

Summary of Management and Technical Processes

Project Management		
Knowledge Area	Key Processes	Examples of Impact on Project Success
<p>Integration Management – How to coordinate all aspects of the project so that all project elements come together at the right time to complete the project successfully.</p>	<ul style="list-style-type: none"> • Prepare Project Charter – Develop a document to formally authorize starting the project. • Develop Preliminary Project Scope – Define and document the project boundaries, requirements, deliverables, and methods of deliverable acceptance. • Prepare Project Management Plan – Define, prepare, integrate and coordinate all subsidiary plans used to plan, execute, control and close the project. • Direct and Manage Project Execution – Conduct the work defined in the Project Management Plan. • Monitor and Control Project – Collect, measure, and disseminate performance information, and assesses measurements and trends, to effect process improvements. • Conduct Integrated Change Control – Control factors that create changes, verify occurrence of approved changes and manage approved changes. • Close Project – Finalize all activities and formally close the project or project phase. 	<p>Preparing a project charter gives the executive sponsor (i.e., someone in an executive leadership position, who will champion the project) and project team an opportunity to make sure they are in agreement on the major deliverables produced by the project before it begins.</p> <p>A recent ambulatory care EMR project failed because there was a gap between what the clinicians expected and what the project delivered.</p>
<p>Scope Management – How to clearly define and understand what the project will accomplish or produce.</p>	<ul style="list-style-type: none"> • Plan Scope – Manage the definition of project scope, including verifying and controlling how the project defines the Work Breakdown Structure (WBS). 	<p>Define and manage changes to the scope of the project to ensure a firm basis for estimating and controlling schedule and cost.</p> <p>A large public hospital's administrative,</p>

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	<ul style="list-style-type: none"> • <u>Define Scope</u> – Develop a detailed project scope statement. • <u>Create WBS</u> – Subdivide major project deliverables and project work, into smaller, manageable components. • <u>Verify Scope</u> – Confirm acceptance of project deliverables according to pre-defined criteria. • <u>Control Scope</u> – Manage changes to project scope. 	financial and clinical system implementation failed because they did not adequately define what was included in, and excluded from the project.
<u>Time Management</u> – How to ensure completion of the project within an approved schedule.	<ul style="list-style-type: none"> • <u>Define Activities</u> – Identify the specific activities that the project will perform to produce all of the deliverables. • <u>Sequence Activities</u> – Identify and document dependencies among activities. • <u>Estimate Resources by Activity</u> – Estimate the type and quantity of resources required to perform each activity. • <u>Estimate Duration by Activity</u> – Estimate the work period required to complete each activity. • <u>Develop Schedule</u> – Organize the project activities, including their sequence, duration, resource requirements and constraints, according to a timetable. • <u>Control Schedule</u> – Manage changes to the project schedule. 	<p>Defining the schedule at the beginning of the project, based on clearly defined scope, resulted in one of their largest project successes. Taking the time required to complete the processes required to prepare, execute and control a schedule increases the likelihood of timely project completion.</p> <p>A public hospital had a project failure. They prepared a recovery project including several months to plan the schedule. This contributed to a successful on-time project completion.</p>
<u>Cost Management</u> – How to ensure completion	<ul style="list-style-type: none"> • <u>Estimate Costs</u> – Develop an approximation 	Scope definition, followed by schedule

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of the project within an approved budget.	<p>of the costs required to complete all project activities.</p> <ul style="list-style-type: none"> • Prepare Budget – Organize estimated costs by the activities required to compete all project deliverables, to establish a cost baseline. • Control Costs – Manage changes to the project budget. 	<p>definition, provides key information for better estimating, budgeting and controlling project costs.</p> <p>A hospital selected an HIS vendor to supply administrative and financial systems. The hospital added clinical systems without fully estimating scope change. Without clear scope definition the actual project cost exceeded budget estimates by 110%.</p>
Quality Management – How to ensure that the project will complete the work and associated deliverables to achieve the project objectives.	<ul style="list-style-type: none"> • Prepare Quality Management Plan – Define applicable quality standards and how the project will comply with them. • Conduct Quality Assurance – Apply planned, systematic quality activities, to ensure that the project supports its requirements. • Conduct Quality Control – Monitor specific project results to determine if the project complies with specified quality standards and identifying ways to eliminate causes of unsatisfactory performance. 	<p>Quality management relies on definition of, and compliance with project management best practices or standards. The project manager collects information, e.g., metrics, to identify deviations from the standards and to specify and implement corrective actions.</p> <p>A vendor kept delivering software modifications with defects. A hospital spent months testing vendor software, identifying errors, returning it to the vendor for repair and repeating this cycle without significant improvements. Eventually the vendor refused to repair any more defects unless they received more money. The hospital refused to pay. The hospital eventually cancelled the project because the parties failed to adequately define standards regarding software defects and acceptance criteria for vendor payment.</p>
Human Resources (HR) Management – How to identify, document, monitor and control project personnel performance in terms of the roles,	<ul style="list-style-type: none"> • Prepare Human Resource Plan – Identify and document project roles, responsibilities 	<p>An HIS vendor supplied a project manager that was disruptive to the project. The hospital requested that the vendor replace the</p>

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responsibilities and reporting relationships assigned to them.	<p>and reporting relationships.</p> <ul style="list-style-type: none"> • <u>Acquire Project Team</u> – Obtain the human resources needed to complete the project. • <u>Develop Project Team</u> – Improve the competency and interaction of project team members to enhance project performance. • <u>Manage Project Team</u> – Track team member performance, provide feedback, resolve issues and coordinate changes to enhance project performance. 	individual based on predefined performance criteria. The vendor complied and the project was a success.
<u>Communications Management Plan</u> – How to ensure timely and appropriate generation, collection, distribution, storage and disposition of project information.	<ul style="list-style-type: none"> • <u>Prepare Communications Plan</u> – Determine the information and communication needs of the project stakeholders. • <u>Distribute Information</u> – Make information available to project stakeholders in a timely manner. • <u>Conduct Performance Reporting</u> – Collect and distribute project performance information including status reports, progress measurements and forecasts. • <u>Manage Stakeholders</u> – Manage communication to satisfy requirements of, and resolve issues with, project stakeholders. 	A clinical systems implementation had multiple issue lists. The project team could not grasp the number of, and relationship between, issues. A new project manager consolidated all issues into a single list, which eliminated duplicates. The project manager also instituted a proactive issues management process, which quickly identified and tracked each issue through resolution.
<u>Risk Management</u> – How to minimize potential negative risks to successful project completion.	<ul style="list-style-type: none"> • <u>Prepare Risk Management Plan</u> – Define how to approach, plan and execute project risk management activities. 	The vendor responsible for a lab interface was always slow to fix problems with a particular hospital's order entry system. The hospital had a new project, which included order entry

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	<ul style="list-style-type: none"> • Identify Risks – Determine which risks may affect the project and document their characteristics. • Conduct Qualitative Risk Analysis – Prioritize risks based on their probability and impact of occurrence. • Conduct Quantitative Risk Analysis – Analyze risks numerically, and rank and estimate their effect on achieving project objectives. • Prepare Risk Response Plan – Develop options and actions to reduce the adverse effect of identified risks on achieving project objectives. • Monitor and Control Risk – Track identified risks, monitor residual risks, identify new risks, execute risk response plans and evaluate their effectiveness throughout the project lifecycle. 	<p>system replacement. The hospital prepared a risk register and a response plan for each risk, including how to resolve vendor performance problems during repair of the lab interface. Having a proactive risk management process improved vendor problem resolution, avoiding a source of potential project delay and cost overrun.</p>
<p>Procurement Management – How to acquire goods and services in a manner that supports the project.</p>	<ul style="list-style-type: none"> • Prepare Procurement Management Plan – Determine what, when and how to purchase for the project. • Plan Contracting – Document products, services and result requirements and identify potential sellers. • Require Seller Response – Prepare for and obtain information, quotations, bids, offers and/or proposals. • Select Seller – Review offers, choose sellers 	<p>A home health care company hired a physician to deliver his infusion therapy system. This system calculated complex drug therapies provide for ambulatory chemotherapy patients. There was no competitive bid to compare products, no contract clause to control timely delivery of the product and no terms regarding software quality standards. While the home health care company received the product, it did not meet their expectations. They eventually settled a dispute</p>

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	<p>and negotiate a written contract.</p> <ul style="list-style-type: none"> • <u>Administer Contract</u> – Manage the contract and relationship between buyer and seller, including reviewing and documenting seller performance. • <u>Close Contract</u> – Complete and settle each contract, including the resolution of any open items, and closing each contract. 	<p>with the doctor, brought the system in-house, re-wrote it and implemented it at a cost of over 200% greater than their original budget.</p>

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<p><u>Software Requirements Management</u> – How to specify and maintain user and technical requirements.</p>	<ul style="list-style-type: none"> • <u>Prepare requirements management plan</u> – Determine what and who is involved in identifying system needs • <u>Define tools and techniques to prepare and maintain requirements</u> – Identify methodology for documenting and maintaining system needs • <u>Define user requirements</u> – Identify and document end-user needs • <u>Define technical requirements</u> – Identify technology, environmental and legislative constraints and considerations 	<ul style="list-style-type: none"> • Scope Management • Time Management • Cost Management • Quality Management • Human Resource (HR) Management • Procurement Management
<p><u>Equipment installation Management</u> – How to install hardware to support the application software.</p>	<ul style="list-style-type: none"> • <u>Prepare equipment installation plan</u> -- Determine what, when and how to support installing equipment for a new system • <u>Identify applicable standards</u> – Define environmental, security and technical standards required for new equipment installation • <u>Identify equipment requirements</u> – Define size, performance, power, temperature and physical components • <u>Identify and prepare facility modifications</u> – Define changes to facilities to support equipment • <u>Prepare and order equipment</u> – Initiate 	<ul style="list-style-type: none"> • Scope Management • Time Management • Cost Management • Quality Management • Procurement Management

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	<p>equipment procurement procedures</p> <ul style="list-style-type: none"> • <u>Confirm facility modifications support for equipment requirements</u> – Obtain supplier certification of readiness of facility for equipment installation • <u>Install equipment</u> – Deliver, inspect and connect equipment 	
<p><u>Configuration Management</u> – How to set up hardware and software for development, modification, configuration, testing, training and production.</p>	<ul style="list-style-type: none"> • <u>Prepare configuration plan</u> – Determine what, when and how to request, track, report and approve system changes • <u>Define tools and techniques for configuration management</u> – Define methodology for requesting tracking, reporting and approving system changes • <u>Configure system</u> – Maintain changes to system 	<ul style="list-style-type: none"> • Integration Management • Scope Management • Time Management • Cost Management • Quality Management • Communications Management • Risk Management
<p><u>Software Development Management</u> – How to employ tools and the methods used to develop, modify and/or configure the application software to meet user requirements, including methods for controlling access to and use of the software.</p>	<ul style="list-style-type: none"> • <u>Prepare software development plan</u> – Determine what, when and how to build and modify application software • <u>Identify applicable standards</u> – Define minimum acceptable guidelines for application coding and documentation • <u>Define tools and techniques to develop, modify and configure application software</u> – Identify the methodology for building, modifying, reviewing and testing code • <u>Develop, modify and/or configure</u> 	<ul style="list-style-type: none"> • Scope Management • Quality Management

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	<p><u>application software</u> – Build, document test and deliver modified application software</p>	
<p><u>Workflow Improvement Management</u> – How to change existing and add new workflow processes to maximize the benefits of the new system.</p>	<ul style="list-style-type: none"> • <u>Prepare workflow improvement plan</u> – Determine what and who is involved modifying existing workflow to maximize new system potential • <u>Define tools and techniques to prepare and maintain workflow improvements</u> – Identify methodology for identifying and making workflow improvements • <u>Define workflow improvements</u> – Identify changes to existing manual and system practices that maximize new system benefits 	<ul style="list-style-type: none"> • Scope Management • Time Management • Cost Management • Quality Management • HR Management
<p><u>Conversion Management</u> – How to transfer exiting information to the new system’s database.</p>	<ul style="list-style-type: none"> • <u>Prepare conversion plan</u> – Determine what, when and how to migrate existing information to the new system • <u>Define tools and techniques to support conversion</u> – Define methodology for identifying, mapping, cleansing and migrating data • <u>Map data exchanges</u> – Map data sources and destinations and define the data attributes • <u>Identify volume of data for conversion</u> – Estimate number of records included in the conversion and the time required to 	<ul style="list-style-type: none"> • Quality Management • Risk Management

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	<p>complete it</p> <ul style="list-style-type: none"> • <u>Identify conversion timing</u> – Define staging of multiple conversions for development, testing, training and go-live • <u>Define requirements for and conduct data cleansing</u> – Identify volume of data inconsistencies and anomalies that may adversely affect the conversion • <u>Develop and test required conversion software</u> – Design, build, review and deliver any required custom tools for data migration • <u>Conduct and verify conversion</u> – Review results of conversion efforts to confirm completeness and accuracy 	
<p><u>Interface Management</u> – How to successfully exchange data between systems.</p>	<ul style="list-style-type: none"> • <u>Prepare interface plan</u> – Determine what, when and how to exchange data between the new and existing systems • <u>Define tools and techniques to support interface</u> – Prepare methodology for identifying, mapping, cleansing and sharing data • <u>Map data exchanges</u> – Map data sources and destinations and define the data attributes • <u>Identify data exchange transactions</u> – Identify the content and timing of individual data exchanges 	<ul style="list-style-type: none"> • Quality Management • Risk Management

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<p><u>Training Management</u> – How to educate users to successfully implement and use the new system.</p>	<ul style="list-style-type: none"> • <u>Prepare training plan</u> – Determine what, when and how individuals will receive training to use a new system • <u>Define tools and techniques to support training</u> – Identify the methods for providing training (e.g., train the trainer, classroom, online) • <u>Identify number and type of users</u> – Determine who is to receive training • <u>Determine user availability</u> – Identify when training can occur • <u>Determine minimum user proficiency</u> – Identify whether or not users possess minimum technical skills required for 	<ul style="list-style-type: none"> • Quality Management • HR Management • Risk Management

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	<p>training</p> <ul style="list-style-type: none"> • <u>Provide proficiency training</u> – Train individuals that do not meet minimum proficiency requirements • <u>Prepare application software training materials</u> – Create, review and update documentation (e.g., user manuals, functional guides, walkthroughs, quizzes) needed for training • <u>Identify and schedule training facilities</u> – Determine and reserve where training is to occur • <u>Schedule and conduct training</u> – Train participants by physical location, class type and class date • <u>Conduct training evaluation</u> – Perform follow-up to confirm effectiveness of training 	
<p><u>Test Management</u> – How to test the system, identify defects, re-test corrections and test for acceptance.</p>	<ul style="list-style-type: none"> • <u>Prepare test plan</u> – Determine what, when and how verification of the proposed system will occur • <u>Define tools and techniques to test the system</u> – Prepare methodology for defining, reporting and evaluating test cases and subsequent test results • <u>Prepare test cases</u> – Define scenarios to verify delivered application meets specifications 	<ul style="list-style-type: none"> • Quality Management • Risk Management

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	<ul style="list-style-type: none"> • <u>Prepare test data</u> – Create or load sufficient information to support each test, including clearing data from previous tests where appropriate • <u>Identify and train testers</u> – Select representative testers and train on using the selected testing tools and methodology • <u>Conduct tests</u> – Perform system verification using test scripts • <u>Document and prioritize test results</u> – Review the impact of repairing identified defects • <u>Correct defects</u> – Resolve identified issues based on priority and impact • <u>Conduct regression testing</u> – Retest system to verify correction of defects 	
<p><u>Transition Management</u> – How to cutover from manual and exiting systems to the new system.</p>	<ul style="list-style-type: none"> • <u>Prepare transition plan</u> – Determine what, when and who is involved in deploying the new system • <u>Define tools and techniques for transition management</u> – Identify methodology for user support during transition period (e.g., help desk, command center, training) • <u>Identify and train transition support team</u> – Define key “power users” who will provide assistance to other users during transition • <u>Prepare transition schedule</u> – Identify 	<ul style="list-style-type: none"> • Quality Management • HR Management • Risk Management

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	<p>timing for transition (e.g., functional, module, departmental)</p> <ul style="list-style-type: none"> • <u>Prepare transition issue log</u> – Prepare how to identify, track, escalate, report and resolve issues • <u>Conduct readiness review</u> – Confirm that all project components, e.g., new system hardware and software, users, support staff, are in place and prepared for cutover • <u>Deploy production system</u> – Switch from old system to new system 	
<p><u>Support and Maintenance Management</u> – How to provide upkeep for software and hardware required after acceptance of the new system.</p>	<ul style="list-style-type: none"> • <u>Prepare support and maintenance plan</u> – Determine how to keep the system operational after go-live • <u>Define tools and techniques to maintain the system</u> – Describe the methodology for reporting and resolving problems, installing updates and patches, etc. • <u>Define support and maintenance requirements</u> – Identify required level, frequency, response time and availability of resources to support the system • <u>Provide support and maintenance training</u> – Identify and schedule system administration and other appropriate classes as required for identified personnel • <u>Initiate ongoing support and maintenance</u> 	<ul style="list-style-type: none"> • Quality Management • Risk Management

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	<p>– Provide ongoing system support and maintenance based on defined roles and responsibilities</p>	
<p><u>Continuous Workflow Improvement Management</u> – Improve workflow continually to optimize system benefits.</p>	<ul style="list-style-type: none"> • <u>Prepare continuous workflow improvement plan</u> – Determine how to update workflow continuously for optimal benefit after go-live • <u>Define tools and techniques to maximize continuous workflow improvement</u> – Define the methodology for identifying, testing, making and maintaining workflow improvements • <u>Define continuous workflow improvement resource requirements</u> – Identify representative user and technical resources to support ongoing workflow improvement • <u>Provide continuous workflow improvement training</u> – Identify, schedule and conduct workflow improvement training • <u>Initiate ongoing workflow process improvement</u> – Provide ongoing workflow process improvements 	<ul style="list-style-type: none"> • Quality Management • Risk Management