

# Requirements Document

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## 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.

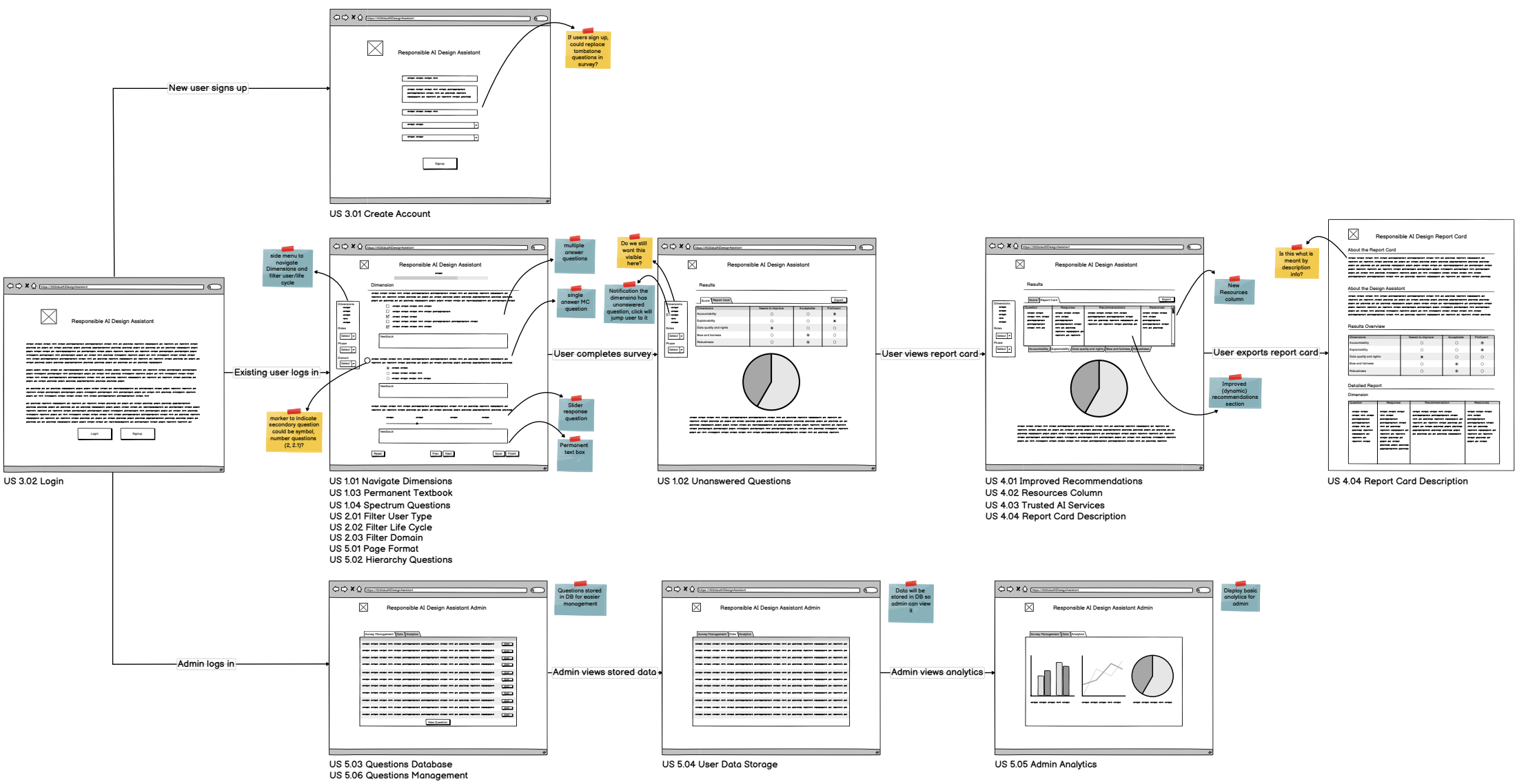
**Risk Assessment:** Evaluation on the potential that an AI program may negatively impact its users.

**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



# User Stories

US 1.XX - Survey user experience

US 2.XX - Question filters

US 3.XX - User account/login features

US 4.XX - Report card and recommendations

US 5.XX - Admin and back-end functionality

#	User Stories	Acceptance Tests
US 1.01	As a <b>User</b> I want to <b>have navigation controls that let me easily navigate to different dimensions</b> so that <b>I can conveniently go back and forth between questions</b>	<ul style="list-style-type: none"><li>• Navigation controls for switching dimensions exists when answering questions</li><li>• Clicking on controls lets the user switch between different dimensions</li></ul>
US 1.02	As a <b>User</b> I want to <b>Scroll to unanswered questions</b> so that <b>I can conveniently find questions I still need to complete</b>	<ul style="list-style-type: none"><li>• Unanswered questions are kept track of</li><li>• There is navigation to jump to these unanswered questions</li></ul>
US 1.03	As a <b>User</b> I want to be able to <b>share additional information that wasn't included in the response options</b> so that <b>I can give a response that wasn't provided, or give suggestion on what can be improved</b>	<ul style="list-style-type: none"><li>• Permanent text box below each question</li><li>• Feedback box is changed to an "Other" response box</li></ul>
US 1.04	As a <b>User</b> I want to <b>have a spectrum instead of check boxes for certain questions</b> so that <b>I can better represent my responses</b>	<ul style="list-style-type: none"><li>• Give option to add a spectrum slider as a response to questions</li><li>• Store spectrum response as a scale from 1-10 instead of yes or no</li></ul>
US 2.01	As a <b>User</b> I want to <b>filter questions by user type</b> so that <b>I am asked questions specific to my role</b>	<ul style="list-style-type: none"><li>• Filter exists that lets user specify their role</li><li>• Choosing a filter limits what questions are shown to the user</li></ul>
US 2.02	As a <b>User</b> I want to <b>filter on life cycle type</b> so that <b>I can answer questions specific to the current life cycle of the project</b>	<ul style="list-style-type: none"><li>• Filter exists that lets user specify on life cycle type</li><li>• Choosing a filter limits what questions are shown to the user</li></ul>
US 2.03	As a <b>User</b> I want to <b>domain specific extensions</b> so that <b>I can filter questions based on domain and region</b>	<ul style="list-style-type: none"><li>• There are different extensions for specific regions</li><li>• Questions presented to the user are filtered to only questions specific to that domain/industry</li></ul>
US 3.01	As a <b>User</b> I want to <b>create an account</b> so that <b>I can keep track of data for monitor my progress during each cycle (Redo test again, estimate, share with team, auto saving responses)</b>	<ul style="list-style-type: none"><li>• There is a button that leads the user to a signup page when clicked</li><li>• User can enter information on this signup page and create an account</li></ul>

US 3.02	As a <b>User</b> I want to <b>login to my account</b> so that I can <b>see what changes each time I fill out the questionnaire</b>	<ul style="list-style-type: none"> <li>• There is a button that leads the user to a login page when clicked</li> <li>• User can input a username and password combination to log into their existing account</li> </ul>
US 4.01	As a <b>User</b> I want to have <b>improved recommendations on my report card based off my answers</b> so that I have <b>recommendations tailored to my needs</b>	<ul style="list-style-type: none"> <li>• User responses are used to generate the recommendations on their report card</li> <li>• A system for deciding which recommendations to show based off how questions are answered is in place</li> </ul>
US 4.02	As a <b>User</b> I want to have a <b>suggested resources column in my report card</b> so that I can <b>conveniently find information on how to improve</b>	<ul style="list-style-type: none"> <li>• There is a resources section in the user's report card</li> <li>• Links to resources are provided based on the user's recommendations</li> </ul>
US 4.03	As a <b>User</b> I want to <b>have a list of Trusted AI service providers on the report card</b> so that I know where to go to get help	<ul style="list-style-type: none"> <li>• There is a list of Trusted AI service providers on the report card</li> </ul>
US 4.04	As a <b>User</b> I want to <b>have a title and description added to the report card</b>	<ul style="list-style-type: none"> <li>• Report card has a title and description</li> </ul>
US 5.01	As an <b>Admin</b> I want to <b>have the page formatted the same regardless of how many questions are on the page</b> so that <b>everything looks consistent and the survey can be easily navigated</b>	<ul style="list-style-type: none"> <li>• Formatting on each page of questions looks consistent</li> </ul>
US 5.02	As an <b>Admin</b> I want to <b>have hierarchy questions</b> so that I <b>can present the User with secondary questions depending on their responses</b>	<ul style="list-style-type: none"> <li>• Specific questions can be marked as primary or secondary questions</li> <li>• Secondary questions are given to the user depending on their response to the primary question</li> </ul>
US 5.03	As an <b>Admin</b> I want to <b>store all the questions in a database</b> so that <b>all the questions are neatly organized in one place</b>	<ul style="list-style-type: none"> <li>• All the questions from the excel sheet are moved to a database</li> <li>• Table in database is set up for questions with an appropriate schema</li> </ul>
US 5.04	As an <b>Admin</b> I want to <b>store the data from the Users</b> so that <b>it can be accessed later for other features</b>	<ul style="list-style-type: none"> <li>• User responses are stored in a database</li> <li>• Security features implemented</li> </ul>
US 5.05	As an <b>Admin</b> I want to <b>have access to basic analytics</b> so that I can <b>make informed business decisions</b>	<ul style="list-style-type: none"> <li>• Analytics for how many views, region, how they linked to the site, how long they are staying on the pages for are tracked and stored</li> </ul>
US 5.06	As an <b>Admin</b> I want to <b>have an interface to easily remove, edit, and add questions</b> so that it is <b>easier to modify the questionnaire</b>	<ul style="list-style-type: none"> <li>• Admin page is set up</li> <li>• Page allows Admin to edit questionnaire questions</li> </ul>

US 5.07	As an <b>Admin</b> I want to <b>have all responses automatically saved into the database</b> so that I can have more data on how many people are filling out the survey and what questions they may be stuck on	<ul style="list-style-type: none"> <li>• Responses are saved in the database when submitted</li> <li>• There is an admin page to view these responses</li> </ul>
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### 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 2.01 - Filter questions by user type
- US 4.02 - Suggested resources column in report card
- US 4.04 - Title and description added to report card
- US 5.02 - Implement hierarchy questions
- US 5.03 - Store questions in a database
- US 5.06 - Keep a record of basic analytics
- US 5.07 - Implement interface to add, edit , and remove questions
- US 5.08 - Ability to get responses from users not logged in

### 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 4.01 - Improve report card recommendations
- US 4.03 - Provide a list of Trusted AI service providers on the report card
- US 5.01 - Have consistent formatting on all questionnaire pages

### Would Like

- US 2.03 - Add domain specific extensions

## 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 SurveyJS library to generate the primary source of the content
- [Bootstrap](#)
  - Open-source CSS framework that existing application is built upon

### Backend:

- [Express\(.js\)](#)
  - Web framework for Node.js
- [Node.js](#)
  - Allows for connection from JavaScript to MySQL
- [MongoDB](#)
  - Cross-platform, document oriented noSQL database program
- [Cybera Rapid Access Cloud](#)
  - A free cloud computing resources to Alberta-based academics

## 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