Project

Project Plan

Project plan for

/ Group IC-INF-IT1A.

General information

Nowadays many students find themselves wanting to do something, to go out of the house or try something new, but they do not have company to go out with. This is especially relevant for first year students, who are still trying to find connections and friend circles. That is why our product, campusLink, comes in.

Our product, campusLink, is a web application designed to help students to socialize, find opportunities to find new people, and make their life more active by giving them an opportunity to easily find events by their preferences and by organising ones.

After registration using their student email and verifying by scanning their student card students can see posts about upcoming events, see the list of available events, check maps with nearby activities, and create their event as a live or online event such as gaming activity or chatting.

In the map section activities will be represented as circles. When students click on a circle, an overview of the event will appear (description, images, private/public settings) along with its location. When the event ends, students will get a feedback window where they can rate people or report. In addition, there will also be a post section where students can post share their experiences by creating discussions and posting their picture from previous events.

Events organised by student associations will be displayed on the campus kiosk and TV. Students can easily enroll to the events using an NFC terminal by scanning their student card NFC, phone NFC, or QR code. Additionally, by scanning the student QR codes in the app students will get a badge and collectibles in their profile.

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1.0 Project Outcome

1.1 Purpose of the Project

The purpose of this project is to design and develop an interactive platform called CampusLink, aimed at first-year NHL Stenden students who want to socialize, attend events, or simply find someone to hang out with, even when they don't already have a group of friends. The project integrates a mobile app with optional hardware (kiosks) to facilitate event discovery, creation, and attendance.

1.2 Objectives

Smart Objectives

Specific: Build a mobile-first application as the primary deliverable, followed by an optional NFC-enabled kiosk system once the core app functionalities are stable, that enables verified students to create, discover, and attend social events—both public and private—on or around campus.

Measurable: Deliver a working product that includes event creation, filtering, location-based display, and NFC-based student verification. At least 10 test users should successfully create and attend events via the system during internal testing.

Achievable: Developed by a student team using existing mobile app frameworks and Raspberry Pi hardware for kiosks, utilizing NFC integration and simple QR-code technology.

Relevant: The project addresses a clear social gap among first-year students at NHL Stenden by promoting social connectivity and improving mental well-being through shared experiences.

Time-bound: The project will be completed and tested within 8 weeks of the project start date, with a potential soft launch at a student welcome event.

Sub-Objectives

Design: Create a vibrant, friendly user interface with a clean layout and intuitive navigation, incorporating map views, filters, and engaging visuals for events.

Functionality: Ensure users can create and browse events, filter them by interests or distance, verify their identity via NFC student ID, and rate or report events afterward.

User Experience: Prioritize fast load times, mobile responsiveness, clear feedback on user actions, and accessibility. Kiosk interactions should be quick and straightforward, even for first-time users.

1.3 Result of the Project

A fully functional mobile app and interactive kiosk prototype named CampusLink, enabling first-year students at NHL Stenden to connect through curated events, both spontaneous and scheduled.

Core Deliveries

Mobile App: Event creation, filtering, map/list view, NFC-based user verification, and a rating/reporting system.

Kiosk System: Raspberry Pi-based station displaying public events and enabling quick sign-ups via student ID card, NFC phone, or QR code.

Note: Kiosk development will begin only after core mobile/web features are stable and functional.

Map View: Events shown as tappable circles, revealing more information and directions upon selection.

User Profiles: Verified student profiles with potential for collecting event badges in future versions.

Security Features: Event reporting, account verification, and limited access (NHL Stenden students only in first release).

Relevance to Objectives and Problem Setting

CampusLink directly tackles the isolation challenge faced by many first-year students by providing an engaging way to discover and attend events. The combination of digital tools and physical touchpoints (kiosks) supports spontaneous and planned social interactions, reinforcing the project's purpose and relevance.

Project Name

CampusLink: A meaningful and memorable name that reflects the core goal—linking students together across campus through real-world events and digital tools. The name emphasizes connection, spontaneity, and campus culture, perfectly aligning with the project's objective of fostering social integration and fun.

1.4 Intermediate Outcome

Results

By the midpoint of the project, the team will have completed and launched a functional webpage displaying stories from students experiencing loneliness, providing an initial platform. In addition, a working prototype of the mobile application will be developed, including core functionalities such as student ID login, event enrolment, a basic version of the “For You” recommendation page based on user interests, and an initial version of the chat function to enable communication between participants.

Testing and checkups

To ensure the project remains aligned with its objectives, regular testing sessions will be conducted to verify functionality, usability, and performance of both the website and mobile application. Scheduled group check-ins will also take place to evaluate progress, gather feedback, and make necessary adjustments. These measures will help confirm that the project is moving in the right direction and that development efforts are consistent with the final intended outcomes.

2.0 Project Results

The result

1. **Functioning Prototype**
   A network for creating and organizing social events for students. Verified students will be able to list, create and join events with a mobile application or the central kiosk. Students will also be able to check in to events with an NFC/QR code to receive a badge on their profile. Development of this component will begin after validation and stabilization of the mobile/web application's core features.
2. **Interactive Kiosk System**
   A Raspberry Pi-powered info station on campus with an NFC/QR scanner to view and join events with just their student ID.
3. **Technical Advisory Report**
   Includes completed features, technical stack used, maintenance tips, and ideas for future improvements.
4. **Final Presentation & Demo**
   A live demonstration of the app and kiosk use case, supported by slides outlining the development process and project outcomes.

Mobile Application Overview

- Map and a list overview of nearby events
- Search feature for events and users
- Login verification using student IDs and emails

Kiosk Hardware Overview

- Raspberry Pi (core system)
- NFC reader/writer
- Display (touchscreen or regular monitor)
- Enclosure (protective casing)

Collectible Physical Cards Concept

- Collectible NFC cards created using a central NFC writer and handed out at events
- Users can scan these cards on their phones to claim them on their profile

3.0 Project Activities

The project is structured in distinct phases, each with clear goals, responsibilities, and deliverables. The development has been divided to prioritize the mobile/web application first. Kiosk development will begin only after the core app features have been validated and stabilized:

3.1 Activities

Phase 1: Research & Planning (Week 1–2)

Goal: Understand user needs and define project scope.

- Figure out core components and features
- Assign roles and tools (Trello, GitHub, Figma)
- Prepare and review project plan with supervisor (GO/NO-GO)

Phase 2: Design (Week 2–3)

Goal: Develop a clear visual and functional layout.

- Design app interface and kiosk screens
- Draw up system design overview
- Design the system database

Phase 3A: Development (Week 3–6)

Goal: Build and connect the app and hardware components.

- Backend setup with database (Supabase)
- Mobile/web application development using Flutter
- Implement features: login, event creation, filtering, map view, NFC-based check-in
- Enable post-event feedback and user profiles
- Internal testing of app functionalities and bug fixing

Phase 3B: Kiosk Implementation (Week 6–7, conditional on app stability)

Goal: Begin kiosk development only after mobile app core features are stable.

- Implement Raspberry Pi kiosk setup with display
- Integrate NFC and QR code scanners

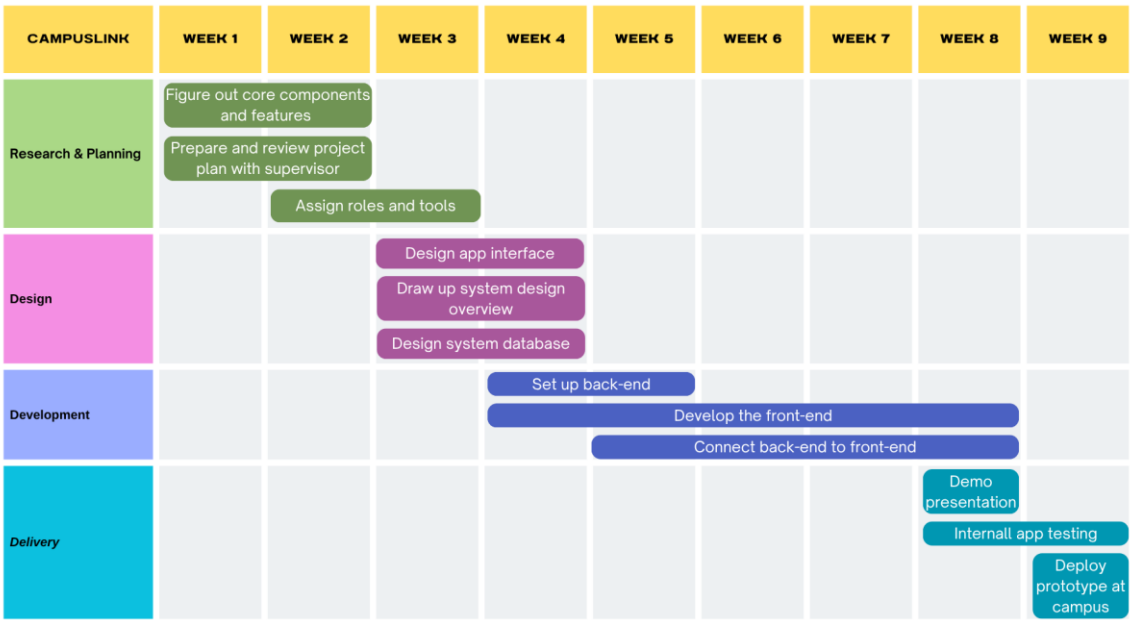
- Display public events on kiosk screen
- Perform usability testing of kiosk interface
- Deploy prototype at campus for demo purposes

Phase 4: Delivery and Presentation (Week 8)

Goal: Deliver complete project package and demonstrate value.

- Final testing and polish
- Prepare and deliver demo for stakeholders
- Submit all deliverables including
- Present working mobile app and kiosk (if completed)

3.2 Gantt chart



4.0 Project Scope and Boundaries

4.1 Scope

The objective of this project is to create a cross-platform application that will help students to find activities nearby, to find new connections and socialize. This project is a cross-platform application which can be used on the pc's online and on the phone.

In-Scope

Application features

- Physical kiosk using Raspberry Pi
  "To be developed after core app functionality is validated."
- Interactive map displaying nearby activities as clickable circles, by clicking on which you can get an information
- Post-event feedback system (Rating and reporting)
- User verification using student ID (linked via NFC scan).
- Event check-in via NFC or QR scan.
- Post section where all posts will be displayed, including pictures from past events and announcements about upcoming ones.
- Support for hosting an online event such as discord sessions.

Technical Development

- Development of the web version using JavaScript, HTML, CSS, SQL, Flutter.
- Development of the app using Flutter.
- ERD to illustrate data connection and defining requirements.
- GitHub repository for version control
- Physical kiosk using Raspberry Pi

Out of Scope

- Support for non-NHL Stenden students and other campuses except Emmen
- Age verification mechanism
- Support for people that do not have a student card.

User Eligibility: Only verified NHL Stenden students from the Emmen campus using valid student email address and student card will be able to register and use the app.

Timeline of completion: The project must be completed within 10 weeks.

Lack of experience: Team members have different level of knowledge and experience with developing an app.

Budget: The project is constrained by a limited budget.

Assumptions:

- The client will ensure that the main idea of the project is good and innovative enough to keep going on.
- Flutter will provide a sufficient cross-platform compatibility for students with Android and iOS.
- The app will have stable access to free map API that will allow real-time.

4.2 Boundaries

Schedule

The project timeline is set for 8 weeks, ensuring that the creation

and delivery of the application will be on time and within the

goals of the team and client.

Quality

The application needs to meet high-quality standers regarding the security and accessibility of the application. The application must be dependable always available and free from crashes or errors. It should be useable on different devices (Android, IOS, Web).

Risk Management

To maximize the successful development of the application, potential risks will be identified and handled early so that these potential risks cannot hinder the development. This includes addressing development difficulties ensuring that project deadlines and goals will be met.

5.0 Cost and Benefits

5.1 Cost analysis

Category	Description	Estimated cost	Frequency	Timeframe
Design & UX	UI/UX design, prototyping tools	€9.800	One-time	Week 3
Development	Frontend & backend coding	€29.400	One-time	Week 4 – 6
Testing & QA	Bug testing & user feedback	€9.800	One-time	Week 7 - 8
Maintenance	Bug fixes, Software compatibility	€600/month	Monthly	Week 8 onward
Reserve	10% buffer for unexpected costs	€4.900	One-time	Throughout
NFC Terminals (3x)	Hardware for the kiosk check-in	€600-€1.200	One time	Week 1
TV/Kiosk integration	Coordination with campus screens, digital signage setup	€1.000-€1.300	One-time	Week 1

Total estimated one-time cost: €55.000-€56.400

Monthly maintenance cost: €600

5.2 Benefits analysis

Benefit type	Description	Estimated value
Increased Social engagement	25-50% more student activity and connections.	Better satisfaction among students.
Centralized platform	Better time-efficiency for students and event-organizers.	Efficiency gain.
Verified student community	Closed network with students, minimal bots or spam.	More trusted and safer interactions
Scalable for Future features	Add AI based recommendations, or campus partnership	Future cost-saving scalability

6.0 Quality Control

6.1 Purpose of Quality Control

The purpose of quality control in the **CampusLink** project is to ensure that both the final product (a mobile event-discovery app and optional kiosk system) and all intermediate deliverables meet agreed-upon standards for functionality, usability, and reliability. This section outlines how the project team will guarantee quality throughout the project lifecycle and how the sponsor will be reassured of that quality.

6.2 Quality of the End Product

The desired product, as outlined in section 1 (‘Project Outcome), is a fully functional product of the CampusLink mobile application and kiosk interface, providing a seamless experience for first-year NHL Stenden students to create and discover events. Kiosk interface and interaction will be evaluated only after core app features are finalized and tested.

The sponsor will assess the final product based on the following criteria:

- **Functionality**: Core features (event creation, filtering, NFC-based verification, map interaction) must work as expected without critical bugs.
- **Usability**: The application must be user-friendly and intuitive, with simple navigation and consistent design.
- **Security**: Student verification should prevent misuse and ensure data integrity.
- **Reliability**: Both the app and kiosk must operate smoothly under expected loads.

6.3 Monitoring the Quality of Intermediate Products

All intermediate products will be reviewed using predefined quality checks:

Intermediate Product	Quality Check Method	Responsible Party
Project Plan	Group members review and feedback from supervisor	Project Team
Wireframes/UI Mockups	Reviewed by group members and validated with user testing	UI/UX Designer
Backend Prototype	Code review and basic functionality testing	Developer Lead
Kiosk Setup	Hardware test in lab and usability feedback from testers	Hardware Specialist
Pilot Test Version	User Acceptance Testing (UAT) with feedback survey	QA Lead + Stakeholders

6.4 Quality Assurance Techniques

To maintain consistent quality across deliverables, the project will apply the following techniques:

- **Testing and Validation**: Functional testing, security checks, compatibility testing, and usability assessments.
- **External Evaluation**: Key components such as the NFC integration and security measures will be reviewed by an external expert in IoT/NFC security.
- **Feedback Collection**: Structured feedback will be gathered from students, project supervisors, and stakeholders at each milestone.
- **Use of Standards**: Project documentation, diagrams, and reports will adhere to NHL Stenden formatting guidelines. Where necessary, internal standards will be established for consistency.

Software Tools:

- Design: Figma (UI/UX), draw.io (diagrams)
- Development: Android Studio, VS Code, Supabase
- Planning: Trello, GitHub Projects
- Documentation: Microsoft Word, Google Docs
- Hardware: Raspberry Pi OS, Python, RFID/NFC libraries

6.5 Balancing Quality and Efficiency

The project team acknowledges that quality and speed can be in conflict. While delivering a high-quality solution is a priority, efforts will be made to avoid unnecessary perfectionism that could waste resources. Each delivery will be aligned with its purpose: for example, wireframes for internal use may not require polished visuals, while the final app interface must meet high design standards.

Quality expectations will be scaled appropriately based on:

- Purpose of the delivery
- Audience (internal vs. external)
- Available time and budget

6.6 Conclusion

By implementing a structured quality control process—including early stakeholder involvement, external expert review, user testing, and adherence to standards—the CampusLink project aims to deliver a reliable, user-centered solution that meets the expectations of both students and the project sponsor.

7.0 Project Organization

This section of project planning outlines the organization and provides an overview of the project's schedule, personnel . It assists the project team in providing clear communication about each other's duties and responsibilities, reducing potential obstacles, and serving as a tool to connect the strategy and vision among members involved in the project.

7.1 Table

Name	Email	Role
Pharrell Buckman	pharrell.buckman@student.nhlstenden.com	Project Manager
Nick Grahovskis	nick.grahovskis@student.nhlstenden.com	Co-Leader
Oliver Nemess	oliver.nemess@student.nhlstenden.com	Team member
Amir Ranjbar Maki	amir.ranjbar.maki@student.nhlstenden.com	Expert
Peter Kapsiar	peter.kapsiar@student.nhlstenden.com	Expert
Alexandros Karayiannis	alexandros.karayiannis@student.nhlstenden.com	Quality manager
Joey Harms	Joey.harms@student.nhlstenden.com	Secretary

7.2 Function and responsibilities

Project manager : Pharrell Buckman

Contact info : pharrell.buckman@student.nhlstenden.com

Ensures the team is on the same path, is working together on the same project and progress altogether by providing feedback to the team. This way he can ensure a better outcome and successful project results. The project manager also Responsible for planning, executing, and overseeing the successful completion of projects within the team.

Co-Leader: Nick Grahovskis

Contact info: nick.grahovskis@student.nhlstenden.com

Co-Leader in planning and executing projects while coordinating and managing project tasks. The Co-Leader also monitors the progress of the project and handles any unpredicted situation that shows in case of absence of leader, he will replace him and take the charge of leading the group.

Experts: Amir Ranjbar Maki / Peter Kapsiar

Contact info : amir.ranjbar.maki@student.nhlstenden.com / peter.kapsiar@student.nhlstenden.com

The members of this role are specialized in a certain field. The experts bring extensive experience and specialized knowledge in the field, guidance to ensure the project meets its technical goals. The term "expert" emphasizes their experience in the field of this project.

Quality Manager: Alexandros Karayiannis

Contact info: alexandros.karayiannis@student.nhlstenden.com

Quality controller checks that the project's work meets the required standards. he review deliverables, spot errors or inconsistencies, and give feedback for fixes. he work closely with team members and leads to ensure everything is accurate and reliable. The term "quality controller" highlights his role in keeping the project's output of high quality.

Secretary : Joey Harms

Contact info: joey.harms@studnet.nhlstenden.com

His main responsibility is contacting with client and setting up the meeting and also informing everybody in the group with new received information from the client.

Team member: Oliver Nemess

Contact info: oliver.nemess@student.nhlstenden.com

Team member helps with the project's everyday work. he understand what needs to be done, work with others to finish tasks, and follow guidance from project leads. The term "team member" highlights his role in keeping the project moving forward and taking action based on the guidance of experts and leader.

7.3 Team Availability

Weekdays: 8:30 till 17:30

Break: 12:30 till 13:30

Weekends: Not Available (except emergencies)

Discussion with client

Client discussions will take place in the first week to approve the project idea and secure the go-ahead, again in the middle of the project to review progress and gather feedback, and in the final week to present and hand over the finished product. If any questions arise at any time, the team can schedule an additional meeting with the client.

Collaboration and Scheduling

The team will operate on a schedule to ensure that project deadlines will be met. The team will communicate through On Campus meeting Discord and WhatsApp. All files made will be stored remotely to ensure the safety of the files.

8.0 Potential Risks

During the project there are some risks we can encounter, and should prepare for accordingly. These risks can be broken down into internal and external, and then categorized into high risks and low risks. Below are some of the most crucial risks that are encountered in a working environment such as this one.

10.1 Internal Risks

Settling too high expectations: Sometimes, as human beings, we underestimate some tasks, and we end up thinking too high of ourselves. This means we may take on challenges beyond our current knowledge. Such a situation can occur when we overlook the fact that the client takes the lead in the meetings, deciding the project's direction without considering the team's capabilities. For example, the client might ask for a dynamic change that could take a significant amount of time to complete but being arrogant and not considerate – we agree to it. Avoiding this is easy when a scope is set in place and a set timeframe of an importance list. Using the MoSCoW method could also be it.

Low team motivation and moral: A system needs to be put in place to boost team motivation and morale on a daily basis, which will parallelly boost the confidence and bond of the whole team. Not having such a system in place can result in a team not meeting deadlines or not handing in quality work as per mentioned in the code of conduct. It cannot be stressed enough, as to how important a fair, well-refined code of conduct can change teamwork in a professional environment. In addition, weekly or even daily checkup meetings could take place to ensure a smooth working relationship and flow is present at all times in the team.

10.2 External Risks

Project Scope Creep: If a project does not meet real work standards and planning is poor, then you end up creeping away from the initial scope of the project. As a result, there is a waste of time, which leads to loss in gross profit. A simple way to avoid such risk is to maintain the scope of the project by having regular (weekly or daily) meetings with the project team and keeping documentation of the discussions with the client (with the use of Minutes of Meeting). Progressing in this way ensures a balanced workflow with a smooth transition between different stages of the project.

Dependence on external factors: Being too dependent on the results of external project and suppliers will never be beneficial – and can sometimes be catastrophic. The project relies on third parties to deliver hardware, such as raspberry Pi, nfc scanners and readers, TVs, the server the website will be hosted on and software such as Flatter, Linux. If these third parties do not deliver the requirements on time, the project will be at a standstill. Reducing this risk, could be to plan for any disturbances in the project – making sure communication is clear.

10.3 Risk Analysis

Below is a table of how the risks are analyzed and categorized into their own branches with a weighted likelihood and severity.

Likelihood			
Severity	Low	Low	Medium
	Low	Medium	High
	Medium	High	High

In the risks analyzed, the percentages which can be found below, besides the likelihood and severity of each risk.

Settling too high expectations

- Likelihood: High (85%)
- Severity: High (90%)

It is very likely that the project team can overestimate their abilities in creating certain features and overtake certain tasks they cannot complete in time or out of scope. This creates high severity; hence a mistake could lead to wastage of time and money for both parties to the project.

Low team motivation and morale

- Likelihood: High (80%)
- Severity: High (85%)

Team motivation and morale can influence the project and usually go unnoticed until it is too late. This is why a solid code of conduct is set in place to directly boost everyone in delivering high quality work, and most importantly on time. It has high severity on the project, since communication and a strong relationship between the team are the most important aspects of team collaboration. Setting up daily or weekly meetings discussing about the project can boost the motivation and moral of the whole team – being beneficial for our personal lives and relationships as well.

Project Scope Creep

- Likelihood: Depends on planning and course action, but generally High ()
- Severity: High (90%)

Having no plan to start with, or no thought of how progress will be tracked throughout the project, makes it is more likely that the team will creep off the scope of the project. In addition, this will cause a waste of time and resources, hence the severity of it is significantly high. This is exactly why

having regular meetings with the client and the team helps to keep everyone updated and on track with the latest changes.

Dependance on external factors

- Likelihood: Varies from Low to Very High (10%-90% -> in this case 75%)
- Severity: Varies from Low to Very High (10%-90% -> in this case 75%)

There is a linear relationship between the likelihood and the severity of this particular risk. A change in one will influence the other by the same amount. For instance, if there is a high dependance on external factors then the likelihood will be high, hence severity will also be high; and vice versa.