

Towards Sovereign AI: Architecting Thailand's National Data Governance and Ethical Legal Frameworks for Digital Independence

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ABSTRACTS

Artificial intelligence (AI) is reshaping economic competitiveness, public administration, and national security. For Thailand, dependence on foreign cloud infrastructure, upstream models, and external data ecosystems creates jurisdictional, operational, and cultural risks, but complete technological independence is neither feasible nor necessarily desirable in globally interdependent AI supply chains. This paper therefore reframes Sovereign AI as strategic digital autonomy: the capacity to make and enforce consequential choices about national data, compute, models, and rules while managing unavoidable external dependencies.

The research asks: How can Thailand combine national data governance, domestic AI capability, Policy-as-Code, and legal-institutional oversight to strengthen strategic digital autonomy without presenting sovereignty as technological self-sufficiency? The study applies qualitative conceptual policy and document analysis to purposively selected academic literature, Thai laws and policy documents, international standards, and authoritative technical or institutional materials available through August 2026. Sources are mapped to four sovereignty dimensions and synthesized into an integrated analytical framework; three public-sector scenarios are used only as structured illustrations rather than empirical tests.

The proposed 'Architecture of Trust' links four mutually dependent layers. National data governance improves provenance, quality, lawful access, and interoperability; domestic compute and localized models expand operational capability; Policy-as-Code translates determinate requirements into versioned technical controls; and legal-institutional oversight authorizes, reviews, audits, and permits challenge to those translations. The framework's original contribution is this explicit causal and accountability chain. Policy-as-Code is treated as a complement to law and human judgment—not as a substitute for statutory interpretation or due process.

Illustrative healthcare, welfare, and national-security scenarios indicate where the framework could reduce selected dependencies and improve traceability, while also revealing risks involving data quality, prompt or policy bypass, automation bias, supply-chain concentration, cybersecurity, and administrative accountability. The paper concludes with a policy roadmap for interoperable governance, domestic capability, accountable rule translation, and rights-preserving review. Because the study is conceptual and document-based, its causal propositions require future validation through implementation cases, stakeholder research, technical testing, and legal analysis.

Keywords: Sovereign AI, data governance, Policy-as-Code, strategic digital autonomy, Scenario-Based Analysis