Requirements Document

Introduction

This document serves the purpose of delivering a comprehensive overview of the proposed Advanced Polymer Sintering Laboratory's Data Management System. It describes the team, product scope, intended audience, intended use and stakeholders of the software.

Developed by Team 7

This system has been developed by Team 7 as part of the module, COM3420 Software Hut, at the University of Sheffield. Members of the team include: Atri Hegde, Annie Tse, Joffray Hargreaves, Lekha Mohta, Jack Allison, Abdullah Niazi and Eyad Mohamed.

Product Scope

The software aims to address the challenges encountered by the APSL, in managing and storing substantial volumes of data. This data, generated by diverse staff members and students at varied times, exists in a variety of formats.
Currently, the method of storing this data is a paper filing system.

This software aims to digitalise this process, therefore, making data readily accessible and backed-up. The software is designed to facilitate accessibility for users both on and off campus, ensuring seamless access of data by various users.

Intended Audience

The primary audience for this software comprises students, staff, and administrators engaged in research activities at the Advanced Polymer Sintering Laboratory. The system is tailored to meet the unique requirements of the laboratory, ensuring in an ergonomic system.

Intended Use

End-users are expected to use the system for upload, retrieval, and manipulation of data. The system provides almost a drop-in replacement for

the existing paper based system. With our system, filtering, searching and managing access should be a lot easier than the current paper based system, where the location of said paper record is unknown a lot of times. It will also be a lot easier to grant and revoke access to certain records/documents.

Stakeholders

An individual, group, or organization who may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of this project.

Stakeholders identified:

- Candice Majewski, the owner of the APSL
- The APSL Staff
- The Students of the University of Sheffield
- The APSL Clients
- Team 7, the Developers

Functional Requirements

This section provides an overview of the functional requirements of the system through user stories, describing the features in system user needs.

Preface

Data : Includes materials, builds, CAD Files and processes (machines)

User stories:
User stories are categorised into different user roles. These are hierarchical, meaning that higher user roles inherit from the lower user roles. Example: Admin can do everything a staff can do.

User roles:
- User (all users)
- Student
- Staff
- Admin

User

As a user, I want to be able to log in with my university account, so that I can easily access the system.

Priority: High

Acceptance Criteria:
- I can enter my university credentials in the login screen and login without having to go through a sign-up process.
- Upon entering incorrect credentials, I cannot log in.
- Upon the first log in, users are assigned the default role of : [User].

As a user, I want to be able to log out of my account, so that no-one else can access my account.

Priority: High

Acceptance Criteria:
- I can have a logout button, which logs me out.

- Pressing the back button on the browser should not reveal any information, as I have logged out of the account, and should say unauthorised.

As a user, I want to search and filter processes, so that I can easily find the processes that I am looking for.

Priority: Low

Acceptance Criteria:

- I can perform a fuzzy search by name.

As a user, I want to search and filter materials, so that I can easily find the materials that I am looking for.

Priority: Medium

Acceptance Criteria:

- I can perform a fuzzy search by name.
- I can filter by fields and place constraints where applicable.

As a user, I want to search and filter builds, so that I can easily find the builds that I am looking for.

Priority: Medium

Acceptance Criteria:

- I can perform a fuzzy search by name.
- I can filter by fields and place constraints where applicable.

As a user, I want to search and filter CAD files, so that I can easily find the CAD files that I am looking for.

Priority: Medium

Acceptance Criteria:

- I can perform a fuzzy search by name.
- I can filter by fields and place constraints where applicable.

Student

As a student, I want to upload my own work, so that I can record any work I have completed.

Priority: High

Acceptance Criteria:
- I can upload builds, recording it as my own work.
- I can create a new project and assign my builds to it.

As a student, I want to view my own data, so that I can view and edit any work I have uploaded.

Priority: High

Acceptance Criteria:
- I can view and edit any data created by me.
- I cannot access any other data unless explicitly shared with me, using the admin groups functionality.

As a student, I want to search and filter my own data, so that I can easily find data that I am looking for.

Priority: Medium

Acceptance Criteria:
- I can see all the data created by me, and all the data that has been assigned to me using the admin groups functionality.

As a student, I want to find contact details of admins, so that I can request to access data that I would like to view or edit.

Priority: Low

Acceptance Criteria:
- I can find the email of the person I need to contact easily, either through a link in the navigation bar or in the footer.

As a student, I want to edit unreferenced data that I have access to, so that only data that has not been referenced before can be edited.

Priority: Medium

Acceptance Criteria:
- I cannot edit data that has been referenced elsewhere in other data.
- If the data I'm editing has been referenced to before, it will error when I try to edit it.

- If the data I'm editing has not been referenced, I can save the changed details.

Staff

As a staff, I want to view all the data that is commercially available, so that I can use it.

Priority: Medium

Acceptance Criteria:
- When I visit a category, all the items that are commercially available will also be listed.
- I can access all data in the "Commercially Available" group.

Admin

As an admin, I want to edit whether any data is commercially available or confidential, so that only users with access can view them.

Priority: High

Acceptance Criteria:
- I can add and remove items freely from the "Commercially Available" group.
- I can add and remove items freely from the "Confidential" group.
- I cannot delete these groups.

As an admin, I want to create groups, so that only members within a given group can access the files within the group to comply with NDAs.

Priority: High

Acceptance Criteria:
- I can create groups and assign specific data objects to those groups.
- Only users within this group (and admins) can access the data assigned to the group.

As an admin, I want to edit the users and data that are part of a group, so that I can manage access control.

Priority: High

Acceptance Criteria:

- I can add and remove Builds, CADs, Materials, Machines and Users to groups.
- Only users in the group (and admins) can access other data in the group.

As an admin, I want to change users' roles, so that I can manage access control.

Priority: High

Acceptance Criteria:

- I can change the role of a user between: [User, Student, Staff, Admin].
- I can search the name of a user to make it easier to change the role for a specified user.

As an admin, I want to archive CAD files, so that these materials can no longer be referenced.

Priority: Low

Acceptance Criteria:

- I can mark a CAD file as archived.
- I can unarchive a CAD file.
- When I mark a CAD file as archived, it can no longer be referenced in the future.
- Unarchived CAD files can still be referenced.

As an admin, I want to archive materials, so that these materials can no longer be referenced.

Priority: Low

Acceptance Criteria:

- I can mark a material as archived.
- I can unarchive a material.
- When I mark a material as archived, it can no longer be referenced in future builds.
- Unarchived materials can still be referenced.

Non-Functional Requirements

Performance
- The system needs to load within a reasonable amount of time (< 5 seconds).

Accessibility
- The system can be accessed from anywhere by the authorised users.
- The system will be accessible using a screen reader.
- Make sure that all the texts are easily legible.

Scalability
- The system should be scalable, meaning it is easy to add new processes/materials.

Security
- The system should have measures to prevent unauthorised external access to the system, protecting any sensitive information that is stored.
- We will ensure the system has weekly snapshots/backups to prevent any data loss.

Usability
- The system should be user-friendly and intuitive.
- There should be a user manual provided to enable easy navigation through the system.

Maintenance
- The system should be easy to maintain.
- Documentation should reflect the system accurately for any later maintenance.

Deadline

Software Hut Team 7 will deliver the software to the client on the 19th May 2024. We (Team 7) will often present some partial functionality to the client for feedback to make sure we are working towards the desired goal system.

Appendix - A

Term	Definition
APSL	Advanced Polymer Sintering Laboratory
Build	Processing of a material under a specified combination of parameters to produce a part/set of parts (e.g. tensile test bars)
Material	The powder/filament used in a process for a build.
Process	A specific method we use for producing parts from materials, i.e. laser sintering. Interchangeable with 'machine'.
Characterisation	Methods we use to identify characteristics of our materials that help us decide what parameters to use in our machines to process materials. Characterisation is done prior to processing a material and is related to the material, not the machine in which it is processed. It produces files that are stored with a material.
Archive	Alternative to deletion. This disables users from referencing data but keeps data for previous references already made.