Network Diagrams AOA & AIB

Vandana Anand

Worcester Polytechnic Institute

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Professor Kenneth J. Wermann

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Abstract

Dell Technologies is a leading global technology company that provides technology solutions and services ranging from infrastructure to software and devices (Dell EMC, n.d.). As an intern at Dell Technologies, I got the opportunity to work on an interesting development project along with three other interns for twelve weeks. Breaking down the tasks involved in the project can be done with the Activity-on-the-Arrow (AOA) and Activity-in-the-Box (AIB) network diagrams. The type of project management network diagram used is called the Critical Path Method (CPM).

Introduction

Dell Technologies, founded by current Chief Executive Officer (CEO) Michael Dell, is comprised of a family of businesses including Dell, Pivotal, RSA, Secureworks, Virtustream, VMware, and the recently acquired EMC in 2016, which marked the biggest tech deal in history (Dell Technologies, n.d.). These organizations are a collective force of innovative efforts with a strong presence in 180 countries worldwide. Dell Technologies provides infrastructure for organizations to expand on their digital assets, transform the Information Technology (IT) industry, as well as protect information (Dell EMC, n.d.). Their mission is to advance human progress by providing greater access to technology for people around the world (Dell Technologies, n.d.).

As an undergraduate student studying Computer Science at Worcester Polytechnic Institute, I got the unique opportunity to pursue a software engineering internship at Dell Technologies in the Storage Department, specifically on the Test Automation and Enablement team. The team works on high-performance storage systems and delivers next-generation tools to improve the efficiency of development operations as well as quality using advanced technologies, tools, and software engineering methodologies.

Three other college interns and I worked on a project to design and develop a website for quality assurance analysts to execute and analyze test cases for various storage projects that are underway for release. We followed the Software Development Life Cycle (SDLC) that involves planning, design, implementation, testing, and deployment. Throughout the duration of the project, we followed the Scaled Agile Framework (SAFe) methodology, a top-down method to project management and decision-making. First, we gathered requirements to determine the
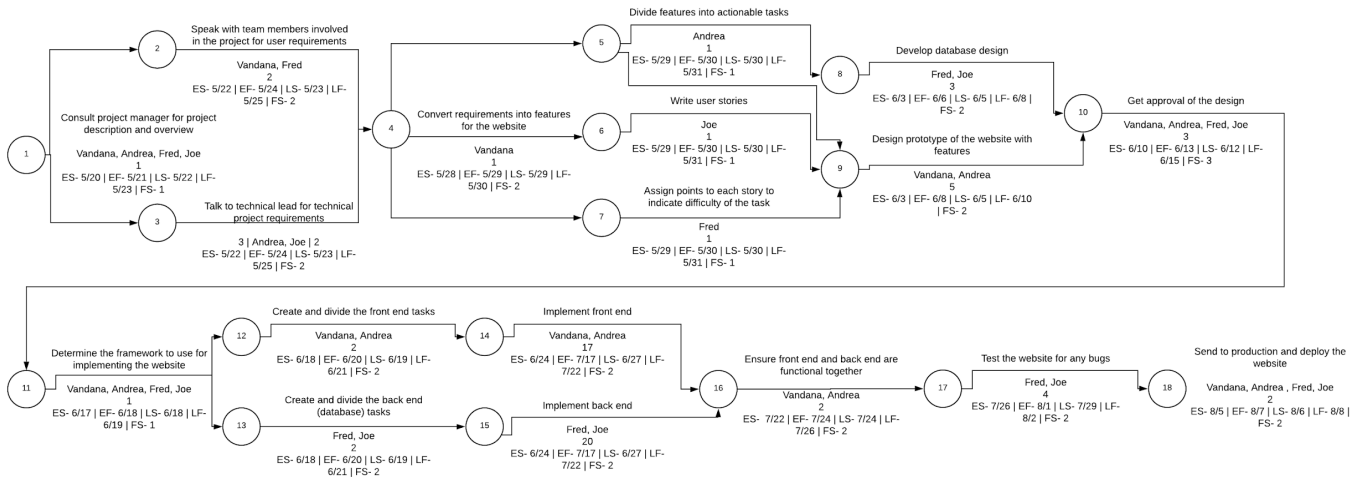
necessary features for the website. Next, we designed a prototype of the website as well the

database which we presented to the rest of the team. We got approval of our design and split up

the feature implementation among our intern team. After this stage, we tested our website and

deployed it in a production environment so that it was ready to use for our internal customers.
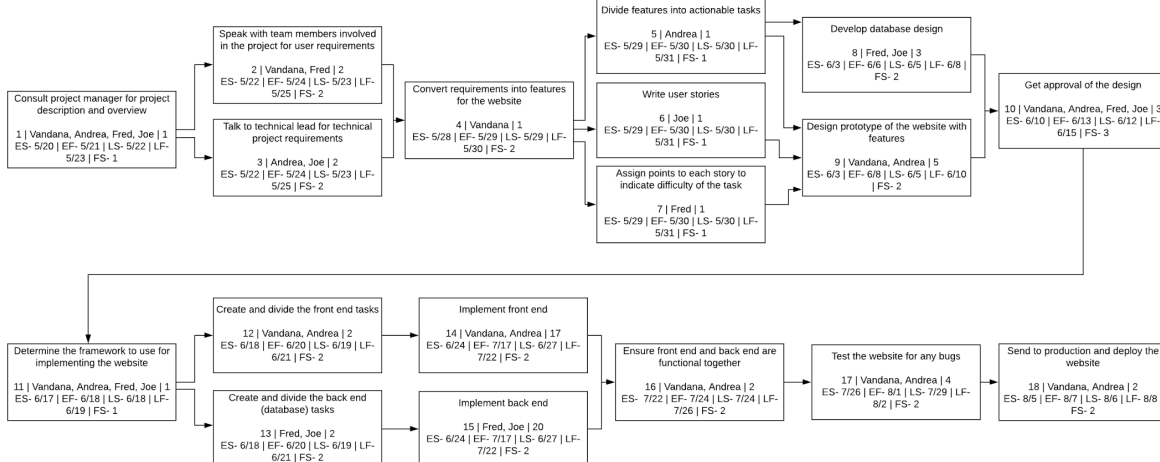
Discussion

AOA and AIB Network Diagrams

Estimated Start Time: May 20th 2019	Required Completion Time: August 9th 2019	Total Slack: 60 days Positive TS: 3 days Negative TS: 3 days

AOA

Speak with team members involved in the project for user requirements
Vandana, Fred
2
ES- 5/22 | EF- 5/24 | LS- 5/23 | LF- 5/25 | FS- 2

Consult project manager for project description and overview
Vandana, Andrea, Fred, Joe
1
ES- 5/20 | EF- 5/21 | LS- 5/22 | LF- 5/23 | FS- 1

Talk to technical lead for technical project requirements
3 | Andrea, Joe | 2
ES- 5/22 | EF- 5/24 | LS- 5/23 | LF- 5/25 | FS- 2

Convert requirements into features for the website
Vandana
1
ES- 5/28 | EF- 5/29 | LS- 5/29 | LF- 5/30 | FS- 2

Divide features into actionable tasks
Andrea
1
ES- 5/29 | EF- 5/30 | LS- 5/30 | LF- 5/31 | FS- 1

Write user stories
Joe
1
ES- 5/29 | EF- 5/30 | LS- 5/30 | LF- 5/31 | FS- 1

Assign points to each story to indicate difficulty of the task
Fred
1
ES- 5/29 | EF- 5/30 | LS- 5/30 | LF- 5/31 | FS- 1

Develop database design
Fred, Joe
3
ES- 6/3 | EF- 6/6 | LS- 6/5 | LF- 6/8 | FS- 2

Design prototype of the website with features
Vandana, Andrea
5
ES- 6/3 | EF- 6/8 | LS- 6/5 | LF- 6/10 | FS- 2

Get approval of the design
Vandana, Andrea, Fred, Joe
3
ES- 6/10 | EF- 6/13 | LS- 6/12 | LF- 6/15 | FS- 3

Determine the framework to use for implementing the website
Vandana, Andrea, Fred, Joe
1
ES- 6/17 | EF- 6/18 | LS- 6/18 | LF- 6/19 | FS- 1

Create and divide the front end tasks
Vandana, Andrea
2
ES- 6/18 | EF- 6/20 | LS- 6/19 | LF- 6/21 | FS- 2

Create and divide the back end (database) tasks
Fred, Joe
2
ES- 6/18 | EF- 6/20 | LS- 6/19 | LF- 6/21 | FS- 2

Implement front end
Vandana, Andrea
17
ES- 6/24 | EF- 7/17 | LS- 6/27 | LF- 7/22 | FS- 2

Implement back end
Fred, Joe
20
ES- 6/24 | EF- 7/17 | LS- 6/27 | LF- 7/22 | FS- 2

Ensure front end and back end are functional together
Vandana, Andrea
2
ES- 7/22 | EF- 7/24 | LS- 7/24 | LF- 7/26 | FS- 2

Test the website for any bugs
Fred, Joe
4
ES- 7/26 | EF- 8/1 | LS- 7/29 | LF- 8/2 | FS- 2

Send to production and deploy the website
Vandana, Andrea , Fred, Joe
3
ES- 8/5 | EF- 8/7 | LS- 8/6 | LF- 8/8 | FS- 2

AIB

Consult project manager for project description and overview
1 | Vandana, Andrea, Fred, Joe | 1
ES- 5/20 | EF- 5/21 | LS- 5/22 | LF- 5/23 | FS- 1

Speak with team members involved in the project for user requirements
2 | Vandana, Fred | 2
ES- 5/22 | EF- 5/24 | LS- 5/23 | LF- 5/25 | FS- 2

Talk to technical lead for technical project requirements
3 | Andrea, Joe | 2
ES- 5/22 | EF- 5/24 | LS- 5/23 | LF- 5/25 | FS- 2

Convert requirements into features for the website
4 | Vandana | 1
ES- 5/28 | EF- 5/29 | LS- 5/29 | LF- 5/30 | FS- 2

Divide features into actionable tasks
5 | Andrea | 1
ES- 5/29 | EF- 5/30 | LS- 5/30 | LF- 5/31 | FS- 1

Write user stories
6 | Joe | 1
ES- 5/29 | EF- 5/30 | LS- 5/30 | LF- 5/31 | FS- 1

Assign points to each story to indicate difficulty of the task
7 | Fred | 1
ES- 5/29 | EF- 5/30 | LS- 5/30 | LF- 5/31 | FS- 1

Develop database design
8 | Fred, Joe | 3
ES- 6/3 | EF- 6/6 | LS- 6/5 | LF- 6/8 | FS- 2

Design prototype of the website with features
9 | Vandana, Andrea | 5
ES- 6/3 | EF- 6/8 | LS- 6/5 | LF- 6/10 | FS- 2

Get approval of the design
10 | Vandana, Andrea, Fred, Joe | 3
ES- 6/10 | EF- 6/13 | LS- 6/12 | LF- 6/15 | FS- 3

Determine the framework to use for implementing the website
11 | Vandana, Andrea, Fred, Joe | 1
ES- 6/17 | EF- 6/18 | LS- 6/18 | LF- 6/19 | FS- 1

Create and divide the front end tasks
12 | Vandana, Andrea | 2
ES- 6/18 | EF- 6/20 | LS- 6/19 | LF- 6/21 | FS- 2

Create and divide the back end (database) tasks
13 | Fred, Joe | 2
ES- 6/18 | EF- 6/20 | LS- 6/19 | LF- 6/21 | FS- 2

Implement front end
14 | Vandana, Andrea 17
ES- 6/24 | EF- 7/17 | LS- 6/27 | LF- 7/22 | FS- 2

Implement back end
15 | Fred, Joe | 20
ES- 6/24 | EF- 7/17 | LS- 6/27 | LF- 7/22 | FS- 2

Ensure front end and back end are functional together
16 | Vandana, Andrea | 2
ES- 7/22 | EF- 7/24 | LS- 7/24 | LF- 7/26 | FS- 2

Test the website for any bugs
17 | Vandana, Andrea | 4
ES- 7/26 | EF- 8/1 | LS- 7/29 | LF- 8/2 | FS- 2

Send to production and deploy the website
18 | Vandana, Andrea | 2
ES- 8/5 | EF- 8/7 | LS- 8/6 | LF- 8/8 | FS- 2

Critical Path Selection

The critical path approach of network diagrams is used for projects with interdependent tasks. It calculates the longest path of planned activities to the end of a project, determines the earliest and latest that each activity can occur as well as which activities are critical and which

have float. Float is also known as total slack, signifying the time between the calculated project

completion time and the project's required completion time (Wermann, 2020).

The critical path shown on the diagrams was selected because it breaks down a large

project into more smaller, actionable tasks. The project was apt for showing the longest

continuous pathway from start to finish as it was based on the SDLC. The duration of each

activity as well as any buffer time that may be needed in case a task takes longer than normal is

clearly shown. It also enforces a sense of a timeline and everything that needs to be done before

the final deadline. Each person is aware of their responsibility for an activity. Moreover,

interdependent tasks are highlighted so that priority can be given those activities that are time

crucial. These advantages make the status and progress of the project apparent to the team as

well as keep the development intern team on track.

Conclusion

Creating network diagrams helps in managing projects and was especially useful for the intern team's website development project. The critical path method helped break down tasks, assess the duration or the project and activities as well as highlight each team member's responsibilities. Overall, creating the diagrams helped organize the project in a practical sense and learn how to apply them for other projects in the future.

References

Dell EMC. (n.d.). PDF. Round Rock, Texas.

Dell Technologies. (n.d.). The Story and Mission of Dell Technologies. Retrieved June 14, 2020,

from https://corporate.delltechnologies.com/en-us/about-us/who-we-are.htm

Wermann, K. (2020, June 21). PPT. Worcester.