



Introduction to Change Management and SDLC

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Back to Business

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?

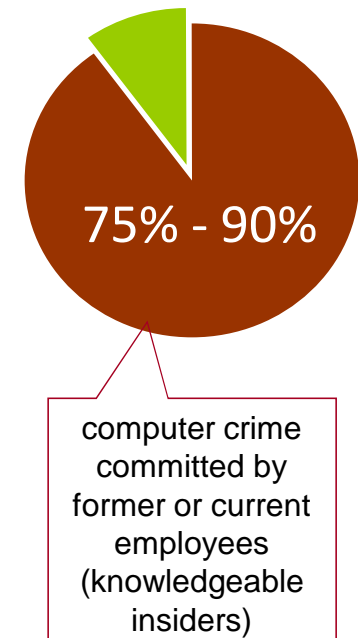
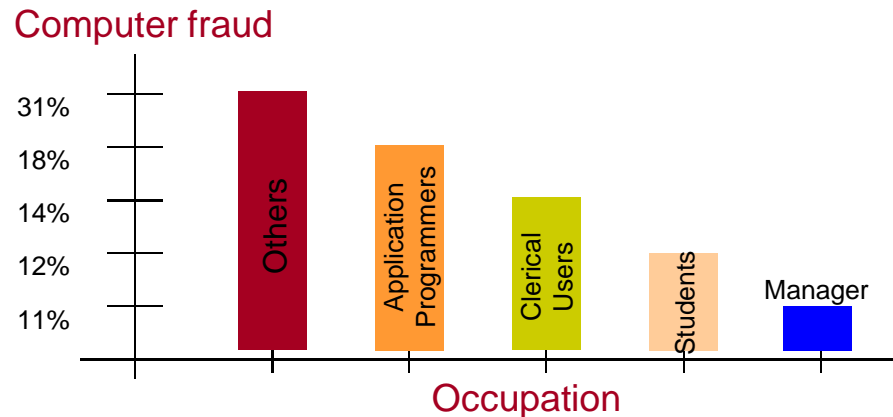
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Why change management and its significance?

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



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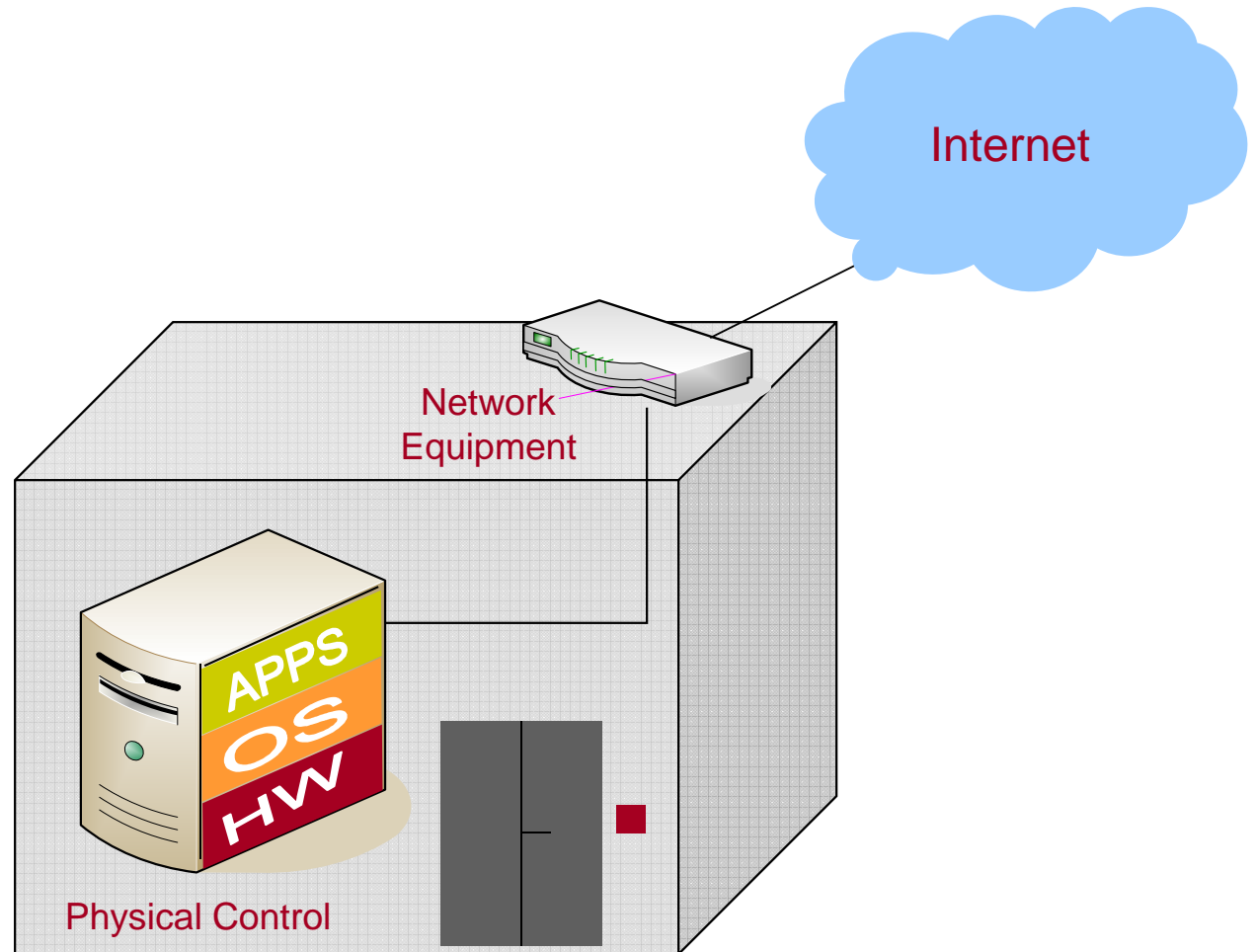
Change management – it is significant because it helps an organization to be efficient



Types of changes

Changes in production environment

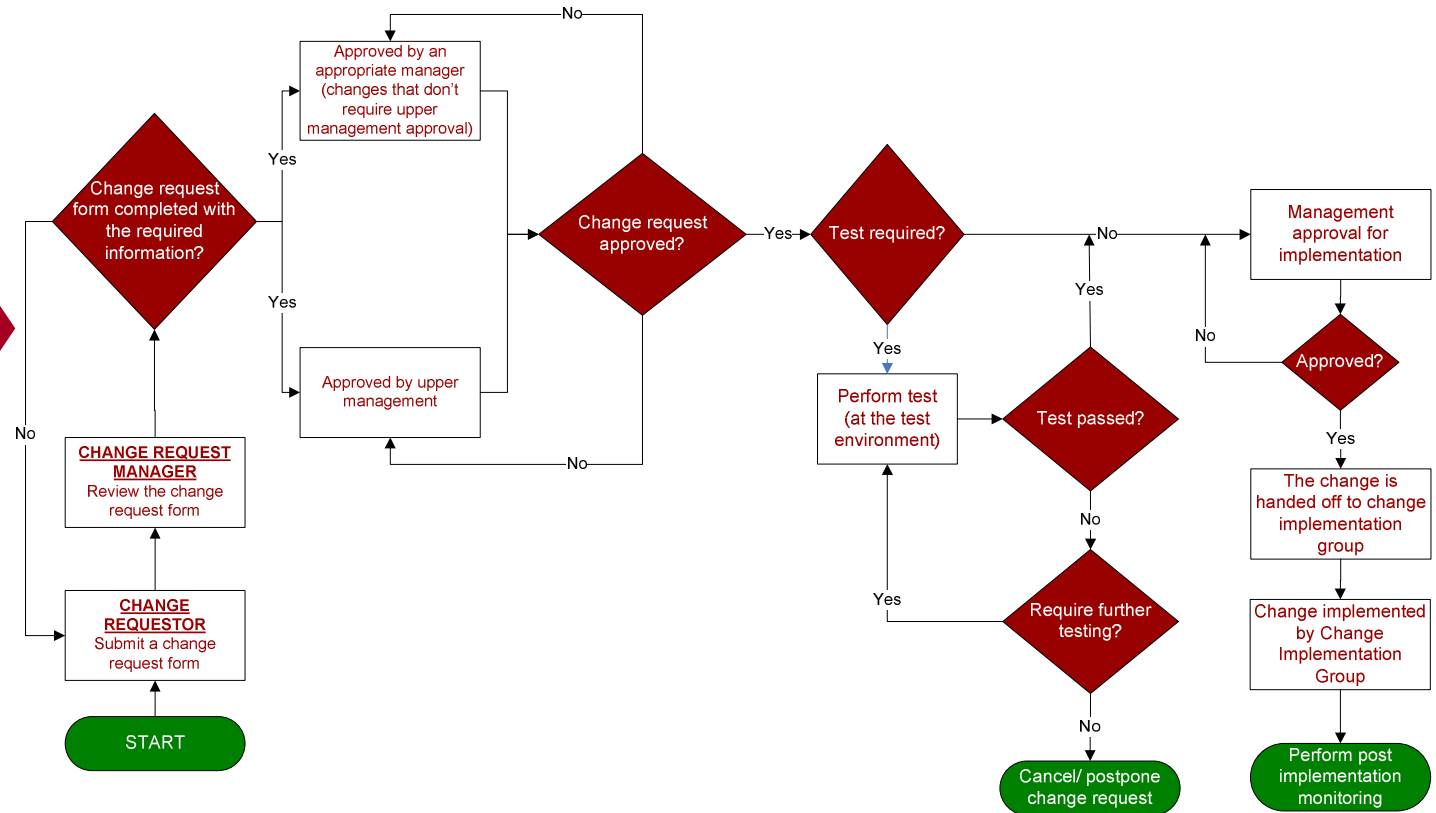
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Change management controls

Planned/routine maintenance changes procedure and controls

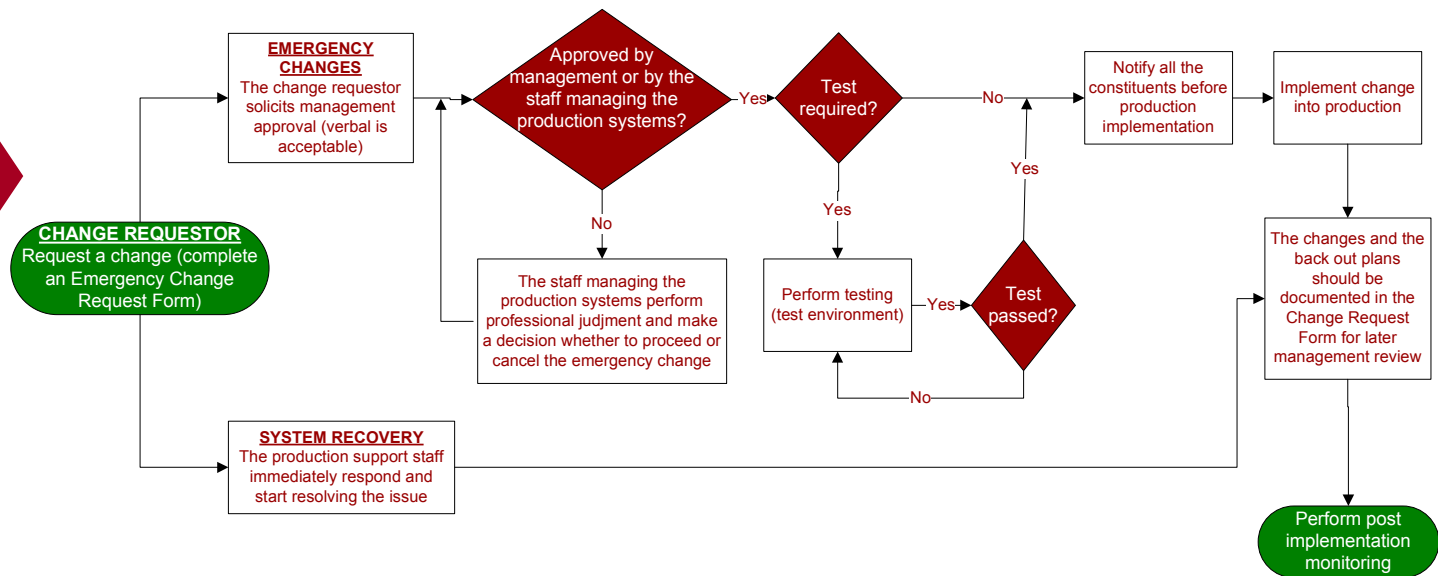
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Change management controls

Emergency/System Recovery change procedure and controls

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Impact of weak change controls

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- Financial loss
 - Brand/reputational damage
 - Losing a customer/ business
- Legal exposure (sensitive data disclosure)
- Unplanned, unauthorized and undocumented changes
- Prone to system attack / outages (DoS)
- Misuse of resources (unplanned work)

Integrity management

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○ 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

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○ 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

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○ 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

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- Change management policy, procedure and standards
- Change request management
- Approval process
- Deployment management
- Change result management
- Monitor application and networks

Change management leading practices

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Change management policy, procedure and standards

- Prioritize/categorize changes based on downtime, lead time, type of services and severity of the change (Low, Medium, High Urgent)
- Roles and responsibilities
 - Define and designate qualified personnel's roles
 - Segregation of duties (SOD)
 - Communication
 - Enforce change-management process

Change management leading practices

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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

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Approval Process

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

Change management leading practices

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Deployment Management

- Logical environment (separate) – Development, Test/QA and Production
- Deployment process
 - High category changes
 - Low/Medium category changes
 - Emergency changes
- Leverage Technology
 - To provide auditability and versioning throughout the deployment process

Change management leading practices

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Result management

- Key Performance Indicators (KPI) about the entire Change Management Process
 - Process bottlenecks, successful techniques, etc.
- Use the KPIs (by management) to make adjustments to the change management procedure and practices
- Post change implementation monitoring

Change management leading practices

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Monitor application and networks

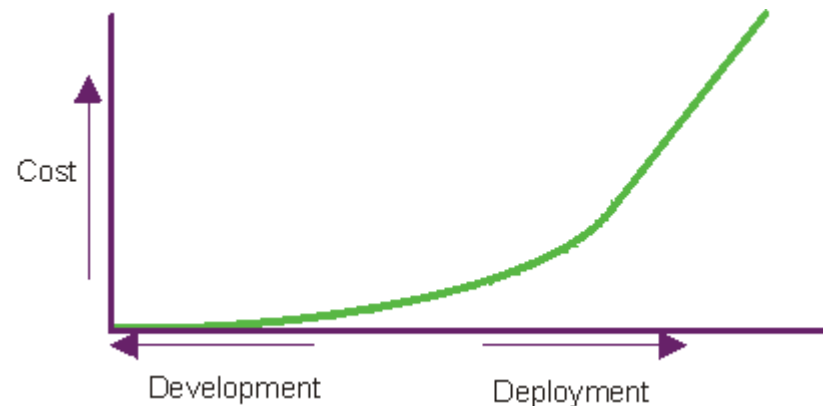
- Integrity checks
 - using automated monitoring tools
 - Incident response
 - Escalation process
- Periodic reviews
 - User access – OS, apps, network, etc.
 - System configuration – servers, network equipment, etc.

Software Development Life Cycle

Relationship between change management and SDLC

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- Managing change is a critical component of any SDLC model
 - Change Management and SLDC are not mutually exclusive
- Change management occurs throughout the development life cycle
- Cost of changes is higher once out of development

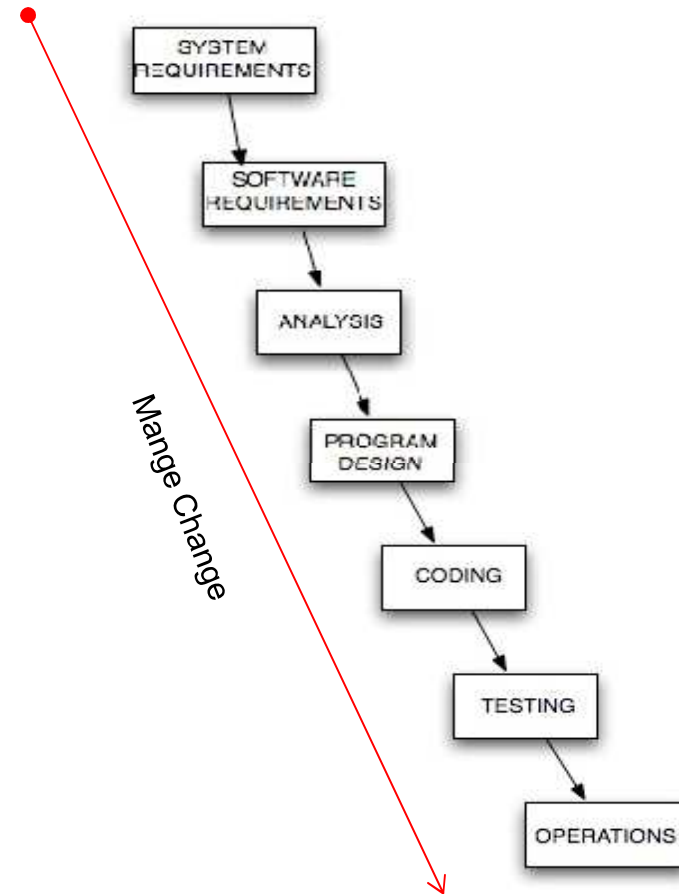


Software Development Life Cycle

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○ Waterfall model



Software Development Life Cycle

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○ Iterative model

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

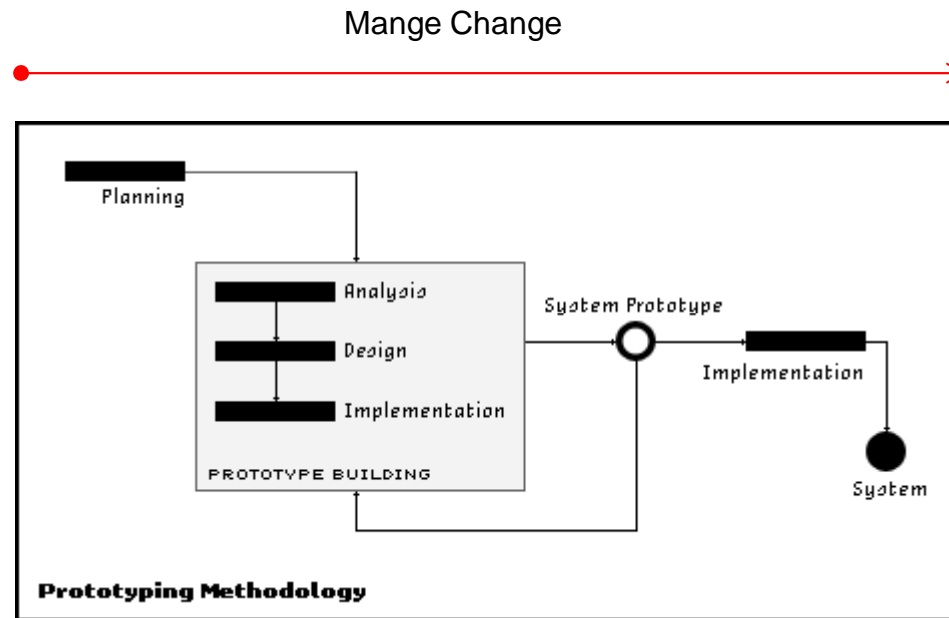


Software Development Life Cycle

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○ Prototyping

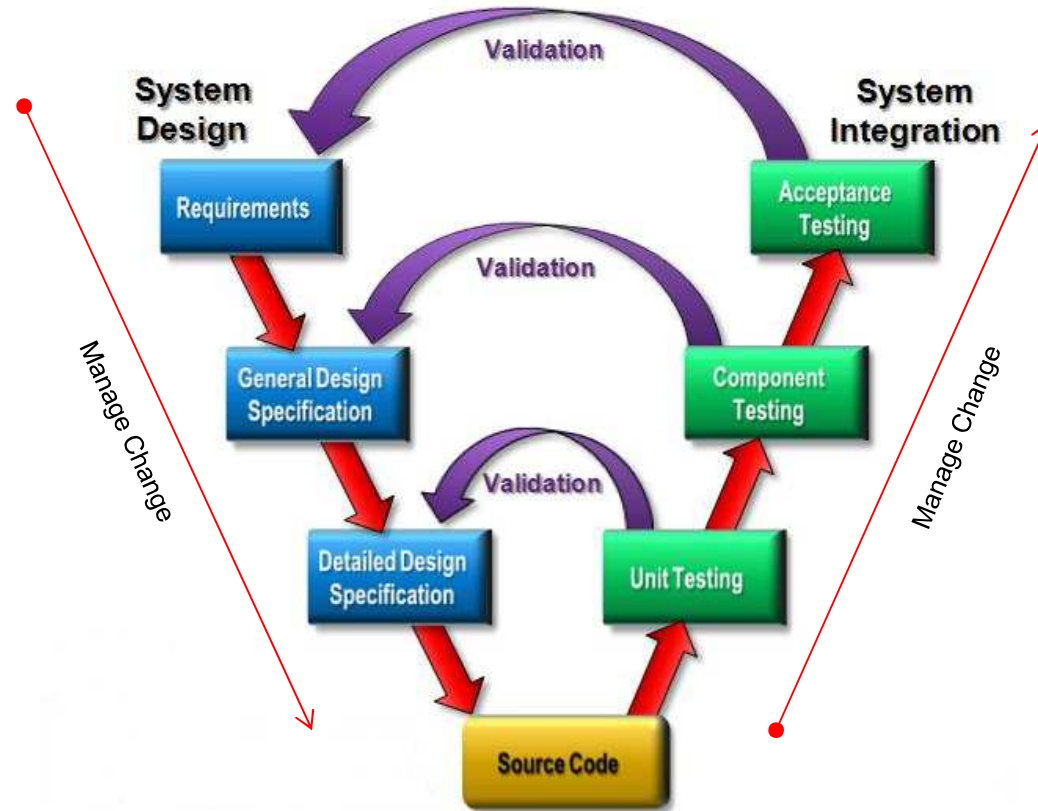


Software Development Life Cycle

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o V Model



Software Development Life Cycle

Tools to better manage change

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

Course Review

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Questions?

Contact Information

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Appendix

Types of Changes

Types of changes

OS changes (Host)

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- **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

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- **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

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- **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

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- 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

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- **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