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Bridging the IS Skills Divide: A Design-Oriented Inquiry into the Alignment of IS Roles, Industry Needs, and University Curricula

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Research-in-progress

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Abstract

The Information Systems (IS) discipline in Australia and New Zealand increasingly recognises that it must urgently reassess how it defines, develops, and aligns its program offerings. This research-in-progress paper introduces a regionally coordinated effort led by the Australian Council of Professors and Heads of Information Systems (ACPHIS) to (1) problematize the fragmented and often outdated understanding of IS roles and skills, (2) synthesize preliminary design requirements derived from diverse sources (skills frameworks and literature, industry jobs roles, and regional curricula), and (3) outline a design-oriented roadmap to develop contextualised artefacts, ranging from an IS Skills Currency Framework to IS Curriculum Design Framework, to support curriculum design and accreditation at universities. Thereby, we aim to provoke discussion within the IS community on how to effectively bridge the gap between academia and practice. This paper invites feedback on our initial framing and welcomes collaboration to ensure sustained relevance and impact for the IS discipline in the Australian and New Zealand Trans-Tasman region.

Keywords Information Systems Skills, Job Roles, Curriculum Alignment, Design Science Research, Industry–Academia Gap

1 Introduction

The Information Systems (IS) discipline faces increasing pressure to demonstrate its relevance and responsiveness to the evolving demands of the digital economy (Adam and Alam, 2024). As digital transformation reshapes how organizations operate, the roles and skills expected of IS graduates are also evolving (Kotha et al., 2024). As reported in the Australian Computer Society (ACS) 'Digital pulse' report, although IT degree completions increased by 11%, just 1% of technology employers in 2024 considered graduates to be job-ready - down from 3% in 2023 (ACS, 2025). As a sociotechnical discipline at the nexus of business- and computing-oriented research (Sarker et al., 2019), IS plays a distinctive role in bridging digital capabilities with strategic operational outcomes (Hol et al., 2024).

To acknowledge the diversity within the discipline, IS encompasses amongst others *IS Management* and *IS Engineering* traditions, ranging from business-focused process and strategy perspectives to technically grounded systems design and implementation approaches. This plurality gives rise to differing emphases on employability, and professional readiness across contexts, which must be recognised in any skills-alignment initiative.

Despite this unique position, there is growing concern that current academic program designs do not adequately cater for the graduate capabilities required by industry (Abelha et al., 2020; Cummings and Janicki, 2020; Goulart et al., 2022). This inadequacy means 65% of technology employers must reskill graduates for them to be effective in their roles (ACS, 2025). This persistent misalignment also reflects broader debates about the "job-ready graduate" ideal in Australian higher education, where calls for immediate workforce readiness risk overlooking deeper disciplinary and equity considerations (Patfield, Gore, and Fray, 2025). Moreover, existing skills frameworks often fail to offer meaningful integration across educational curricula, professional roles, and meet accreditation requirements. These tensions are particularly pressing in Australia and New Zealand, where IS programs operate within diverse institutional contexts, yet are subject to shared pressures from employers, policy makers, and accreditation bodies (Adam and Alam, 2024).

Globally, comparable challenges have been reported across the IS and computing disciplines, for instance, in the U.S. (Topi et al., 2017), Europe (European Commission, 2020), and Asia (Li, 2024) - each highlighting the need for competency models that remain adaptive to local conditions while maintaining global coherence. Against this backdrop, the Australasian context provides a distinctive case of a small yet internationally connected ecosystem, warranting a coordinated regional response.

Historical evidence supports this view. Studies found that IS curricula often emphasised outdated technical topics/tools with poor alignment to industry needs, highlighting a discrepancy between academic competency models and actual recruitment signals (Ahsan et al., 2013). Recent studies also concluded that many IT competencies from academic models are not reflected in job ads (Poba-Nzaou et al., 2020), highlighting a gap between employer expectations and academic offerings. This sums up to a call-to-action for relevant curricula that reflects industry needs.

Yet, this challenge extends beyond immediate skills gaps to the broader issue of *educational change inertia*, where curriculum review cycles and institutional governance processes are often too slow to match the pace of technological and industrial evolution (Fullan, 2016).

This research-in-progress paper introduces a Trans-Tasman initiative led by the Australian Council of Professors and Heads of Information Systems (ACPHIS) focused on "IS Job Roles and Skills." (- ACPHIS is the peak body established to represent Australian IS academics in matters of national and international importance). We argue that a coordinated, evidence-based approach is needed to bridge the gaps between supply, demand, and standardisation in this space. Guided by a Design Science Research (DSR) orientation (Hevner et al., 2004; Gregor and Hevner, 2013), this project translates the problem space into actionable design knowledge through empirically grounded artefacts. To guide this effort, we pose two research questions, and these questions also frame the design of artefacts such as the IS Skills Currency Framework, mapping dashboards, and accreditation support packs that collectively aim to enable evidence-based curriculum renewal.

RQ1: *How can the IS discipline in Australia and New Zealand design a systematic, evidence-based approach to respond to and manage the dynamic relationships between job roles, skills, and academic curricula across industry, education, and accreditation frameworks?*

RQ2: *What design requirements must underpin artefacts that enable this alignment in a scalable, adaptable, and future-oriented manner?*

For clarity, we define *IS roles* as the distinct professional positions or functions that IS graduates and practitioners occupy (e.g., business analyst, systems developer), and *IS skills* as the technical, analytical, and interpersonal capabilities required to perform those roles effectively. This research-in-progress paper problematises the current disconnect, outlines the scope and design orientation of the ACPHIS project, and proposes emerging meta-requirements to inform the development of robust and adaptable artefacts that strengthen the IS discipline's alignment with workforce needs.

2 Problematizing the IS Roles and Skills Landscape

The Information Systems (IS) discipline is navigating a period of unprecedented change, driven by rapid technological innovation, evolving business models, and shifting workforce expectations (Adam and Alam, 2024). This change is only likely to accelerate as emerging technologies such as generative and agentic artificial intelligence, blockchain, advanced data analytics, robotic process automation, and increasingly sophisticated cybersecurity threats, transform not only how organisations operate but also the skills expected of IS professionals (Li, 2024). These changes amplify the need to ensure that university curricula, industry requirements, and accreditation frameworks remain aligned, particularly in small and interconnected labour markets such as Australia and New Zealand. The alignment challenge is longstanding: Lee et al., (1995) identified in the 1990s a growing disconnect between industry needs and IS education, noting declining demand for lower-level roles and rising demand for multidimensional skillsets. Similar concerns remain today about the future-readiness of IS graduates.

Evidence shows the gap between graduate capabilities and employer expectations persists (Cummings and Janicki, 2020; Goulart et al., 2022). The "IS expectation gap" has been documented as a structural issue (Lee et al., 1995; Todd et al., 1995), stemming not from individual deficits but from systemic factors such as slow curriculum review cycles, fragmented frameworks, and poor integration of emerging skills (Joseph et al., 2010; Todd et al., 1995). Given the breadth of products, platforms, and trends such as agentic transformation and dynamic APIs, graduates are unlikely to match employers' ideal mix of skills. Curricula must therefore prepare adaptable professionals capable of lifelong learning, since an IS graduate beginning in 2026 and retiring in 2066 will encounter multiple cycles of technological change.

When developing curricula, the IS academics may use specific Bodies of Knowledge (BoKs) and competency frameworks for support. However, these BoKs are fragmented, sometimes outdated, not IS specific or lacking granularity. While not inherently low in quality, BoKs are typically created with near-term technical goals in mind rather than long-run competency and workforce development as their goal. Our review of 15 key BoKs and competency frameworks (see Appendix A) highlights the fragmented and uneven guidance they offer to IS academics. These sources span IS, Computer Science, IT, and related disciplines, covering both foundational competencies and specialised areas such as cybersecurity (CyBOK), data science (DS2019 BoK), (International Association of Business Analytics Certification, 2019), and business process management (BPM CBOK) (ABPMP - Association of BPM Professionals International, 2020), as well as meta-frameworks like the ACM IEEE Computing Curricula CC2020 (ACM et al., 2020). While current more broadly founded curricula frameworks such as SFIA 9 and IS2020 are more responsive to technological change, others - including BABOK (IIBA, 2015), ACS CBOK (Australian Computer Society, 2015), and IS2010 are outdated, risking the perpetuation of obsolete content. Some frameworks define competencies without detailing IS-specific role (e.g., SEBoK) (SEBoK Editorial Board, 2025), requiring integration with bridging frameworks like SFIA 9. High-level meta-frameworks (e.g., CC2020) (ACM et al., 2020) also lack the granularity needed for curriculum design and must be supplemented with IS-specific BoKs. In practice, IS academics must combine core curriculum models such as IS2020 (The Joint ACM/AIS IS2020 Task Force, 2020), and the global competency model for graduate degree programs in IS (MSIS 2016) (Topi et al., 2017) with up-to-date skill definitions and specialised BoKs, continually assessing currency and applicability to ensure graduates are prepared for a rapidly evolving profession by finding the balance of acquiring necessary near-term skills, understanding that those skills may be eclipsed by new innovations, and cultivating life-long competences that allows learners to adapt rapidly to change.

Historical analyses show technical skills may become obsolete within three to five years (Todd et al., 1995), though foundational competencies such as problem-solving and stakeholder communication remain essential. The balance between technical and business-facing skills has also shifted repeatedly over three decades (Lee et al., 1995; Todd et al., 1995), presenting a moving target for educators, employers, and accreditation bodies.

Higher education inertia has broad consequences. Universities face fragmented guidance, slow multi-tiered approval processes, and systemic resistance to change, with programme reviews often once per decade - too slow for industry needs. Students risk graduating with outdated skills which limits their

employability (Mavromaras et al., 2012). Employers face uncertainty about graduate readiness, increased training costs, and sometimes the need to "unteach" obsolete skills. For the IS discipline, lagging innovation undermines its unique value relative to adjacent fields such as computer science, software engineering, and data science, a challenge amplified in policy and funding contexts where STEM categories are often conflated. Past studies for example, (Abelha et al., 2020; Cummings and Janicki, 2020; Goulart et al., 2022) highlight misalignments between academic programs and industry needs, but few offer empirically grounded, Australia–New Zealand specific roadmaps for use by various stakeholders such as universities (e.g., IS Skills Currency Frameworks, mapping tools and benchmarking dashboards), accreditation bodies (e.g., visual mapping tools and Accreditation Evidence Packs) and industry organisations (e.g. Graduate Skill Capability Summaries and standardised profiles for priority IS roles). This research is focused on addressing this neglected, yet important gap. Addressing this challenge requires navigating diverse stakeholders — universities, students, employers, professional associations, and government — each with distinct priorities and timelines. The next section explores this stakeholder landscape and the needs that must be met for broad adoption and impact.

3 The ACPHIS IS Job Roles and Skills Project

Building on the challenges identified above, the ACPHIS IS Job Roles and Skills project provides a coordinated, design-oriented response to the persistent gaps between IS curricula, industry requirements, and accreditation frameworks. Rather than adding yet another framework to the mix, the project seeks to create regionally relevant and empirically grounded artefacts that support agile curriculum renewal, strong industry engagement, and evidence-based accreditation.

The project is organised into three integrated work packages (WP1–WP3; see Appendix B): (1) synthesising existing frameworks and literature, (2) analysing industry job roles through job advertisements and practitioner engagement, and (3) reviewing IS curricula across Australia and New Zealand. Together, these work packages provide a comprehensive evidence base to inform the design of artefacts such as an IS Skills Currency Framework, mapping tools, benchmarking dashboards, and accreditation support packs.

The anticipated benefits span multiple stakeholder groups (see Appendix C for a detailed stakeholder map). For universities, the artefacts offer authoritative inputs for program review and innovation, reducing reliance on fragmented external frameworks. For students, they increase the likelihood of graduating with industry-relevant skills that enhance employability and career mobility. For employers, they provide clearer signals of graduate capability, reducing training costs and uncertainty in recruitment. At a national level, the project unifies the IS discipline's voice in workforce capability discussions, strengthening its influence with government, accreditation bodies, and funding agencies. Ultimately, this initiative is not about producing a single, static framework. Instead, it is about reconfiguring how the IS discipline in Australia and New Zealand defines, develops, and demonstrates its distinctive contribution to the digital economy - ensuring ongoing adaptability and relevance in a fast-changing environment.

To develop a regionally relevant and empirically grounded roadmap with coherent artefacts for universities, ranging from an IS Skills Currency Framework to mapping tools and supporting templates, we adopt a design-oriented approach. Design Science Research (DSR) has, since its introduction into the IS discipline (Hevner et al., 2004; Vom Brocke et al., 2020), matured as a methodology for creating rigorous artefacts that address significant problems within defined domains. DSR particularly emphasizes the specification of design requirements early in the process to strengthen solution relevance and validity (Gregor and Hevner, 2013; Venable et al., 2016). In this paper, we report on the early stage of the design cycle, commonly referred to as 'Problem Identification and Motivation', through which we translate the overarching problem into preliminary meta-requirements. This stage is widely recognised as critical for the success of any design endeavour, since the relevance and eventual utility of artefacts depend on requirements that are carefully derived and grounded in stakeholder needs (Vom Brocke and Buddendick, 2006; Wieringa, 2009). Accordingly, we present this research-in-progress paper at this early stage to invite feedback on our initial framing and to actively engage the IS community in shaping robust meta-level requirements that will ensure sustained relevance and impact for the discipline in Australia and New Zealand.

The derivation of design requirements for this project has been shaped by multiple sources. First, the project team developed a stakeholder map to identify groups who contribute to and benefit from the artefacts (see Appendix C), thereby grounding requirements in stakeholder perspectives (Pouloudi, 1999). Second, early consultations were undertaken with key academic and professional stakeholders,

including ACPHIS members, heads of IS schools, and professional bodies such as the Australian Computer Society (ACS). These steps enabled the team to derive tentative meta-requirements that are both practically useful and academically robust.

4 Meta-Requirements for Designing IS Job Roles and Skills Artefacts

Building on the problem areas identified earlier; fragmented frameworks, slow curriculum update cycles, inconsistent stakeholder alignment, and opaque governance, this section outlines six meta-requirements (MRs) that underpin the design of artefacts for the ACPHIS IS Roles and Skills project. See summary overview in Table 1. In design-science terms, meta-requirements express the essential conditions that any artefact must satisfy to achieve its intended purpose (Gregor and Jones, 2007). Here, they are deliberately framed to reflect the socio-technical character and disciplinary hybridity of Information Systems, situated between technology creation and organisational transformation.

MR #	Addressed Challenge	IS-Specific Emphasis
MR 1	Fragmented institutional contexts	Configurational flexibility for diverse IS disciplinary homes (business, engineering, ICT)
MR 2	Curriculum inertia and skills obsolescence	Balance of enduring socio-technical core with agile update layer
MR 3	Misaligned stakeholder expectations	Multi-stakeholder mapping guided by stakeholder-salience theory
MR 4	Lack of transparent stewardship	Governed, auditable and version-controlled artefact lifecycle
MR 5	Disparate evidence sources	Integration of technical, organisational & educational data inputs
MR 6	Low methodological reproducibility	Replicable, tool-agnostic meta-method using contemporary IS analytics

Table 1 Key challenges in IS skills aligned to meta-requirements guiding artefact design

MR 1 - Configurational Flexibility: The artefacts must be configurable across heterogeneous IS contexts and degrees, recognising the discipline's plural identities within business schools, ICT faculties, or engineering units. Flexibility ensures consistent alignment with shared standards (e.g., IS2020) while allowing local adaptation of majors such as business analytics or health informatics. Such configurational agility is fundamental for an interdisciplinary field like IS whose relevance depends on bridging technical systems and organisational outcomes (Sarker et al., 2019).

MR 2 - Balancing Stability and Adaptability: To overcome curriculum lag, artefacts should encode a stable core of enduring role families and competencies alongside an adaptive extension layer for emerging skills (e.g., Responsible AI Lead). This echoes educational-change theory that emphasises continuity amid renewal (Fullan, 2016). Versioning, timestamping, and "update/deprecation" rules enable continuous evolution while maintaining comparability for accreditation and longitudinal benchmarking.

MR 3 - Aligning with Stakeholder Needs: Given the discipline's multi-constituent ecosystem with; universities, students, employers, professional associations, and government (see Appendix C for a detailed stakeholder map), artefacts must enable traceable mapping of stakeholder requirements and evolve as influence shifts. Drawing on stakeholder-salience theory (Mitchell et al., 1997), this ensures legitimate prioritisation and usability. For example, alignment with ACS requirements of CBoK and SFIA 9 remains essential for accreditation, yet mechanisms must also capture emerging expectations from employers and students for transferable, hybrid capabilities.

MR 4 - Transparency of Governance and Processes: To ensure legitimacy and sustainability, artefacts require transparent, participatory governance, clarifying decision rights, review cycles, and version control under ACPHIS oversight. Documented procedures for inclusion/exclusion of roles and

competencies, and periodic reporting, strengthen trust and allow other IS communities to replicate the governance model.

MR 5 - Integrating Diverse Inputs Across Domains and Sources: IS, by nature, spans technical, organisational, and human domains; therefore, artefacts must systematically integrate multiple evidence across difference domains. It also needs to include diverse sources, such as literature, competency frameworks, curricula, and job advertisements - through explicit triangulation. Such integration reflects IS's socio-technical remit to combine data-driven and context-sensitive insights, balancing empirical completeness with feasibility and traceability.

MR 6 - Replicable and Evolving Methods: Sustained relevance demands replicable, tool-agnostic analytic methods for identifying and tracking IS roles and skills. Clear procedures for data collection, analysis, and synthesis enable consistent application across institutions and time. While method-independent, artefacts should leverage IS capabilities such as natural-language processing of job ads and machine-learning–based trend detection, embedding a continuous-improvement loop consistent with design-science evaluation principles (Hevner et al., 2004; Venable et al., 2016).

Together, these six meta-requirements provide a traceable bridge between the identified problems and the intended artefacts, namely, the IS Skills Currency Framework, Mapping Dashboard, and Accreditation Toolkit. They articulate how IS education can remain technologically current, pedagogically sound, and socially responsive within the Australasian context while contributing reusable design knowledge for global adaptation.

5 Discussion & Conclusion

This paper underscores the urgent need to reassess how the IS discipline defines, develops, and aligns its programs with contemporary workforce demands. Through the ACPHIS IS Job Roles and Skills project, we have outlined a design-oriented roadmap to produce coherent artefacts, ranging from an IS Skills Currency Framework to a contextualised IS Curriculum Design Framework, that strengthen industry–academia linkages, enable agile curriculum renewal, and reinforce accreditation with empirical rigour. By doing so, the project seeks to reconfigure the IS discipline in Australia and New Zealand and reaffirm its distinctive contribution to the digital economy.

Distinctively, this initiative is ACPHIS-led and regionally coordinated, triangulates multiple evidence sources (frameworks, job advertisements, and curricula), and embeds governed, version-controlled updates to preserve comparability over time while remaining adaptable to emerging roles. It is designed for alignment with ACS CBoK and SFIA yet remains portable to other contexts. While grounded in AU/NZ needs, the artefacts are parameterised to map to widely used benchmarks (e.g., IS2020, MSIS 2016, SFIA), supporting transferability and global comparison.

As the success of any design endeavour hinges on requirements that are systematically derived and grounded in stakeholder needs, this Research-in-Progress paper has focused on establishing the meta-requirements (MR1–MR6) that form the foundation for the broader design project. Positioning the work at this stage allows us to engage the IS community in shaping, refining, and validating these requirements so that subsequent artefacts are both relevant and robust. Practically, MR1-MR6 translate into concrete artefact features—for example, configurability options for diverse IS program structures (MR1), versioning and deprecation rules for evolving role/skill taxonomies (MR2), stakeholder-traceability views and accreditation crosswalks (MR3–MR4), multi-source triangulation pipelines (MR5), and a replicable, tool-agnostic methods playbook (MR6).

We acknowledge that this work remains at an early stage. While a number of stakeholders have been identified and initial engagement with academic and professional bodies has begun, systematic input from employers, accreditation agencies, and government has yet to be obtained. Engaging these groups is a critical next step to ensure inclusiveness and legitimacy. Future work will also involve the development of a replicable meta-methodology for mapping IS skill requirements to industry needs. This will combine techniques such as content analysis of job advertisements with focus groups and other stakeholder engagements, moving the IS community beyond ad hoc approaches towards a more rigorous, adaptable, and evidence-based process.

By presenting this early-stage contribution, we extend an open invitation for feedback and collaboration from the IS research and education community. Such input is essential for enhancing the rigour, relevance, and transferability of the artefacts, ensuring that they not only serve current needs but also provide a sustainable foundation for the future of the IS discipline.

6 References

Abelha, M., Fernandes, S., Mesquita, D., Seabra, F., and Ferreira-Oliveira, A. T. (2020). Graduate employability and competence development in higher education-A systematic literature review using PRISMA. Sustainability (Switzerland), 12(15) (doi: 10.3390/SU12155900).

ABPMP - Association of BPM Professionals International. (2020). Guide to the Business Process Management Common Body of Knowledge (BPM CBOK®): Vol. Version 4.0. ABPMP International.

ACM, & AIS. (2010). IS 2010: Curriculum Guidelines for Undergraduate Degree Programs in Information Systems.

ACM, IEEE, & IEEE-CS. (2017). Information Technology Curricula 2017.

ACM, IEEE, & IEEE-CS. (2020). Computing Curricula 2020.

ACS. (2025). ACS Australia' Digital Pulse 2025.

Adam, M. T. P., and Alam, L. (2024). Information Systems Research in Australia and New Zealand: A Survey of Research Activity from 2020 to 2022. Australasian Journal of Information Systems Adam & Alam, 28 (doi: 10.3127/ajis.v28.5079).

Agarwal, R., and Karahanna, E. 2000. "Time Flies When You're Having Fun: Cognitive Absorption and Beliefs About Information Technology Usage," *MIS Quarterly* (24:4), pp. 665-694.

Ahsan, K., Ho, M., and Khan, S. (2013). Recruiting Project Managers: A Comparative Analysis of Competencies and Recruitment Signals From Job Advertisements. Project Management Journal, 44(5), 36–54 (doi: org/10.1002/pmj).

Ajzen, I. 1991. "The Theory of Planned Behaviour," *Organizational Behaviour and Human Decision Processes* (50:2), pp. 179-211.

Ajzen, I., and Fishbein, M. 1980. *Understanding Attitude and Predicting Social Behaviour*. Englewood Cliffs, NJ: Prentice-Hall.

Applegate, L. M., Holsapple, C. W., Kalakota, R., Radermacher, F. J., and Whinston, A. B. 1996. "Electronic Commerce: Building Blocks of New Business Opportunity," *Journal of Organizational Computing and Electronic Commerce* (6:1), pp. 1-10.

Association for Computing Machinery ACM. (2001). CS Body of Knowledge. https://dl.acm.org/cms/attachment/632213cd-cec3-48ca-9100-27b2e9f4c365/cs-csbok.html

Australian Computer Society. (2015). ACS Core Body of Knowledge for ICT Professionals (CBOK). Australian Computer Society (ACS).

Bhattacherjee, A. 2000. "Acceptance of E-Commerce Services: The Case of Electronic Brokerages," *IEEE Transactions on Systems, Man and Cybernetics - Part A: Systems and Humans* (30:4), pp. 411-420.

Cummings, J., and Janicki, T. N. (2020). What Skills Do Students Need? A Multi-Year Study of IT/IS Knowledge and Skills in Demand by Employers. Journal of Information Systems Education, 31(3). http://jise.org/Volume31/n3/JISEv31n3p208.htmlhttp://jise.org

European Commission for Standardization. (2018). 15 European ICT professionals role profiles - Part 1 - 30 ICT profiles 2018.

Fullan, M. (2016). The new meaning of educational change. Teachers college press.

Goulart, V. G., Liboni, L. B., and Cezarino, L. O. (2022). Balancing skills in the digital transformation era: The future of jobs and the role of higher education. Industry and Higher Education, 36(2), 118–127 (doi: 10.1177/09504222211029796).

Gregor, S., and Hevner, A. R. (2013). Positioning and Presenting Design Science Research for Maximum Impact. In Source: MIS Quarterly (Vol. 37, Issue 2). (doi: 10.25300/misq/2013/37.2.01)

Gregor, S., and Jones, D. (2007). The Anatomy of a Design Theory. Journal of the Association for Information Systems, 8(5), 312–335 (doi: 10.17705/1jais.00129).

Hevner, A. R., March, S. T., Park, J., and Ram, S. (2004). DESIGN SCIENCE IN INFORMATION SYSTEMS RESEARCH. Design Science in IS Research MIS Quarterly, 28(1), 75–105. (doi: 10.2307/25148625).

Hol, A., Richardson, J., Hamilton, M., and McGovern, J. (2024). Strengthening Undergraduate Information Systems Education in an Increasingly Complex Computing Disciplines Landscape. Communications of the Association for Information Systems, 54, 50–65 (doi: 10.17705/1CAIS.05403).

IIBA. (2015). A Guide to the Business Analysis Body of Knowledge (BABOK). International Association of Business Analytics Certification. (2019). Data science body of knowledge.

Joseph, D., Ang, S., Chang, R. H. L., and Slaughter, S. A. (2010). Practical intelligence in IT: Assessing soft skills of IT professionals. Communications of the ACM, 53(2), 149–154 (doi: 10.1145/1646353.1646391).

Kotha, M., Pradhan, S., and Cetindamar, D. (2024). Relevance of Engineering Management Courses to Managerial Skills in the Industry. IEEE Transactions on Engineering Management, 71, 7849–7862 (doi: 10.1109/TEM.2023.3269069).

Lee, D., Trauth, E., and Farwell, D. (1995). Critical skills and knowledge requirements of IS professionals. MIS Quarterly, 19(3), 313–340 (doi: 10.2307/249598).

Li, L. (2024). Reskilling and Upskilling the Future-ready Workforce for Industry 4.0 and Beyond. Information Systems Frontiers, 26(5), 1697–1712 (doi: 10.1007/s10796-022-10308-y).

Lin, A. Y; Parinyavuttichai, N. 2015. "IS Project Management and Risk Escalation: Towards A Dynamic Model". *Australasian Journal of Information Systems*, (19) (doi: 10.3127/ajis.v19i0.929).

Mavromaras, K., Sloane, P., and Wei, Z. (2012). The role of education pathways in the relationship between job mismatch, wages and job satisfaction: A panel estimation approach. Education Economics, 20(3), 303–321 (doi: 10.1080/09645292.2012.672556).

Mitchell, R. K., Agle, B. R., and Wood, D. J. (1997). Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. Academy of Management Review, 22(4), 853–886 (doi: 10.5465/amr.1997.9711022105).

Patfield, S., Gore, J., and Fray, L. (2025). Problematising the 'job-ready graduate' ideal in Australian higher education: New forms of exclusion in the academy. The Australian Educational Researcher. Advance online publication (doi: 10.1007/s13384-025-00849-x).

Poba-Nzaou, P., Uwizeyemungu, S., and Clarke, C. (2020). Patterns underlying required HR and IT competencies: a content and cluster analysis of advertisements of HR manager positions. International Journal of Human Resource Management, 31(16), 2065–2088 (doi: 10.1080/09585192.2018.1424019).

Pouloudi, A. (1999). Aspects of the Stakeholder Concept and their Implications for Information Systems Development. 32nd Hawaii International Conference on System Sciences (doi: 10.1109/HICSS.1999.772776).

Project Management Institute. (2025). Part 1: A Guide to the Project Management Body of Knowledge (PMBOK GUIDE). United States: Project Management Institute. Retrieved August 28, 2025, from https://library.canberra.edu.au/discovery/fulldisplay?docid=cdi_proquest_ebookcentralchapters_5180849_6_36&context=PC&vid=61ARL_CNB:61ARL_CNB&lang=en&search_scope=MyInst_and_CI&adaptor=Primo%20Central&tab=Everything&query=any,contains,alma991004765650603996

Sarker, S., Chatterjee, S., Xiao, X., and Elbanna, A. (2019). The sociotechnical axis of cohesion for the IS discipline: Its historical legacy and its continued relevance. MIS Quarterly: Management Information Systems, 43(3), 695–719 (doi: 10.25300/MISQ/2019/13747).

SEBoK Editorial Board. (2025). The Guide to the Systems Engineering Body of Knowledge (SEBoK) (R. J. Cloutier, Ed.). The Trustees of the Stevens Institute of Technology.

SFIA. (2025). Skills framework for the information age: Vol. Version 9. Skills framework for the information age.

Taylor, S., and Todd, P. 1995a. "Assessing It Usage: The Role of Prior Experience," *MIS Quarterly* (19:4), pp. 561-570.

Taylor, S., and Todd, P.A. 1995b. "Understanding Information Technology Usage - a Test of Competing Models," *Information Systems Research* (6:2), pp. 144-176.

The Joint ACM/AIS IS2020 Task Force. (2020). IS2020: A Competency Model for Undergraduate Programs in Information Systems.

The National Cyber Security Centre. (2021). Cyber Security Body of Knowledge. Human Factors Knowledge Area.

Todd, P., McKeen, J., and Gallupe, R. (1995). The evolution of IS job skills: A content analysis of IS job advertisements from 1970 to 1990. MIS Quarterly, 19(1–27) (doi: 10.2307/249709).

Topi, H., Karsten, H., Brown, S. A., Carvalho, J. A., Donnellan, B., Shen, J., Tan, B. C. Y., and Thouin, M. F. (2017). MSIS 2016: Global Competency Model for Graduate Degree Programs in Information Systems. Communications of the Association for Information Systems, 40, MSIS-i-MSIS-107 (doi: 10.17705/1cais.04018).

Vander Wal, T. 2007. "Folksonomy Coinage and Definition." (vanderwal.net/folksonomy.html, accessed April 6, 2021)

Venable, J., Pries-Heje, J., and Baskerville, R. (2016). FEDS: A Framework for Evaluation in Design Science Research. European Journal of Information Systems, 25(1), 77–89 (doi: 10.1057/ejis.2014.36).

Vom Brocke, J., and Buddendick, C. (2006). Reusable Conceptual Models-Requirements Based on the Design Science Research Paradigm. https://www.researchgate.net/publication/228770897

Vom Brocke, J., Winter, R., Hevner, A., and Maedche, A. (2020). Special issue editorial – Accumulation and Evolution of Design Knowledge in Design Science Research: A Journey Through Time and Apace. Journal of the Association for Information Systems, 21(3), 520–544 (doi: 10.17705/1jais.00611).

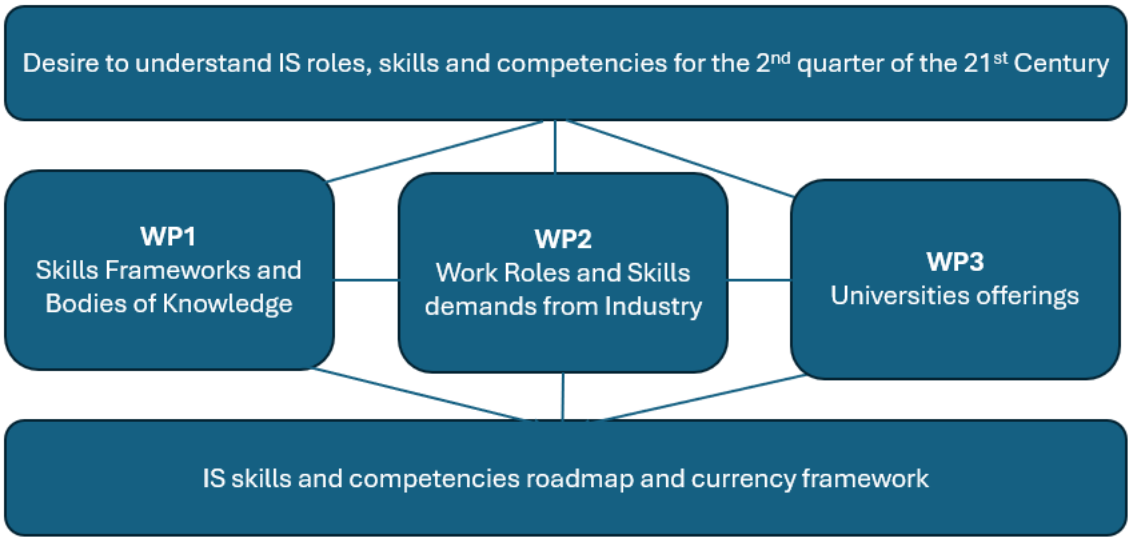
Wieringa, R. (2009). Design Science as Nested Problem Solving. International Conference on Design Science Research in Information Systems and Technology, 1–12 (doi: 0.1145/1555619.1555630).

Appendix A: Bodies of Knowledge and competency frameworks related to Information Systems

#	Acronym	Title	Community
01	BABOK	Business Analysis Body of Knowledge (IIBA, 2015)	IIBA – International Institute of Business Analysis
02	BPM CBoK	Business Process Management Common Body of Knowledge (ABPMP - Association of BPM Professionals International, 2020)	ABPMP Association of Business Process Management Professionals International
03	CBOK	Core Body of Knowledge (ABPMP - Association of BPM Professionals International, 2020)	ACS Australian Computer Society Inc
04	CS BoK	Computer Science Body of Knowledge (Association for Computing Machinery ACM, 2001)	ACM Association for Computing Machinery
05	DS BoK	Data Science Body of Knowledge (International Association of Business Analytics Certification, 2019)	ACM
06	IT BoK	Information Technology Body of Knowledge (ACM et al., 2017)	ACM
07	PM BoK	Project Management Body of Knowledge (Project Management Institute, 2017)	PMI Project Management Institute
08	SE BoK	Systems Engineering Body of Knowledge (SEBoK Editorial Board, 2025)	ACM
09	SFIA	Skills Framework for the Information Age (SFIA, 2025)	SFIA Foundation
10	IS 2010	Curriculum Guidelines for Undergraduate Degree Programs in IS (ACM & AIS, 2010)	ACM/AIS Association for Information Systems

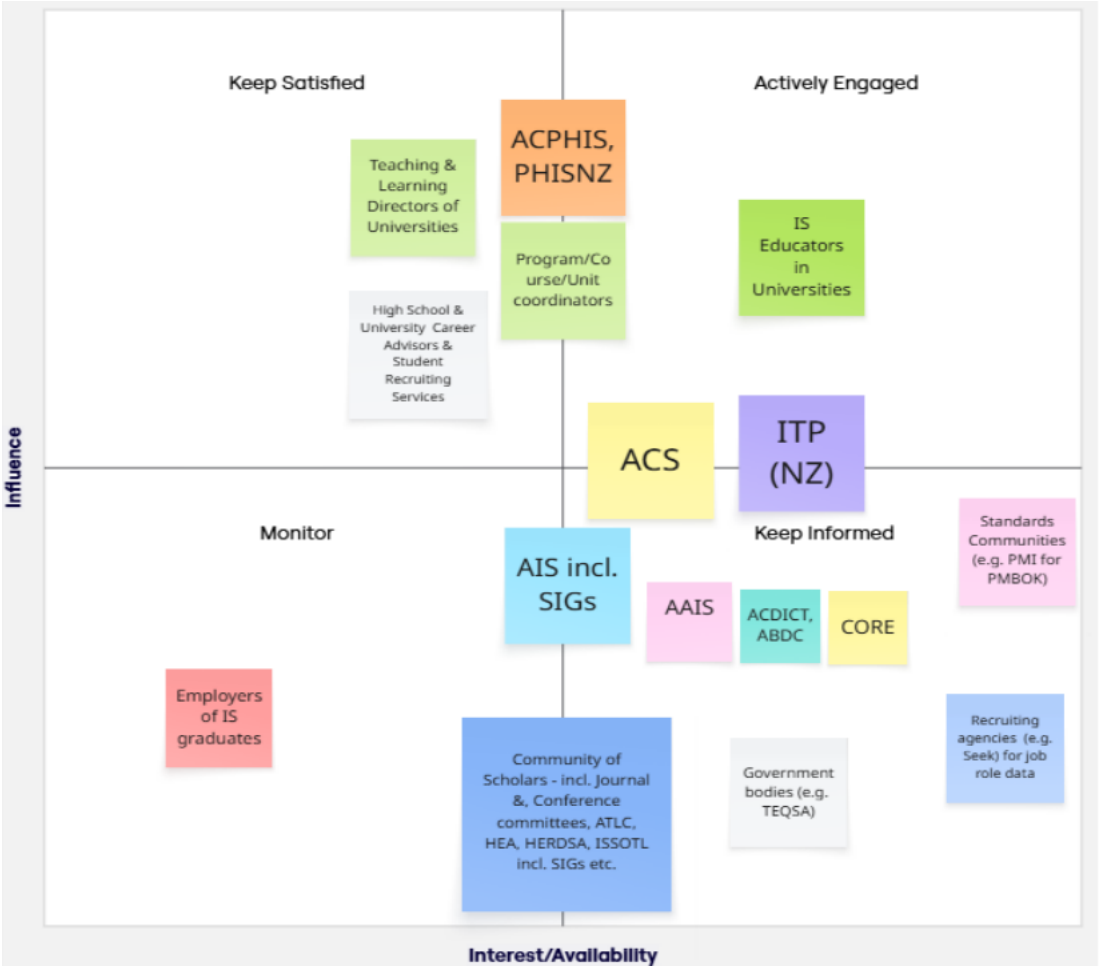
11	MSIS 2016	Global Competency Model for Graduate Degree Programs in Information Systems (Topi et al., 2017)	ACM/AIS
12	IS 2020	A Competency Model for Undergraduate Programs in IS (The Joint ACM/AIS IS2020 Task Force, 2020)	AIS /ACM
13	CC 2020	ACM IEEE Computing Curricula 2020 (ACM et al., 2020)	ACM/IEEE Computer Society
14	CyBOK	Cyber Security BoK (The National Cyber Security Centre, 2021)	The National Cyber Security Centre
15	EU ICT Role Profiles	European ICT Professionals Role Profiles (European Commission for Standardization, 2018)	CEN European Committee for Standardization

Appendix B: Visual overview of the ACPHIS IS Roles and Skills project



Appendix C: Overview of the stakeholder map

The stakeholder map identifies the range of stakeholders anticipated to have an interest in the artefacts developed through this project. It positions these groups according to two dimensions: their level of interest in the artefacts and their influence on artefact design. The quadrant layout illustrates where different stakeholder entities reside, highlighting both their relative salience and the type of engagement they may require. Each quadrant has been outlined to clarify its meaning and to guide how stakeholder input can be managed in the ongoing design process.



Quadrants explained:

Actively Engaged - Participating in the development of this work (e.g. as chief investigators; interviewees for data collection; researchers with stakeholder agency)

Keep Satisfied – The project team will be reporting to them and seeking feedback - these stakeholders can exert power over the project outcomes.

Monitor – For our project team to include in the target environmental scanning efforts.

Keep Informed - For our project team to provide periodical updates and accept feedback. This group may also influence policy and/or strategic direction.

Acronyms used:

AAIS - Australasian Association for Information Systems

ABDC - Australasian Business Deans Council

ACDICT - Australian Council of Deans ICT

ACPHIS - Australian Council of Professors

ACS - Australian Computing Society

AIS - Association for Information Systems

ATLC - Australian Learning and Teaching Council

Employers - CIO forum, Telecommunications forum, AI forum

HEA - Higher Education Academy

HERDSA Higher Education Research Development

CORE - Computing Research and Education Association of Australasia

ISSOTL - International Society for Scholarship of Teaching & Learning

ITP - Institute of Technology Professionals (NZ)

PHISNZ - Professors & Heads of Information Systems (NZ)

Standards governing bodies (e.g. PMI for the PMBOK - Project Management Body of Knowledge)

SIGs - Special Interest Groups

TEQSA - Tertiary Education Quality and Standards Agency

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