

Motivation and Urgency for Semantic Interoperability



The persistent problem of data siloes in industry

Widespread Data Silo Challenges

Data siloes exist across technical, organizational, and semantic levels, fragmenting critical industry information.

Consequences of Data Fragmentation

Data silos cause inefficiencies, rework, misunderstandings, and erode trust in data-driven decisions.

Need for Semantic Interoperability

True interoperability requires shared understanding through common semantic foundations beyond simple data exchange.

Call for Coordinated Action

Collective efforts and implementor communities focusing on semantics and ontologies are essential to overcome siloes.

The background of the slide features a complex, abstract graphic. It consists of a grid of binary digits (0s and 1s) in various shades of blue and green. Overlaid on this grid is a network of glowing blue lines and dots, resembling a digital or neural network. The overall aesthetic is high-tech and futuristic.

Why AI and competitiveness make semantics urgent now

Importance of Structured Data

AI systems require trustworthy, well-structured, and context-rich data to effectively search, summarise, reason, and automate processes.

Role of Semantic Structures

Explicit semantic structures and ontologies improve language model performance by capturing domain-specific meaning and relationships.

Industrial Competitiveness Needs

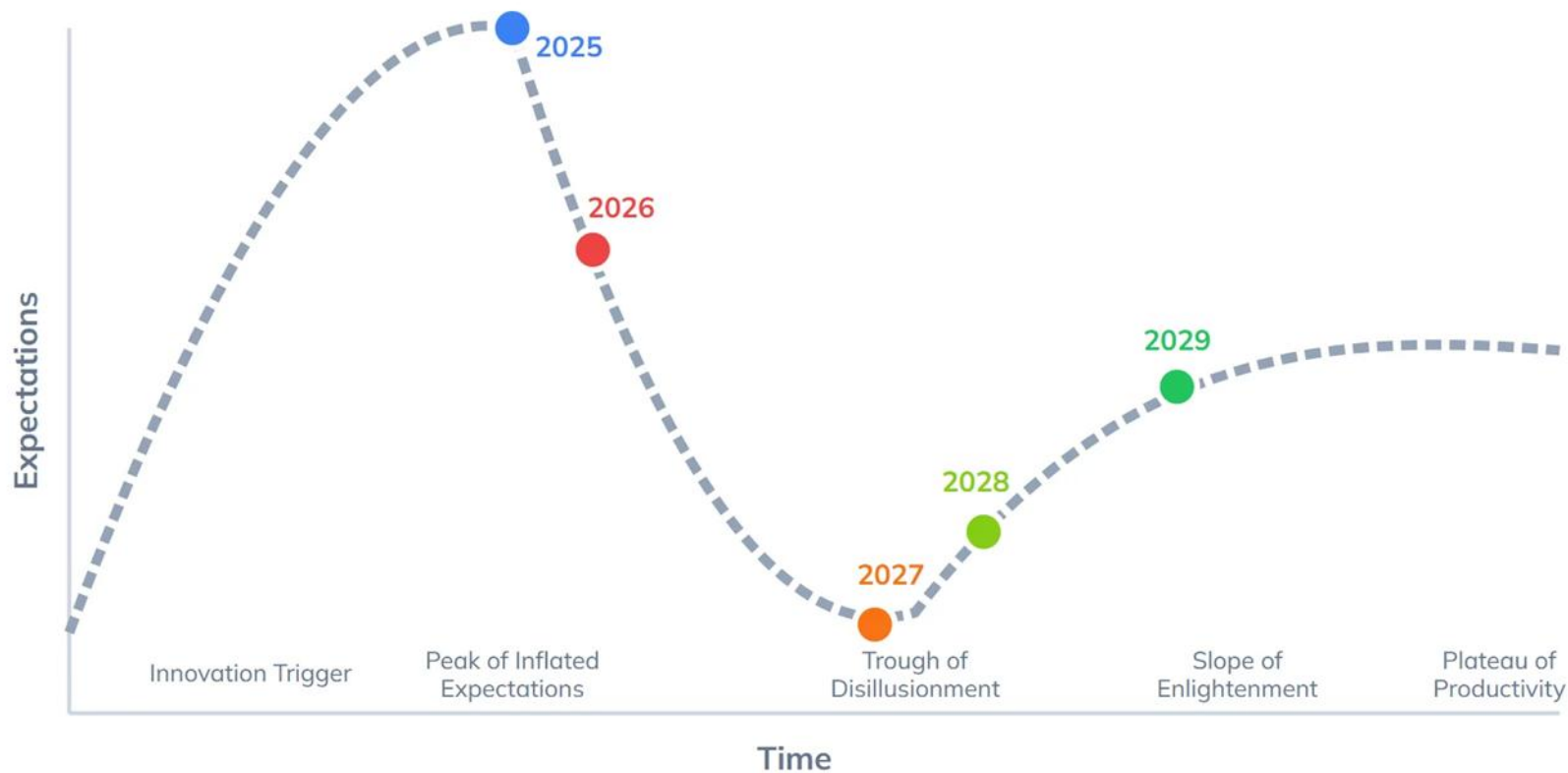
Efficient data exchange, digital twins, and regulatory reporting are critical for scaling AI solutions and maintaining industrial competitiveness.

Urgency of Implementation

Converging technological readiness and business pressure make coordinated semantic adoption vital to avoid duplicated efforts and gain advantages.

AI Agents Outlook (2025-2029)

Projected trajectory on the Gartner Hype Cycle.

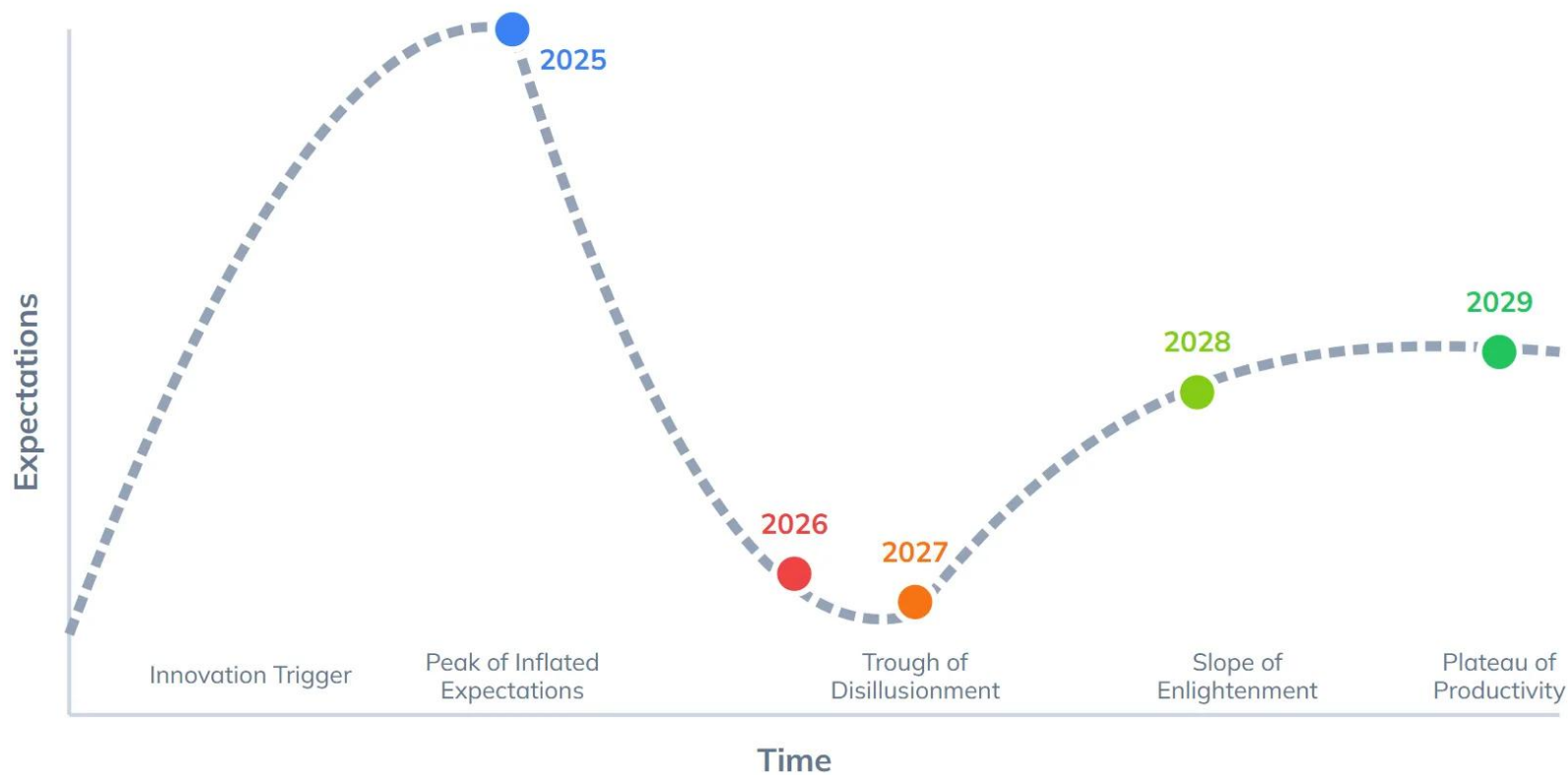


After peaking in 2025, AI Agents fall into the **Trough of Disillusionment** due to reliability and safety concerns. A slow recovery begins, with agents starting to climb the **Slope of Enlightenment** by 2029.

● 2025 ● 2026 ● 2027 ● 2028 ● 2029

AI-Ready Data Outlook (2025-2029)

Projected trajectory on the Gartner Hype Cycle.

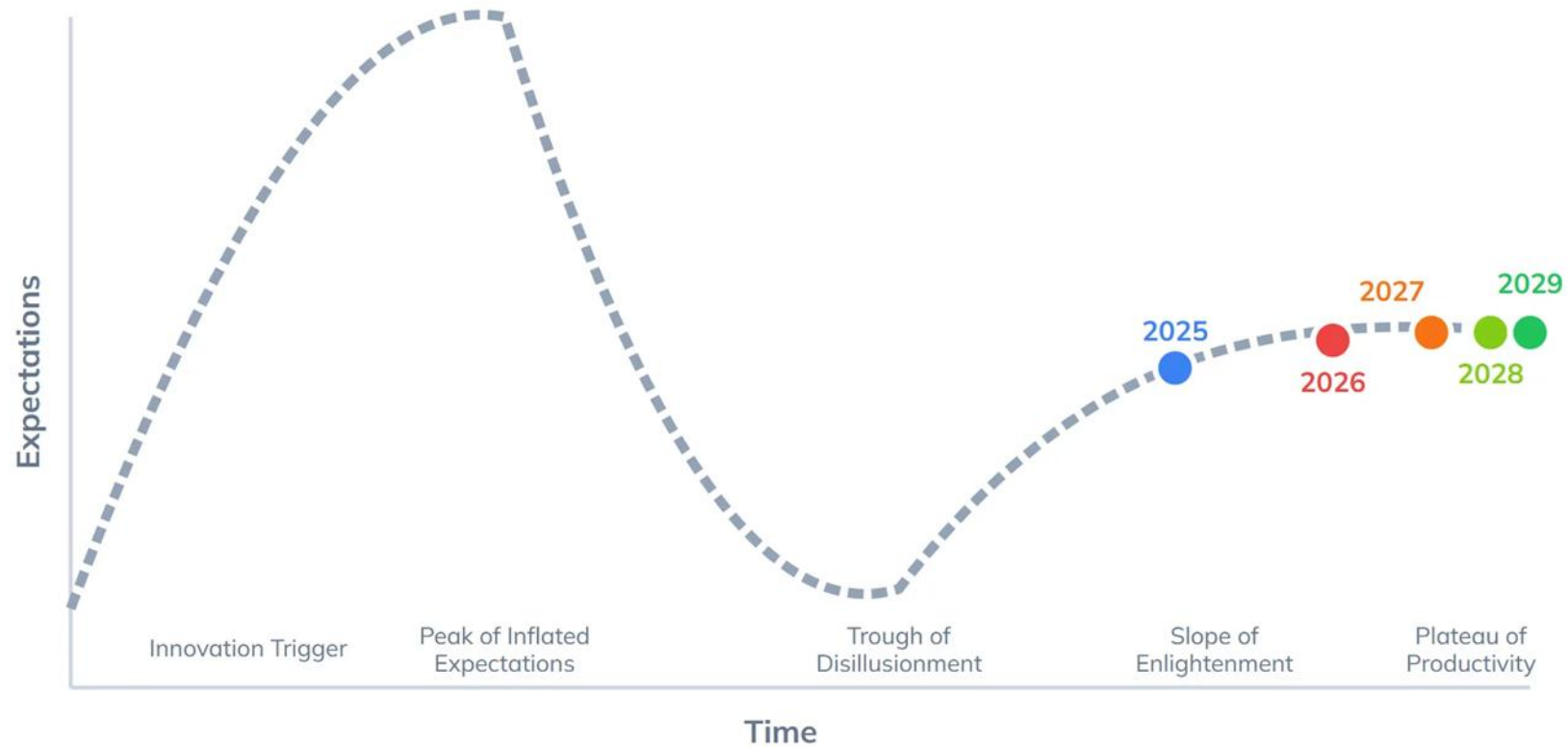


After peaking in 2025, AI-Ready Data falls into the **Trough of Disillusionment** as data management proves difficult. It recovers as processes mature, reaching the **Plateau of Productivity** by 2029.

● 2025 ● 2026 ● 2027 ● 2028 ● 2029

Knowledge Graphs Outlook (2025-2029)

Projected trajectory on the Gartner Hype Cycle.



Already on the **Slope of Enlightenment** in 2025, Knowledge Graphs quickly mature to the **Plateau of Productivity**. By 2029, they become a pervasive, foundational technology for enterprise AI and data fabrics.

● 2025 ● 2026 ● 2027 ● 2028 ● 2029

Learning from Proven Implementor Forum Models



Key lessons from the RDS Wind Implementor Forum

Core Operating Principles

The forum focuses on transparency, shared goals, and progress for successful implementation.

Forum Organisational Structure

Includes steering committee, working groups, secretary function, and centralised document library for guidance.

Broad Ecosystem Participation

Implementation requires collaboration among asset owners, OEMs, suppliers, software vendors, integrators, standards bodies, and researchers.

Collaborative Implementation Model

Structured collaboration, shared ownership and agreed roadmap convert standards into practical, scalable industry solutions. The importance of USE CASES!

The Proposal: A Cross-Industry Implementor Forum



Purpose and scope of the Implementor Forum for semantics and ontologies

Cross-Industry Collaboration

The forum brings together multiple industries to share knowledge and avoid isolated semantic reinventions.

Real-World Implementation

Focuses on moving semantic standards and ontologies from concepts into operational environments for practical use.

Shared Understanding and Flexibility

Encourages common approaches and clear mappings that reduce fragmentation while supporting diverse solutions.

Accelerating Digital Transformation

Acts as a catalyst to scale interoperability and advance digital changes across industrial ecosystems.

What the Forum Will Do in Practice

Six missions: from use cases to demonstrators

Industrial Use Cases Collection

Collect and prioritise real industrial use cases like digital twins

Semantic Requirements Development

Translate use cases into shared semantic requirements covering governance, identifiers, and system integration.

Vendor Engagement

Engage software vendors to align product roadmaps with industry needs for embedded semantic capabilities.

Knowledge Base Creation

Establish a shared knowledge base with guides, templates, and onboarding materials for implementors.

Feedback Loop to Standards

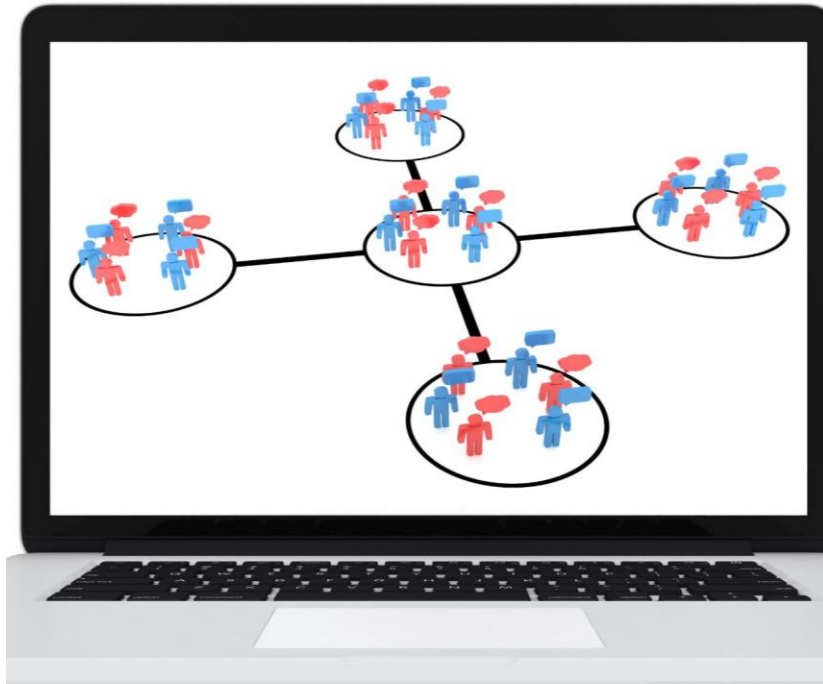
Create structured feedback loops to improve standards and ontologies based on real-world implementations.

Demonstrators for Interoperability

Support demonstrators proving interoperability across systems to build confidence and accelerate adoption.

Operating Model and Governance

A lightweight structure to create momentum



Steering Group Leadership

The steering group sets priorities, scope, governance, and ensures cross-industry strategic alignment.

Secretariat Support

A small secretariat handles coordination, communication, onboarding, and documentation to maintain momentum.

Focused Working Groups

Working groups address specific themes with clear objectives and deliver tangible outputs.

Shared Resources and Meetings

A shared repository and regular virtual meetings promote transparency, continuity, and relationship building.

Yearly Summit + 2 virtual gatherings between

Call to Action and Vision of Success



Building a community to achieve shared meaning

Community Participation

Success depends on active participation from asset owners, suppliers, integrators, software vendors, SDOs, researchers, and domain experts.

Shared Goals and Outcomes

Measuring success by shared use cases, reusable patterns, and vendor alignment after one year.

Collective Knowledge Building

Organizations gain scalable interoperability by drawing on collective knowledge and trusted relationships.

Launching pad for Joint Industry Projects (JIP)

The community can bring industry sectors together for “heavy duty” challenges and deliverables in proposing and getting JIPs off the ground.