

GOV.UK Learning Record Service API Integration

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Research Context

- The industrial partner for this project is the management and information systems department of the university under study, whose responsibility is to ensure, amongst other data, that students' qualifications are of a high standard for the Higher Education Statistics Agency (HESA) student return. Their main duty is improving and preserving data quality, which is a pivotal component in all aspects of a higher education institution.

Research Problem

- The organization faces a range of challenges regarding qualifications on entry data, due to its manual and resource-intensive nature, which makes it prone to data entry errors by both students and staff. This inefficiency generates a significant administrative burden and affects the quality of data submitted for the HESA student data return.

Research Aim & Objectives



AIM: To improve data accuracy and efficiency in student qualification records by integrating the UK Government Learning Record Service (LRS) API with the university under study systems, ensuring seamless retrieval of verified qualifications.



OBJECTIVES:



To analyse the university's existing qualification data processes and assess the impact of automated retrieval via the LRS API on data accuracy and administrative workload, identifying opportunities for integration and improvement.



To design a scalable system architecture that supports future enhancements to qualification verification and system integration.

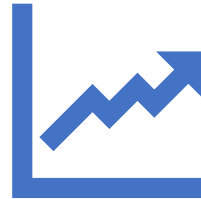


To develop a secure data integration framework that complies with government data protection standards while enabling seamless information flow.

Literature Review



Criticality of Entry Data: Entry data remains pivotal in selecting students prepared for higher education, as it is crucial higher education institutions (HEIs) do not inadvertently allow the recruitment of underprepared candidates [1].

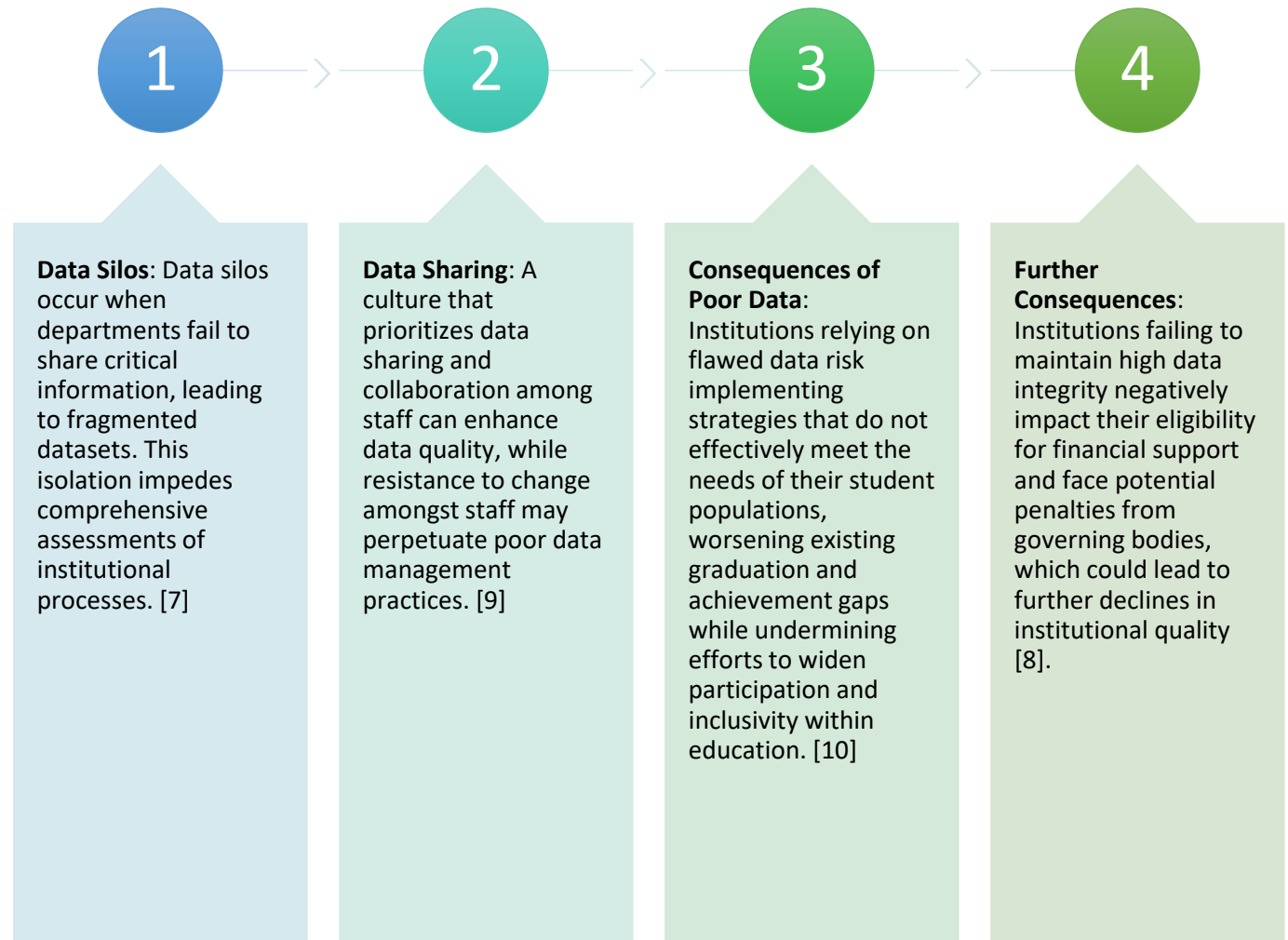


Entry Grades: Research has demonstrated that entry grades are strongly correlated with retention rates. [2][3][4].



Data Quality: Organizations are becoming increasingly reliant on big data for analytics and policy formation. Data quality issues can impact these processes and arise from multiple sources. [5][6]

Literature Review (Continued)



Research Methodologies



Philosophy: The project will measure quantitative improvements in efficiency and reducing qualification errors, but a purely positivist view could potentially subsidize subjective user feedback, which is critical in understanding the benefits of the proposed project. [11]



Approach: The research is designed to gather evidence to confirm the hypotheses or reject them, and this logic represents the core values of a deductive approach. [12]

Data Collection

- The quantitative data will be collected via a script and manual timing. The script will capture the amount of data errors amongst the targeted student batch in relation to qualification data, alongside timed observations of the two workflows. The timing will be performed with a standard timer, alongside timestamps of when the first student is processed, up until the final qualification import script is ran, for current and proposed solutions.
- The qualitative data will be collected through semi-structured interviews, asking staff their opinions on the project and current solution relating to their perceptions and experiences. [15]

Data Analysis

Qualitative: The interview transcripts will be analysed by an inductive method of identifying relevant sentences of phrases, simplifying their meaning and grouping them into codes that demonstrate overarching themes that correlate to the research question regarding user experience. [13]

Quantitative: The data from the system logs will be organised under themes such as efficiency and accuracy and then analysed to evaluate the project's experimental hypotheses using hypotheses testing. The pass / fail results of automated testing will also serve as a measure of evaluation. [13]

Development Methodologies

- Feature-driven-development (FDD) will be utilized as a methodology and will guide the technical specification and development process. FDD's focus on timely results aligns with scrum's product backlogs, making it easy to see results and timely progress.
- FDD will help break down the systems complexity into manageable and distributed pieces of work to ensure stakeholder needs are being met and to ensure timely progress. [14]

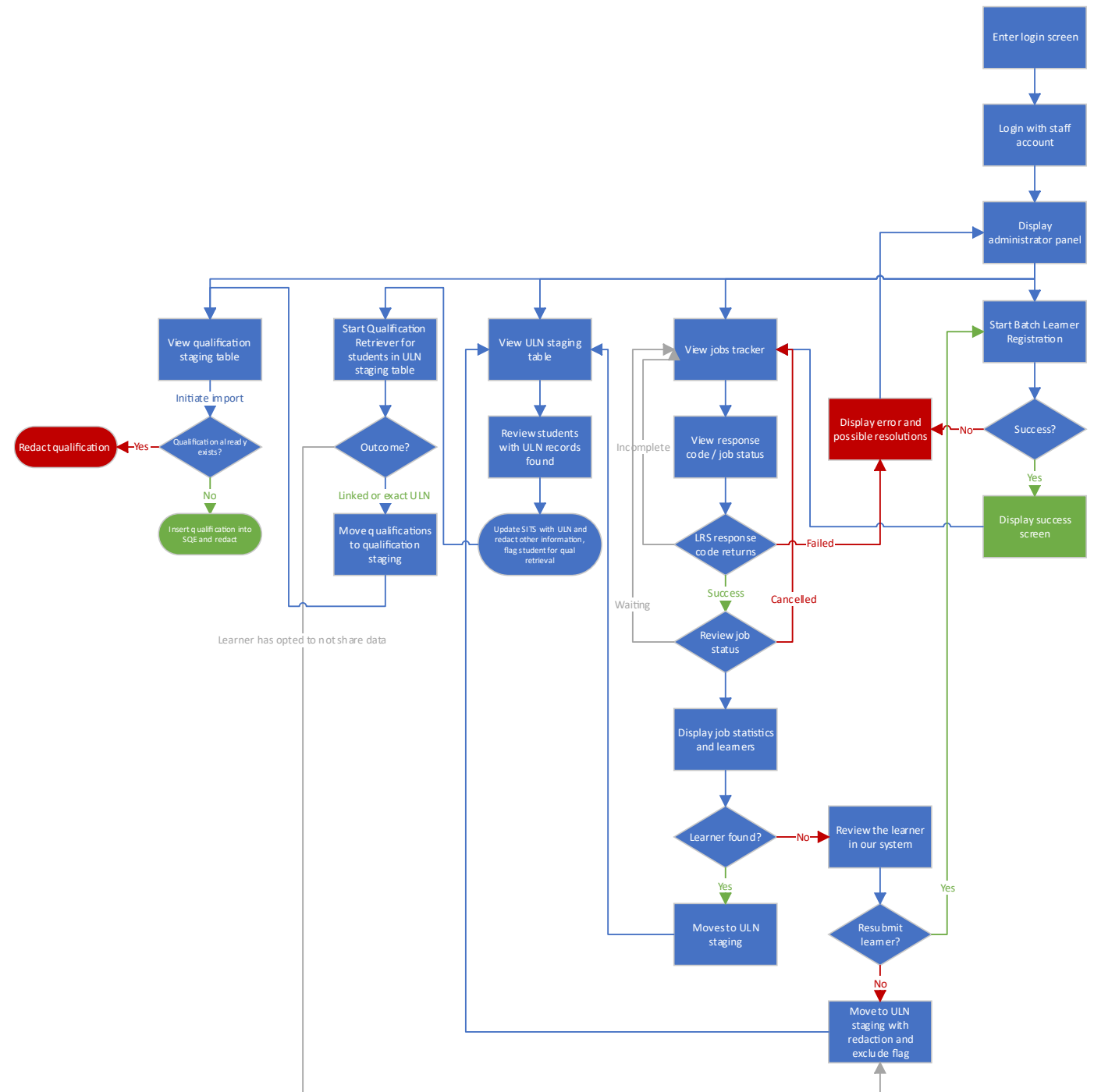
Technical Setup (1M)

- **IDE:** Microsoft Visual Studio 2022 Professional
- **Language/Framework:** C# 13, ASP.NET Core Web App MVC (.NET 8.0) (available via Visual Studio)
- **Database:** Microsoft SQL Server 2022 (Partially Existing Infrastructure)
- **Testing Framework:** xUnit
- **Data Generation:** Bogus
- **Project Management & CI/CD:** Microsoft Azure DevOps

Resources/Materials (1M)

- The UK Government's Learner Record Service (LRS) API will be utilized for the documentation of the project, and for the primary data source.
- Anonymised student data will also be used in a test and development environment for checking qualifications.
- Data from HESA and GOV.UK will also be used to validate level three qualification data.
- There is no financial cost for acquiring data from any of these sources.

Workflow



References

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Any questions?