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

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

#### Elaboration

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| RendezVous is a service for new and existing businesses to verify employee attendance at 'job sites', i.e., a specific location. Upon reaching and leaving a job site, an employee provides verification information to 'check-in' and 'check-out' respectively.  The service uses GPS data to verify an employee's location, alongside an automated identity verification process, e.g., facial recognition. The employee provides a photograph, which is validated against their account's picture. In the case of failure, manual verification is used as a fallback.  By the nature of working on-location, an internet connection is not a guarantee; to ensure check-ins are not lost, they can be cached on the employee's device to be submitted once a connection is restored. The check-in process is further enhanced by notifying users upon entering/leaving job sites.  RendezVous also offers integration with client systems to forward check-in data, enabling automated payroll for example. |

#### Project Aims

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| * Produce an application for employees to:   + View their job sites   + Check their personal details   + Check-in and check-out of locations   + Easily provide verification information at a job site * Produce an application for employers to:   + Configure company job sites   + Handle manual verification   + Manage employee details   + Assign job sites to employees * Develop a reliable method to validate a user's location and identity * Extend the usability of the application by incorporating:   + Notifications   + Check-in caching * Implement method(s) for customers to integrate the service with their own systems |

#### Project deliverable(s)

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| The system will be implemented using web technologies, serving a RESTful API as the backend and a website developed as an SPA for the frontend.  The frontend 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. Crucially, the ecosystem also has immediate support for developing a PWA, using templates or an additional library; this enables notification and offline storage access to cover all aspects of the project description  Note: Vue was also considered due to my extensive use on placement. However, Vue is currently transitioning from v2 to v3 and some major libraries do not yet support the new major version. Combined with the support from my 'Applications: Architectures and Frameworks' module, React was the better option.  The .NET Core framework will framework the RESTful API, 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 external tools to aid development with SPA technologies, such as NSwag for API-client generation.  Since all technologies are cross-platform across the frontend and backend, the system will be deployable on any operating system.  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. |

#### Action plan

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| This should be a **table** listing the jobs that need doing to succeed with your project. This is your list of **objectives**. Against each job you should put a date by when it needs to be done. You and your supervisor will use this to ensure that the project remains on schedule. You could also use a graphical technique to present the information. Include optional deadlines such as the information review, contents page, and draft critical evaluation submissions. |

#### BCS Code of Conduct

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| 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

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

#### GDPR

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| 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 |