.1.8. Objectives**

**The objectives of Change Management are to:**

- Implement changes in adherence with company policy;
- Provide a system that reduces, or eliminates, disruptions due to change activities;
- Implement changes on schedule;
- Coordinate change activities;
- Eliminate, or reduce, the number of change back-outs caused by ineffective change planning or implementation;
- Implement changes without exceeding estimated system utilization;
- Eliminate, or reduce, the number of problems caused by changes; and,
- Eliminate, or reduce, system outages caused by changes.

The Change Management process is designed to ensure that installation or modification of computing resources is implemented in an orderly and controlled fashion to minimize change failures and maximize productivity.

Management can assess the impact of changes through Change Management reports and regularly scheduled Change Management meetings.

### **10.1.9. Benefits Derived from Change Management**

The Change Management System is designed to ensure that changes made to the production data processing environment are successfully:

- Planned;
- Tested;
- Scheduled; and,
- Implemented.

The results of implementing a controlled Change Management process are to optimize system availability and minimize outages related to unsuccessful change activities. A Change Management System improves data processing quality by:

- Certifying adherence to dictated standards;
- Ensuring that Component and Release Management guidelines are followed;
- Validating the presence of required documentation; and
- Providing a mechanism to remove failed changes.

The Change Management process covers all operating environments and is used to: define, justify, assess, schedule, implement, and validate change activity targeted for the data processing environment. The Change Management process produces reports that are distributed to management and technical personnel. These reports describe all changes planned for the data processing environment.

The Change Management reports are also utilized to support the Change Management meeting agenda; where change activities are discussed and change schedules established.

### 10.1.10. SMC Discipline Interfaces

The Change Management. process interfaces with other SMC processes and key business areas. The diagram below shows how Change Management interfaces with the other Systems Management and Control (SMC) disciplines within the organization.

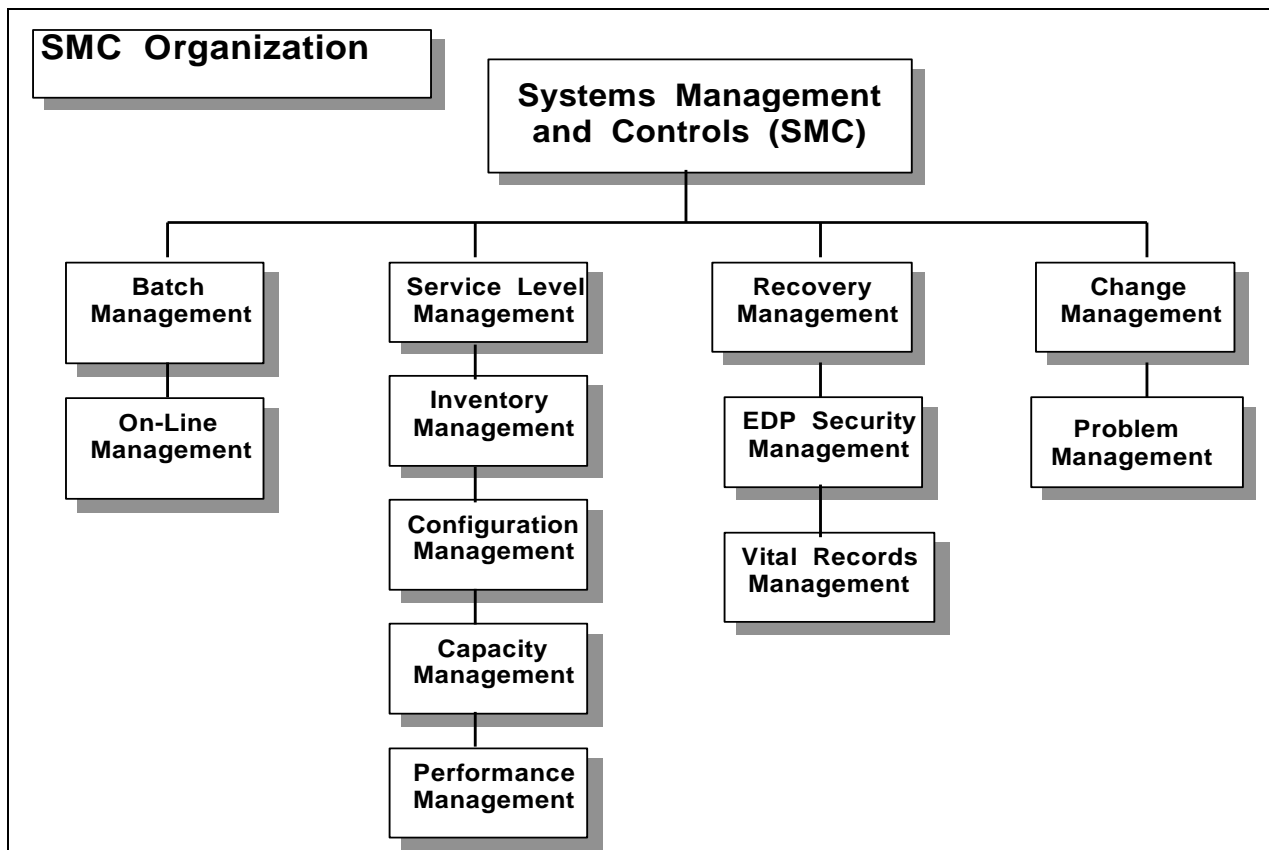


Figure 1: SMC Discipline Interfaces

The owners of the SMC disciplines can be identified through the current Technology Operations Organization Chart, which is maintained by the Administration Area. The various SMC disciplines are grouped together based on their common functionality. For example; Problem and Change Management are related, while Capacity, Performance, Inventory and Configuration Management are all related to Service Level Management.

The remainder of this section will describe how SMC disciplines directly interface with the Change Management process.

- **Inventory Management**

Whenever a change results in the Acquisition, Redeployment, or Termination of an Asset, the Inventory Management System will be updated to reflect the Change Control activity. By keeping the Inventory System in sync with the Change Management system, it will be possible to maintain an accurate and current inventory of all assets included within Technology Operations. This information is needed for financial planning, environmental evaluation, and problem analysis.

- **Configuration Management**

If a change adds, deletes, or otherwise moves components within a location, then the Configuration Management documentation for that area must be updated to reflect the new configuration. This information is used to support Recovery and Problem Management.

- **Capacity Management**

If a change affects the amount of resources at a location, or used by an application, then the Capacity Management discipline must be aware of the change. This information is needed to define the capacity of available resources and for the distribution of these resources in support of business applications and services. It is therefore critical that any changes that affect resource capacity be identified and the Capacity Management area notified.

- **Performance Management**

When a change affects performance, then the Performance Management group should be notified. This information will be used to explain deviations in reported performance and will allow the Performance and Capacity Management areas to adjust their forecasts accordingly.

- **Service Level Management**

If a change affects the amount of service available to an application or business service that has a Service Level expectation, then it is imperative that the impact of the change be known prior to its implementation. The Service Level impact will be compared against any contractual agreement(s) and discussions with the Business User conducted before the change can be implemented. If the impacted Business User does not approve the change because of its impact on Service, then the change will be rejected until it can be implemented without interfering with the level of service supplied to the Business User.

- **Batch Management**

Should a Batch Job experience a change to JCL, Programs, or Data Files then the impact of the change must be known before the change can be implemented. The impact of a Batch job change should be communicated to personnel having a need to know about the impact. The Change Management process will ensure that all pertinent information needed to describe and justify the change are produced and that the change goes through proper testing and quality assurance prior to being installed.

- **On-Line Management**

If a change is associated with an on-line system, then its impact on the on-line system must be known prior to implementing the change. Information concerning other SMC disciplines must be provided to the On-Line Management area for evaluation before the change can be implemented. Should the On-Line Management area find that the change impacts other system areas, then the change may be deferred until the conflict is resolved. The use of these checks-and-balances is designed to safeguard the vast array of system resources under the control of the Technical Operations department.

- **Recovery Management**

The Recovery Management discipline is responsible for identifying and safeguarding Critical Applications and the Vital Records associated with these applications. Recovery Management includes: EDP Security and Access Controls placed over application resources, Vital Records Management (including back-up, vaulting, and recovery operations), and the Recovery Planning for Technology Operations. Any changes that impact critical applications or resources, will therefore be reported to the Recovery Management area for an impact analysis. The findings of

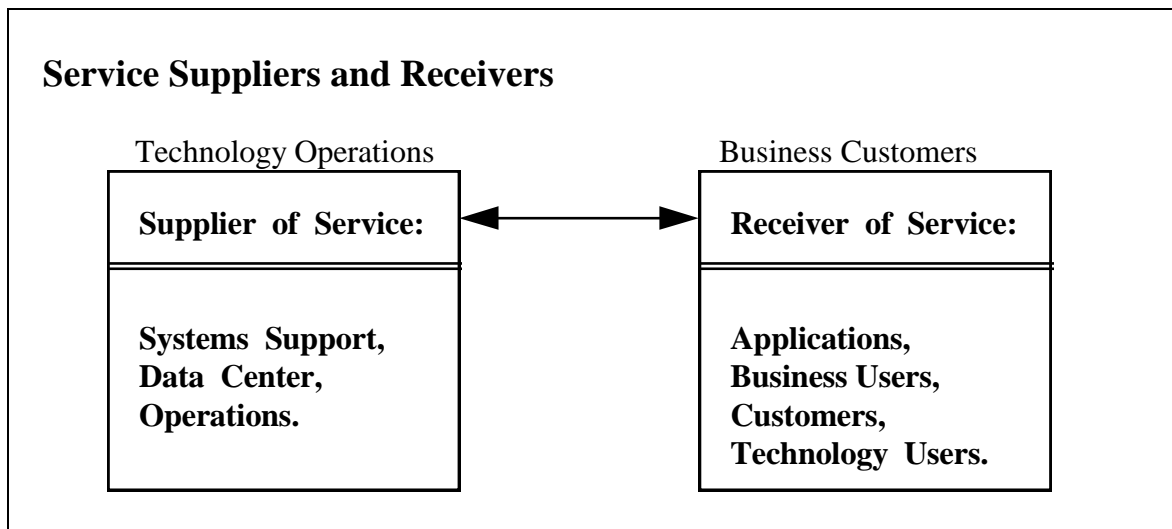
the Recovery Management area will be reviewed during the evaluation of the impending Change Control.

- **Problem Management**

The implementation of a Change may affect the procedures used to recover and restore operations in the event of a problem. Therefore, it is imperative that any alteration to recovery and restoration operations caused by a change be reported to the Problem Management area. Additionally, any new components that may be impacted by a problem should be identified and recovery procedures developed. Once developed, these procedures should be added to the documentation associated with the component being altered.

## 10.2. Roles and Responsibilities

A Change Management Process is as effective as its participants and must be administered with a degree of flexibility and clear definition of responsibilities to ensure effective results. It is not the organization which is important, but the effective execution of the Change Management Process responsibilities.



*Figure 2: Service Suppliers and Receivers*

### 10.2.1. Supplier of Service

The Supplier of Service for this process is the:

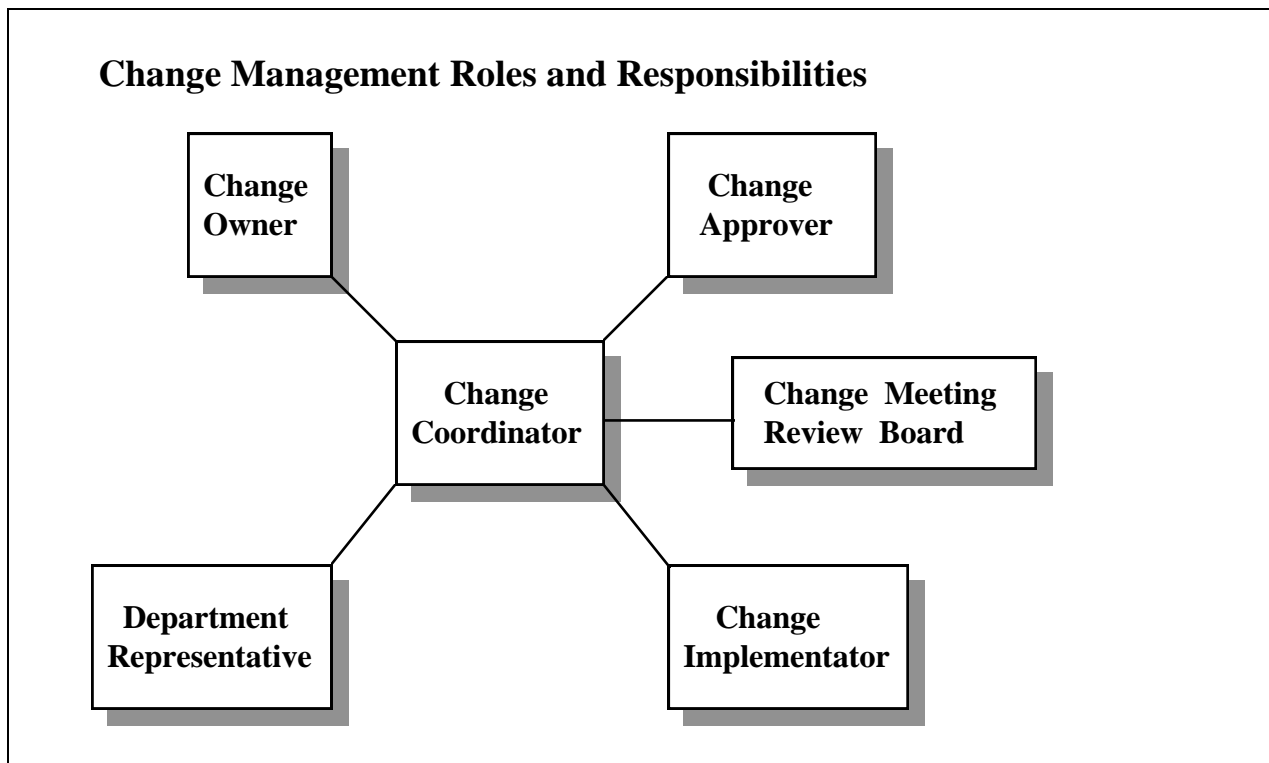
- **System Support,**
- **Data Center, and**
- **Operations**

areas within the Technology Operations organization. They must understand the customer's needs and design the solution to meet or exceed the customer's requirements. The Supplier of Service must also provide a stable environment and maximize service availability and reliability.



### 10.2.2. Receiver of Service (Process Customers)

The Receiver of Service, or Customer of this process, may be one or more of the people or groups that requires the service of the Technology Operations organization. This individual (or group) may be a designated representative for this process. They must provide an accurate picture of their needs, environment, and a forecast of any future changes which may affect the level of service provided to them. They must also assist with business justification for any additional system resources which may be required to support those needs.



*Figure 3: Change Management Roles and Responsibilities*

### 10.2.3. Owner

The manager of the department to which a change record is assigned. The Owner must ensure accuracy of data and timeliness of the change implementation, as well as, overall compliance of the Change Management Process.

**The owner is responsible for the following:**

- Review and understand the Change Management Process.
- Understand and concur with the nature of the change to be implemented.
- Sign-off on changes owned by them.
  - Concur with the requested installation date.
  - Concur with the nature and impact of the change.
  - Concur with test results.
- Fully understand the business impact of the change.
- Responsible for customer/user communications.
- Ensure education is provided to the customer/user community.

#### **10.2.4. Change Coordinator Responsibilities**

The Change Coordinator is responsible for maintaining Change Management Standards and Procedures contained within the Standards and Procedures Manual.

**The specific duties of the Change Coordinator are:**

- Review and update the Change Management process, as needed;
- Facilitate Change Management Meetings;
  - Prepare and distribute meeting information and reports;
- Review all change requests to ensure clarity of information;
- Identify potential exposures;
- Analyze change data and communicate to management potential exposures;
- Ensure changes are approved prior to implementation;
- Review and close installed changes;
- Assist departments in the change process;
- Maintain process document;
- Attempt to resolve change conflicts and escalate to management as necessary;
- Develop and distribute Change Management reports and measurements; and
- Provide education as needed.

### **10.2.5. Individual Department Change Management Representative**

The Department Representative is assigned by the Department Manager. This person works closely with the Change Coordinator to help ensure understanding and compliance of the process by the department.

#### **Responsibilities include:**

- Review and understand the Change Management process;
- Ensure change records have proper documentation;
- Attend required meetings;
- Notify the Change Coordinator of potential exposures;
- Ensure the department is in compliance with the Change Management process; and
- Work with the Change Coordinator to provide departmental education.

### **10.2.6. Change Approver Responsibilities**

The Change Approver is typically the last approver in the Change Process. By approving the change, the Approver has indicated that they have performed the following:

- Has reviewed and understands the Change Process;
- Understands and concurs with the change and its impact;
- Ensured that there are no outstanding conflicts or issues with the change;
- Ensured that the change will be installed as indicated by the change installation date;
- Has ensured that the change will be installed according to the change instruction;
- Has received instructions on what to look for if a problem with the change should arise; and,
- Has been provided with back-out instructions on how to remove the change and revert to the older release of the component.

### **10.2.7. Change Implementer (Requester or Assignee)**

The Change Implementer is responsible for compliance with the change process while requesting, scheduling, communicating and installing changes. A Change Implementer can be either the person: originating a change, approving the change, performing activities associated with the change, or the Implementer of the change. This is because a single change may require many tasks to be performed, each within a different operational area. With the vast array of people potentially associated with a change, it is imperative that a strong degree of communications be maintained. The process described below is designed to pass data among change related personnel and to maintain an Audit Trail of change activities.

#### **Responsibilities include:**

- Review and understand the Change Management Process;
- Ensure change records contain proper documentation;
- Ensure all affected areas are informed of the proposed change;
- Ensure proper testing and test results;
- Provide back-out information, if applicable, for each change;
- Minimize the impact of the change on the environment, schedule, or service agreement;
- Attend required meetings;
- Present changes in change meetings;
- Integrity of change information;
- Provide required education on the change to be implemented;
- Update change records with problem information resulting from the installed change;
- Clearly document any special instructions in the change record;
- Responsible for technical assessment; and,
- Obtain proper approval.

### **10.2.8. Change Meeting Review Board**

The Change Management Review Board is comprised of Change Management Department Representatives, whose responsibility is to formally review all changes presented in the change meeting. Working together, the group can provide valuable insight to the Change Implementer of potential exposures, since they represent their departments in the process, they are aware of all the activity going on within their areas.

#### **Responsibilities include:**

- Review all scheduled changes prior to the meeting;
  - Identify and communicate to the requester any concerns/exposures,
  - Ensure all up-front cross team/function activities are complete,
  - Attempt to resolve any concerns/exposures prior to the meeting,
  - Communicate to the Change Coordinator any unresolved concerns,
- Provide leadership to the change Implementer;
- Assist in resolving any identified concerns/exposures;
- Approve or Reject all changes presented in the meeting;
- Communicate back to the department any high impact activities;
- Understand how change errors can be detected;
- Understand how changes in error can be backed-out;
- Understand the nature of the requested change; and,
- Understand the impact of the requested change.

### **10.2.9. Meetings**

In order to ensure an effective change process, it is important that members from various areas meet on a regular basis. However, it is very important that each meeting have a purpose and everyone understands fully the objectives of the meeting.

### **10.2.10. Change Management Meeting**

The Change Management Meeting is designed to provide a forum whereby a change can be presented. The following process evaluations should be reviewed:

- Technical Assessment
- Business Assessment
- Implementation Plan
- Consideration for Scheduling
- Validate Results

See following page for a pictorial view of the Change Management Meeting process.



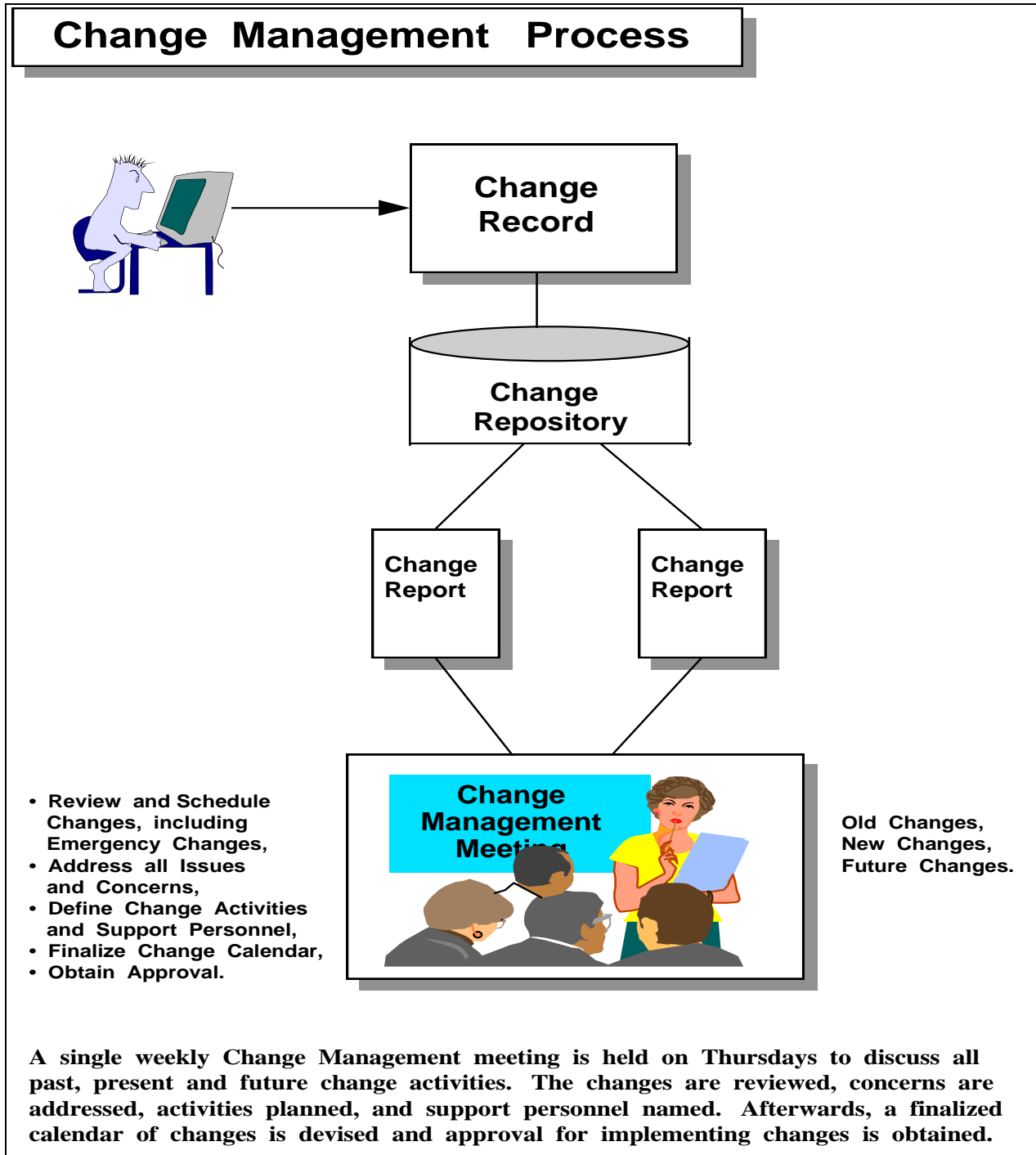


Figure 4: Change Management meeting agenda and schedule.

### **10.3. Process Overview and Flow**

#### **10.3.1. Change Management Process Description**

When preparing a change, there are several items that must be considered to minimize the impact of the change on the environment.

- **The impact of the change**
  - Consider the affect of a possible failure
  - Consider the impact on other systems or applications
- **The risk of installing the change**
  - Complexity
  - The probability of a failure
- **The type of change**
  - Hardware
  - Software, etc...
- **The priority/urgency**
  - How soon is it required
- **Communications**
  - Create change record as soon as possible
  - Publish the change

### 10.3.2. Change Management Process Phases

There are **eight phases** (A-H listed below) associated with the Change Management Process and each phase has **four steps** (1-4 listed below phases).

**The process begins** when a **change record** is documented and recorded in a common repository

**The process ends** once the change request has been **closed**.

**The process includes** phases A through H listed below:

- A. Create change request;
- B. Perform technical assessment;
- C. Perform business assessment;
- D. Test change;
- E. Schedule change;
- F. Approve change;
- G. Install change; and,
- H. Measurements and Ongoing Process Improvements.

**Each phase has four steps, which are:**

- 1. Definition.
- 2. Scope.
- 3. Inputs.
- 4. Outputs.

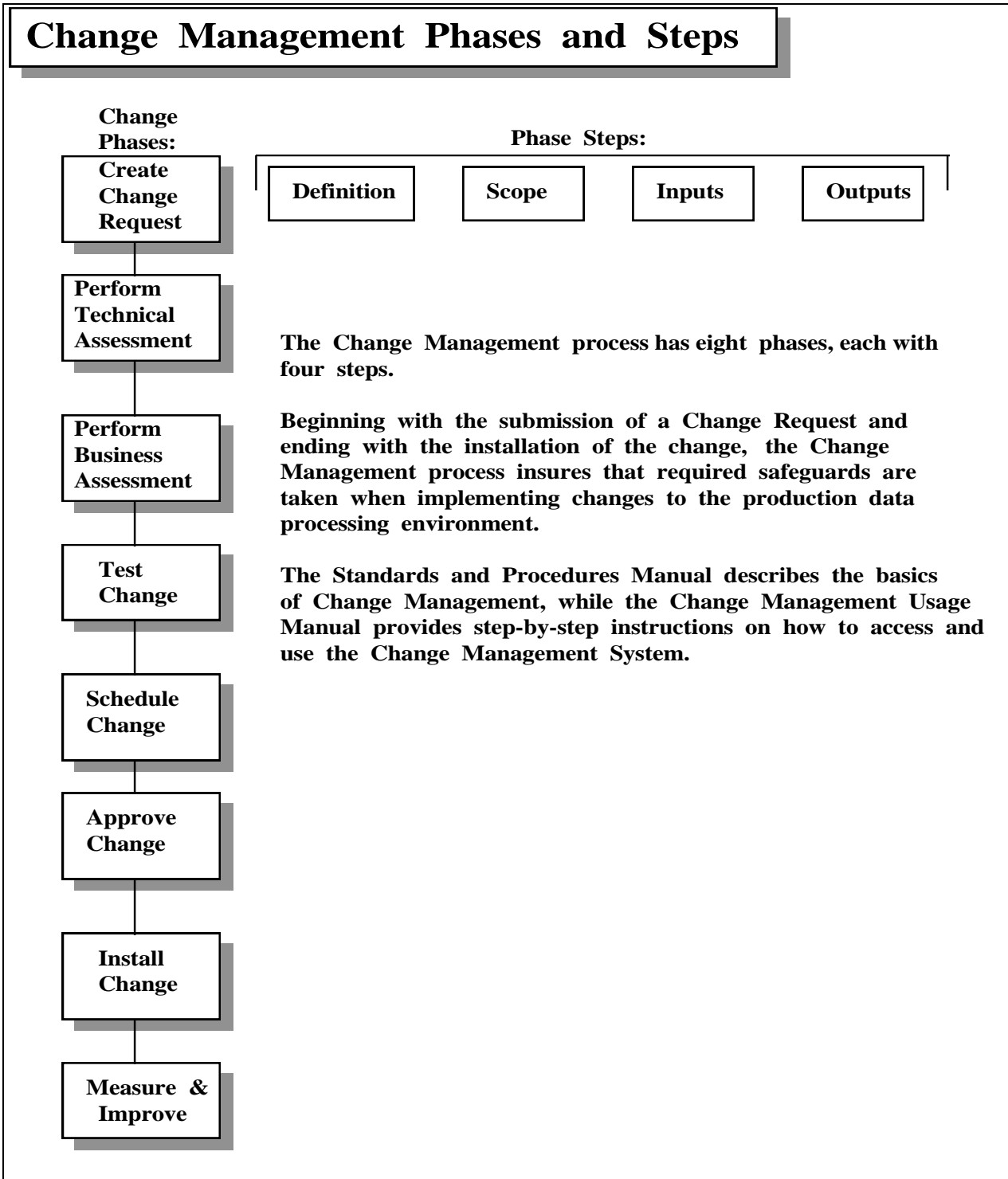


Figure 5: Overview of Change Management process

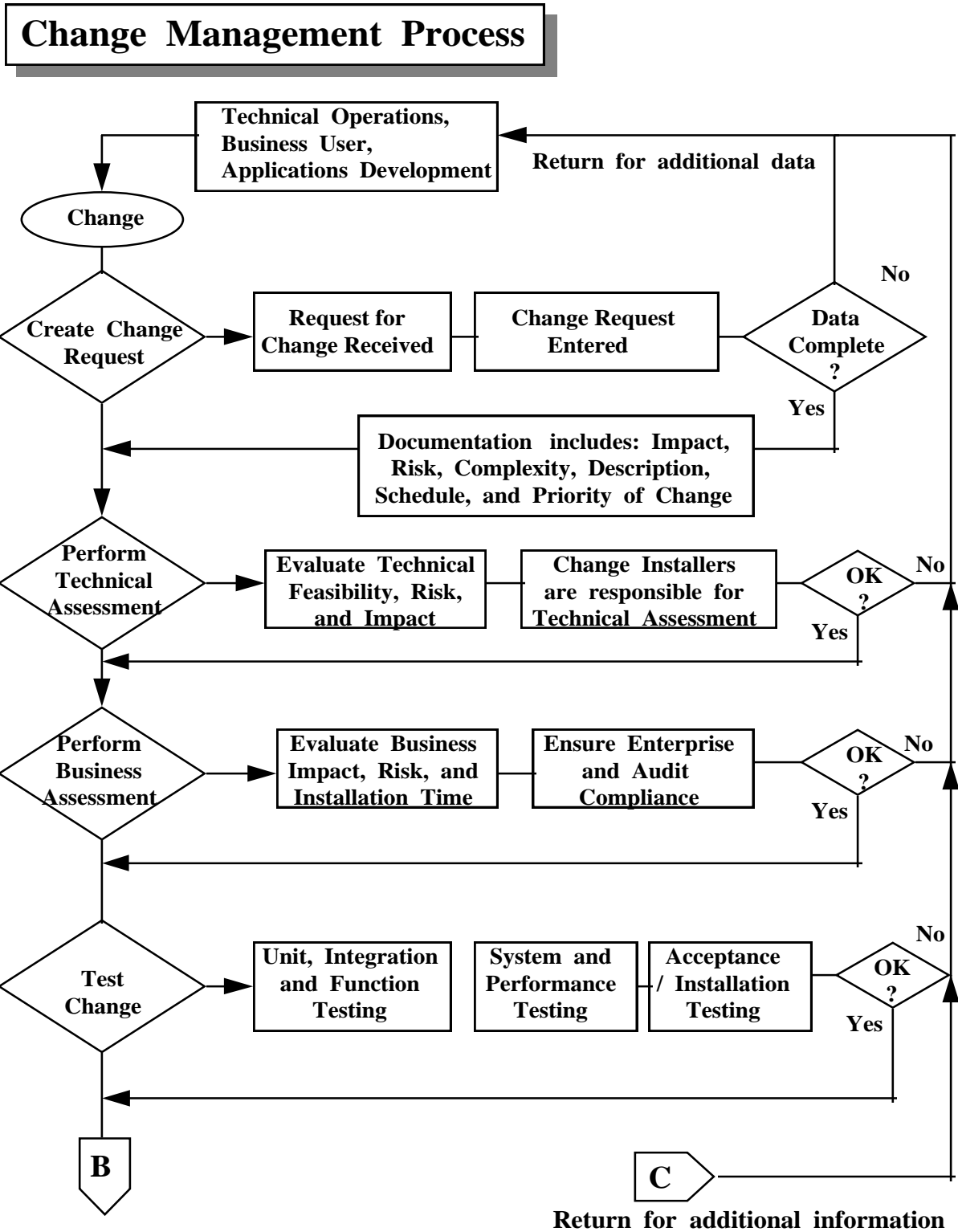


Figure 6: Change Management Phases - Flow Chart (part 1 of 2).

## Change Management Process continued...

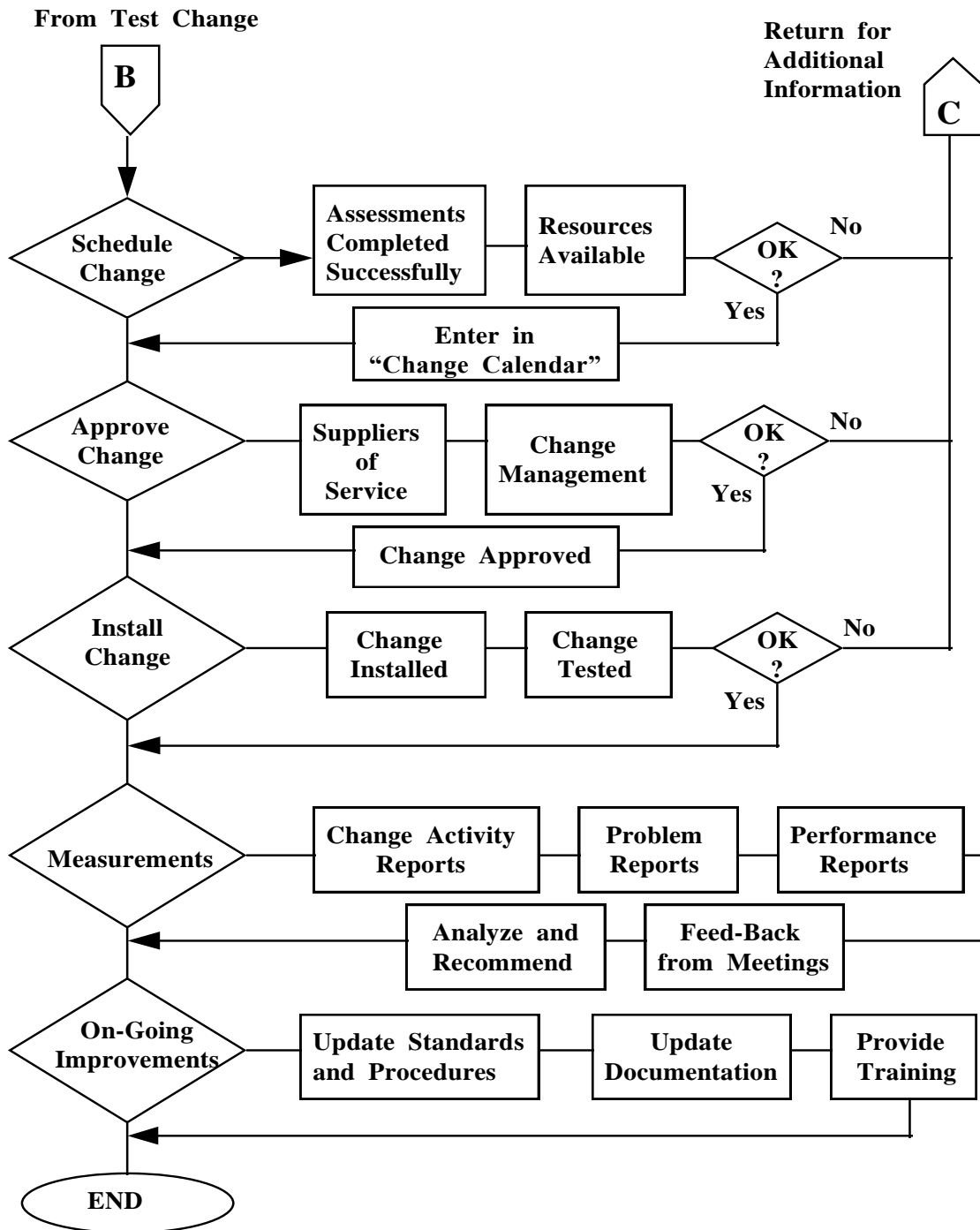


Figure 7: Change Management Process - Flow Chart (Part 2 of 2)

### 10.3.3. Create Change Request

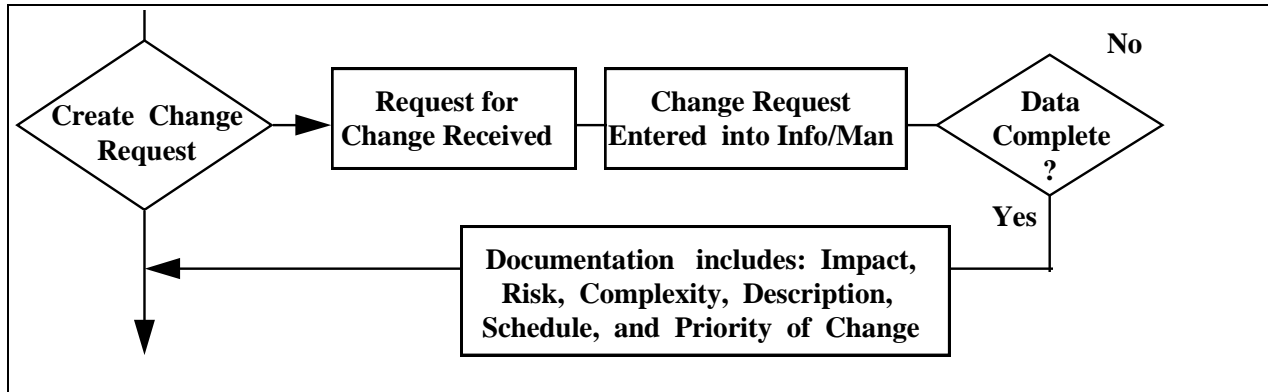


Figure 8: Create Change Request process.

#### 1. PROCESS DEFINITION:

The **Create Change Request** process is the first phase of Change Management and is responsible for defining a change targeted for the production environment. A change request is the actual notification of a plan to change the current environment. It is entered through a Change Record and it is the initial entry of information regarding the planned activity.

#### 2. PROCESS SCOPE:

**This phase begins with** a request for change for any Technology Operations managed resources. The change request is entered into the Change Management System and a Change Record created. **This phase ends with** a completed change record contained within the Change Repository

- Documentation

The documentation included with the Change Request includes plans and activities required for modifying the environment and must describe the change's:

- Impact,
- Risk,
- Complexity, and
- Priority

The required input and derived outputs associated with this phase are.

INPUT	PROCESS	OUTPUT
<ul style="list-style-type: none"> <li>• Change Request,</li> <li>• Requester Data,</li> <li>• Detail Data,</li> <li>• Change Type,</li> <li>• Change Complexity,</li> <li>• Description,</li> <li>• Reviews Required,</li> <li>• Start / End Dates,</li> <li>• Scheduling Data,</li> <li>• Business Justification,</li> <li>• Backout / Recovery Plans,</li> <li>• Activity Record(s),</li> <li>• Identify Assignee,</li> <li>• Resource(s) affected,</li> <li>• Identified Approver(s).</li> </ul>	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: auto;"> <p><b>Create Change Request</b></p> </div>	<ul style="list-style-type: none"> <li>• Change Record in Change Management Repository,</li> <li>• Impact and Risk Assessment.</li> </ul>

Figure 9: Creating a Change Request - Inputs and Outputs

3. **PROCESS INPUTS:**

- **Change Request**

Request to change any managed Technology Operations resource.

- **Requester Data**

Documented requester personal information for identification and communication.

- **Detail Data**

Specific information pertaining to change record.



- **Change Type**

The category of the change request (e.g., hardware, software, application).

- **Change Complexity**

The impact and the degree of risk associated with the change type.

- **Description**

Freeform detailed documentation of the change and all associated activity for analysis purposes.

- **Reviews Required**

Business impact consideration (e.g., security and operations documentation).

- **Start / End Dates**

Current target date/time duration.

- **Scheduling Data**

Documented Prerequisites,

Co-Requisites, and

Dependencies.

- **Business Justification**

Documented business reason, why the change is required, and/or benefit to the company.

Identification of the business rationale for implementing the change. Delineation of the customer and/or Technology Operations support goals that would be realized upon implementation of the change (i.e., increased performance, addition of a new function, installation of new equipment, etc.).

- **Backout/Recovery Plans**

Specific action to be taken if the change does not perform as planned.

- **Activity Record(s)**

Identification of significant events/tasks that must be performed to implement change, such as a form that must be completed, or an approval, etc...

- **Identify Assignee**

Change implementer -- the person who has ownership and accountability for ensuring that the change is implemented per change record.

- **Resource(s)**

Identification of specific components affected by the implementation of the change.

- **Identify Approver(s)**

Identification of the person(s) who must approve the change request prior to implementation.

4. **PROCESS OUTPUTS:**

- **Change Record**

Composite of all data and information associated with the change.

- **Impact and Risk Assessment**

Evaluation of the impact and risk of the change to the environment.

### 10.3.4. Perform Technical Assessment

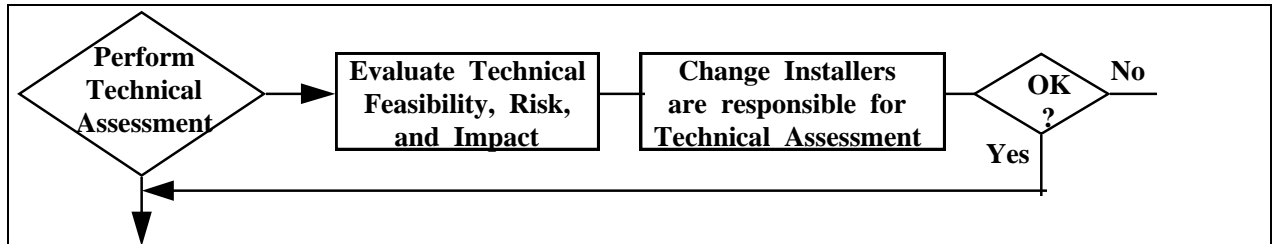


Figure 10: Performing Technical Assessment of a Change Request

#### 1. **DEFINITION:**

The **Perform Technical Assessment** process will evaluate the technical feasibility, risk, and the singular effect of a change, as well as, the global effect of the change on the entire environment. The Technical Assessment is the responsibility of the person(s) installing the change.

#### 2. **SCOPE:**

**This phase begins with** validating the technical completeness of the change plans and evaluating the aggregate effect of the change to the production environment. **This phase ends with** technical approval of the change request, based on the evaluation of the change.

**The process includes** a review of the change request, which encompasses:

- **Co-requisites, prerequisites;**
- **Adequacy of plans** in the change record;
  - levels of testing required,
  - backout/recovery plans,
  - technical completeness of change plans,
- **Dependencies and/or conflicts** (activity records can be utilized to perform this function. They are similar to forms, where the Change Request is an Event);
- **Aggregate effect** of the change;

- **Compliance** with existing procedures; and,
- **Notification** of assessment meeting to appropriate parties.

Formal technical assessments are recommended by the Change Management process when a change complexity is High Risk/High Impact, as defined in the section on **Determining Complexity Levels**.

All areas required to review a High Complexity/High Risk or major activity must be formally notified. Individual assessments must be performed by those areas affected.

The areas listed below may be affected by High Complexity/High Risk changes:

- Data Center Operations;
- Networking Services;
- Security;
- Facilities;
- Software Support;
- Application Development; and,
- Users.

**Required Inputs and Outputs to the Perform Technical Assessment process.**

The following figure represents the required inputs to the Perform Technical Assessment phase and the outputs derived from successfully completing this phase.

INPUT	PROCESS	OUTPUT
<ul style="list-style-type: none"> <li>• Risk Assessment,</li> <li>• Performance Assessment,</li> <li>• Capacity Assessment,</li> <li>• Recovery Assessment,</li> <li>• Backout Plan,</li> <li>• Estimated Install Time,</li> <li>• Impact to System Security,</li> <li>• Change Record.</li> </ul>	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p><b>Perform Technical Assessment</b></p> </div>	<ul style="list-style-type: none"> <li>• Technical Assessment,</li> <li>• Technical Approval,</li> <li>• Change Record.</li> </ul>

*Figure 11: Perform Technical Assessment - Inputs and Outputs*

3. **PROCESS INPUTS:**

- **Risk Assessment**

Evaluation of the impact and risk of the change to the environment.

- **Performance Assessment**

Assessment of the overall impact to system performance of the entire production environment.

- **Capacity Assessment**

Assessment of the overall impact to production environment system capacity.

- **Recovery Assessment**

Assessment of the overall impact to customer and/or Technology Operations services if implementation of the change fails. The assessment should be of sufficient detail and include the steps needed to return the system to its prior state.

- **Backout Plan**

The plan should be of sufficient detail and include when and how it will be determined if a backout is needed to be performed.

- **Estimated Install Time**

The amount of time (window) required to implement the change into production by all affected parties.

- **Impact to System Security**

All System Owners have the responsibility to ensure their system is adequately protected. The decision about the level of protection required must be based on the data classification as well as the value of the service the system provides.

- **Change Record**

Composite of all data and information associated with the change.

4. **PROCESS OUTPUTS:**

- **Technical Assessment**

Formal evaluation of the technical feasibility, associated risk (if any) and the overall technical effect of the change per the aforementioned PROCESS INPUTS.

- **Technical Approval**

Approval or rejection of the change will be based in part on the merits of the Technical Assessment. In addition, it may be determined that the change be rescheduled for a later date/time when any risks and/or negative impacts associated with the change could be minimized.

- **Change Record**

Composite of all data and information associated with the change.

### 10.3.5. Perform Business Assessment

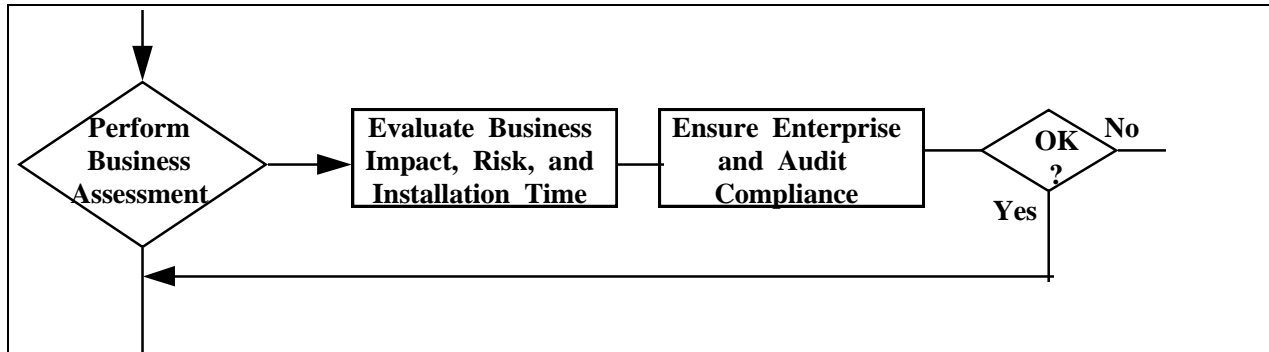


Figure 12: Performing a Business Assessment of a Change Request

#### 1. **DEFINITION:**

The **Perform Business Assessment** phase is the process of performing an assessment of a change from the business risk, impact, and installation timing perspective. Its purpose is to confirm that the change is consistent with business objectives.

#### 2. **SCOPE:**

**The phase begins with** an assessment of the business plans and goals associated with the proposed Change Request and includes an assessment of the:

- Business Impact,
- Risk, and
- Installation Timing.

**The phase ends with** business approval based on the evaluation of the business assessment.

**The phase includes:**

- An analysis of the change to ensure the timing is not creating conflicts.
- Ensuring compliance requirements are met.
- Ensuring all affected parties are aware of the change.
- Ensuring change plans are compatible with and meet the plans and goals of the enterprise.
- Ensuring business audit requirements are met.
- Formalizing any additional recommendations or requirements prior to the approval process.

**The required inputs and derived outputs associated with this phase are:**

<b>INPUT</b>	<b>PROCESS</b>	<b>OUTPUT</b>
<ul style="list-style-type: none"> <li>• Service Level Impact,</li> <li>• Technical Assessment,</li> <li>• Technical Approval,</li> <li>• Change Record.</li> </ul>	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p><b>Perform Business Assessment</b></p> </div>	<ul style="list-style-type: none"> <li>• Business Approval,</li> <li>• Business Assessment,</li> <li>• Change Record.</li> </ul>

*Figure 13: Perform Business Assessment - Inputs and Outputs*



3. **PROCESS INPUTS:**

- **Service Level Attainment**

Consider the stability of the affected resource(s) as related to service commitments. (i.e., could the implementation of the change/negatively impact prior service commitments).

- **Technical Assessment**

Formal evaluation of the technical feasibility, associated risk (if any) and the overall technical effect of the change.

- **Technical Approval**

Approval or Rejection of the change will be based in part on the merits of the Technical Assessment. In addition, it may be determined that the change be rescheduled for a later date/time when any risks and/or negative impacts associated with the change could be minimized. Once the change has been technically approved, it should be evaluated based on its business merits.

- **Change Record**

Composite of all data and information associated with the change.

4. **PROCESS OUTPUTS:**

- **Business Approval**

Approval or rejection of the change will be based in of the merits of the Business Assessment. In addition, it may be determined that the change be rescheduled for a later date/time when any risks and/or negative impacts associated with the change could be minimized.

- **Business Assessment**

Evaluation of the business feasibility, associated risk and the overall business effect of the change per the aforementioned PROCESS INPUTS. Overall business effect includes change requester business processes, related customer business processes, and I/S support processes.

- **Change Record**

Composite of all data and information associated with the change.

### 10.3.6. Test Change

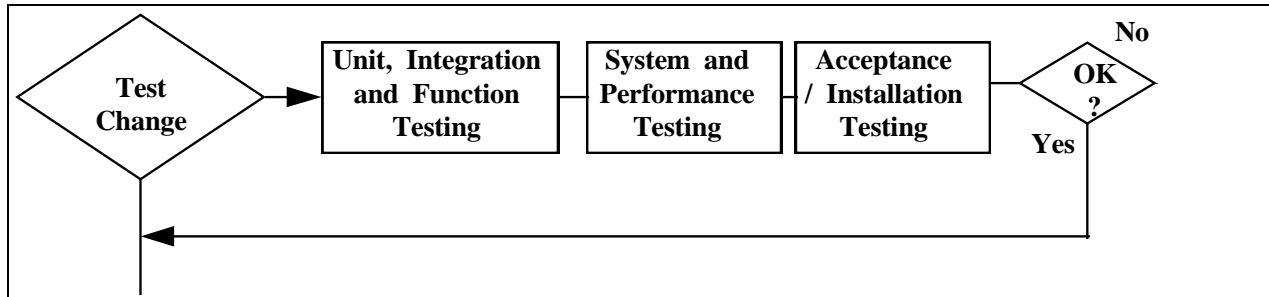


Figure 14: Testing Change Requests

#### 1. **DEFINITION:**

The **Test Change** is responsible for testing the change to the resource(s) to ensure that it functions as intended. Testing has four basic steps, which are:

- **Unit Test** - ensuring owner requirements are complete.
- **Integration or Function Test** - ensuring nothing has been broken because of the change.
- **System/Performance Test** - test under a working load to ensure stability.
- **User Acceptance/Installation Test** - ensuring the procedures are accurate for installing the change.

Testing reduces the risk of failure and must be considered when approving changes. After reviewing all elements, the intent of the Change Process is to minimize impacts and maximize productivity of all resources involved.

#### 2. **SCOPE:**

**This phase begins with** the decision that testing is required and includes the performance of testing in the test environment. **This phase ends with** test results and user acceptance.

**The phase includes:**

- Testing the proposed change prior to installation,
- Tracking, documenting and communicating test progress and results,
- Identification of problems and concerns,
- Successfully completing testing, and
- Obtaining User Acceptance of the installed change.

The key to testing changes prior to installation is that a good test reduces the risk of failure.

**The types of tests that are conducted include:**

- **Unit Test**

Unit or string testing is performed by the developer who authors the code. Unit testing assures that the program performs as it was designed.

Unit test environments are provided for application development work. They must contain, or have access to, all tools deemed necessary to accomplish the development mission. Unit test databases are roughly equivalent to one percent of a live system.

- **Integration Test**

Integration (or function) test is performed by an independent test group and is sometimes combined with system test. Integration testing assures that the product meets functional specifications.

Integration test environments are supported somewhat like the unit test systems. Integration test databases are equivalent to the unit test systems.

- **System/Performance Test**

The system test process must assure the operability, reliability, and performance of the system. As mentioned before, the system test environment must be closely configured in all aspects to the production environment.

Performance testing usually is executed near the end of the test cycle. Performance testing should assure that there are no impacts to any existing Service Level Definitions.

- **User Acceptance/Installation Test**

User Acceptance/Installation Test should verify that the design implementation is what the user expects and that it is "user friendly." This test is normally done when a product greatly changes the way the user operates or introduces a totally new function. The owner, or owner representative, chooses the persons to do this test. The User Acceptance Test should be scheduled as soon as the code is stabilized, but in time for design changes.

- **User Training**

User groups sometime require access to a test environment for training or education purposes.

**The required inputs and derived outputs associated with the Test Change phase are.**

<b>INPUT</b>	<b>PROCESS</b>	<b>OUTPUT</b>
<ul style="list-style-type: none"> <li>• Change Test Requirement,</li> <li>• Change Verification,</li> <li>• Change Record.</li> </ul>	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p><b>Test Changes</b></p> </div>	<ul style="list-style-type: none"> <li>• User Acceptance,</li> <li>• Test Results,</li> <li>• Change Record.</li> </ul>

*Figure 15: Test Change - Inputs and Outputs*

3. **PROCESS INPUTS:**

- **Change Test Requirement**

Definition of the scope of the test, if applicable:

- Function(s) NOT tested
- Exception conditions to be tested (if any)
- Level of testing (unit, integration, system, user acceptance)
- Resource(s) required
- Dependencies
- Acceptance criteria

- **Change Verification**

Identification of expectations of function and exception conditions to be tested.  
Specifically what should occur to prove the success of the change test; specifically what should NOT occur.

- **Change Record**

Composite of all data and information associated with the change.

4. **PROCESS OUTPUTS:**

- **User Acceptance**

Documented verification that the change (as tested) meets the customer requirements and expectations.

- **Test Result**

Completed documentation regarding the test scenarios as defined by the 'Change Test Requirement' PROCESS INPUT. Any/all deviations from the 'Change Test Requirement' or test exceptions encountered should be documented accordingly. An empirical evaluation of the success or failure of the change test per the 'Change Verification' PROCESS INPUT.

- **Change Record**

Composite of all data and information associated with the change.

### 10.3.7. Schedule Change

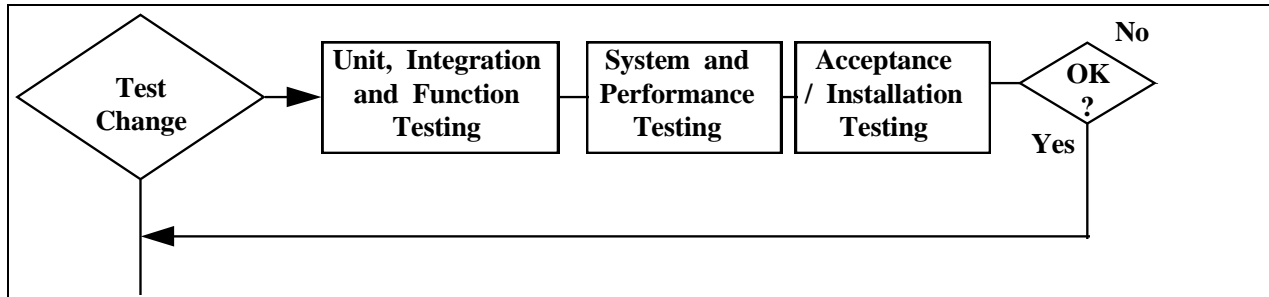


Figure 16: Schedule Change - Flow Chart

#### 1. **DEFINITION:**

The **Schedule Change** phase is the process of scheduling a change for installation into the environment based upon recommendations, priorities, and resource availability. Before a change is scheduled, the business and technical assessments must be completed and no known/unresolved issues or concerns can remain outstanding.

#### 2. **SCOPE:**

**This phase begins with** an evaluation of the technical and business assessments and the current schedule change report. **This phase ends with** an updated report of scheduled changes for implementation.

**This phase includes** obtaining agreement from Supplier(s) of Service as to the scheduling of the change prior to its approval.



- **Considerations include:**

- Current state of the system
- Impacts and risks
- Criticality of the change
- Understanding of test scenarios
- Resources availability
- Service Level Definition, as to the number of interrupts allowed during a Measurement period.

**NOTE:**

At this time the change is "locked in" to the scheduled date and time, and cannot be modified further without re-approval from the Supplier(s) of Service.

**The required inputs and derived outputs associated with this phase are.**

<b>INPUT</b>	<b>PROCESS</b>	<b>OUTPUT</b>
<ul style="list-style-type: none"> <li>• Technical Approval,</li> <li>• Business Approval,</li> <li>• Technical Assessment,</li> <li>• Change Schedule Report,</li> <li>• Change Record.</li> </ul>	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p><b>Schedule Change</b></p> </div>	<ul style="list-style-type: none"> <li>• Change Schedule Report,</li> <li>• Change Record.</li> </ul>

*Figure 17: Schedule Change - Inputs and Outputs*

3. **PROCESS INPUTS:**

- **Technical Approval**

Approval or rejection of the change will be based in part on the merits of the Technical Assessment. In addition, it may be determined that the change be rescheduled for a later date/time when any risks and/or negative impacts associated with the change could be minimized.

- **Business Approval**

Approval or rejection of the change will be based in of the merits of the Business Assessment. In addition, it may be determined that the change be rescheduled for a later date/time when any risks and/or negative impacts associated with the change could be minimized.

- **Business Assessment**

Evaluation of the business feasibility, associated risk and the overall business effect of the change per the aforementioned PROCESS INPUTS. Overall business effect includes change requester business processes, related customer business processes, and I/S support processes.

- **Technical Assessment**

Formal evaluation of the technical feasibility, associated risk (if any) and the overall technical effect of the change per the aforementioned PROCESS INPUTS.

- **Change Schedule Report**

A report containing a summary of approved changes to be installed.

**4. PROCESS OUTPUTS:**

- **Change Schedule Report**

Report identifying a scheduled date and time the change implementation as entered into Change Management process based upon the merits of the Technical and Business assessments and approvals as well as any/all prerequisites, co-requisites, and/or dependencies. Changes will not be scheduled for implementation prior to the resolution of any/all outstanding issues or concerns.

### 10.3.8. Approve Change

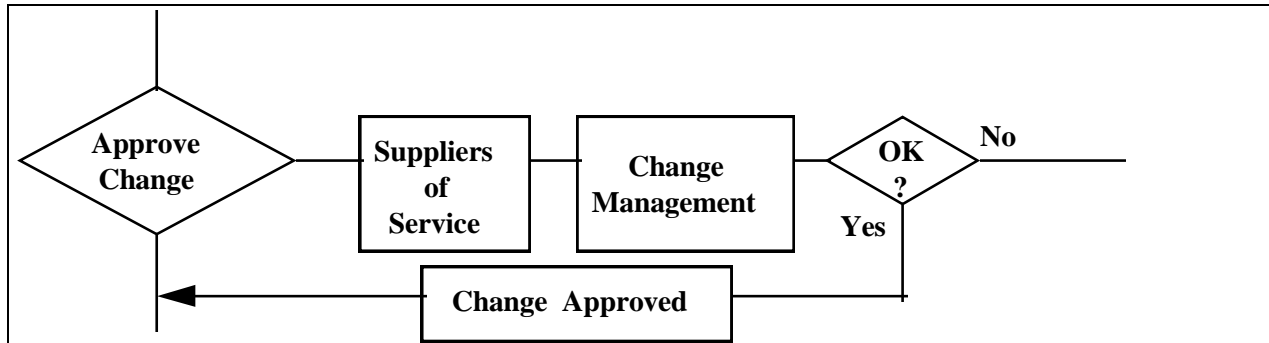


Figure 18: Approve Change - Flow Chart

#### 1. **DEFINITION:**

The **Approve Change** phase is the process of obtaining approval of the change by the groups associated with the type of change proposed (listed below).

Application changes require Supplier of Service and Customer Representative approval. All other change types require Supplier of Service approval. Approvals constitute acceptance of the following conditions, if applicable:

- **Supplier of Service:**

- Documentation is complete
- Education is completed/understood
- Concurrence with date/time scheduled
- Procedures have been reviewed
- Verification procedures understood
- Resource availability
- Technical assessment complete
- Understanding of the business assessment
- Performance and capacity review complete
- No security exposures
- Testing complete, if applicable
- Disaster recovery and Application Development review, if applicable
- Successful Change Management

- **Change Management:**
  - Resolve concerns/issues
  - Ensure process guidelines have been followed
  - Resolve conflict among approvers
  - Identify escalation point
  - Represent absent parties where appropriate

**2. SCOPE:**

**This phase begins with** changes ready for installation, pending approval. **This phase ends with** an on-line approval (updated Change Record) from Supplier of Service, and other affected areas, if applicable.

**This phase includes** approval from Supplier of Service and other affected areas, if applicable.

**The required inputs and derived outputs associated with this phase are.**

INPUT	PROCESS	OUTPUT
<ul style="list-style-type: none"> <li>• User Acceptance,</li> <li>• Test Results,</li> <li>• Technical Assessment,</li> <li>• Business Assessment,</li> <li>• Change Record.</li> </ul>	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p><b>Approve Change</b></p> </div>	<ul style="list-style-type: none"> <li>• Approved Change,</li> <li>• Reschedule Change,</li> <li>• Change Record,</li> <li>• Rejected Change.</li> </ul>

*Figure 19: Approve Change - Inputs and Outputs*

3. **PROCESS INPUTS:**

- **User Acceptance**

Documented verification that the change (as tested) meets the customer requirements and expectations.

- **Test Result**

Output from the tests.

- **Technical Assessment**

Formal evaluation of the technical feasibility, associated risk (if any) and the overall technical effect of the change per the aforementioned PROCESS INPUTS.

- **Business Assessment**

Evaluation of the business feasibility, associated risk, and the overall business effect of the change. Overall business effect includes change requester business processes, related customer business processes, and I/S support processes.

- **Change Record**

Composite of all data and information associated with the change.

4. **PROCESS OUTPUTS:**

- **Approved Change**

No outstanding issues or concerns exist. The change is approved by all affected parties. Implementation of the change will proceed.

- **Rescheduled Change**

Due to scheduling conflicts, the change has to be rescheduled for a later date/time.

- **Change Record**

Composite of all data and information associated with the change.

- **Rejected Change**

Outstanding issues or concerns exist preventing approval of the change by all affected parties. Implementation of the change will NOT proceed until all issues and/or concerns are resolved. Escalation points may be identified if an impasse is reached amongst the approvers.

### 10.3.9. Install Change

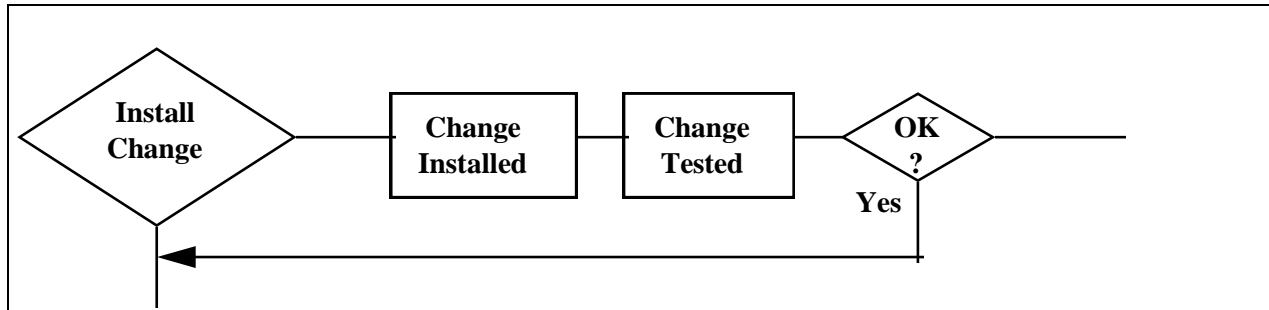


Figure 20: Install Change - Flow Chart

#### 1. **DEFINITION:**

The **Install Change** phase is the process of installing approved changes into the Technology Operations environment.

Change installation is defined as the task of propagating approved changes to the resource(s) as defined by the change record.

#### 2. **SCOPE:**

**The phase begins with** an approved and scheduled change.

**The phase includes** monitoring the installation, which is defined as; tracking, documenting, and communicating the installation progress and results, along with identification of problems or concerns.

Verification of successful installation is a very important step in the installation process. Usually Operations or the customer should have the responsibility to verify change results. This brings an objective observer into the process to ensure results are consistent with what was communicated prior to the change being approved.

**This process ends with** an install verification, updated change record and/or an open problem record, if applicable.



The required inputs and derived outputs associated with this phase are.

INPUT	PROCESS	OUTPUT
<ul style="list-style-type: none"> <li>• Change Schedule Report,</li> <li>• Emergency Change,</li> <li>• Exception Change,</li> <li>• User Acceptance,</li> <li>• Approved Change,</li> <li>• Change Record.</li> </ul>	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p><b>Install Change</b></p> </div>	<ul style="list-style-type: none"> <li>• Problem Record - (if appropriate),</li> <li>• Install Verification,</li> <li>• Rejected Change.</li> </ul>

Figure 21: Change Install - Inputs and Outputs

**3. PROCESS INPUTS:**

- **Change Schedule Report**

A report containing a summary of approved changes to be installed.

- **Emergency Change**

Generally, emergency change requests are the result of systems being unavailable or at risk of becoming unavailable if action is not taken. This includes those instances where performance of a system is degraded or service levels are impacted.

**Emergency change examples follows:**

- Post approval, post change review if necessary
- Emergency fix or change
- Fixes a critical problem
- Supported by a documented high severity high priority problem

- **Exception Change:**

Change could not conform to normal approval cycle. (i.e.) Short notice customer requirement.

- Post approval, post change review if necessary
- Business need

- **User Acceptance**

Documented verification that the change (as tested) meets the customer requirements and expectations.

- **Approved Change**

No outstanding issues or concerns exist. The change is approved by all.

- **Change Record**

Composite of all data and information associated with the change.

4. **PROCESS OUTPUTS:**

- **Problem Record (if appropriate)**

A composite of all available information related to a specific problem.

Problem records will be generated from the Change Management process in any/all instances where unscheduled outages and/or impacts were encountered as a result of the 'Install Change' process.

- **Install Verification**

It is important to monitor and document the 'Install Change' process. Results of the process (problems and concerns inclusive) should be tracked and communicated from both the customer and the supplier of service's perspective. Problem records should be generated in any/all instances where unscheduled outages and/or impacts were encountered as a result of the 'Install Change' process.

**The categories of change install verification follow:**

**Defective** - Change contributes to missed Service Level, change is backed out after install, or change causes significant impact to customer.

**Defect Free** - No PRs reported, no outage or fix after install, and no unexpected impact on solution center call volume.

**Minimal Defects** - Any change that does not meet Defect Free or Defective criteria.

**Cancel** - Change canceled prior to actual implementation.

- **Change Record**

**Definition:** Composite of all data and information associated with the change.

-- Update change record with appropriate status.

- Rescheduled change

- Closed successful

- Closed unsuccessful

### 10.3.10. Measurements and Ongoing Process Improvements

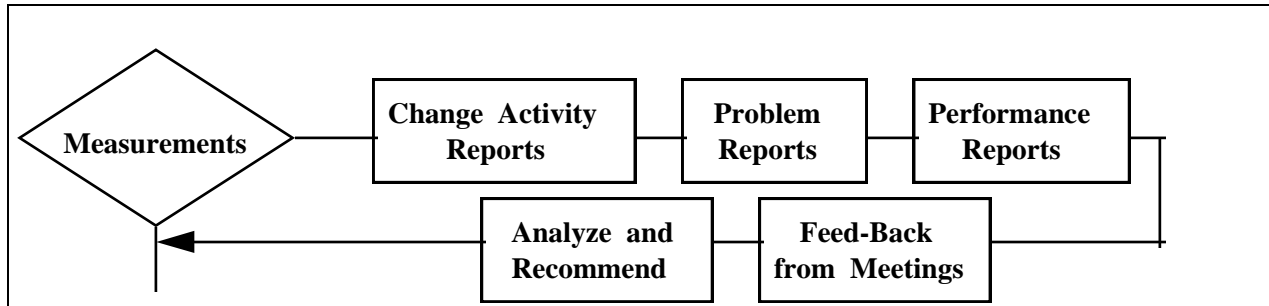


Figure 22: Measurements - Flow Chart

1. **DEFINITION:**

The **Measurement** phase is responsible for performing analysis of change activity for the purpose of determining process compliance and effectiveness.

2. **SCOPE:**

**The phase begins with** data entered into the common repository. **This phase ends with** measurement reports and action items. **The phase includes** the use of measurements to review, and creation of corrective action plans to resolve, deficiencies.

The required inputs and derived outputs associated with this phase are.

INPUT	PROCESS	OUTPUT
<ul style="list-style-type: none"> <li>• Change Record,</li> <li>• Compliance Review Data,</li> <li>• Various reports from Technical Operations.</li> </ul>	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p><b>Change Measurement</b></p> </div>	<ul style="list-style-type: none"> <li>• Problem Record - (if appropriate),</li> <li>• Install Verification,</li> <li>• Rejected Change.</li> </ul>

*Figure 23: Change Measurements - Inputs and Outputs*

**3. PROCESS INPUTS:**

- **Change Record**

Composite of all data and information associated with the change.

- **Compliance Review Data**

Peer Reviews.

**4. PROCESS OUTPUTS:**

- **Measurements**

Measurements are used to determine the effectiveness of processes/sub-processes. The intent is to identify any/all 'weak links' in the processes/sub-processes and correct them.

## **IMPROVEMENTS TO PROCESS:**

- **Ongoing Process Improvements**

Collect and use measurements to continuously drive and demonstrate process improvements, thereby eliminating the potential for defects and ideally improving customer satisfaction.

The first thing to do when analyzing the effectiveness of the change management system is to determine what changes are causing problems, and not just problems associated with outages. It is necessary to determine what percentage of all changes made to the system caused problems, as well as what percentage of problems were caused by changes. It may be surprising how many problems are attributable to a change in some way or another. Once the number of changes causing problem have been determined, it is important to understand why these changes caused problems.

### **Examples of why changes may cause problems:**

- Were testing procedures appropriate for the type of change being made?
- Was there an appropriate backout plan in place for the change?
- Were the proper approvals required and received?
- Was the risk of success or failure properly established for the change?

- **Corrective Action Plans**

Plans used to resolve any issues or deficiencies identified by measurement reviews audits or analysis.

## 10.4. Process Elements

### 10.4.1. Products

- **Info/Man 4.2**

INFORMATION MANAGER (Info/Man) is an IBM Product that provides a consistent method of addressing changes. It provides common procedures for; data entry, editing, searching and reporting of changes made to the environment.

### 10.4.2. Aids

- **User Checklist (see appendix 'A')**

The User Checklist is a series of questions to assist the implementer in taking a global look at what's being changed on the system. By answering the following questions with complete information in the freeform text, the change will have enough data for most reviewers to be able to approve the change.

The record is public information so any questions/concerns should be added to the freeform text to be answered in the freeform text without additional phone conversations or other external communications. This in turn will save the implementer and approvers time by communicating on-line.

- **Description/Justification of Change:**

- **Supplier of Service** (Technology Operations) instructions and/or procedures (Install instructions) used to:

- IPL a system;
- Recycle a Subsystem; and,
- Promote, copy, move a batch application from a specific library.

- **Customer Benefit/Impact**

- **Test Results**

- **Backout Instructions**

- **Contact Name: (If Not On Site, Who Should Be Contacted)**



### **10.4.3. Technical Review**

Formal technical assessments are recommended by the change process when a change complexity is a 1 or a 2, as defined in the section heading "Change Complexity Levels". When planning a review of a high complexity or major change activity, formal notification should be used. This will ensure proper notification has taken place and provides tracking. The notification should be sent to affected parties and to those who should be aware of the change.

**The review should encompass:**

- Adequacy of plans in the change record
- Dependencies and/or conflicts
- Aggregate effect of the change
- Ensure the compliance with existing procedures
- Impact on other pending and scheduled changes
- Impact on current problem status
- Impact on system capacity and performance
- Training requirements
- Impact on customers/users
- Notification of assessment meeting to appropriate parties

#### 10.4.4. Common Procedures

- **Define an Unsuccessful Change**

##### **SUB-PROCESS:**

Unsuccessful Change

##### **PROCEDURE:**

It is not always easy to determine if a change is unsuccessful. However, the following will help determine if a change is unsuccessful.

- Change caused problem(s) that were equal to or higher than the level of the change or activity.
- Change was not installed in the scheduled time frame.
- The change impacted service level commitment(s) and/or customers expected results were not achieved.
- Change caused an unplanned outage (system or application).
- Change was backed-out due to unforeseen problems.

- **Establish Change Windows**

There will be cases where the Change Coordinator will have to use good judgment when determining the success or failure of a change.

**SUB-PROCESS:**

Change Window

**PROCEDURE:**

Change windows are normally established to minimize the impact to the environment. The Change Window depends on the applications within that Center. This window should be documented and available to all those involved with the Change Management process. The Change Window must be defined.

- **Change Complexity Levels**

**SUB-PROCESS:**

Determining Change Complexity Levels

**PROCEDURE:**

This is the procedure for determining the complexity of a proposed change.

The complexity of the change should be determined prior to opening a change record. The composite total, calculated at the end of the matrix will determine complexity and will be documented in the Information Management Record. This will protect the initiator and the process from misuse and misinterpretation.

Based on additional information or historical data, the change level can either be increased or decreased by the Change Coordinator.

The following matrix will assist the implementer in determining the complexity of the proposed change.

	<b>Complexity Factor #:</b>
<b>EXPOSURE:</b>	
-- Difficult to back out	1
-- Moderate back-off (1-2 hrs.)	2
-- Moderate back-off (1 or less hrs, IPL)	3
-- Easy to back-off (1 or less hrs, no IPL)	4
<b>DOCUMENTATION:</b>	
-- Considerable amount of documentation	1
-- Moderate amount of documentation	2
-- Minimum documentation (1-2 pages)	3
-- None required	4
<b>NUMBER OF USERS:</b>	
-- 150 Users	1
-- 50-150 Users	2
-- 2-49 Users	3
-- 1 User	4

*Figure 24: Change Complexity Factor Table (1 of 3)*

	<b>Complexity Factor #:</b>
<b>EDUCATION:</b>	
-- Considerable amount (general user, all)	1
-- Moderate (some user not all)	2
-- Little (no user)	3
-- None required	4
<b>NUMBER OF SYSTEM IMAGES/APPLICATIONS IMPACTED:</b>	
-- More than 3 systems/on-line applications	1
-- 2 - 3 systems/on-line applications	2
-- 1 system/on-line application	3
-- None	4
<b>PREPARATION EFFORT:</b>	
-- 2 Days Or More	1
-- 10 To 48 Hours	2
-- 2 To 10 Hours	3
-- 2 Hours or less	4
<b>RESOURCES REQUIRED TO PREPARE:</b>	
-- 3 Or More Departments	1
-- 2 Or More, 2 Departments	2
-- 2 Or More, Same Department	3
-- 1 Person	4

*Figure 25: Change Complexity Factor Table (2 of 3)*

**Explanation of Complexity Factor #:**

<b>If Total =</b>	<b>Then Complexity Factor =</b>
7 - 11	Change Level - 1
12 - 16	Change Level - 2
17 - 22	Change Level - 3
23 - 26	Change Level - 4

*Figure 26: Change Complexity Factor Table (3 of 3)*

- **Emergency Change**

An Emergency Change is a change that is vital to meeting a committed service level agreement. For a change to be classified as an Emergency Change, there must be an open problem record that implementation of the change will correct. An Emergency Change requires a severity 1 or 2 problem, reference Problem Management Process Document.

An **Emergency Change** must be installed immediately, bypassing the normal change review/approval process.

An **Emergency Change** may be equivalent to any change level regarding risk, impact, etc. The Implementer is responsible for meeting all change requirements following the implementation of the Emergency Change

**An Emergency change must have the following:**

- The Implementer's Management approval
- Supplier(s) of Service (Technology Operations) approval

#### **10.4.5. Exception Change**

An Exception Change is vital to meeting a business need.

Exception Changes may be installed at anytime with appropriate management review and approval.

An Exception Change may be equivalent to any change level regarding risk, impact, etc. The Implementer is responsible for meeting all change requirements following the implementation of the Exception change.

#### **An Exception Change must have the following:**

- The Implementers Management approval
- Suppliers of Service (Technology Operations) approval

#### **10.4.6. Maintenance Change**

A Maintenance Change is a quick, low impact change to be installed with minimal turn-a-round time. The procedure to implement these changes is a repeatable procedure that has been proven successful. These changes will be monitored for effectiveness and will be reviewed on a regular basis to maintain a high level of proficiency. If the success rate drops or becomes questionable, the process for these changes will be reviewed by the Implementers Manager and the SMC (System Management and Controls) Management for a resolution and action plan to fix the problem.

- A Maintenance change:
  - Requires no involvement from any other group
  - Requires no Operations education or involvement
  - Requires no outages or scheduling requirements

#### **10.4.7. Change Lead Time**

The earlier a change is entered into the system, the more time it has to be reviewed and communicated through the Change Management process. However, the change implementer is responsible for notification and communication with affected users and departments.

- **Level 1** changes must be entered into the repository 30 days prior to implementation.
- **Level 2** changes must be entered into the repository 15 days prior to implementation.
- **Level 3** changes must be entered into the repository 3 days prior to implementation.
- **Level 4** changes must be entered by noon the previous day.
- **Level M** changes do not require any lead time and may be installed at anytime with appropriate approval.
- Emergency and Exception changes may be installed at anytime with appropriate management approval.

- **Process Education**

Education on the Change Management process is available through the use of this document and all referenced and associated documents.



## 10.5. Process Evaluation

### 10.5.1. Measurements and Reports

A common "core set" of measurements, that may be reported on, are described below:

- Total changes installed
- Total & percentage of emergency/exception changes
- Total & percentage of changes closed successfully
- Total changes installed to fix problems
- Total changes installed that caused problems
- Total changes planned for future installation

Reporting on the change activity is a very important part of the process. The Change Coordinator is responsible for developing and delivering reports that support or improve the process.

### 10.5.2. Periodic Reviews

The Change Coordinator will conduct periodic reviews of the change data base to ensure all departments are in compliance. Departments not in compliance with the Change Management process will be escalated to management. Some of the items the Coordinator will review are:

- Proper documentation of change records (dates, times, levels, etc.)
- Proper identification of problems caused by changes
- All changes are approved
- Misuse of Emergency or Maintenance change levels
- Success rate of changes
- Backlog of changes in the data base

### **10.5.3. Process Violation Escalation**

The Change Coordinator is responsible for escalation of any violation of the change process. The procedure to be followed if escalation is necessary is as follows:

#### **First Process Violation (Electronic Note)**

- Violator
- Department Change Representative
- First Level Management

#### **Second Process Violation (Electronic Note)**

- Violator
- Department Change Representative
- Violator Management
- Second Level Management

#### **Third Process Violation**

- Letter to First Level Management and copy to second and third level Management
- Possible removal of System Authority

#### **Forth Process Violation**

- Letter to the Executive Director

### 10.6. Appendix 'A' - Operational Readiness Review (ORR) Checklist

The following checklist is provided as a means for performing a "Quick Review" of the information related to a Change Control as it passes through its various stages.

#### 10.6.1. General Information:

1. Is this Change affecting a VITAL BUSINESS PROCESS \_\_\_\_\_
2. Will any area require additional/change of procedures as a result of this Change \_\_\_\_\_
3. Has an Implementation/Fallback plan been developed \_\_\_\_\_
4. Any IMPACT or CHANGE to the Disaster Recovery Procedure \_\_\_\_\_
5. Was there any testing involved with this change \_\_\_\_\_
6. Are any On-Line applications affected by this Change \_\_\_\_\_
7. Are any Batch applications affected by this Change \_\_\_\_\_
8. Does this Change affect hardware or program products \_\_\_\_\_

**10.6.2. Testing Information:**

1. Was the testing performed in the Test Environment \_\_\_\_\_
2. What is, or was, the test completion date \_\_\_\_\_
3. Have all down-stream processes been tested \_\_\_\_\_
4. Has user acceptance testing been completed \_\_\_\_\_
5. Has every function/transaction been tested with good/bad results \_\_\_\_\_
6. Has every message and abend condition been tested \_\_\_\_\_
7. Have all recovery/restart procedures been tested \_\_\_\_\_

**10.6.3. Batch Checklist:**

1. Is the Batch process totally automated \_\_\_\_\_
2. Are any tapes/cartridges mailed to an off-site location \_\_\_\_\_
3. If so, is there a confidential disclosure in place \_\_\_\_\_
4. Are TAPE datasets being passed from one job to another \_\_\_\_\_
5. Are all temporary datasets deleted at the end of processing \_\_\_\_\_
6. Are all report files secured \_\_\_\_\_
7. Does the process utilize DASD wherever possible \_\_\_\_\_
8. What is the total number of procs involved \_\_\_\_\_
9. What is the total number of programs involved \_\_\_\_\_
10. Have all the procs been reviewed \_\_\_\_\_
11. Have OPC/ESA requirements been submitted to scheduling \_\_\_\_\_
12. Does the process contain any SAS programs \_\_\_\_\_
13. What is the Batch implementation date \_\_\_\_\_
14. Has OPCUSER been given proper RACF access authority to new Batch production datasets \_\_\_\_\_
15. Any additional information can be supplied below:

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**10.6.4. On-Line Checklist:**

1. What On-Line application does this Change affect \_\_\_\_\_
2. Are there any changes to IDMS (New/Changed Tables) \_\_\_\_\_
3. Are there any changes to DB2 (New/Changed Tables) \_\_\_\_\_
4. Are there any changes to IMS (New/Changed Tables) \_\_\_\_\_
5. Are there any changes to ADABAS (New/Changed Tables) \_\_\_\_\_
6. Have all On-Line functions been successfully tested \_\_\_\_\_
7. Any additions/deletions/changes to On-Line functions/files \_\_\_\_\_
8. Will the On-Line security profile need to be updated \_\_\_\_\_
9. Will there be a change to the current number of users \_\_\_\_\_
10. Will this change require alteration of User Profiles \_\_\_\_\_
11. Do any CICS update recoverable resources \_\_\_\_\_
12. Will any CICS files require Journaling \_\_\_\_\_
13. Has System Support and Security Administration been notified \_\_\_\_\_
14. Has System Support and Security Administration been supplied with the information they require \_\_\_\_\_
15. Have Operations/Network Support been supplied with the information they require to support the On-Line application \_\_\_\_\_
16. What is the On-Line implementation date \_\_\_\_\_
17. Any additional information can be supplied below:

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**10.6.5. Hardware/Program Product Checklist**

1. Are there any changes to the I/O Configuration \_\_\_\_\_
2. Are there any changes to the System Software \_\_\_\_\_
3. Are there any changes to the Physical Floor Plan \_\_\_\_\_
4. Will system down time be required \_\_\_\_\_
5. Has the product been successfully tested \_\_\_\_\_
6. Are there any changes to the Operator recovery Procedure \_\_\_\_\_
7. What is the implementation date \_\_\_\_\_

**10.6.6. EDP Security Administration**

1. Do all datasets/mini disks have an owner identified \_\_\_\_\_
2. Have all datasets/mini disks been classified by their owner \_\_\_\_\_
3. Do reports/display screens show data classification \_\_\_\_\_
4. Is the data classified Confidential \_\_\_\_\_
5. If Confidential, are communications lines encrypted \_\_\_\_\_
6. if not Confidential, define data classification \_\_\_\_\_
7. Has the EDP Security Officer been notified of data classification \_\_\_\_\_
8. Has the EDP Security Office generated RACF Access Control Rules to protect data resources, as defined by the Owner \_\_\_\_\_
9. Are all Control Elements registered with the EDP Security Officer \_\_\_\_\_
10. Have all Restricted Utilities been registered with the EDP Security Officer \_\_\_\_\_
11. Are all terminals/systems which access this application on premises \_\_\_\_\_
12. If not, has a Risk Assessment been completed for off-premise location \_\_\_\_\_
13. Do all datasets comply with JCL Naming and Placement Standards \_\_\_\_\_
14. Are all datasets protected by RACF \_\_\_\_\_
15. Provide any additional information below.

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## 10.7. Glossary

**Actual Install Time** Actual time and duration to install the change.

**Activity Record(s)** Identification of significant events/tasks that must be performed to fully implement change.

**Approved Change** No outstanding issues or concerns exist. The change is approved by all.

**Approver Data** Information in the change record to determine whether the change is ready to be installed.

**Assignee** Person to whom the change record is assigned to for implementing and documenting information in the change record.

**Backout Plan** The plan should be of sufficient detail and include when and how it will be determined if a backout is needed to be performed.

**Business Approval** Approval or rejection of the change will be based on the merits of the Business Assessment. In addition, it may be determined that the change be rescheduled for a later date/time when any risk and/or negative impacts associated with the change could be minimized.

**Business Assessment** Evaluation of the business feasibility, associated risk and the overall business effect of the change. Overall business effect includes change requester business processes, related customer business processes, and Technology Operations support processes.

**Business Justification** Documented business reason, why the change is required, and/or benefit to the business.

**Capacity Assessment** Assessment of the overall impact to system capacity in the context of the total production environment.

**Change Activity Report** The monthly summary of change activity organized by functional area.

**Change Complexity** The impact and degree of risk associated with the change type.

**Change Record** Composite of all data and information associated with the change.

**Change Request** Request form to change any managed I/S resource.

**Change Schedule Report** Report describing the scheduled date and time that the change implementation is entered into Change Management process. It is based upon the merits of the Technical and Business assessment and approval, as well as any/all prerequisites, co-requisites, and/or dependencies. Change will not be scheduled for implementation prior to the resolution of any/all outstanding issues or concerns.

**Change Test Requirement** Definition of the scope of the test.

**Change Type** The category of the change request; e.g., hardware, software, network, or application.

**Change Verification** Identification of expectations of function and exception conditions to be tested. Specifically what should occur to prove the success of the change test; specifically what should NOT occur.

**Corrective Action Plan** An outline of tasks required to implement the permanent resolution.

**Criteria** Amount of time allowable for problem resolution based on the severity code.

**Detail Data** Specific information pertaining to change record.

**Delayed Change** The decision to postpone a change based on the business impact and risk.

**Department Rep** Representative person assigned by the department manager to ensure the department is complying with the Change Management process.

**Emergency Change** A critical requirement to change the environment.

**Estimated Install Time** The estimated time and duration to implement a change.

**Exception Change** could not conform to normal approval cycle.

**Failing Component** The identified point of failure.

**ID Recovery/Bypass Procedure** Identification of the tasks required to bypass/restore the failing component.

**Identify Approvers** Identification of the person(s) who must approve the change request prior to implementation.

**Identify Assignee** Change implementer, a person who has ownership and accountability for ensuring change is implemented per change record.

**Install Verification** It is important to monitor and document the 'Install Change' process once initiated. Results of the process (problems and concerns inclusive) should be tracked and communicated from both the customer and Technology Operations perspective. Problem records should be generated in any/all instances where unscheduled outages and/or impacts were encountered as a result of the 'Install Change' process. The categories of change install verification are: Defective, Defect Free, Minimal Defects and Cancel.

**Measurements** Analysis of change activity for the purpose of determining process and effectiveness.

**Ongoing Process Improvements** Collect and use measurements to continuously drive and demonstrate process improvements, thereby eliminating the potential for defects and ideally improving customer satisfaction.

**Owner** Manager of the department to which change record is assigned. Owner must ensure accuracy of data, and timeliness of change implementation as well as overall compliance to the Change Management process.

**Performance Assessment** Assessment of the overall impact to system performance in the context of the total production environment.

**Permanent Resolution** Implementing permanent solutions to problems to prevent reoccurrence.

**Probable Cause** Identification of the suspected source of the problem.

**Problem Assignment** Assignment of the problem record to the appropriate support team for resolution.

**Problem Record** Composite of all available information related to a specific problem.

**Problem Symptom** The identification /recognition of a component not operating as expected.

**Recovery Assessment** Assessment of the overall impact to the customer and/or company services if implementation of the change fails. The assessment should be of sufficient detail and include what steps would need to be performed to recover the system to its prior state.

**Rejected Change** Outstanding issues or concerns exist preventing approval of the change by all affected parties. Implementation of the change will NOT proceed until all issues and/or concerns are resolved. Escalation points may be identified if an impasse is reached amongst the approvers.

**Requester Data** Documented requester personal information for identification and communication purposes.

**Rescheduled Change** Due to scheduling conflicts, the change has to be rescheduled for a later date/time.

**Resolver** Person who resolves the problem, documenting such information in the problem record and closing the problem record.

**Restored Service** Availability of service to the customer.

**Risk Assessment** Evaluation of the impact and risk of the change to the environment.

**Root Cause Analysis** Ability to distinguish the difference between the symptom of the problem and the root cause of the problem.

**Scheduling Data** Documented prerequisites, co-requisites, dependencies.

**Supplier of Service** The Supplier of Service for this process is Technology Operations (Systems Support, Data Center and Operations areas, and the Help Desk).

**Service Level Attainment** Considers the stability of the affective resource as it relate to service.

**Technical Approval** Approval or rejection of the change will be based in part on the merits of the Technical Assessment. In addition, it may be determined that the change be rescheduled for a later date/time when any risks and/or negative impacts associated with the change could be minimized.

**Technical Assessment** Formal evaluation of the technical feasibility, associated risk (if any) and the overall technical effect of the change.

**Test Guideline** Criteria used to validate the change.

**Test Result** Completed documentation regarding the test scenarios as defined by the 'Change Test Requirement' PROCESS INPUT. Any/all deviations from 'Change Test Requirement' or test exceptions encountered should be documented accordingly. An empirical evaluation of the success or failure of the change the 'Change Verification' PROCESS INPUT.

**User Acceptance** Documented verification that the change (as tested) meets the customer requirements and expectations.

**Info/Man** Information Management, an interactive tool used to provide a consistent method of addressing problems regardless of the environment, product or component involved. It provides common data entry, updating, searching and reporting facility.