Problem Statement and Goals
SyncMaster

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Table 1: Revision History

Date	Developer(s)	Change
2024/09/17	Whole team	Initial review and formatting of problem statement
2024/09/24	Whole team	Initial problem statement and goals. Document completed
2025/03/19	Mitchell Hynes	Update markdown to LaTeX

1 Problem Statement

1.1 Problem

The City of Hamilton, Water Division requires an application to assist in the management and security of their water and wastewater stations. Stations are visited by internal staff and external contractors regularly, but no electronic log of their visit to site exists to confirm work that was performed. This makes it difficult to verify work completion and accurate invoicing. Each station has many documents associated with it (such as entry protocols, hazard assessments, etc) which are frequently updated and need to be effortlessly redistributed to relevant parties as required. This is currently completed manually and is very time consuming for the stakeholder and prone to human error. Many stations have site specific information, which is difficult to capture in a single document. Instead, a dynamic application which displays only information relevant to that station as it is needed would be advantageous. Information needs to be easily accessible to authorized site visitors.

Many documents require signing, and currently it is a manual process to distribute and collect routine signatures. This functionality currently requires the stakeholder to use multiple applications. The stakeholder also currently has many different computer applications for documentation storage. Each has a different standard for storing and managing that information. This leads to duplication and outdated documents in many locations, rather than a single source of truth. The stakeholder requries contract management tools including syncing of contract files to the application and automatic alerts when documents, training, or signatures are set to expire.

Directly related to station access is a management system for contractors. This includes the ability to collect and distribute contract documentation, contact information, training, and other records. A key control management subsystem would be beneficial to view key distribution in real time, as this is currently managed in a separate application. A system to authenticate users at stations prior to access would improve visibility and protection. A digital key system should control access and entry to the station approved from a work order generated in the work order system.

1.2 Inputs and Outputs

Inputs:

- User login information for staff, internal contractors, and visitors
- Uploading of documents
- Signing of documents
- Completion of training
- Verification of arrivals and departures from the plant for contractors
- Adding of new staff and contractors

Outputs:

- Station documentation
- Station maps and access protocol information
- Station forms
- Site contact information

1.3 Stakeholders

The stakeholder for this project is the City of Hamilton, Water Division. Primary stakeholders with the City are the Facilities team, SCADA (Supervisory Control and Data Acquisition) team, and Corporate Security. Depending on what is decided during the requirements gathering process, other stakeholders from the City may need to be included in the project, such as City IT.

- City of Hamilton, Water Division: Primary stakeholder and client for the project
- Facilities Team: Subdivision of the primary stakeholder
- SCADA (Supervisory Control and Data Acquisition): Subdivision of the primary stakeholder
- Corporate Security: A stakeholder with an interest regarding Hamilton Water station security

1.4 Environment

- Software: Windows 10 operating system, android, iOS
- Hardware: Laptop computers, tablets, smartphones

2 Goals

3 Stretch Goals

4 Challenge Level and Extras

[State your expected challenge level (advanced, general or basic). The challenge can come through the required domain knowledge, the implementation or something else. Usually the greater the novelty of a project the greater its challenge level. You should include your rationale for the selected level. Approval of the level will be part of the discussion with the instructor for approving the project. The challenge level, with the approval (or request) of the instructor, can be modified over the course of the term. —SS]

[Teams may wish to include extras as either potential bonus grades, or to make up for a less advanced challenge level. Potential extras include usability testing, code walkthroughs, user documentation, formal proof, GenderMag personas, Design Thinking, etc. Normally the maximum number of extras will be two. Approval of the extras will be part of the discussion with the instructor for approving the project. The extras, with the approval (or request) of the instructor, can be modified over the course of the term. —SS]

Appendix — Reflection

[Not required for CAS 741 —SS]

The purpose of reflection questions is to give you a chance to assess your own learning and that of your group as a whole, and to find ways to improve in the future. Reflection is an important part of the learning process. Reflection is also an essential component of a successful software development process.

Reflections are most interesting and useful when they're honest, even if the stories they tell are imperfect. You will be marked based on your depth of thought and analysis, and not based on the content of the reflections themselves. Thus, for full marks we encourage you to answer openly and honestly and to avoid simply writing "what you think the evaluator wants to hear."

Please answer the following questions. Some questions can be answered on the team level, but where appropriate, each team member should write their own response:

1. What went well while writing this deliverable?
2. What pain points did you experience during this deliverable, and how did you resolve them?
3. How did you and your team adjust the scope of your goals to ensure they are suitable for a Capstone project (not overly ambitious but also of appropriate complexity for a senior design project)?