Project Management – CI629

By: Cameron Martin

Student Number: 20830519

**Requirements table**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Requirements  (R”) | Description | Direction | Data Group | COSMIC Function Point |
| R1 | ISBN is input | Entry | ISBN | 1 |
|  | System locates book information using ISBN | Read | Book Database | 1 |
|  | System displays information on book | Exit | Book  Database | 1 |
|  | System displays image of the book to user | Exit | Image database | 1 |
|  | Display book price | Exit | Price | 1 |
| R1.1 The input can only be the 13-digit barcode/ISBN | System to read ISBN/Barcode input | Read | ISBN | 1 |
|  | Error displayed is ISBN/Barcode is incorrect | Exit | Error | 1 |
| R1.2 Display image of the book or placeholder if not available | System displays book image | Exit | Image  Database | 1 |
|  | System to display placeholder if no image is available | Exit | Image  Database | 1 |
| R1.3 Display of book information | Display information of the book i.e. title, author name, published year, etc. | Exit | Book  database | 1 |
| R1.4 Price of Book | System will locate price offer for the book | Read | Price | 1 |
|  | System displays price of book | Exit | Price | 1 |
| R1.5 Should be able to agree to price if greater than zero | System allows you to accept price if greater than zero | Exit | Button | 1 |
|  | System allows you to “move to trade” if greater than zero | Exit | Button | 1 |
|  | System allows you to “Reject price” if greater than zero | Exit | Button | 1 |
| R1.6 Items moved to trade | System adds new item to trade category | Write | Trade  Database | 1 |
| R1.7 Rejecting price | Customer rejects the trade | Read | Trade  Database | 1 |
|  | System removes the item from the trade | Write | Trade  Database | 1 |
| R2 Record item into trade | System records the book into the trade | Write | Trade  Database | 1 |
|  | System updates the value of the Trade | Write | Trade  Database | 1 |
| R3 Enable trade | System gets trade value | Read | Trade  Database | 1 |
|  | System enables trade button if value is greater than £10 and the item minimum is 10 | Exit | Button | 1 |
| R4 Remove items from trade | Customer clicks the remove button | Entry | Button | 1 |
|  | System removes item from trade | Write | Trade  Database | 1 |
|  | Trade total value is updated | Write | Trade Database | 1 |
| R4.1 Updating Trade value after removal | System updates value after item is removed | Write | Trade  Database | 1 |
|  | Disable Trade if total is below £10 or 10 items | Exit | Button | 1 |
| R5. Enact R1.7 by performing R4 | System rejects the price removing it from the trade | Write | Trade  Database | 1 |
|  | Update total trade value | Write | Trade  Database | 1 |
| R6 payment information/method | System reads method chosen | Entry | Payments | 1 |
|  | System will check method is valid | Read | Payments | 1 |
|  | Error message will display if information is incorrect | Exit | Error | 1 |
| R6.1 Bank Transfer details | Customer inputs bank details | Entry | Bank Details | 1 |
|  | System checks account is valid | Read | Bank Details | 1 |
|  | Error displayed is information cannot be verified | Exit | Error | 1 |
| R6.2 Paypal Info | System validates info input by user | Read | Paypal information | 1 |
|  | System displays error if information is invalid | Exit | Error | 1 |
| R6.3 Cheque payments | Customer inputs post address for cheque payment | Entry | Cheque payment | 1 |
|  | System will validate address | Read | Cheque  Payment | 1 |
| R7.1 Warehouse Quality check | Warehouse worker scans ISBN/Barcode | Entry | ISBN | 1 |
|  | System locates information on book | Read | Book information | 1 |
|  | Warehouse check the quality of book | Read | Quality Check | 1 |
|  | Warehouse accepts book if in acceptable condition and updates trade | Write | Trade Database | 1 |
| R7.2 Items Rejected due to quality | Warehouse find defected quality book |  | Quality check | 1 |
|  | Warehouse records poor quality item and trade system removes it | Write | Trade database | 1 |
|  | System updates trade value | Write | Trade  Database | 1 |
|  | Warehouse confirm item rejection | Entry | Quality check | 1 |
| R7.3 Inspection Completed | Inspection completion acknowledged by warehouse | Entry | Quality check | 1 |
|  | System will update the status of the trade to Complete | Write | Trade Database | 1 |
|  | The final trade value is calculated by the system | Read | Trade Database | 1 |
|  | System outputs the final trade value / total | Exit | Accounts | 1 |

52 CFP = Total number of COSMIC Function Points.

**Measurement strategy diagram**

A diagram of a flowchart

Description automatically generated

**Section 1 COSMIC function points estimate:**

Here I will look at the conversion of the COSMIC function point estimates and the total duration I believe this project would take.

My total CFPs needed was 52 overall based off each of the requirements in the requirements table being 1CFP to achieve which gives us the total of 52 and the Daily average we can spend is 1.25 CFPs per day.

So, I took 52 divided by the daily average of 1.25 allows this project to be achievable in 41.6 days, however you will need to round it to the nearest whole number meaning its actual projection is 42 days.

52 ÷ 1.25 = 41.6, Rounded up = 42days

**Part 2 User stories & the Fibonacci sequence**

In this section I will look at the User stories and my application of the Fibonacci to assign each story, Story points and my reasoning to why. Below are the user stories numbered, which will be followed by the Fibonacci calculations, the Fibonacci sequence “is one popular scoring scale for estimating agile story points. In this sequence, each number is the sum of the previous two in the series. The Fibonacci sequence goes as follows: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89… and so on.”, - (ProductPlan. (n.d). 2024)

1. As a customer user, I want to get a good price for the book I’m selling.
2. As a customer user, I want to conduct an easy trade and know I’m getting value for my efforts.
3. As a system, we should offer an easy way for customers to be paid.
4. As a customer user, I want to package and deliver my books to the store fast.
5. As a customer user, I should find packages easy for courier pickups.
6. As a drop off location user, I want to be able to record deliveries of a package and record it to fizzit.
7. As a system, we need to reflect any price changes from TWOO are updated weekly as per the SLA (Service Level Agreement)
8. As a courier, I need to be able to log each pickup from a shop and each delivery to Fizzits warehouse.
9. As a courier, I need to be able to log each item picked up from a home
10. As a Warehouse employee, I need to be able to check each item for quality and then record it.
11. As the accounts employee for Fizzit, I need to be able to pay each customer when they have had their QA done.

**Assigning Story points using the Fibonacci method –**

**User story 1 Pricing: Story points** – 5

Reasoning for this: my reasoning is that it is slightly complicated due to the need of market analysis and some sort of pricing algorithm both of these I believe make it moderately complicated.

**User story 2 Conduct of Trade: Story points** – 8

Reasoning for this: My reasoning is because it will need to have a user-friendly interface and the background stuff you’ll need to support it ensuring user usage makes it more complex

**User story 3 Payment types: Story Points** – 3

Reasoning for this: because payment gateways can be fairly straightforward but would still require a safe and careful implementation.

**User story 4 Delivery & Packages: Story points** – 2

Reasoning for this: This could be done quite easily by using maybe some basic guidelines or tips, which wouldn’t be to consuming

**User story 5 Easy courier pickup: Story points** – 2

Reasoning for this: this task is similar to task 4 I believe it could be solved the same way with instructions or packaging solutions.

**User story 6 Record of location drops: Story points** – 5

Reasoning for this: its going to need to have a scanning and data entry process which is complicated to some degree.

**User story 7 Price updates weekly: Story points** – 13

Reasoning for this: I think the complexity of this one is fairly high due to the need of an automated and reliable data fetching tool or API, and then an updating and processing the new information, I think this would be complex which is why I gave it such a high rating.

**User story 8 Warehouse pickup for courier: Story points** – 3

Reasoning for this: This would be a straightforward logging task for the warehouse worker but the backend would need to make a friendly UI which gives it a bit of complexity.

**User story 9 home pickup by courier: Story points** – 3

Reasoning for this: this like task 4&5 is similar to task 8 it just requires an efficient and user-friendly logging portal.

**User story 10 Quality check by Warehouse: Story points** – 5

Reasoning for this: as it would require a physical check and then a data entry portal, I think this one would be moderately complex.

**User story 11 Payment accounts: Story points** – 8

Reasoning for this: this would need to be integrated with some financial systems so that customers could be paid quickly and that brings some complexity.

**Total Story point after adding all the points up = 57**

So, based on this and that we have 0.5 Story Points per day (per person) and the sum of our story points being 57, we have to work out how many days it is going to take.

**Total duration** = 57 ÷ 0.5 = 114 Days to achieve this.

**Part 3 Staff costs**

|  |  |
| --- | --- |
| Staff | Daily cost (£) |
| Business Analyst | 150 |
| User Experience Designer | 125 |
| Systems Analyst | 100 |
| Developer | 100 |
| Database programmer | 120 |
| Tester | 100 |
| Systems Architect | 200 |
| Project Manager | 225 |

In this part I will look at the staff costs for both CFP and SP methods to compare which method would be the cheaper method, based off my results for the COSMIC calculations and the Story Points calculations. Above Are the current staff costs, and below will be the updated costs after the agile approach was implemented.

|  |  |
| --- | --- |
| Staff | Daily cost (£) |
| Developer | 100 |
| User Experience Designer | 125 |
| Systems Analyst | 100 |
| Developer | 100 |
| Database programmer | 120 |
| Tester | 100 |
| Project Manager | 225 |
|  |  |
| Systems Architect | 200 |

I have added a second developer below because I believe it would be more efficient having two developers as they are able to split the workload. Whilst removing the business analyst as the systems analyst can focus on business needs and requirements while the system architect focuses on the technical build and knowledge of the site.

**CFP staff costs:**

The CFP Project will last 42 days based on my calculation with the function points and I will show how I got the total cost of the project,

To calculate the total cost for the CFP project, I had to sum up the daily rates based on the assumption all roles will be required for the total duration of the project, then multiply that by the length of the project (42 days).

Total cost (CFP) = (100+125+100+100+120+100+225+200) x 42

Total cost (CFP) = 1,070 x 42 = **£44,940**

As I wouldn’t need every staff member across every day, I looked at a potential cost, if I took the test out and only used them for 7 days of the 42 and the new calculation followed.

New Total cost without tester = 970 x 42 = £40,740 without the tester at all

New Total after adding one week of testing = 100 x 7 = 700 + 40,740 = TOTAL COST OF **£41,440**

This would make more sense and I could do the same with other staff as I wouldn’t need all staff on every day making an opportunity for it to be even lost cost effective this is because I’m going with the agile method I could have that flexibility or fluidity to the project allowing the tester to be used at any point over those 42 days and other staff too, as the agile method allows me to go back if needed to earlier development issues.

**SP staff costs:**

The story points project lasts for 114 days, and my calculations for that follows below, and is very similar maths to the CFP calculations.

1,070 x 114 = **£121,980**, but we need to then think about splitting the staff across the days in order to try and limit that number.

970 x 114 = **£110,580** with no tester + 400 for 4 days of testing = **£110,980**, this still is to high but this is all on the assumption that all other staff would be in everyday, which isn’t the case, so there is much more room to bring the costs down.

The rates would all depend on location and complexity of the project and other relating factors, as this project has some slight complexity to it, I would say the prices for the roles were reasonable as you would not need every member of staff working on the project to be working on every day of the project as it will keep the overall costs very high and I would be working with budgets in real projects and trying to keep it within the budget.

For example, a systems analyst might be crucial in the initial stages for getting the requirements but not needed in the later stages, Developers are needed throughout the project as they are the ones “developing” it but their involvement may vary. As for the project manager they will need to be in most likely all the time to see out the projects process.

In summary the decision on daily rates depends on a lot of different factors of the project and the phases and complexities it could have, but it’s about finding that balance between cost effectiveness and having the staff with the correct skills to get the most out of the project and use the correct planning method for it.

**Part 4 Reflection**

This section is am reflection of the work I have done over this project where the focus was on Management approach which I thought agile was the best as compared to others like waterfall, agile with its fluidity and flexibility and it also aligns with the projects staff needs and requirements, the COSMIC and story points was interesting as I looked at the two different methods and what their costs would be and how with effective planning and structuring I could influence the total costs or outcome.

I looked over bringing in a second developer as I believe a lot of this project will require some sort of front and back development, I don’t think the project could be done effectively with just one developer I also removed positions I don’t believe were necessary to the project such as a business analyst as the System analyst will do a similar job.

One of the challenges I faced was estimation accuracy when calculating the CFP’s and SP’s and being able to accurately predict the project timeline but I learnt that with the proper contingencies for delays should be in place or a lesson in refining my ability to estimate.

Resource allocation was another challenge in knowing how to balance the staff and when and where they need to be deployed and for how long for. It did prove an insight and has taught me how to make effective decisions when allocating resources.

Cost was one thing I struggled with, as there was no set limit on how much the project should cost it made it difficult to adhere to the daily rates but showed me how to budget based on my resources and how to manage costs against the projects deliverables.

Team dynamics and being able to manage such a team of diverse skill sets could have been a challenge if I had worked on a real project with real teams but just understanding the staff I believed were required for the project was difficult as I couldn’t just use everyone and anyone I needed to asses who was right for this project and what roles are unnecessary but a valuable lesson was learned in management and allocating roles was learned and changing the staff allocation to one I believe is correct.

Though this project has taught me a lot about adaptability and as there was a few changes and tweaks I had to make throughout the project forcing me to adapt to any changes in an agile environment.

The reflection on team dynamics, emphasizing and predicting whilst sticking to resources we have and how to ensure the most cost efficient, refined user experience and a successful project, is that all of these things are crucial, and without it could lead to a failed project.

Ultimately, I found that the project outcome could be completely different dependant on a few changes and factors and how these planning steps are executed, I think agile will be a method I would continue to use due to its ability to draw on staff strengths so that they can contribute to their specific set of skills, but ultimately it comes down to the requirements of the project and what the business needs.

**Reference:** ProductPlan. (n.d). Fibonacci Agile Estimation. Available at: <https://www.productplan.com/glossary/fibonacci-agile-estimation> [Accessed 19th January 2024] – Part 2 – Story Points