Project Methodology Selection

Selection Criteria

1. Ability to accommodate change, flexible
2. Effective documentation
3. Focus on the overarching goal
4. Simplicity, suitability for beginners
5. Designed for small teams
6. Efficient time management

Justification for criteria

1. We will have weekly progress meetings with our PGTA, so we need to be able to act on feedback
2. Effective documentation is important because we need to be able to track our progress across the project on GitHub – this is also how we are marked
3. Our aim is to make a web app, so we need a functional software at the end
4. Due to our lack of experience, we believe it would be in our best interest to opt for a more beginner friendly and simplistic methodology
5. We are a small team so we can't use a methodology that only accommodates large teams
6. Due our strict deadlines and projects from other modules, it is in our best interest to select a less time constraining methodology

Reasons for not being shortlisted

- Some methods such as Waterfall do not allow for flexibility through the method stages and heavily rely on thorough planning in advance. Since we expect to receive frequent feedback on improvements we could make, this method restricts any form of iteration.
- The Feature Driven Development method is not well defined as some important steps like interface design and testing are not included in its guide. This is not very beginner friendly so it may cause issues such as missing important steps need for an effective final product.
- Some methods such as SAFe are aimed for large corporations and teams. They require multiple roles to function effectively, thus are not appropriate for our small group of 4.
- Methods such as the Domino life cycle and DSDM are very similar to CRISP-DM but are less instructive, which could be confusing for beginners.
- Other methods like Essence felt too convoluted for beginners, as well as too excessive for our small-scale project.

These methods were ruled out as they overtly did not meet our chosen criteria.

Evaluation of shortlist

Criteria	Extreme Programming	Team Data Science Process (TDSP)	Kanban	Scrum	CRISP-DM
Flexibility, ability to accommodate change	• XP is based on short iterative cycles and hence it is probably the most agile process. • Codes are revised and improved frequently.	• Agile development hence supports incremental developments • Can also be incorporated with other methods like CRISP-DM	• Kanban is mostly implemented with agile development processes • It can work very well with scrum or any other agile method	• Due to Scrum being an iterative method it can adapt to change.	• If the team decides to not iterate frequently, it operates more of a waterfall process. • If the model is followed in a more flexible way, it will operate in a more agile approach.
Focus on the overarching goal	• it concentrates on current needs, only develops the features needed instantly.	• Gives importance to the business needs; Plans are based around the critical tasks/phases	• Whilst the Kanban board can be useful for setting important milestones, it can become cluttered and detract from earlier tasks such as setting project aims and requirements	• Each sprint ensures progress towards a sprint goal that needs to be completed to reach the final goal.	• It makes sure that goals and the data required are clearly understood early on during the project development. • However, it might be easy to lose track of the goal due to the heavy documentation required.
Effective documentation	• No guideline or requirement on documentation. • Small updates are made continuously during development process, it may take time to write documentation	• Rich documentation which highlights any updates and progress made in each phase.	• Each Kanban card on the board summarises a task under headings such as “to do”, “doing”, and “completed” • This would provide an extensive record of the project’s smaller tasks	• This methodology uses an ordered list if what is needed to improve the product called a Product Backlog. • A Sprint Backlog is also composed to see the work that the team is meant to complete.	• Documentation is greatly promoted and is needed after every milestone. This ensures that team is well informed about the project.
Simplicity and beginner friendliness	• XP strives for the simplest solution. • Pair programming allows developers to work together and share ideas. • Perform task only when it is necessary.	• More Data science focused which; utilises use machine learning solutions, software’s tools etc. • Although it does provide free templates	• Kanban can be implemented in an extremely simple way • A straightforward, three heading Kanban board would make it easy for everyone in the group to visualise	• As the model doesn’t provide exact plan and milestones, it can be difficult for beginners to implement.	• The model can be used by teams that are un-trained or lack organisation skills.

			progress of project • There are many online tools to help a Kanban methodology such as Trello		
Suitability for small teams	• XP usually defines several team roles, but not limited to. • Even one to two members can form a team as XP is coding based and simple.	• Four distinct hierarchical roles but more suitable for groups with sub-teams	• Kanban's simplicity and visualisation of tasks makes it very easy for small teams to use	• The Scrum Team is a small team of people consisting of Scrum Master, one Product Owner, and Developers. • However, Due to our team only consisting of 4 people there 2 developers are not enough to develop the software.	• The model assumes that the team is a tight-knit team.
Effective time management	• Due to the principles of YAGNI (You Ain't Gonna Need It) and DRY (Don't Repeat Yourself), features are developed in a timely manner. • However, the simplest solution for today may not be adaptable to feature development.	• Has fixed-length sprints which may limits flexibility • But could also help paint a solid time frame	• One of the core aspects of Kanban is reducing project times by improving the flow of work • This is done by evaluating the board regularly for tasks that take too little or too much time • However, this could lead to poor time effectiveness in the beginning due to not knowing optimised timeframes for each phase	• A fixed length of time called sprints are used to progress towards the goal. • However, can limit flexibility.	• Due to the heavy documentation requirement, it might slow down the team to meet deadlines.

Final Selection

After evaluating the shortlisted process models, we decided to implement Extreme Programming with Kanban.

Extreme programming gives us a simplistic approach for our project as it is suitable for small teams and is very beginner friendly. Integrating Kanban helps cover up the flaws of extreme programming like its poor documentation by keeping a track of the tasks and activities which need to be carried out till it's done. It also improves time management throughout the project by optimising the overall workflow.

References

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