**Case Study 4**

**West Oak Cove Schools Network Upgrade**

West Oak Cove Schools is an independent school district with over 3,000 students in four different buildings around town. The students range from elementary school to high school. Franklin Elementary includes grades K–3. Lincoln Elementary includes grades 4–6. Eisenhower Junior includes grades 7–9. Kennedy High includes grades 10–12.

West Oak Cove Schools has a current project in progress to upgrade its networks across all four campuses. The IT director, Alice Miller, wants to complete all the upgrades in three months, while school is out for summer, although she has conceded that some lower priority features may be pushed into the school year as long as the core network is up and running.

West Oak Cove Schools has had major issues with its computer networks. The district currently uses a slow DSL-based network with a significant network latency issue due to the distance data must travel among the four buildings.

The school district plans to host all files at one central location to ensure they are backed up consistently and locked down per FERPA standards. A consistent unified messaging system will be implemented.

Several individual teachers and coaches, particularly at Eisenhower and Kennedy, have some unique technology needs for the STEM classes, clubs, and teams they oversee.

**Work Completed So Far**

Three weeks into the network upgrade project, the IT team has negotiated a contract with a cloud storage provider and implemented software to synchronize folders on teachers’ local machines to be backed up online. In addition, teachers can create their own shared folders to be used with other teachers of their choosing. The synchronization and sharing process works, although the helpdesk is receiving complaints that it isn’t. A vendor tech support representative assures Alice that when the school internet speed is upgraded, the cloud storage tool will have no trouble running more quickly. User Story B2 has been completed.

**What’s Next?**

While the cloud storage tool was being implemented, two network engineers who hadn’t been assigned to work on file sharing were doing some initial work focused on determining which internet service provider would satisfy the school’s speed requirements. The ISP should be able to offer various speeds, catering to the district’s business needs. The team has conducted several speed tests at different locations in each of the four campuses and reported their results back to Alice. By accident they found that wired network connection speeds at the Eisenhower campus increased dramatically when the wireless access points were powered down and only dropped again when they were turned on.

They also found that only the principals and a couple of teachers were using the wireless network capabilities at the Franklin and Lincoln campuses since the majority of teachers at the elementary schools have desktop computers. This was surprising since almost everyone at the secondary schools uses laptops and Wi-Fi due to the layout of Eisenhower and Kennedy with teacher offices clustered in a separate wing from their classrooms.

The following email was sent by Kennedy physics teacher Oliver Williams, regarding a potential opportunity he has just heard about through a colleague at the local university:

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To: Alice Miller

From: Oliver Williams

Subject: university grant/network project

Ms. Miller, I hope all is going well on the upgrade project. Since I’m not on campus during the summer break, I can only guess regarding what you’ve done so far. We are all looking forward to seeing how everything works when we come back for the retreat the week before school starts.

Do you remember Maya Johnson, who completed her Ph.D. a couple years ago and left Kennedy for U of M? She let me know of an interesting grant her department is working on. The gist of it is that they have some ruggedized handheld devices they need to test out in a variety of nonideal conditions. She figured if the devices can handle use at a high school, they’ll last through anything. I thought of the mountain biking team and the JROTC, but there are probably others who could use them. My physics class might be able to launch one during our rocket unit in October.

We would have to set up a next-gen cell tower on the campus, but all the equipment cost would be covered by the grant. I can get you in contact with Dr. Johnson if you think there is enough interest from some of the club advisors to make this happen.

-O.

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The following email was sent by Dr. Mateo Costa, principal at Kennedy High, as a follow-up to a meeting he and Alice Miller held to discuss project priorities:

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To: Alice Miller

From: Mateo Costa, Ed.D.

Alice, thanks again for meeting with me on such short notice. I know you’re busy troubleshooting the file sharing system. I hope they can get the speeds figured out. I did try what you told me and waited until after lunch to check for the files in the “Administrators” folder. The spreadsheet of ninth-grader data that Mrs. Phan from EJ said she had put in there for me this morning was ready just like you said it would be. I’m trying to practice patience, but this isn’t sustainable.

As we discussed, the new government records transparency law takes effect about halfway through this coming school year. Unless the legislature makes some last-minute changes, we’ll need to have the email and phone logging system available by then for sure. To answer your question, the more I think about it, the more I’m certain that any instant messaging we decide to roll out will fall under the same transparency requirements. We can’t afford the fines and increased oversight that will follow if someone asks for something we can’t find within the response period.

Best,

Dr. Costa

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The following memo is from Alice to the project team in preparation for planning the second three-week sprint:

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To: Network Upgrade Team

From: Alice Miller

I appreciate all your work as we launched our project three weeks ago. I apologize for the miscommunication about who was supposed to be working on what. I realize it wasn’t clear that we were starting with more of a skeleton crew right at the beginning of the project and planned to increase participation to involve all of you moving forward with the core of the project. We were still finalizing our contract with the IT consulting company that is helping to manage the project. They will be at all of our meetings moving forward. This is a new approach to projects for the district that we hope will help us move quickly in order to have the upgrades completed before school starts.

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**Product Backlog**

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| **Epic** | **Description** |  |  | |
| A | Network Access |  | “Difficulty” is on a scale of 1–10, where 1 is the most difficult and 10 is the easiest. |
| B | File Storage and Common Services |  | “Customer priority” is on a scale of 1–10, where 1 is the lowest priority and 10 is the highest priority. |
| C | Localized Applications |  | “Score” is on a scale of 1–100, where the higher the number, the sooner it should be addressed. |

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| --- | --- | --- | --- | --- | --- |
| **Epic** | **User story** | **Item** | **Difficulty** | **Customer priority** | **Score** |
| A | 1 | As a schoolteacher, I want high-speed connectivity so I can offer a better learning experience to students. | 6 | 6 | 36 |
| A | 2 | As a school IT technician, I want an internet service provider that is always available with little outage to reduce calls to the help desk. | 5 | 7 | 35 |
| A | 3 | As a school IT technician, I want all four buildings at the school to have the same speed when accessing the files. | 4 | 3 | 12 |
| A | 4 | As a high school teacher over STEM clubs, I want fast enough internet access to stream video of events and competitions. | 7 | 6 | 42 |
| A | 5 | As a school official, I want a lower-priced internet service provider so I can allocate funds to other needed areas. | 5 | 6 | 30 |
| B | 1 | As a schoolteacher, I want assignments to reach students’ devices so I can communicate with students electronically in the classroom. | 6 | 6 | 36 |
| B | 2 | As a schoolteacher, I want a file storage area to be able to collaboratively work with other teachers on my team. | 7 | 6 | 42 |
| B | 3 | As a school IT technician, I need a list of all authorized users to set up appropriate access rights in the central file system. | 5 | 8 | 40 |
| B | 4 | As a school official, I want an instant messaging tool so I can communicate with school faculty and staff quickly. | 6 | 6 | 36 |
| C | 1 | As a science teacher, I want a virtual lab tool to let students participate in more interactive learning. | 4 | 7 | 28 |
| C | 2 | As a high school teacher over STEM clubs, I want video streaming equipment to stream video of events and competitions. | 6 | 6 | 36 |
| C | 3 | As a high school sports coach, I need video equipment for recording and reviewing game performance with student athletes. | 6 | 6 | 36 |
| C | 4 | As a school resource officer, I need surveillance tools to monitor for suspicious activity inside the schools. | 5 | 8 | 40 |