Module 10 Assignment: Putting It All Together: Course Project Plan

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Executive Summary

Solution to business problem and quantifying business impact:

FPD DM will help to better utilize the product order data collected from customers, as well as distribution orders based on inventory levels and customer needs. Despite having a system to assist planners to develop plant production schedules based on customer needs and planned supply chain inventory levels, business performance is still unpredictable, and marketing and sales organizations do not generate timely sales.

Large customers have been complaining about incomplete shipments, late shipments, and delays in fulfilling orders. These customers are threatening to find other beverage suppliers. This project can help to resolve those issues and keep the customers. Losing a customer due to poor service would equate to the loss of (revenue per customer) x (lifespan of customer) - (cost to acquired) (Clapp 2019). On the other hand, prioritizing customers can help the revenue grow between four and eight percent while also creating a positive public image (Hawke Media 2021).

A dashboard that provides information and metrics for sales and operations can help to improve decision-making and planning through analytics-based results provided through proposed models and outcomes. The dashboard would be built using AI tools and extensive amounts of historic data collected.

Breakdown of technical and business solutions:

The technical approach to solving the problem would include a combination of business and technical solutions. From a business perspective, it would be best to use existing software rather than building from scratch to stay within the six-month timeframe. The Big Data Training Group proposed a fixed price proposal of $10,000 for one week of AI tools training for the FPD DM team members, and this training will enable the FPD data analysts and programmers to use the tools to manage and cleanse the necessary data for the dashboard, as well as for the metrics development and presentation. Cloud-based AI tools need to be utilized to analyze the data and propose models and outcomes. The solution requires significant data sciences analysis to evaluate the results validly. According to the CFO, FPD DM should utilize AI tools, and more specifically, cloud-based AI tools, are utilized by Wal-Mart, FPD Beverage Company's largest customer, to accomplish the goals FPD DM is set out to do.

The data required for FPD DM is already being captured by the Enterprise Resource Planning (ERP) system, so the existing software to collect and hardware to store the data can continue to be utilized. Preliminary data will be used with the available AI tools to formulate, test analytics models, and then the models will be used on sourced data to populate the dashboard. QlikSense cloud-based storage and AI tools are already contracted and licensed, so there is no cost for such tools. However, Frank Modruson, CIO, said the ERP system change request and his resources are very constraint. It would be best to have a third-party software team on standby to handle ERP system changes in case data collection needs to be adjusted to fit requirements. The CIO has provided workspace, laptops, and printers, so there will be no initial cost there either. Additional equipment will be needed for at least two additional developers (with one on standby) and a UI/UX expert. The development of the dashboard will be complex and require significant time when it comes to integration. While all five in-house analysts will utilize their AI tools training to clean and analyze data, a developer will be necessary from an approved third-party vendor to bring pieces together and build the dashboard at the end. A UI/UX designer from a third party will be necessary during the design and development phase.

High-level functional and nonfunctional requirements:

The high-level requirements are set out by management and stakeholders. From a functional perspective, management is seeking a dashboard that provides information and metrics for sales and operations that can help to improve decision-making and planning. The dashboard would include, but not limited to product line sales analysis, packaging performance by product line analysis, product line by customer analysis, order delivery performance by product line and customer, and distribution center shipping performance to customer. Steve James, vice president of marketing requests that data be processed as quickly as possible, the dashboard be accessible 24/7, and has short response time. The marketing and sales personnel ask that the data be accessible from anywhere and on any authorized device.

From a nonfunctional perspective, which is how the dashboard will work and fulfill the requirements requested by management, the technical approach mentioned in the second question addresses the CFO's request to utilize AI tools. The second question also addresses the financial standards set (budget and time), including the CIO's concerns about the ERP system, as well as hardware and software requirements. Finally, security over dashboard access is important since propriety FPD data is exposed.

Regarding the project results and standards for FPD DM, the Executive Oversight Committee (EOC) and at least three other stakeholders will review and approve project status reports from me (project manager), as well as review, approve, or reject changes requests, review and resolve issues, and represent the many stakeholder groups. FPD needs to have ability to take reasonable actions to keep its customers.

Expected summary schedule with milestones:

The CIO suggested the waterfall/predictive for the project management approach. While taking that into consideration, a hybrid approach is most ideal so FPD DM will also utilize Agile aspects. Through the various phases: planning, design, data, sourcing/analysis, model validation, dashboard development, and deployment/implementation, new issues and suggestions can be addressed in later iterations. However, through the waterfall approach, the requirements, design, and implementation factors are set before the project. The following is a rough estimate of how the six-month timeline would be utilized (Note that the activity-on-node (AON) diagram shows that the timeline will actually be about four months, but possible delays and issues can push the team use the entire six months. The goal is to avoid passing the six-month duration.):

Month 1: Planning and design
    Milestones: Define requirements and plan project, design pipeline with technical requirements, design dashboard.
Month 2: Data
    Milestones: Cleanse and integrate data, build prototype with dummy data.
Month 3: Sourcing/analysis
    Milestones: Build models and analytics features.
Month 4: Model validation
    Milestones: Confirm results, improve models and analytics features.
Month 5: Dashboard development
    Milestones: Build dashboard with confirmed results.

Month 6: Deployment/implementation
Milestones: Test and integrate feedback, deploy final dashboard.

Expected summary cost/budget request:

Estimated costs for training and team members:
- In-house team members (five analysts): On company salary/none
- Project manager (me): $62.50/per hour (6 months – 960 hours)
- AI tools training: training consultant(s): $250/per hour ($10,000 max) (1 week – 40 hours)
- Third-party vendor software developer: $67/per hour (6 months – 960 hours)
- Third-party vendor software developer for ERP requests: $63/per hour (on standby) (1-2 months – 160-320 hours)
- Third-party UI/UX designer: $55/per hour (2-3 months – 320-480 hours)

Based on the baseline budget, the total cost is expected to be $201,328, which is well below the $250,000 budget, but possible issues can force the team to use the full budget. The goal, however, is to remain within the maximum budget. The request of $250,000 also takes into account at least a 10 percent contingency fund in case of emergencies. According to estimations, the budget should still stay within $250,000 despite having to use additional funds to mitigate risks. It is also important to note that a thorough risk assessment has been performed to handle issues throughout the process.

High-level assumptions and expectations:

A high-level assumption is that integration of data may take longer than expected, especially since the data is collected from multiple sources. Further data may be required from third parties such as distribution centers close to key customers and transportation carriers that are utilized from plants to distribution centers. Finding gaps in information may a critical factor to address to overcome unpredictability that is common at the moment. However, the assumption is that all the data is already in-house and simply needs to be manipulated to fit the requirements.

The expectation is that the suggested timeframe and budget is enough to complete the dashboard with the requirements while adhering to suggestions made by management regarding AI tools (CFO request), concerns and constraints (mentioned by CIO), and project management approach.

Project organization and team members (including PM and EOC):

The project manager will be me, Nadeem Patel.

The Executive Oversight Committee (EOC) consists of the CEO (Barbara Coffee), CFO (Paul Reporting), and three other external stakeholders (Boyd Roach (investor), Arooj Petty (investor), and Brenna Devine (investor)).

Team members include Brennan Clements (IT manager), Aila Branch (ERP application analyst), Raheel Juarez (database analyst), Luisa Larson (supply chain analyst), Cain Griffiths (sales operations analyst). The team also looks to bring on an additional developer from a third party to build dashboard, a UI/UX designer, and possibly another developer in case the ERP system requires changes.

Other information (milestones with approximate dates that need to be mentioned):

All expected milestones and dates have been mentioned. However, if there are issues that occur regarding ERP, incorrect results, or design issues, there may be a delay of two-to-four weeks.

Summary of documents:

The documents following this summary go further into details regarding the project scope, timelines and costs, sequenced plan, risk management, resource scheduling and costs, and leadership and management. The project scope will dive into the objective, deliverables, milestones, technical requirements, and limits and exclusions. The tradeoff of time, cost, and performance is broken down in the priority matrix, and the communication management plan shows how team members, EOC, and the project manager will ensure high-level communication and prevent avoidable issues. The identified scope and deliverables are broken down into smaller elements, and the hierarchical process is reflected in the work breakdown structure (WBS). With the use of the WBS, the WBS cost spreadsheet breaks down the cost of each work package.

The AON diagram provides a clear idea of the expected project timeframe from start to end, including the various paths and each activity's duration, early start, late start, early finish, late finish, and slack, which are all also reflected in the AON spreadsheet. The project baseline budget uses the early start and late finish, as well as the costs derived in the WBS cost spreadsheet to indicate the cost over a time period for each activity. Using information from the AON diagram, a Gantt chart has been developed to provide another visual perspective of the project, including the milestones and paths.

Risk management is reflected in the risk identification table, risk severity matrix, and risk response matrix. These documents show how risks are assessed and the possible steps to handle risks. The project organization chart shows how the structure with all individuals will be broken down for the FPD DM project. All the documents mentioned to this point should provide clear indication as to how the project can succeed, but the feasibility section will further explain why FPD DM can be successful.

Project Scope Statement

Project objective:

Develop a high-quality, interactive dashboard that provides information and metrics for sales and operations for management decision making at FPD Beverage Company. The project, FPD Drinking Metrics (FPD DM), is to be completed within six months (May 2022 to October 2022) with no additional cost above the set $250,000 budget.

Product scope description:

The dashboard would be built using cloud-based AI tools and extensive amounts of historic data, and it would provide analytics-based results through proposed models and outcomes.

Justification:

FPD Beverage Company management, including Paul Reporting, CFO and Project Sponsor, is looking to improve sales and operations information for decision making. According to management, FPD DM is considered "an extremely important project for the company's future," especially when considering the ongoing issues the company has been facing. Business performance has been unpredictable, and the marketing and sales organizations do not generate timely sales forecasts by product and consumer. Furthermore, large customers complained about incomplete shipments, late shipments, and delays in fulfilling orders. These customers have threatened to seek other beverage suppliers.

When looking at studies, losing a customer would be costly to the total revenue, but prioritizing customer needs can help the revenue grow between four and eight percent, and subsequently create a positive public image (Hawke Media 2021). Also, it is crucial FPD Beverage Company retain its customers that are threatening to leave. Other studies show that increasing customer retention even by just five percent can increase profits by 25-95 percent. Additionally, the probability of selling to an existing customer is 60-70 percent while selling to a new prospect is just five to 20 percent (TTi Global Research 2019).

Deliverables:

Phase 1 (Months 1 and 2):

- Completed dashboard design.
- Completed backend to frontend pipeline design.
- Completed data protection plan design.
- Integrated cleansed and organized data from multiple sources.

Phase 2 (Months 3 and 4):

- Integrated dashboard technical requirements.
- Integrated data protection plan.
- Completed prototype with necessary outputs and results.

Phase 3 (Months 5 and 6):

- Completed dashboard development with all requirements and security measures.
- Completed testing phase.
- Dashboard deployed with integrated user feedback.

Milestones (in detail):

Month 1: Planning and design
- AI-tools training with Big Data Training Group completed and analysts certified (May 6, 2022).
- Data collection completed (May 13, 2022).
- Dashboard design completed (May 27, 2022).
- Pipeline design with technical requirements completed (May 27, 2022).

Month 2: Data
- Data cleansed and managed using AI tools (June 10, 2022).
- Data integrated into pipeline from multiple sources (June 17, 2022).
- Security for data protection plans completed (June 24, 2022).

Month 3: Sourcing/analysis
- Dashboard technical requirements integration completed (July 15, 2022).
- Data protection plans integration completed (July 29, 2022).

Month 4: Model validation
- Prototype completed (August 12, 2022).
- Prototype approved by Executive Oversight Committee (EOC) after presentation 1 (August 19, 2022). *All EOC members listed under "Review with sponsor/customer" section.*
- Required final outputs and results confirmed by management (CFO/Project Sponsor, VP – CIO, and VP – Marketing) and EOC after presentation 2 (August 26, 2022). *CFO/Project Sponsor (also on EOC), VP – CIO, and VP – Marketing listed under "Review with sponsor/customer" section.*

Month 5: Dashboard development
- Dashboard with requirements and security measures completed (September 23, 2022).

Month 6: Deployment/implementation
- Testing phase completed (October 07, 2022).
- User feedback implemented (October 21, 2022).
- EOC and other management (VP – CIO and VP – Marketing) approve final iteration (October 21, 2022).
- Dashboard deployed (October 28, 2022).

Technical requirements:

- Management requirements for information and metrics dashboard:
    - Product lie sales analysis.
    - Packaging performance by product line analysis.
    - Product line by customer analysis.
    - Order delivery performance by product line and customer.
    - Distribution center shipping performance by customer.
- Requirements from CFO:

    - Use cloud-based AI tools to analyze data and propose models and outcomes (analysis needed to evaluate results validity).
        - Utilize QlikSense cloud-based storage and AI tools as per VP – CIO.
- Requirements from VP – Marketing:
    - Data is processed "quickly as possible" (near real-time processing/no delay).
    - Access to dashboard 24/7 and short response time.
    - Marketing and sales personnel have access to data from anywhere and on any authorized device (smart phone, tablet, laptop, desktop).
    - Security for propriety data.
    - Action plan to retain customers (result of successful dashboard that provides necessary information and metrics to act upon).

Limits and exclusions:

- Dashboard will be built to the technical requirements set by management and stakeholders.
- Enterprise Resource Planning (ERP) system will be primary source of data:
    - Data and information include:
        - Product order data from customers.
        - Distribution orders based upon inventory levels and customer needs.
        - Assists plant production schedules based upon customer needs and planned supply chain inventory levels.
    - ERP system has many change requests and resources are constrained, according to VP – CIO.
        - Approved third-party vendor will be responsible for significant software development if necessary (on standby; budget accounted for).
- Additional data collection will be dependent on third-party:
    - Distribution centers close to key customers and transportation carriers.
    - Transportation carriers from plants to distribution centers.
- Management (CFO/Project Sponsor, VP – CIO, and VP – Marketing) will be responsible for providing any other data if necessary.
- FPD DM is limited to using preliminary data with AI tools to formulate and test analytics models, and then use the models on sourced data (data quality, completeness, suspicions, etc.) to populate dashboard as per VP – CIO.
- Cloud-based AI tools are limited to what is already contracted, licensed, and available to use:
    - QlikSense tools:
        - Self-service data-prep capabilities and cloud data storage.
        - Data visualization and color-selection flexibility.
        - Model formulation and training/validation.
        - Geospatial analysis.
        - Mobile app that supports offline analysis.
        - Advanced analytics capabilities not supported by QlikSense tools can be incorporated using integrated R and Python tools.
- VP – CIO is responsible for providing hardware and software (workspace, laptops, printers, etc.) to all team members, including two third-party developers and a UI/UX designer from approved vendors.

Acceptance criteria:

The dashboard can be officially deployed if:

- All set milestones are complete at estimated deadlines while adhering to technical requirements.
- Confirmation required from management (CFO/Project Sponsor, VP – CIO, and VP – Marketing) regarding output results that fulfill technical requirements.
- EOC and management (VP – CIO and VP – Marketing) review and approval required of final product.

Review with sponsor/customer:

The project scope statement is to be developed under the direction of the project manager (Nadeem Patel) and CFO/Project Sponsor, as well as customer and significant stakeholders (EOC and other management individuals (VP – CIO and VP – Marketing)), to clearly define the deliverables for end users and project plans of FPD DM (107). The EOC also represents the many other FPD Beverage stakeholder groups. With that in mind, the project scope statement will be reviewed and approved by:

- The EOC (review and approval required):
    - Barbara Coffee (CEO), Paul Reporting (CFO/Project Sponsor), (Boyd Roach (investor), Arooj Petty (investor), and Brenna Devine (investor).
- Other management individuals that will be involved in development (review required):
    - Frank Modruson (VP – CIO), Steve James (VP – Marketing).

(Larson and Gary Gray 2020, 106-111)

Project Priority Matrix

	Time	Performance	Cost
Constraint		X	
Enhance	X		
Accept			X

The quality and success of FPD DM is defined as meeting or exceeding the expectations of the EOC and other management individuals (VP – CIO and VP – Marketing) in terms of cost (budget), time (schedule), and performance (scope) of the project. While time, cost and performance are significant factors, it is important to establish priorities for those factors to make appropriate trade-off decisions when necessary. The matrix will help clear the priorities with the EOC and other management individuals (VP – CIO and VP – Marketing), as well as shared expectations and prevent misunderstandings, especially if unexpected problems arise.

When considering that FPD DM is viewed as an "extremely important project for the company's future" by management, the performance cannot be compromised. Each technical requirement needs to be met at the highest level, so the set parameters regarding desired outputs from the dashboard will remain fixed throughout the project.

Shipping performance has been unpredictable due to ocean vessel transportation. Additionally, business performance has been unpredictable, and the marketing and sales organizations have not been able to generate timely sales forecasts by product and consumer. With large customers threatening to leave to due to incomplete or late shipments and delays in fulfilling orders, time is the top priority to meet demands and retain customers. Time-to-market is important to sales, and the FDP DM aims to take advantage of every opportunity to reduce completion time, so this criterion should be optimized, and this prioritization should also add value to the FPD DM project.

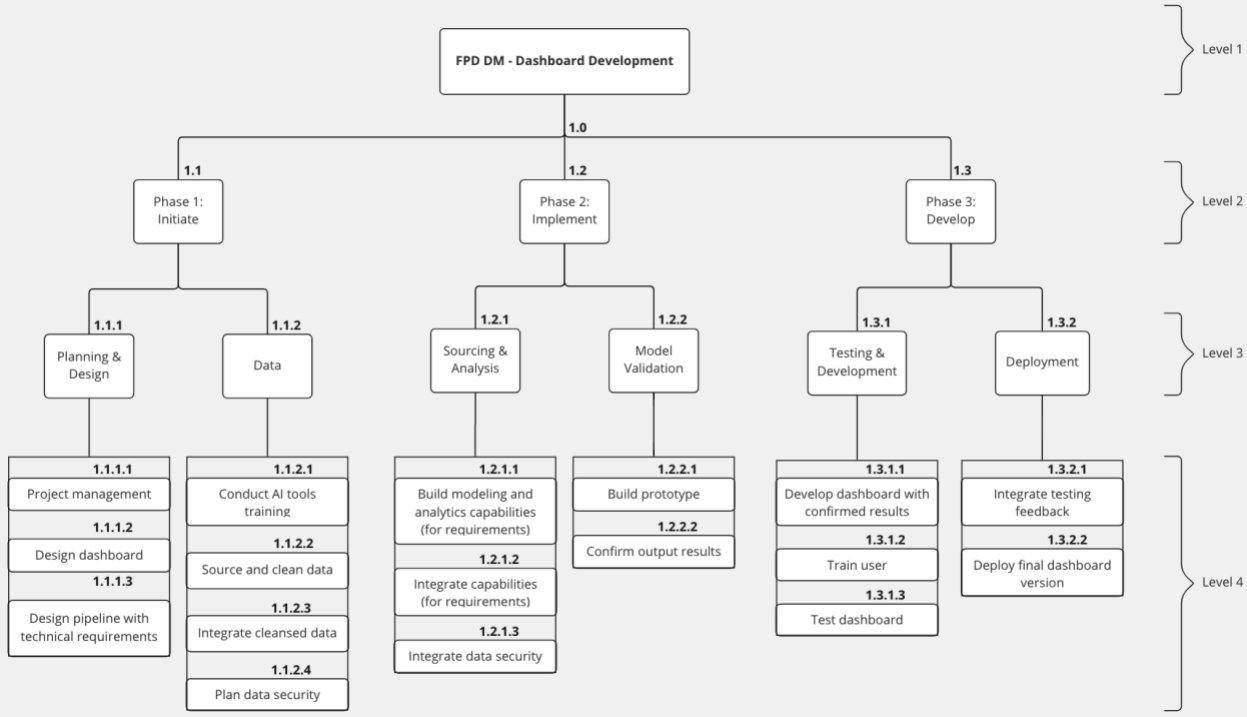
Through the tradeoff performance and time, it is possible that the budget may go over the amount set by Paul Reporting (CFO/Project Sponsor). While management is keen on completion within the budget and schedule, the CFO has asked to determine if the budget and schedule targets cannot be met. The FDP DM team views this as an opportunity to state that there may be a need for additional $20,000 for training or a short-term hire from a third-party for tasks that might hinder progress. However, the team is committed to staying within the budget from the start and is actually looking to keep costs below the $250,000 threshold. The estimated cost for all team members and training is currently estimated to be $180,880 (see the project proposal for a full breakdown). While deadlines for milestones are set, the team is hoping to reduce time in the planning and design phase, as well as the data collection process. If the EOC, other management individuals (VP – CIO and VP – Marketing), or even a major customer is looking to further speed up the process, the total estimation can quickly rise as additional members would need to be brought on to FPD DM team.

(Larson and Gary Gray 2020, 111-113)

Work Breakdown Structure (WBS):

After the scope and deliverables are identified, the project needs to be divided into smaller elements, and this process can be viewed as the work breakdown structure (WBS). The WBS can be used to not just confirm the project elements by the project manager, but it can also be used to establish a basis for control. For the FPD Drinking Metrics (FPD DM) project, the WBS begins with the completed project is at the top (Level 1), which is then broken into phases that include the major deliverables. Those major deliverables (Level 3) are broken into work packages that can be considered as identifiable work activities and control points (Level 4) (Larson and Gray 2020, 113). In the final level, it can be seen that project management is considered as a work package as well. It is important to include such a work package since it is also essential to assign the lowest organization units the responsibility for packages within a cost account, which is the intersection of the organization unit and work package (118). Essentially, it is crucial to build a project control point (cost account) wherever necessary in order to have a clear idea of outcomes and responsibility.

The FPD DM project's WBS is built on the assumption that the scope and deliverables are clarified with management, and the team has been assembled. Work packages were broken down to the point that the tasks are manageable the required individual or individuals. For example, one of several requests made by Steve James (VP – Marketing) was that data be processed as quickly as possible. This requirement would be fulfilled in work package 1.2.11. Similar to that requirement, every requirement and expected deliverable would fall within one of the work packages. The WBS was essentially built by referring to the project scope statement, which included deliverables, milestones, technical requirements, so it is certain that every work package has been created thoughtfully and meant to address all requirements and expectations.



Selecting estimation method (bottom-up):

Having a clear understanding of project times and costs estimates is the foundation for project planning and control. When looking at the FPD DM project, senior management has indicated the objectives, as well as requirements, budget, and time frame for the project. However, the estimates provided by senior management are focused on strategic decision making, so those who want the metric dashboard built likely do not have an in-depth knowledge of the component activities used to complete the project. With that in mind, the bottom-up approach is ideal in this situation.

The bottom-up approach will help estimate the entire process all the way down to the work package level, and it will establish low-cost, efficient methods by getting project estimates from people most knowledgeable about the estimate needed. Additionally, the bottom-up approach can serve as a check on cost elements in the WBS as work packages and cost accounts are rolled up to major deliverables. Since each work package is assessed rather than just the whole project, section, or deliverable, the customer, which in this case is management, also has an opportunity to compare the low-cost, efficient method approach with any imposed restrictions. Essentially, they can consider the trade-off (140).

When looking at the various bottom-up approaches for estimating project times and costs, the template method is most ideal since dashboard development is a common practice and the company appears to have done projects associated with data development analysis For example, the company's Enterprise Resource Planning (ERP) system captures product order data from customers, captures distribution orders based upon inventory levels and customer needs, and assists planners to develop plant production schedules based upon customer needs and planned supply chain inventory levels. The dashboard being built as part of the FPD DM project can utilize the previous estimates from projects also focused on data collection, modeling, as well as prediction and analysis. Ultimately, templates are created based on the costs of previous, similar projects, and the times and pasts can be adjusted based on the differences. This can also help to quickly reduce estimate errors (146).

Time-Cost Labor Estimates														
WBS ID	Task Description	Task Assigned to	Estimate (hrs)	Estimating Approach	Estimated Duration (hrs) (Estimate * 1.5)	Estimated Interruptions (hrs) (Estimate * 0.33)	Total Effort (hrs)	Labor Rate $/hr	Labor Cost Total $	Expenses	Total Costs	# of Resources	Calendar duration
1.0	**Project FPD DM**												
1.1	**Phase 1: Initiate**												
1.1.1	Planning & Design												
1.1.1.1	Project management	Nadeem Patel (PM)	960	Expert	1440	316.8	1756.8	$62.50	$ 109,800	0	109800	1	1756.8
1.1.1.2	Desgin dashboard	Nisha Hail (UI/UX designer)	40	Expert	60	13.2	73.2	$55	$ 4,026	0	4026	1	73.2
1.1.1.3	Define requirements and design pipeline with technical requirements	Paul Tyson (Developer), Brennan Clements (IT manager)	80	Expert	120	26.4	146.4	$60	$ 8,784	0	8784	2	73.2
1.1.2	Data												
1.1.2.1	Conduct AI tools training	Big Data Training Group consultant(s)	40	Expert			40			10000	10000	2	20
1.1.2.2	Source and clean data	Aliah Branch (ERP application analyst, Raheel Juarez (database analyst), Luisa Larson (supply chain analyst), Cain Griffiths (sales operations analyst)	80	Historical	120	26.4	146.4	$55	$ 8,052	0	8052	4	36.6
1.1.2.3	Integrate cleansed data	Paul Tyson (Developer)	40	Historical	60	13.2	73.2	$70	$ 5,124	0	5124	1	73.2
1.1.2.4	Plan data security	Samad Mays (Developer), Brennan Clements (IT manager)	40	Expert	60.0	13.2	73.2	$60	$ 4,392	0	4392	2	36.6
1.2	**Phase 2: Implement**												
1.2.1	Sourcing & Analysis												
1.2.1.1	Build modeling and analytics capabilities (for technical requirements)	Aliah Branch (ERP application analyst, Raheel Juarez (database analyst), Luisa Larson (supply chain analyst), Cain Griffiths (sales operations analyst)	80	Expert	120.0	26.4	146.4	$55	$ 8,052	0	8052	4	36.6
1.2.1.2	Integrate capabilities (for technical requirements)	Paul Tyson (Developer)	40	Historical	60.0	13.2	73.2	$70	$ 5,124	0	5124	1	73.2
1.2.1.3	Integrate data security	Samad Mays (Developer)	40	Historical	60.0	13.2	73.2	$65	$ 4,225	0	4225	1	73.2
1.2.2	Model Validation												
1.2.2.1	Build prototype	Paul Tyson (Developer)	80	Expert	120.0	26.4	146.4	$70	$ 10,248	0	10248	1	146.4
1.2.2.2	Confirm output results	Paul Tyson (Developer)	16	Expert	24.0	5.3	29.3	$70	$ 2,051	0	2051	1	29.3
1.3	**Phase 3: Develop**												
1.3.1	Testing & Development												
1.3.1.1	Develop dashboard with confirmed results	Paul Tyson (Developer)	80	Expert	120.0	26.4	146.4	$70	$ 10,248	0	10248	1	146.4
1.3.1.2	Train users	Nisha Hail (UI/UX designer)	4	Expert	6.0	1.3	7.3	$55	$ 402	0	402	1	7.3
1.3.1.3	Test dashboard	Nisha Hail (UI/UX designer)	36	Expert	54.0	11.9	65.9	$55	$ 3,625	0	3625	1	65.9
1.3.2	Deployment												
1.3.2.1	Integrate testing feedback	Paul Tyson (Developer)	40	Historical	60.0	13.2	73.2	$70	$ 5,124	0	5124	1	73.2
1.3.2.2	Deploy final dashboard version	Paul Tyson (Developer)	16	Historical	24.0	5.3	29.3	$70	$ 2,051	0	2051	1	29.3
		Total							$ 191,328	$ 10,000	$ 201,328		

Communication Management Plan

The following communication plan is aimed to mitigate project problems and ensure customers, team members, the EOC, and other management individuals have the information to do their jobs:

What Information	Target Audience	When?	Method of Communication	Provider
Milestone report	EOC, VP – CIO, VP – Marketing	Biweekly	E-mail, hardcopy	Project manager, project office
Project status & agendas	Team members (analysts, developers, designer)	Weekly	E-mail, hardcopy	Project manager, project office
Team status reports	EOC, VP – CIO, VP – Marketing	Weekly	E-mail	Project manager, project office
Issues report	EOC	Weekly	E-mail	Project manager, project office
Escalation reports	EOC	When needed	Meeting, e-mail, hardcopy	Project manager, project office
Outsourced data & information	Project manager, team members (analysts, developers, designer)	As required	Meeting, email, hardcopy	CFO/Project Sponsor, VP – CIO, VP – Marketing
Accepted change requests	EOC	Anytime	E-mail, hardcopy	Project manager, project office
Oversight gate decisions	EOC, VP – CIO, VP – Marketing	As required	E-mail, meeting report	Project manager, project office
Key presentations	EOC, VP – CIO, VP - Marketing	Monthly	Meeting, e-mail, hardcopy	Project manager, team members (analysts, developers, designer), project office

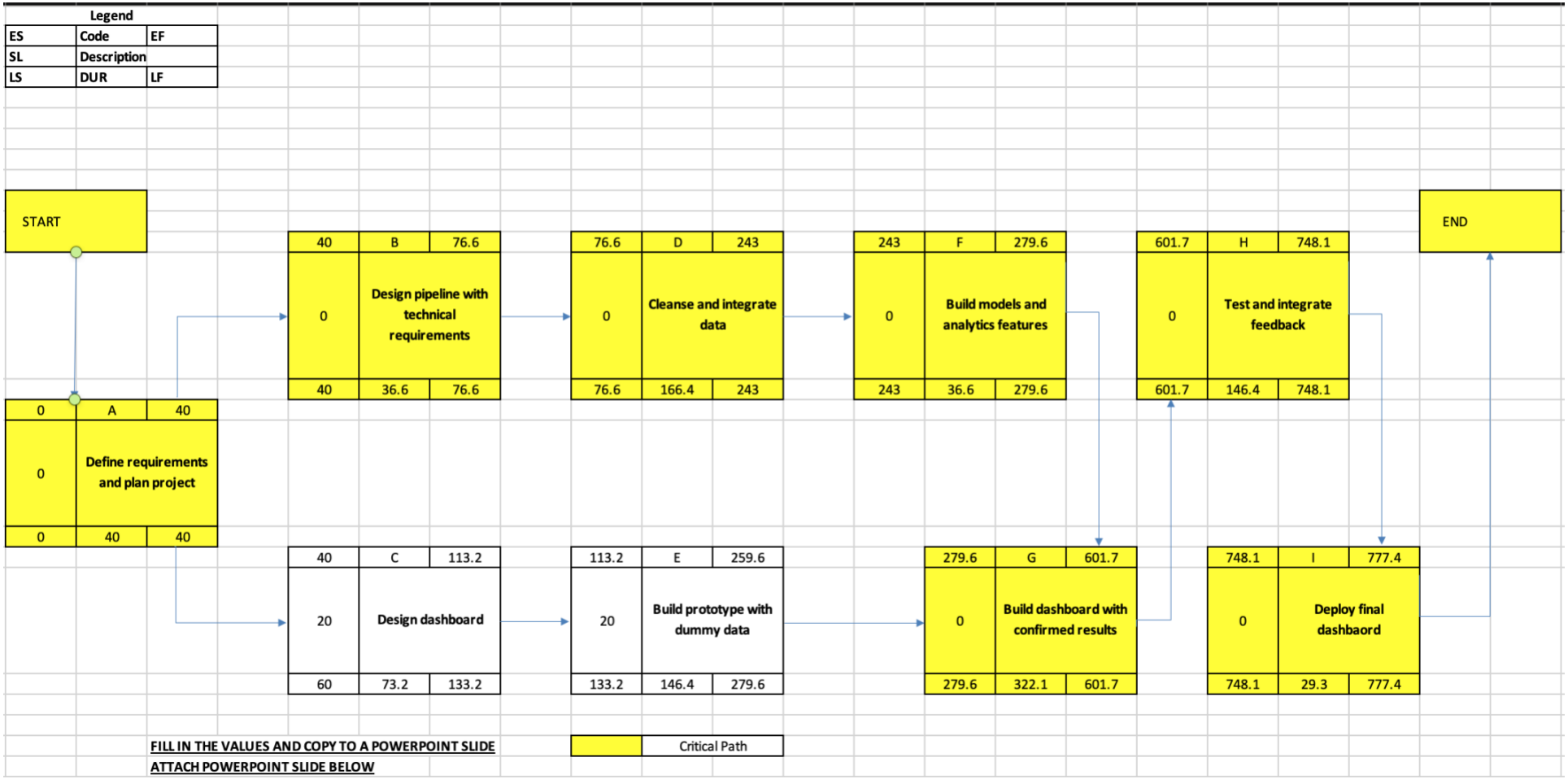
(Larson and Gary Gray 2020, 124-126)

Main points:

- All work will be done inhouse and any necessary third-party vendors will be part of the team internally, so there is no need for information regarding outsourcing performance. However, if the ERP system or other data sources are not sufficient to complete a task, additional information will be needed from management (CFO/Project Sponsor, VP – CIO and VP – Marketing), who will communicate with key customers, as well as distribution and transportation companies used by FPD Beverage Company, to obtain necessary information.

- Key presentations to the EOC and other necessary management (VP – CIO and VP – Marketing) occur end of each month. These include but not limited to all milestones completed during the month, prototype presentations, new or ongoing issues, and changes.
- All reports, status updates, requests, decisions, and presentations will be available for all those involved at the virtual project office on the Web. This will allow immediate access to information at all times for transparency and reference.

Activity-on-node (AON) Diagram



Activity-on-node (AON) Spreadsheet

Activity	Work Package(s)	Duration	ES	LS	EF	LF	Slack
A	1.1.1	1	0	0	1	1	0
B	1.1.1.3	0.91	1	1	1.92	1.92	0
C	1.1.1.2	1.83	1	1.5	2.83	3.33	0.5
D	1.1.2.1 - 1.1.2.4	4.16	1.92	1.92	6.08	6.08	0
E	1.2.2.1	3.66	2.83	3.33	6.49	6.99	0.5
F	1.2.1.1	0.92	6.08	6.08	6.99	6.99	0
G	1.2.1.2, 1.2.1.3, 1.2.2.2, 1.3.1.1	8.05	6.99	6.99	15.04	15.04	0
H	1.3.1.2, 1.3.1.3, 1.3.2.1	3.66	15.04	15.04	18.7	18.7	0
I	1.3.2.2	0.73	15.04	15.04	19.44	19.44	0

Critical Path	A	B	D	F	G	H	I
Critical Path Duration	**19.44**					

Note: Duration, ES, LS, EF, LS, LF, and Slack are shown in weeks (hours from AON diagram/40 - rounded to two decimal places). Critical Path

Project Baseline Budget

Activity	Duration	ES	LF	Slack	Cost From WBS Cost Spreadsheet	0	5	9.58	14.15	16.65	26.65	30.38	34.95	44.95	54.95	64.95	75.21	85.21	93.51	97.18
Define requirements and plan project (A)	5	0	5	0	$4,392	4392														
Design pipeline with technical requirements (B)	7.32	5	9.58	0	$4,392		2196	2196												
Design dashboard (C)	14.64	5	16.65	2.5	$4,026		2013	2013	0											
Cleanse and integrate data (D)	20.8	9.58	30.38	0	$27,568			6892	6892	6892	6892									
Build prototype with dummy data (E)	18.3	14.15	34.95	20	$10,248				3416	3416	3416	0								
Build models and analytics features (F)	4.58	30.38	34.95	0	$8,052							8052								
Build dashboard with confirmed results (G)	40.26	34.95	75.21	0	$21,648								5412	5412	5412	5412				
Test and integrate feedback (H)	18.3	75.21	93.51	0	$9,151												4575.5	4575.5		
Deploy final dashbaord (I)	3.67	93.51	97.18	0	$2,051														2051	
E(PM)	97.18	0	97.18	0	$109,800	7842.86	7842.86	7842.86	7842.86	7842.86	7842.86	7842.86	7842.86	7842.86	7842.86	7842.86	7842.86	7842.86	7842.86	
				BAC	$201,328	$12,234.86	$12,051.86	$18,943.86	$18,150.86	$18,150.86	$18,150.86	$15,894.86	$13,254.86	$13,254.86	$13,254.86	$13,254.86	$12,418.36	$12,418.36	$9,893.86	
				Cumulative PV		$12,234.86	$24,286.72	$43,230.58	$61,381.44	$79,532.30	$97,683.16	$113,578.02	$126,832.88	$140,087.74	$153,342.60	$166,597.46	$179,015.82	$191,434.18	$201,328.04	

List all paths in the AON diagram:	(1) Start-A-B-D-F-G-H-I-End (2) Start -A-C-E-G-H-I-End
Critical Path:	Start-A-B-D-F-G-H-I-End
CP Duration:	777.4 Hours / 97.18 Days

Project Start

Note	Please note that the Gantt chart is based on hours. The total number of hours for the entire duration is 777.4, which is about 19 weeks (19.435) or four months (3.887).

Gantt Chart

Name: Nadeem Patel

Time Period (Hours)

Activity	Duration	ES	LS	EF	LF	Slack
Define requirements and plan project (A)	40	0	0	40	40	0
Design pipeline with technical requirements (B)	36.6	40	40	76.6	76.6	0
Design dashboard (C)	73.2	40	60	113.2	133.2	20
Cleanse and integrate data (D)	166.4	76.6	76.6	243	243	0
Build prototype with dummy data (E)	146.4	113.2	133.2	259.6	279.6	20
Build models and analytics features (F)	36.6	243	243	279.6	279.6	0
Build dashboard with confirmed results (G)	322.1	279.6	279.6	601.7	601.7	0
Test and integrate feedback (H)	146.4	601.7	601.7	748.1	748.1	0
Deploy final dashbaord (I)	29.3	748.1	748.1	777.4	777.4	0

Activity	40	76.6	120	149.8	170	209.8	243	280	320	360	389	409.4	449.4	489	529	569	602	642	682	721.7	748	777.4
A	40																					
B		36.6																				
C			43.4	29.8	20																	
D			43.4	29.8	20	40	33.2															
E								36.6	40	40	29.8	20										
F								36.6														
G									40	40	29.8	20	40	40	40	40	32.3					
H																		40	40	40	26.4	
I																						29.3

List all paths in the AON diagram: (1) Start-A-B-D-F-G-H-I-End (2) Start -A-C-E-G-H-I-End

Critical Path: Start-A-B-D-F-G-H-I-End

CP Duration: 777.4 Hours

Project Start

Note

Please note that the Gantt chart is based on hours. The total number of hours for the entire duration is 777.4, which is about 19 weeks (19.435) or four months (3.887).

FPD Drinking Metrics (FPD DM)

Project Risk Assessment

This document covers a risk assessment for the FPD DM project. The first step in analyzing the project risk is risk identification. For each risk identified, estimating the likelihood, the impact, should a given risk even occur, and an estimate of how difficult the event might be to detect. Additionally, we decide as to a point in time such an event might occur.

Risk Identification

	Risk Event	Likelihood	Impact	Detection Difficulty	When	Risk Value *
R1	Receiving unclean data with low data integrity and missing elements	3	2	2	Development	**12**
R2	Requiring additional resources to meet schedule due to other duties and lack of appropriate skills/experience	4	4	3	Development	**48**
R3	Define/socialize/accept performance metrics (how to calculate)	2	3	3	Planning	**18**
R4	Server outage	2	5	5	Production	**50**
R5	Security of proprietary data getting exposed	2	5	5	Production	**50**
					Average Risk Value	**36**

Table 1 - Risk Identification

***Likelihood/Impact/Detection* Legend**	
1-Very Low	Insignificant cost/time increase and scope/quality decrease
2-Low	<10% cost/time increase, and minor scope/quality areas affected
3-Moderate	10-20% cost/time increases, and major scope/quality areas affected
4-High	20-40% cost/time increases and scope/quality changes unacceptable to sponsor
5-Very High	>40% cost/time increases, and project end result is effectively useless

* *We arrive at a risk value by multiplying the scores for the likelihood, impact, and detection difficulty (Impact x Probability x Detection = Risk Value). This is part of the Failure Mode and Effects Analysis (FMEA) approach.*

Risk Severity Matrix

Likelihood						
	5					
	4				R2	
	3		R1			
	2			R3		R4 & R5
	1					
		1	2	3	4	5
	Impact					

Table 2- Risk Severity Matrix

The risk severity matrix visualizes each key risk along a likelihood / impact access. Risk events in the upper right quadrant are the most concerning and warrant thorough attention during the risk response and contingency planning steps.

Risk Assessment

The risk assessment analysis resulted in three risks being placed on the very high zone, one risk in the medium zone, and one risk in the low zone. Due to these risk placements, the project is determined to be considered medium high risk overall. Additionally, the Failure Mode and Effects Analysis (FMEA) gives an overall average score of 36. Although not a perfect way to analyze the risks since this technique gives the same weight to the three types of inputs (probability, detection, and impact), the FMEA result can show that the overall risk is clearly higher than a low risk of 1 and not very high as 125. The FMEA result combined with the severity matrix gives the medium high overall assessment of the project.

(Larson and Gray 2020, 221-223)

Risk Response Matrix

R1) Receiving unclean data with low data integrity and missing elements

Response	Contingency Plan	Trigger	Responsible Party
Mitigate: Reduce likelihood event will occur. Have multiple checkpoints to review data quality. * Data engineers. * Sales ops analysts. * Data scientists. Conduct data checks early and often. Example: For analysis generation, don't wait until the final report layout is complete to start running preliminary checks on data validity. Ask data engineers and other existing users of data to see if any issues currently exist.	Make extra consultant "hands" available should additional ETL be required to prepare data or add additional pipeline steps. Identify alternative sources of data to fulfill requirements.	Any party responsible identifies: * That current data sources require more than [16] hours time to prepare data for their needs. * A considerable part of the data they need is not available. * A considerable part of the data they need is of poor or unreliable quality.	Sales analysts Data engineers Data scientists IT (CIO) team

R2) Requiring additional resources to meet schedule due to other duties and lack of appropriate skills/experience

Response	Contingency Plan	Trigger	Responsible Party
Mitigate: Reduce likelihood event will occur. Identify as early as possible if a skill gap does exist. Place "at risk"/new activities off the critical path, allow for additional skills training while minimizing impact to	Have consultants "on call" should additional resources be required, establish pricing expectations ahead of time to avoid cost surprise. Try and appoint in-house expert should they be needed.	* Prototype delays. * Prototype issues. * Work package delays. * Feedback from analysts or data scientist about Qliksense tools or AI capability.	Project manager Analyst Data scientist Data engineer

Transfer: Pass risk to third party Try and build in contract requirements with third parties (Qliksense, Big Data Training Group) support requirements. Have third parties responsible for providing data sign data quality agreement (e.g., Three part manufacturers and/or distributors). **Retain**: Accept risk of event occurring If there are new technologies employed or “at risk” areas certain risk of overrun (resources/time) should be accepted, to the degree it does not jeopardize project budget and schedule.			

R3) Define/socialize/accept performance metrics (how to calculate)

Response	Contingency Plan	Trigger	Responsible Party
Mitigate: Reduce likelihood event will occur. Identify key stakeholders and users of the final dashboard. During planning phase of the project, hold initial meeting to define metrics and calculations. Hold follow-up meetings to clarify selected metrics (involve subject matter	Adjust metrics or calculations based on user feedback to gain acceptance. Testing or post-production.	During testing or post-production, evaluate feedback from users based on metrics defined and calculated. If metrics are not accepted by the users during these stages, the contingency plan will be triggered.	Project manager Data engineer Analyst

experts to confirm calculations). Communicate weekly or bi-monthly with these stakeholders on progress of gathering metrics, reiterating calculations in email communication. Ensure user acceptance of metrics in testing phase — get test users from each department of stakeholders to test tool. Resolve any calculation issues during testing phase.			

R4) Server outage

Response	Contingency Plan	Trigger	Responsible Party
Transfer: Pass risk to third party Since the software is being hosted on cloud services, pay the premium for the cloud service provider to take on the disaster and availability risk. This fixed contract rate (monthly) will provide the peace of mind needed that if a server goes down, the data is copied to other zones and still able to be accessed 24/7.	Pay pricing to cloud service provider to handle disaster and availability recovery. When: Pay monthly fee.	When data is unavailable or server is offline.	Third-party cloud service provider

R5) Security of proprietary data getting exposed

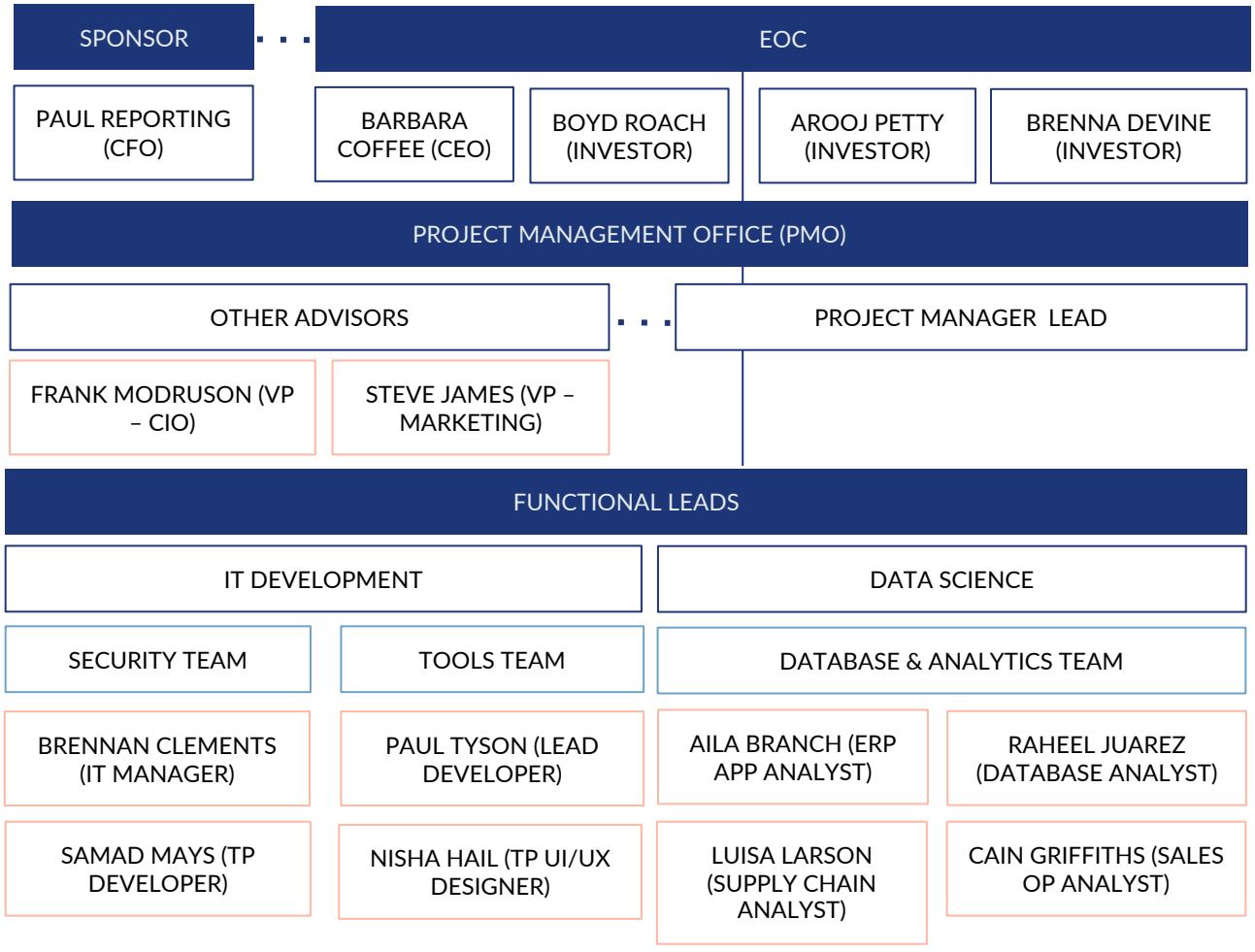
Response	Contingency Plan	Trigger	Responsible Party
Mitigate: Reduce likelihood event will occur	Shut down database and further limit access.	Data breach notification due to unusual activity.	Pipeline developer IT (CIO) team

Identify possible risks during prototype and testing phases. Address these issues before deployment. * Run tests on different parts of pipeline and data sources. Use intrusion detection systems (IDS) to monitor traffic for suspicious activity (IT department monitors activity). Provide “additional” access on as-needed basis. **Retain**: Accept risk of event occuring With a new technology release, pipeline vulnerabilities are not always clear, even with the analysis of previous projects. Possible breaches should be accepted and used to further improve security.	Pinpoint where and how suspicious activity is taking place, and identify what information is at risk. Recover from breach by changing access information.		

(Larson and Gray 2020, 223-227)

Hierarchical Representation

Considering the needs of the organization and the project itself, the project organization structure is functional. The project has various parts that are delegated to respective functional units, and each unit is responsible for completing its segment of the project. While the Executive Oversight Committee (EOC) is looking to implement the project, the project manager is responsible for coordinating the project. Such a structure also provides flexibility as appropriate specialists in different functional units are assigned to work on the project before returning to their normal work after the completion of the project. This also leads to the point that such a structure gives the ability to bring on in-depth expertise (Larson and Gray 2020, 71). Finally, since the project has been developed to address major issues regarding business performance and shipments, the individuals brought on the project will eventually move on without dedicating an extensive amount of time on the dashboard. With a functional structure, there is an easy post-project transition for the specialists making major contributions. The functional field is their professional home and the focus of their professional growth and advancement (72).



EOC RESPONSIBILITIES

- Meet bi-monthly with Project Manager (PM)
- Shape and advise overall direction
- Allocate resources
- Make key decisions
- Resolve escalated issues and risks

PM RESPONSIBILITIES

- Lead execution, enforcing guiding principles
- Link between EOC and functional teams
- Manage budget, synergy governance
- Provide weekly email reporting to EOC

FUNCTIONAL TEAM RESPONSIBILITIES

- Meet 1x a week with PM Lead
- Identify activities that need to occur and the timeline for each
- Perform/delagate day-to-day planning & roadmap tasks
- Proactively escalate issues/risks to PM Lead
- Provide business/technical expertise

IT = INFORMATION TECHNOLOGY
TP = THIRD-PARTY
UI/UX = USER-INTERFACE/USER-EXPERIENCE
ERP = ENTERPRISE RESOURCE PLANNING

Feasibility

Despite the breakdown of the entire FPD DM project, including the intricate details, there may still be doubt as to how the project will succeed. It is important to note that the project's baseline budget ($201,328) and expected timeframe (about four months) have been set to be well under the desired budget and six-month duration set by the CFO. with unexpected costs and delays, FPD DM can finish within the set budget and duration. It is also important to note that the budget request takes into account a 10 percent contingency fund. Additionally, the risk assessment has allowed a proper development of steps needed to be taken in case of unexpected risks occurring. Furthermore, the use of a functional structure guarantees the use of experts within functional teams, so the development process would be handled by those who are highly experienced. Finally, the set requirements and expectations have been defined and set so that they address the company needs. With a strict and narrow scope, the total aim is to ensure the dashboard addresses the requirements set by management, which is return would help to deal with unpredictable business performance and shipment issues customers have been complaining about.

Reference

Larson, E. W., & Gray, C. F. (2020). Project management: The managerial process (8th ed.). Irwin/McGraw-Hill. [ISBN-13: 978-1260238860].

Project Plan **Student Self Assessment**		**Name:**	Nadeem Patel					
Project Plan Components	**Points**	Not Done	Some Elements	Some Elements of Competency	Done with some Major Flaws	Mostly done with Min Flaws	Completely Present	Score
Executive Summary	15	0	3	5	8	11	15	
Project Scope Statement	10	0	2	4	6	8	10	
Priority Matrix	5	0	1	2	3	4	5	
Work Breakdown Structure & WBS Cost Spreadsheet	10	0	2	4	6	8	10	
Communications Plan	5	0	1	2	3	4	5	
AON Network Diagram & AON Spreadsheet	10	0	2	4	6	8	10	
Project Baseline Budget	10	0	2	4	6	8	10	
Gantt Chart w 3-4 milestones	10	0	2	4	6	8	10	
Risk Assmt, Severity, & Response Matrices; FPD Project Risk Impact Summary	5	0	1	2	3	4	5	
Project Organization	5	0	1	2	3	4	5	
Feasibility	5	0	1	2	3	4	5	
Integration	10						10	
Scope ties with WBS								
Comm Plan identifies key stakeholders								
WBS ties to Gantt Chart								
WBS ties to Project Baseline Budget								
AON Diagram consistent w/ Gantt Chart								
Risk identification ties to WBS								
Extra Credit: enhances story								
Responsibility matrix	5	0	1	2	3	4	5	
Other	0	0	1	2	3	4	5	
Project Plan Total	100							100
25% Course Grade - 600 points							Points Earned	600