**PROJECT SPECIFICATION - Project (Technical Computing) 2021/22**

|  |  |
| --- | --- |
| **Student:** | Joshua Sexton-Jones (28022626) |
| **Date:** | 22/10/2021 |
| **Supervisor:** | Nnamdi Anyameluhor |
| **Degree Course:** | BEng (Hons) Software Engineering |
| **Title of Project:** | RendezVous |

#### Elaboration

|  |
| --- |
| RendezVous is a service for new and existing businesses to verify employee attendance at 'job sites', i.e., a specific location. Upon reaching a job site, an employee provides verification information to 'check-in' at a location.  The service verifies the employee's location and identity to ensure check-in is valid, i.e., ensuring the end-user cannot be another employee/individual.  Using the platform on the job should be as easy as possible, so the system will incorporate handy features to ensure its convenience. For example, providing notifications to users when entering a job location.  RendezVous also offers integration with client systems to register employees and forward check-in data, enabling automated payroll for example. |

#### Project Aims

|  |
| --- |
| * Allow on-location workers to:   + View their job sites   + Check their personal details   + Check-in at locations   + Easily provide verification information at a job site * Allow administrators to:   + Configure company job sites   + Handle verification issues   + Manage employee details   + Assign job sites to employees * Develop a reliable method to validate a user's location and identity * Extend the application's ease-of-use with small, additional features based on user research * Implement method(s) for customers to integrate the service with their own systems |

#### Project deliverable(s)

|  |
| --- |
| The project will be developed as three systems: a RESTful API serving the backend; a website for configuration and management; and a cross-platform mobile application for checking in at job sites.  Developing the RESTful API will be achieved using .NET Core, as it was the main technology with which I worked on placement. Alongside its high performance, it has: native support for authentication, dependency injection, and ORMs such as Entity Framework; highly-capable development tools like Visual Studio and Rider, both available for students; and almost any design pattern/architecture can be chosen using either C# or F#.  The site will be developed using the React ecosystem, as it offers a very wide additional frameworks/libraries to handle all the fundamental aspects of the site, e.g., Redux for state management, React-Bootstrap for UI development, and auth0-react for Auth0 authentication. Due to my extensive use of Vue on placement, the learning curve should be shallow thanks to their fundamental similarities.  The check-in/out feature is separated into a dedicated mobile application to provide as many possible sources for identification as possible, e.g., NFC, biometrics, unique device IDs, etc. Non-native mobile applications, such as PWAs, do not have the capability to access this information for security risks. The feature also lends itself to mobile usage, as a phone is the most likely device an employee will have at any job location.  Currently the two frontrunners to develop cross-platform mobile applications are React Native and Xamarin, which are both closely related to the frontend and backend technologies respectively. I have chosen React Native as I have no experience developing a UI with Xamarin and I do not see the codebase lending utilities/business logic from the backend system.  Since .NET Core is cross-platform, it can be deployed on any OS along with the website.  I will follow an agile approach, managed using a Kanban board. After creating user stories, tasks for development and testing will be deduced using estimates in-line with the deadlines on the action plan below. Lower-level agile techniques, such as sprints, do not seem appropriate to the development of this project; scheduling at university is flexible and changeable, meaning the working hours for a task may not be predictable even when constrained within an estimate.  Note: I also chose React over Vue as it's currently transitioning from v2 to v3 and some major libraries/tools do not yet support the new major version. |

#### Action plan

|  |  |  |  |
| --- | --- | --- | --- |
| Feature | Commencing (Weeks) | Objectives | Platforms |
| Initiation | 25 Oct (14) | Set up deployment platforms, repository, project structures, Kanban board | API, Web, Mobile |
| Users | 06 Dec (15, 16, 17) | DDT authentication | API, Web, Mobile |
|  |  | DDT roles and permissions configuration | API, Web, Mobile |
| Job Site Management | 22 Nov (18, 19) | Research tools to select locations |  |
|  |  | DDT job site management | API, Web |
| Location Verification | 06 Dec (20, 21) | Research tools to map locations for job site configuration |  |
|  |  | DDT the process | API, Mobile |
| Identity Verification | 03 Jan (24, 25) | Research mobile hardware, plus accompanying APIs, usable to identify employees |  |
|  |  | DDT the process | API, Mobile |
| Customer Integration | 17 Jan (26) | Research common platforms/services with which to integrate |  |
| Check-in Forwarding | 24 Jan (27, 28) | DDT customer-integrated process | API |
| User Registration | 07 Feb (29, 30) | DDT customer-integrated process | API, Web |
| User Research | 21 Feb (31) | Attain user feedback on existing system and potential features |  |
| Extensions | 28 Feb (32+) | DDT existing/additional features | API, Web? Mobile? |

#### BCS Code of Conduct

|  |
| --- |
| I confirm that I have successfully completed the BCS code of conduct on-line test with a mark of 70% or above. This is a condition of completing the Project (Technical Computing) module.  **Signature:**Joshua Sexton-Jones |

#### Publication of Work

|  |
| --- |
| I confirm that I understand the "Guidance on Publication Procedures" as described on the Bb site for the module.  **Signature:** Joshua Sexton-Jones |

#### GDPR

|  |
| --- |
| I confirm that I will use the "Participant Information Sheet" as a basis for any survey, questionnaire, or participant testing materials. The participant information sheet form is available on the Bb site for the module and as an appendix in the handbook.  **Signature:** Joshua Sexton-Jones |