

Volume I establishes the infrastructural and foundational capacity base of the Global Artificial Intelligence Development and Competitiveness Assessment Framework.

It examines five major dimensions of AI foundational capacity: compute power and hardware resources; data resources and AI model quality; AI system stability and security assurance; the AI developer ecosystem; and sustainable AI compute resources. Across these dimensions, the volume integrates quantitative indicators, validation procedures, grading standards, international benchmarking, and computation methods.

By connecting physical infrastructure, data and model conditions, system resilience, developer capacity, and sustainability, Volume I provides a structured basis for assessing whether an AI ecosystem possesses the resources and capabilities required for scalable, secure, resilient, and sustainable AI development.

About the Four-Volume Series

This four-volume series provides a systematic examination of global AI development, competitiveness, and AI power. Moving from foundational infrastructure and technological capabilities through applications and competitiveness to governance, risk, human capital, frontier indicators, and future-oriented strategic pathways, the series establishes a comprehensive assessment framework for understanding how AI capabilities are built, deployed, measured, governed, and transformed into durable national, institutional, and strategic power in an increasingly competitive global landscape.

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I

Global Artificial Intelligence Development and
Competitiveness Assessment Framework

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Volume I: AI Infrastructure and Foundational Capacity

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