**SE 216 – SOFTWARE PROJECT MANAGEMENT**
**SOFTWARE PROCESS MODEL DOCUMENT**

**PROJECT NAME:** ECOLIB
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| # | NECESSARY NEEDS FROM THE ORGANIZATIONAL PROCESS |
|---|---|
| 1 | Project Team: A dedicated project team consisting of people with skills in software development, image processing, database management and user interface design should be formed. |
| 2 | Current Layout: To ensure an accurate representation of their needs, library staff and administrators should be provided with information about the library's operation, the location of cameras currently in use, and the structural internal layout of the library. |
| 3 | Library Layout: After the information received from the library authorities and managers is analysed by the project team, the layout of the items such as tables, bookshelves, cameras, etc. in the library should be optimised for the system. |
| 4 | Stakeholder Engagement: Essential stakeholders such as students, library staff, and administrators should be contacted to gather their input, expectations, and concerns about the library reservation system. |
| 5 | User Guidance: In order to ensure smooth adoption and use of the reservation system, a guide that is understandable for both library staff and end users should be developed. |
| 6 | Legal and Ethical Considerations: A legal and ethical assessment should be conducted to ensure compliance with privacy laws and regulations, particularly in relation to image processing and the use of personal data. |
| 7 | Communication Plan: A communication plan should be established to inform all stakeholders about the progress of the project, changes and potential problems. |
| 8 | Project Delivery Time: Clear timelines should be set for project |

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| | phases and delivery. Deadlines should be defined for key phases of the project, ensuring that the system is developed and implemented within the specified time frame. |
| 9 | Budgeting: A detailed budget covering hardware and personnel costs, software development and possible unexpected situations should be developed. |
| 10 | Test Plan: A test plan should be in place to identify and fix bugs or problems in the system prior to deployment. |

| SOFTWARE PROCESS NAME: SCRUM |
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| **SOFTWARE PROCESS DESCRIPTION:** |
| Scrum is an agile project management paradigm that prioritizes flexibility, teamwork, and incremental development. The Product Owner, Scrum Master, and Development Team are the three primary responsibilities involved. Scrum tracks and plans work using artifacts like the Product Backlog and Sprint Backlog, and it facilitates communication and adaptation using events like Sprint Planning, Daily Scrum, Sprint Reviews and Sprint Retrospectives. Scrum's overall goal is to efficiently provide value to clients while encouraging openness and ongoing development. |

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## SOFTWARE PROCESS MODEL:

**Sprint 1: Project Initiation and Planning (2 weeks)**

- Project team will be formed and roles will be defined.
- Stakeholder meetings will be initiated to define objectives and requirements.
- Initial product backlog will be developed.
- Development environment and version control system will be set up.

**Sprint 2: Basic Reservation System (3 weeks)**

- User authentication and registration will be implemented.
- Basic reservation system functionality without image processing will be developed.
- Simple booking management interface will be created.
- Internal testing will be performed and issues will be addressed.

**Sprint 3: Image Processing Integration (4 weeks)**

- Image processing will be integrated for occupancy detection.
- Features will be developed and implemented to identify empty tables and calculate the time to empty.
- Turnstile system will be integrated for access control.
- Extensive testing of image processing features will be carried out.

**Sprint 4: Reservation System Enhancements (3 weeks)**

- The booking system interface will be improved.
- Features such as reservation changes and cancellations will be implemented.
- Notifications for empty tables and reminders will be provided.
- Usability testing will be conducted and user feedback will be collected.

**Sprint 5: Sanctioning System and Image Processing Improvement (3 weeks)**

- A sanction system will be implemented for violators.
- Improve image processing to identify abuse and damage.
- Implementation of sanctions and image
- Documentation will be updated according to system changes.

**Sprint 6: Language Options and Access Controls (2 weeks)**

- **Language options will be defined to the application.**
- **Access controls and restrictions will be set.**
- **Tests will be conducted to ensure effectiveness.**

**Sprint 7: System Stability and User Guidance (2 weeks)**

- **Focus will be on system stability and performance improvements.**
- **Comprehensive user manual will be implemented.**
- **Final tests will be performed for the entire system.**
- **Preparation for deployment.**

**Sprint 8: Deployment and Post Deployment (1 week)**

- **Deploy the system to production.**
- **Issues will be tracked and feedback will be addressed.**
- **Documentation will be completed.**

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## REASONS TO CHOOSE THIS MODEL:

1. **Iterative and Incremental Development:**
   - **It allows the project to be developed and delivered in small, manageable increments, which will enable easier and faster development of certain functions of the library reservation system, such as user authentication, reservation management and image processing integration.**
   - **Allows for continuous improvement and adjustment based on feedback at the end of each iteration.**

2. **Flexibility and Adaptability:**
   - **Adapts to changes in requirements, priorities, or scope during the development process; if new requirements arise during the project, the product backlog can be adjusted accordingly and the development team can reprioritize tasks to address these changes effectively.**
   - **Adapts to evolving needs and ensures that the project remains aligned with stakeholder expectations.**

3. **Customer-Focused Approach:**
   - **Prioritizes customer satisfaction by delivering valuable features early and consistently throughout the project.**
   - **Allows stakeholders, including students, library staff, and administrators, to be involved throughout the development process to gather feedback and set priorities and ensure the final product meets their needs and expectations.**

4. **Transparent Communication:**
   - **Facilitates open and transparent communication between team members, students, library staff, and administrators.**
   - **Daily Scrum meetings and regular sprint reviews improve collaboration and understanding.**

5. **Continuous Improvement:**
   - **Promotes a culture of continuous improvement through regular sprint retrospectives.**
   - **Team members reflect on their processes, identify areas for improvement and make corrections accordingly. This minimizes the problem in active environments such as libraries.**

6. **Early Delivery of Value:**

- Ensures that the most valuable features are developed and delivered early in the project.
- In the first sprints, the implementation of core functions such as user authentication and basic reservation management can be prioritized, thus enabling early deployment and delivering tangible benefits to end users sooner.

7. Reducing Risk:
   - Identifies and mitigates risks early in the project life cycle.
   - Regular reviews and adaptability help address challenges quickly, reducing the likelihood of project failure.

8. Strengthening Teams:
   - Enables cross-functional teams to make decisions and take responsibility for their work.
   - Promotes a sense of responsibility, accountability and collaboration within the development team.

9. Frequent Inspections and Adaptations:
   - Emphasizes regular monitoring of the progress of the project and the quality of the product.
   - Allows the team to adapt plans and processes based on real-time information.

10. Efficient Time Management:
    - Structured time-boxed iterations (sprints) provide a clear time frame for achieving specific goals.
    - It helps manage time effectively and ensures balance between development and planning activities.

11. Focus on Business Value:
    - Prioritizes features and tasks based on business value and ensures the most critical items are addressed first.
    - Improves the overall alignment of the project with organizational goals.