Smart-Split Project Plan

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Introduction

Project Scope

The Smart-Split application will give users the following main functionalities:

- Account creation
- Add friends/ create groups
- Create transactions
- Edit transaction details
- Settle transactions via connected payment method
- Receive notifications about transaction details

Major Software Functions

Below are some of the main Software Functions of the Smart-Split Application

Account Registration

- Allow users to create accounts. To set up an account the users should provide their full name, home address & email, and desired payment information.

Expense Creation

- Allow users to create an expense for either themselves or as a group.

Balance Tracking

- Keep track of payments made by users within a group and display the most up-to-update balances for each user next to their account.

Invite Friend

- Allow the user to enter in the person’s email that they wish to be friends with on SplitSmart. Then an invite request will be sent to the recipient’s email address.

Payment Tracking

- Allow the user to track expenses linked with the user's account. It will update the User’s balance when they pay an expense or are paid for an expense.

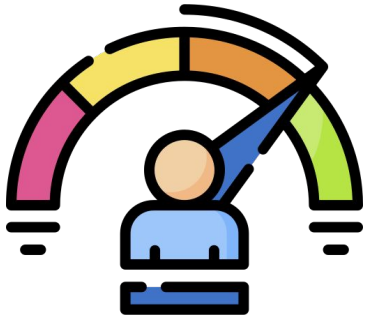
Report

- Allow the user to see a summary of balance changes, payments made, and expenses they were involved in along with the dates where the changes occurred or other filters.

Note: Not all functions within Project Plan document are listed.

Performance/ Behavior Issues

- High traffic
  - Time of year will fluctuate traffic to application
  - Can all functions work correctly under high traffic?
- Cohesive web/ mobile applications
  - Are both versions user friendly?
  - Can user's swap between devices seamlessly?



Management and Technical Constraints

Time

- The main constraint is time as there is a relatively small software development team consisting of only 5 developers.

Experience

- As we are all relatively new to web development there will be moments where we must research to familiarize ourselves with the tools we will be using.

Project Estimates

Historical Data Used for Estimates

From Salary.com:

- Estimated pay rate for Web Developers in Michigan
  - **Low** = $60,149
  - **Median** ≈ $70,000
  - **High** = $80,377
- Estimated labor rate per person-month:
  - **$5,833**

FPA Based Estimation

Information Domain Value	Count	Weighting Factor	Total
External Inputs (EI)	2	4	8
External Outputs (EO)	3	7	21
External Inquiries (EQ)	8	8	64
Internal Logical Files (ILF)	3	5	15
External Interface Files (EIF)	0	0	0
Total			108

FP Value Adjustment Factors = 43

Value Adjustment Factor:

$[0.65 + 0.01 * S(Fi)] = [0.65 + 0.01 * (43)] = 1.08$

$FP = T * (0.65 + 0.01 * \sum Fi) = 108 * 1.08 = 117$

Average Productivity = 15 FP/pm
Burdened Labor Rate = $5,833 per month
Cost per FP = ($5833 / 15) = **$388 per FP**

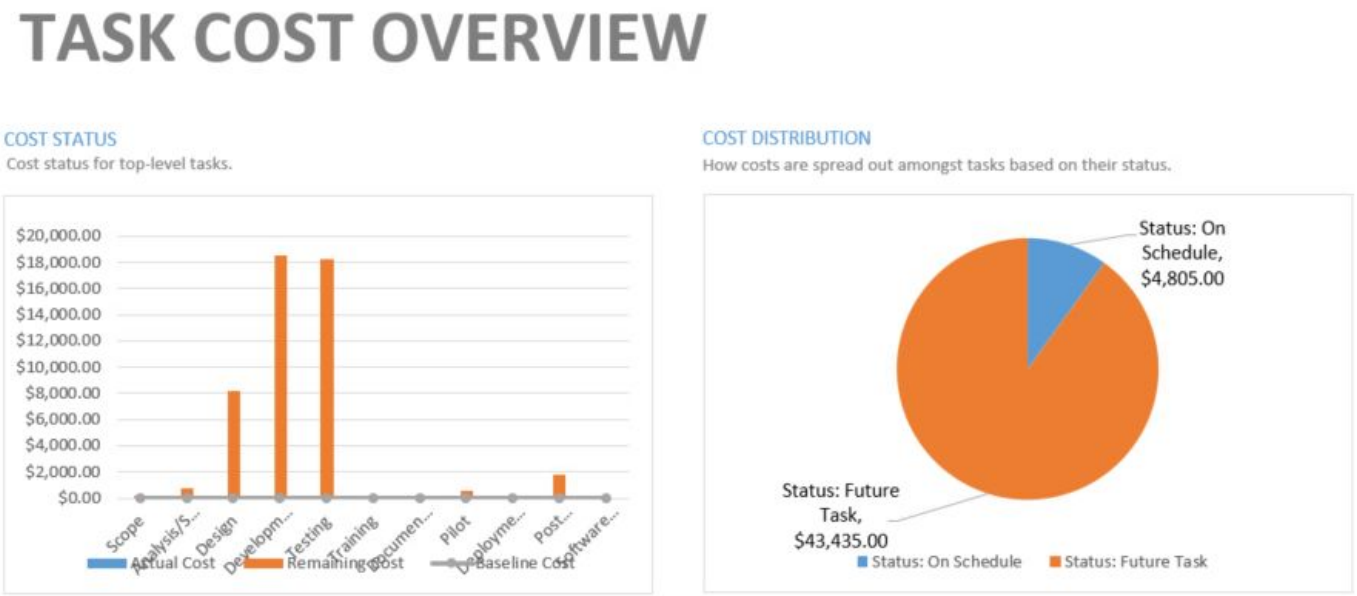
Reconciled Estimate

Final Estimated Project Cost: (cost per FP x FP) = **$45,396**

Final Estimated Effort: (FP / average productivity) = 117 / 15 = **7.8 person-months**

Final Estimated Duration: (person months / persons) = 7.8 / 5 = **1.56 months**

Process Based Estimation



Process Based Estimation

COST DETAILS

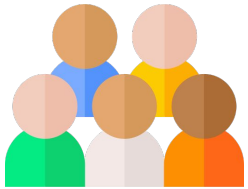
Cost details for all top-level tasks.

Name	Fixed Cost	Actual Cost	Remaining Cost	Cost	Baseline Cost	Cost Variance
Scope	$0.00	$0.00	$235.00	$235.00	$0.00	$235.00
Analysis/Software Requirements	$0.00	$0.00	$725.00	$725.00	$0.00	$725.00
Design	$0.00	$0.00	$8,200.00	$8,200.00	$0.00	$8,200.00
Development	$0.00	$0.00	$18,480.00	$18,480.00	$0.00	$18,480.00
Testing	$0.00	$0.00	$18,200.00	$18,200.00	$0.00	$18,200.00
Training	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Documentation	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Pilot	$0.00	$0.00	$600.00	$600.00	$0.00	$600.00
Deployment	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Post Implementation Review	$0.00	$0.00	$1,800.00	$1,800.00	$0.00	$1,800.00
Software development template complete	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

Project Resources

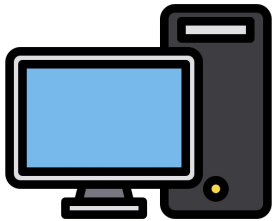
People:

- 5 CECS Students
- Experience with C++ and Python
- New to front-end web development



Hardware:

- Personal Computers



Software:

- Google Suite Applications
- Zoom
- Enterprise Architect
- Microsoft Project

Risk Management

Project Risks

Risks of **Project Size**:

- Given the amount of transactions stored by groups and its members are highly variable, there is a concern that the system will not be scalable enough.

Risks of **User Experience**:

- For less technically literate users, there is concern that the app may be too difficult to use, resulting in revisions that may be costly.

Risks of **Developers**:

- Given that this software requires developers to put forth effort towards its completion, there is a concern that developers will lose motivation and as a result lose productivity.
- Lack of experience
- Team size

Risks of **Transaction Modification:**

- In the event of a price adjustment of a posted transaction, there is a concern whether members who have already paid the creator of the transaction will receive the appropriate adjustment.

Risks of **Security Concerns**:

- A user paying with their credit card or bank account may be concerned about the security of their transaction.

Risks of **Currency Conversion**:

- Given that a payer's currency's value may change at any given moment will cause it to weigh differently against the payee's currency should they differ.

Risks of **Payment Methods**:

- Given that over time new online payment will rise and old ones may cease. There is concern regarding the cost and time required to implement new payment methods like (PayPal, Google, Apple, Venmo).

Risk Table

Risk Identification Categories:

- **PS** = **P**roject **S**ize Risk
- **UE** = **U**ser **E**xperience Risk
- **TM** = **T**ransaction **M**odification Risk
- **SC** = **S**ecurity **C**oncern Risk
- **CC** = **C**urrency **C**onversion Risk
- **PM** = **P**ayment **M**ethod Risk
- **DR** = **D**eveloper **R**isk

Risk Impact Index:

1 = Catastrophic
2 = Critical
3 = Marginal
4 = Negligible

Risks	Category	Probability	Impact	RMMM
Staff turnover	DR	10%	1	*
Lack of security of payment compromises user data	SC	15%	1	*
User payment method information are made accessible on their account (not hidden or encrypted)	SC	5%	1	*
Software bugs cause miscalculation during currency conversion	CC	20%	1	*
Most recent currency weights not pulled at time of transaction	CC	10%	1	*
Developing a GUI that meets the accessibility requirements of less technically literate users	UE	30%	2	*
User payment method is not supported	PM	15%	2	*
Web page is not fully supported by all major platforms and browsers	UE	17%	2	*
Team conflict	DR	5%	2	*
User paying through a service is denied payment due to product terms being out of date	PM	15%	2	*
Some team members are not available full time	DR	25%	3	*
Transaction database is not extensible enough to support future additions	PS	15%	3	*
Downtime caused by lack of storage hardware. (Unplanned scalability)	PS	20%	3	*
User complaints about lack of the latest visual styling standards in web interface	UE	10%	4	*

RMMM for Catastrophic Impact Risks

Staff Turnover

Mitigation	Monitoring	Management
Ensure constant communication between team members and keep track of team member participation on various components of the project.	To ensure stability, team morale must be evaluated on a regular basis.	Rapidly search for a replacement team member and contact the Professor.

Lack of Secure Payments

Mitigation	Monitoring	Management
Consult cybersecurity experts in the field to ensure the highest level of security can be achieved.	Ensure payment security is a top priority when developing the software.	Apologize and refund any lost money to users if their credit card information was taken and rapidly develop new security.

User Payment Info Exposed on Account

Mitigation	Monitoring	Management
Consult cybersecurity experts in the field to ensure the highest level of security can be achieved.	Run tests to make sure user data is encrypted	Shut down the website to fix errors in the code or implement new code and run many tests.

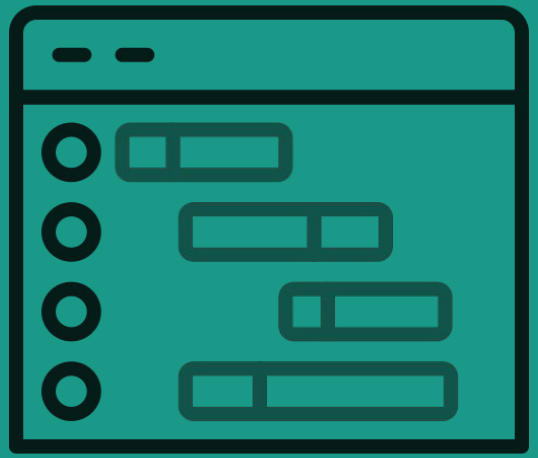
Miscalculation During Currency Conversion

Mitigation	Monitoring	Management
Have banks deal with conversion rates or find a framework that is made with live, accurate conversion rates already in place.	Run frequent test payments to ensure conversions work as intended.	Mandate the use of U.S currency only to bypass issues with currency conversion or leave conversions up to the banks so it doesn't have to be managed by the software.

Currency Weights not pulled at time of transaction

Mitigation	Monitoring	Management
Create delay during time of currency weights being pulled to ensure transactions can occur at proper time.	Partner with a bank when it comes to overseas transactions	If nothing works out, SmartSplit will only accept U.S currency

Project Schedule



Project Tasks

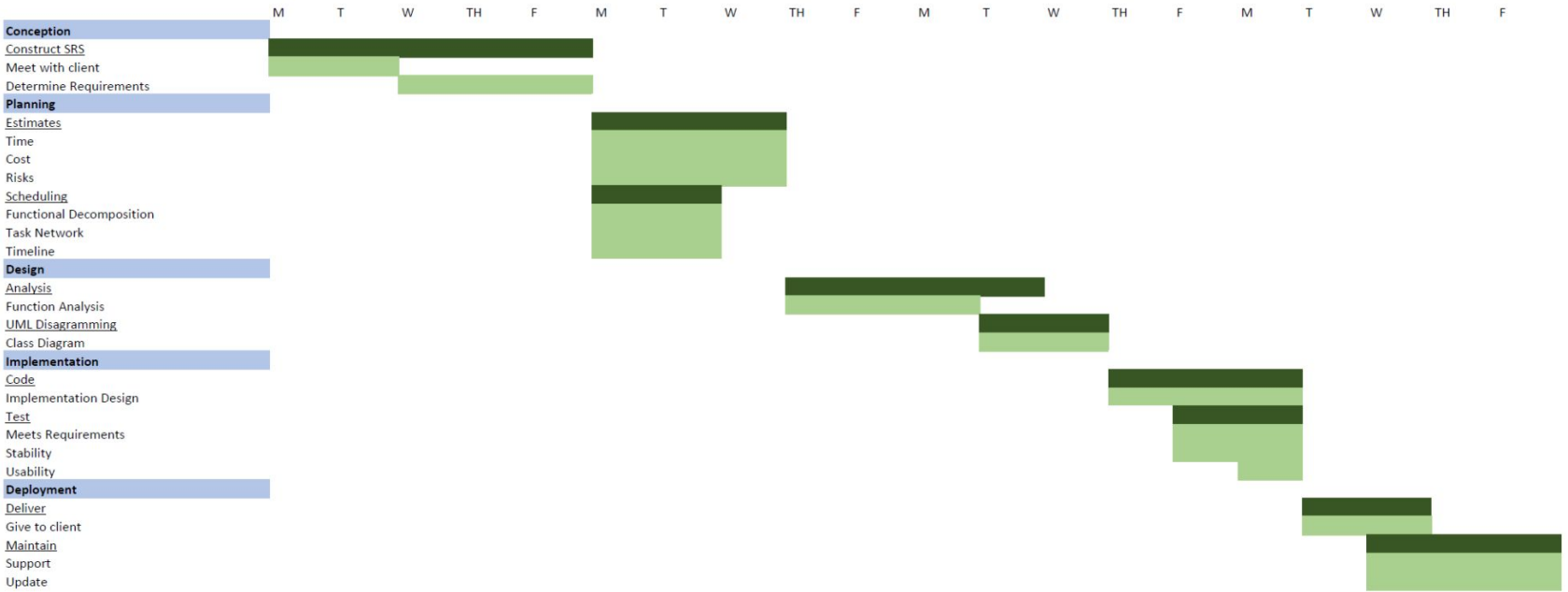
Conception: Determine highest priority requirements
Planning: Calculate estimates. (time, labor, risk, misc. costs, etc.)
Design: system-level requirements ⟶ realized architecture
Implementation: Develop class diagrams ⟶ implement design with testing
Deployment: Deliver final product to client, continuous support & maintenance

Function Decomposition

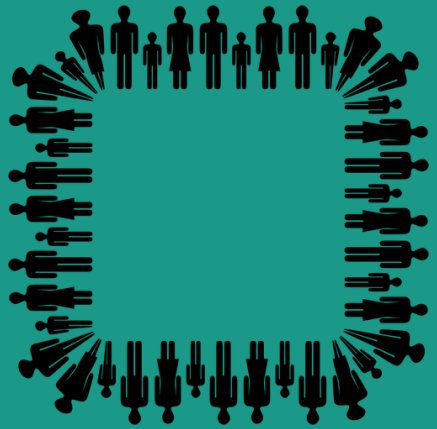
Our functional requirements will allow the user to:

- Register/modify their account
- Create/manage expenses
- Add/manage groups
- Track expense histories

Timeline Chart



Staff Organization



Team Structure

The following team roles will be defined:

- Documentation
- Design
- Programming
- Testing
- Training

Documentation

The group member in charge of documentation will ensure that each document contains relevant and consistent information throughout and that documents are completed on time and in an efficient manner.

Design

The group member in charge of design will be responsible for creating innovative unique ideas that can be useful for the system and program. The member will be required to write pseudo code to explain the system and sketch a website to illustrate the program.

Programming

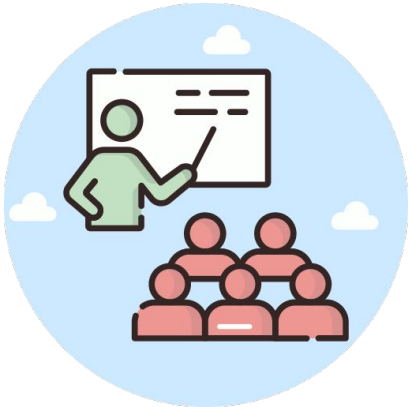
The group member in charge of programming will be responsible for directing the software development team in the implementation of the software itself. They will determine the IDE, as well as ensure that the code remains clean and readable throughout.

Testing

The group member in charge of testing will be responsible for directing the testing phase of the project. They will determine the best method to test as well as lead the creation of test cases.

Training

The group member in charge of training will research topics needed for the creation of the project as well as keep the rest of the team up to date with new concepts they should familiarize themselves with.



Management Reporting and Communication

What did you do this past week?

What will you do this week?

Any impediments you encountered?