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BUILDING A FUTURE-PROOF BUSINESS WITH KNOWLEDGE GRAPHS



In an increasingly complex and data-driven business landscape, the dual imperatives for C-level leaders are clear: optimize existing operations and drive innovation. At the same time, the pressure to keep up with the fast pace at which industries and business environments are changing, along with the swift advancements in artificial intelligence and machine learning applications, is at an all-time high.

How do you maintain a competitive edge and solidify your place as an industry leader in a rapidly-changing future?

The answer lies in understanding your company's history and inner workings, industry insights, current market sentiment and the ever-changing demands of your customers. And the real key is consolidating this information into an accessible

contextualized and sustainable tool—ultimately, transforming it into actionable knowledge.

We propose a multi-faceted approach that combines technological innovation with the power of human expertise that holds specialized knowledge. At the heart of this strategy is the semantic knowledge graph.

Knowledge graphs are a valuable technology that unlock the hidden potential of your data and internal expertise by organizing it in a way that mirrors real-world relationships. They allow for more efficient knowledge management and analysis and discovery, leading to better-informed decisions and innovation, all of which are required for a business to stand the test of time.



CRITICAL DECISIONS RELY ON CONNECTED, CONTEXTUALIZED & CONTINUOUS DATA

Every decision made in business needs to be informed, data-driven and carefully thought-out because a single choice can have a lasting and paramount impact on the trajectory of your company, as well as have repercussions on company operations, time and costs. That's why data is one of the most valuable assets an organization can possess. Within it lies knowledge that can make a material difference when it comes to strategic decision-making, discovering new opportunities or predicting roadblocks that can make or break a business. However, while data is critical, simply having an abundance of it does not inherently assure its quality or usability—being able to wield this data and transform it into actionable knowledge is just as, if not more, important.

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“Effective decision making in today's complex and disrupted business environments must be connected, contextual and continuous to drive good outcomes.”

Gartner, 2021

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„By 2023, graph technologies will facilitate rapid contextualization for decision making in 30% of organizations worldwide.“

Gartner, 2021

Knowledge graphs enable 360° knowledge management by connecting data from all sources and enriching them with contextual meaning, resulting in the elimination of data silos, deeper analysis and insights, and significantly reducing time and costs spent on data retrieval.

Data made accessible through knowledge graphs promotes an increase in data literacy and company-wide collaboration and knowledge-sharing and enables deeper insights by uncovering hidden relationships and trends that would not otherwise be found by reviewing raw data alone. When data is contextualized, consumable and connected, it fosters smarter decision-making and creates the perfect environment for innovation to flourish.

INNOVATE OR RISK GETTING LEFT BEHIND

Organizations willing to evolve and adapt to technological shifts are better positioned to forge ahead as leaders in their industry and avoid obsolescence, a fate destined for companies that are slow to change or resist it entirely.

According to a report by Gartner, “By 2025, 30% of enterprises will have implemented an AI-augmented development and testing strategy, up from 5% in 2021.”

As more companies are looking to integrate AI/ML solutions in their operations, it’s apparent that knowledge graphs are a necessary complement to these technologies. The structure and explicit

relations defined within knowledge graphs enhance the trustworthiness, explainability and accuracy of AI solutions, for example, LLM-driven applications. Knowledge graphs can serve as a source of truth for LLMs, which are often vulnerable to answering bias and hallucinations—i.e., when results generated from a question-answering tool, for example, seem accurate but are incorrect or made up entirely.

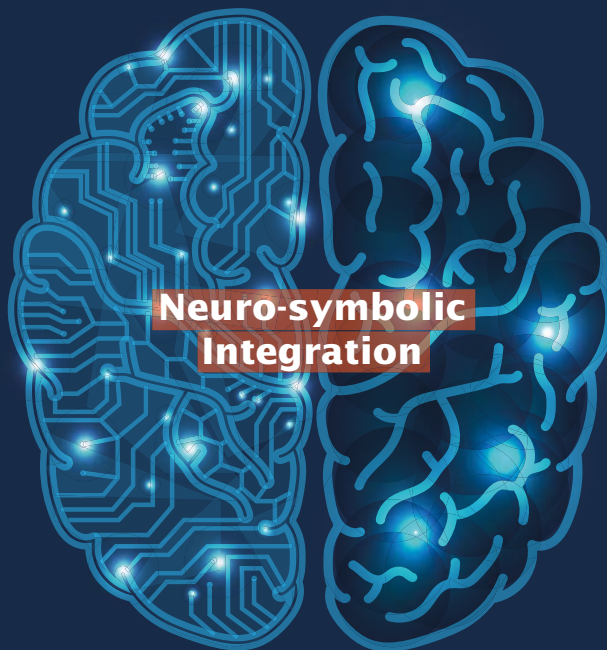
Knowledge graphs are also a time, energy and cost-effective foundation for other AI-powered solutions, which can cost up to millions of dollars for companies looking to leverage their enterprise data and acquire higher levels of security.



Symbolic AI

Knowledge Graphs

Explicit knowledge
Symbolic reasoning
Interpretability & explainability



Neural AI

LLMs

Implicit, general knowledge
Artificial neural networks
Black-box & latent semantics

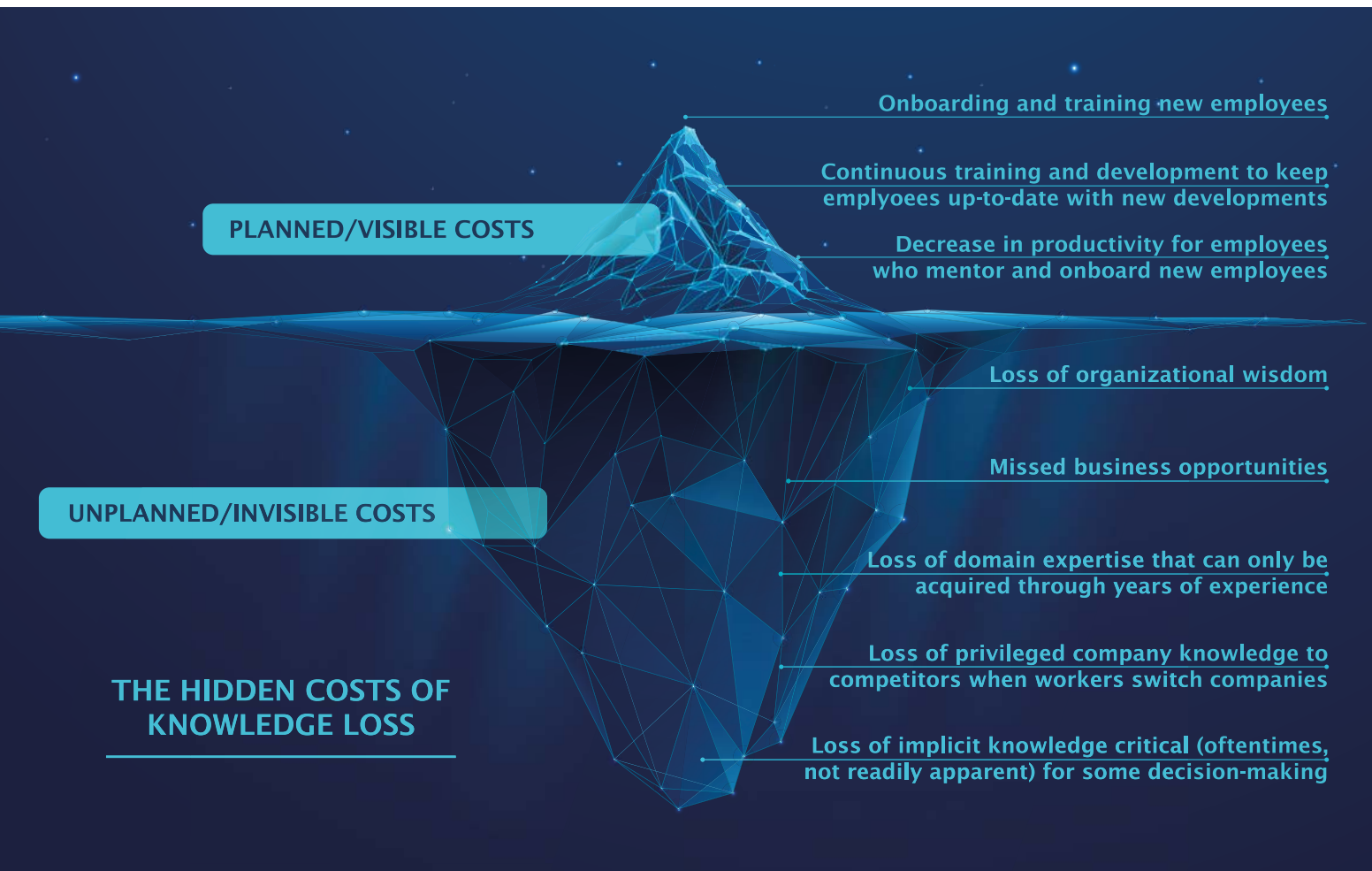
Explain & Train

Augment & Complete

Build Trust

**HARNESSING THE SYNERGY
OF NEURO-SYMBOLIC AI**

THE HIDDEN COST OF KNOWLEDGE LOSS



When workers exit a company, change departments or go on leave, the knowledge and experience they've acquired over time often leave with them. Retaining this valuable insider knowledge is vital to an organization's success as it ensures efficiency, maintains a competitive advantage, fosters innovation and results in substantial cost-savings, among many other things. As your workforce is never static but constantly in flux, it's even more critical to capture this expertise and wisdom before it becomes lost forever.

In 2004, the International Data Corporation (IDC) estimates that Fortune 500 companies lose roughly estimated \$31.5 billion a year

by failing to share knowledge. Things have not improved since then: A recent study by Panopto found that small organizations report up to \$2.7 millions in productivity losses due to inefficient knowledge sharing; for larger organizations, the losses can add up to \$265 million per year.

The semantic model within a knowledge graph enables the capturing of specialized knowledge and makes it accessible for years to come. Even after domain experts leave or organizational changes take place, the semantic model preserves and safeguards this wisdom, which can be then leveraged to drive growth and innovation.

REALIZING TANGIBLE BUSINESS OUTCOMES THROUGH KNOWLEDGE GRAPHS

The deployment of knowledge graphs translates into tangible business outcomes that range from operational excellence to the strategic foresight required to stay at the forefront of your industry. Knowledge graphs can help your organization:



FAIR-ify data

Boost findability, accessibility, interoperability and reusability of data by providing a common, contextualized view of all relevant data sources.



Accelerate your innovation pipeline

Streamline your innovation and development cycles for new services by significantly reducing the time required to find, interpret and connect data for each new use case.



Monetize data assets

Transform digital objects and data into machine-actionable knowledge and reduce the time needed to make data assets consumable.



Make informed, explainable decisions

Benefit from advanced data analytics and AI-driven insights provided by semantically rich, machine-interpretable data.



Retain business-relevant knowledge

Mitigate the impact of knowledge attrition and reduce dependencies on hidden knowledge by capturing domain-specific insights together with your data.



Increase productivity

Support employee's day-to-day with more accurate, precise and highly reliable insights, boosting efficiency and productivity.



Reduce data management costs

Significantly cut costs for data cleaning and data integration by developing reusable semantic models that rely on domain expertise and truly eliminating data silos.



Build organizational resilience

Empower your enterprise to adapt swiftly to market shifts and business uncertainties by quickly propagating changes across the entire organization.

START YOUR KNOWLEDGE GRAPH JOURNEY

Knowledge graphs provide an unprecedented opportunity to maximize human expertise and technology. They enrich your data with business-relevant context and help you to harness and leverage the expert knowledge hidden within your business.

metaphacts provides the product, services and expertise to help you build your knowledge graph and use-case-oriented apps. To start your journey towards a future-proofed organization with knowledge graphs, contact us at info@metaphacts.com

A NOTE FROM THE TECHNOLOGIST

We have been very deliberate in providing a vendor-independent and high-level view of the importance of knowledge graphs, based on our expertise from hundreds of knowledge graph implementations. Nevertheless, this document presumes the implementation of an RDF Knowledge Graph, as only this specific technology stack really fulfills all of the requirements we have laid out above.



RESOURCES

Whitepaper

Building a knowledge-centric-organization with knowledge graphs

- » metaphacts.com/building-a-knowledge-centric-organization-with-knowledge-graphs

Blog Post

The importance of the semantic knowledge graph

- » blog.metaphacts.com/importance-of-semantic-knowledge-graph

Resource Hub

- » metaphacts.com/resource-hub

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