## 3 - Project Development

This section outlines our chosen development methodology and projects a detailed schedule for the Classroom Monitor project For Elemore Hall. We justify our approach, to ensure it aligns with the unique demands of our project. A structured timeline will be provided to effectively monitor our process towards project completion.

### 3.1 – Development approach

In the development of the Classroom Monitor, we have adopted the **Agile** methodology, particularly focusing on the **Scrum** framework within the software development lifecycle (SDLC). We have chosen Agile development due to its strong synergy with our project strategy, as we were inspired by the "Manifesto for Agile Software Development" formulated in 2001. We believe its four core values – prioritizing individuals and interactions, working software, customer collaboration, and responsiveness to change – are essential for effective software development. By implementing these principles through the Scrum framework, we aim for a flexible, collaborative development process that is focused on delivering a functional, user-centric software solution.

The approach we chose is based on a thorough evaluation of key factors including the project scope, team dynamics, the expectations set by our client Mr. Hunter, and our organizational capabilities, as detailed in the points below:

* **Flexibility of Product Scope:** Agile Scrum's iterative development and responsive planning are essential for adapting our tracking system to Mr. Hunter's dynamic requirements. The flexibility of Scrum enables us to rapidly adjust our development process, which is particularly beneficial when addressing the imminent obsolescence of current systems and incorporating new functionalities.
* **Leveraging Team Strengths**: The Scrum framework enhances our planning and task allocation by utilizing our team's diverse skills and preferences. Focusing on collaboration and self-organization, Scrum promotes regular sprints and weekly meetings. This structure enables us to effectively set priorities and evenly assign tasks based on individual member strengths, ensuring alignment with our project goals. This approach allows everyone to contribute optimally within their comfort zone, thus boosting productivity and team cohesion.
* **Collaborative Client Relationship**: The Scrum framework encourages a dynamic partnership with our client. Regular sprint reviews and continuous communication ensure that our development process remains in sync with the client’s vision, which is specifically customised to fulfil Elemore Hall's specific requirements. This ongoing approach is crucial for delivering a system that meets the client's requirements effectively and guarantees client satisfaction.
* **Ensuring Quality and Security**: As we are dealing with the data of sensitive students in special schools, those data demand a strong commitment to security and quality. Agile Scrum's emphasis on frequent testing and code reviews is an ideal fit with our commitment to maintaining high data protection standards, especially for the students' personal information. This approach guarantees that we deliver a monitoring platform that is both secure and reliable sustainably.
* **Responsiveness to User Needs:** Given that our target users include students, teachers, and support staff, our system must address diverse requirements and be user-friendly, because our clients and users are not software experts. Scrum's user-centric methodology is promoted for easier iterative development with feedback loops, it can make sure our system improvements are guided by user feedback. By actively involving users in usability testing sessions, we can customise it to meet their needs and preferences based on reviews.

3.1.1 Comparison with Other Methodologies

* **Waterfall** - Rigidity: The rigidity of the linear and sequential phases of the Waterfall model is a major drawback for the Classroom Monitor project. Since we have a relative lack of experience with such projects, its fixed stages are inflexible and cannot adjust to changing client requirements. On the other hand, **Scrum** provides greater efficiency because of its regular sprint reviews and active client engagement, which enables us to effectively customise our work to meet Elemore Hall's unique requirements.
* **Spiral** - Complexity: The Spiral model with its emphasis on risk assessment, is overly complex for the Elemore Hall project since we only have a tight six-month timeline to complete. Considering the urgent need to replace the existing system, a model that involves extensive risk testing and potential delays is not suitable for us. We have chosen Scrum because it offers a simpler and more time-efficient approach, which is essential for addressing the particular requirements and quick adjustments needed for the Elemore Hall project.
* **XP** - challenging: Extreme Programming (XP) heavily emphasis on frequent releases and continuous customer feedback, which might be challenging given our project's scope and our team's experience level. The strict cooperation and quick adaptation required by XP may be excessive for a team that is still getting to know the basics of project management and software development. Instead, we chose Scrum because it provides a well-balanced framework with its time-boxed sprints and frequent reviews, better fitting the six-month timeline of our project.

3.1.2 Confirming Our Path Forward

By using Agile Scrum as our development approach, we commit to applying the approach that reflects the dynamic and intricate nature of the Classroom Monitor project. This approach ensures that our work goes beyond simple software development, with the goal of developing a complete solution that consistently aligns with the school's requirements and desires to meet or exceed Mr. Hunter's expectations.

### 3.2 – Project Schedule

A screenshot of a project management chart

Description automatically generatedThis section introduces the Project Schedule for the Classroom Monitor, is an important component of our project management methodology. It illustrated in a Gantt chart to outline tasks, durations, and dependencies for each project phase, ensuring we meet our development goals efficiently and on time. Utilizing the Scrum approach, we conduct daily scrums via WhatsApp, hold two-week sprint cycles, and organize monthly general reviews meeting with our client and team. Each sprint cycle involves planning meetings, coding, usability testing, and review sessions for continuous feedback and improvement. Our schedule can be adjusted as needed, considering holidays and other deadlines for module coursework.

A. Srivastava, S. Bhardwaj and S. Saraswat, "SCRUM model for agile methodology," 2017 International Conference on Computing, Communication and Automation (ICCCA), Greater Noida, India, 2017, pp. 864-869, doi: 10.1109/CCAA.2017.8229928.

Manifesto, Agile. (2001). *Manifesto for Agile software* development. Available online:   <https://agilemanifesto.org/iso/en/manifesto.html> (accessed on 4 November 2023).