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SKU: 9780134606996-SOLUTIONS

2 Collaboration Information Systems

LEARNING OBJECTIVES

Q2-1 Describe the two key characteristics of collaboration.
Q2-2 Describe three criteria for successful collaboration.
Q2-3 Explain the four primary purposes of collaboration.
Q2-4 Describe the requirements for a collaboration information system.
Q2-5 Explain how to use collaboration tools to improve team communication.
Q2-6 Explain how to use collaboration tools to manage shared content.
Q2-7 Explain how you can use collaboration tools to manage tasks.
Q2-8 Discuss which collaboration IS is right for your team.
Q2-9 Discuss your ideas on how we may collaborate in 2027.

CHAPTER OUTLINE

Q2-1 What are the two key characteristics of collaboration?
- Importance of constructive criticism
- Guidelines for giving and receiving constructive criticism
- Warning!

Q2-2 What are three criteria for successful collaboration?
- Successful outcome
- Growth in team capability
- Meaningful and satisfying experience

Q2-3 What are the four primary purposes of collaboration?
- Becoming informed
- Making decisions
  - Operational decisions
  - Managerial decisions
  - Strategic decisions
  - The decision process
  - The relationship between decision type and decision process
  - Decision making and collaboration systems
- Solving problems
- Managing projects
  - Starting phase
  - Planning phase

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  - Doing phase
  - Finalizing phase

Q2-4 What are the requirements for a collaboration information system?

- The five components of an IS for collaboration
- Primary functions: communication and content sharing

Q2-5 How can you use collaboration tools to improve team communication?

Q2-6 How can you use collaboration tools to manage shared content?

- Shared content with no control
- Shared content with version management on Google Drive
- Shared content with version control
  - Permission-limited activity
  - Document checkout
  - Version history
  - Workflow control

Q2-7 How can you use collaboration tools to manage tasks?

- Sharing a task list on Google Drive
- Sharing a task list using Microsoft SharePoint

Q2-8 Which collaboration IS right for your team?

- Three sets of collaboration tools
  - The *minimal* collaboration tool set
  - The *good* collaboration tool set
  - The *comprehensive* collaboration tool set
- Choosing the set for your team
- Don't forget procedures and people!

Q2-9 2027?

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SECURITY GUIDE

Evolving Security

1. *This guide emphasizes how information security strategy has changed over the past two decades due to advancements in technology. What do these changes mean for you personally in managing and securing your own personal systems and data?* Private technology users encounter the same types of risks that companies encounter. If your tablet or smartphone is lost or stolen, the data on those devices can be compromised with minimal effort. If you happen to use Dropbox, this means that all of your personal photos, documents, financial statements, and even tax returns may be

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accessed by a third party. Furthermore, if you are tech savvy and happen to have a VPN set up to your home network, nefarious actors could access systems and other devices on your home network.

2. *Take a few minutes to conduct an Internet search on insider threats. Besides some of the high-profile cases of employees stealing and selling or distributing corporate data, what other examples can you find?* Students will find a vast array of examples based on their search terms. The key point of this question is to help students recognize that insider threats are common and that the risks associated with insider threats are severe.

3. *What kinds of collaboration tools have you used to complete class assignments and projects? Could these collaboration tools pose a risk to you? How?* Students have likely used file-sharing software like Dropbox to compile and access team resources. Dropbox users often forget to end shared access to folders and files when the project ends and thereby leave vulnerabilities open to any device linked to their Dropbox account if a former collaborator were to upload a malicious file. Students have also likely used Google Docs – other team members can easily access information shared in a Google Doc and disseminate that information to other friends or teams without the consent of the content creator.

4. *How do you feel about the trend of companies using new technologies to monitor their employees? Would you want to work for a company that uses monitoring technologies? Why or why not?* The response to this question is clearly subjective and student responses will be mixed. Some students will likely encourage any measure that can be taken to secure the systems and data at their place of employment while others will consider these technologies an invasion of privacy.

5. *Monitoring digital activity is not exclusive to the workplace. Internet service providers monitor your Web traffic and many Web sites monitor everything that you do while interacting with their site. What does this mean for users working from home? How might an ISP's monitoring activities be a threat to corporations?* The main tension in information security used to be between security and accessibility. Today a new tension between security and privacy has emerged. Privacy is clearly being sacrificed in most digital environments and the implications of this trend are difficult to quantify. Privacy will be a perpetual issue as technology continues to become more and more pervasive over time.

SO WHAT?

Augmented Collaboration

1. *This feature provides two examples of possible business uses for the HoloLens. Think about the future impact of this innovation by identifying other industries that may benefit from the development of augmented reality technology.*

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Student answers will vary. There are many types of situations where the work of someone could be guided by a remote expert who was able to view the field of view at the local site and provide expert direction. As an example, insurance companies who are dealing with post-disaster claims could use augmented reality technology to replace the highly-trained on-site insurance adjustment team with local agents who could perform immediate inspections and claims processing with the guidance of experts. Pilots or astronauts could receive more detailed instruction from experts when faced with an emergency situation. A chef could be assisted by a specialist on how to prepare a new type of dish. Law enforcement and military personnel could receive assistance in making decisions on how to proceed in high-risk and/or high-stress situations.

2. *What is the difference between the Oculus Rift and the Microsoft HoloLens?*
   Oculus Rift is a virtual reality headset geared to 3D gaming and new forms of social media. The Microsoft HoloLens is a mixed-reality headset, meaning that the user can see the real world through the device while the interface, videos, and other content created by the device are superimposed on top of the real world.

3. *How could this type of technology benefit your collaborations as a student? Think about how you interact with tutors and fellow students on group projects and how you seek and receive help from your instructor.*
   Students who are working on homework problems could communicate with an instructor or tutor and enable the remote expert to see the student's solution through the HoloLens. The remote expert could diagram on the headset interface places where the solution is wrong and make suggestions for corrections. When collaborating with fellow students, joint editing of documents might be feasible.

4. *Privacy concerns are one of the factors that prompted Google to delay a full release of the Google Glass. What are the security and privacy implications of releasing a product like the HoloLens?* Any time information is transferred through the Internet it is at risk of being intercepted and/or compromised. While industries like health care, higher education, and law enforcement can all benefit from this type of innovation, interactions and data exchanged in these contexts are sensitive and require robust regulations. Patient health data, student transcripts, and criminal histories all require security and privacy considerations, and live feeds of interpersonal dialogues occurring in these contexts would require similar if not more robust security and privacy solutions than the protocols that exist today.

5. *Virtual reality and augmented reality headsets are currently a novelty, but that will change over the coming years. How might these new innovations affect collaboration and business 10 or 20 years from now?*
   As with any new technology, over the next decades the technological issues and societal issues will be dealt with and will evolve. Use of these augmented reality headsets may become standard practice and widely accepted as a part of our collaborative toolkit. Concerns over privacy may be minimized through enhancements to security systems.

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USING YOUR KNOWLEDGE

2-4. This exercise requires you to experiment with OneDrive. You will need two Office IDs to complete this exercise. The easiest way to do it is to work with a classmate. If that is not possible, set up two Office accounts, using two different Outlook.com addresses.

a. Go to www.onedrive.com and sign in with one of your accounts. Create a memo about collaboration tools using the Word Online. Save your memo. Share your document with the email in your second Office account. Sign out of your first account.

(If you have access to two computers situated close to each other, use both of them for this exercise. If you have two computers, do not sign out of your Office account. Perform step b and all actions for the second account on that second computer. If you are using two computers, ignore the instructions in the following steps to sign out of the Office accounts.)

No answer required; a task to be performed by the student. (LO: 6, Learning Outcome: Explain how IS can enhance systems of collaboration and teamwork, AACSB: Information Technology)

b. Open a new window in your browser. Access www.onedrive.com from that second window and sign in using your second Office account. Open the document that you shared in step a.

No answer required; a task to be performed by the student. (LO: 6, Learning Outcome: Explain how IS can enhance systems of collaboration and teamwork, AACSB: Information Technology)

c. Change the memo by adding a brief description of content management. Do not save the document yet. If you are using just one computer, sign out from your second account.

No answer required; a task to be performed by the student. (LO: 6, Learning Outcome: Explain how IS can enhance systems of collaboration and teamwork, AACSB: Information Technology)

d. Sign in on your first account. Attempt to open the memo and note what occurs. Sign out of your first account and sign back in with your second account. Save the document. Now, sign out of your second account and sign back in with the first account. Now attempt to open the memo. (If you are using two computers, perform these same actions on the two different computers.)

No answer required; a task to be performed by the student. (LO: 6, Learning Outcome: Explain how IS can enhance systems of collaboration and teamwork, AACSB: Information Technology)

e. Sign in on your second account. Re-open the shared document. From the File

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menu save the document as a Word Document. Describe how OneDrive processed the changes to your document.
No answer required; a task to be performed by the student. (LO: 6, Learning Outcome: Explain how IS can enhance systems of collaboration and teamwork, AACSB: Information Technology)

COLLABORATION EXERCISE 2

2-5. Build a communication method:

a. *Meet with your team and decide how you want to meet in the future. Use Figure 2-8 as a guide.*
b. *From the discussion in a, list the requirements for your communication system.*
c. *Select and implement a communication tool. It could be Skype, Google Hangouts, or Skype for Business.*
d. *Write procedures for the team to use when utilizing your new communication tool.*

No specific answer given – an activity to be performed by the students. (LO: 1, Learning Outcome: Explain how IS can enhance systems of collaboration and teamwork, AACSB: Information Technology)

2-6. Build a content-sharing method:

a. *Meet with your team and decide the types of content that you will be creating.*
b. *Decide as a team whether you want to process your content using desktop applications or cloud-based applications. Choose the applications you want to use.*
c. *Decide as a team the server you will use to share your content. You can use Google Drive, Microsoft OneDrive, Microsoft SharePoint, or some other server.*
d. *Implement your content-sharing server.*
e. *Write procedures for the team to use when sharing content.*

No specific answer given – an activity to be performed by the students. (LO: 1, Learning Outcome: Explain how IS can enhance systems of collaboration and teamwork, AACSB: Information Technology)

2-7. Build a task management method:

a. *Meet with your team and decide how you want to manage tasks. Determine the task data that you want to store on your task list.*
b. *Decide, as a team, the tool and server you will use for sharing your tasks. You can use Google Drive, Microsoft OneDrive, Microsoft SharePoint, or some other facility.*
c. *Implement the tool and server in step a.*
d. *Write procedures for the team to use when managing tasks.*

No specific answer given – an activity to be performed by the students. (LO: 1, Learning Outcome: Explain how IS can enhance systems of collaboration and teamwork, AACSB: Information Technology)

2-8. Using your new collaboration information system, answer the following questions:

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a. *What is collaboration? Reread Q1 in this chapter, but do not confine yourselves to that discussion. Consider your own experience working in collaborative teams, and search the Web to identify other ideas about collaboration. Dave Pollard, one of the authors of the survey on which Figure 2-1 is based, is a font of ideas on collaboration.*

Student answers will vary. Their ideas on collaboration should focus on people working together to achieve a common goal, result, or work product. Feedback and iteration is involved so that the results of the collaborative effort are greater than could be produced by any of the individuals working alone. (LO: 1, Learning Outcome: Explain how IS can enhance systems of collaboration and teamwork, AACSB: Reflective Thinking)

b. *What characteristics make for an effective team member? Review the survey of effective collaboration skills in Figure 2-1 and the guidelines for giving and receiving critical feedback and discuss them as a group. Do you agree with them? What skills or feedback techniques would you add to this list? What conclusions can you, as a team, take from this survey? Would you change the rankings in Figure 2-1?*

Student answers will vary, depending on their team experiences. (LO: 1, Learning Outcome: Explain how IS can enhance systems of collaboration and teamwork, AACSB: Reflective Thinking)

c. *What would you do with an ineffective team member? First, define an ineffective team member. Specify five or so characteristics of an ineffective team member. If your group has such a member, what action do you, as a group, believe should be taken?*

Student answers will vary. The characteristics of an ineffective team member will include lack of interest and commitment, unwillingness to give or take criticism, unwillingness to listen, and indifference. Students are typically not too tolerant of ineffective team members, but are not always willing to boot them off the team, preferring instead to just work around them. (LO: 1, Learning Outcome: Explain how IS can enhance systems of collaboration and teamwork, AACSB: Reflective Thinking)

d. *How do you know if you are collaborating well? When working with a group, how do you know whether you are working well or poorly? Specify five or so characteristics that indicate collaborative success. How can you measure those characteristics?*

Student answers will vary. Characteristics of collaborative success center on the output of the group being superior to the output that could have been created by an individual working alone, including such things as being more productive, more creative, and generating more and better ideas. (LO: 1, Learning Outcome: Explain how IS can enhance systems of collaboration and teamwork, AACSB: Reflective Thinking)

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e. Briefly describe the components of your new collaboration IS.
No specific answer given – student answers will vary depending on the work done in parts 1-3 of this exercise. (LO: 1, Learning Outcome: Explain how IS can enhance systems of collaboration and teamwork, AACSB: Information Technology)

f. Describe what your team likes and doesn't like about using your new collaboration system.
No specific answer given – student answers will vary depending on the work done in parts 1-3 of this exercise. (LO: 1, Learning Outcome: Explain how IS can enhance systems of collaboration and teamwork, AACSB: Reflective Thinking)

CASE STUDY 2

Eating Our Own Dog Food

2-9. *In your own words, define* dogfooding. *Do you think dogfooding is likely to predict product success? Why or why not? When would dogfooding not predict product success?*
The term is used to describe an organization that utilizes its own products in its day-to-day business operations. A company that demonstrates commitment to its own products by using them exclusively should gain useful insight into the products' actual performance in realistic settings. Assuming those insights are used to improve the product, then it seems likely the product has an increased likelihood of success. If the use of the product is mandated but is done only for appearance (e.g., a car dealer that requires its salespeople to drive only the car brands sold by the dealership), then dogfooding probably does not predict product success. (LO: 1, Learning Outcome: Explain how IS can enhance systems of collaboration and teamwork, AACSB: Reflective Thinking)

2-10. *Explain how this team uses the shared whiteboard to generate minutes. What are the advantages of this technique?*
The whiteboard was used by the meeting participants to list the initial agenda, create new task lists, and indicate task completion. Once the whiteboard contents were saved, there was no forgetting of the topics discussed, completed, or planned (a common occurrence in meetings when note taking is absent or spotty). All the accomplishments and plans from the meeting were recorded on the whiteboard and saved as a resource for the team. (LO: 4, Learning Outcome: Explain how IS can enhance systems of collaboration and teamwork, AACSB: Information Technology)

2-11. *Explain how this team uses alerts. Summarize the advantages to this team of using alerts.*
Alerts were established so that when a task was added to the task list and assigned to a team member, that member received an email notifying him/her of the task. This way the alert brought the new task to the attention of the right person in a timely way.

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(LO: 4, Learning Outcome: Explain how IS can enhance systems of collaboration and teamwork, AACSB: Information Technology)

2-12. Explain why this team does not use Skype for Business.

Skype for Business was not used by the team because it was not allowed to be installed by the publisher, Pearson. It is necessary to ensure that a tool that is being contemplated for use does conform to the organization's IT standards. (LO: 4, Learning Outcome: Explain how IS can enhance systems of collaboration and teamwork, AACSB: Information Technology)

2-13. Summarize the advantages to this team of using SharePoint.

SharePoint is a powerful tool for content sharing. SharePoint enabled this team to keep track of many documents that were evolving through a series of edit/review cycles; keep track of many tasks; and communicate effectively despite being geographically dispersed. As a result, the team was able to complete work on a big project efficiently and effectively without the expense and hassle of traveling. (LO: 4, Learning Outcome: Explain how IS can enhance systems of collaboration and teamwork, AACSB: Information Technology)

2-14. Explain how you think Office 365 Professional contributes to the efficiency of the development team. How might it contribute to the quality of this text?

The most important contributions of Office 365 Professional to the efficiency of the textbook development team are the improvement in communication amongst the team and the control of the textbook content as it is being created and reviewed in preparation for publishing. Because of these capabilities, we can expect that the textbook is of higher quality. More edit/review cycles can be completed, so the textbook content is more refined. In addition, more current content can be incorporated into the textbook because the edit/review cycles do not take as much time as in the past. (LO: 4, Learning Outcome: Explain how IS can enhance systems of collaboration and teamwork, AACSB: Information Technology)

2-15. Which aspects of Office 365 Professional described here could have value to you when accomplishing student team projects? Explain why they add value compared to what you are currently doing.

Student answers will vary. Students will probably find the text chat, audio and videoconferencing, online content sharing, content management and control, discussion forums, wikis, blogs, email, and concurrent document editing to be useful for student projects. Compared to traditional student group processes, there should be more meaningful participation by group members, less confusion about the status of the project, more satisfaction with the group process, higher quality group product, and more satisfaction with the group product. (LO: 4, Learning Outcome: Explain how IS can enhance systems of collaboration and teamwork, AACSB: Reflective Thinking)

For an example illustrating the concepts found in this chapter, view the videos in

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Security Guides

Chapter 1 - Password Etiquette

1. Here is a line from Shakespeare's Macbeth: "Tomorrow and tomorrow and tomorrow, creeps in its petty pace." Explain how to use these lines to create a password. How could you add numbers and special characters to the password in a way that you will be able to remember?

   There are several correct ways to create a password from this line. One way might be to take the first letters from each word. The password would then be "tatatciipp". You could then capitalize a couple of the letters and add in a special character or numbers. The resulting password could be "T&2morrow&tciiPP". This would be a very secure password.

2. List two different phrases that you can use to create a strong password. Show the password created by each.

   There will be many correct answers to this question. Using a passphrase to create a password is done by using the first letters in the phrase. Then changing some of the letters by substituting in special characters, numbers, or changes of case. For example, the phrase, "I never count my chickens before the eggs have hatched!" could create the password "iNcmCHKNSb4t3ggsHH!" This would be a great password.

3. One of the problems of life in the cyberworld is that we all are required to have multiple passwords—one for work or school, one for bank accounts, another for eBay or other auction sites, and so forth. Of course, it is better to use different passwords for each. But in that case you have to remember three or four different passwords. Think of different phrases you can use to create a memorable, strong password for each of these different accounts. Relate the phrase to the purpose of the account. Show the passwords for each.

   There will be many correct answers to this question. For example, a passphrase for a university account may look something like, "I will graduate from state university before 2020 or bust!" This could yield a password that would look like "IwgfSUb42020ORB!"

4. Explain proper behavior when you are using your computer and you need to enter, for some valid reason, another person's password.

   In this case, say to the other person, "We need your password," and then get out of your chair, offer your keyboard to the other person, and look away while she enters the password. Among professionals working in organizations that take security seriously, this little "do-si-do" move—one person getting out of the way so another person can enter her password—is common and accepted.

5. Explain proper behavior when someone else is using her computer and that person needs to enter, for some valid reason, your password.

   If someone asks for your password, do not give it out. Instead, get up, go over to that person's machine, and enter your own password yourself. Stay present while your password is in use, and ensure that your account is logged out at the end of the activity. No one should mind or be offended in any way when you do this. It is the mark of a professional.

Chapter 2 - Evolving Security

1. This guide emphasizes how information security strategy has changed over the past two decades due to advancements in technology. What do these changes mean for you personally in managing and securing your own personal systems and data?

   Private technology users encounter the same types of risks that companies encounter. If your tablet or smartphone is lost or stolen, the data on those devices can be compromised with minimal effort. If you happen to use Dropbox, this means that all of your personal photos, documents, financial statements, and even tax returns may be accessed by a third party. Furthermore, if you are tech savvy and happen to have a VPN set up to your home network, nefarious actors could access systems and other devices on your home network.

2. Take a few minutes to conduct an Internet search on insider threats. Besides some of the high-profile cases of employees stealing and selling or distributing corporate data, what other examples can you find?

   Students will find a vast array of examples based on their search terms. The key point of this question is to help students recognize that insider threats are common and that the risks associated with insider threats are severe.

3. What kinds of collaboration tools have you used to complete class assignments and projects? Could these collaboration tools pose a risk to you? How?

   Students have likely used file-sharing software like Dropbox to compile and access team resources. Dropbox users often forget to end shared access to folders and files when the project ends and thereby leave vulnerabilities open to any device linked to their Dropbox account if a former collaborator were to upload a malicious file. Students have also likely used Google Docs – other team members can easily access information shared in a Google Doc and disseminate that information to other friends or teams without the consent of the content creator.

4. How do you feel about the trend of companies using new technologies to monitor their employees? Would you want to work for a company that uses monitoring technologies? Why or why not?

   The response to this question is clearly subjective and student responses will be mixed. Some students will likely encourage any measure that can be taken to secure the systems and data at their place of employment while others will consider these technologies an invasion of privacy.

5. Monitoring digital activity is not exclusive to the workplace. Internet service providers monitor your Web traffic and many Web sites monitor everything that you do while interacting with their site. What does this mean for users working from home? How might an ISP's monitoring activities be a threat to corporations?

   The main tension in information security used to be between security and accessibility. Today a new tension between security and privacy has emerged. Privacy is clearing being sacrificed in most digital environments and the implications of this trend are difficult to quantify. Privacy will be a perpetual issue as technology continues to become more and more pervasive over time.

Chapter 3 - Hacking Smart Things

1. How many devices in your home are connected to the Internet? How much time do you spend daily, weekly, or monthly trying to ensure that these devices have the latest software and/or are secure? Think about the implications of maintaining dozens of devices with Internet access.

   Managing the information systems infrastructure at a large business or government agency takes a tremendous amount of time and effort. It can be equally inconvenient for a homeowner to ensure that the operating system and software on a few home computers is up to date and patched. Managing a household of dozens of Internet-connected devices could prove to be the biggest hurdle inhibiting people from protecting themselves from any number of threats that could occur with a home filled with Internet-connected devices.

2. The article discusses the potential threat of a hacker accessing a vehicle and downloading data about the car's performance and operations. Aside from a malicious hacker acting alone, are there any businesses or government agencies that could also benefit from accessing these data?

   A number of government agencies have been found to be collecting data and spying on American citizens without the proper authority. It is possible that as more and more devices have Internet access, intelligence agencies can take advantage of these devices and raise their intelligence-gathering operations to an even more pervasive level. On the business side, car insurance companies could be tempted to illegally access the data stored in vehicles to learn more about how the drivers they are covering are operating their vehicles, and potentially change insurance premiums for drivers who are operating their vehicle in a manner that introduces higher risk and thus higher likelihood of a claim.

3. How has this article changed your perception of the Internet of Things? Are you still willing to risk invasions of privacy or security vulnerabilities for convenience or to have "cool" new gadgets?

   This is a subjective question – student responses will vary.

4. The Internet of Things is not solely focused on home automation or private consumer products. Businesses are using the Internet of Things to manage supply chains and streamline various business processes. What benefits or risks are associated with businesses adopting new Internet-connected devices?

   As businesses have access to more and more data about supply chains and other important processes they can mitigate demand-forecasting risks like the bullwhip effect by more accurately managing the flow of resources in the supply chain. In the age of the Internet of Things, shipping containers and even individual products can be tracked around the globe in real time. However, as any device with an Internet connection can be compromised, competing firms could access shipping and other supply chain information to learn more about competitors' business processes and raw material flows to anticipate the supply of competing products. This concern is not far-fetched as companies regularly hack into the information systems of competitors to steal intellectual property.

Chapter 4 - Poisoned App-les

1. Think about your use of various phone and computer apps and your interactions on social media. Have you ever experienced a breach of your privacy or personal data? What was the impact of this breach? Were you able to resolve it or were you forced to live with the consequences?

   The response to this question clearly depends on the previous experiences of students in the class. While it is likely that a handful of students will have had some sort of privacy violation, be sure to call on students who are clearly comfortable sharing their experience.

2. Try to identify three different strategies that any smartphone user could follow in an attempt to minimize the risk of installing and using dangerous/risky apps.

   (1) Users can avoid downloading apps with poor reviews and complaints about the functionality; these apps may be designed specifically for the purposes of accessing data and sharing it with 3rd parties. (2) Pay close attention to usage agreements when downloading new software/apps. (3) Avoid free apps as there are usually hidden costs. (4) Remove any apps on your phone that you are no longer using; there is no reason to jeopardize your data and privacy for an app that is providing no benefit to the user. (5) Carefully manage app settings on the device. (6) Monitor tech news or Twitter feeds to stay on top of announcements concerning compromised or dangerous pieces of software.

3. Reflect on the tradeoff between free apps and the potential privacy risks that these apps may introduce. Has this article changed your perception of free apps and will you continue to download these apps in the future?

   The response to this question is clearly subjective in nature but can be used to generate a discussion in the class. Some students will likely express their concern and will be more hesitant when downloading apps while others will not alter their behavior. Use these varying opinions as an opportunity to demonstrate how differently people think about and approach securing their data/systems.

4. Conduct an Internet search to identify if there have been any recent security vulnerabilities introduced through app stores. If so, conduct a brief investigation to see which apps are involved, how many people have been impacted, and whether or not the vulnerability has been resolved.

   The outcomes of these searches will depend on current events. If there have not been any recent incidents, this can be used as an indication of how hard Apple and other companies are working to avoid tarnishing their brand and reputation.

Chapter 5 - Big Data…Losses

1. Take a moment to think about how the trend of capturing and storing data has impacted you. What types of data have been generated about you and where are these data located? What data have you generated yourself? Can you do anything to manage access to or the security of these data?

   The bulk of data generated by a college student will be in social media. This is a great opportunity to point out that comments, photos, and videos uploaded by students to social media platforms will likely remain on the Internet forever. Other data points will include articles about sports or fine arts accomplishments in high school, medical data kept by doctors and hospitals, etc. The reality is that system/social media platform users can often do very little to manage the security and access to their own data; we simply have to trust the personnel managing those systems to ensure that our data are protected.

2. Search the Web to identify new data-driven applications that Watson is being used for as IBM continues to leverage and market the power of this supercomputer.

   Even a casual search will reveal that Watson is being used or considered for countless applications. Students will find examples of everything from health and business applications to fantasy football and even cooking. This question should generate some interesting discussions on the power of big data and how technology and the big data movement can impact virtually every industry.

3. The article mentions the continuing technological tension between security and convenience. How has this tension impacted your own interactions with computers? Do you err on the side of security or convenience when creating and managing your own security "policies"?

   The best example of how this tension plays out in the life of students will be the security policies of their university. Students have to create a password to access registration, tuition, and course content systems. They will also have to change their password somewhat regularly. These are basic security measures and are likely not very demanding. Regarding their own security "policies", each student has to decide whether or not to password-lock their phone, if they use security on the WiFi in their apartment (and if so what type of security), and what privacy settings they will choose to use on social media sites.

4. Have you or anyone you know purchased home automation devices? Based on a lack of emphasis on security found in many of these devices, are you willing to risk security for the convenience that these devices provide?

   Students will respond to this question differently depending on their interest in technology and their aversion to risk. Some students who are excited about technology, data, and automation will risk the security vulnerabilities of these devices for the sake of the "cool" factor or the convenience it provides. Other students may simply not care about gadgets or having access to data about household devices. An important point to make here is that there is a difference in how people perceive technology and that there will always be even a small subset of people who are willing to sacrifice security for the convenience or value technology can provide.

Chapter 6 - From Anthem to Anathema

1. How vulnerable are you right now to having your data stolen? Think about all of the cloud services that you use.

   There is no easily quantifiable metric to determine one's vulnerability to data theft, however, the more cloud services and online accounts a user has, the greater the chance that a user's data will be stolen in a future breach. Users should also keep in mind that lost or stolen devices can be used to steal data, too.

2. What are some of the ways that you can mitigate the negative outcomes of your personal data being stolen?

   One of the best methods for mitigating the negative outcomes of data theft is awareness. Students should try to monitor current events to stay informed on data breaches and use credit monitoring services to make sure that stolen social security numbers are not used for criminal purposes. Students should also be judicious in choosing what data they store online, in deciding the types of online accounts that they will create and maintain, and whether or not they will encrypt files stored locally on their devices or encrypt files stored in the cloud.

3. The article explains how Anthem failed to encrypt account information thereby exacerbating the risk associated with customer records being stolen. What does it mean to "encrypt" data and do you know how easy or difficult it is for you to do?

   Encrypting a file means taking plaintext and encoding it to create ciphertext. The ciphertext will be an unintelligible body of characters that can only be reversed back to meaningful plaintext using the encryption key. Encrypting files can be very easy to do. On a Windows machine, users can choose to encrypt all of the files placed inside of an encrypted folder. Users can also install AxCrypt, a free tool for easily encrypting files on a Windows machine.

4. How have prior data breaches impacted your consumer behaviors? Have you stopped shopping at Home Depot or Target because of their respective security breaches?

   Student responses to this question will vary, but most students will likely report that they have not altered their online shopping or file management practices at all in response to high-profile security breaches (e.g., Target, Home Depot, and Anthem). A discussion based on this question would be an ideal time to encourage students to more closely monitor their online activities and behaviors in order to avoid becoming a victim of a future data breach.

5. How can having a higher awareness of security best practices, and a habit of monitoring security breaches, help you when you get a job?

   Data is now one of the most valuable assets possessed by corporations. If you can demonstrate to employers that you are a security-conscious individual, you will likely be perceived as a valuable asset to your organization. People are often perceived as being one of the most vulnerable areas of a company's security policy – if you can demonstrate that you are one less thing for security professionals at your company to worry about, you will have a competitive advantage over your peers!

Chapter 7 - It's Not Me…It's You

1. Have you ever witnessed someone stealing something at work? If so, it was probably very apparent to both you and the perpetrator that they were doing something wrong. Why do you think employees are so willing to steal data when they would be unlikely to steal tangible items like laptops or other expensive organizational assets?

   Based on the discussion in the article of the white-collar crime triangle, many people cannot rationalize stealing tangible property from a company (e.g., a laptop) as it is clearly a crime. However, the value of data can be very difficult to quantify and in many cases certain types of data may appear to have no inherent value at all (or a person can rationalize that the data have no value). Furthermore, the information age continues to be plagued from a legal standpoint in that there is a lack of legal precedent for so many different types of "digital" activities. For example, it is very difficult to prosecute someone for threatening someone on social media as laws have not been created yet for many types of behaviors that would be considered crimes not committed in a digital context.

2. Take a moment to search the Internet for cases of white-collar crime. Find a specific example and see if you can identify the three elements of the white-collar triangle as being factors that contributed to that crime being committed.

   Students will likely identify a variety of white-collar incidents which have occurred and been reported in the popular press. It should be fairly easy to identify the pressure (the person needed the money) or rationalization (they developed the IP for a product or everyone else in the department got a bonus but the perpetrator did not and felt that they deserved one…).

3. How do you feel about the fact that many companies are investing in tools to monitor employee behavior? Would you want to work for a company that audits email logs and analyzes your activity on the company's network?

   Students will have different opinions on this question based on their personal feelings about privacy and employee monitoring. This is yet another example of the tension that occurs between those who want more security for the greater good and are willing to sacrifice individual privacy versus those who feel that personal privacy should not be infringed upon for any reason.

4. The article mentions that encryption can be a tactic used to thwart employees from taking data with them. Explain how encryption can be used effectively in this context.

   Encryption can be used to render data inaccessible if it is taken off of a given machine and accessed elsewhere (e.g., refer to the encryption tools offered in the Windows operating systems). In this context, data can be encrypted on company servers so that it is accessible to employees but not accessible if it is removed off of those systems. Setting up this type of encryption could reduce the motivation and likelihood that an employee would try to steal data and use it to secure a job elsewhere.

Chapter 8 - Digital is Forever

1. The article emphasizes that criminals and corporations both seek out the private information of Internet users for their own gains, but they are not the only ones trying to access your information. Do you think universities or future employers will attempt to access information about you when making admissions or hiring decisions?

   Absolutely – there are reports in the popular press almost weekly about how employers and universities are trolling social media sites attempting to learn more about their applicants and the information gleaned from these efforts is often used to aid in making acceptance/rejection decisions. The purpose of this question is to help students recognize that privacy concerns are not centric to theft or commercial purposes, but are much more pervasive than many students may initially recognize.

2. You likely heard news reports about the iCloud and Sony breaches, both of which resulted in private photos and emails being shared with the masses on the Internet. However, can you recall hearing reports about the perpetrators being brought to justice? If not, why do you think this is the case?

   To date there has been no indication that the perpetrators of either breach have been arrested or subsequently brought to justice. Aside from the fact that cyber criminals can be extremely difficult to track down, the legal system is still in many ways ineffective against the types of crimes that are perpetrated in cyberspace. For both of these reasons, many cyber crimes go unpunished, thereby yielding a forum rich in opportunities and thus very attractive to cyber criminals.

3. The Internet is not the only medium by which your privacy can be breached. Stolen or compromised devices can also be used to access your information, even if that information has been deleted. Search the web for information about recovering files and find out (1) whether or not deleting a file actually eliminates it from the memory of your device, and (2) if it can be recovered.

   Tangible devices also present a medium by which privacy can be violated. When users delete a file on a computer many think that the file is permanently gone, but in actuality, the computer simply deletes the file pointing to that data on the hard drive but the data actually remain. File recovery programs, many of which are free and easy to operate, can be used to scan hard drives and recover files that have been "deleted" but not permanently removed from the hard drive. File shredding utilities can be used to scramble free space on hard drives thereby rendering data formerly stored on the drive extremely difficult to recover.

4. Take a few minutes to reflect on your online habits. Do you have a tendency to send emails or post messages or images that could be perceived as offensive, inflammatory, or controversial in nature to others? If so, what could the end result of this behavior be?

   The end result of such behavior could be more far-reaching than students initially think. Building on the answer to Question 1, poor behavior on the Internet can negatively impact any number of future opportunities or relationships, and all users should recognize that simply deleting content on a social media site does not actually delete that information forever. It is possible that this information could be recovered, accessed, and distributed online at some point in the future.

Chapter 9 - Semantic Security

1. In your own words, explain the difference between access security and semantic security.

   Access security concerns the authorized and authenticated control of access to data, systems, and networks. Semantic security concerns the unintended release of protected information through the release of a combination of reports or documents that are independently not protected.

2. Why do reporting systems increase the risk of semantic security problems?

   Reporting systems increase the risk of semantic security problems because information from two different reporting systems can be combined with publicly available information to produce, or calculate, confidential information. This is a semantic security problem.

3. What can an organization do to protect itself against accidental losses due to semantic security problems?

   To protect themselves from accidental data losses, organizations should only release information to employees if it is necessary for them to complete their jobs. They also need to be more consistent about labeling confidential information, and labeling personally identifiable information that could be used to "triangulate" other data from outside information sources.

4. What legal responsibility does an organization have to protect against semantic security problems?

   Organizations have a legal requirement to protect personally identifiable information (PII) they collect. Additional requirements apply to financial, medical, and tax (just to name a few). Organizations must keep information secure when it is being stored, processed, or transmitted.

5. Suppose semantic security problems are inevitable. Do you see an opportunity for new products from insurance companies? If so, describe such an insurance product. If not, explain why.

   An organization like an insurance company may be interested in accessing multiple data sources to help estimate an individual's likelihood of making a claim. For example, they might want to correlate voting records with "anonymized" medical study data. This could yield information about potential clients that might be susceptible to certain expensive medical conditions. Conversely, an insurance company may offer an "information" product that protects clients from information triangulation. They could offer protection against a variety of information or identity theft incidents.

Chapter 10 - Exhaustive Cheating

1. What other technologies now included in cars could pose a potential risk to users? Based on the Volkswagen incident, are the technological advancements we have seen in the automotive industry worth these risks?

   A new technology that is now prominently featured in car advertisements is Internet access. However, numerous studies have demonstrated that cars with such capabilities can be accessed and compromised remotely. For example, hackers have been able to demonstrate the ability to apply breaks, turn the stereo system on or off, and control other functions within the car without any direct access to the vehicle. This type of vulnerability would not be possible without the proliferation of computers in almost every aspect of a car's operations. The value of increasing computer use in cars' operations, versus the risks, is a subjective point that each student will likely perceive differently.

2. The article introduces the term "black box". Take a few minutes to brainstorm other examples of systems or technologies that could be considered a black box. Try to identify some of the risks that may exist due to our inability to understand how these systems operate.

   The technology used to manage the stock market is a perfect example of a black box. Very few people understand the technical components involved in managing all of the digital trading that takes place every day. A book was published several years ago (*Flash Boys*) which argued that the stock market is rigged because heavy-hitting trading firms were paying for maximized transaction speeds and taking advantage of their rapid access. This lack of understanding of exactly how the trading system functions is a great example of a black box.

3. Aside from tarnishing Volkswagen's brand, the company experienced a substantial decline in its stock price. Why do you think the stock price dropped so significantly even though it is a global brand with popular vehicles?

   One of the biggest drivers of Volkswagen's plunging stock price is the uncertainty regarding the potential cost of recalling ~11 million vehicles. Simply overwriting software for these vehicles to eliminate the "cheating" code would be time consuming and costly in its own right. However, if mechanical parts of the car need to be modified or replaced, such a recall could pose a tremendous financial imposition on the company and jeopardize its financial viability.

4. Do you side with Elon Musk and Stephen Hawking and thus consider super-advanced AI systems to be a potential threat? Alternatively, are you skeptical that computers will ever have the capability to pose any form of risk to end users? Be ready to explain your position.

   Students' opinions on the potential threat of AI will vary. This question is intended to promote a lighthearted yet curiosity-inducing discussion on the potential AI capabilities of future systems. This is also a discussion in which IBM's Watson can be discussed as it is currently one of the best examples of AI being used for a variety of positive applications.

Chapter 11 - Watching the Watchers

1. The article discusses the use of security audits to ensure that employees are not doing anything that they should not be doing on their employer's systems. In what other contexts are audits conducted?

   Audits can be used in virtually every industry. Students will likely identify accounting as the most common application of audits as accounting auditors work to make sure that a company's financial records are accurate. These audits can be further categorized into specialized audits, including financial, compliance, operations, investigative, and information systems. However, any type of organization can conduct an audit to ensure that the subject matter is free of misstatement. Even research can be audited to ensure that data reported in a journal paper are not fabricated or tampered with.

2. Define what a rootkit is and conduct a search online for examples of how rootkits have been used.

   Rootkits are malicious pieces of software that are used to gain unauthorized access to another system or piece of software. Rootkits are often the basis for security breaches – a quick search of the Internet will likely identify numerous breaches in which rootkits were used to gain access to a corporate server or other type of system.

3. One strategy for preventing IT employees from violating their extensive system access is 'separation of duties'. Can you think of any other examples of how a function or task is split into multiple pieces or assigned to multiple individuals to prevent abuse of that function?

   We can look to the military for numerous examples of separation of duties. Weapon systems are often broken into numerous components with various operators controlling the disparate modules of the system. For example, on a nuclear submarine, launch codes to deploy weapons requires authorization from numerous individuals. This serves as a safety mechanism to prevent one individual from initializing a weapon without proper authorization.

4. Take a moment to think about all of the different types of devices that you use on a daily basis. How could these devices be compromised to invade your privacy? Is this risk of privacy invasion enough to make you stop using these devices?

   Looking around a random house or apartment would probably reveal numerous technologies that could be used to invade privacy. Web cameras or baby monitors designed to keep an eye on members of the family can be hacked or more easily accessed if the user does not change the default security settings. New gaming consoles have built in microphones that are in standby mode continuously waiting for the voice prompt of a user to activate the system; if accessed by a nefarious actor these microphones could be used for other purposes. Cellphones can also be compromised and people carry these devices with them everywhere; as cameras and microphones are ubiquitous on these devices they present a potential attack vector for invading privacy. The question students will have to consider: is are they willing to forego the benefits these devices provide to ensure the protection of their privacy? Responses will vary.

Chapter 12 - Psst. There's Another Way, You know…

1. If, in your absence, your roommate opens your desk and eats the top layer of your 2-pound box of chocolates, you'll know it; at least you'll know they're gone. But, if in your absence, your roommate uses your computer to copy your MIS term project onto his flash drive, do you know? If so, how? If not, why not?

   It's very unlikely that a student would notice if a file was copied from their computer. It's possible that they could have turned on security logging for computer access. Some operating systems (like Windows) do have this feature. Others may not. Then the student would have to check the logs regularly for unauthorized access. It's possible that the student may remember the exact time he was out of the apartment and notice the intrusion. That, of course, assumes that the student locks his or her computer each time they walk away from it. Many people don't lock their computers when they walk away from them because they assume they are in a safe place.

2. Of course your roommate wouldn't steal your term project. So, instead, suppose the person across the hall obtains the name of your computer and your logon name (the name you enter when your computer starts). She could surreptitiously watch you enter your password and learn it, too. But let's say instead that she notices the 75 pictures of your family basset hound, Fido, taped to your desk and correctly guesses that your password is Fido. With that data and a little knowledge, she uses your dorm's network to access shared folders on your computer from her computer. (Search the Internet for How to share a folder in Windows (or Mac) if you don't know what shared folders are.) When she finds your MIS term paper in one of your shared folders and copies it to her computer, do you know? Why or why not?

   For the same reasons listed in the question above, without turning on security logging and checking logs regularly it's nearly impossible to detect this type of intrusion. In this case the student might have an intrusion detection system, or a data loss prevention (DLP) system running to catch these types of unauthorized actions, but this is very unlikely.

3. How does the situation in question 2 differ from packet sniffing? What's required for her to steal your paper from a shared folder? What's required to steal that paper using packet sniffing? Which is easier?

   The situation in question 2 differs from packet sniffing in that situation 2 is the unauthorized access of a file stored on a file share, whereas packet sniffing is a type of man-in-the-middle attack where data are intercepted as they are being sent over a network. To steal the file from the shared folder the attacker would need authorized credentials, or use automated software that can take advantage of a vulnerability in the computer hosting the file. To steal the paper using packet sniffing the attacker would have to have access to the network where the packet was being sent from, and the data connection would have to be unencrypted. Currently, it's probably easier to steal from a shared network location because most data connections are now encrypted. This makes it difficult, but not impossible, to steal data being sent over networks.

4. As a student, you're unlikely to share many folders, but once you start work, you're likely to do so. Is the scenario in question 2 possible at work? Does it matter if your employer has strong network security? What is the one thing you can do to protect yourself from the person in the cubicle down the hallway accessing your shared folders?

Yes, the situation in question 2 is likely in a work environment. Yes, if your employer has strong network security it would be much more difficult, but not impossible, to steal the file. Strong network security would be able to see who was accessing which network shares, and monitor the movement of data files. To protect yourself from these types of attacks you should encrypt your files, share your file shares with as few people as possible, and make sure your file shares are secured with strong credentials.

5. Now consider the suppliers in this guide who had their designs stolen. Will they know their designs were stolen? How will they find out? How will they know which designs were taken? How can they assess their damages?

   It's unlikely they will immediately know their files were stolen. They may find out their files were stolen after the fact when a competitor produces a similar part without any research and development expenditures. It's unlikely they'll know exactly which files were taken. They'll be forced to assume that all related files were taken. It will also be extremely difficult to access the damages of this data loss. If the files were key to their competitive advantage the loss of these files could be catastrophic.

6. It's possible for companies to configure their network so that email can only be sent to their own Internet service provider. Such a configuration would thwart the ACAD/Medre.A worm, and indeed it did, for all the companies that had such security. Companies with large, knowledgeable IS departments (see Chapter 11) most likely will, but in this case hundreds did not. If you're the owner of a small business, what can you do?

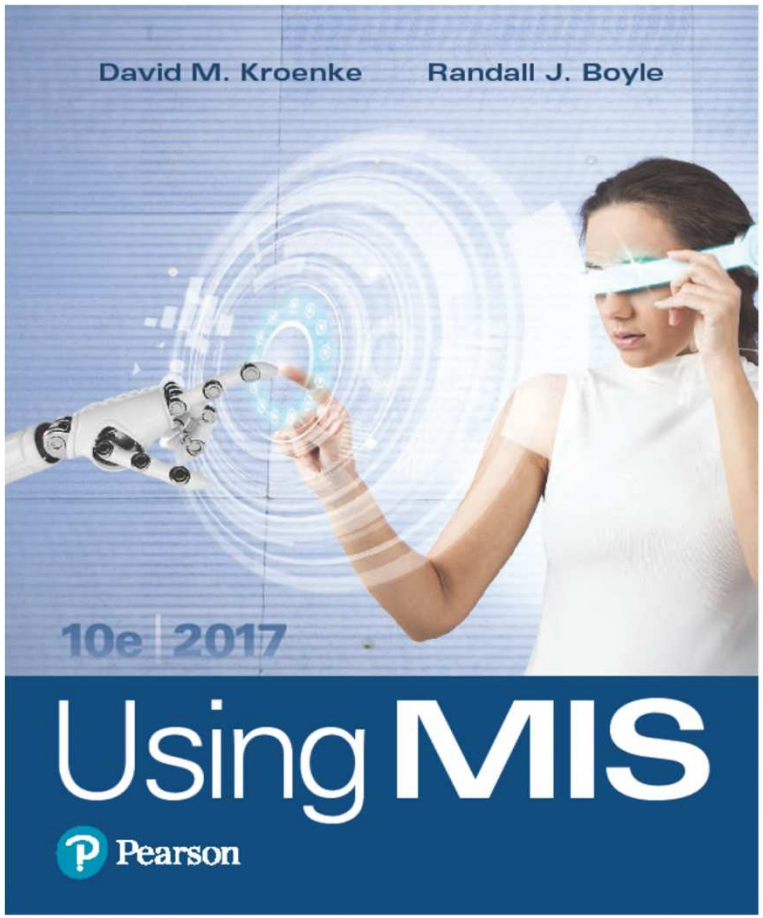
   For small businesses with limited in-house technical expertise, the best option might be outsourcing their email function to a managed service provider. Many managed service providers offer very reasonable rates for managing corporate email. They also have the technical expertise to stop these types of attacks.

7. Search the Internet for the term industrial espionage. Find one example of espionage that has been conducted using malware. Summarize the problem and the damages. What could the companies involved have done to avoid losses?

   Student responses to this question will vary. There are many examples of corporate espionage using malware. One famous attack occurred in 2013 when hackers stole nearly 70 million of customer accounts from Target Corp. using custom malware. The malware was used to copy customer account information from point of sale (POS) systems and then send it to external servers. This information was later sold and netted hackers between $20M and $50M.

Using MIS

10th Edition



Chapter 2

Collaboration Information Systems

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"I Got the Email, But I Couldn't Download the Attachment."

- Difficult for everyone to attend meetings.
- Wastes time covering old ground.
- Cell phone calls interrupt meeting.
- Felix not reading meeting minutes.
  - "I got the email, but I couldn't download the attachment."
- Poor communication.
- Interpersonal conflicts.

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Study Questions

Q2-1 What are the two key characteristics of collaboration?

Q2-2 What are three criteria for successful collaboration?

Q2-3 What are the four primary purposes of collaboration?

Q2-4 What are the requirements for a collaboration information system?

Q2-5 How can you use collaboration tools to improve team communication?

Q2-6 How can you use collaboration tools to manage shared content?

Q2-7 How can you use collaboration tools to manage tasks?

Q2-8 Which collaboration IS right for your team?

Q2-9 2027?

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Successful Collaboration

Q2-1 What are the two key characteristics of collaboration?

1. People working together to achieve a common goal.
2. Feedback and iteration
   - Cooperation lacks feedback and iteration loop.

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Importance of Effective Critical Feedback

Q2-1 What are the two key characteristics of collaboration?

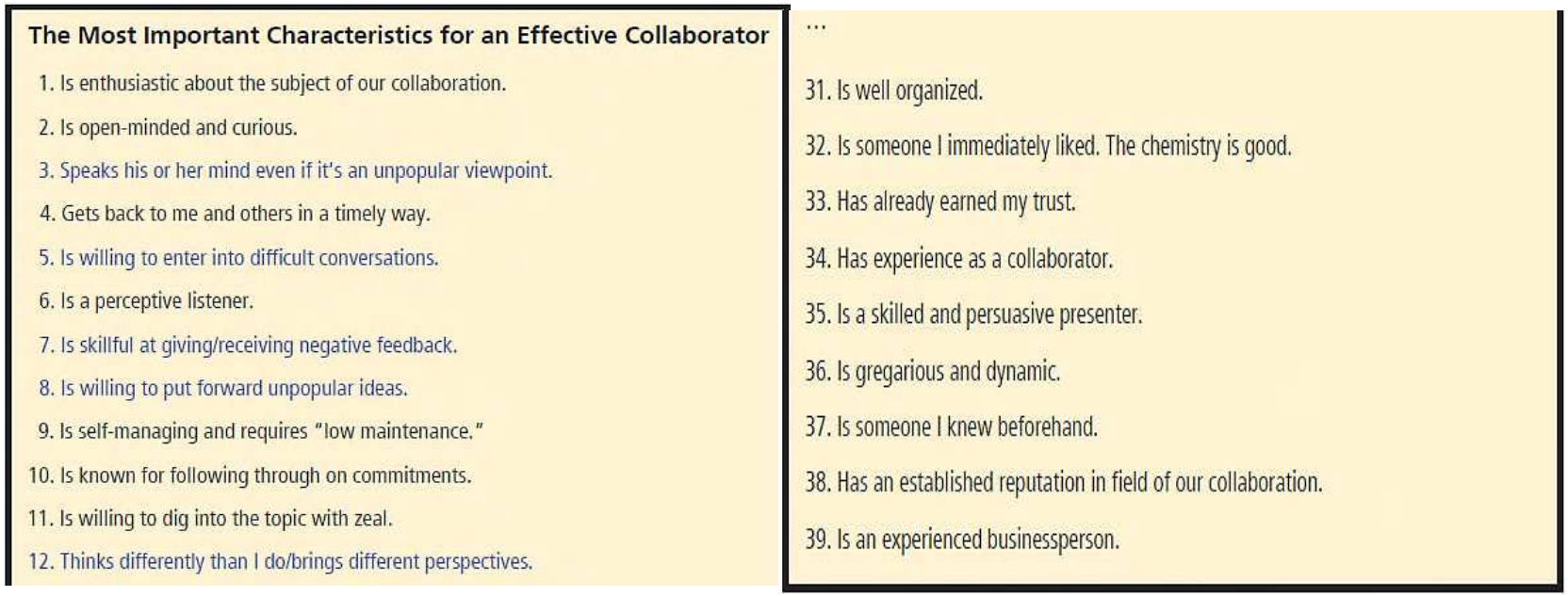
- Members learn from each other.
- Provide **constructive criticism** – both positive and negative advice given to improve an outcome
- Be willing to express different, even unpopular, ideas. (Important)
- Avoid **groupthink** – the desire for group cohesion.
- Collaborator business experience not important.
- Being popular or well organized not important.

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Important Characteristics of a Collaborator

Q2-1 What are the two key characteristics of collaboration?



The Most Important Characteristics for an Effective Collaborator

1. Is enthusiastic about the subject of our collaboration.
2. Is open-minded and curious.
3. Speaks his or her mind even if it's an unpopular viewpoint.
4. Gets back to me and others in a timely way.
5. Is willing to enter into difficult conversations.
6. Is a perceptive listener.
7. Is skillful at giving/receiving negative feedback.
8. Is willing to put forward unpopular ideas.
9. Is self-managing and requires "low maintenance."
10. Is known for following through on commitments.
11. Is willing to dig into the topic with zeal.
12. Thinks differently than I do/brings different perspectives.

...

31. Is well organized.
32. Is someone I immediately liked. The chemistry is good.
33. Has already earned my trust.
34. Has experience as a collaborator.
35. Is a skilled and persuasive presenter.
36. Is gregarious and dynamic.
37. Is someone I knew beforehand.
38. Has an established reputation in field of our collaboration.
39. Is an experienced businessperson.

Figure 2-1 Important Characteristics of a Collaborator

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Guidelines for Giving and Receiving Constructive Criticism

Guideline	Example
Giving Constructive Criticism	
Be specific.	Unconstructive: "The whole thing is a disorganized mess." Constructive criticism: "I was confused until I got to Section 2."
Offer suggestions.	Unconstructive: "I don't know what to do with this." Constructive criticism: "Consider moving Section 2 to the beginning of the document."
Avoid personal comments.	Unconstructive: "Only an idiot would put the analysis section last." Constructive criticism: "The analysis section might need to be moved forward."
Set positive goals.	Unconstructive: "You have to stop missing deadlines." Constructive criticism: "In the future, try to budget your time so you can meet the deadline."
Accepting Constructive Criticism	
Question your emotions.	Unconstructive: "He's such a jerk. Why is he picking apart my work?" Constructive criticism: "Why do I feel so angry about the comment he just made?"
Do not dominate.	Unconstructive: You talk over others and use up half the time. Constructive criticism: If there are four group members, you get one fourth of the time.
Demonstrate a commitment to the group.	Unconstructive: "I've done my part. I'm not rewriting my work. It's good enough." Constructive criticism: "Ouch, I really didn't want to have to redo that section, but if you all think it's important, I'll do it."

Figure 2-2 Guidelines for Giving and Receiving Constructive Criticism

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Successful Collaboration

Q2-2 What are three criteria for successful collaboration?

Criteria for judging team success:

1. Successful outcome. (Achieved objectives)
2. Improve team capability over time.
3. Meaningful and satisfying experience.

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Why Collaborate?

Q2-3 What are the four primary purposes of collaboration?

1. Become informed.
   - Share data & communicate interpretations.
   - Develop & document shared understandings.
2. Make decisions.
3. Solve problems.
4. Manage projects.

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Collaboration Needs for Decision Making

Q2-3 What are the four primary purposes of collaboration?

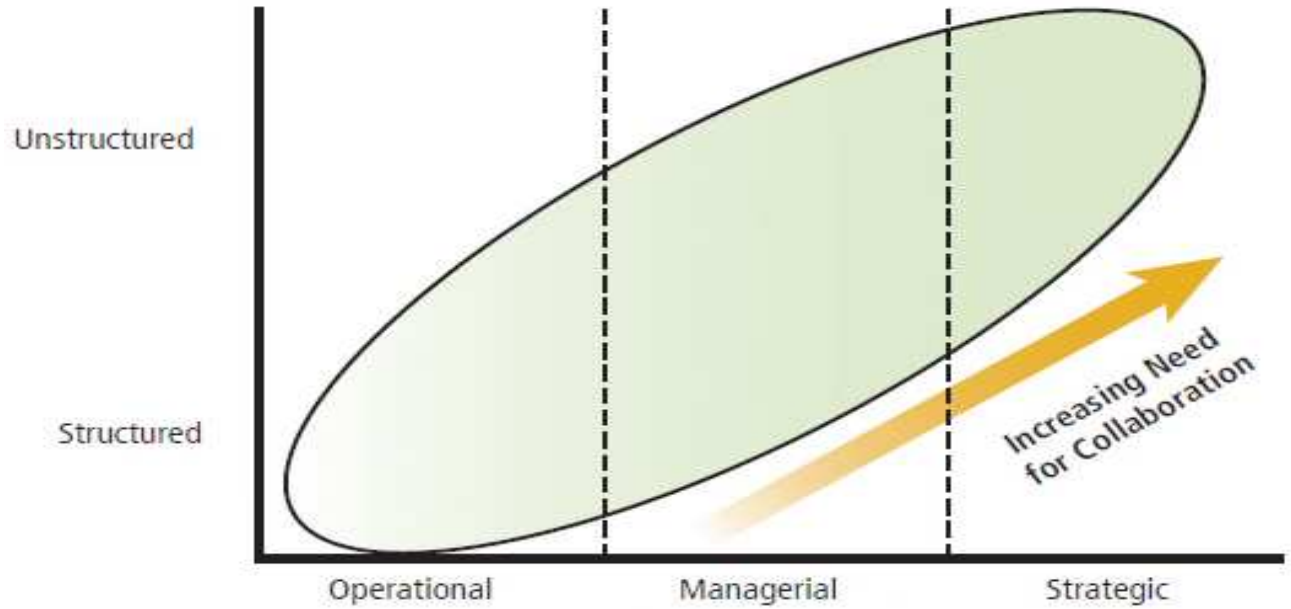


Figure 2-3 Collaboration Needs for Decision Making

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Solving Problems (Phases)

Q2-3 What are the four primary purposes of collaboration?

- Define the problem.
- Identify alternative solutions.
- Specify evaluation criteria.
- Evaluate alternatives.
- Select an alternative.
- Implement solution.

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Managing Projects

Phase	Tasks	Shared Data
Starting	Set team authority. Set project scope and initial budget. Form team. Establish team roles, responsibilities, and authorities. Establish team rules.	Team member personal data Startup documents
Planning	Determine tasks and dependencies. Assign tasks. Determine schedule. Revise budget.	Project plan, budget, and other documents
Doing	Perform project tasks. Manage tasks and budget. Solve problems. Reschedule tasks, as necessary. Document and report progress.	Work in process Updated tasks Updated project schedule Updated project budget Project status documents
Finalizing	Determine completion. Prepare archival documents. Disband team.	Archival documents

Figure 2-5 Project Management Tasks and Data

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Collaboration Information Systems

Q2-4 What are the requirements for a collaboration information system?

1. Hardware
2. Software
3. Data and metadata
4. Procedures
5. People
   - Know when and how to use.

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Requirements for Successful Collaboration

Q2-5 How can you use collaboration tools to improve team communication?

Criterion for Team Success	Requirement
Complete the work, on time, on budget	Communicate (feedback), Manage many versions of content (iteration), Manage tasks (on time, on budget)
Growth in team capability	Record lessons learned, Document definitions, concepts, and other knowledge, Support intra–team training
Meaningful and satisfying experience	Build team esprit, Reward accomplishment, Create sense of importance

Figure 2-6 Requirements for a Collaboration IS

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Requirements for Different Collaboration Purposes

Team Purpose	Requirement
Become informed	Share data Support group communication Manage project tasks Store history
Make decisions	Share decision criteria, alternative descriptions, evaluation tools, evaluation results, and implementation plan Support group communication Manage project tasks Publish decision, as needed Store analysis and results
Solve problems	Share problem definitions, solution alternatives, costs and benefits, alternative evaluations, and solution implementation plan Support group communication Manage project tasks Publish problem and solution, as needed Store problem definition, alternatives, analysis, and plan
Manage projects	Support starting, planning, doing, and finalizing project phases (Figure 2–5) Support group communication Manage project tasks

Figure 2-7 Requirements for Different Collaboration Purposes

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Collaboration Tools to Improve Team Communication

Q2-5 How can you use collaboration tools to improve team communication?

Synchronous		Asynchronous
Shared calendars Invitation and attendance		
Single location	Multiple locations	Single or multiple locations
Office applications such as Word and PowerPoint Shared whiteboards	Conference calls Multiparty text chat Screen sharing Webinars Videoconferencing	Email Discussion forums Team surveys

Virtual meetings

Figure 2-8 Collaboration Tools for Communication

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Office 365 Lync Whiteboard Showing Simultaneous Contributions

Q2-5 How can you use collaboration tools to improve team communication?

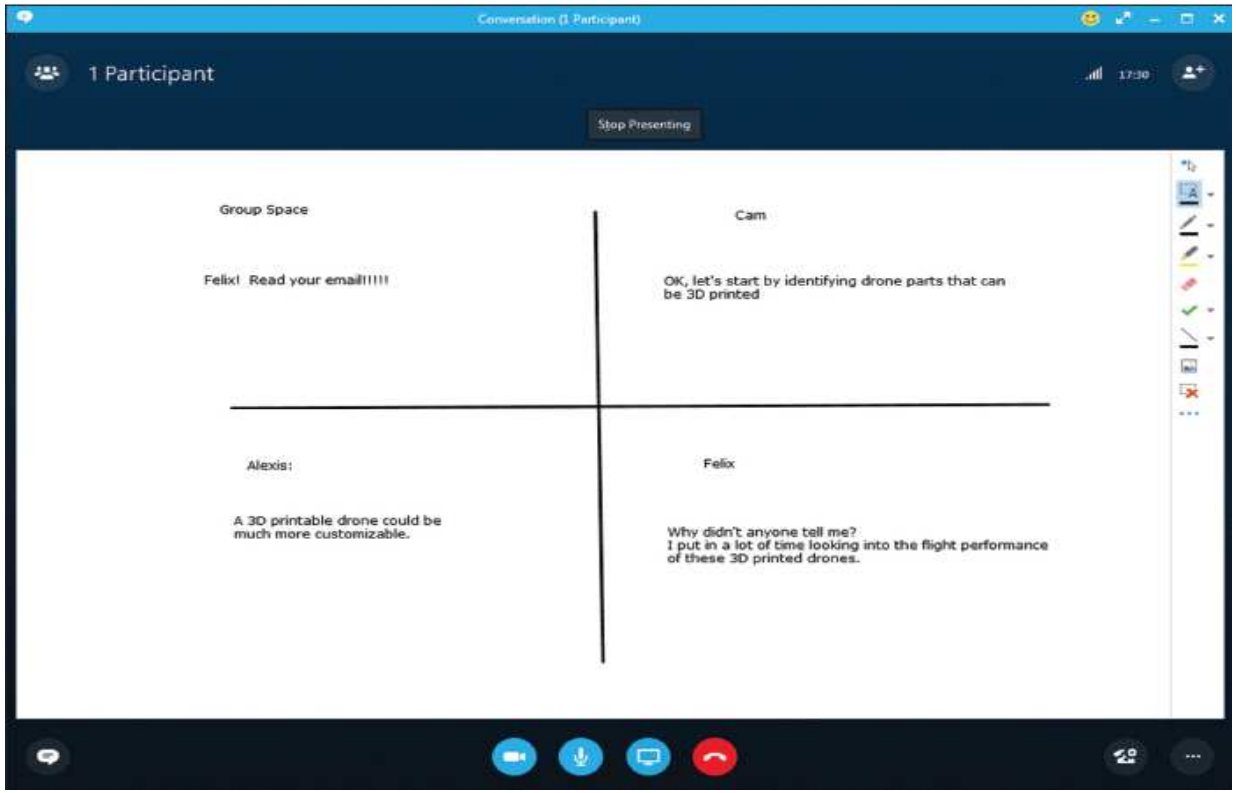


Figure 2-9 Skype for Business Whiteboard Showing Simultaneous Contributions Source: Used by permission from Skype Corporation.

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Virtual Meetings

Q2-5 How can you use collaboration tools to improve team communication?

- Multiparty text chat
  - Microsoft Skype for Business, Google Hangouts.
  - Search Google for “multiparty text chat.”
- Screen-sharing applications
- Webinar (webex.com)
- Videoconferencing
  - Google Hangouts, WebEx, Skype for Business.

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Discussion Forums

Q2-5 How can you use collaboration tools to improve team communication?

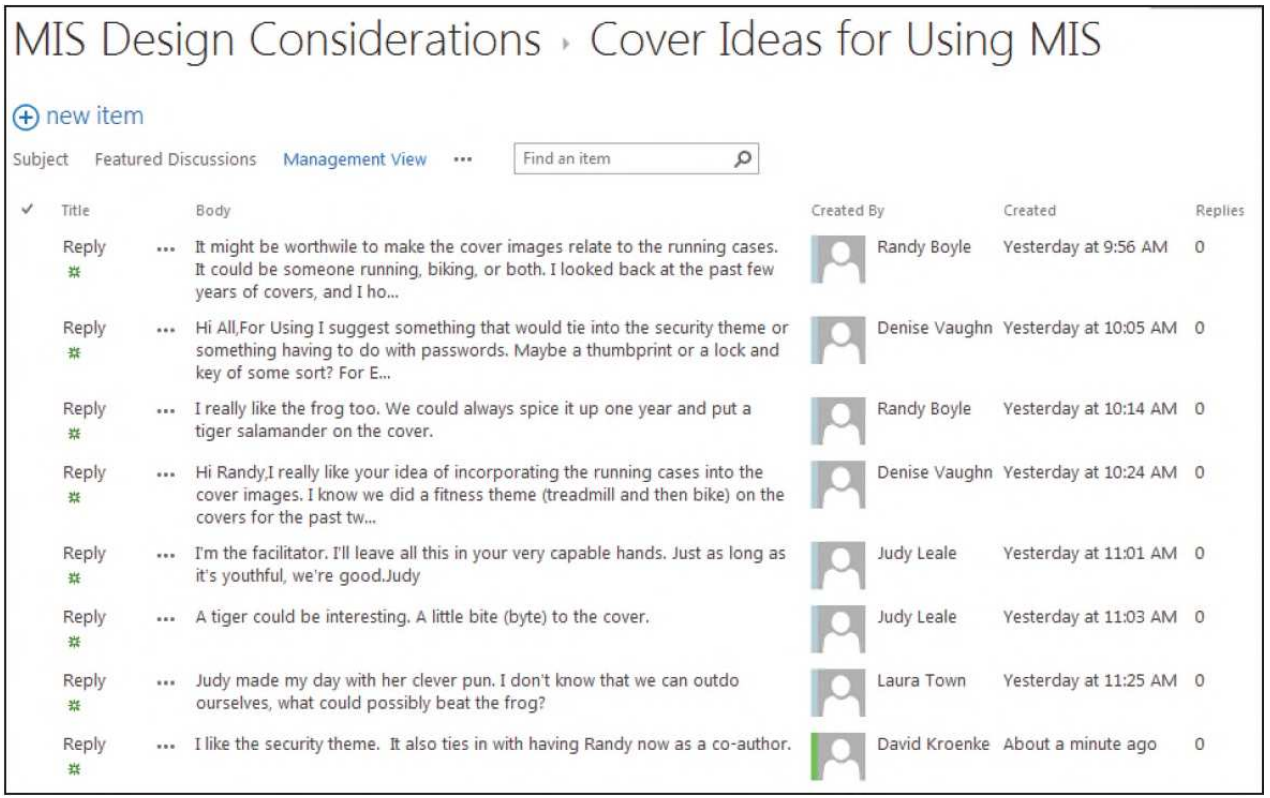


Figure 2-11 Example Discussion Forum Source: Microsoft Corporation

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Team Surveys

Q2-5 How can you use collaboration tools to improve team communication?

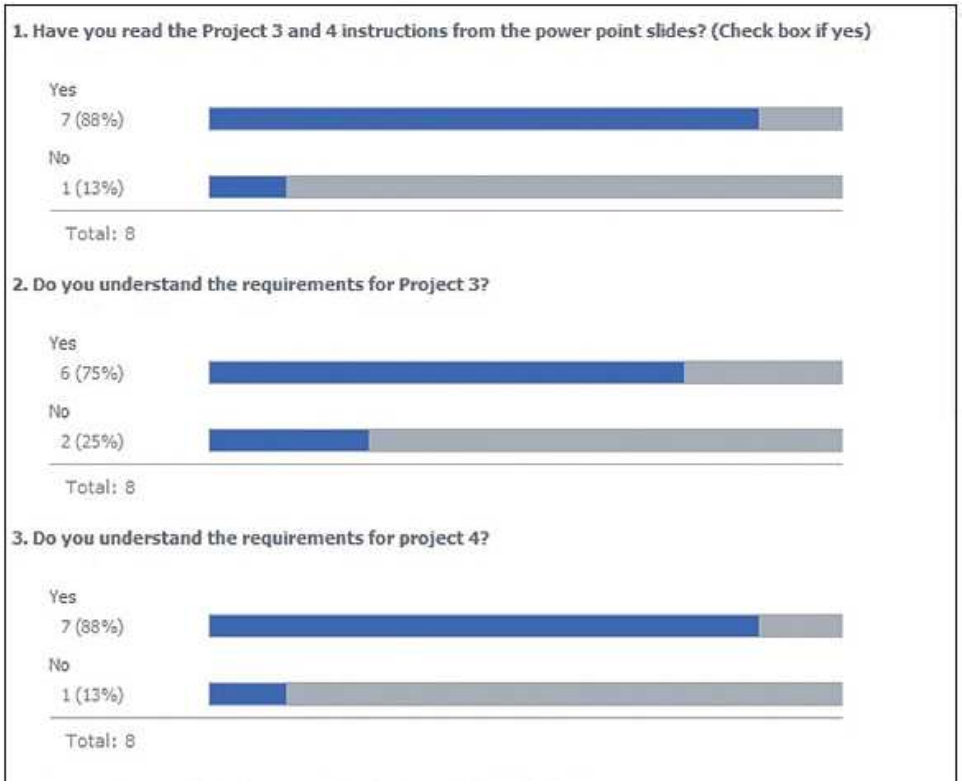


Figure 2-12 Example Survey Report

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Using Collaboration Tools to Manage Shared Content

Q2-6 How can you use collaboration tools to manage shared content?

Content Type	Desktop Application	Web Application	Cloud Drive
Office documents (Word, Excel, PowerPoint)	Microsoft Office LibreOffice OpenOffice	Google Docs (Import/Export non–Google Docs) Microsoft Office Online (Microsoft Office only)	Google Drive Microsoft OneDrive Microsoft SharePoint Dropbox
PDFs	Adobe Acrobat	Viewers in Google Drive, Microsoft OneDrive, and Microsoft SharePoint	Google Drive Microsoft OneDrive Microsoft SharePoint Dropbox
Photos, videos	Adobe Photoshop, Camtasia, and numerous others	Google Picasa	Google Drive Microsoft OneDrive Microsoft SharePoint Apple iCloud Dropbox
Other (engineering drawings)	Specific application (Google SketchUp)	Rare	Google Drive Microsoft OneDrive Microsoft SharePoint Dropbox

Figure 2-13 Content Applications and Storage Alternatives

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Collaboration Tools for Sharing Content

Q2-6 How can you use collaboration tools to manage shared content?

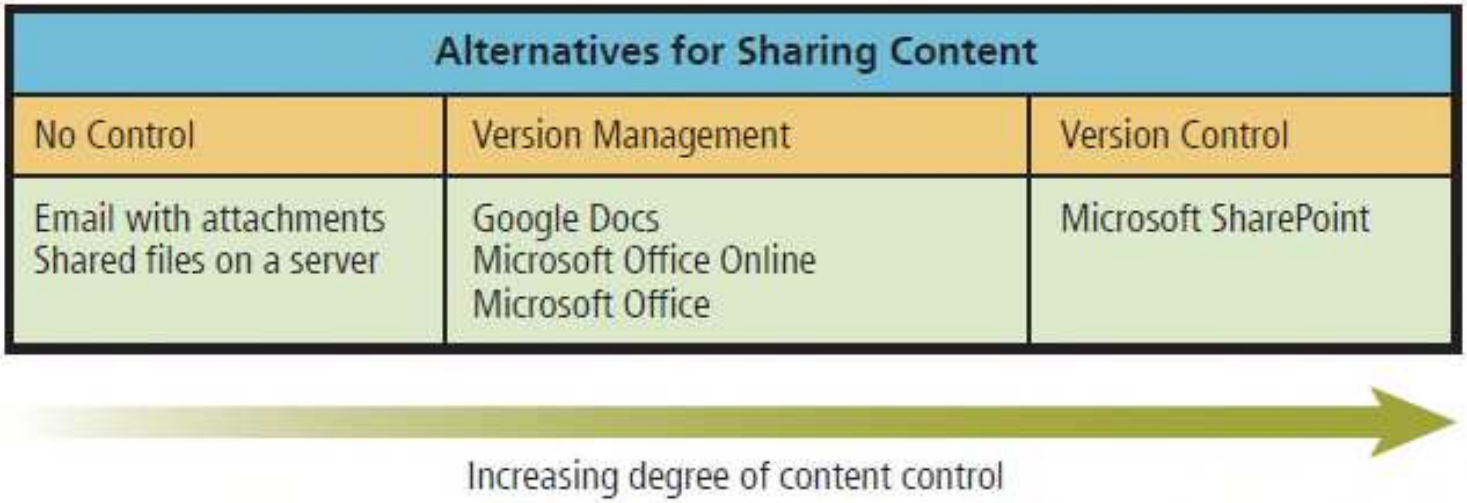


Figure 2-14 Collaboration Tools for Sharing Content

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Shared Content with Version Management on Google Drive

Q2-6 How can you use collaboration tools to manage shared content?

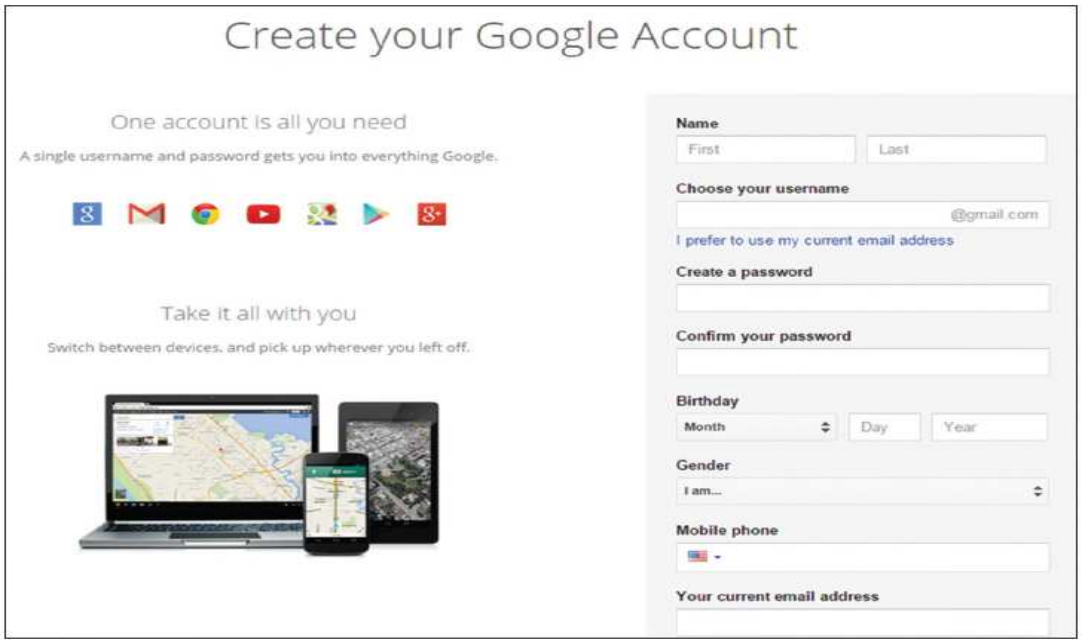


Figure 2-15 Form for Creating a Google Drive Account Source: Google and the Google logo are registered trademarks of Alphabet Inc., Used with permission.

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Available Types of Documents on Google Drive

Q2-6 How can you use collaboration tools to manage shared content?

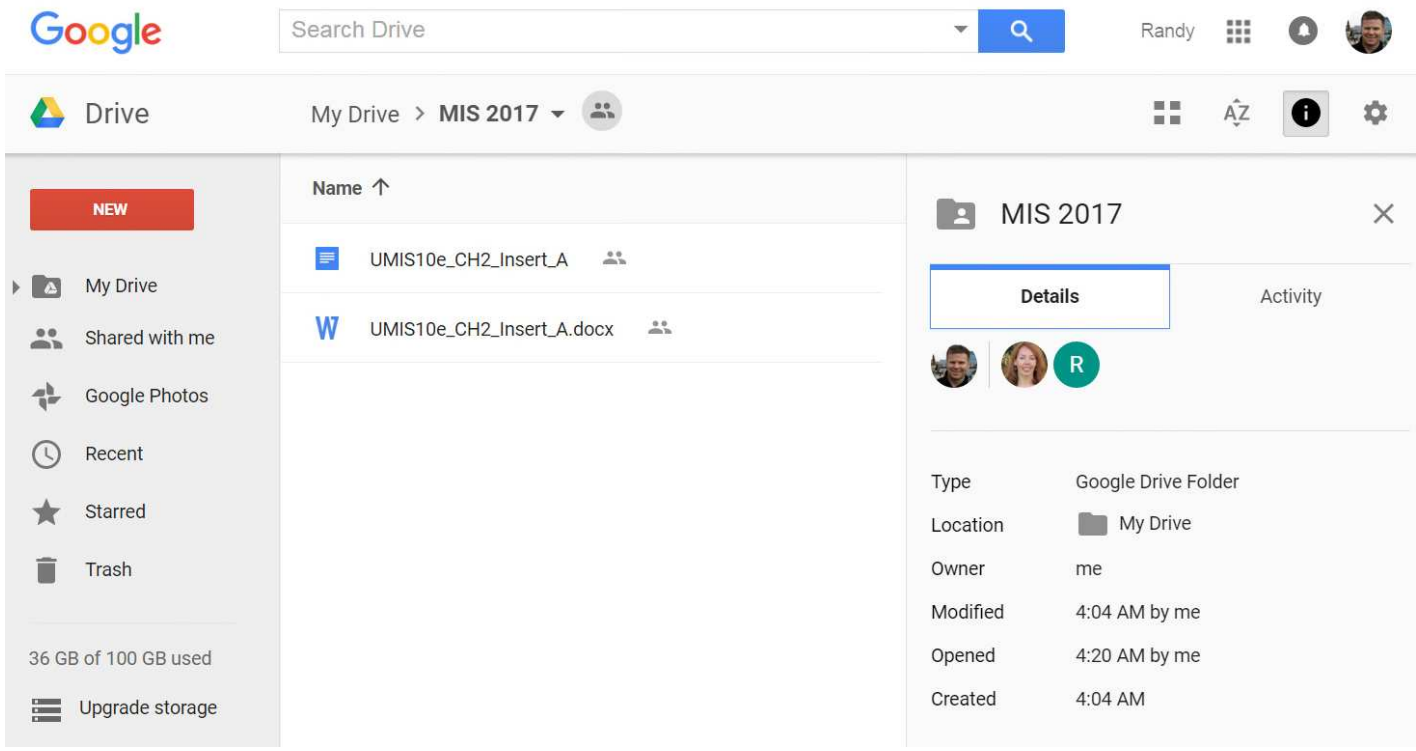


Figure 2-16 Available Types of Documents on Google Drive Source: Google and the Google logo are registered trademarks of Alphabet Inc., Used with permission.

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Document Sharing on Google Drive

Q2-6 How can you use collaboration tools to manage shared content?

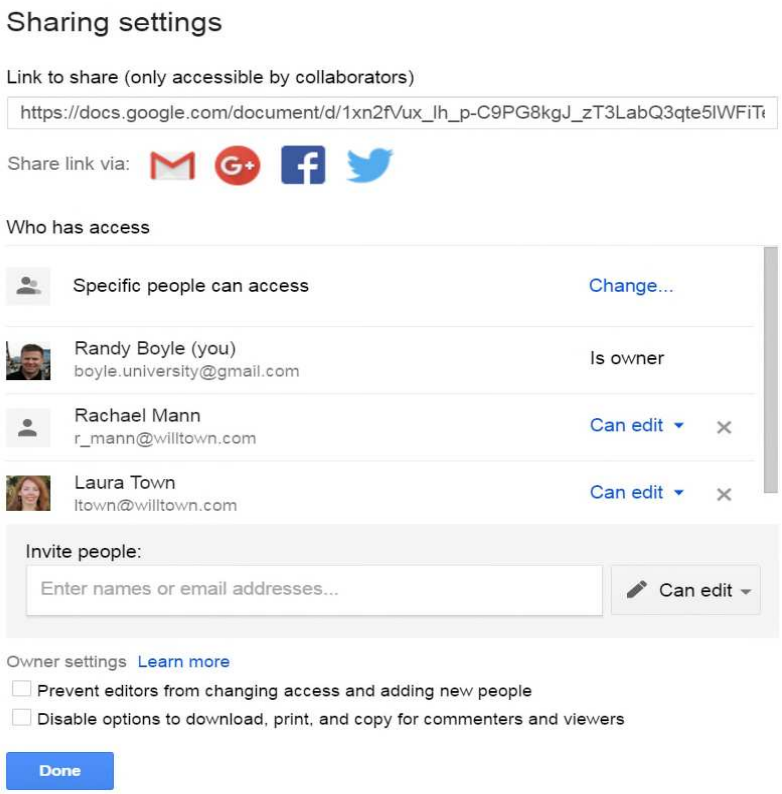


Figure 2-17 Document Sharing on Google Drive Source: Google and the Google logo are registered trademarks of Alphabet Inc., Used with permission.

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Example of Editing a Shared Document on Google Drive

Q2-6 How can you use collaboration tools to manage shared content?

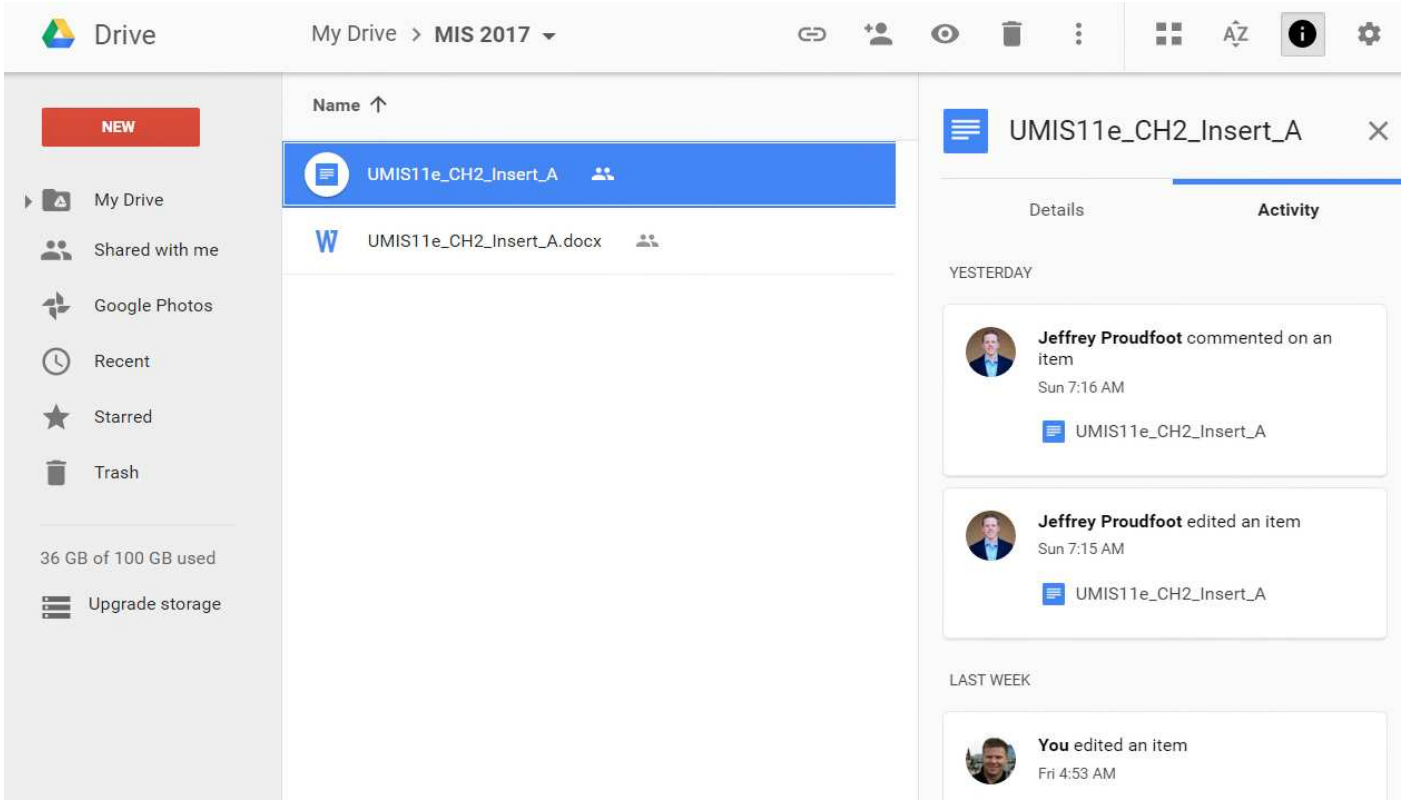


Figure 2-18 Example of Editing a Shared Document on Google Drive Source: Google and the Google logo are registered trademarks of Alphabet Inc., Used with permission.

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Shared Content with Version Control

Q2-6 How can you use collaboration tools to manage shared content?

- Version control involves one or more capabilities.
  - User activity limited by permissions.
  - Document checkout.
  - Version histories.
  - Workflow control.

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Microsoft SharePoint

Q2-6 How can you use collaboration tools to manage shared content?

- Large, complex, very robust application for all types of collaboration.
- Used by thousands of businesses.
  - SharePoint skills in high demand.
- Install on company Windows servers or access it over Internet using SharePoint Online.

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Checking Out a Document

Q2-6 How can you use collaboration tools to manage shared content?

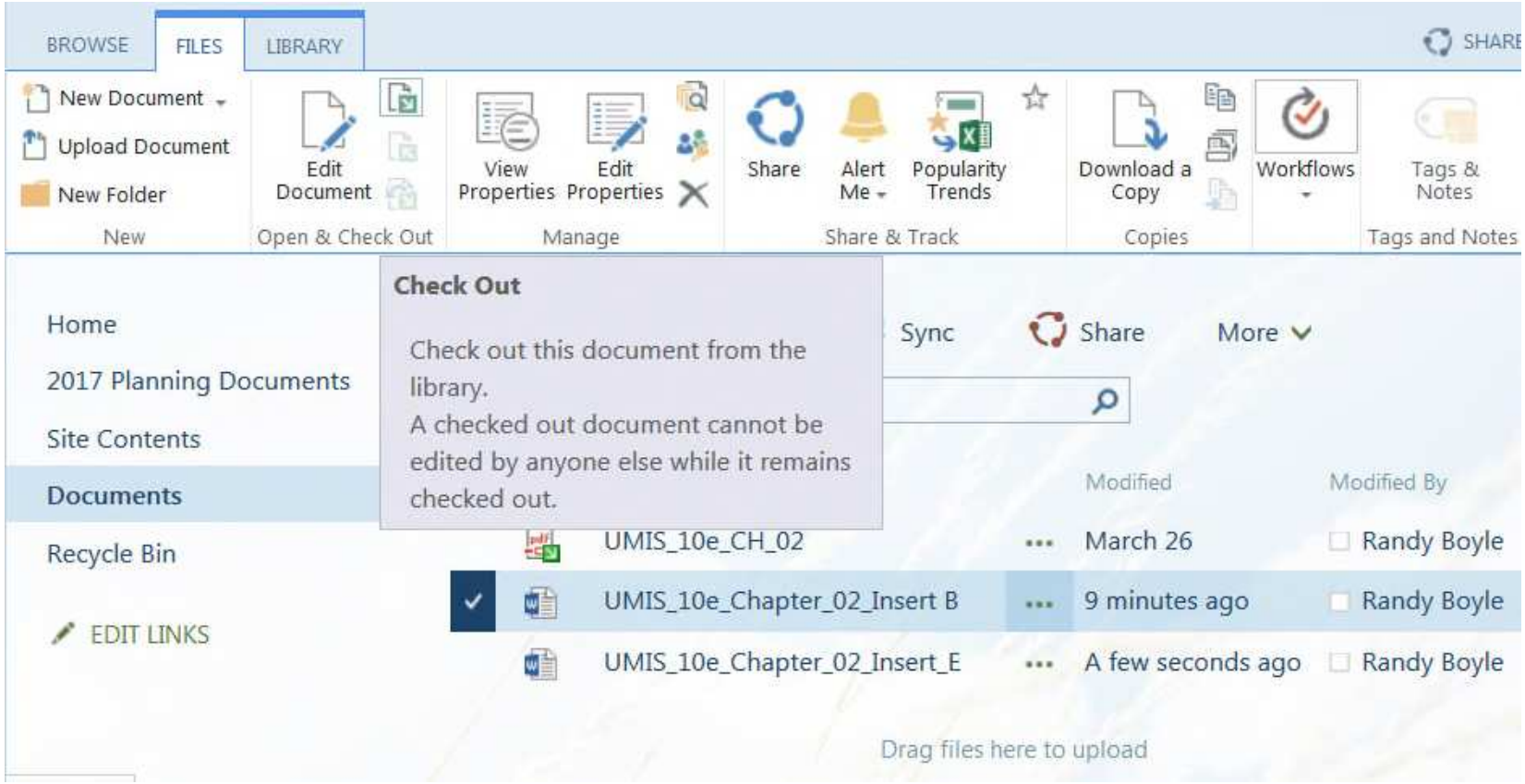


Figure 2-19 Checking Out a Document Source: Microsoft Corporation

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Example of Workflow

Q2-6 How can you use collaboration tools to manage shared content?



Figure 2-20 Example Workflow Source: Microsoft Corporation

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Big Brother Wearables

Ethics Guide

- Richie agrees to wear a biological profiling and health tracking device.
- Paid a $150 bonus as part of an incentive program at work to help employees be more healthy.
- Sal, his boss, tells him his performance is unacceptable.
- Richie is over-fatigued from too much cycling.

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Big Brother Wearables (cont'd)

Ethics Guide

- How would you feel if your employer began monitoring your computer activity and physiological state?
- Is monitoring the physiology and computer behavior of employees ethical?
  - **Categorical imperative** - What you ought to do, independent of your own wants.
  - **Utilitarianism** - Morality of an act is determined by its outcome.

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Big Brother Wearables (cont'd)

Ethics Guide

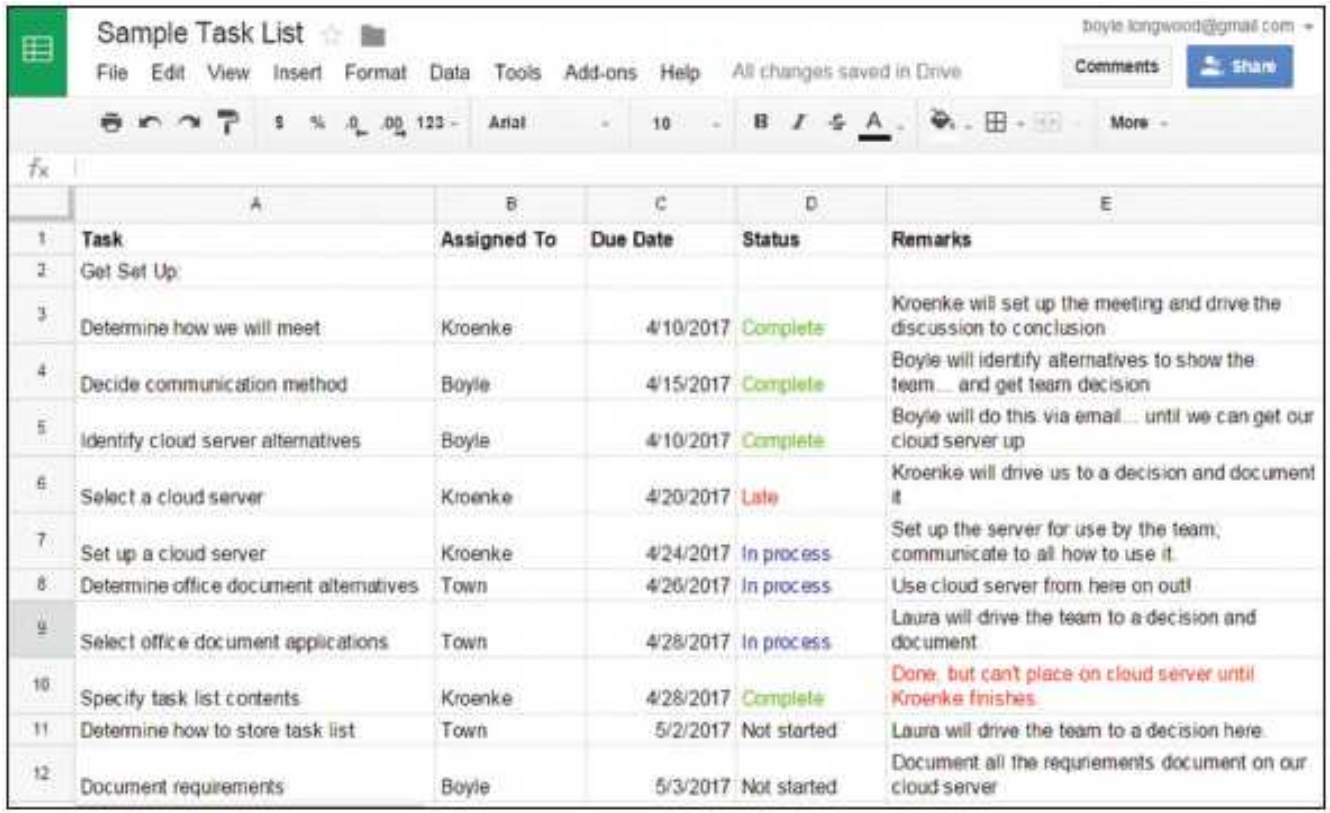
- Would this type of monitoring change your behavior both inside and outside of work?
- Would you consider this an invasion of your privacy?
- Patient data collected by healthcare providers is one of the most sensitive types of data.
  - What are some of the risks and liabilities facing companies if they decide to use wearable technologies to monitor employees?

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Using Collaboration Tools to Manage Tasks

Q2-7 How can you use collaboration tools to manage tasks?



Sample Task List

File Edit View Insert Format Data Tools Add-ons Help All changes saved in Drive

Comments Share

	A	B	C	D	E
1	**Task**	**Assigned To**	**Due Date**	**Status**	**Remarks**
2	Get Set Up				
3	Determine how we will meet	Kroenke	4/10/2017	Complete	Kroenke will set up the meeting and drive the discussion to conclusion
4	Decide communication method	Boyle	4/15/2017	Complete	Boyle will identify alternatives to show the team... and get team decision
5	Identify cloud server alternatives	Boyle	4/10/2017	Complete	Boyle will do this via email... until we can get our cloud server up
6	Select a cloud server	Kroenke	4/20/2017	Late	Kroenke will drive us to a decision and document it
7	Set up a cloud server	Kroenke	4/24/2017	In process	Set up the server for use by the team, communicate to all how to use it
8	Determine office document alternatives	Town	4/26/2017	In process	Use cloud server from here on out!
9	Select office document applications	Town	4/28/2017	In process	Laura will drive the team to a decision and document
10	Specify task list contents	Kroenke	4/28/2017	Complete	Done, but can't place on cloud server until Kroenke finishes
11	Determine how to store task list	Town	5/2/2017	Not started	Laura will drive the team to a decision here
12	Document requirements	Boyle	5/3/2017	Not started	Document all the requirements document on our cloud server

Figure 2-21 Sample Task List Using Google Drive Source: Google and the Google logo are registered trademarks of Alphabet Inc., Used with permission.

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UMIS Production Task List in SharePoint

Q2-7 How can you use collaboration tools to manage tasks?

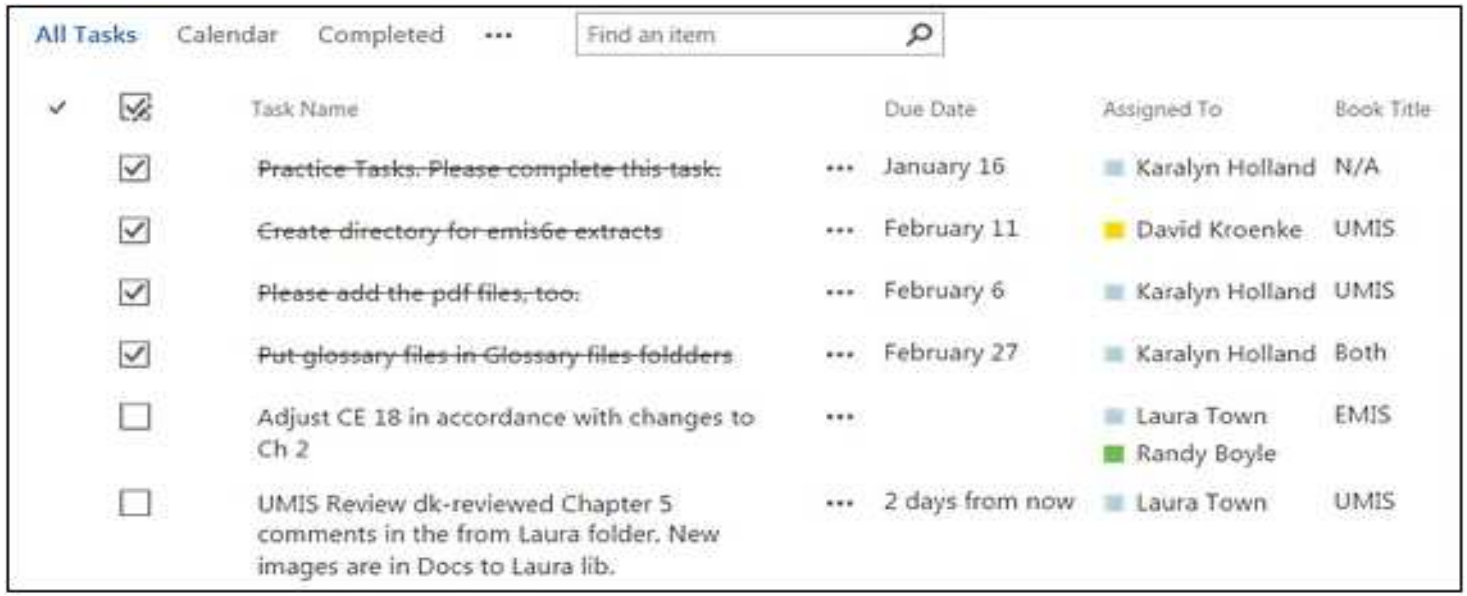


Figure 2-22 UMIS Production Task List in SharePoint Source: Microsoft Corporation

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UMIS To-Do List in SharePoint (cont'd)

Q2-7 How can you use collaboration tools to manage tasks?

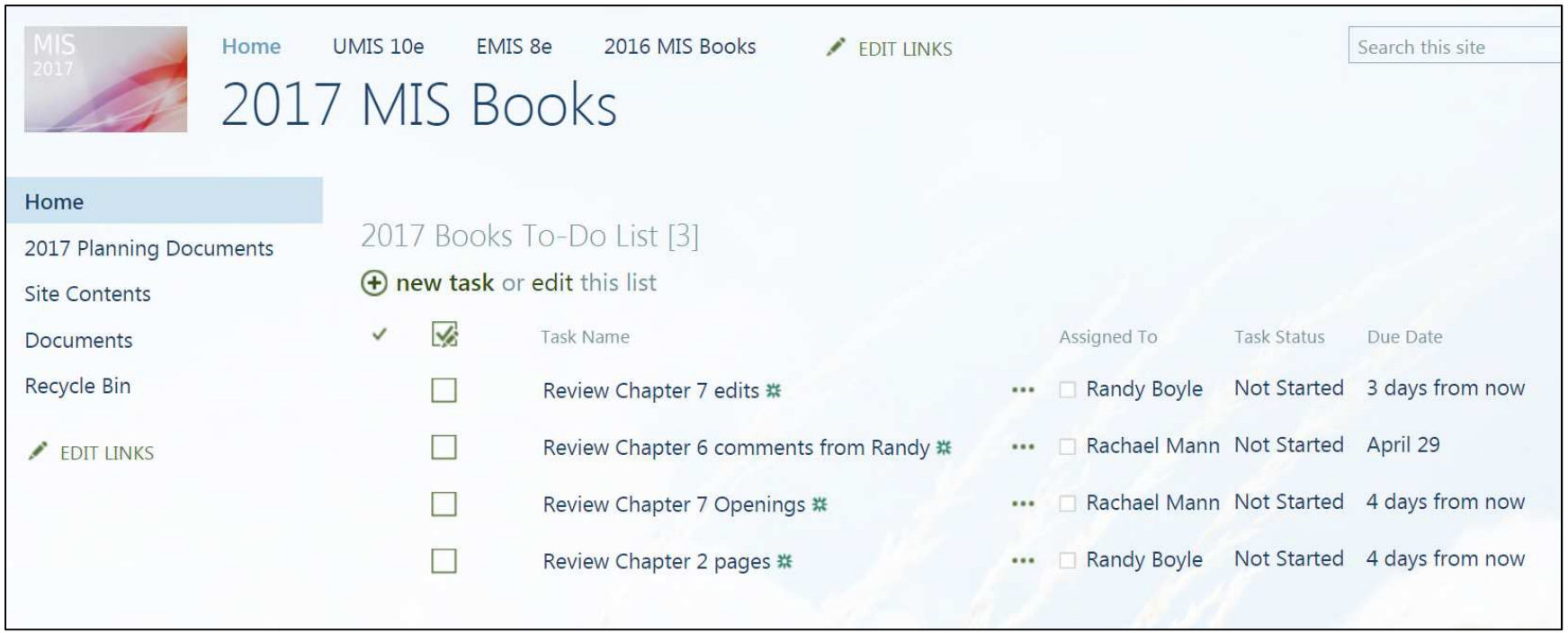


Figure 2-23 UMIS To-Do List in SharePoint Source: Microsoft Corporation

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UMIS Completed Tasks in SharePoint

Q2-7 How can you use collaboration tools to manage tasks?

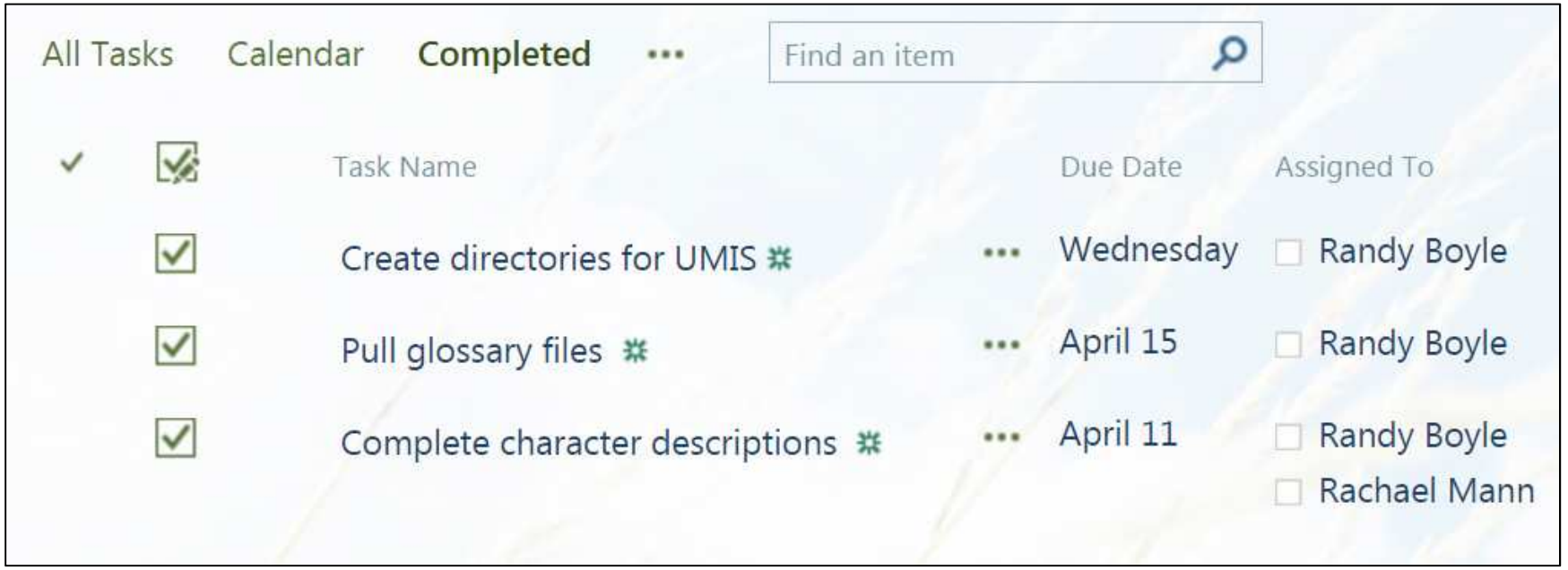


Figure 2-24 UMIS Completed Tasks in SharePoint Source: Microsoft Corporation

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Augmented Collaboration

So What?

- How can HoloLens change collaboration and business?
- Identifying industries that might benefit from augmented reality technology. How so?
- What is the difference between the Oculus Rift and the Microsoft HoloLens?
- How could this type of technology benefit students?
- What about privacy concerns?

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Collaboration Tool Sets

Q2-8 Which collaboration IS right for your team?

	Three Collaboration Tool Sets		
	Minimal	Good	Comprehensive
Communication	Email; multiparty text chat	Google Hangouts	Microsoft Skype for Business
Content Sharing	Email or file server	Google Drive	SharePoint
Task Management	Word or Excel files	Google Calendar	SharePoint lists integrated with email
Nice-to-Have Features		Discussion boards, surveys, wikis, blogs, share pictures/videos from third-party tools	Built-in discussion boards, surveys, wikis, blogs, picture/video sharing
Cost	Free	Free	$10/month per user or Free
Ease of Use (time to learn)	None	1 hour	3 hours
Value to Future Business Professional	None	Limited	Great
Limitations	All text, no voice or video; no tool integration	Tools not integrated, must learn to use several products	Cost, learning curve required

Figure 2-25 Three Collaboration Tool Sets

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Office 365 Features You Need for the Comprehensive Toolset

Q2-8 Which collaboration IS right for your team?

Component	Features
Skype for Business	Multiparty text chat Audio- and videoconferencing Online content sharing Webinars with PowerPoint
SharePoint Online	Content management and control using libraries and lists Discussion forums Surveys Wikis Blogs
Exchange	Email integrated with Skype for Business and SharePoint Online
Office 2013	Concurrent editing for Word, Excel, PowerPoint, and OneNote
Hosted Integration	Infrastructure built, managed, and operated by Microsoft

Figure 2-26 Office 365 Features You Need for the Comprehensive Tool Set

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Evaluating Learning Time

Q2-8 Which collaboration IS right for your team?

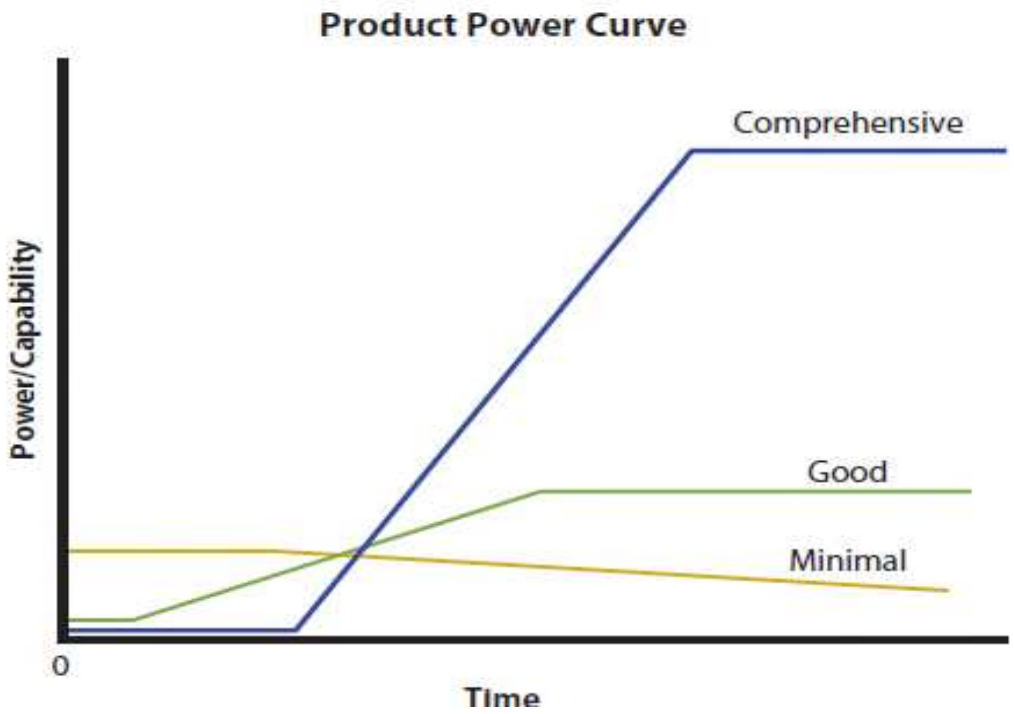


Figure 2-27 Product Power Curve

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Don’t Forget Procedures and People!

Q2-8 Which collaboration IS right for your team?

- Data component up to you.
- Metadata for project management demonstrates your team practiced iteration and feedback.
- Team needs to agree on tools to use.
- Train team members in the use of tools.
- Create special jobs or roles needed.

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Collaboration Information Systems in 2027

Q2-9 2027?

- Collaboration systems cheaper, easier to use, run on portable devices.
- Face-to-face meetings rare.
- Employees work at home, full time or part time.
- Corporate training online & asynchronous.
- Much less business travel.
- Travel industry focused on recreational travel.
- Conventions become virtual.

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Evolving Information Security

Security Guide

- Old castle model
  - Create barrier between internal information systems and hackers.
  - Firewalls and intrusion detection systems (IDS)
- Physical barriers gone
  - Smartphones, laptops, network-enabled devices completely transformed organization network architecture.
  - Access corporate servers remotely and store corporate data locally.

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Evolving Information Security (cont'd)

Security Guide

- City model
  - Authorized users and visitors free to roam digital city with any device.
  - Access to individual buildings, servers, and data restricted to authorized users.
  - More challenging due to diversity of devices, operating systems, and applications.
  - Must monitor user behavior more closely.
    - Reduce the risk of rogue employees.

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Evolving Information Security (cont'd)

Security Guide

- Collaborative projects with other firms.
  - Granting network access to outside collaborators can pose considerable risks.
- Employers increasingly monitoring
  - Internet usage, tracking GPS information on vehicles and mobile devices, recording keystrokes, monitoring social media activity, and reviewing emails.

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Software Product Manager

Career Guide

Christi Wruck at Instructure

Q. What attracted you to this field?

A. “I was working in a different field but was regularly considered the resident techie. I built websites and databases and set up networks and systems for the nonprofits that employed me. I was good at it, and I enjoyed it. So I decided to move into this field.”

Q. What advice would you give to someone who is considering working in your field?

A. “Study Agile, UX/UI design, project management, and SCRUM, and learn how to write at least a little bit of code.”

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Active Review

Q2-1 What are the two key characteristics of collaboration?

Q2-2 What are three criteria for successful collaboration?

Q2-3 What are the four primary purposes of collaboration?

Q2-4 What are the requirements for a collaboration information system?

Q2-5 How can you use collaboration tools to improve team communication?

Q2-6 How can you use collaboration tools to manage shared content?

Q2-7 How can you use collaboration tools to manage tasks?

Q2-8 Which collaboration IS right for your team?

Q2-9 2027?

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Eating Our Own Dog Food

Case Study 2

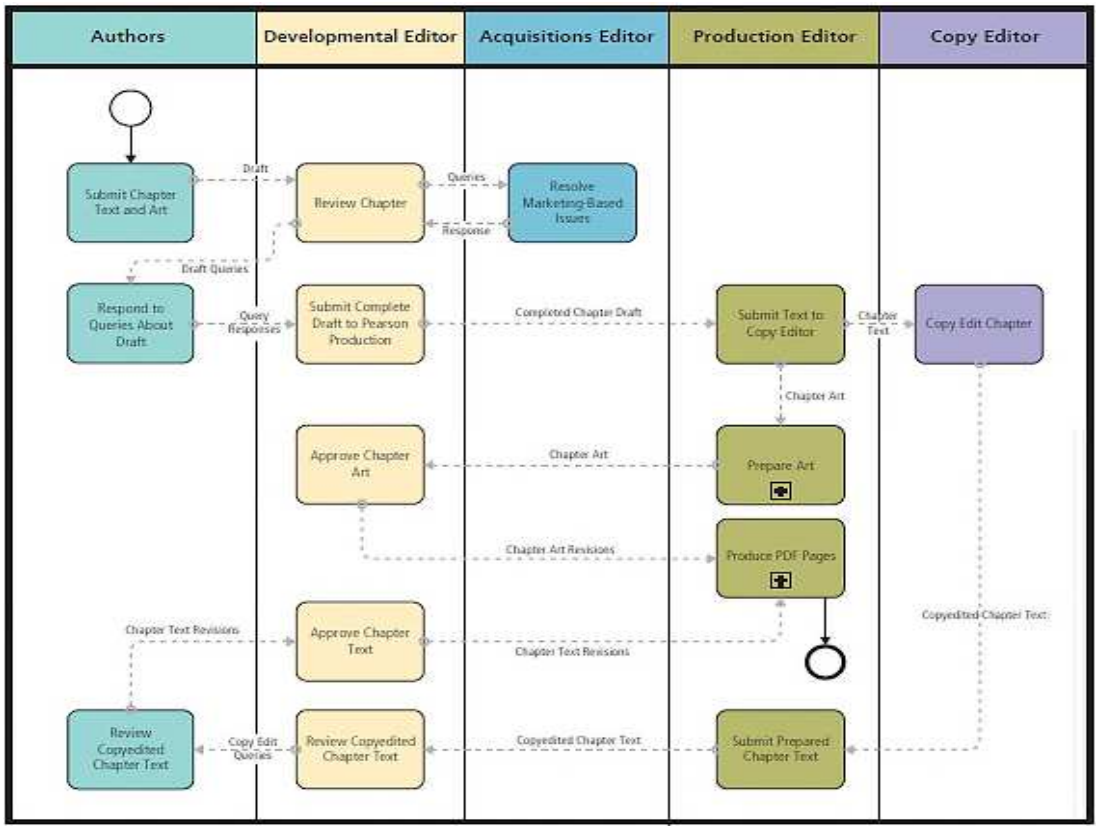


Figure 2-28 Chapter Development Process

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Case Study 2: Eating Our Own Dog Food (cont'd)

Case Study 2

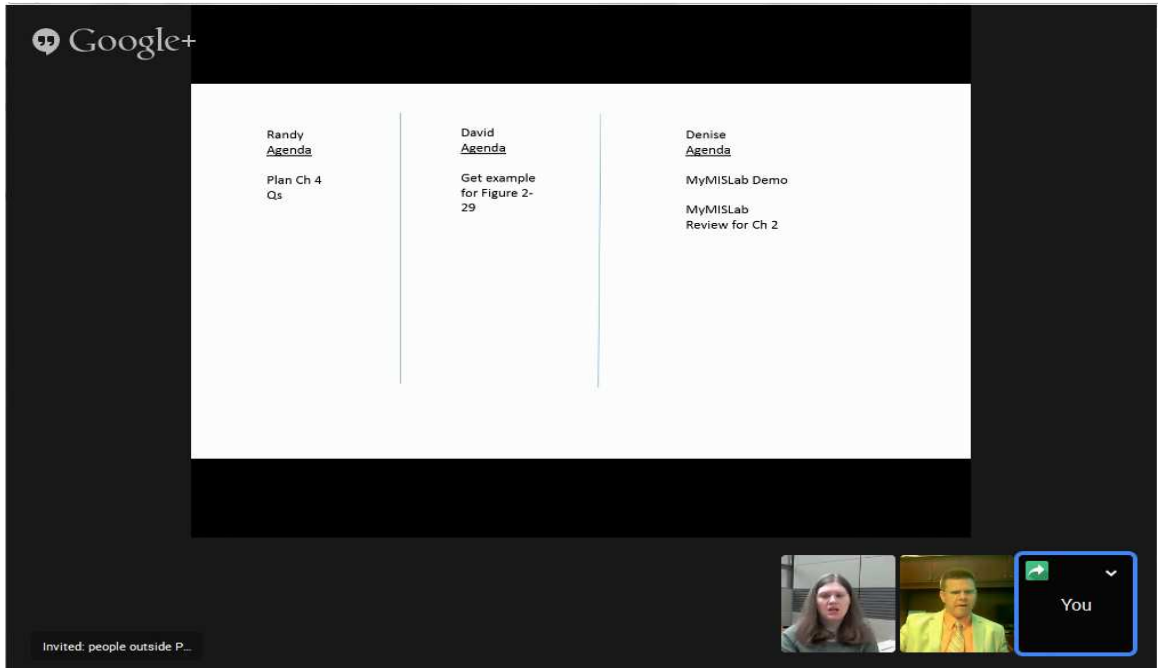


Figure 2-29 Google Hangout Group Conversation Source: Google and the Google logo are registered trademarks of Alphabet Inc., Used with permission.

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Using MIS 10th Edition SharePoint Development Site

Case Study 2

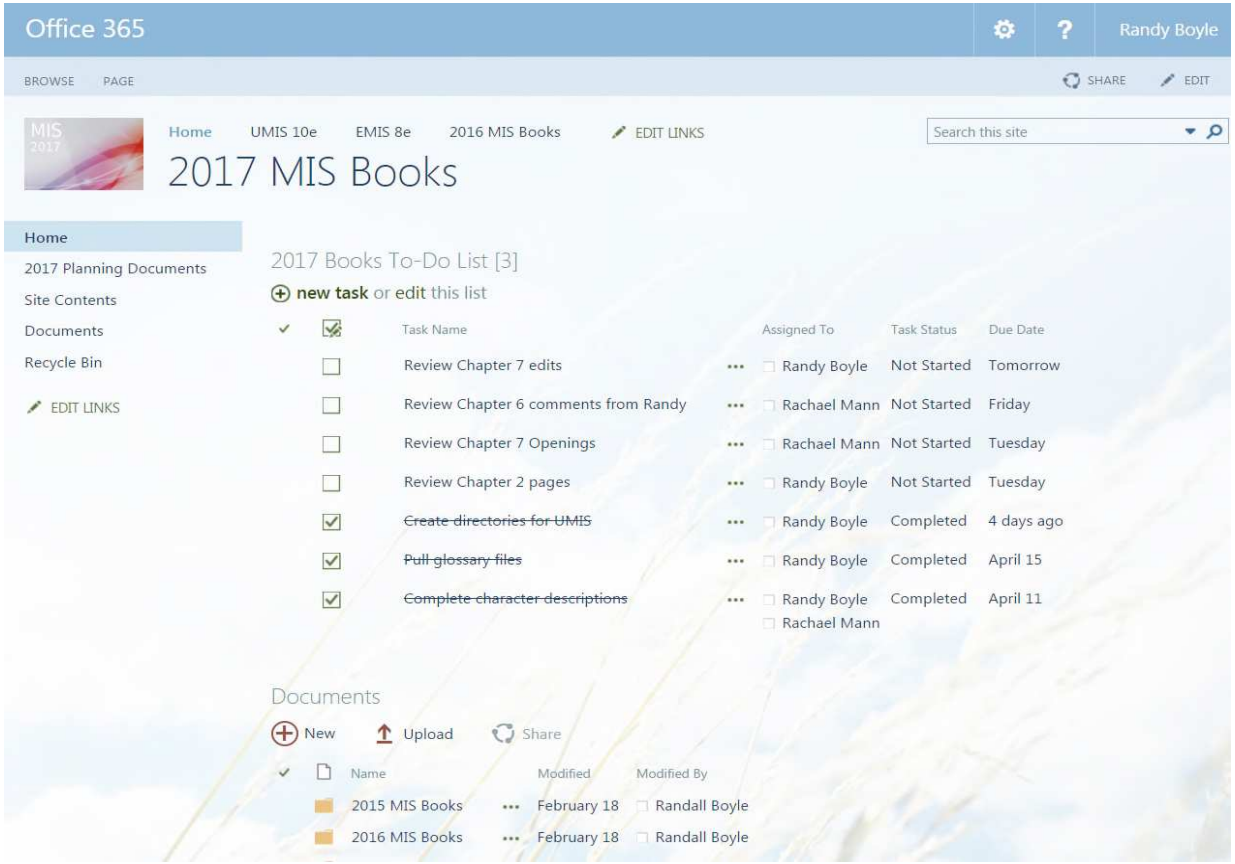


Figure 2-30 Using MIS 10th Edition SharePoint Development Site Source: Microsoft Corporation

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Example Email from SharePoint

Case Study 2

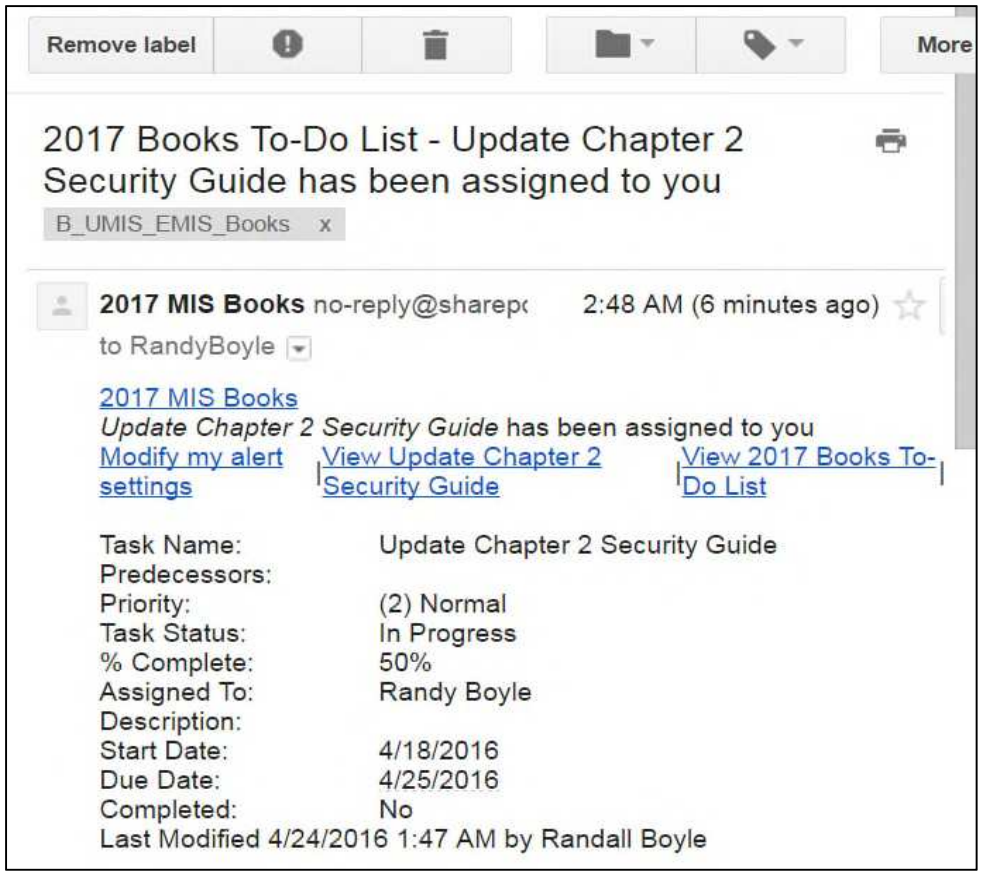


Figure 2-31 Example Email from SharePoint Source: Microsoft Corporation

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First Draft Document Library Contents

Case Study 2

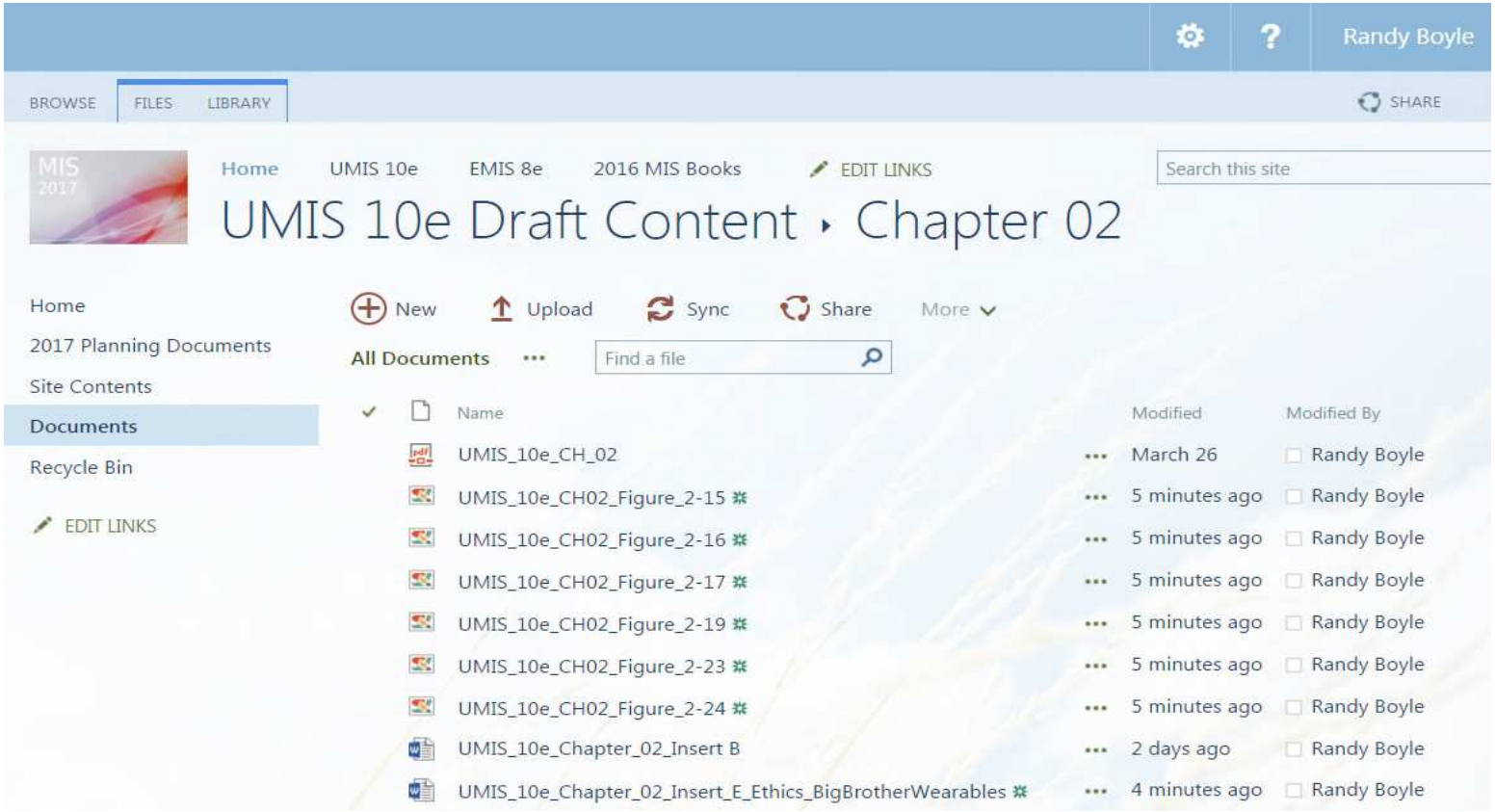


Figure 2-32 First Draft Documents Library Contents Source: Microsoft Corporation

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Version History

Case Study 2

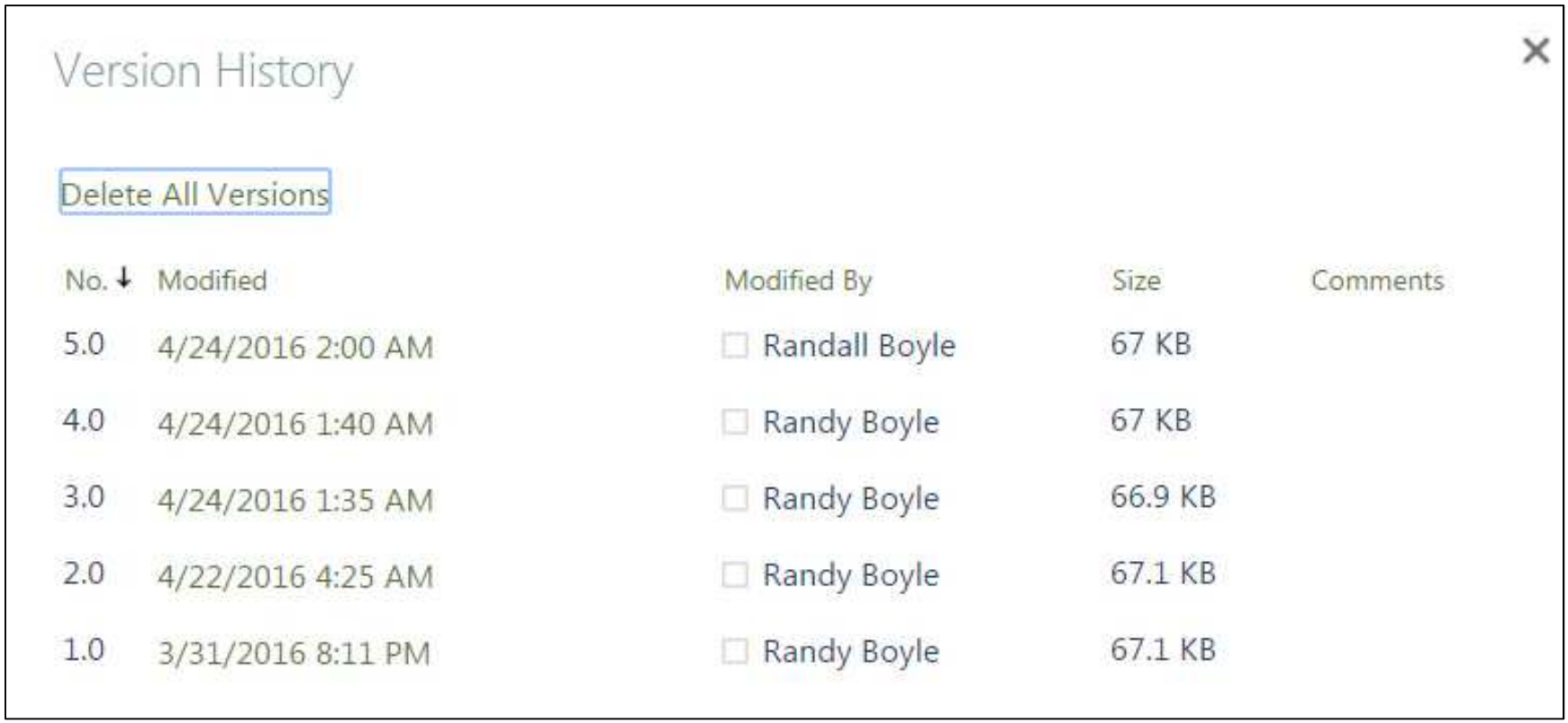


Figure 2-33 Version History Source: Microsoft Corporation

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