

# Development of Real Estate Internship Supervisory Assessment System (REISAS) for Green Education Ecosystem

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## ABSTRACT

The rapid evolution of the global digital economy and the Fourth Industrial Revolution have necessitated a transformative shift in how higher education institutions manage experiential learning. Conventional industrial training assessment models, particularly in professional disciplines like Real Estate, have historically relied on analogue, paper-based workflows. These legacy systems are characterized by administrative delays, significant risks of document loss during transit, and a structural inability to facilitate real-time monitoring of student progress. To address these inefficiencies while advancing the objectives of a sustainable and digitalized future, the Real Estate Internship Supervisory Assessment System (REISAS) was developed. This research details the conceptualization, methodology, and output of Phase 1 of REISAS, which focuses on the digitalization of the industry supervisor module and the integration of a paperless submission framework. By replacing manual scoring with automated digital rubrics and centralized analytical dashboards, the system streamlines the dual-stakeholder evaluation model required for Real Estate students. The analysis demonstrates how REISAS aligns with Environmental, Social, and Governance (ESG) principles and the United Nations Sustainable Development Goals (SDGs) 4, 9, and 12. Furthermore, the system's architecture supports the Ministry of Higher Education Digitalization of Higher Education Action Plan 2025-2030 by fostering an effective, adaptive, and lifelong learning ecosystem. The findings suggest that REISAS serves as a scalable model for professional internship programs, offering a transparent, technology-driven framework that replaces manual inefficiencies with high-fidelity competency tracking and real-time administrative oversight.

**Keywords:** Internship, supervisory assessment, grading, REISAS, green education ecosystem

## INTRODUCTION

The landscape of higher education is undergoing a profound metamorphosis driven by the twin imperatives of digitalization and sustainability. As the Fourth Industrial Revolution disrupts traditional business models and processes, universities are increasingly tasked with restructuring their administrative and pedagogical frameworks to remain competitive and relevant (Mabotha, P. A. P., & Ngcamu, B. S., 2026). Within this context, industrial training or internships represents a critical bridge between academic theory and professional practice, particularly in highly regulated fields such as Real Estate. In Malaysia, the management of internship programs is a vital academic operation, yet many institutions continue to struggle with the logistical and administrative burdens of legacy systems Nurnasran Puteh, et al. (2024).

The historical paradigm of internship management at the Faculty of Built Environment, Universiti Teknologi MARA (UiTM), has been defined by a dual-stakeholder model where assessment is split between university academic supervisors and industry practitioners. While internal academic marks have transitioned to digital formats in recent years, the external evaluation component remained stubbornly analogue. Industry supervisors

were traditionally required to complete physical forms and mail or courier them back to the university for manual compilation. This conventional workflow created significant bottlenecks, including administrative delays that could last weeks, the high risk of document loss during transit, and a complete lack of real-time monitoring capabilities for internship coordinators. Ultimately, reliance on these manual workflows leads to coordination hurdles and prevents the institution from identifying struggling students until long after the intervention window has closed.

To address these systemic inefficiencies, the Real Estate Internship Supervisory Assessment System (REISAS) was conceptualized. This system is designed specifically for the industrial training course code RES601, aiming to fully digitalize the assessment lifecycle. The development of REISAS is not merely a technical upgrade but a strategic alignment with the Malaysia Digital Economy Blueprint (MyDIGITAL), which seeks to accelerate the nation's progress as a technologically advanced economy. The shift toward a paperless, automated system is also a response to the lessons learned during the COVID-19 pandemic, which served as a catalyst for digital transformation in education worldwide (Kayanja, W., et al T.,2025). The pandemic compelled institutions to adopt digital solutions to ensure academic continuity, highlighting the viability of automated and paperless systems for building resilient educational frameworks (Kayanja, W., et al T.,2025).

The professional context of real estate education in Malaysia adds another layer of complexity to this transition. The profession is governed by the Board of Valuers, Appraisers, Estate Agents and Property Managers (BOVAEP) under the Valuers, Appraisers, Estate Agents and Property Managers Act 1981 (Act 242). Graduates of accredited real estate programs must eventually undergo a two-year Test of Professional Competence (TPC), which involves rigorous documentation through work diaries and logbooks. REISAS introduces students to this culture of precise, structured, and auditable record-keeping at the undergraduate level, bridging the gap between academic training and professional registration requirements.

Furthermore, the implementation of REISAS is a proactive step toward achieving a "Green Campus" and fulfilling Environmental, Social, and Governance (ESG) principles. By eliminating paper consumption associated with hundreds of internship logbooks and assessment forms, the university contributes directly to SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action). This digitalization also facilitates broader educational goals, such as SDG 4 (Quality Education) and SDG 9 (Industry, Innovation, and Infrastructure), by establishing a modern, scalable infrastructure that enhances transparency and accountability in higher education management. This study examines how the transition to REISAS impacts operational efficiency and stakeholder engagement while identifying the adaptive capabilities required for the university to navigate the rapidly changing technological landscape (Kayanja, W., et al T.,2025).

The following report explores the development of REISAS in detail, focusing on the methodology used in Phase 1, the resulting system output, and the broader implications for the real estate education ecosystem in Malaysia. It positions REISAS not just as a software solution but as a replicable model for other professional internship programs seeking to modernize their administrative frameworks in line with national and global sustainability agendas.

## METHODOLOGY

The methodology employed in the development of REISAS is rooted in the "Prototype Development" approach, characterized by iterative cycles of user requirement collection, mock-up refinement, and performance evaluation (Hardison, H. at all, 2025). This method ensures that the final system aligns closely with the needs of its primary stakeholders: the internship coordinators, industry supervisors, and students. The research focused on Phase 1 of the development, which prioritized the Industry Module and Digital Submission framework.

The developmental process began with a comprehensive analysis of the existing manual workflow for the RES601 course. This analysis revealed a fragmented process where students downloaded manual logbook templates, printed them, and carried them to their placement sites. Industry supervisors would then fill these forms by hand at the end of the semester. To modernize this, Phase 1 focused on creating a centralized web-based system that replaces these physical interactions with digital transactions.

The system's architecture was designed to support a dual-stakeholder evaluation model. Table 1 outlines the core functional components of the REISAS Phase 1 framework, highlighting the transition from paper-based to digital processes.

Table 1: REISAS Phase 1 Framework and Digital Transition

COMPONENT	TRADITIONAL MANUAL PROCESS	REISAS DIGITAL IMPLEMENTATION
Assessment Delivery	Physical forms mailed or couriers to supervisors	Secure web-based login for industrial mentors
Rubric Structure	Handwritten scores on paper templates	Structured digital rubrics aligned with CLOs
Score Calculation	Manual arithmetic by administrative staff	Automated calculation via system backend
Task Submission	Bound hardcopy reports submitted to office	Digital upload of reports and evidence
Monitoring	Retrospective (after documents arrive)	Real-time coordinator dashboard
Audit Trail	Manual signatures and stamps	Digital timestamps and user logs

The development utilized standard web technologies (HTML, CSS, JavaScript, and a robust database management system) to ensure cross-platform compatibility. This aligns with findings from Petcharat and Sutthirak (2024), who emphasized the efficiency of Progressive Web Apps (PWA) and web-based platforms in reducing workflow steps and allowing for continuous supervision. For REISAS, the web-based approach was selected to ensure that industry supervisors could access the assessment module without the need for specialized software installation, thereby lowering the barrier to adoption (Petcharat, W., & Sutthirak, T., 2024).

The assessment module itself was mapped directly to the RES601 Course Learning Outcomes (CLO). To ensure professional relevance, the competency indicators were derived from a synthesis of academic requirements and Malaysian professional real estate standards. Figure 1 shows the rubric the CLO for RES601 appear on the admin dashboard on REISAS,

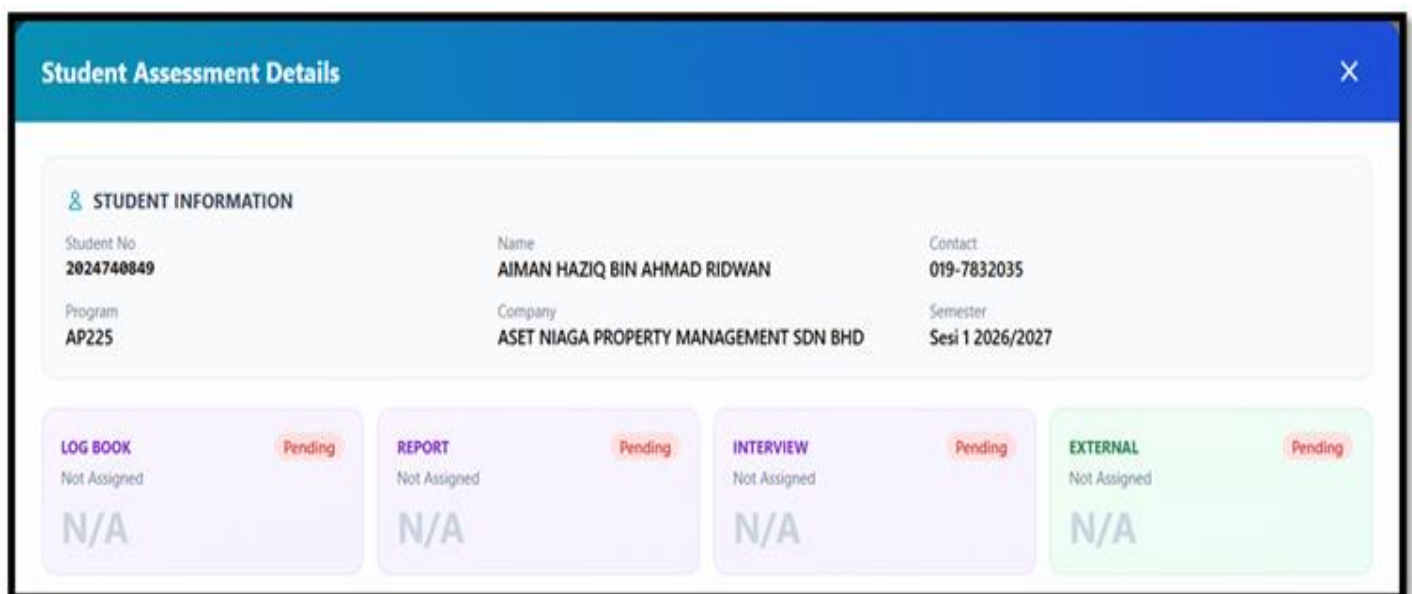


Figure 1: Rubric the CLO for RES601

The system design also accounts for the "monitoring and audit trail" requirement, recording every submission and assessment action to prevent document loss or manipulation, which is a critical governance requirement in professional education. Finally, the methodology considered the "Green Campus" paradigm. The transition to a paperless workflow was evaluated based on the Multi-disciplinary Comprehensive Policy Framework, which provides green indicators for measuring and monitoring sustainability practices in Malaysian HEIs (Anthony Jnr B, 2021). This ensured that REISAS was not just an administrative tool but a contribution to the university's ESG performance metrics.

## RESULTS AND DISCUSSION

The implementation of Phase 1 of the Real Estate Internship Supervisory Assessment System (REISAS) has yielded transformative results in the administrative and pedagogical management of the RES601 course. The system has successfully replaced a legacy of manual delays with a high-fidelity, real-time data ecosystem that benefits all stakeholders.

The core output of REISAS is a centralized dashboard that provides coordinators with an bird's-eye view of the entire internship cohort. As illustrated in the system's data visualizations, the dashboard tracks student enrollment, identifies partner companies, and displays real-time assessment statistics. One of the most significant results is the distribution of student marks generated automatically. This eliminates the lag that previously prevented academic departments from analyzing performance trends until the following semester.

Table 3: Comparative Efficiency Gains Post-REISAS Implementation

METRIC	MANUAL SYSTEM (BASELINE)	REISAS IMPLEMENTATION	IMPROVEMENT FACTOR
<b>Data Processing Time</b>	2-4 weeks post-internship	Instantaneous (Real-time)	10 times efficient
<b>Paper Consumption</b>	+/- 200 pages per student	0 pages (Digital)	100% reduction
<b>Document Loss Risk</b>	High (Courier/Postal issues)	Minimal (Encrypted database)	Significant
<b>Monitoring Capability</b>	Static (End-of-term only)	Dynamic (Daily oversight)	Transformative
<b>Stakeholder Access</b>	Physical office visits	24/7 Web-based access	Enhanced

The system allows coordinators to identify outliers and verify the consistency of industrial supervisor grading. By having immediate access to this data, the university can conduct the capability individual performance reviews, ensuring that the grading adheres to the established rubrics and professional standards. This transparency is crucial for maintaining the quality of the RES601 program, which is a prerequisite for the Bachelor of Real Estate (Hons) degree accredited by BOVAEP. A deeper analysis of the results through the lens of the HI-TOP model reveals the strategic synergy achieved by REISAS. The evident show how the system equips industry supervisors with structured digital tools, reducing the ambiguity of manual comments and enhancing their ability to provide objective feedback.

### Measurable Indicators for ESG and SDG Impact

A critical strength of REISAS is its ability to provide concrete indicators for sustainability, moving beyond general claims of alignment with ESG principles.

**SDG 12: Responsible Consumption and Production was success to traceability carbon footprint. Table 4 shown the environmental impact by using REISAS:**

MATERIAL METRIC	DATA CALCULATION	ENVIRONMENTAL IMPACT
<b>PAPER REDUCTION</b>	200 pages per students for 117 students; 23400 pages	Saves approximately 1.3 kg CO <sub>2</sub> e kg of paper per student.
<b>CARBON SAVINGS</b>	152.1 kg CO <sub>2</sub> efor Total.	Fully charging (0% to 100%) 18,500 units of smartphones  Electricity consumption for 26,000 hours for a 6W LED lamp.
<b>RECYCLING SAVINGS</b>	Elimination of physical archival needs.	Reduces e-waste and material throughput pressure.

**SDG 4: Quality Education and Digital Literacy**

REISAS addresses SDG Target 4.4 by substantially increasing the number of youths who have relevant skills, including ICT and digital literacy skills, for employment. First, Indicator 4.4.1: Proportion of youth/adults with ICT skills. The system forces engagement with cloud-based submission and automated rubric interaction, bridging the skills gap identified in vocational training literature and secondly Transparency and Feedback: Online logbooks correlate with increased real-time entries and more timely feedback from supervisors, which significantly enhances student engagement and learning outcomes compared to retrospective paper logs.

**SDG 9: Industry, Innovation, and Infrastructure**

The development of REISAS contributes to building a resilient infrastructure and promoting inclusive and sustainable industrialization (Target 9.2). By providing a mobile-accessible web platform, the system ensures universal access to information and communications technology for students across diverse geographic internship locations. Then the Innovation from manual logs to a data-driven dashboard represents a step forward in building an accountable digital culture within professional sectors like Real Estate.

**CONCLUSION**

The development and implementation of the Real Estate Internship Supervisory Assessment System (REISAS) represent a significant advancement in the digitalization of higher education in Malaysia. Phase 1 has successfully replaced a fragmented, paper-based assessment model with a centralized, web-based ecosystem that enhances operational efficiency, transparency, and administrative oversight. The system has demonstrably reduced processing times and eliminated paper consumption, aligning the university with global ESG principles and national digital transformation goals. By digitalizing the dual-stakeholder evaluation process, REISAS ensures that students are assessed objectively against industry-relevant competencies, while providing internship coordinators with the real-time data needed to manage complex cohorts effectively.

Furthermore, REISAS contributes meaningfully to the United Nations Sustainable Development Goals, particularly SDG 4, 9, and 12, by providing modern, resilient, and responsible infrastructure for higher education. As the university moves toward the next decade, REISAS provides a scalable framework for further innovation, including the potential for AI-driven competency tracking and closer integration with professional regulatory bodies like BOVAEP. This innovation replaces manual inefficiencies with a technology-driven framework, ensuring that the next generation of real estate professionals is equipped to lead in a digital and sustainable future.

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