

The Problem Architect: Reframing Information Systems and Analytics for the AI-Native Enterprise

A strategic vision for information systems and analytics education

Executive summary

Artificial intelligence is moving from a software feature to a layer embedded across business processes. The strategic opportunity for information-systems and analytics programs is therefore not simply to teach students another AI application. It is to teach them how to design, integrate, evaluate, and govern AI-enabled work. This paper proposes the Problem Architect as a useful organizing concept: a professional who translates ambiguous business problems into measurable objectives, decomposes work, coordinates people/data/models/agents, designs controls, and delivers an evaluated business solution.

Why the role is emerging

Traditional information systems emphasized the alignment of people, processes, data, and technology. Analytics added evidence-driven decision support. Generative AI and agentic systems add a new capability: software can increasingly interpret goals, generate artifacts, use tools, and execute portions of workflows. This shifts the scarce skill from knowing one application to knowing how to compose many capabilities into a reliable system.

What a Problem Architect does

A Problem Architect operates at the boundary of business strategy and technology. The role includes requirements discovery, process modeling, task decomposition, AI/model selection, workflow and integration design, analytics, evaluation, governance, change management, and executive communication. The role is less about being the best programmer or the best prompt writer and more about making the whole solution work.

Competency model

1. Problem framing — objectives, stakeholders, constraints, KPIs.
2. Systems thinking — processes, dependencies, feedback loops, failure modes.
3. Analytics — data literacy, SQL, BI, statistics, experimentation.
4. AI literacy — models, agents, retrieval, tools, strengths and limitations.
5. Orchestration — routing tasks among models, agents, systems, and people.
6. Integration — APIs, automation, enterprise platforms, identity and permissions.
7. Evaluation — quality metrics, testing, benchmarking, monitoring.
8. Governance — privacy, security, provenance, auditability, responsible use.
9. Change leadership — redesigning jobs, processes, and adoption.
10. Communication — translating technical architecture into business value.

A proposed educational pathway

Year/Stage 1: AI literacy and analytics foundations.

Stage 2: Problem framing, process analysis, and data foundations.

Stage 3: AI models, agents, orchestration, automation, and evaluation.

Stage 4: Intelligent-enterprise design and governance.

Stage 5: Capstone with a real organization and executive presentation.

Illustrative architecture

A typical student solution might contain: a business objective at the top; enterprise data and knowledge sources underneath; a routing/orchestration layer that selects models and tools; specialized AI agents for research, analysis, drafting, validation, or monitoring; existing enterprise applications and automation; and human approval gates around consequential decisions. The architecture should include logging, evaluation, security, and escalation from the beginning.

Implications for information-systems and analytics programs

Programs should move beyond tool-specific instruction while retaining practical tool experience. Students should still build with current platforms, but every project should require them to justify tool choice, compare alternatives, measure performance, document risks, and explain how the solution changes an existing process. This makes the curriculum resilient as individual models and vendors change.

Strategic course proposal

A signature elective, AI Orchestration and Intelligent Business Systems, can become the curricular anchor. It can connect analytics, systems analysis, enterprise architecture, automation, AI governance, and business strategy. A later capstone can require students to deliver a governed AI-enabled workflow for an external organization.

Conclusion

The enduring educational goal is not to predict which AI vendor wins. It is to graduate people who can understand a business problem deeply enough to use whatever combination of humans, data, software, models, agents, and controls best solves it. That is the core promise of the Problem Architect concept and a natural next evolution for information systems and analytics education.