Using IT change management processes to navigate the transition to e-business

“All change is a miracle to contemplate; but it is a miracle which is taking place every instant.”

— Henry David Thoreau

Introduction

Every company today must deal with a swiftly changing environment. The introduction of Web technologies and the resulting networked economy have only intensified the pace. How quickly and successfully organizations adapt will depend heavily on the processes they put in place to react to change and ease transitions. This paper will define and examine a process for change management that can help information technology (IT) professionals implement change more effectively.

What is change management?

Change management is the process of planning, controlling, coordinating, executing and monitoring changes that affect one’s IT service delivery environment. It encompasses all components and activities required to direct additions, modifications and deletions to that environment—systems, networks, applications and databases; processes; organizational structures; procedures and environmental facilities. While IT change can be traced to a number of factors, it is most often driven by one of more of the following:

• Mergers and acquisitions
• Business growth
• Technology changes
• Performance improvement
• Addition of a new function
• Problem resolution
• Problem prevention.

Key Topics

Defining change management
Managing change
Administering changes
Executing changes
Summary
The objectives of implementing a change management process center on:

- Introducing problem-free change into the IT environment in a logical, orderly and timely fashion
- Reducing the negative impact of failed changes on committed service levels by minimizing disruption and addressing primary root causes of failure
- Implementing expected changes within planned schedules and without unnecessary service disruption
- Enabling service-delivery management to compile a snapshot of current activities and assess, at any time, the business impact of current changes. This enhances management’s ability to make appropriate decisions based on current and planned activities.

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**Process description**

*Figure 1* provides an overview of the three main phases of the change management process. Bullets identify subprocesses for each phase.

**Phase 1: Managing change**

This phase defines required IT management activities, which depend on pre-defined, consistent change policies and standards across the IT organization. These policies are supported through the creation and implementation of processes and procedures for managing day-to-day activities, such as tracking change status, reacting to process exceptions as they occur (escalation) and analyzing closed change records to determine process compliance and effectiveness.
Figure 2 shows the subprocesses of phase 1—managing change, including Establishing policies & standards, Assigning roles & responsibilities and Designing reporting criteria. Each subprocess influences the overall change management process and should be performed in the order shown.

**Establishing policies and standards**

By establishing policies and standards, IT organizations can implement and manage change based on its anticipated impact. This in turn can save time and money by setting a structure that helps organizations plan appropriately. To set prudent policies and standards, the IT organization must gather input from its customers—either through previously negotiated service-level agreements, or via the customers’ business policies. Information can also be gathered from suppliers, based on their specific business practices.

Steps in this subprocess encompass:

- Establishing approval criteria
- Establishing notification events
- Establishing escalation policies, including distribution lists for escalation notification
- Setting quality criteria
- Determining change authorization for activities such as accessing data or opening/closing changes
- Determining target dates and lead times
- Defining the process for managing and updating policies and standards
- Setting operational service levels
- Defining contracted services and entitlement
- Identifying thresholds and filters
- Setting up criteria for data archiving and deletion.

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**Figure 2: Managing the flow of the change process**

Assign roles and responsibilities  
Manage changes  
Establish policies and standards

Manage consolidated change schedule  
Manage day-to-day change activity  
Analyze and define reporting criteria

Yes  
Reschedule required

No  
Return
Assigning roles and responsibilities
The IT organization must determine and assign change management roles and responsibilities that support defined procedures for planning and implementing change requests. For example, a change coordinator role can be established to ensure that:

• All changes are planned and communicated
• Appropriate priorities and impacts are assigned to each change request
• Appropriate escalation takes place when necessary.

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Defining reporting criteria
The task of defining reporting criteria is segmented as two views: the customer or business-department view and the IT service-provider view. IT customers normally generate their reporting requirements based on contractual agreements with the IT organization; the IT organization stipulates that its customers report on certain pre-defined statistics, which the IT organization then uses to monitor the effectiveness of the process. Frequency of reporting and the delivery method are determined through mutual agreement.

Phase 2: Administering changes
This phase, shown in Figure 3, consists of the following primary subprocesses:

• Entering the change request
• Building a consolidated change schedule
• Performing a technical assessment
• Performing a business assessment
• Approving change
• Closing change.

Each of these subprocesses is discussed in the following sections. Although the diagram (Figure 3) may make this phase seem complex, it is, in fact, simple to complete.

Entering the change request
As the starting point within this phase, change requests are entered into the change management database.
Figure 3: Administering the flow of the change process

1. Initiate/enter change request
2. Document and plan change activities
3. Assign ownership
4. Build/manage consolidated change schedule
   - Yes: Rescheduled changes
   - No: Schedule resources
5. Document backout and recovery phase
6. Notify affected parties
7. Assess change request
8. Perform technical assessment
   - Renew technical completeness
9. Evaluate feasibility/change impact/identify alternatives
10. Perform business assessment
   - Evaluate business impact/identify alternatives
11. Ensure compliance requirements/customer approval recommendations
12. Document assessments
13. Approve/reject
14. Close change
15. Update problem/asset management
The information recorded includes detailed change information, plans for recovery (if applicable) and backout (the process used to reverse a change having undesirable side effects), and assignment to a change assignee group if the requester cannot complete the change. Further activities include:

- **Documenting and planning change activities**: All change records include plans outlining the change—its complexity, priority, potential impact and risk of failure. The amount of information required varies, based upon these factors.

- **Assigning ownership**: If it is necessary to transfer ownership to another change assignee group, both the change requester and the current assignee group must approve.

- **Documenting backout and recovery plans**: The owner of the change is responsible for documenting backout and recovery plans. These plans must be complete and must indicate the time required for performing the backout or recovery.

- **Notifying affected parties**: There are many notification channels—e-mail, phone, printed or soft copy or through meetings. All affected parties must be notified. To ensure a smooth transition, reviewers and approvers must monitor the database on a daily basis.

**Building a consolidated change schedule**

At this stage, all incoming change requests to be implemented during a specific period (for example, a week or a month) are reviewed for compatibility in terms of impact, timing and resources. They are then consolidated into an overall change schedule.

This subprocess consists of the following activities:

- Compiling approved change requests for the defined period
- Determining priorities
- Identifying and resolving conflicts
- Requesting a new change schedule, if needed
- Documenting consolidated change schedule information.

**Performing a technical assessment**

Next, all technical components are analyzed, and the technical feasibility, risk and effect of the change are evaluated. The change requester acts as the focal point for receiving and disseminating information relative to the change. Reviewers (change approvers) are required to understand and provide the technical assessment prior to their approval.
Activities during this phase include:

• **Reviewing technical thoroughness:** After receiving information from reviewers as to why the change is necessary, the requester then processes the information to obtain reviews and approvals. Areas evaluated are:
  — Co-requisites and prerequisites
  — Adequacy of plans
  — Testing-level requirements
  — Backout/recovery plans
  — Technical completeness
  — Dependencies and/or conflicts
  — Compliance with existing standards
  — Impact if change is not implemented
  — Risk assessment
  — Estimated installation time.

• **Evaluating technical feasibility:** During this activity, the approver determines if the change is technically feasible. This requires the concurrence of subject-matter experts. For very complex changes, these specialists should be formally notified that their reviews would be required.

• **Evaluating change impact:** Change approvers must next provide change-impact information to the change requester. Areas typically impacted pertain to:
  — Disaster recovery plans for changed areas
  — Performance of the total production environment
  — Capacity of the total production environment
  — Total configuration/re-installation requirements
  — Customer and/or IT services availability if implementation fails
  — Backout requirements
  — Change implementation schedules
  — Identification of alternatives.

• **Identifying alternatives:** The change requester, change assignee, change approvers, change reviewers and change implementers all provide potential alternatives to the change. This information is communicated back to the change requester. The change requester and/or customer advocate then negotiates alternatives with the customer, addressing elements of cost and risk for both parties.

• **Notifying affected parties:** Affected parties are then notified of all changes via e-mail and change-control meetings.

• **Documenting the technical assessment:** Results of the technical assessment must next be documented in the change record.
Performing a business assessment

Much like the technical assessment subprocess, this stage involves evaluating the affect of change on the business. The business impact and installation timing are both reviewed. The primary objective of the assessment is to confirm that the change is consistent with the business objectives.

Activities included in this subprocess are:

- Evaluating the business impact: In order to accomplish, the change requester and approvers must have knowledge of current business plans
- Notifying affected parties: Affected parties are notified of all changes via e-mail and change-control meetings
- Ensuring compliance: The change requester is required to verify compliance with business policies, as well as adherence to any other approved recommendations or requirements
- Ensuring customer management pre-approval: To ensure customer approval, the change requester should obtain pre-approval from customer management. This can be accomplished by providing pre-notification of upcoming, unscheduled changes
- Identifying alternatives: The change requester, assignee, approvers, reviewers and implementers all provide potential alternatives. This information is then communicated back to the requester. The requester and/or customer advocate negotiates alternatives with the customer, addressing cost and risk factors for both parties
- Documenting assessment results: As with technical assessment results, business assessment results must be documented in the change record.

Approving change

Only predefined groups and/or individuals may approve change. IT customer negotiations or business policies determine the list of these authorized personnel, who are ultimately responsible for ensuring that all issues are resolved prior to change approval.

Change approval policies define schedules. They also define authorized approvers who must confirm or reject changes within a defined period. Individuals who are incorrectly assigned to a change should contact the requester or coordinator and ask to be removed from the approver’s list for that change. Coordinators may endorse changes based on business need and assessment information if approval has not occurred within the defined period. Unapproved and unendorsed changes will either be canceled or rescheduled. It is the requester’s responsibility to notify the appropriate groups before any change is implemented.
Key activities involve:

- **Approving or rejecting the change**: Authorized approvers must resolve all change issues prior to approval, which constitutes acceptance of the following conditions, if applicable:
  - Documentation is complete
  - Education is complete/understood
  - Date/time is scheduled
  - Procedures have been reviewed
  - Verification procedures are understood
  - Backout plans are documented
  - Resources are available
  - Technical/business assessments are understood
  - No security exposures exist
  - Testing is complete
  - No known issues are outstanding
  - Business recovery and application, development and maintenance review is complete
  - Proper sign-off is achieved.

If issues can't be solved and/or bypassed, the change request is rejected. Once rejected, the approver must notify the requestor of the rejection via phone or in person.

- **Requesting change rescheduling, when required**: The requester must work with the coordinator if a change request requires rescheduling. If a request cannot be rescheduled, it must be canceled and closed.

- **Documenting change approval**: The requester verifies the list of approvers for each type of change. Approval for each type must be negotiated with the IT customer. The approver refers the change record to the appropriate workgroup for the required approval.

**Closing change**

This is the final step in this phase of the change management process. All pertinent information concerning the closure of the change record is entered; the record is assigned a closed condition by the designated assignee. This step includes the following activities:

- Ensuring closure of any/all related activities
- Ensuring configuration and inventory (asset) data is updated as appropriate
- Closing changes by noon of the next business day after implementation
- Closing installed changes without completed approvals as failed changes
- Obtaining customer sign-off, if appropriate
- Documenting change closure
- Notifying problem management personnel, if problem resulted from change
- Notifying problem management personnel, if change was the result of a problem
- Notifying affected parties.
Figure 4: Executing the change process flow

1. Distribute change
2. Distribution required
   - Yes: Monitor distribution
   - No: Install change
3. Monitor distribution
4. Update problem record
   - No: Backout change
5. Backout change
6. Restore systems
7. Activate change
8. Verify change
9. Successful
   - Yes: Complete
   - No: Backout change

Flowchart Diagram:
**Phase 3: Executing changes**
The stages of executing changes are shown in Figure 4, and consist of the following:

**Distributing change**
Change implementers distribute changes as required across target systems, resources and environments. Distribution is monitored to ensure completeness.

**Installing change**
Change implementers coordinate and execute all steps necessary for completing the change and document the results in the free-form text section of the change record.

Problem management is initiated in the event of error during the installation of the change. The operator (or whoever is assigned as the appropriate person) must enter INSTALL in the record in the assignment phase area after corrective action is completed. This provides technical services personnel with the ability to:

- Easily view the change record
- Determine that corrective action is complete
- Perform the necessary research to ensure that the change was successful.

Technical services personnel are accountable for disposition of the change record.

*Change management also addresses the important human factor, and takes into account the involvement of those whose cooperation and support is essential to achieving the objectives associated with change.*
Activating change
 Activation involves moving from a current version or environment to a new version or environment. This step is monitored and documented in the change record to ensure accuracy and completeness. Any problems that are detected result in initiation of the problem management process. Activation activities include:

- Performing and verifying activation
- Controlling and monitoring the progress of activation and verifying completeness
- Documenting activation results
- Synchronizing all related activities
- Requesting backout if problems occur.

Verifying change
 Change phases are verified to ensure that all prerequisite and co-requisite change steps or actions have been completed and expected results have been met. Recovery processes allow return of the environment to its previous state if a change (backout) is unsuccessful.

The customer and the supplier of the service need to verify change results. This allows an objective observer to ensure that the results are consistent with what was communicated prior to the change being activated. Any problems encountered result in the initiation of the problem management process.

The change management process...enables the IT organization to support its company’s goals to grow and thrive as it makes the transition to e-business technologies.

Backing out change
 In the event of a problem, backout change activities restore target systems, resources or environments to their pre-installation or activation state. Instructions for backout must have been previously documented in the change record. All actions are recorded in the free-form text section of the change record, including the associated problem record number. The problem management process is then initiated. If the change is backed out before records are made, and it doesn’t impact the customer in any way, the change should remain open and be rescheduled.
Summarizing the phases

*Figure 5* shows the overall flow of the change management process and summarizes the key activities for each of its phases.

**Figure 5: Overall change management process**
Figure 6 shows the human and non-human interfaces, as well as outputs, to the related processes. These processes include problem, asset and service-level management (SLM). Using these outputs can help an enterprise increase efficiency and performance in an increasingly competitive industry.

**Figure 6. Change Management**
Summary

The change management process enables IT organizations to effectively implement change, thus reducing costs and business disruption. More important, it enables the IT organization to support its company's goals to grow and thrive as it makes the transition to e-business technologies. Although this process requires discipline, it can help enormously in dealing with change and easing the transition. Problems can be anticipated earlier, or at least readily identified and corrected, as change occurs. What's more, change management documentation provides the ability to learn from mistakes. Change management also addresses the important human factor, and takes into account the involvement of those whose cooperation and support is essential to achieving the objectives associated with change.

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