

BIM Auto-Checking e-Profiling System™ (BIMCheck Pro™)

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1. Product Description

BIMCheck Pro™ closes the *competency gap* that throttles Malaysia's BIM e-Submission transformation by continuously measuring, visualising, and upgrading the competencies of officers and operatives. It delivers real-time, role-aligned assessments mapped to the *BIM Auto-Checking Competency Framework™* and turns results into adaptive upskilling plans—shifting teams from one-off training to a living competency profile.

The platform validates five domains critical to e-Submission success—*C01: BIM Modelling, C02: BIM e-Submission Operation, C03: Automated Building Code Compliance Checking, C04: Digital Data Management, C05: Administrative Functions*—and shows progression from *Novice Operative* → *Expert Operative* with re-assessment built in.

2. Innovation Objectives

- a) Make competence measurable in real time for the specific tasks that drive BIM e-Submission quality and speed, using the operationalised *BIM Auto-Checking Competency Framework™* as the ground truth.
- b) Personalise upskilling with data-driven TNA pathways that auto-recommend micro-learning, simulations, and scenario tasks based on each individual's profile.

c) Track readiness over time via

Novice → *Expert* trajectories and re-assessments, giving supervisors a transparent view of strengths, gaps, and progress.

- d) Support national policy and TVET outcomes by aggregating anonymised readiness data for workforce planning aligned with NBeS/OSC 3.0 and TVET 2030.

3. Problem Statement

Malaysia targets faster, more transparent building-plan approvals by integrating *NBeS* → *OSC 3.0 Plus Online*. Yet, national outcomes hinge on operational competency, not just platform deployment: inconsistent skills in model interpretation, data integrity, and automated rule checking (e.g., UBL) slow reviews and create variability across PBTs. The “*BIM Checker*” role, while pivotal, has historically lacked a validated, role-specific competency benchmark and continuous development loop—leaving digital benefits unrealised. *BIMCheck Pro*TM directly addresses this by making competencies explicit, assessable, and improvable.

4. Authenticity/Novelty

- a) Framework-to-platform translation: First solution that operationalises the *BIM Auto-Checking Competency Framework*TM into a live e-profiling + TNA engine tailored to Malaysian statutory/regulatory realities.
- b) Granular, domain-level scoring: Beyond pass/fail—users see domain-level Knowledge/Skills/Attitude breakdowns that pinpoint exactly *what* to fix. A sample report demonstrates K/S/A scoring per C01–C05 and interprets readiness.
- c) Adaptive upskilling loop: Results trigger targeted micro-learning, simulation labs, and real-world tasks; periodic re-assessments convert static matrices into living profiles.
- d) Designed for national scale: Built for PBT regulators and aligned with NBeS/OSC 3.0 governance—so competence growth maps straight onto permit-review outcomes.

5. Implementation Level

- a) Current status at 2025: MVP live; assessment engine (scenario + practical items), K/S/A profiling across C01–C05, Novice→Expert trajectories; auto-TNA recommendations; supervisor review (baseline and gap heatmaps); PDF/CSV exports; data-privacy SOPs in place.
- b) Pilots & user testing: TVET instructors and students ran baseline + re-assessment cycles; anonymised competency reports generated; item banks and prescriptions refined via feedback.
- c) Content coverage: C01–C05 mapped to role tasks (model integrity checks, e-Submission workflows, automated rule-check preparation, data management, administrative processes). Simulations mirror UBBL-centric review scenarios.
- d) Deployment readiness: Cloud-hosted web app; QR-enabled access to sample outputs; onboarding pack for agencies (assessor guide, consent forms, data policy).
- e) Next steps (near-term): Expand scenario banks; add state-level dashboards; optional OSC 3.0 Plus integration hooks; onboard first PBT cohorts for routine competency governance.

6. Uses and Applications

- a) Regulators & PBTs:
 - Verify role readiness, route officers to the *right* training fast, and baseline teams before/after NBeS process changes—so approvals become consistent across jurisdictions.
- b) National & TVET bodies:
 - Align curricula and certification to *actual* gaps surfaced in C01–C05, and plan investments using aggregated, privacy-preserving dashboards.
- c) Academia & industry partners:
 - Run research and pilots on automated compliance literacy; evaluate interventions with repeat assessments and domain-level K/S/A visibility.

7. Innovation Product/Project Impact

a) Operational efficiency where it matters:

- By raising competence in rule-set literacy, data integrity, and e-Submission workflows, reviews become faster and less variable—because the *people* steps match the automation.

b) Capability at scale:

- Novice→Expert pathways and periodic re-assessments normalise continuous upskilling across PBTs, turning a one-time rollout into an upgrading *system*.

c) Policy-ready evidence:

- The platform is articulated as a high-impact TVET digital tool that strengthens smart-city readiness and public-sector digital governance.

8. Achievements

BIMCheck Pro™ received multiple awards in various conferences/innovation events, namely:

- The 1st International Conference on Social Innovation in Design and Built Environment (SiDe) 2025* — **Level:** International | **Venue:** UPM Serdang, Selangor | **Date:** 25–26/02/2025 | **Participation:** THD Instructors | **Status:** Best Paper Award.
- Innovation and Invention Competition Through Exhibition (iCompEx) 2025* — **Level:** International | **Venue:** POLIMAS, Jitra, Kedah | **Date:** 12–14/08/2025 | **Participation:** THD Students (Sem 2) | **Status:** Gold Medal.
- Innovation Development Through Educational Activities 2025 (iDEA '25)* — **Level:** National | **Venue:** IKSN, Banting, Selangor | **Date:** 16–17/08/2025 | **Participation:** THD Students (Sem 5) | **Status:** Silver Medal.
- The 1st International Product Profile Innovation Competition (IPPIC2025) in the 6th TVET International Conference (TVETIC2025)* — **Level:** International | **Venue:** UTM Skudai, Johor | **Date:** 10/09/2025 | **Participation:** THD Instructors | **Status:** Gold Medal & Best Poster Award.