

Powering Australia's Energy & Utilities Sector with Trusted, Governed Data

A practical guide to Australia's new rules — and how the Denodo Platform helps you meet them

Australia's energy & utilities sector is going through its biggest shake-up in a generation. The National Electricity Market serves close to 10 million customers,¹ and more than 4 million small-scale rooftop solar systems have been installed under the Clean Energy Regulator's national scheme.² At the same time, volatile wholesale prices, ageing grid assets, and extreme weather are pushing operators to rethink how they manage and share data.

Compounding the situation, a wave of new rules is arriving. In short: tougher security duties for critical infrastructure,^{3,4} mandatory reporting of ransomware payments,⁶ stronger privacy protections (including new transparency duties for AI-driven decisions),⁷ and a national data exchange for consumer energy resources run by AEMO.^{8,9}

Meeting these obligations, while maintaining reliable operations, requires a data architecture built for distributed, time-sensitive work; not one that forces every obligation through a single data repository.

SOLUTION

The Denodo Platform for regulatory compliance and data interoperability in energy & utilities

INDUSTRY

Electricity, gas, water, and renewable energy operators, networks, retailers and market participants in Australia and New Zealand

PRODUCT OVERVIEW

The Denodo Platform provides a centralized data access layer that unifies distributed data in real time — without replication. With its universal semantic layer and rich metadata, the Denodo Platform provides consistent business meaning, making it easier for users to find, understand, and trust the available data, and equipping AI applications with AI-ready data. Denodo's customers worldwide deliver business- and AI-ready data in a fraction of the time and with 10x better performance than lakehouses and other mainstream data platforms alone.

The New Rules Shaping Energy & Utilities Data

Australia's regulatory landscape is rapidly expanding, raising the bar on how utilities manage, govern, and share data. Four overlapping obligations now define what every Australian energy and utilities operator must do:

REGULATION	WHO'S AFFECTED	KEY DATE / STATUS	WHAT'S REQUIRED
SOCI Act + CIRMP Rules 8–11^{3,4}	Electricity, gas, water, and liquid fuel operators	In force; 2025 update brings business-critical data storage inside the CIRMP ⁴	Register critical assets; cyber-incident reporting (12h significant / 72h otherwise); annual board-approved CIRMP covering cyber, personnel, supply chain, and physical hazards, aligned to a recognised framework such as AEMO's AESCSF. ⁵
Cyber Security Act, 2024	SOCI operators and businesses with annual turnover above \$3 million	Commenced 30 May 2025	Report any ransomware or cyber-extortion payment within 72 hours. ⁶
Privacy and Other Legislation Amendment Act, 2024⁷	All APP entities (organizations and Commonwealth agencies)	Statutory right to sue: 10 June 2025 Automated decision transparency: 10 December 2026	New statutory right to sue for serious invasions of privacy. Explain how AI and other automated systems use personal information in decisions that significantly affect people. Penalties up to the greater of \$50 million, 3× the benefit gained, or 30% of turnover during the breach period.
AEMO CER Data Exchange + National CER Roadmap	AEMO, networks, retailers, CER aggregators, and market participants	Roadmap endorsed July 2024 Industry co-design concluded May 2025; broader access targeted May 2027 ⁸ In-depth review 2027 ⁹	Securely share verified CER data — rooftop solar, batteries, EVs and network limits including dynamic operating envelopes. Aligns to the Roadmap's 16 reforms across consumers, technology, the market, and power-system operations. ⁹

What These Rules Mean in Practice

Across SOCI, the Cyber Security Act, Privacy Act reforms, and the CER Data Exchange, organizations are expected to:

- Maintain secure, reliable, and auditable data environments.^{3,4}
- Provide clear data lineage and traceability.³
- Support timely incident reporting and response.^{3,6}
- Enable the transparent use of data in automated decisions.⁷
- Share data securely across market participants.⁸

This shifts expectations from periodic reporting to ongoing operational capability.

Why This Matters Now

Three forces are converging to make this an immediate priority for Australian utilities:

- **Regulatory scrutiny is increasing** — across resilience, governance, and AI transparency, with overlapping obligations under SOCI, the Cyber Security Act, the Privacy Act, and the CER Data Exchange.
- **System complexity and distributed energy are accelerating** — millions of consumer energy resources, new market participants, and edge devices are reshaping how data is generated, shared and consumed.
- **Modernization cannot disrupt operations** — utilities need to evolve their data foundations while continuing to run grids, markets, and customer services, without interruption.

Together, these pressures create an immediate need to modernise data management: quickly, but without large-scale replatforming.

The Data Management Challenges of Australia's Energy & Utilities Industry

Energy & utilities organizations operate in an environment defined by operational complexity. Data is abundant but fragmented across:

- Operational technology systems (SCADA, DMS, EMS, control centers), and they are often restricted from large-scale replication on cyber-security and SOCI grounds
- AEMO market systems, wholesale market feeds, and Market Settlement and Transfer Solution (MSATS) data
- Asset registers, GIS, and maintenance systems across long-lived network infrastructure
- DER orchestration, virtual power plant platforms, and dynamic operating envelope engines.
- Customer, billing, and retail platforms subject to Privacy Act obligations, plus ESG and emissions data required for regulatory and investor reporting

An article from CFOtech Australia has highlighted that fragmentation remains a principal blocker to operational and regulatory outcomes, despite heavy investment in digital tools.¹⁰

The Gaps Presented by Centralized Data Repositories

Data lakes and lakehouses are excellent for bulk analytics, but they weren't built for real-time, distributed, sovereignty-sensitive work. Common gaps include the following:

- **They cannot support real-time operations.** Data must be ingested and curated before use, delaying grid and dispatch decisions and CIRMP risk monitoring.³
- **They can cause data sovereignty conflicts.** Offshore replication of sensitive operational data is flagged as a material risk under the CIRMP Rules.⁴
- **Using them, reporting evidence is hard to produce.** CIRMP reports, CER Data Exchange sharing, and Privacy Act transparency need lineage and access evidence, for which lakehouses may require significant additional tooling.⁸
- **Using them, AI-driven decisions are harder to explain and audit.** The new automated-decision transparency duties need a clear audit trail of what data informed each decision.⁷

Rethinking the Data Foundation: From Pipelines to a Business Semantic Layer

Traditional data architectures, built to support data movement and replication, struggle with the dynamic needs of modern operations and AI. They depend on long pipelines, repeated copies, and rigid platforms that pull data toward a single physical store. The result is **data gravity**: a form of dependency that constrains agility and undermines data sovereignty, which are exactly the qualities Australian regulators are now putting under pressure.

A different approach called **semantic unification** flips the model. Instead of always having to move data before they can analyze it, organizations centralize a **business semantic layer** across distributed systems. This approach reduces dependency on data movement and enables:

- Unified access without data movement or replication
- Centralized governance across distributed systems
- Timely, contextualized data delivery.
- Reduced migration overhead: AI and analytics both need to access data in place, so existing investments are preserved.

THE DENODO PLATFORM: AI-READY

The Denodo Platform provides seamless semantic unification across operational, market, enterprise, and cloud data: bridging fragmented environments and the people, applications, and AI agents that consume them. It delivers trusted, real-time, governed data through a **universal business semantic layer**, while the underlying engine provides built-in capabilities for query optimization, workload management, and intelligent caching, plus API-based data services for seamless integration with digital and AI systems, without architectural disruption.¹¹

This approach aligns directly with the priorities of energy and utility organizations around interoperability, data sovereignty, and cross-organization collaboration, the same priorities the new regulations are designed to enforce.

How Denodo's Business Semantic Layer Fits

The Denodo Platform unifies data across operational technology (OT), market, enterprise, and cloud systems through a single universal business semantic layer, without forcing copies into one central store.¹¹ Governance, security and lineage are built in, so operators can meet Australian regulatory obligations while keeping the agility they need.



One semantic layer across every source

Denodo connects in real time to SCADA, AEMO market systems, smart meters, DER platforms, asset registers, CIS, ERP and ESG systems, exposing them through reusable, governed data products; because of the Denodo Platform's universal semantic layer, these data products will have consistent business definitions¹²



Central control across hybrid environments

Because the semantic layer is abstracted from the individual data sources, it provides one place from which to apply privacy, cyber, and data-sovereignty policies across on-premises, hybrid, private and air-gapped environments, supporting CIRMP risk mitigation and Privacy Act security duties.



Faster access, ready when incidents happen

Standardized semantics enable faster, governed access to data in support of the response timelines required for SOCI incident reporting, 72-hour ransomware reporting, and grid operations.



Easier regulatory reporting

Unified access, lineage, and audit trails can support CIRMP annual reporting, AEMO market and compliance reporting, NGERs and ESG disclosures, and Privacy Act notifications.



Role- and attribute-based access

Access aligns to the verified, role-based sharing model required by AEMO's CER Data Exchange, and to CIRMP personnel-hazard controls.



Security policies applied at the data layer

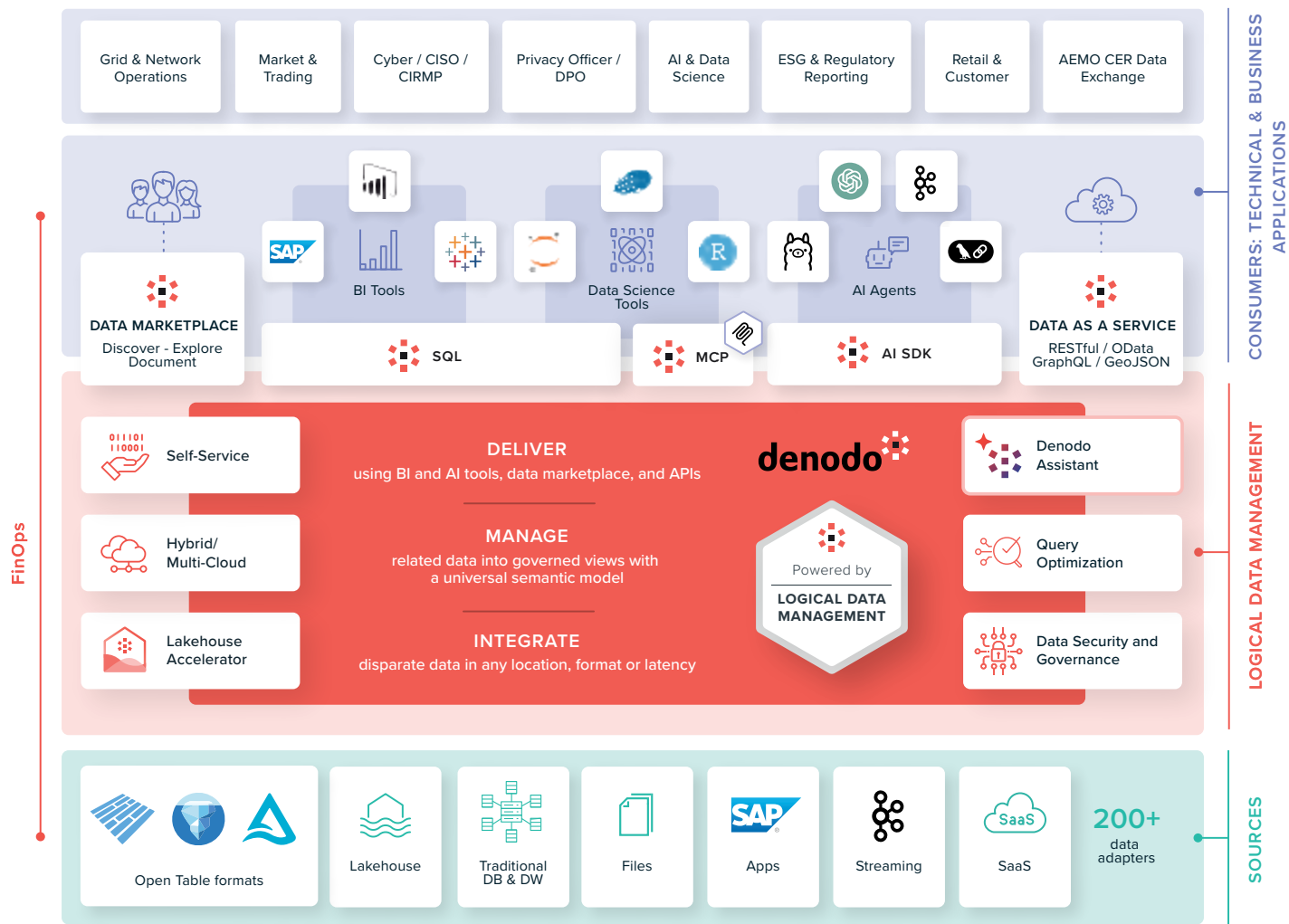
Masking, tokenization and encryption are applied at the semantic layer, supporting Privacy Act security duties and CIRMP data-integrity controls.



The bottom line: Denodo reduces the cost, complexity and risk of meeting regulatory obligations, without large-scale data movement or replatforming.

How Denodo Helps Meet Regulatory Obligations

The diagram below shows how Denodo’s business semantic layer (known as ‘logical data management layer’ in technical terms) unifies operational, market, enterprise and cloud data with standardized semantics, so that it can then be delivered as trusted and governed data, to teams and systems that need it, in the delivery mechanism of choice.



THE DENODO PLATFORM ARCHITECTURE

Impact on Key Metrics

Beyond meeting the new obligations, a universal semantic layer moves the needle on the metrics that matter most to compliance posture, cost, and operational responsiveness.

CATEGORY	KEY METRIC	DIRECTION	WHY IT MATTERS
Compliance	Time to Report	Decrease	Supports SOCI incident reporting (12h significant / 72h otherwise) and 72-hour ransomware-payment reporting under the Cyber Security Act 2024 — reducing exposure to non-compliance penalties. ^{3,6}
Efficiency	Data Provisioning Lead Time	Decrease	Reusable, governed data products replace bespoke pipelines — typical delivery shifts from weeks to days.
Financial	Total Cost of Ownership	Decrease	Less data duplication and movement reduces storage, ETL, and cloud egress costs.

Security	Data Exposure Surface	Decrease	Masking, tokenization, and encryption applied at the semantic layer reduce the surface area for Privacy Act breaches. ⁷
Reliability	Grid Decision Latency	Decrease	Faster, governed access to SCADA, DER, and market data, supports response to grid instability and outages.

Benefits by Role

ROLE	DENODO PLATFORM BENEFITS
Grid and Network Operations	Real-time access to SCADA, asset health, network topology, and weather data through a single governed layer. Supports outage management, hosting-capacity analysis, and DER coordination, without requiring OT data replication.
Market and Trading Teams	Timely, governed access to AEMO market data, generation availability, fuel, and renewable forecasts for informed bidding and dispatch optimization — with full lineage for market surveillance and internal control.
CIRMP Owner / Cyber / CISO	Identifies and manages risks to data storage systems holding business-critical data (2025 CIRMP amendments). Supports annual board-approved reporting under SOCI Act Section 30AH, alignment with AESCSF, and rapid incident-reporting evidence.
Privacy Officer / DPO	Data marketplace with PII discovery, semantic masking, lineage to support APP 1 transparency, APP 1.7–1.9 automated decision-making disclosures, APP 11 security, and auditable consent tracking.
AI, Analytics, and Data Science	AI-ready, business-ready data products with Denodo Assistant natural-language querying — accelerating model development for forecasting, churn, fraud, and DER optimization while keeping automated decision inputs fully traceable.
Regulatory Reporting and ESG	Unified emissions, fuel, water, and generation data joined with financial context for NGERS, Safeguard Mechanism, and investor ESG reporting — delivered without duplicative ETL processes.
Retail and Customer Operations	360° view across usage, tariff, DER participation, and service history to support accurate billing, targeted offers, and the customer-facing elements of the National CER Roadmap — within Privacy Act guardrails.

Customer Examples

VTTI — STREAMLINED DATA ACCESS ACROSS A GLOBAL ENERGY INFRASTRUCTURE

VTTI is a global energy infrastructure company operating storage terminals and logistics assets across multiple regions. As its operations expanded, VTTI faced challenges integrating data distributed across terminal management systems, asset databases, trading platforms, and enterprise applications. Operational and reporting teams required consistent access to near-real-time data, but fragmentation across systems made this difficult, particularly when combining operational data, such as jetty information and vessel movements, with enterprise data.

VTTI implemented the Denodo Platform as a business semantic layer to integrate data across these systems, enabling governed, consistent access without requiring large-scale data movement.

VERIFIED IMPACT AND METRICS

1. Operational Quality: 3.6% fewer faulty customer-service orders per month through improved data consistency and integrity
2. Speed-to-Insight: Approximately two weeks to create and publish a data model integrating jetty and vessel data into Power BI, compared with an estimated two months using alternative approaches.
3. Operational Efficiency: Integration of operational, maintenance, and financial data enabled preventive maintenance and identification of high-risk equipment scenarios

The same capabilities that enabled VTTI to integrate distributed data sources, improve data quality, and support operational analytics align with the needs of Australian energy operators for governed data access, interoperability, and operational resilience, including requirements for data integrity, traceability, and secure data access under SOCI and Privacy Act obligations.

TOP-25 FORTUNE GLOBAL 500 ENERGY PRODUCER

A Top-25 Fortune Global 500 energy producer — one of the “seven supermajors” — faced challenges managing data across large-scale projects in oil and gas exploration and production, as well as new energy initiatives including wind and solar. Data was distributed across operational systems and multiple electronic document management systems (EDMS) spanning on-premises and public cloud environments. This fragmentation made it difficult for project teams to access consistent data and metadata across project phases.

The company deployed the Denodo Platform as a logical data management layer to integrate data across operational, enterprise, and document systems, enabling unified and governed access across its hybrid environment.

VERIFIED IMPACT AND METRICS

1. Performance Improvement: Query times reduced from approximately 30 minutes to around 5 minutes through optimisation and caching.
2. Data Accessibility: Enabled secure access to data for end users via tools such as Power BI, while maintaining cybersecurity controls.
3. Standardisation and Governance: Established a common data model supporting consistent data definitions and governance across 15 technical domains.
4. Metadata Integration: Aggregated metadata across multiple EDMS, enabling users to query structured data alongside document-based information across project phases.

These capabilities demonstrate how a logical data management approach can support consistent governance, improved performance, and scalable data access across complex, hybrid energy environments, aligning with requirements for auditability, governance, and secure data access under SOCI and Privacy Act frameworks.

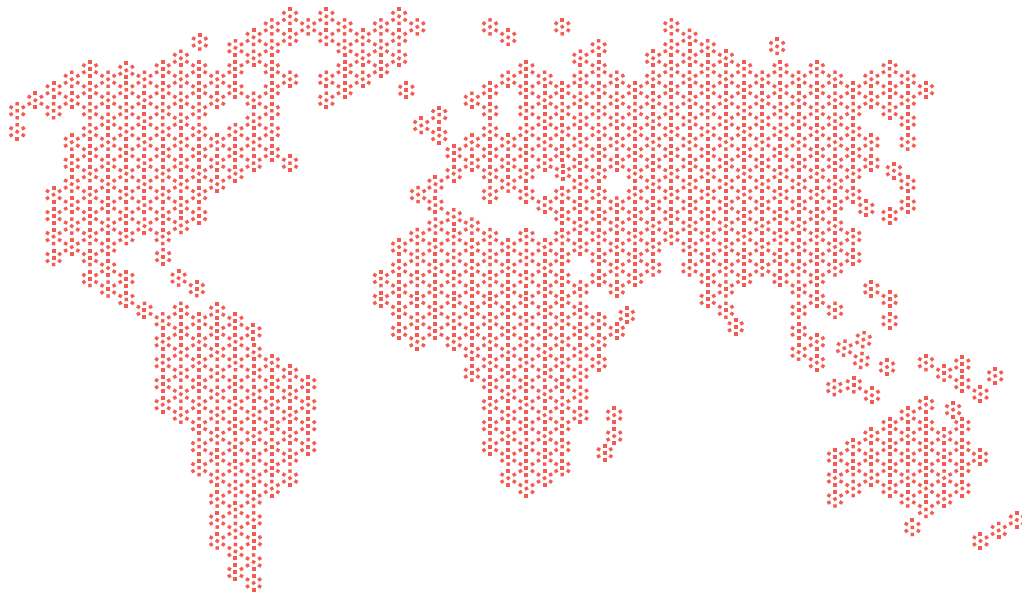
Why Denodo Meets Australia's Needs

Denodo's universal semantic layer suits the operational, regulatory, and architectural realities that Australian utility organizations face every day.

THE DENODO PLATFORM:

Runs on-premises, in hybrid, private cloud, and air-gapped systems, aligned with SOCI data-sovereignty requirements.³

- Is deployed in a loosely coupled architecture, with no need to force OT, market, and enterprise data into one physical platform, while still enabling fast, seamless access across the entire data estate.
- Enables both real-time and batch data integration in one governed layer, while supporting fast incident reporting.^{3,6}
- Moves or copies data only when needed, consistent with Privacy Act data-minimization.⁷
- Supports role- and attribute-based access, semantic policies, and full lineage capture, aligned with CIRMP controls and the CER Data Exchange.^{4,8}
- Offers the Denodo Data Marketplace and Denodo Assistant for natural-language discovery, which can help in supporting the AI transparency duties from December 2026.⁷



Denodo is a global leader in data management, powering trustworthy AI agents and applications. The Denodo Platform, an award-winning logical data management solution, transforms enterprise data into reliable insights for AI, analytics, and self-service initiatives. Organizations worldwide use Denodo to deliver AI-ready, business-ready data in a fraction of the time compared to traditional data lakehouses, achieving up to 4x faster time-to-insight, 345% ROI, and 10x better performance. For more information, visit [denodo.com](https://www.denodo.com).

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