Requirements Document

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Colin Choi, Dalton Ronan, Erik Ligai, Harrison Peters, Micheal Nguyen, Md Ridwan Hasan

Project Overview

The *Responsible AI Design Assistant* is a tool to help ensure those who are deploying an AI system do so in a responsible way. The Design Assistant is a web-based survey that will assess the respondent's answers, score the responsibility of the AI system, and provide recommendations for improving the system, based on the 5 dimensions of the AI Global Responsible AI Trust Index:

1. Accountability
2. Explainability and Interpretability
3. Data Quality
4. Bias and Fairness
5. Robustness

The product will be a self-sustaining, self-assessment tool that can be completed by project members at any point of their AI project development. Questions will be flexible and catered to the respondent's domain and subsequent answers. Likewise, the score assessment report card and recommendations will be tailored to the respondent to provide them with clear and specific ways they can improve their system. Survey results will be stored for future analysis and research by AI Global.

Project Glossary

Accessibility: The extent to which how easily data is available and/or retrievable

Accountability: Refers to the extent to which an organization has good governance over aspects such as risk assessments, organizational structure, decision making, and independent review of the systems and inputs.

Accuracy: Correctness of the data; Reliability of the data

Bias and Fairness: Like the human rights harms in other uses of technology that leverage data, the harms related to the use of AI often disproportionately impact marginalized populations.

Completeness: The extent to which the data covers the problem domain (breadth, depth, scope) of the task at hand

Consistency: The extent to which the data's format is consistent with other data in the problem domain

Data Quality and rights: The extent to which a dataset exhibits exemplary levels in each of the Data Dimensions (see: Completeness, Accuracy, Timeliness, Consistency, Accessibility) underlying data rather than the algorithm itself are most often the main source of the issue. Models may be trained on data containing human decisions or on data that reflect second-order effects of societal or historical inequities.

Dimensions of the trust index: Accountability, Explainability, Data Quality and rights, Bias and Fairness, Robustness.

Explainability: AI system would be able to explain its own reasoning to a user in a format that is understandable to a human

Interpretability: Extent to which a cause and effect can be observed within the AI system

Privacy: Who has access to the data collected. Who can make changes to the data. How transparent is it to the user about what data is being collected

Responsible: AI Global “did the hard work of deciphering the best practices, policies, and principles and put them into a simple online survey”. Used the “most cited principles, whitepapers, and policy documents published by academics, standards organizations, and companies and translated them into comprehensive questions.” All this information is used to determine what a responsible AI is and what principles it should abide by.

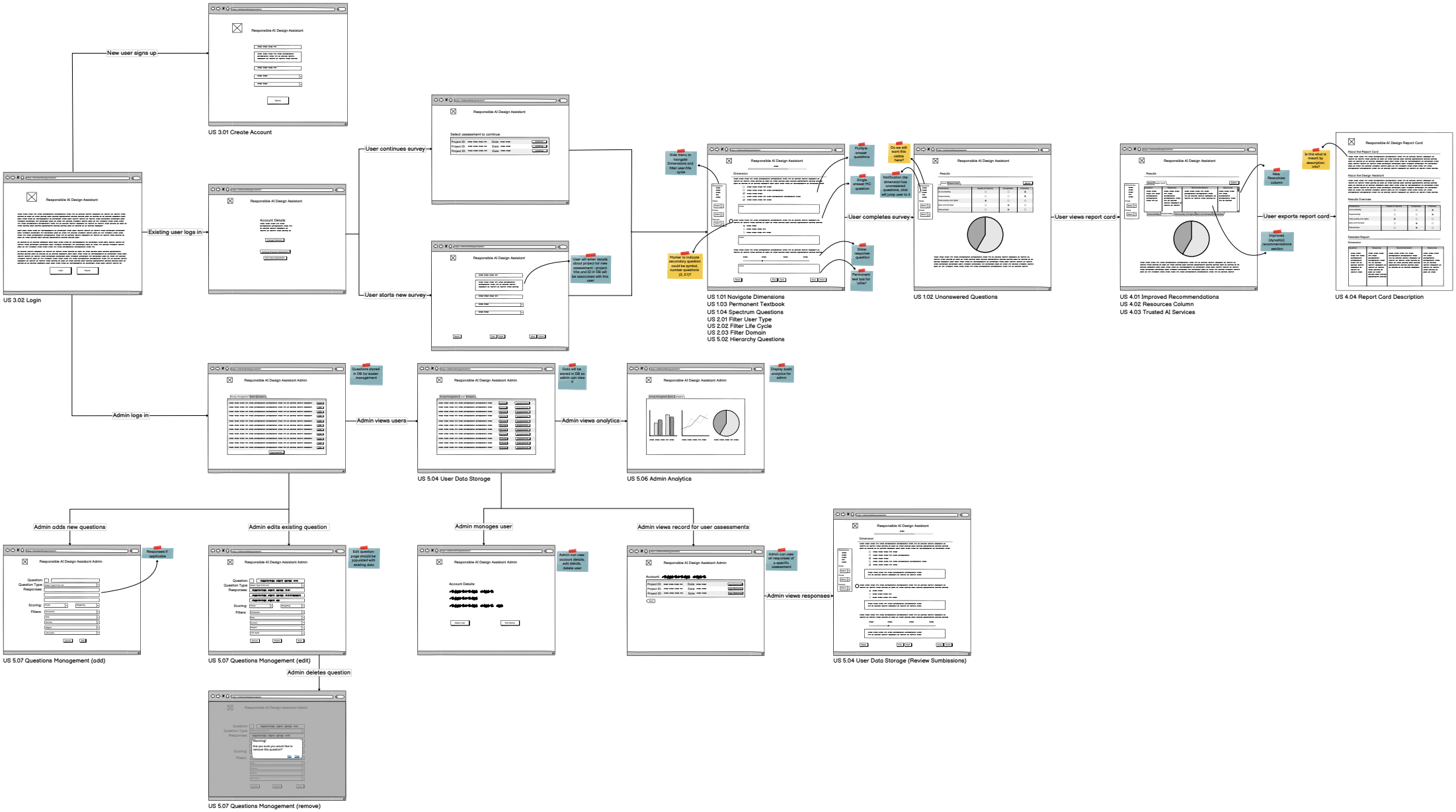
Risk Assessment: Evaluation on the potential that an AI program may negatively impact its users.

Robustness: Ensures that an AI system continues to operate within safe limits upon perturbations. Must be robust or unforeseen events and adversarial attacks that can damage or manipulate such systems.

Scoring mechanism: Defined by AI Global on how each question response will contribute to the total score.

Security: How securely data is being stored. How well is it protected against unauthorized access

Timeliness: The obsolescence of the data for the task at hand


New user signs up
US 3.01 Create Account
Existing user logs in
US 3.02 Login
User continues survey
User starts new survey
Select assessment to continue
User will enter details about project for new assessment. Unique value used ID in DB will be associated with this user
Side menu to navigate Dimensions and filter user/life cycle
Marker to indicate secondary question could be symbol, number questions (2, 2.1)?
Multiple answer questions
Single answer MC question
Slider response question
Permanent text box for 'other'
Do we still want this visible here?
Notification the dimension has unanswered questions, click will jump user to it
User completes survey
US 1.01 Navigate Dimensions
US 1.03 Permanent Textbook
US 1.04 Spectrum Questions
US 2.01 Filter User Type
US 2.02 Filter Life Cycle
US 2.03 Filter Domain
US 5.02 Hierarchy Questions
US 1.02 Unanswered Questions
User views report card
New Resources column
Improved (dynamic) recommendations section
User exports report card
Is this what is meant by description info?
US 4.01 Improved Recommendations
US 4.02 Resources Column
US 4.03 Trusted AI Services
US 4.04 Report Card Description
Admin logs in
Questions stored in DB for easier management
Admin views users
Data will be stored in DB so admin can view it
Admin views analytics
Display basic analytics for admin
US 5.04 User Data Storage
US 5.06 Admin Analytics
Admin adds new questions
Admin edits existing question
Admin manages user
Admin views record for user assessments
Responses if applicable
Edit question page should be populated with existing data
Admin can view account details, edit details, delete user
Admin can view all responses of a specific assessment
Admin views responses
US 5.07 Questions Management (add)
US 5.07 Questions Management (edit)
US 5.04 User Data Storage (Review Submissions)
Admin deletes question
Warning!
Are you sure you would like to remove this question?
US 5.07 Questions Management (remove)

User Stories

US 1.XX - Survey user experience
US 2.XX - Question filters
US 3.XX - User account/login features
US 4.XX - Results page and recommendations
US 5.XX - Admin and back-end functionality

#	User Stories	Acceptance Tests
US 1.01	As a **User** I want to **have navigation controls that let me easily jump to questions in a different dimensions** so that **I can conveniently go back and forth between different sections of the survey**	● When a user starts the survey, navigation controls with labels of the dimensions appear ● The user can click on the labels to jump to questions in that dimension
US 1.02	As a **User** I want to **jump to unanswered questions** so that **I can conveniently find questions I still need to complete**	● While a user is filling out the survey, clicking on a dimension lebel opens up a menu that show all questions in that dimension ● Questions that have been completed are green ● Questions that are still unanswered are grey ● Clicking on a question switches the current survey page to the page containing the question
US 1.03	As a **User** I want to be able to **share additional information that wasn't included in the response options** so that **I can give a response that wasn't provided, or give suggestion on what can be improved**	● Each question in the survey is followed by an "Other" question ● The user can fill out the "Other" question with free text
US 1.04	As a **User** I want to **have a spectrum instead of check boxes for certain questions** so that **I can better represent my responses**	● The user is able to answer specific questions with a spectrum option
US 1.05	As a **User** I want to **be able to take the survey without having to login** so that I **can test out the survey without creating an account**	● There is an option on the login page to continue without an account ● The user can start the survey without an account
US 2.01	As a **User** I want to **filter questions by user type** so that **I am asked questions specific to my role**	● When the survey begins, user can select their role on a dropdown menu ● The questions of the survey are filtered based off the role selected by the user
US 2.02	As a **User** I want to **filter on life cycle type** so that **I can answer questions specific to the current life cycle of the project**	● When the survey begins, user is able to specify their project's life cycle ● The questions of the survey are filtered based off the life cycle selected by the user

US 2.03	As a **User** I want **domain specific extensions** so that I can **filter questions based on domain and region**	● The user is able to select between different domain specific extensions ● The questions of the survey are specific to the domain/industry selected by the user
US 3.01	As a **User** I want to **create an account** so that I can **have my responses saved and keep track of my results to monitor my progress during each life cycle**	● When the user navigates to the login page, there is an option to create an account ● When the user clicks the option to create an account, they are navigated to a signup page ● The user can enter their information on the signup page and create an account
US 3.02	As a **User** I want to **login to my account** so that I can **see what changes each time I fill out the questionnaire**	● When the user navigates to the website, there is an option to login ● When the user clicks the login button, they are navigated to the login page ● The user can input a username and password combination to log into their existing account
US 4.01	As a **User** I want to have **recommendations on my report card that adapt to my answers** so that **I can have recommendations that are tailored to my project's weaknesses and needs**	● The user can find a list of recommendations on the report card that is generated ● Recommendations are shown to the user on the report card based off their responses to the survey
US 4.02	As a **User** I want to have **a suggested resources column in the report card** so that **I can conveniently find information on how to improve in my project's areas of weaknesses**	● The user can find a list of resources on their report card ● The list of resources on the report card are based off the user's answers to the survey
US 4.03	As a **User** I want to **have a list of Trusted AI providers on the results page** so that **I know where to go to get help**	● The user can see a list of Trusted AI Providers on the results page
US 4.04	As a **User** I want to **have a title and description added to the exported PDF version of the results** so that **I can tell which project the results refer to**	● The user can see the title and description that they inputted for the project on their exported results PDF
US 5.02	As an **Admin** I want to **be able to add hierarchy questions** so that **I can present the User with child questions depending on their responses**	● The admin can mark questions as being primary or secondary ● The admin can specify the answer(s) to the primary question that will display the secondary question

US 5.04	As an **Admin** I want to **be able to view all survey submissions** so that **I can review submissions and their responses**	• There is a view submissions section in the Admin page • Admin is able to see all survey submissions from registered and unregistered users
US 5.06	As an **Admin** I want to **have access to basic analytics** so that **I can make informed business decisions**	• There is a analytics section in the Admin page • The admin is able to view basic analytics of the survey
US 5.07	As an **Admin** I want to **have an interface to easily remove, edit, and add questions** so that **it is easier to modify the questionnaire**	• There is a edit survey section in the Admin page that displays the questions in the survey • The admin is able to add, edit and delete questions in the survey
US 5.08	As an **Admin** I want to **have all survey submissions automatically saved** so that **I can have more data on how many people are filling out the survey and what questions they may be stuck on**	• Submissions are automatically saved to the database when the User clicks the finish button on the survey • The admin is able to view these automatically saved responses
US 5.09	As an **Admin** I want to **be able to add and remove Trusted AI Providers** so that **I can select the Trusted AI Providers to be displayed to the User**	• The admin is able to add and remove Trusted AI providers in the Admin page • The added trusted AI providers are displayed on the results page

MVP Specification

Must Have

- US 1.01 - Navigation controls for navigating to different dimensions
- US 1.03 - Permanent text box for submitting feedback
- US 1.04 - Spectrum responses for questions
- US 1.05 - Allow users to complete the survey without having to log in with an account
- US 2.01 - Filter questions by user type
- US 4.04 - Title and description added to report card
- US 5.02 - Implement hierarchy questions
- US 5.05 - Keep a record of basic analytics
- US 5.07 - Implement interface to add, edit, and remove questions
- US 5.08 - Save all responses in database so Users don’t have to email in their results

Should Have

- US 1.02 - Navigation controls for moving to unanswered questions
- US 3.01 - Allow users to create accounts
- US 3.02 - Allow users to login to their accounts
- US 5.04 - Store data from users with accounts

Could Have

- US 2.02 - Filter question by lifecycle type
- US 4.03 - Provide a list of Trusted AI providers on the report card
- US 5.09 - Allow admin to add and remove Trusted AI Providers

Would Like

- US 4.02 - Suggested resources column in report card
- US 4.01 - Improve report card recommendations

Technical Resources

We will use the MERN stack to be consistent with the AI Global Community Portal that is currently being developed.

Front End:

- React(.js)
  - A JavaScript library for building user interfaces
- SurveyJS
  - Existing application leverages the SuveyJS library to generate the primary source of the content
- Bootstrap
  - Open-source CSS framework that existing application is built upon

Backend:

- Node.js
  - Backend JavaScript
- Express(.js)
  - Web framework for Node.js
- Mongoose
  - Object data modelling library that allows for connection between Node.js and MongoDB
- MongoDB
  - Cross-platform, document oriented noSQL database program
- Cybera Rapid Access Cloud
  - A free cloud computing resources to Alberta-based academics

Analytics

- Google Analytics for React
  - Module to track analytics such as time spent

Similar Products

- PwC Responsible AI Toolkit
  - Similar type of assessment survey
  - Breaks assessment down into three categories **Ethics & Legal**, **Performance**, and **Governance**
- Socionics Personality Tests
  - Similar type of assessment survey

    - Contains Questions that allow spectrum responses
    - Provides a report card assessing the user.

Open-Source Products

- Algorithmic Impact Assessment
    - Similar type of assessment survey designed to help assist and mitigate impacts associated with deploying an automated decision system
    - Existing application is built off this open-source project
- COVID Self-Assessment
    - Self assessment survey designed to recommend services based on answers given by the user.
    - Utilizes JavaScript for their backend and CSS for their frontend