Global Information Assurance Certification Paper

Copyright SANS Institute
Author Retains Full Rights

Interested in learning more?

Check out the list of upcoming events offering
"Managing Cybersecurity Initiatives & Effective Communication (Cybersecurity L
at http://www.giac.org/registration/gcpm

Managing the Implementation of a BYOD Policy

GIAC (GCPM) Gold Certification

Author: Jim Horwath, jim.horwath@rcn.com
Advisor: Tim Proffitt

Abstract

Mobile devices are consumer products that are starting to dominate the business world and change the way people do business. Having a mobile device is akin to carrying a dual-core processor computer in your pocket. Businesses are moving towards a BYOD (bring your own device) policy for management of these devices. Corporations must have a policy in place to allow the use of these devices while protecting data, employees and customers. Implementation of mobile devices without having a policy governing the use and defining what needs protection is bad business and opens corporations to unnecessary risk. Learning and applying project management methodology for the adaption of a corporate Mobile Device Policy can increase the chances of a rapid and successful adoption. Although using project management methodology does not guarantee success, it will increase the probability of success for the initiative.

© 2013 SANS Institute. Author retains full rights.

1. Introduction

Mobile devices are consumer-oriented devices that are changing the way people do business. The increase in computing power is allowing these consumer devices to start replacing traditional end-user computing platforms such as laptops. (Johnson, 2011) This increases security concerns as end-users start to carry sensitive data around with them. Corporations must deal with new security concerns such as users having a mix of corporate and personal data on a mobile device. (Wright, 2012) Managing the risk on devices used for personal and business purposes complicates the management of these devices and associated data. Policy is critical for the protection of data, staff, and customers. Complicating matters may be a senior executive who wants to use a personal device to use for business and personal use. Data ownership becomes a big issue, especially for a business operating in a regulated market. (Johnson, 2011)

Many corporations are starting to implement a *"Bring Your Own Device"* (BYOD) policy allowing staff to use their favorite devices while cutting costs. (Micro, 2012) This model complicates policy and data control in organizations and increases the importance of having a strong policy. (Johnson, 2011) Successfully implementing a mobile device policy is critical to the success of a BYOD initiative, this covers the entire life cycle of the project from idea to fruition. Using the discipline of project management will not guarantee success, but it will increase the chances. (PMI, 2009) Using project management discipline does not force the use of the entire suite of tools, not all the project management tools will be necessary since the size of the project dictates the tool selection. When a phase or tool is not necessary there will be a note indicating the exclusion of the tool or method. (Heldman, 2009)

Projects are ephemeral in nature having a defined start and end date; they are not on-going operational responsibilities. Although many projects may result in on-going operations, they have deliverables and a defined period. (Portny, 2007) (Camilleri, 2011) discusses how projects often cause people to think of large efforts and grand undertakings; work effort and scope does not define a project. Projects come in all sizes and may require the involvement of a team of people, or only a single individual.

Jim Horwath, jim.horwath@rcn.com

Additionally, duration of the effort does not define whether an initiative is a project. Projects may have durations of several hours, up to many months. Projects are agents of change that are temporary and unique in nature. (Kerzner, 1998) recommends projects use W. Edwards Deming's Plan-Do-Check-Act (PDCA) cycle during the project lifecycle. The PDCA cycle is a perfect match for project management. Initially there is a plan of steps to accomplish a goal, and then execution of tasks, correction of what did not work, and execution of the steps to complete the project. The creation of a BYOD policy is a great candidate for a project. However, because this is an internal project with limited scope, the entire suite of project management tools is not necessary.

Appendix A contains a table listing the 42 project management processes by the 5 Project Management Process Groups and the 9 Project Management Knowledge Areas. This table will serve as the blueprint for the entire BYOD policy implementation project.

2. Background Information

2.1. Company Background

Knowing the company structure, environment and political landscape is crucial for the success of any project. The organization discussed in this paper is a mid-size company that has functional organizational structure. Specialties group the organization; as a result, the project management office has little control over employees as resources. There are normally multiple projects contending for a limited number of resources, the more effective resources are tough to get, so often less visible projects receive less effective resources. The employees have a loyalty to their organizations, and little to the project manager since the project manager has little input into their success in the organization as an employee. The structure of the organization will make several early decisions critical to the success of the project. Functional organizations have a clear skill and reporting distinction. A smart project manager will include the right stakeholders who directly influence the employees involved in this project. (Heldman, 2009)

The fictional company for this discussion sells vapor widgets through a series of brokers and agents. Senior leadership and the sales force believe their vapor presence will increase dramatically with the adoption of mobile devices. Senior leadership

commissioned a study that concluded a BYOD implementation is more cost effective than providing employees with mobile devices. Along with the cost angle, it gives employees a sense of empowerment since they can choose their mobile or computing device. The employee has the choice of mobile device or laptop that fits their personality and comfort level. The company has a long-term strategy of phasing out employee laptops and desktops and replacing them mobile devices where possible. Based on the business and regulatory obligations of the company, this strategy is likely years away from happening.

The federal government tightly regulates the sale of vapor widgets; the company needs a policy that aligns with corporate policies and federal regulations. During the initial review of the feasibility of a BYOD strategy, the company studied the effects of this strategy on their business model and reviewed feedback from employees on the issue. The data from these studies was a key drive for moving forward with a BYOD strategy. A company leadership chart is available below.
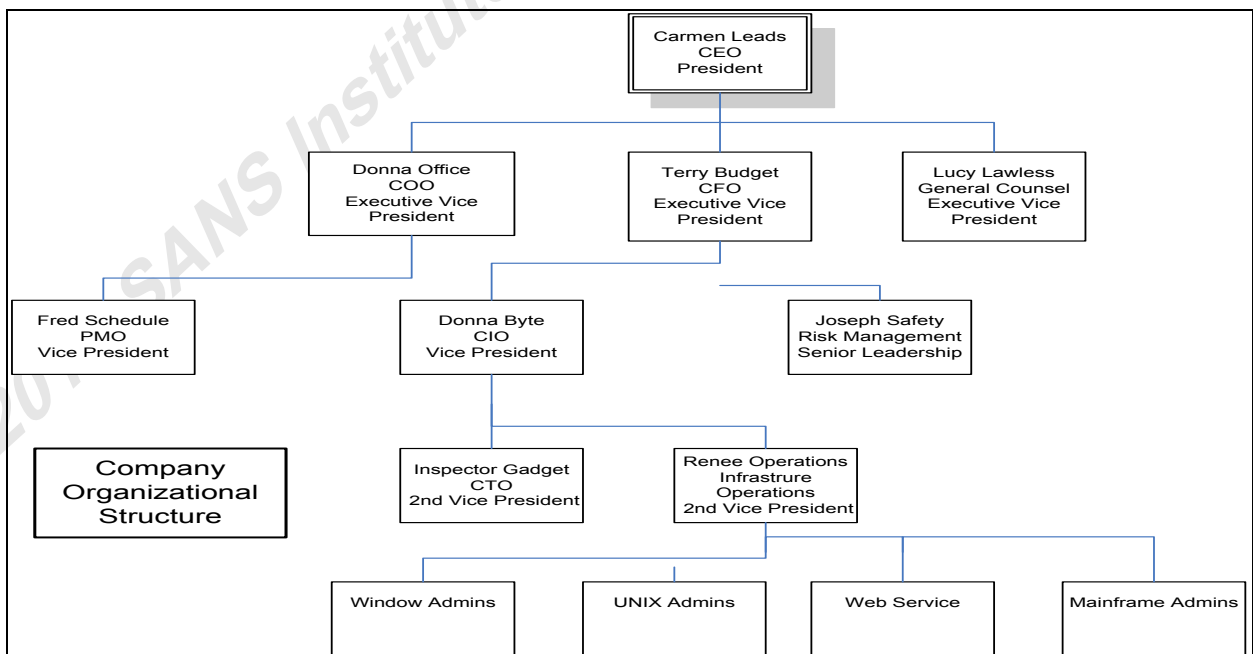
Company Organizational Structure – Functional Organization

2.2. Policy Decision

The decision to create a new policy resulted from a review of current policies, and the determination that current policies were not sufficient for BYOD coverage. After

review, the firm did not feel modification of the current policies would adequately address and protect the company, customers, data and employees. Most people associate Smartphone's with the term BYOD, but in reality BYOD comprises not only Smartphone but also employee-owned computing devices. BYOD has the economic advantage of the employee providing his or her own equipment, which normally results in a happier user base. The disadvantages are the security risks of allowing an unknown system onto the corporate network, data security, ownership and customer protection. Creating a policy to address BYOD will affect the company in several areas because all policies require review, approval, updating and awareness. Policies are auditable items that a company has to demonstrate adherence. The BYOD policy created will integrate into the firm's overall policy, and there will be an employee awareness program regarding it. The policy will address usage and not individual technologies, focusing on areas that are difficult to enforce with existing controls. Standards, procedures, and guidance will help support controls for technically specific areas.

3. Initiating Process Group

The company has a commitment for a BYOD initiative; the initial phase will be the development and implementation of a BYOD policy. This decision resulted in the recognition that this is a project and not an ongoing operation. All properly executed projects start with the Initiating Process Group; the outputs of this group become inputs or checkpoints throughout the project. This process group defines the initial scope committing resources and finances for the project. This process group grants the approval to commit the organizational resources working on the project and authorizes the project manager to start on the project. The output of the Initiating Process Group becomes the input into the Planning Process Group. (Heldman, 2009) During this stage of the project, the project charter develops and the team identifies the project stakeholders. These are critical stages that the project will build and rely upon for support of the project throughout its life cycle. (Kerzner, 1998) stresses the importance of defining projects in business terms and avoiding focusing too much on technology. Placing too much emphasis on technology and ignoring the business drivers for the project can place the project into a reactive rather than a proactive mode. Business

objective should have a weighting of about 90 percent business terms and 10 percent technical terms. This demonstrates the need for a diverse team that brings differing points of view and can help focus the project towards the deliverable. A project team skewed with experience in only one area; will miss key business drivers in other areas the project touches.

3.1. Develop Project Charter

The project charter is a key document that states the purpose and requirements of the BYOD project. The charter includes approval from senior management and gives the project manager the authority to use resources and spend money. A project charter authorizes the project and serves as a reference point throughout the life of the project, particularly when it comes to the subject of scope. The project charter for the BYOD project will define what the policy will accomplish and will establish the authority of the project manager. The project charter should remain business focused and avoid too much emphasis on technology. This is a market driven project to meet the explosion of mobile device technology and allow the sales force to be more productive and mobile.

(Richman, 2009) recommends a project charter that contains the business needs addressed by the project, constraints of the project, decisions leading to the project, scope items, communication plans, and any budgetary items for the project. The project charter is a dynamic document that may receive updates via a change management process if there are changes to the project charter. The project charter is a written, formal document that is accessible to all members of the project team. Using a Web site such as a Wiki or SharePoint are ideal document stores. This allows the project manager to track changes and provide access to the necessary staff. The project scope of work will include three things: project scope definition, business need and strategic plan.

The project scope description is a BYOD policy will define the acceptable use of mobile devices, recognizing the limitations and threats of the devices and supporting systems. The policy must be practical based on the limitations of the devices, regulatory obligations and capability of the systems used to support the devices. (Wright, 2012) The business driver is the ability of end-user to choose their computing platform, cutting corporate hardware costs, while increasing the mobility and flexibility of the corporate

Jim Horwath, jim.horwath@rcn.com

workforce.   The strategic plan is to increase sales, increase mobility and cut costs. Marketing feels, a mobility platform can help the company market to new areas and will increase the effectiveness of the sales staff. BYOD has the potential for a sale anywhere there is a wireless connection, and the "wow" factor associated with mobile devices should alter customer perception about the company being stodgy. This new mobility will help cut costs since the company no longer provides a traditional computing environment, requires less office space, and increases staff availability.

The project will address several areas of concern relating to mobile devices in a corporate environment. The major issues to address are data storage policies, connectivity policies, device protection policies, feature control policies, application control policies, and audit logging of activity. (Johnson, 2011)   These issues will end up in the project charter with the intention of define the project scope and preventing scope creep in the project.

3.2. Identify Stakeholders

Stakeholders are critical to the success of a project, because of the organizational structure, selecting the right stakeholders will help make this project a success. The structure of the organization is a functional model based on skills and job responsibilities; the Project Management Office (PMO) has little influence on employees and functional managers. The project charter developed in a previous step along with regulatory obligations will serve as inputs to the selection of stakeholders. Fortunately, this project is the result of an employee and business request, so the project manager should receive very little resistance to this initiative. The company exists in a regulated industry, the BYOD policy must cover local and federal regulations, this will require the law department and risk department to be key stakeholders in the project. (Kerzner, 1998) This will result in risk and law departments becoming stakeholders of the project.

 (PMBOK, 2008) suggests identifying stakeholders by gathering and analyzing quantitative and qualitative information for determining the personnel who will have interests and accountability throughout the project. During this stage, the project manager should be building relationships and accumulating social capital that they can use during the lifetime of the project. Interviewing potential stakeholders, accessing

roles, influence, interests, support levels, and expectations are critical in the selection of the proper stakeholder team.   Based on the interest and support for the project, using a power/interest grid for grouping stakeholders based on their level of authority ("power') and their level of concern ("interest"), the resulting grid for grouping is below. The project manager will place potential stakeholders into this grid so he/she can classify them and define an approach strategy.
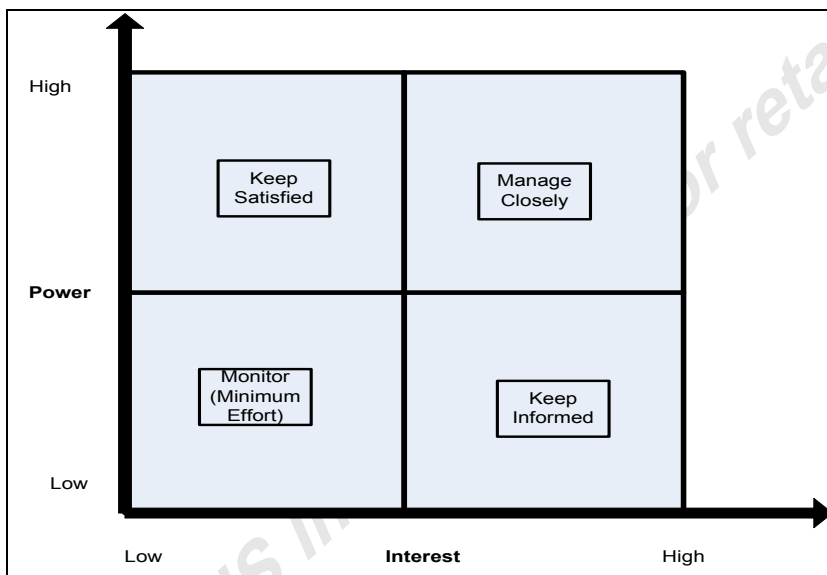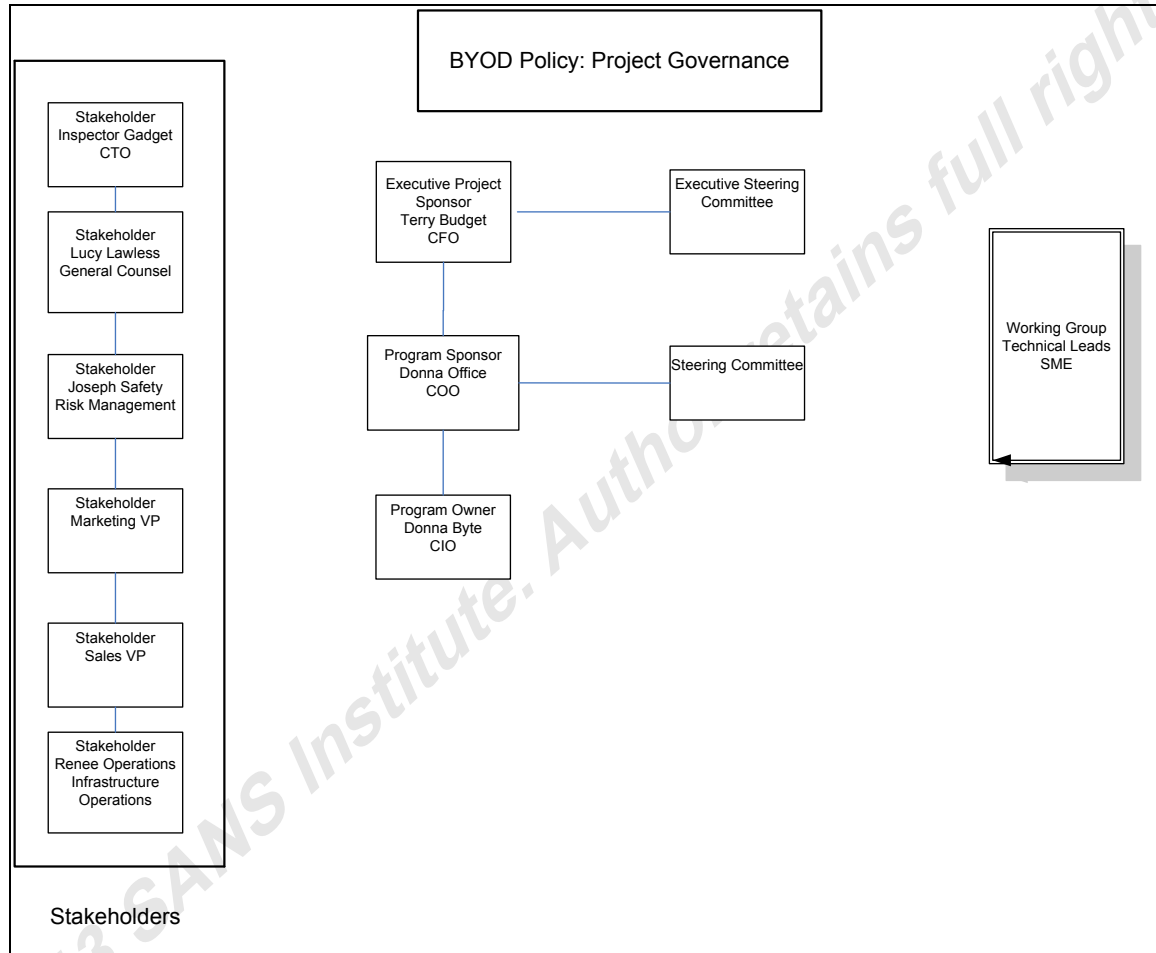

Power/interest grid to group, classify stakeholders, and formulate an approach strategy (PMBOK, 2008)

Using expert judgment the project manager is able to create the executive sponsor and stakeholders. The power/interest grid will serve as a reference on how to communicate and approach each stakeholder or team member. The interviews and grids will result in selection of project sponsors, stakeholders and a stakeholder register.

Stakeholder	Stakeholder Interest in the project	Assessment of Impact	Potential Strategies for Gaining Support or Reducing Obstacles
Inspector Gadget	High	Medium	Provide a company sponsored iPad
Lacy Lawless	High	High	Provide a company sponsored iPad
Joseph Safety	Low	High	Provide a company sponsored iPad
Marketing VP	Medium	Medium	Provide a company sponsored iPad
Sales VP	High	High	Provide a company sponsored iPad
Renee Operations	Low	Low	Provide a company sponsored iPad
Terry Budget	Medium	Medium	Provide a company sponsored iPad

Jim Horwath, jim.horwath@rcn.com

Donna Office	Medium	Medium	Provide a company sponsored iPad
Donna Byte	Medium	Medium	Provide a company sponsored iPad

Stakeholder Register

BYOD Policy: Project Governance

Stakeholder
Inspector Gadget
CTO

Stakeholder
Lucy Lawless
General Counsel

Stakeholder
Joseph Safety
Risk Management

Stakeholder
Marketing VP

Stakeholder
Sales VP

Stakeholder
Renee Operations
Infrastructure
Operations

Stakeholders

Executive Project
Sponsor
Terry Budget
CFO

Executive Steering
Committee

Program Sponsor
Donna Office
COO

Steering Committee

Program Owner
Donna Byte
CIO

Working Group
Technical Leads
SME

BYOD Policy Project Governance

4. Planning Process Group

The Planning Process Group consists of the processes that formulate the goals of the project, define the project scope and develop a plan of action to achieve the project objectives. This group creates a project plan that will achieve the goals of the project. Antoine de Saint-Exupery has a famous quote, "A goal without a plan is just a wish." The planning of a project is the dominant and most critical issue in project management. (Camilleri, 2011) The Planning Process Group is the largest of the process groups and is an iterative process. During the planning process as the project team learns more about the project, additional planning and revisions may result. . (Heldman, 2009) discusses

Jim Horwath, jim.horwath@rcn.com

how the Planning Process Group consumes the majority of the time for a project. If the project team properly plans, execution of the project is much easier and normally more successful. The Planning Process Group is the area where details provide guidelines for successfully navigating from one phase of the project to another. The BYOD initiative is new to the company and will cover all areas of project management. Since this is a smaller project leveraging internal resources, some of the project management disciplines will not apply. During this phase the most command issue a project manage will experience is project prioritization from other groups.

4.1. Develop Project Management Plan

The Development of a Project Management Plan is the process of documenting the steps necessary for defining, preparing, integrating, executing, monitoring and coordinating all the related plans and efforts for the creation and implementation of a BYOD policy. The Project Management Plan should not be anything elaborate since this is an internal project with a well-defined business objective. There are various subsidiary plans such as The Scope Management Plan, Requirement Management Plan, Schedule Management Plan, Cost Management Plan, Quality Management Plan, Communications Management Plan, Risk Management Plan, and Procurement Management Plan. Combining all these plans will yield the Project Management Plan. The written project management plan will guide the project and allow the project manager to track how well the project is progressing. The development of a project management plan falls in the Project Integration Management knowledge area. (PMBOK, 2008)

4.2. Collect Requirements

(Heldman, 2009) speaks about collecting the requirements of the project being the stage when the deliverable of the project starts to take shape. This section starts to define the end goal of the project, which is the implementation of a BYOD policy. The primary purpose of this activity is to define and document the requirements of the BYOD policy for the project sponsors and stakeholders. There are several tools available to collect the requirements for the BYOD policy. Using an interview process, the project will prepare a series of questions relating to BYOD for stakeholders. The interviews will allow stakeholders and subject matter experts to

Jim Horwath, jim.horwath@rcn.com

voice their opinions and visions for a BYOD policy. Additionally, arranging a facilitated workshop with stakeholders and subject matter experts will allow participants to learn from each other and help create a vision for the future.

Requirements documentation should include items such as the business need for the BYOD policy, acceptance criteria, business rules, organizational areas affected, constraints and regulatory obligations. The requirements should meet the business needs and project objective of creating and implementing a BYOD policy. The company does have corporate policies for areas other than mobile devices; these policies will help create a Requirements Traceability Matrix. The Requirements Traceability Matrix will be a mapping of mobile capabilities to current corporate policies and regulatory obligations. The requirements collected in this step may undergo modifications later in the project after a more thorough vetting of the risk appetite of the organization. However, at this time there is little expectation of any deviation from the requirements collected.

4.3. Define Scope

(Richman, 2002) warns about the criticality of correctly defining the project scope. A project scope that is nebulous, unrealistic, not written down, or agreed upon will invite trouble from the start of the project. Defining the scope of the project is critical to success because this document will serve as a baseline for the project. As the project progresses, a well-defined scope statement makes it easy to compare a request against the project scope and determine if it meets the intended effort. Many projects suffer from scope creep where changes to the original effort occur at a regular rate. This results in a project that may balloon into an effort that never ends, or has little chance of success. The project management malady of scope creep is a detriment for many projects, having a well-defined scope statement is a preventative measure against scope creep. The project scope provides a common view of the project from the point of view of the stakeholders and sponsors. This area defines the deliverables and the work required to meet the deliverables.

Jim Horwath, jim.horwath@rcn.com

The scope of this project is to create and implement a corporate BYOD policy. This is not a large, expensive, or resource intensive project, but it is very important to the future and safety of the firm. Based on the data obtained through SME's, business needs, regulatory obligations, user requests the policy will address several key subjects. The policy will address the logging and audit requirements, sensitive data responsibility, employee/device monitoring, data ownership, applications, and acceptable use. An adjunct effort of providing employee education concerning the policy contents is also port of this project.

Once there is a draft of the project scope statement, it should receive agreement and written approval from the stakeholders, project team members and key management personnel. (Heldman, 2009) During the project if there are changes to the scope statement, the project manager will need to engage the Change Management process and possibly update the project objectives, requirements, and stakeholder register.

4.4. Create WBS

The Work Breakdown Structure (WBS) is a hierarchical structure that defines and maps the deliverables of the project allowing the project manager to define the total scope of the project. The WBS functions as a schematic diagram of the components decomposed to smaller deliverables with a description accompanying each level. This diagram will allow the project manager to better estimate costs, time and resources for each work component. The WBS for the BYOD project will list major deliverables and continue to decompose each level until it is broken down into the work package level. Work packages are components that the project manager can assign to a resource for completion; this resource may be an individual or comprise individuals. This project is straightforward and does not require many levels of deliverables until it reaches the work package level. The numbers inside each block of the WBS are WBS identifiers used to track costs, scheduling and resources with each WBS effort.   These codes will help track costs by category. (Camilleri, 2011)
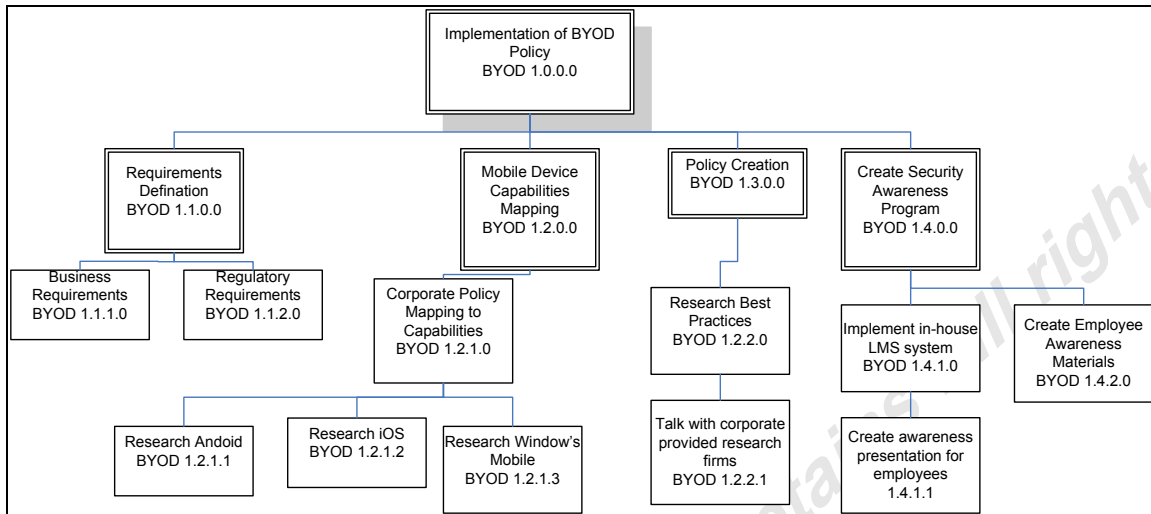
Work Breakdown Structure and billing codes

4.5. Define Activities

The WBS creates the activities allowing the project manager to start working towards the development of a schedule. Activities are the result of applying decomposition to the work packages resulting in small work efforts that are easy to manage. Activities are not deliverables but individual work units that combine to fulfill the deliverables defined in the WBS. For the BYOD project, the WBS defined will translate almost directly into activities because the project is not complex. The WBS will serve as the activities for the project and will not require further decomposition. (Richman, 2002) The activities list will create several project milestones that signify a major accomplishment of the project. The project milestones are:

- Requirement definition
- Corporate policy mapping to capabilities
- Policy Creation
- Employee Awareness materials
- LMS system ready

Project Milestones

4.6. Activities and Schedule Development

The next few steps involve sequencing activities, estimating durations, estimating durations, and developing a schedule from the data. Strict project management recommends these as separate tasks, but the simplicity of the BYOD project will allow the combining of these steps into one. At the completion of this step the project team will

Jim Horwath, jim.horwath@rcn.com

have a schedule defining activities, times, and durations. With the activities and milestones are activities identified for the BYOD project indentified, documenting the logical relationships between activities will result in activity sequencing. Every activity has a predecessor and successor with the exception of the first and last activities. The project manager can develop the logical relationships of activities using a Precedence Diagramming Method.   (Newbold, 1998)

The relationships between the activities will allow scheduling of durations and resources.   When the diagram is complete, the project team will have the completed schedule that they can socialize with project sponsors and stakeholders. This schedule will feed into cost and budgeting activities. The completed schedule is below.
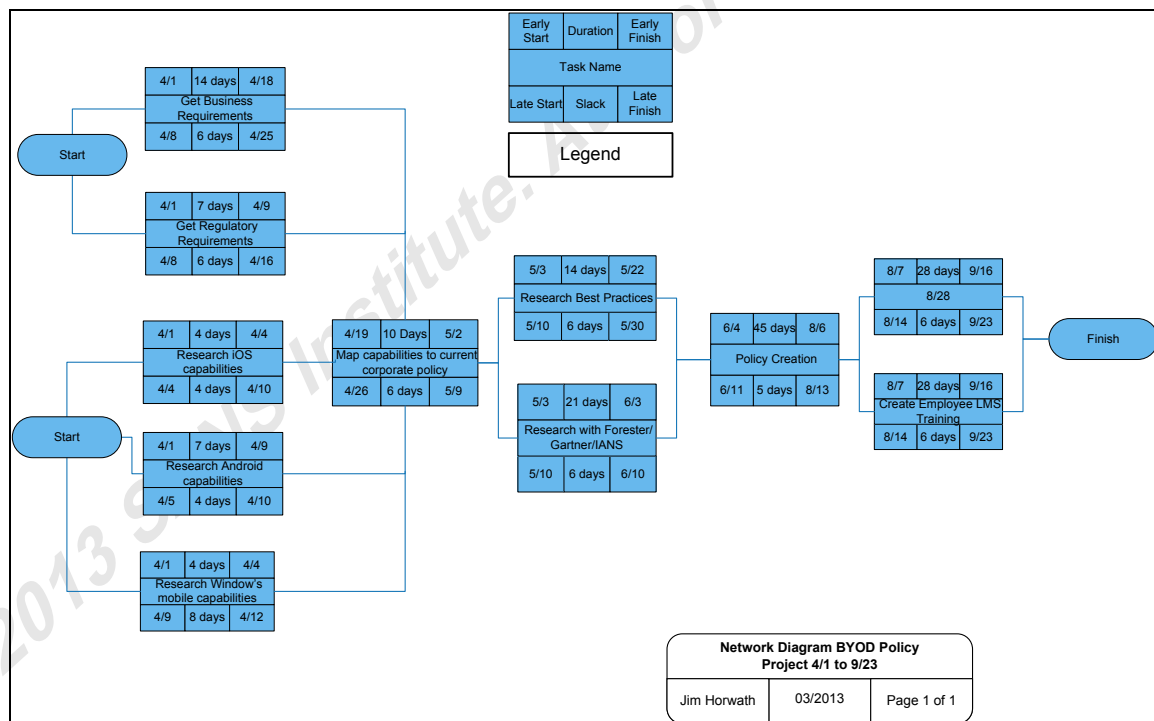
Network diagram for project activities, dates and durations

4.7. **Estimate Costs and Determine Budget**

This project is an internal project with soft costs associated with it. Since they project deliverable is a BYOD policy, the project will not incur any spends for additional resources such as hardware, software, consultation or labor. The staff working on this effort is internal and does not operate on a charge back model. The company already has corporate accounts with research and consultation firms such as IANS, Gartner and

Jim Horwath, jim.horwath@rcn.com

Forester; so there is no additional cost for those services. In addition, the team will use sources from freely available resources from industry leaders such as SANS. The creation of the employee education and awareness program is a separate budget and considered a cost of doing business. The education and awareness program will not charge against the BYOD project. When this project concludes it will spawn several additional projects that will investigate the feasibility of the BYOD policy replacing current desktops.

4.8. Plan Quality

With the project schedule and tasks developed, the project manager will identifying quality requirements and standards for the BYOD project and document how the project will demonstrate compliance with these requirements. This is the Plan Quality group. The working group will be responsible for performing quality checkpoints and verify the achievement of milestones. The working committee comprises staff from different backgrounds, responsibilities, and expertise; this diverse group of staff will be able to provide balance and expertise when providing checkpoint reviews. Milestone reviews will occur at the following project milestones. (Heldman, 2009)

> - Requirement definition
> - Corporate policy mapping to capabilities
> - Policy Creation
> - Employee Awareness materials
> - LMS system ready

Project Milestones

The quality materials used for checking will be expert judgment and research documents from external parties (IANS/Gartner/Forester/SANS). These resources will provide sufficient data for quality checking of project work.

4.9. Develop Human Resource Plan

Every project at some point must leverage human resources during the lifetime of the project, without humans, the project would accomplish nothing. The BYOD project has the support of senior leadership, so leveraging the support of senior management will ease the process of

Jim Horwath, jim.horwath@rcn.com

securing resources. (Watson, 1997) discusses the difficulty of deciding the skill level requirements needed for the various phases of the project. Classifying the skills required for the project and then trying to find the resources is the more intelligent way to do things. Obtaining resources and seeing where they will best fit may not yield ideal results for the project. The smart project manager is able to entice the best staff to come and work for a project. Because this project deals with innovative technology and a chance to work with the latest gadgets, attracting the best talent should not be difficult.

The reward for staff involvement on the BYOD project is a company provided mobile device with one-year of paid cellular service. The employees will have their choice between an iOS device, Window's mobile or android device. This is part of the BAU (business as usual) budget, so this spend does not require any additional budgetary items or approvals.

4.10. Plan Communications

Plan communications will define and document the information requirements of the project sponsors and stakeholders, and create an approach for disseminating the information. The BYOD policy represents a move forward for the company; as a result communicating information is critical. The organization thrives on e-mail communications and Power Point presentations, all communications will leverage one or both of these mediums. There will be a conscious effort to avoid verbal commitments; all commitments will be in writing so everyone can agree upon them. Hallway conversations and phone calls may initiate an agreement, but until it is in writing, it is not a binding agreement. Written communications will become part of the project archives and serve as inputs for the lessons learned phase. (Heldman, 2009)

The communication is important lack of it can doom a project; the right amount can save a project. If information needs to go out beyond the project team, the project manager will use a companywide communication to reach employees of all levels.

BYOD Policy Communications Management Plan					
Communication Item	**Purpose**	**Frequency**	**Medium**	**Audience**	**Responsibility**
Project status reports	Communicate regular status	Every Tuesday	e-mail	Stakeholders	Project Mgr
Steering Committee Updates	Communicate Progress at a higher level	Every other Monday	e-mail	Executive Steering Committee	Project Mgr
Project Update	Discuss progress	Monthly	Paper (Power Point)	Steering Committee	Project Mgr
QA Review	Review product work	After reviews	e-mail and paper	Project team	Project Mgr
Status Meetings	Meeting minutes	As needed after meetings	E-mail	Project team	Project Mgr
Change Requests	Review change requests	As needed	e-mail	Project Mgr	Project Team
Ad Hoc Information	Information updates	As needed	e-mail	various	Project Mgr
Companywide update	Information updates	As needed	e-mail and internal company webpage	all employees	Project Mgr

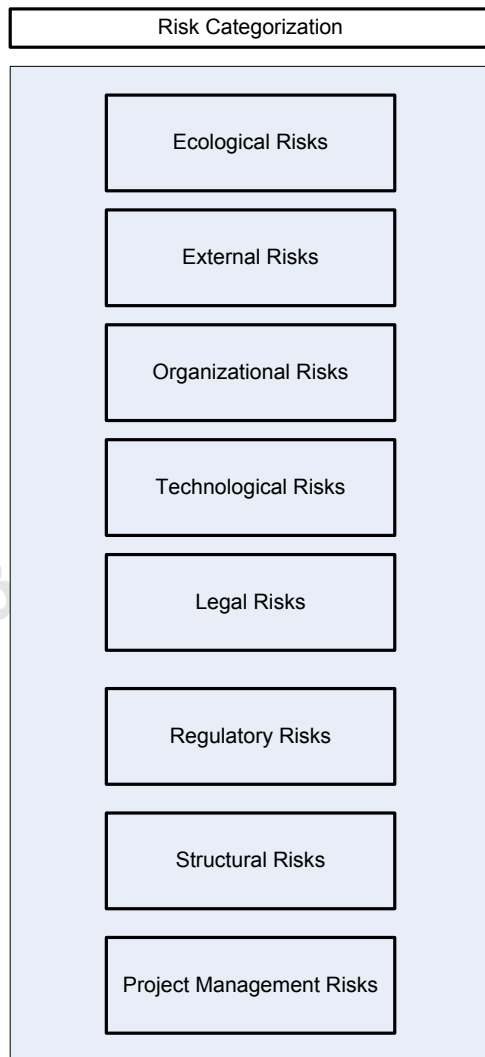**Communications Management Plan**

4.11. Plan Risk Management

(Watson, 1997) mentions that problems occurring during the project lifecycle are often known allowing the project manager to identify and manage them as risks. Risks can affect a project in terms of cost, time, morale, and quality of deliverables. The Risk Management Plan defines how the project will define, monitor, and control risks throughout the project. The risk plan will deal with accepting risk into the plan, tracking and updating a risk plan, removing risk from the plan, and escalating risk when necessary. Maintaining a current risk plan will allow the project manager to set expectations to stakeholders and sponsors, keeping the team focused on project work and not what might happen. The factors affecting risk management plan include many internal and external factors such as politics, economics, industry trends, social issues, project objectives, company direction, policies, historical factors, etc. The BYOD risk management plan will identify risks associated with the project and deliverables from the

Jim Horwath, jim.horwath@rcn.com

project. It is also important to note that not all risks are negative, some risk can be a positive and used to the benefit of the project.

4.12. Identify Risks

Identification of the risks is the process where the project manager asks the question what might go wrong. During this process the project team will indentify warning signs of risk, and the likely occurrence of that risk materializing; and it provides the team with an opportunity to discover better methods for achieving the projects objective's and deliverables.   (Camilleri, 2011) provides an excellent chart to use for the categorization of risk that is available below.

Risk Categorization
Ecological Risks
External Risks
Organizational Risks
Technological Risks
Legal Risks
Regulatory Risks
Structural Risks
Project Management Risks

Risk Categorization (Camilleri, 2011)

The BYOD project will not have to worry about ecological or structural risks due to the nature of the project; however, the other categories are areas of concern. The risk resulting from this step will create a risk register that will help the team identify and track risks to the project.

ID	Risk	Trigger	Event	Cause	Impact	Owner	Response Plan
Risk Register							
BYOD-1	Key employee time off	Vacation calendar	Employee needs time off	Vacation scheduled	Medium	Project Manager	Look to backfill with another internal resource
BYOD-2	Legal counsel not reviewing policy in a timely manner	Court Appearances/Legal Obligations	Court appearances or legal obligations requiring legal resources	Higher priority legal instances	High	Project Manager	Escalate to project sponsors
BYOD-3	Laws or regulations change regarding data security on devices	Regulators pass new or additional laws pertaining to data security	Regulators pass laws to protect consumers	Regulators pass new or additional laws pertaining to data security	High	Project Manager	Map new laws to existing controls, implement change control if necessary
BYOD-4	There are no technical solutions to meet policy	Technology solutions cannot meet compliance demands	Technology is too immature	Technology solutions cannot meet compliance demands	Medium	Project Manager	Add additional compensating controls
BYOD-5	Key employee separation	Key employees over extended with commitments	Companies are doing more with less	Employee looking for a job - employee not happy with company	Medium	Project Manager	Try to compensate employees with gadgets during the project (such as free iPad)

Jim Horwath, jim.horwath@rcn.com

BYOD-6	Work Package Completed Early	Work Completed	Employees are working on assignments after-hours because due to enjoyment of task	Employees are gadget-heads and love exploring new technology	Low	Project Manager	Leverage early completion and fast track activities

Example Risk Register

4.13. Perform Qualitative Risk Analysis

The Qualitative Risk Analysis indentifies what affect different risks will have on the project deliverables and the probability they will occur. The Qualitative Risk Analysis prioritizes risks for further analysis, identifying how different risks will affect the project deliverables. By identifying and focusing on high priority risks, the team can concentrate on these risks. The results from Qualitative Risk Analysis will help the team complete Quantitative Risk Analysis. The BYOD project identified most of the risks related to staff commitments, and staff not being able to fulfill their project commitments in a timely manner. The project will continue through summer months, which are traditionally popular months for vacations. During the task scheduling, the project plan added some extra time into the tasks taking into account key staff taking vacations. The most critical risk to the schedule is the legal review of the documents. Having an in-house legal review of documents is a milestone that the team cannot outsource to an outside firm. The team will closely track work schedules and legal commitments and escalate to the project sponsors if the warning signs of a risk manifesting. (Heldman, 2009)

4.14. Perform Quantitative Risk Analysis

Every risk identified should have Qualitative Risk Analysis applied against them to produce a priority on the risks. Quantitative Risk Analysis does not always lend itself to every project, and it does not apply to the BYOD Policy project. Quantitative Risk Analysis uses a numerical or quantitative rating assigned in order to develop a probabilistic analysis of the project. Quantitative Risk Analysis requires quality data, a good project mode and a prioritized list of project risks. This can result in realistic costs,

Jim Horwath, jim.horwath@rcn.com

schedule and scope targets. The project has a limited scope and deliverable, this analysis would not provide enough benefit from all the effort it would require.

4.15. Plan Risk Responses

The Plan Risk Response plans what actions to take to reduce threats and take advantage of opportunities discovered during the risk analysis process. The risk register and the risk management plan are the input used to create Risk Responses. There are two types of threats: negative risks and positive risks. The risk identified in the Risk Register is negative, and the steering committee agreed to use a combination of acceptance and mitigation to deal with them. The team identified only one positive risk that they could exploit. The sole positive risk would be the early completion of a work package. The team did put this in the Risk Register along with the negative risks. The steering committee is accepting the risk of any possible delays due to the legal team having higher priorities. The positive risk of completing work early will allow the team to crash tasks if possible. (Frisk, 2011)

4.16. Plan Procurements

The Plan Procurements is a process identifying what goods or services the project will need to purchase from a vendor outside the organization. Because this is an internal project using internal resources, there is no need to purchase goods or services from an external vendor. The project will incur small expenses at times, but senior leadership would like to budget these against a general operating expenses fund since they are small and this is a general initiative for the firm.

5. Executing Process Group

The Executing Process Group focuses on execution of the project management plan by directing and coordinating resources to meet the objectives of the project. During this stage of the project, the project manager ensures the project continues on track and activities align to meet the project objectives. The project objective continues to be the creation and implementation of a BYOD policy. All the work planned in previous stages is now taking place and the project manager is making sure tasks are staying on schedule. The Executing Process Group is the area that will utilize most project time and resources

Jim Horwath, jim.horwath@rcn.com

resulting in this process group having the highest cost. This process group is where the project manager will need to deal with conflicts and issues may jeopardize project timelines. Expert judgment is the main tool used in this knowledge area, and the main output is the deliverable of a BYOD policy. Thus, this is a very import knowledge area. (Heldman, 2009)

5.1. Direct and Manage Project Execution

(Camilleri, 2011) discusses the Project Management Plan as the key input for the Direct and Manage Project. This is a very important phase of the project, because the result of this phase is a deliverable. This process also has a relationship with the Perform Integrated Change Control process to manage changes to the project. If a proposed change receives approval, the approved change request becomes an input into this process. This is an important part of the Executing process group. This process group will use inputs from the Project Management Plan, Approved Change Requests, Enterprise Environmental Factors, and Organizational Process Assets.

Deliverables are not always material items; projects contain intangible outputs such as milestones and document updates. The outputs of this group will be deliverables such as work performance information, change requests, project management plan updates, and project document updates. This group will gather work outcomes, completion dates, milestones, status, quality, costs and schedules. Keeping track of deliverables is very important and feeds into the communication phase of this process group. Knowing change requests, implemented changes, corrective changes, and work performance is critical data that the project manager will need to socialize with stakeholders and sponsors. (Kerzner, 1998)

The final deliverable is the implementation of a BYOD policy. Working towards that deliverable there are milestones, work performance information and possible change requests. The scope of this project is narrow, so although there are no anticipated changes requests, the project team is watching for them. This project will likely start other initiates so it is important to control the scope and keep the project on time and on budget. This process group will enforce these goals.

Jim Horwath, jim.horwath@rcn.com

5.2. Perform Quality Assurance

The Perform Quality Assurance process strives to improve products and processes by adhering to the principle that continuous process improvement provides a cumulative means for improving the quality of a process and deliverables. The process group will look to streamline and remove any waste in processes and procedures. Although the team spent adequate time analyzing and preparing, the team will review the quality of the work performed. Quality assurance is important when the team is performing security reviews of the various mobile devices and mapping their capabilities to current policy and industry standards. Each work stream will be under review from colleagues and stakeholders verifying the completeness and correctness of the effort. It is unlikely, but the quality assurance review may result in change requests, and will help improve the overall processes and procedures for the project. The project manager will add finding from this process group into the formal project documentation so it will become part of the organizational processes for other projects to use in the future. (Frisk, 2011)

5.3. Acquire Project Team

Like any project, the BYOD initiative requires human resources to complete it. The company has a functional structure, and as a result, the project manager has little influence on acquisition and managing of human resources. The BYOD project is a high visibility initiative working with the latest technology, finding resources to work on the project will be easy. Most of the technical staff members are "gadget heads," owning and having an in-depth knowledge of mobile devices and laptop computers. Enticing the best talent for this project should be easy; the chance to work and learn the latest technology is a passion for most technical professionals. Once the corporate rumor mill starting churning out senior leadership was looking to a BYOD strategy, there were vocal volunteers for the project. Technical people have a near religious attachment to the latest devices, they know the technologies really well, and will work off-hours on learning what they do not know. The project manager will formally meet with team leads and department heads, initial conversations provided no resistance from them.

The SharePoint site has a calendar for all team members to use. Team members will use the calendar for scheduling time off (such as vacations or other work

commitments) during their involvement with the project. The calendar will allow the project manager and teammates to understand commitments outside of the BYOD project. During the initial meetings with team members, the project manager discusses expectations of the team; this includes expectations of the project manager and individual team members. During the project when there are issues or changes needed each member will know the process to follow.

5.4. Develop Project Team

(Watson, 1997) discusses developing a project team is creating an environment where team members from different organizations, backgrounds and interests can work together to create the deliverable of a BYOD policy. The project team will comprise members from different areas and responsibilities of the organization, some members will have leadership positions of authority. The project manager is the leader and must assume the leadership role. The project manager will need excellent soft skills so the team jells together, and inspires a respectful, creative working environment. The project manager will be the leader who creates the project vision and shares that vision with a passion so the team willingly follows along to meet the vision. Socializing the engagement standards provides the expectations of how team members plan, execute tasks and communicate the results.

The project team will comprise employees of varying levels of authority and responsibility. Setting ground rules, expectations and fostering an environment of mutual respect is important. Creating and monitoring team chemistry is critical for the success of the project, a team will accomplish more than a collection of super stars working only for themselves. Team development normally follows a maturity model where the team forming, storming, norming, and performing stages. The astute project manager recognizes the different development stages and may be able to help the progression from one stage to another. Great leaders recognize the strengths of their teams and put the team into the best position to succeed. Team development does not stop, continuing to nurture the development of the team will help the team meet the project goals and help the members grow. This period will help staff develop better leadership skills through project responsibilities and by observing the leadership skills of the project manager.

Jim Horwath, jim.horwath@rcn.com

Actions speak louder than words, the project manager will need to develop the team and demonstrate his/her leadership skills.

5.5. Manage Project Team

The BYOD effort will be pulling resources from several different groups within the corporation. It is important the project manager start to define and develop the team once the sponsors and stakeholders identify the team members. This team will need to develop an identity and establish how it will function concerning the project and business as usual activities. Each team member will have individual goals and deliverables, and will understand how their pieces affect others and fit into the final deliverable of the project.

The project manager will have a challenge since the technical people will focus on technical aspects, compliance and legal will focus on regulatory facts, and business representatives will want a policy flexible and non-intrusive. The project manager will have to act as the mediator and setup productive discussions so all opinions are heard and the team weighs all viewpoints for the policy. The project manager may need to reshape attitudes and behaviors of team members towards one another and stress the strength of one unit over the strength of many pieces.

(Richman, 2002) discusses helping the project manager forge a better team and atmosphere, discussion about the reasons of the project, the supporters, the opponents and its affect on the organization is critical. Having the company move forward by modernizing and streamlining through BYOD technologies will help the company keep up the competition and save costs. Selling the project by stressing how this effort will help the organization grow, increase sales and support the long-term viability of the company should help increase awareness. Finally, be reviewing how each team member will help the effort through their participation should result in personal pride and build a team atmosphere. The project manager will also need to address any internal conflicts that will arise and stress professional collaboration. During the review of the various mobile devices, individuals will work together and this should create a bond that will last throughout the project.

5.6. Distribute Information

Distributing information is about getting stakeholders information about the project in a timely manner and in the correct form. The BYOD project is a highly visible project and the stakeholders are eager to move forward and take credit for this effort. Following the communication plan and keeping the stakeholders informed; the project manager should be able to minimize conflicts, complains, and changes that could have a negative effect on the project.   Regardless of the communication vehicle, each communication will have a sender, receiver, and message. Part of the Distribute Information process involves listening to the stakeholders. An effective listener should not only hear, but also listen to stakeholder concerns and opinions. Effective listening will empower the project manager to become an effective communicator because they know the recipients.   The distribution of information produces six outputs: stakeholder notifications, project reports, project presentations, project records, stakeholder feedback, and lessons learned documentation. (Frisk, 2011) The project manager will setup a SharePoint site to store and share documents within the project team. As mentioned earlier, the SharePoint site contains a calendaring system that will allow the team to alert team colleagues to unavailable time.   This will not replace direct communications such as meetings, presentations, and e-mail.   Because the BYOD will become a corporate policy, it is important to have history and documents of the entire process.

5.7. Manage Stakeholder Expectations

Dealing with stakeholders is much different from dealing with members of the project team.   The stakeholders hold powerful positions within the company and normally get their way with little resistance. The BYOD project purposely chose stakeholders in a position of authority to help move the BYOD policy through the company process.   Communication with the stakeholders requires knowing the recipient, social capital, and political shrewdness. Communication with stakeholders is very important – proper communication will help the project; poor communication can cause a project to fail. Communicating with stakeholders allows the project manager raise and resolve issues, request changes, manage concerns and raises potential issues. The stakeholder register is the document the project manage will use when directing communications. This provides names, interest levels, and influence.   The project

manager will keep an issues log that contains current and resolved issues from the BYOD project. The issue log will help prioritize and track problems, contain comments about the project and serve as a source for managing stakeholders. (Newbold, 1998)

5.8. Conduct Procurements

The Executing Process contain a Conduct Procurements process that deals with obtaining responses from vendors, selecting vendors, and awarding a contract to a vendor or vendors. Because this is an internal project, using internal resources, there is no need for additional purchasing or vendor partnerships. The BYOD project is small and does not require any procurement; therefore, this process will not be part of the project.

6. Monitoring & Controlling Process Group

(Richman, 2002) discusses how the Monitoring & Controlling Process Group starts at the beginning of the project and continues throughout the lifetime of the initiative. A properly run project needs continuous monitoring and control to make sure there is sufficient planning, monitoring of work, checks for work quality, meeting of deadlines, and in the end meeting the customer's expectations. Earlier there was a discussion about the Plan-Do-Check-Act cycle during any project. This is a key component of the Monitoring & Controlling Process Group is a key element of this. The project manager will monitor the teams' performance against the corporate specifications of how a corporate policy should look and feel; this will allow the team to gage their progress. Without a standard to measure against, there is little point in planning or executing because any ad-hoc effort will satisfy since there is no standard. Many project managers overlook this critical area; this process group will help deliver projects on time, on budget and to specification.

When there is an issue, the project manager should escalate to the lowest level of management that can make a decision and take corrective actions. When there is a problem requiring escalation, it is important the project manager present at least one, and preferably more solutions to address the issue. This removes the escalation point from presenting a solution that is not in the best interest of the

BYOD project, and it demonstrates the leadership ability of the project manager. Finally, the project manager cannot do everything, attempting to micromanage the project will result in gridlock and an autocratic leadership style. By empowering the team members with checklists and expectations, they can better manage the BYOD effort and free the project manager for other tasks. (Newbold, 1998)

6.1.   Monitor and Control Project Work

(Heldman, 2009) states this process group, Monitor and Control Project Work; encompasses all phases of the project because it deals with comparing performance against the project plan. This process group monitors all the processes in the Initiating, Planning, Executing, and Closing process groups. The collecting of data, measuring results, and reporting on the performance are key activities of this process group. During the BYOD project this process group will compare actual results against the project plan and will allow the project, team to make adjusts via change requests if necessary.   Before the project begins, the project manager needs to consult with the project team and stakeholders to determine their information needs, data collection methods and the frequency of collection so they have the data needed to feel good about the project and make informed decisions when needed.

The project manager will need to monitor many aspects of the project; a few of the important items will receive a discussion here.   The project manager must measure according to the project management plans and determine when there are variances from the plans. The most dangerous item to the success of the project, and an item the manager will need to keep track of is scope verification. Scope creep is the killer of many projects and is notorious for showing up in many projects. There will be temptations to expand the scope of the BYOD effort beyond the policy, stakeholders and sponsors will likely try to jumpstart BYOD activities by trying to expand their influence in this project. Changes during a project are inevitable.   The project manager will need to engage the Change Control progress to introduce changes or implement preventative and corrective actions. The issue log will track project issues so the team can address the issues and keep the project on

Jim Horwath, jim.horwath@rcn.com

track. The project manager will perform risk audits to identify, assign and remediate any risks to the project. (Frisk, 2011)

Based on this discussion, there is a huge amount of work to monitor and control. Anything that is being done needs to be audited, checked, verified, and re-verified before it can be passed on to the customer for sign-off.   The two areas that will require careful monitoring are when the project team researches capabilities, and the gathering of business and regulatory requirements. These two items could present a danger of scope creep and veering from the project charter. The project manager must keep close watch on the team and activities keeping the project focus on the right areas and on track. The data gathered in the process group will provide project status and forecasting to stakeholders and team members.   The data collected may spawn change requests that need to go through the defined approval process.

When the project manager is evaluating work performance, he/she is really comparing expected results versus actual results. The BYOD effort is new to the organization, but policy development is not. The company does have a policy standard and a review process for policies, the team will verify the policy is in alignment with corporate standards.

6.2. Perform Integrated Change Control

There is an old saying, they only thing constant in project management is change. Regardless of planning and preparation, factors will cause change and the project manager will need to deal with changes.   Projects differ from routine operations because they have a limited duration and create something unique as the result.   Changes that occur during the project lifetime need control, documentation, and approval from a source of authority. The project manager must document any changes to the BYOD effort and integrate them into the project baseline.   (Richman, 2002)

The BYOD business environment is young and still evolving, there issues such as data ownership that need addressing, and may eventually have courts

decide the answer. The legal team will monitor external regulations and legal briefs looking for any changes that may affect the BYOD project and environment. If there are any changes, or proposed changes the change control process will engage. The project charter defines the scope of the project, so there are expectations that there will be few if any changes that originate internally. This is not a guarantee, and the team prepared for any potential project changes initiated internally. The expert judgment available from the project team and stakeholders will comprise the change control process. There is a temptation to schedule regular change control meetings; this is not in the best interest of the BYOD project. There should be little change; regular meetings that have nothing but a quick status create apathy in staff. When there is a need for a change control meeting the project manager will schedule it. This will demonstrate to the team how the project manager values their time and any meetings scheduled have important issues.

6.3. Verify Scope

The Verify Scope process looks to obtain formal sign-off acceptance that completed deliverables are satisfactory and meet the stakeholders' expectations. This process formalizes the acceptance of the completed project deliverable of a BYOD policy. The project charter defines who can sign-off that the project is complete, and the project scope statement contains the criteria for a completed BYOD policy. The list of stakeholders who must agree the policy is acceptable and meet their needs is below.

Stakeholder	Stakeholder Interest in the project	Assessment of Impact	Potential Strategies for Gaining Support or Reducing Obstacles
Inspector Gadget	High	Medium	Provide a company sponsored iPad
Lacy Lawless	High	High	Provide a company sponsored iPad
Joseph Safety	Low	High	Provide a company sponsored iPad
Marketing VP	Medium	Medium	Provide a company sponsored iPad
Sales VP	High	High	Provide a company sponsored iPad
Renee Operations	Low	Low	Provide a company sponsored iPad
Terry Budget	Medium	Medium	Provide a company sponsored iPad
Donna Office	Medium	Medium	Provide a company sponsored iPad
Donna Byte	Medium	Medium	Provide a company sponsored iPad

Stakeholder Register

Jim Horwath, jim.horwath@rcn.com

The tool used for scope verification is inspection. Inspection is the verification of the BYOD policy in terms of functionality and quality. The stakeholders and sponsor need to inspect the policy so it meets the business needs of the firm, and meets the policy standards for the firm. All the communications and updates sent by the project manager should pay off at this point in the project. There should be little resistance to the final deliverable because the project manager communicated effectively to the stakeholders during the entire project. This is the time when the project manager can cash in any social capital they have with the stakeholders and sponsors. The stakeholders need to use inspection as their tool to determine if the BYOD policy is acceptable. (Frisk, 2011)

6.4. Control Scope

Controlling the scope deals with changes that affect the dates, deliverables, scope, and project. Change is constant and something you cannot avoid with any project, the project manage must control changes avoid scope creep. Change control will help the project manager deal with change in a controlled manner. The scope of the BYOD project is narrow in scope and should have little area for scope creep, but it is possible. The most likely area is making the policy too prescriptive instead of descriptive. Controlling the project scope will affect the scope statement, WBS, and change requests. The project deliverable is a BYOD policy, the stakeholders and sponsors are going to take a more authoritarian approach so the timelines do not slip and the deliverable does not grow. (Camilleri, 2011)

The project manager will be keeping work performance information throughout the life of the project. This will allow the team to record dates, work effort, and completion of milestones. The narrow focus of this internal project, there should be no deviation from the initial scope. If there is a change, the project manager will identify when the scope changed, indentify what changed, and verify the authorization for the change.

6.5. Control Schedule

Knowing and keeping the project on schedule is the primary concern of the project manager. Deviations to the schedule and changes to the project have a direct influence on the project. Controlling the schedule is the process group where

the project manager monitors the project schedule and focuses on the current state of the project. The project manager will take corrective actions if there are any issues to the project schedule. The schedule baseline, schedule management plan and performance reports are the inputs that will produce performance measurements as outputs. During the BYOD project, the project manager will need to be flexible and use the schedule as a guide and not as gospel. The BYOD project has a well-defined scope and should have little change to the deliverable. The project manager will use the corporate project management tool that will allow them to track scheduling electronically. (Heldman, 2009)

The project schedule will contain the daily schedule and the items the team is currently working on, this will help with managing and controlling resources. The BYOD project will leverage existing organizational process assets for the policy. The company has a defined policy structure, and policies and procedures for managing projects. Using work performance information gives the project manager information on work in progress, not started, and finished. This information can help the project manager indentify problem and strength areas. The project manager will not be using monetary based formulas such as schedule performance index (SPI), or schedule variance (SV) because this is an internal project using internal resources without a charge back system.

Because there is no actual budget for this project, performance reviews will be a key item with controlling the schedule and determining how the project is progressing. The project schedule has start and finish dates for each task, comparing these against the actual start and completion dates. The variance between the planned and actual provides evidence of how the project is progressing. As the project progresses, the project manager may reallocate resources or add them to existing or new tasks. Moving resources around will help the control the schedule and allow fast tracking, compression or crashing if necessary. Right sizing resources can help reduce task durations and help compensate for areas where there are issues and potential problems. Keeping

Jim Horwath, jim.horwath@rcn.com

control of the schedule will result in keeping control of the BYOD project. (Newbold, 1998)

7. Closing Process Group

(Heldman, 2009) states The Closing Process Group formally brings to an end the activities of the project. When the project enters this stage, there is implementation of the BYOD policy and the project team is meeting to verify the achievement of this goal. The project had a well-defined goal, creation and implementation of a BYOD policy. Many projects skip this process group, once the project meets the objectives many organizations move on. Skipping this process group denies an organization the opportunity to learn from the victories and opportunities for improvement for future projects. Reviewing the documentation from the project allows and organization to adopt changes for future projects. This is the stage where the project team obtains formal acceptance and approval the stakeholders.

(Richman, 2002) discusses the importance of closing a project. The project manager needs to verify all there is no outstanding work or commitments left for the team. The project manager should perform employee evaluations and review the project with team members. The project manager should thank the team and ensure they have a smooth transition back to their daily responsibilities or other projects.

7.1. Close Procurements

The BYOD project was internal and did not require any external resources or contracts. Due to the internal nature, size and limited scope of the BYOD project, there is no need to close any procurement. There is no need to exercise this process group so there is no work the project manager needs to do here.

7.2. Close Project

The process group closing the project deals with gathering all the project documentation and receiving formal acceptance of the BYOD policy from the stakeholders. The project manager should verify all the documentation is correct and current before sending anything out. Holding a formal project termination meeting

Jim Horwath, jim.horwath@rcn.com

allows the project manager to ensure there is nothing outstanding, do staff evaluations, document lessons learned, and prepare to have the BYOD policy become part of the organizational assets and transitioned to ongoing support. Closing the project means receiving formal acceptance of the BYOD deliverable demonstrating the project met the targeted deliverable. When all the documents and records are current, the project manager will need to file them with other organizational project documents.

Documentation of successes and failures is important because it will allow other projects to learn from the BYOD project and capitalize on its lessons learned. In the future, these documents may help if there are any internal or external project audits. Many people cringe and shake in fear when they hear the word audit, but an audit of the project is a good idea because it compliments lessons learned. The organization can learn what went well and what did not go so well so they can make improvements for future projects. The lessons learned and project audits strengthen a company for future projects and endeavors. As a final gesture, the project manager should have a social gathering that demonstrates a thank you from sponsors and company for a job well done. (Heldman, 2009)

8. Conclusion

The concept of BYOD is a topic that business is embracing for its flexibility and cost savings. Delivering a corporate BYOD policy will be the foundation for further BYOD initiates and allow the company to remain competitive. The BYOD policy initiative was a small project that produced a deliverable that the company will use to spawn other projects. Projects should be temporary endeavors with a defined start and end date, along with an objective. When the project deliverable meets the stakeholder's expectations, the project is complete and can become part of the ongoing operations. Applying the discipline of project management will help, but not guarantee the success of a project. Although the project was small and leveraged internal resources, using project management discipline drove the project towards a timely completion. Attempting a project without preparation and planning will result in chaos and a less superior deliverable as a result.

Jim Horwath, jim.horwath@rcn.com

Project management provides a proven framework and discipline for achieving objectives. The project manager will have the documentation and tools to show superiors and colleagues how the project is doing, and implement corrective actions when presented with opportunities to overcome obstacles. At the completion of the project, the project documentation will become part of the organizational assets and help other endeavors to succeed. In a competitive business environment, project management can help companies succeed where other fail. Projects are critical to succeeding in business; using tools such as project management will help ensure the longevity of an organization.

9. References

Camilleri, E. (2011). *Project success: critical factors and behaviours*. Farnham: Gower
    Pub..

Frisk, J. (2011). *Management 525 Project Management and Effective Communications*
    for Security Professionals and Manager: 525.1 Project Management Structure &
    Framework. Bethesda: SANS.

Frisk, J. (2011). *Management 525 Project Management and Effective Communications*
    for Security Professionals and Manager: 525.2 Project Charter and Scope
    Management. Bethesda: SANS.

Frisk, J. (2011). *Management 525 Project Management and Effective Communications*
    for Security Professionals and Manager: 525.3 Time and Cost Management.
    Bethesda: SANS.

Frisk, J. (2011). *Management 525 Project Management and Effective Communications*
    for Security Professionals and Manager: 525.4 Communication and Human
    Resources. Bethesda: SANS.

Jim Horwath, jim.horwath@rcn.com

Frisk, J. (2011). *Management 525 Project Management and Effective Communications for Security Professionals and Manager: 525.5 Quality and Risk Management*. Bethesda: SANS.

Frisk, J. (2011). *Management 525 Project Management and Effective Communications for Security Professionals and Manager: 525.6 Procurement and Project Integration*. Bethesda: SANS.

Heldman, K., Mangano, V., Wagner, T. A., & Zaval, L. K. (2009). *PMP project management professional exam certification kit* .. Indianapolis, Ind.: Sybex, an imprint of Wiley.

Johnson, K. (2011). *Security 571: Mobile Device Security*. Bethesda: SANS.

Kerzner, H. (1998). *In search of excellence in project management: successful practices in high performance organizations*. New York: Van Nostrand Reinhold.

Managing projects and programs. (1989). Boston, Mass.: Harvard Business School Press.

Newbold, R. C. (1998). *Project management in the fast lane: applying the theory of constraints*. Boca Raton, Fla.: St. Lucie Press.

PMBOK, P. (2008). *A guide to the project management body of knowledge (PMBOKÂ© Guide): PMBOKÂ© Guide.* (4th ed.). Newtown Square, Pa.: Project Management Institute.

Portny, S. E. (2007). *Project management for dummies* (2nd ed.). Hoboken, NJ: Wiley Pub..

Portny, S. E. (2007). *Project management for dummies* (2nd ed.). Hoboken, NJ: Wiley Pub..

Richman, L. L. (2002). *Project management step-by-step*. New York: Amacom.

Micro. (n.d.). BYOD - Consumerization of IT & Mobility - Trend Micro USA. *Content security software - Internet Security & Cloud - Trend Micro USA*. Retrieved February 11, 2013, from http://www.trendmicro.com/us/enterprise/challenges/it-consumerization/index.html

Watson, C. S., & Williams, D. J. (1997). *Managing projects for personal success*. London: International Thomson Business Press.

Wright, J. (2012). *Security 575: Mobile Device Security - Mobile Device Threats, Policies, and Security Models* . Bethesda: SANS.

10. Appendix A

Knowledge Area	Initiating Process Group	Planning Process Group	Executing Process Group	Monitoring & Controlling Process Group	Closing process Group
Project Integration Management	4.1 Develop Project Charter	4.2 Develop Project Management	4.3 Direct and Manage Project Execution	4.4 Monitor and Control Project Work 4.5 Perform Integrated Change Control	4.6 Close Project or Phase
Project Scope Management		5.1 Collect Requirements 5.2 Define Scope 5.3 Create WBS		5.4 Verify Scope 5.5 Control Scope	

Jim Horwath, jim.horwath@rcn.com

Project Time Management		6.1 Define Activities 6.2 Sequence Activities 6.3 Estimate Activity Resources 6.4 Estimate Activity Durations 6.5 Develop Schedule		6.6 Control Schedule	
Project Cost Management		7.1 Estimate Costs 7.2 Determine Budget		7.3 Control Costs	
Project Quality Management		8.1 Plan Quality	8.2 Perform Quality Assurance	8.3 Perform Quality Control	
Project Human Resource Management		9.1 Develop Human Resource Plan	9.2 Acquire Project Team 9.3 Develop Project Team 9.4 Manage Project Team		
Project Communication Management	10.1 Identify Stakeholders	10.2 Plan Communications	10.3 Distribute Information 10.4 Manage Stakeholder Expectations	10.5 Report Performance	
Project Risk Management		11.1 Plan Risk Management 11.2 Identify Risks 11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis 11.5 Plan Risk Responses		11.6 Monitor and Control Risks	
Project Procurement		12.1 Plan Procurements	12.2 Conduct Procurements	12.3 Administer Procuremen	**12.4** Close Procurements **(Not needed)**

Jim Horwath, jim.horwath@rcn.com

Manageme nt				ts	