A Quantitative Framework for Measuring and Prioritising Technical Debt in Mission Critical Trading Information Technology Services

Planning and Risk Identification for MSc Computing Project

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1 Major Project Steps and Time Estimates

#	Step	Description	Estimated Time
1	Project initiation and proposal	Define project scope, research objectives, and complete the research proposal and ethical approval process	6 weeks
2	Literature review and gap analysis	Critically review technical debt, service management, and operational resilience literature and identify the research gap	4 weeks
3	Research design and data strategy	Define research philosophy, methodology, case study design, and data collection strategy	3 weeks
4	Framework design	Identify service level technical debt indicators and design and validate the quantification framework	5 weeks
5	Data preparation and analysis design	Extract and prepare anonymised data and define the analytical and validation approach	3 weeks
6	Artefact implementation	Implement the technical debt framework as a prototype artefact	3 weeks
7	Empirical evaluation	Apply the artefact to the case study and analyse results	1 week
8	Writing and submission	Integrate findings, finalise the dissertation, and submit	3 weeks
9	Presentation and defence	Prepare presentation materials and complete the oral defence	2 weeks

Table 1: Project Plan for MSc Project (Zeier, 2026)

2 Gantt Chart

To ensure the primary text remains concise and to facilitate optimal readability, the Gantt Chart detailing the project timeline has been included as an appendix. This visual representation of the project schedule can be accessed via my e-Portfolio at the following URL:
https://github.com/TobiZeier/UoEO_MSc_EIM/blob/main/Module8_MSc_Computing_Project/Unit2-GanttChartMScProject.pdf

3 Key Project Risks and Mitigation Measures

Risk	Potential Impact	Mitigation Strategy
Limited data availability or quality	Weak empirical evaluation and reduced validity	Use multiple indicators, clearly document assumptions, and acknowledge limitations
Scope creep	Delays and incomplete artefact	Strictly limit the framework to service level indicators and prioritisation
Over complexity of the framework	Reduced clarity and examiner criticism	Prioritise interpretability over sophistication
Time constraints due to full time employment	Delayed milestones	Follow a structured weekly plan and freeze artefact scope early
Weak alignment between research question and analysis	Loss of academic coherence	Continuously map methods and results back to research objectives
Ethical or confidentiality constraints	Restrictions on data use	Use anonymised and aggregated data only

Table 2: Risk Identification and Mitigation Strategies for MSc Project (Zeier, 2026)

Word Count: 351

References:

Zeier, T. (2026) A Quantitative Framework for Measuring and Prioritising Technical Debt in Mission Critical Trading Information Technology Services. *CSPROJ: MSc Computing Project January 2026*. Essay submitted to the University of Essex Online.