1. Introduction

This report focuses on investigating the operation process, advantages, disadvantages, functional shortcomings of the SharePoint project management platform, and the reasons why customers and in-depth beneficiaries want to design a new platform to replace SharePoint.

1. Management Process

Through a conversation with the customer, Ramesh Lal, it was discovered that AUT (Auckland University of Technology) is currently using SharePoint as a portfolio management platform to store and distribute data. The school initially established email accounts for teachers and students using Microsoft Education and retrieved student data for the current semester from the school's Student Information System (SIS) through School Data Sync (SDS) functionality. Additionally, the school collects project proposals from students to assess feasibility. The school has created dedicated platforms for departments within SharePoint and stores both student and project data in SharePoint.

The Paper leader sends an interest form to all students and based on their majors, GPAs, and expressed interests, assigns students to suitable projects with mentors in groups of up to five individuals. Once the group assignments are complete, the system sends emails to students and teachers, informing them of the project topics and facilitating contact among group members. These details are also recorded in SharePoint.

Currently, SharePoint only offers a semi-automated management system, with only email communication being automated. To fully understand the school's management processes and requirements and why this workflow in SharePoint is only partially automated, it is essential to gain a clear understanding of the SharePoint platform and the challenges faced by the customer during its usage.

1. Functions includes in SharePoint.

SharePoint is a collaboration platform and content management system developed by Microsoft, designed to facilitate organizational work, share information, manage documents, and data, among other functions. In Microsoft's learning website, I found that it offers various features and integrations:

1. SharePoint allows tracking and managing different versions of documents, ensuring data consistency and integrity.
2. SharePoint supports real-time collaboration on documents and sharing of tasks and lists among multiple users.
3. SharePoint data integrates with Power Automate, enabling the creation of automated workflows, such as approval processes and notifications.
4. SharePoint integrates with PowerApps, allowing users to create custom applications for data input, management, and visualization.
5. Microsoft Graph API provides programmatic access to SharePoint data, enabling the retrieval of documents and lists.
6. SharePoint integrates with Azure AD to enable single sign-on and user authentication, enhancing security.
7. SharePoint tightly integrates with other Office 365 applications, such as Word, Excel, and Outlook.
8. SharePoint workflow

Based on the school's management processes and an investigation into the use of SharePoint, it appears that the current setup for using SharePoint involves the following steps, which are more complex than the assumed integrated workflow:

SharePoint is configured to add a list, which is used to store data collected from Microsoft Education. Application registration is created to obtain a Microsoft Graph API access token, granting the program appropriate permissions. Power Automate, specifically Microsoft Flow, is used to automate integration with Microsoft Education. Microsoft Graph API calls are made to retrieve Microsoft Education data and add it to the SharePoint list created earlier. A scheduled trigger is set up in Microsoft Flow. This trigger can be time-based and applies at the beginning of each semester. It automatically sends a link to Microsoft Forms to collect student feedback into the SharePoint list. Custom conditions are set in Microsoft Flow to analyze which projects are suitable for specific students. Another trigger is added in Microsoft Flow, including the "Office 365 Outlook - Send an Email" action. This action automatically sends emails once projects are assigned. Configuration of email content is required in this step. The SharePoint project development environment and processes are much more complex than the simplified integrated workflow assumed.

1. Functional defects in SharePoint
2. While using SharePoint and referring to Gingerdoc's 2021 quick guide, it becomes evident that customizing SharePoint web parts can be quite challenging in terms of secondary development. Most of the content consists of server-side controls developed by the SharePoint team. To make modifications, it's essential to understand what their programs do and the potential consequences of deletion or modification.
3. In Microsoft Flow's custom conditional operations, "AND" and "OR" logical operators are used to combine multiple conditions. However, during usage and research, it was found that SharePoint can only implement sequential logic operations and cannot handle looped logic (such as feedback or modification requests). Additionally, the approval interface is automatically generated (matching information and reasons), and slightly more complex operations require editing through Visual Studio to be implemented.
4. SharePoint requires an Office Automation (OA) system, which is not convenient for handling large data sets. In the AUT workflow, lists can easily develop modules for data settlement. However, when it comes to tasks like project and personnel allocation, using lists may not be flexible enough. When such complex requirements arise, modules designed with lists may need significant modifications to adapt.
5. customizing SharePoint List views can be quite challenging. The filtering options for views support many criteria but do not include user and group types containing the current user. Therefore, when sending targeted notifications, additional development may be needed for sending notifications to a specific group.
6. SharePoint lists by default inherit permissions from the entire site collection. List items also inherit permissions from the list. When users in SharePoint are granted administrator privileges and permissions, it can lead to extensive permission records at both the list and list item levels. This can become problematic, especially in scenarios where lists are large, as is often the case in schools and educational institutions. Removing users with such extensive permissions can be a challenging task.
7. Benefit and problems for stakeholders

The primary reasons why beneficiaries might choose to use SharePoint as their management platform could include:

1. Client is already using Microsoft Education services, including email for students and teachers. Therefore, opting for a platform compatible with the Microsoft ecosystem allows for easier integration and management of these services.
2. SharePoint offers collaboration and sharing features that enable students and teachers to easily share project information, documents, and data among themselves.
3. SharePoint includes access control features, and by adding Microsoft Graph API, it ensures that only authorized personnel can access specific content, thereby enhancing data and project security.
4. Operations such as designing workflows with SharePoint Designer are straightforward and does not typically require coding (except for customization involving large data).

Based on practical experience and investigation, it can be inferred that the primary reasons beneficiaries may not want to use the platform include:

1. The complexity of using SharePoint, particularly in cases of large deployments and highly customized scenarios such as schools and educational institutions. Configuring, managing, and maintaining SharePoint requires specialized knowledge and may not be user-friendly for those unfamiliar with it.
2. Schools often need to design SharePoint lists and other components for each semester, depending on the increasing number of students and different projects or mentors. Advanced customization may require developer skills, resulting in time and cost investments. New users of the SharePoint platform may need time to adapt to the interface and functionality, which can lead to inconvenience and decreased productivity.
3. The limitations of SharePoint's functionality have caused trouble for the beneficiaries, especially regarding custom conditions. Each semester, the school experiences high student turnover, with cases of students leaving their majors for various reasons and dissatisfaction among students or teachers with group assignments. The inability to implement rollbacks and automated approvals means that teachers must manually search for and modify data.

In conclusion, there are limitations to SharePoint's functionality. The high degree of integration and dependency on Microsoft products may impose constraints on users in terms of licensing costs. While the Microsoft ecosystem offers a complete technical framework and reliable application support, it may also lack compatibility with non-Microsoft environments and exhibit over-reliance on Microsoft runtime environments. Additionally, concerns about the reliability of the operating system and the closed-source nature of the software can limit the development of complex, large-scale applications in highly demanding environments. Some limitations may not be addressable through coding and require manual workarounds, leading beneficiaries to seek new design platforms.

1. New Platform Design

Based on the understanding of SharePoint and the needs of the beneficiaries, the design of a new platform may require the following factors:

1. Database: Create a database to store information and design the content of database tables.
2. User Management: Implement user management functionality, including administrators and users. Establish an authorization system to ensure that administrators have the authority to manage user data and permissions, which can be categorized as edit and view permissions.
3. Collaborative Editing: Based on the school's needs, implement collaborative editing functionality that allows multiple users to edit the same portfolio simultaneously.
4. User Interface: Allow users to create custom applications and lists to meet their specific needs. These custom applications and lists can be used for filtering and browsing portfolio data.
5. Custom Logic: Enable users to customize operational logic, such as triggering specific actions and notifications when certain conditions are met.
6. Approval Interface: Create an approval interface for modification requests. Automatically generate notifications to relevant approvers, informing them of new approval requests that need attention. Detecting and addressing issues promptly can improve efficiency.
7. Data Modification Requests: Implement a data modification request feature that allows users to request changes to stored data. These requests can be integrated with the approval interface for approvers to review.
8. Email Integration: Integrate email functionality to send email notifications to users from the platform.

Reference：

<https://learn.microsoft.com/en-us/graph/api/user-sendmail?view=graph-rest-1.0&tabs=http>

<https://learn.microsoft.com/en-us/power-automate/triggers-introduction?tabs=classic-designer#%E9%80%89%E6%8B%A9%E9%80%82%E5%BD%93%E7%9A%84%E8%A7%A6%E5%8F%91%E5%99%A8>

<https://learn.microsoft.com/zh-cn/sharepoint/dev/general-development/role-inheritance-elevation-of-privilege-and-password-changes-in-sharepoint>

<https://www.gingerdoc.com/sharepoint/sharepoint_quick_guide>

<https://learn.microsoft.com/en-us/microsoft-365/enterprise/introduction-to-performance-tuning-for-sharepoint-online?view=o365-worldwide>