

Project Scope and Expected Outcomes

Context-Aware Diagnostic Notification Effectiveness in Problem Reporting

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Project Purpose

The purpose of this project is to design and evaluate a bounded context-aware diagnostic notification that may improve the appropriateness and timing of end users' problem-reporting decisions. The proposed notification supplements the Helpdesk Button and Tier2Tickets rather than replacing either tool. The Helpdesk Button remains the interface through which the user begins a support request, while Tier2Tickets represents the diagnostic context intended to assist the technician. The notification adds an earlier decision point by identifying a possible qualifying condition, explaining the condition in plain language, and allowing the user to open a simulated reporting workflow only through explicit action.

The project does not assume that faster or more frequent reporting is automatically better. A submission may be premature when a temporary or expected condition has not yet become meaningful, while a delayed submission may occur after useful diagnostic evidence has disappeared. Therefore, the project evaluates whether a reporting decision is appropriate at the stage when the decision occurs after considering severity, duration, recurrence, visible task impact, recovery after retry, and the availability of a practical workaround.

Included Project Scope

The project includes the research, technical development, controlled evaluation, and documentation necessary to determine whether the proposed notification is promising under the

tested conditions. The included work begins with stakeholder and user research and continues through prototype revision and final reporting.

Scope Area	Included Work
Requirements research	Semi-structured interviews with 5 to 10 experienced IT support technicians and an anonymous survey of 15 to 30 adult computer users.
Research design	Research questions, hypotheses, variables, scenario rules, decision classifications, timing events, technical controls, and analysis procedures.
Controlled environment	Microsoft Azure Virtual Desktop, Windows 11 Enterprise, Microsoft Entra authentication, a private virtual network, and one Standard B2as v2 session host with 2 vCPUs and 8 GiB of memory.
Prototype development	A bounded memory-pressure generator, threshold and persistence logic, plain-language notification, explicit user controls, simulated Helpdesk Button and Tier2Tickets workflow, duplicate suppression, event logging, stopping controls, resource release, and recovery checks.
Technical testing	Baseline testing, resource-pressure calibration, false-trigger testing, trigger and timing verification, permission compliance, logging completeness, stopping, release, and recovery.
Usability evaluation	A controlled comparison of a group with the existing reporting tools and a group with the same tools plus the incident-specific notification.
Analysis and revision	Descriptive comparison of decision quality, reporting latency, undesirable submissions, participant experience, technical conformance, limitations, and evidence-supported prototype revisions.
Final documentation	Updated portfolio materials, final report, prototype package, user-help documents, final presentation, recorded presentation, and implementation notes.

Excluded Project Scope

The project remains a controlled academic proof of concept and does not include production deployment. The exclusions prevent the capstone from making claims or collecting information that are unnecessary for answering the research questions.

Excluded Area	Boundary
Production support activity	No actual support ticket, client incident, or production diagnostic report will be created or collected.
Automatic decision making	The prototype will not diagnose a root cause, decide that a ticket is required, or submit a ticket automatically.
Restricted information	The study will not request passwords, client identities, participant identities in the analysis dataset, private network details, confidential configurations, or sensitive production diagnostics.
Uncontrolled system stress	The memory-pressure process will not continue until system failure, application crash, loss of participant work, or unrecoverable instability.
Organization-wide implementation	The project will not deploy the notification across an employer environment or modify a production ticketing system.
Broad generalization	The convenience sample, simulated setting, brief exposure, and limited scenarios do not support claims about every user, workplace, or technical condition.
Long-term effectiveness	The project will not measure long-term ticket quality, organizational cost savings, technician resolution time, or sustained user behavior after extended deployment.

Expected Project Outcomes

The project is expected to produce both technical artifacts and research evidence. These outcomes are defined as project outputs rather than guaranteed findings. In particular, the project does not assume that the notification group will outperform the control group.

Expected Outcome	Evidence or Deliverable
Traceable stakeholder and user requirements	Technician-interview themes, end-user survey findings, pilot revisions, prioritized requirements, and a requirements traceability matrix.
Controlled and repeatable study environment	A documented Azure Virtual Desktop environment with fixed visible processor and memory allocation, private network access, and a recoverable baseline.
Prototype 1.0	A functioning end-to-end simulated workflow that produces the condition, detects the approved rule, displays the optional notification, records events, and creates no production submission.

Operational event definitions	Calibrated T0 through T8 event rules, including observable definitions for degradation, qualification, notification exposure, participant actions, workflow outcome, and verified recovery.
Technical-readiness evidence	Pass or fail evidence for resource bounds, progression, timing, false-trigger control, permission, suppression, logging, stopping, release, and recovery.
Usability-study evidence	Coded participant-scenario records, event timestamps, decision classifications, workflow outcomes, participant ratings, explanations, deviations, and exclusion reasons.
Prototype revisions	A later prototype version incorporating prioritized changes supported by technical and usability evidence.
Implementation recommendation	A final interpretation explaining whether the notification is promising under the tested conditions, what safeguards are required, what limitations remain, and what future testing would be necessary.

Scope Acceptance Criteria

The project will remain within scope only when the prototype and research procedures preserve user control, privacy, safety, and traceability. No simulated submission may begin without explicit user action. The memory-pressure procedure must remain within the approved allocation and duration, provide manual and automatic stopping, release allocated memory, and return the environment to an approved recovery state. Temporary or expected activity must not create a notification, and one continuing condition must not produce repeated prompts.

The intervention will be considered promising only if the notification improves decision quality without producing an unacceptable increase in premature or unnecessary submissions and without violating the technical safeguards. However, a null or unfavorable result will not be treated as a failure of the capstone when the protocol is executed correctly and the result is reported accurately. A sound finding that the intervention is not promising under the tested conditions is still a valid project outcome.

Scope Dependencies and Constraints

The final thresholds, persistence intervals, delayed-submission boundary, resource limits, and recovery criteria depend on technical calibration in the completed memory-stress environment. The event categories can be defined during planning, but the exact numerical values must be established through repeated baseline and stress testing before formal participant data collection. Once approved, those values will be locked so that participant behavior does not influence how the scoring rules are defined.

The project also depends on faculty review and, if applicable, institutional review before formal human-subject activities begin. Recruitment feasibility, Azure subscription policy, VM availability, participant access, schedule compression, and the performance characteristics of the burstable Standard B2as v2 virtual machine may constrain the number of scenarios or prototype features. When a constraint requires a change, the change will be documented rather than silently altering the study procedure.

Completion Boundary

The scope will be complete when the requirements evidence, approved instruments, controlled environment, technically validated prototype, usability-study records, integrated analysis, revised prototype, final report, user-help material, presentation, and implementation notes are available and traceable to the research questions. Production deployment or organization-wide adoption is not required for completion.