

Software Requirements Specification for Software Engineering: subtitle describing software

Team 21, Alkalytics

Sumanya Gulati

Kate Min

Jennifer Ye

Jason Tran

September 29, 2024

Contents

1	Purpose of the Project	vi
1.1	User Business	vi
1.2	Goals of the Project	vi
2	Stakeholders	vi
2.1	Client	vi
2.2	Customer	vi
2.3	Other Stakeholders	vi
2.4	Hands-On Users of the Project	vi
2.5	Personas	vi
2.6	Priorities Assigned to Users	vi
2.7	User Participation	vii
2.8	Maintenance Users and Service Technicians	vii
3	Mandated Constraints	vii
3.1	Solution Constraints	vii
3.2	Implementation Environment of the Current System	vii
3.3	Partner or Collaborative Applications	vii
3.4	Off-the-Shelf Software	vii
3.5	Anticipated Workplace Environment	vii
3.6	Schedule Constraints	vii
3.7	Budget Constraints	vii
3.8	Enterprise Constraints	viii
4	Naming Conventions and Terminology	viii
4.1	Glossary of All Terms, Including Acronyms, Used by Stakeholders involved in the Project	viii
5	Relevant Facts And Assumptions	viii
5.1	Relevant Facts	viii
5.2	Business Rules	viii
5.3	Assumptions	viii
6	The Scope of the Work	viii
6.1	The Current Situation	viii
6.2	The Context of the Work	viii
6.3	Work Partitioning	ix

6.4	Specifying a Business Use Case (BUC)	ix
7	Business Data Model and Data Dictionary	ix
7.1	Business Data Model	ix
7.2	Data Dictionary	ix
8	The Scope of the Product	ix
8.1	Product Boundary	ix
8.2	Product Use Case Table	ix
8.3	Individual Product Use Cases (PUC's)	ix
9	Functional Requirements	ix
9.1	Data Input Requirements	ix
9.2	Data Migration and Organization Requirements	x
9.3	Data Search and Query Requirements	x
9.4	Data Visualization Requirements	x
9.5	Data Analysis Requirements	x
9.6	Error Tracking Requirements	xi
9.7	User Access Management Requirements	xi
9.8	Data Export Requirements	xi
10	Look and Feel Requirements	xi
10.1	Appearance Requirements	xi
10.2	Style Requirements	xi
11	Usability and Humanity Requirements	xi
11.1	Ease of Use Requirements	xi
11.2	Personalization and Internationalization Requirements	xii
11.3	Learning Requirements	xii
11.4	Understandability and Politeness Requirements	xii
11.5	Accessibility Requirements	xii
12	Performance Requirements	xii
12.1	Speed and Latency Requirements	xii
12.2	Safety-Critical Requirements	xii
12.3	Precision or Accuracy Requirements	xii
12.4	Robustness or Fault-Tolerance Requirements	xii
12.5	Capacity Requirements	xii
12.6	Scalability or Extensibility Requirements	xiii

12.7 Longevity Requirements	xiii
13 Operational and Environmental Requirements	xiii
13.1 Expected Physical Environment	xiii
13.2 Wider Environment Requirements	xiii
13.3 Requirements for Interfacing with Adjacent Systems	xiii
13.4 Productization Requirements	xiii
13.5 Release Requirements	xiii
14 Maintainability and Support Requirements	xiii
14.1 Maintenance Requirements	xiii
14.2 Supportability Requirements	xiv
14.3 Adaptability Requirements	xiv
15 Security Requirements	xiv
15.1 Access Requirements	xiv
15.2 Integrity Requirements	xiv
15.3 Privacy Requirements	xiv
15.4 Audit Requirements	xiv
15.5 Immunity Requirements	xiv
16 Cultural Requirements	xiv
16.1 Cultural Requirements	xiv
17 Compliance Requirements	xv
17.1 Legal Requirements	xv
17.2 Standards Compliance Requirements	xv
18 Open Issues	xv
19 Off-the-Shelf Solutions	xv
19.1 Ready-Made Products	xv
19.2 Reusable Components	xv
19.3 Products That Can Be Copied	xv
20 New Problems	xv
20.1 Effects on the Current Environment	xv
20.2 Effects on the Installed Systems	xv
20.3 Potential User Problems	xvi

20.4	Limitations in the Anticipated Implementation Environment That May Inhibit the New Product	xvi
20.5	Follow-Up Problems	xvi
21	Tasks	xvi
21.1	Project Planning	xvi
21.2	Planning of the Development Phases	xvi
22	Migration to the New Product	xvi
22.1	Requirements for Migration to the New Product	xvi
22.2	Data That Has to be Modified or Translated for the New System	xvi
23	Costs	xvii
24	User Documentation and Training	xvii
24.1	User Documentation Requirements	xvii
24.2	Training Requirements	xvii
25	Waiting Room	xvii
26	Ideas for Solution	xvii

Revision History

Date	Version	Notes
Date 1	1.0	Notes
Date 2	1.1	Notes

1 Purpose of the Project

1.1 User Business

Insert your content here.

1.2 Goals of the Project

Insert your content here.

2 Stakeholders

2.1 Client

Insert your content here.

2.2 Customer

Insert your content here.

2.3 Other Stakeholders

Insert your content here.

2.4 Hands-On Users of the Project

Insert your content here.

2.5 Personas

Insert your content here.

2.6 Priorities Assigned to Users

Insert your content here.

2.7 User Participation

Insert your content here.

2.8 Maintenance Users and Service Technicians

Insert your content here.

3 Mandated Constraints

3.1 Solution Constraints

Insert your content here.

3.2 Implementation Environment of the Current System

Insert your content here.

3.3 Partner or Collaborative Applications

Insert your content here.

3.4 Off-the-Shelf Software

Insert your content here.

3.5 Anticipated Workplace Environment

Insert your content here.

3.6 Schedule Constraints

Insert your content here.

3.7 Budget Constraints

Insert your content here.

3.8 Enterprise Constraints

Insert your content here.

4 Naming Conventions and Terminology

4.1 Glossary of All Terms, Including Acronyms, Used by Stakeholders involved in the Project

Insert your content here.

5 Relevant Facts And Assumptions

5.1 Relevant Facts

Insert your content here.

5.2 Business Rules

Insert your content here.

5.3 Assumptions

Insert your content here.

6 The Scope of the Work

6.1 The Current Situation

Insert your content here.

6.2 The Context of the Work

Insert your content here.

6.3 Work Partitioning

Insert your content here.

6.4 Specifying a Business Use Case (BUC)

Insert your content here.

7 Business Data Model and Data Dictionary

7.1 Business Data Model

Insert your content here.

7.2 Data Dictionary

Insert your content here.

8 The Scope of the Product

8.1 Product Boundary

Insert your content here.

8.2 Product Use Case Table

Insert your content here.

8.3 Individual Product Use Cases (PUC's)

Insert your content here.

9 Functional Requirements

9.1 Data Input Requirements

- FR-1.** The system shall allow the user to input new experiment data or parameters.

- FR-2.** The system shall store experiment data in the database with all associated parameters and values correctly labelled.

9.2 Data Migration and Organization Requirements

- FR-3.** The system shall read existing experiment data stored in .CSV files.
- FR-4.** The system shall migrate existing experiment data into the database.
- FR-5.** The system shall organize experiment data by timestamps and experiment ID for unique identification.

9.3 Data Search and Query Requirements

- FR-6.** The system shall allow the user to search for specific datasets based on different parameters.
- FR-7.** The system shall allow the user to query two or more parameters or datasets for comparison and analysis.
- FR-8.** The system shall display the results of a user's selected search or query in a format that is readable to the user.

9.4 Data Visualization Requirements

- FR-9.** The system shall generate visual graphs based on selected parameters and datasets.
- FR-10.** The system shall allow the user to customize the data visualization by adjusting axes, data ranges, labels, etc.

9.5 Data Analysis Requirements

- FR-11.** The system shall analyze patterns and trends in the experiment data based on the user's selected parameters.
- FR-12.** The system shall use machine learning algorithms to predict and interpolate the data.

9.6 Error Tracking Requirements

This section outlines functional requirements for one of the project's stretch goals.

FR-13. The system shall track and log errors in the experiment data.

9.7 User Access Management Requirements

This section outlines functional requirements for one of the project's stretch goals.

FR-14. The system shall allow the user to sign in with valid credentials.

9.8 Data Export Requirements

This section outlines functional requirements for one of the project's stretch goals.

FR-15. The system shall generate a report of queries in a session for the user to save or download.

10 Look and Feel Requirements

10.1 Appearance Requirements

Insert your content here.

10.2 Style Requirements

Insert your content here.

11 Usability and Humanity Requirements

11.1 Ease of Use Requirements

Insert your content here.

11.2 Personalization and Internationalization Requirements

Insert your content here.

11.3 Learning Requirements

Insert your content here.

11.4 Understandability and Politeness Requirements

Insert your content here.

11.5 Accessibility Requirements

Insert your content here.

12 Performance Requirements

12.1 Speed and Latency Requirements

Insert your content here.

12.2 Safety-Critical Requirements

Insert your content here.

12.3 Precision or Accuracy Requirements

Insert your content here.

12.4 Robustness or Fault-Tolerance Requirements

Insert your content here.

12.5 Capacity Requirements

Insert your content here.

12.6 Scalability or Extensibility Requirements

Insert your content here.

12.7 Longevity Requirements

Insert your content here.

13 Operational and Environmental Requirements

13.1 Expected Physical Environment

Insert your content here.

13.2 Wider Environment Requirements

Insert your content here.

13.3 Requirements for Interfacing with Adjacent Systems

Insert your content here.

13.4 Productization Requirements

Insert your content here.

13.5 Release Requirements

Insert your content here.

14 Maintainability and Support Requirements

14.1 Maintenance Requirements

Insert your content here.

14.2 Supportability Requirements

Insert your content here.

14.3 Adaptability Requirements

Insert your content here.

15 Security Requirements

15.1 Access Requirements

Insert your content here.

15.2 Integrity Requirements

Insert your content here.

15.3 Privacy Requirements

Insert your content here.

15.4 Audit Requirements

Insert your content here.

15.5 Immunity Requirements

Insert your content here.

16 Cultural Requirements

16.1 Cultural Requirements

Insert your content here.

17 Compliance Requirements

17.1 Legal Requirements

Insert your content here.

17.2 Standards Compliance Requirements

Insert your content here.

18 Open Issues

Insert your content here.

19 Off-the-Shelf Solutions

19.1 Ready-Made Products

Insert your content here.

19.2 Reusable Components

Insert your content here.

19.3 Products That Can Be Copied

Insert your content here.

20 New Problems

20.1 Effects on the Current Environment

Insert your content here.

20.2 Effects on the Installed Systems

Insert your content here.

20.3 Potential User Problems

Insert your content here.

20.4 Limitations in the Anticipated Implementation Environment That May Inhibit the New Product

Insert your content here.

20.5 Follow-Up Problems

Insert your content here.

21 Tasks

21.1 Project Planning

Insert your content here.

21.2 Planning of the Development Phases

Insert your content here.

22 Migration to the New Product

22.1 Requirements for Migration to the New Product

Insert your content here.

22.2 Data That Has to be Modified or Translated for the New System

Insert your content here.

23 Costs

Insert your content here.

24 User Documentation and Training

24.1 User Documentation Requirements

Insert your content here.

24.2 Training Requirements

Insert your content here.

25 Waiting Room

Insert your content here.

26 Ideas for Solution

Insert your content here.

Appendix — Reflection

The information in this section will be used to evaluate the team members on the graduate attribute of Lifelong Learning. Please answer the following questions:

1. What knowledge and skills will the team collectively need to acquire to successfully complete this capstone project? Examples of possible knowledge to acquire include domain specific knowledge from the domain of your application, or software engineering knowledge, mechatronics knowledge or computer science knowledge. Skills may be related to technology, or writing, or presentation, or team management, etc. You should look to identify at least one item for each team member.
2. For each of the knowledge areas and skills identified in the previous question, what are at least two approaches to acquiring the knowledge or mastering the skill? Of the identified approaches, which will each team member pursue, and why did they make this choice?