Hazard Analysis
Software Engineering

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Table 1: Revision History

Date	**Developer(s)**	**Change**
October 18, 2023	Aamina Hussain	Added sections 1, 2, and 4
October 19, 20023	David Moroniti	Added trial hazards + SR's
...	...	...

Contents

1 Introduction

This document includes a hazard analysis for the web application REACH. REACH will allow users to find clinical trials or research studies they are eligible to participate in. It pulls in information about these studies from existing external public databases. This document will analyze and record any hazards to the system REACH. In this case, a hazard is a property of a system, together with the condition of the environment the system is in, which can cause harm or damage and results in a loss. This definition of hazard is from Nancy Leveson's work.

2 Scope and Purpose of Hazard Analysis

The scope and purpose of this hazard analysis is to identify any system hazards and which components they are related to. This includes analyzing the causes and effects of the hazard and the recommended actions to mitigate the hazard, as well as documenting the resulting safety and security requirements.

3 System Boundaries and Components

4 Critical Assumptions

N/A. There are no critical assumptions being made about the software or system.

5 Failure Mode and Effect Analysis

Component	Failure modes	Effects	Causes	Action	SR	Ref.
Trial Fetching/Matching	External Api's unavailable	System is unable to search for trials	System failure on the API providers side, scheduled maintenance, and API access method changed	Keep an internal database of trials.	SR-1	HT-1
	Mismatch in trials being recommended	User attempts to sign up for ineligible trial	Not enough/invalid information entered by user	Display a warning/disclaimer with respect to signing up for trials. Display a confidence rating for each matched trial.	SR-2, SR-5	HT-2
	User eligible for "too many" trials	Too many emails being sent to user and it could make it more difficult for a user to find a trial they really like.	Not enough data entered by user.	Inform user if they haven't entered enough data to get a good search.	SR-3, SR-4, SR5	HT-3
Place holder	Place holder	Place holder	Place holder	Place holder	Place holder	Place holder
Place holder	Place holder	Place holder	Place holder	Place holder	Place holder	Place holder

6 Safety and Security Requirements

SR-1: The system shall periodically store new trials into an internal database, and remove trials that are no longer active.
Rationale: In case of external API failure, there should be some redundancy. Keeping a small "cache" of active trials can ensure the system is never completely down, due to an external failure.

SR-2: The system shall give users a "confidence rating" when matching trials.
Rationale: It will be nearly impossible for the system to match every single eligible trial perfectly, and the user should know this.

SR-3: The system shall enable the user to put a limit on the number of emails they can receive per day.
Rationale: Some users may only want 1 email per day, and some users may want 10 emails per day. Each user should be able to decide this.

SR-4: The system shall define a pre-set limit number of emails that will be sent to an individual each day.
Rationale: If a user doesn't set a limit (whether on purpose or by accident), the system could not handle sending thousands of emails to each user every day. A limit for this reason, is necessary.

SR-5: The system shall inform a user if it is likely that they have not entered a sufficient amount of information to get accurate search results or narrow down the search in any way.
Rationale: Some users may not realize the importance of entering sufficient and accurate information. Additionally, some may forget.

7 Roadmap

[Which safety requirements will be implemented as part of the capstone timeline? Which requirements will be implemented in the future? —SS]