

C22 - Intro to Change Management and SDLC

Steve Owyong

Doug Mohrland



September 21, 2009 – September 23, 2009

Introduction to Change Management and SDLC

Steve Owyong
Manager

Doug Mohrland
Manager

KPMG LLP, IT Advisory



September 21, 2009 – September 23, 2009



Discussion topics

- Why change management and its significance
- Types of changes in production environment
- Change management controls
- Impact of weak change management control
- Integrity management
- Change management leading practices
- Software Development Life Cycle (SDLC)



Why change management and its significance?

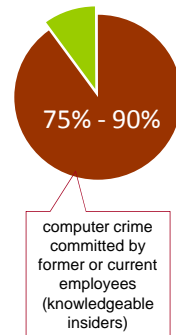
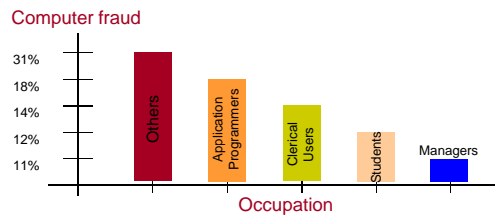
1	Why change management and its significance?
2	Types of changes in production environment
3	Change management controls
4	Impact of weak change control
5	Integrity management
6	Change management leading practices
7	Software Development Life Cycle



Why change management and its significance?

1	Why change management and its significance?
2	Types of changes in production environment
3	Change management controls
4	Impact of weak change control
5	Integrity management
6	Change management leading practices
7	Software Development Life Cycle

- Total fraud losses in the United States estimated to be \$994 billion in 2008
- Of all the computer crimes reported:



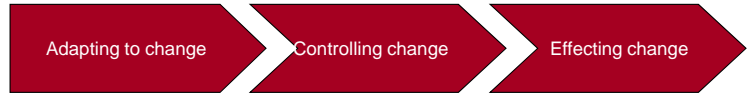
Source: Association of Certified Fraud Examiners and National Center For Computer Crime



Why Change Management and its significance?

1	Why change management and its significance?
2	Types of changes in production environment
3	Change management controls
4	Impact of weak change control
5	Integrity management
6	Change management leading practices
7	Software Development Life Cycle

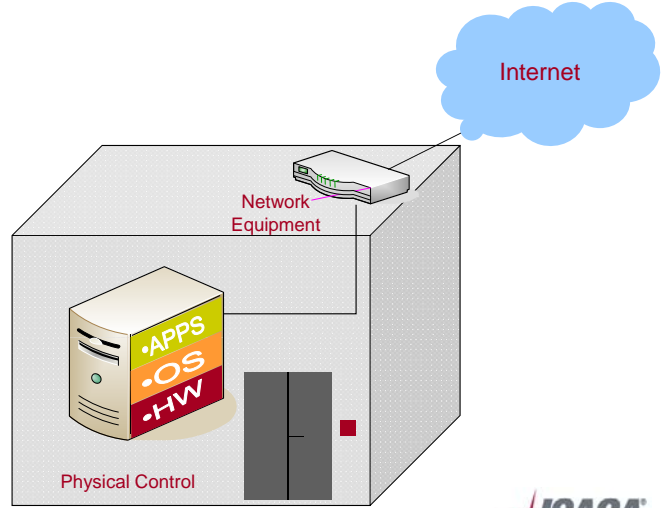
- Change management – it is significant because it helps an organization to be efficient



Types of changes

Changes in production environment

1	Why change management and its significance?
2	Types of changes in production environment
3	Change management controls
4	Impact of weak change control
5	Integrity management
6	Change management leading practices
7	Software Development Life Cycle





Types of changes

OS changes (Host)

1	Why change management and its significance?
2	Types of changes in production environment
3	Change management controls
4	Impact of weak change control
5	Integrity management
6	Change management leading practices
7	Software Development Life Cycle

- **Applying OS patches**
 - OS vendor recommendation
 - Opening/closing OS services
- **Re-imaging**
 - As a backup plan when an OS update didn't go as planned
 - As part of major/minor/emergency application changes






Types of changes

Network changes

1	Why change management and its significance?
2	Types of changes in production environment
3	Change management controls
4	Impact of weak change control
5	Integrity management
6	Change management leading practices
7	Software Development Life Cycle

- **Software changes**
 - Deploying OS
 - Patching OS
- **Configuration Changes**
 - Updating firewall, router, switch configuration
- **Hardware changes**
 - Adding/removing of network equipment






Types of changes

Application changes

1	Why change management and its significance?
2	Types of changes in production environment
3	Change management controls
4	Impact of weak change control
5	Integrity management
6	Change management leading practices
7	Software Development Life Cycle

- **Company specific application change**
 - Major, minor and emergency changes
 - New releases
 - Bug fixes
- **Application configuration changes**
- **Database changes**
 - Schema changes
 - Database upgrades (version upgrade)






Types of changes

Physical access change

1	Why change management and its significance?
2	Types of changes in production environment
3	Change management controls
4	Impact of weak change control
5	Integrity management
6	Change management leading practices
7	Software Development Life Cycle

- **Physical access to data center**
 - Preventing root level access through a system console
 - Deactivating terminated employee's physical access
 - Deactivating temporary physical access






Types of changes

Logical access change

1	Why change management and its significance?
2	Types of changes in production environment
3	Change management controls
4	Impact of weak change control
5	Integrity management
6	Change management leading practices
7	Software Development Life Cycle



- **OS Access Change**
 - privileged access to production/mission-critical server
- **Application Access Change**
 - privileged access to production/mission-critical application
- **Network Access Change**
 - privileged access to network equipment

Change management controls

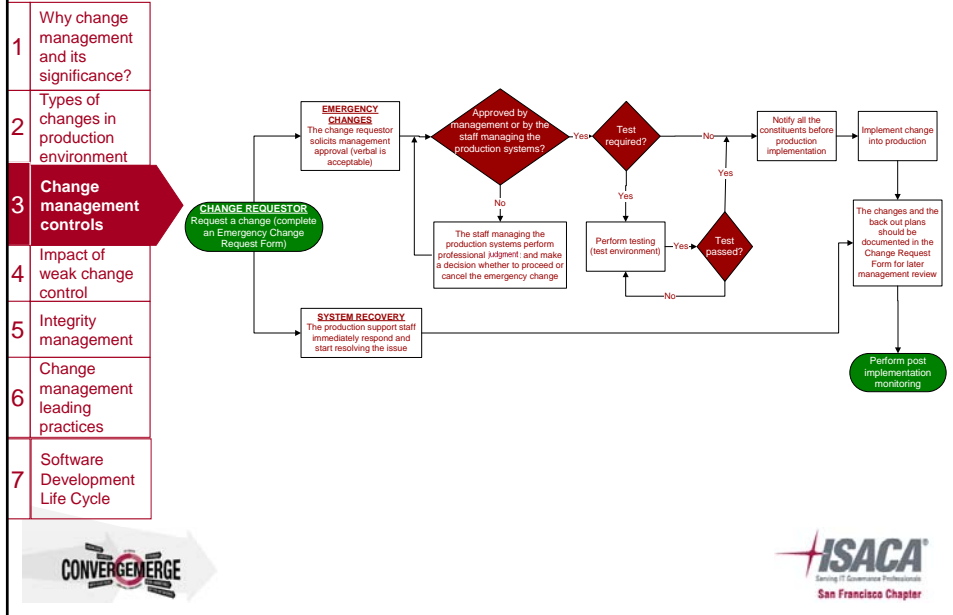
Planned/routing maintenance changes procedure and controls

1	Why change management and its significance?
2	Types of changes in production environment
3	Change management controls
4	Impact of weak change control
5	Integrity management
6	Change management leading practices
7	Software Development Life Cycle

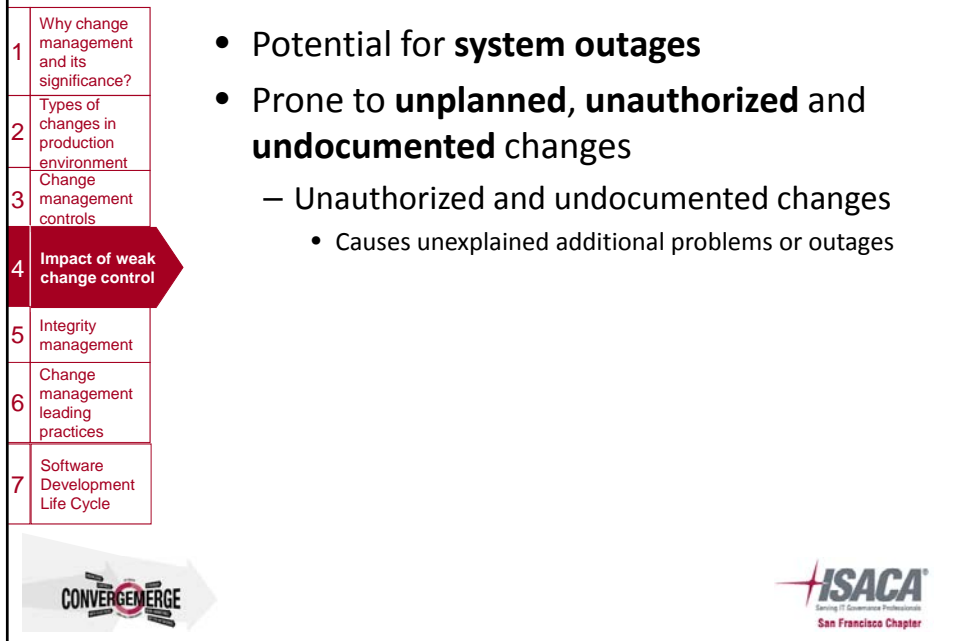



Change management controls

Emergency/System Recovery change procedure and controls



Impact of weak change controls



Impact of weak change controls

1	Why change management and its significance?
2	Types of changes in production environment
3	Change management controls
4	Impact of weak change control
5	Integrity management
6	Change management leading practices
7	Software Development Life Cycle

- **Prone to system attack** – example denial of services
- **Misuse of resource**
 - Unplanned work
 - Creates monetary loss
- **Causes legal implication**
 - Due to the exposure of sensitive customer data
 - Due to system unavailability to customers
- **Losing a customer/ business**



Integrity management

1	Why change management and its significance?
2	Types of changes in production environment
3	Change management controls
4	Impact of weak change control
5	Integrity management
6	Change management leading practices
7	Software Development Life Cycle

- **Prevention**
 - Restrict logical access
 - Firewall, IDS, OS and Application
 - Unnecessary services
 - Disable at the servers
 - Block by the firewalls
 - Restrict physical access
 - Restrict physical access that houses critical systems to **ONLY** authorized employees
 - Perform periodic physical access reviews



Integrity management

1	Why change management and its significance?
2	Types of changes in production environment
3	Change management controls
4	Impact of weak change control
5	Integrity management
6	Change management leading practices
7	Software Development Life Cycle

• Detection

- Monitor metadata and look for changes
 - Create, store and monitor baseline metadata values
 - Metadata values: modification time, file size and cryptographic checksum
- Integrity Management Software
 - Reads files or directories to monitor
 - critical network configuration, data files, customer database files, documents and spreadsheets
 - Takes action when a violation (change) occurs
- Intrusion detection (IDS)



Integrity management

1	Why change management and its significance?
2	Types of changes in production environment
3	Change management controls
4	Impact of weak change control
5	Integrity management
6	Change management leading practices
7	Software Development Life Cycle

• Recovery

- Maintain a backup copy of the production data
- Identify changes based on the Integrity Management Software report
- Determine whether a change is authorized or not
- Restore a file if the change is deemed unauthorized or malicious



Change management leading practices

1	Why change management and its significance?	<ul style="list-style-type: none"> • Change management policy, procedure and standards • Change request management • Approval process • Deployment management • Change result management • Monitor application and networks
2	Types of changes in production environment	
3	Change management controls	
4	Impact of weak change control	
5	Integrity management	
6	Change management leading practices	
7	Software Development Life Cycle	



Change management leading practices

		<i>Change management policy, procedure and standards</i>
1	Why change management and its significance?	<ul style="list-style-type: none"> • Prioritize/categorize changes based on downtime, lead time, type of services and severity of the change (Low, Medium, High Urgent) • Roles and responsibilities <ul style="list-style-type: none"> – Define and designate qualified personnel's roles – Segregation of duties (SOD) – Communication – Enforce change-management process
2	Types of changes in production environment	
3	Change management controls	
4	Impact of weak change control	
5	Integrity management	
6	Change management leading practices	
7	Software Development Life Cycle	





Change management leading practices

1	Why change management and its significance?
2	Types of changes in production environment
3	Change management controls
4	Impact of weak change control
5	Integrity management
6	Change management leading practices
7	Software Development Life Cycle

Change Request Management

- **Change Request Analysis**
 - Business Analysis
 - The likelihood of success
 - Significance to business
 - Resources required and business justification
 - Technical Analysis
 - System dependencies
 - Technical requirement
 - Project estimate
- **Change Request Reporting**
 - Make the change requests visible to management
 - Retain status of the change request when it is analyzed, prioritized, tested and deployed






Change management leading practices

1	Why change management and its significance?
2	Types of changes in production environment
3	Change management controls
4	Impact of weak change control
5	Integrity management
6	Change management leading practices
7	Software Development Life Cycle



Approval Process

- Appropriate approval should be obtained between the different phases of change management process
- Management approval should be documented



Change management leading practices

1	Why change management and its significance?	<p><i>Deployment Management</i></p> <ul style="list-style-type: none"> • Logical environment (separate) – Development, Test/QA and Production • Deployment process <ul style="list-style-type: none"> – High category changes – Low/Medium category changes – Emergency changes • Leverage Technology <ul style="list-style-type: none"> – To provide auditability and versioning throughout the deployment process
2	Types of changes in production environment	
3	Change management controls	
4	Impact of weak change control	
5	Integrity management	
6	Change management leading practices	
7	Software Development Life Cycle	

Change management leading practices

1	Why change management and its significance?	<p><i>Result management</i></p> <ul style="list-style-type: none"> • Key Performance Indicators (KPI) about the entire Change Management Process <ul style="list-style-type: none"> – Process bottlenecks, successful techniques, etc. • Use the KPIs (by management) to make adjustments to the change management procedure and practices • Post change implementation monitoring
2	Types of changes in production environment	
3	Change management controls	
4	Impact of weak change control	
5	Integrity management	
6	Change management leading practices	
7	Software Development Life Cycle	

Change management leading practices

1	Why change management and its significance?	<p><i>Monitor application and networks</i></p> <ul style="list-style-type: none"> • Integrity checks <ul style="list-style-type: none"> – using automated monitoring tools – Incident response <ul style="list-style-type: none"> • Escalation process • Periodic reviews <ul style="list-style-type: none"> – User access – OS, apps, network, etc. – System configuration – servers, network equipment, etc.
2	Types of changes in production environment	
3	Change management controls	
4	Impact of weak change control	
5	Integrity management	
6	Change management leading practices	
7	Software Development Life Cycle	

CONVERGEMERGE

ISACA
Serving IT Governance Professionals
San Francisco Chapter

Software Development Life Cycle

1	Why change management and its significance?	<p><i>Relationship between change management and SDLC</i></p> <ul style="list-style-type: none"> • Managing change is a critical component of any SDLC model <ul style="list-style-type: none"> – Change Management and SDLC are not mutually exclusive • Change management occurs throughout the development life cycle • Cost of changes is higher once out of development
2	Types of changes in production environment	
3	Change management controls	
4	Impact of weak change control	
5	Integrity management	
6	Change management leading practices	
7	Software Development Life Cycle	

CONVERGEMERGE

ISACA
Serving IT Governance Professionals
San Francisco Chapter

Software Development Life Cycle

Relationship between change management and SDLC

1	Why change management and its significance?
2	Types of changes in production environment
3	Change management controls
4	Impact of weak change control
5	Integrity management
6	Change management leading practices
7	Software Development Life Cycle

- Waterfall model

```

    graph TD
      SR[SYSTEM REQUIREMENTS] --> SWR[SOFTWARE REQUIREMENTS]
      SWR --> AN[ANALYSIS]
      AN --> PD[PROGRAM DESIGN]
      PD --> CO[CODING]
      CO --> TE[TESTING]
      TE --> OP[OPERATIONS]
  
```

Software Development Life Cycle

Relationship between change management and SDLC

1	Why change management and its significance?
2	Types of changes in production environment
3	Change management controls
4	Impact of weak change control
5	Integrity management
6	Change management leading practices
7	Software Development Life Cycle

- Iterative model
 - Agile Methodology
 - Rational Unified Process (RUP)
 - Rapid Application Development (RAD)
 - Joint Application Development (JAD)

```

    graph TD
      subgraph Cycle
        direction TB
        B[Business Modeling] --> R[Requirements]
        R --> AD[Analysis & Design]
        AD --> I[Implementation]
        I --> T[Test]
        T --> D[Deployment]
        D --> E[Evaluation]
        E --> ENV[Environment]
        ENV --> C[Config. & Change Management]
        C --> P[Planning]
        P --> B
      end
      IP[Initial Planning] --> P
  
```

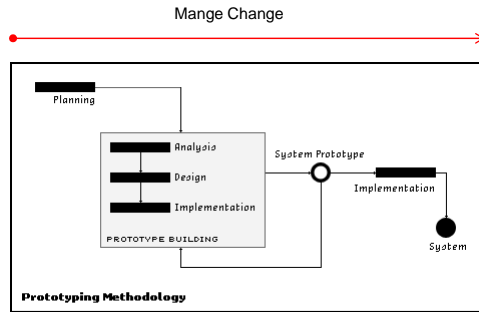
Illustration courtesy of Rational Unified Process

Software Development Life Cycle

Relationship between change management and SDLC

- Prototyping

1	Why change management and its significance?
2	Types of changes in production environment
3	Change management controls
4	Impact of weak change control
5	Integrity management
6	Change management leading practices
7	Software Development Life Cycle

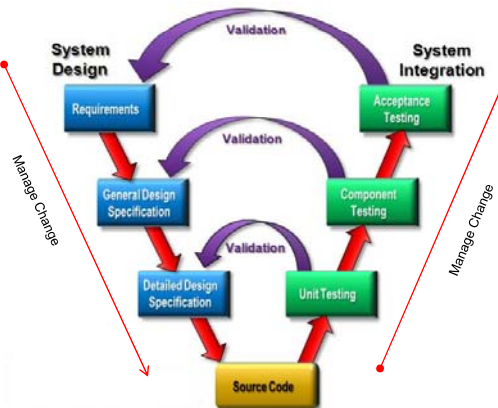


Software Development Life Cycle

Relationship between change management and SDLC

- V Model

1	Why change management and its significance?
2	Types of changes in production environment
3	Change management controls
4	Impact of weak change control
5	Integrity management
6	Change management leading practices
7	Software Development Life Cycle



Software Development Life Cycle

Tools to better manage change

1	Why change management and its significance?
2	Types of changes in production environment
3	Change management controls
4	Impact of weak change control
5	Integrity management
6	Change management leading practices
7	Software Development Life Cycle

- Requirements Management
- Visual Modeling
- Automated Testing
- Change Management



Course Review

- Why change management and its significance
- Types of changes in production environment
- Change management controls
- Impact of weak change management control
- Integrity management
- Change management leading practices
- Software Development Life Cycle (SDLC)



Questions



Contact Information

- Steve Owyong, 415-963-7603
sowyoung@kpmg.com
- Doug Mohrland, 415-963-7570
dmohrland@kpmg.com

