SOEN 6481 Summer 2021

VISION DOCUMENT
E-CONCORDIA DRIVE

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Chapter 1

Vision Document

1.1 Introduction

1.1.1 Purpose

The purpose of this vision document is to collect and analyze all assorted ideas that have come up to define the system, its requirements with respect to end users. Also, we shall predict and sort out how we hope this product will be used in order to gain a better understanding of the project, outline concepts that may be developed later, and document ideas that are being considered, but may be discarded as the product develops.[1]

1.1.2 Scope

E-Concordia drive is an E-learning platform for students to learn and practice driving lessons to obtain a license. It has got three main users: Trainer, Student and Admin. Admin edits, comments, approves and publishes lessons uploaded by a trainer. Once approved the content is ready to be viewed by students.

1.1.3 References

[1] R.Morales, 1b-p1 Vision Document, Available on: https://moodle.concordia.ca/moodle/mod/resource/view.php?id=2764233 [Current July, 2021]

[2]Improvement of Detection for Warning Students in E-learning Using Web Cameras - Scientific Figure on ResearchGate. Available from: https://www.researchgate.net/figure/A-block-diagram-of-the-e-learning-system_fig1_275541493 [accessed 13 Jul, 2021]

1.2 Positions

1.2.1 Problem Statement

The Problem of	Not being able to hold in-person learning and practice for obtaining driver's license due to COVID-19
Affects	All people who are new to driving and existing course students.
The impact of which is	That due to the pandemic the driving school had to close the in-person classes.
The Solution to which is	Creating an E-Learning website using which, the students can watch training videos prepared by instructors. Also based on the training module students can solve quizzes, which will help them practice for the main exam.

Table 1.1: Problem Statement.

1.2.2 Product Position Statement

For	All people who are new to driving and existing course students
Who	Want to practice for the final driving exam.
The E-Concordia Drive	is an e-learning web product
That	helps students prepare for their final writing test, while sitting at their home.
Unlike	attending school amidst of the pandemic
Our Product	Helps the student learn from the vicinity of their homes. Using this platform they have access to videos 24/7, which helps revisit the videos them with if they did not understand something at first. Apart from this the platform also helps with practice quizzes.

Table 1.2: Position Statement.

1.3 Stakeholder Description

1.3.1 Stakeholder Summary

Name	**Description**	**Responsibilities**
Owner of Driving School	Person who owns the school and wants to take things online.	Should provide feedback and connect with Product Owner to convey his needs to the development team
Product Owner	A person who tells his needs to the business analyst	Should coordinate with BA to communicate the needs of business from the website.
Business Analyst	Is a person responsible for the SRS document and understanding the business needs	Should prepare SRS document and any changes to it, understand the business requirements, understand the customer requirements, layout clear and precise requirements for the developers and testers.

Architects	Acts as development lead and is a guy who has knowledge of MVC architecture	Create the MVC style architecture for the developers, communicate with business and clients to design and execute solutions. Make executive software design decisions
Developers	Coders of the website	They are responsible to write a stable, understandable and easily executable PHP language based website. Should be familiar with MVC architecture. Should be able to read and understand requirements from the requirement document
Database Admins	Is a person who maintains and develops database for the application.	Should be familiar with MySQL database. Responsible for creating and maintaining the database. Should have in-depth knowledge of SQL.
QA/Test Analyst	Is a person who can find bugs in the application and help achieve stable application	Should be familiar with JIRA, can create test suite, test plan, test cases.
Marketing & Advertising	A firm responsible to bring the application to end users.	Select the target users, advertise to the users, maintain social media advertising and help in SEO.

Table 1.3: Stakeholder Summary.

1.3.2 User Summary

Name	**Description**	**Responsibilities**	**Stakeholder**
Students	Is a person who is enrolled for the driving lesson	Should register for the lessons, attend all the lectures and attempt all the quizzes	Self-Represented
Trainer	Is a person who takes the lessons	Is responsible for creating all the content for the students to view	Self-Represented
Admin	Is a person who maintains the content and users	Is responsible for approval of all the contents and approval of students and trainers	Self-Represented
Marketer & Advertiser	Is a person who advertises the website	Obtains the information to be advertised from the website and admins	Self-Represented.

Table 1.4: User Summary.

1.3.3 User Environment

- **Tools used for the project:**
  - **PhpStorm:** IDE for software development
  - **JIRA:** To improve the management of new development and defects.
  - **GitHub:** for configuration management of the source code, test code and data.
  - **MySQL:** for creating and maintaining the data.
  - **Overleaf:** for creating all project related documentations
- **Team Structure:**
  - There will be 1 software architect who will also act as the development manager. The development team will consist of 4-5 developers and will be lead by the architect. Number of developers will go down to 2 once the project is live.
  - The testing team will have 4 testers. The 4 people includes a test lead and 3 test analysts. Number of testers will reduce to 1-2 once the project goes live.
  - There will be 1 scrum master and 1 business analyst.
  - 1 developer and 1 tester will be moved to maintenance team once the project is live and deal wil production issues.
- Development of the product will be done using agile methodologies. It will be divided in 3 iterations. Iteration 1 will be 8 weeks long, Iterations 2 and 3 each will be 4 weeks long.
- For this release the project will work on Google Chrome and Safari. Expansion of this project will see working on other web browsers available in the market. Also there is a plan to create an application after analyzing the response for the website.
- Users should have a browser enabled device for using the website. Also the devices they use should be capable of viewing video and audio clips.
- Marketers and Advertisers should be familiar with the SEO and SCO tools. They should track all the social media activities via twitter, facebook and instagram.
- Student users shall have access to all the videos and quizzes once they enroll for the course.
- Trainer users should be able to record, manage and publish the videos for the approval of admin. Also they should be able to create quizzes for students to practice.
- Admin shall have the access to approve/reject the published stuff by the trainers.

1.3.4 Key Stakeholder or Users Needs

Need	Priority	Concerns	Current Solution	Proposed Solution
Login Page	High	Login page should be secure	None	Login page will use captcha and unique userIDs and password with specific criterion.

Receive notification when new video is uploaded	High	Volume of notifications	None	Users will be sent push notifications when changes are made or new content is available
Responsive Website	Medium	Website should respond to user's behavior and environment.	None	Use of HTML and CSS style coding for the front end.
Stable and Bug Free website	High	There will be defect leakage	None	Use the extensive testing technique, track the defects in JIRA, perform regression testing after each iteration.
Good quality for audio and video	High	A/V should work on all kinds on internet bandwidths	none	users will be provided an auto pixel setup which will adjust the quality depending on internet quality.
Data to be stored	High	All data on the website to be stored in a database	using paper trails	a centralized database will be used to store all the information.
An account to do the quality check of content	Medium	Admin has knowledge of content	None	Train the admin to use website and ask him to complete advanced driving training.
Marketing data	High	Marketers and advertisers should have access to the content	none	Marketers and Advertisers should coordinate with the admin to collect the necessary data. They should use SEO/SCO to promote the website in search engines.

Table 1.5: Stakeholder and User needs.

1.4 Product Overview

1.4.1 Product Perspectives

This product will setup the servers using apache servers. The servers in the backend will have interactive session between the code and the database. All the data will be stored in the MySQL database. User will have the active web connection. Using that users will use the set URL parameters to access the website on their PC/mobile devices. Below is the block diagram for the e-learning website:

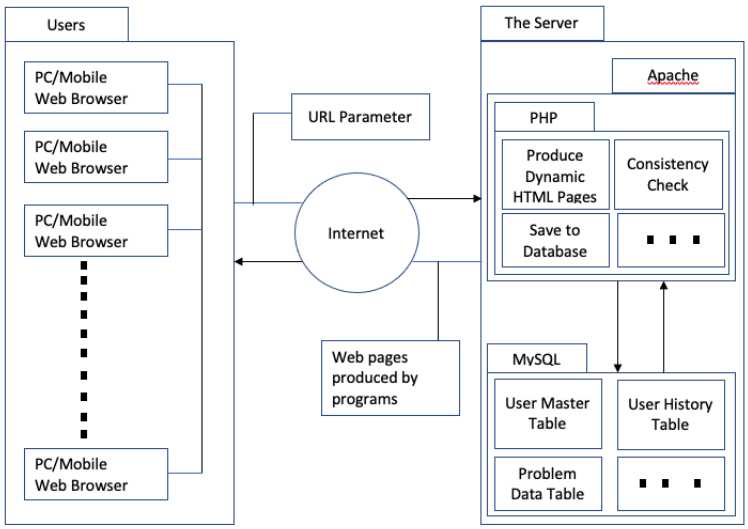

Figure 1.1: A block diagram of the e-learning system [2]

1.4.2 Assumptions and Dependencies

Assumptions	Dependencies
It is assumed that there are enough resources to carry out the development of the project	In case of sick leaves or vacations a backup should be planned.
The server downtime should be planned for maintenance	Maintenance team is available and users are sent email for the downtime.
The website will work on latest versions Google Chrome and Safari	If any browser is discontinued then the document will change to introduce the new browser.
The developers have knowledge of PHP, HTML and CSS and MVC architecture	If not then the developers need to be trained which will add time to the project and scope will be revisited.

Table 1.6: Assumptions and Dependencies.

1.5 Product Features

Below listed are all the high level features of the website:

1. **Sign-Up:** All the end users should be able to create an account.
2. **Login:** After the sign-up is complete, students will be given a studentID and traffic No, using this they can login. trainers and Admins can login with the username and password provided by the institute.

Students:

3. **Dashboard:**The dashboard page should have the general information about the type of license a student is training for.
4. There will be 3 status of the modules: Completed,In Progress and Pending. Students cannot bypass the lessons and have to go sequentially.
5. **Start Again** feature allows the student to preview the lesson contents again. Note: it will be available only after the lesson is complete.
6. Lesson icons will have the slides count and the duration from the lesson content. This will help students track their individual lesson progress as well.
7. Left pane on the dashboard page will have the Student ID and Examination ID along with next exam date, expiry dates of lesson and fees.
8. Lessons will have an interactive screen. This will enable touchscreen device users no navigate easily. Videos will adjust to screen orientation of the mobile device.
9. Description box will contain any extra information that the students nee to know.
10. Volume adjustment button will be provided for the users to keep volume as per their need.
11. Start, front and back button will help students navigate through slides
12. Students when they logout will resume from where they left and will not have to start over again.
13. Quiz related to the lesson will be enabled once a student completes their training video.
14. Correct answer will be highlighted in green when students select the answer. If the student answer a wrong answer the answer will be marked in red and correct answer will be displayed in green.
15. For match the following and rearranging the correct sequence, drag and drop feature will be provided.

Trainers and Admins:

16. Dashboard page for the trainer login will have navigation pane with following links: Home, All Lessons, Pending, Drafts, Published, Notification. Navigation pane will be on all the pages in trainer account.
17. Quick navigation will show the categorized number of all lessons, drafts, pending, notifications
18. All lessons link will take the trainers to all lessons page where they will have manage lessons button.
19. Manage lessons button will open a popover form where trainer will input the Lesson name(drop down menu as per SRS from EDC server), description, language (language listing as per SRS from EDC server) and icon to upload(using choose file button).

20. Submit button in the popover form enables trainer to insert the content to lesson.

21. A new pane is created in all lessons page for the lesson created with 5 buttons namely, Slide, Quiz,Lesson Status, Edit and Delete.

22. Slide button is used for slide creation, Quiz button for quiz creation, lesson status shows the status of lesson in creation(Draft, Pending and Published). Edit and Delete.

23. Plus button is used to expand the lesson and see the contents of it and lesson information pane on the right.

24. when clicked on slide button the website will open an slide editor popover form.

25. Media type in slide form will be audio, video and image. Slide duration is auto detected.

26. Media file can be selected using the choose file button. Slide description is suitable for LTR or RTL.

27. Slides are added after the user clicks on submit. The entry will have an icon for the notification on changes done by admin.

28. Addition of Quiz also opens a popover pane. Quiz type will enable to select the type of quiz from, true/false, Right Answer, Drag and Drop and Reorder.

29. For True/False space will be provided for trainer to type the question and provide the correct answer using dropdown.

30. For choose correct answer Area to type question is given or it can be based on media(A/V or Image). 4 Answers will be typed in and the correct answer radio button will be selected by trainer.

31. For drag and drop Questions will be typed in and matching answer will be given. System will shuffle the answers once the student is attempting the quiz.

32. When trainer click on draft link on the navigation pane system navigates to the draft lessons page, where all the drafts are listed.

33. When trainer click on published link on the navigation pane system navigates to the published lessons page, where all the published are listed.

34. When the trainer click on notification, they will be navigated to the notifications page. It will display all the updates done either by trainer or admin.

35. There will be 3 status of the updates: lesson updated(lesson creation, pending, draft and published), comment updated(when trainer updates admin comments), quality comment(from admin for trained)

36. View button against the comments will take trainer to the slides having admin comments on it. Status of comment will change to done once changes are made and admin will be notified.

37. Trainers will be allowed to create versions of the lessons they created using the edit button in the lesson management.

38. No other trainer can work on the in progress work of a trainer. Only time when someone else can work on a trainer's pending work is when they are out of office or sick.
39. Once the lesson is published trainer will loose access to edit or delete the slide and admin will have control over it.
40. Admin has access to accept/reject students and trainers in case of change in their status

1.6 Other Product Requirements

1. Performance and Load testing to be done considering 350000 users at a time.
2. A one time website navigation help to be provided for the users visiting for the first time.
3. A help section to be provided which will have the website details for the users and ContactUS details.
4. Product should comply with the existing HTML, TCP/IP and other web standards.

1.7 Appendix

Section	**Time Spent**
Introduction	1 hours
Positions	3 hours
Stakeholder Descriptions	8 hours
Product Overview	6 hours
Product Features	7 hours
Other Product Requirements	1 hour
Total	**26 hours**

Table 1.7: Appendix - Vision Document

Chapter 2

Defects and Inconsistencies Form

2.1 Task 1 - Identifying and finding inconsistencies in vision document

2.1.1 Defect Inspection Form

ID	Location	Defect Type	Classification	Description	Status	Date Corrected
1	2.1	Inadequacy	Minor	Impact has been mentioned as COVID-19 which has already been given in the problem	Closed	Aug 16
2	3.1	Omission	Major	Major Stakeholder is missing from the document. There is no owner of the driving school mentioned.	Closed	Aug 16
3	Sub-Sec 5 point 7	Inadequacy	Minor	Page is not mentioned on which the left pane will display the information	Closed	Aug 16
4	Sub-Sec 5 point 11	Over-specification	Minor	This requirement is mentioned for the developers to make them understand the functions needed.	Closed	Aug 16
5	Sub-Sec 5 point 40	Forward Reference	Minor	This requirement is mentioned keeping in mind that a trainer can also leave the institute and their credential will be revoked.	Closed	Aug 16

6	Sub-Sec 5 point 38	Contradiction	Major	When one trainer is busy no other trainer or admin is given access to modify that lesson.	Closed	Aug 17

Table 2.1: Defect Inspection Table.

2.1.2 Inconsistencies Inspection Form

ID	Location	Inconsistency Type	Classification	Description	Status	Date Corrected
1	5 and 2.2	Terminology Clash	Weak	Term trainer, trainer and instructor is used to depict a person who creates training videos	Closed	Aug 17
2	5	Designation Clash	Weak	Term end users for E-Concordia User and Website User	Closed	Aug 17
3	Sub-Sec 5 point 18	Terminology Clash	Strong	In this section user means trainer or Admin where as in other places in the document user means Students as well.	Closed	Aug 17

Table 2.2: Inconsistencies Inspection Table.

2.2 Task 2 - Documenting Conflicts

Based on the defects and inconsistencies below is the Interaction matrix for conflicts and overlapping

S1: Students should be able to register on the portal.
S2: Trainer should record and upload course related videos.
S3: Admin should approve all the content uploaded by trainer.
S4: Students should be able to give Quiz after the lesson
S5: Students should be able to view the lessons and slides.

Statement	S1	S2	S3	S4	S5	Total
S1	0	0	0	1000	1000	2000
S2	0	0	1000	1	1000	2001
S3	0	1000	0	1	1	1002
S4	1000	1	1	0	0	1002
S5	1000	1000	1	0	0	1002
Total	2000	2001	1002	1002	2002	7007

Table 2.3: Interaction Matrix.

2.3 Task 3 - Conflict Resolution

1. Consider the statement where admin is approving the content uploaded by the trainer.

Avoiding Boundary Condition	The conflict arises if both the trainer and the admin have access to approve the content. This will be considered as the boundary condition and restriction of access as per profiles will help in avoiding this.
Weakening Conflict Statements	To weaken the conflict approval of content rights should be kept with admin only.

Table 2.4: CR-1

2. The statements where trainer records and uploads the videos and student views the content is also a conflict.

Avoiding Boundary Condition	Allowing trainers to approve the content of the quiz avoid the boundary condition as he/she has more knowledge about the content of quiz and this way students can get quizzes sooner than expected.
Weakening Conflict Statements	Content will be viewed by students only when it is approved by admin not when a professor uploads it on the portal.

Table 2.5: CR-2

2.4 Task 4 - Conflict Evaluation

Evaluation Criteria NFR	**Significance Weighting**	**Approval of Content**	**Viewing of Content**
Fast Approval	0.4	0.9	0.6
Minimal Inconvenience	0.2	0.6	1.0
Right Content	0.4	1.0	1.0
Total	1.0	0.88	0.64

Table 2.6: Conflict evaluation

2.5 Task 5 - Risk Management

2.5.1 Component Inspection

1. **Student Module:** User should be above 16 years to obtain learner driver's permit and above 18 years to obtain full driver's permit. Student's video progress is not saved and they have to start videos again from the start. Student's response to quiz is not saved.
2. **Trainer Module:**Trainer should have the license to teach, which is issued by government. Trainer's comments on the content is not posted or are not viewed by the admin.
3. **Admin Module:**Risk will be that admin is not a certified quality assurance, so the content approved might be wrong. Trainer gets ambiguous comments from admin.

2.5.2 Risk Tree

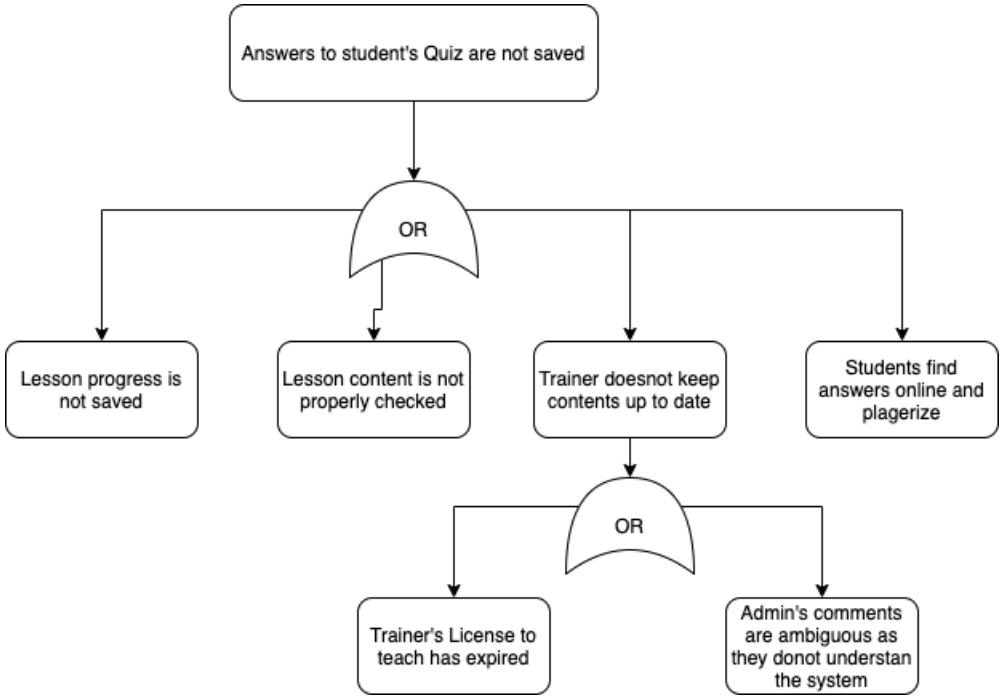

Figure 2.1: Risk Tree

2.5.3 Risk Checklist

1. Quantitative Risk Assessment

Risk	Likelyhood(1-10)	Rationale	Severity(1-10)
Answers to quiz not saved	5	This can happen due to loss of internet connection or a bug in the app, which questions stability.	5
Admin's conmmets are ambiguous	6	Admin is not a trained professional in giving driving license so they might not be able to convey what is wrong with content.	8
Loading video takes long time	8	Video content is not parsed properly which will question the system being less interactive and there might be lost of interest from students.	7
Loss of life, students, trainers or admin	10	If admin's life is lost there will be no one to handover charge to new admin, it will take extra amount of money to find new trainer in case a trainer is lost.	10
Data Leakage	7	Student's personal data is lost which questions database security.	10
Database is not connected	4	Student data is not saved or content is not viewed to the students	10

Table 2.7: Risk Checklist.

2. Risk Control

Risk	Countermeasure 1	Countermeasure 2	Evaluation of Countermeasure)
Answers to quiz not saved	Student save each answer before moving to next one	System automatically saves answer when student moves to next question.	Option 2 is better as it reduces effort of student.

Admin's comments are ambiguous	Admin should clearly mention what are the changes required	Trainer should ask admin what he meant by the comments before making changes.	Option 1 is more effective as option 2 increases time and cost.
Loading video takes long time	Cloud based server should be used	Videos should be run on low quality.	option 1 is better as videos can be of any size and students should get best quality videos.
Loss of life, students, trainers or admin	All trainers should know what others ar working on	Admin should also know how to add content.	both are equally viable option.
Data Leakage	Use a layered architecture	Add security countermeasures and hire a 3rd party firm to handle the security.	Countermeasure 2 is better as school can hire a company which is expert is security.
Database is not connected	Manually reconnect the database	If database is down for maintenance,keep database maintenance during the website maintenance time	both can equally be used depending on situation

Table 2.8: Risk Control.

2.6 Appendix

Section	**Time Spent**
Task 1	2 hours
Task 2	1.5 hours
Task 3	3 hours
Task 4	1 hours
Task 5	1 hours
Total	**8.5 hours**

Table 2.9: Caption

Chapter 3

Rebuttal Document: Response to reviewers, teacher assistant and instructor.

3.1 Introduction

I would like to thank the reviewers, teacher assistant for their detailed feedback and useful suggestions to improve my vision document.

I have carefully considered all the issues raised by my peers. Teacher assistant, and instructor and prepared a revised vision document. This document outlines how I have addressed each comment individually. Each comment has been assigned a number R(1-3).C(1-N), where the number to the right of the R identifies the reviewer, and the number to the right of the C identifies the comment.

My response to each comment is highlighted in blue.

Sincerely,
Tavtej Singh Lehri

3.2 Reviewer and Identifiers

Reviewer	**ID**
Peer 1(Comments Received in D2)	R1
Peer 2(Comments Received in D2)	R2
Teaching Assistant(Comments Received in D1)	R3

Table 3.1: Reviewer and IDs.

3.3 Reviewer Comments

1. **R1.01:**Defect type changed from ambiguity to inadequacy.
2. **R1.02:**Defect added as per comments
3. **R1.03:**Changes made to interaction matrix.
4. **R1.04:**NFRs are not changed as they are correct per my understanding. There is understanding clash between me and reviewer.
5. **R1.05:**Risk Control added.
6. **R2.01:**Overlaps Corrected.
7. **R2.02:**Conflicts covered
8. **R2.03:**Severity added in risk consequences table
9. **R2.04:**Risk Control added.
10. **R3.01:**Stakeholders Added.
11. **R3.02:**Could not reduce pages even after change in formatting.