



metaphacts

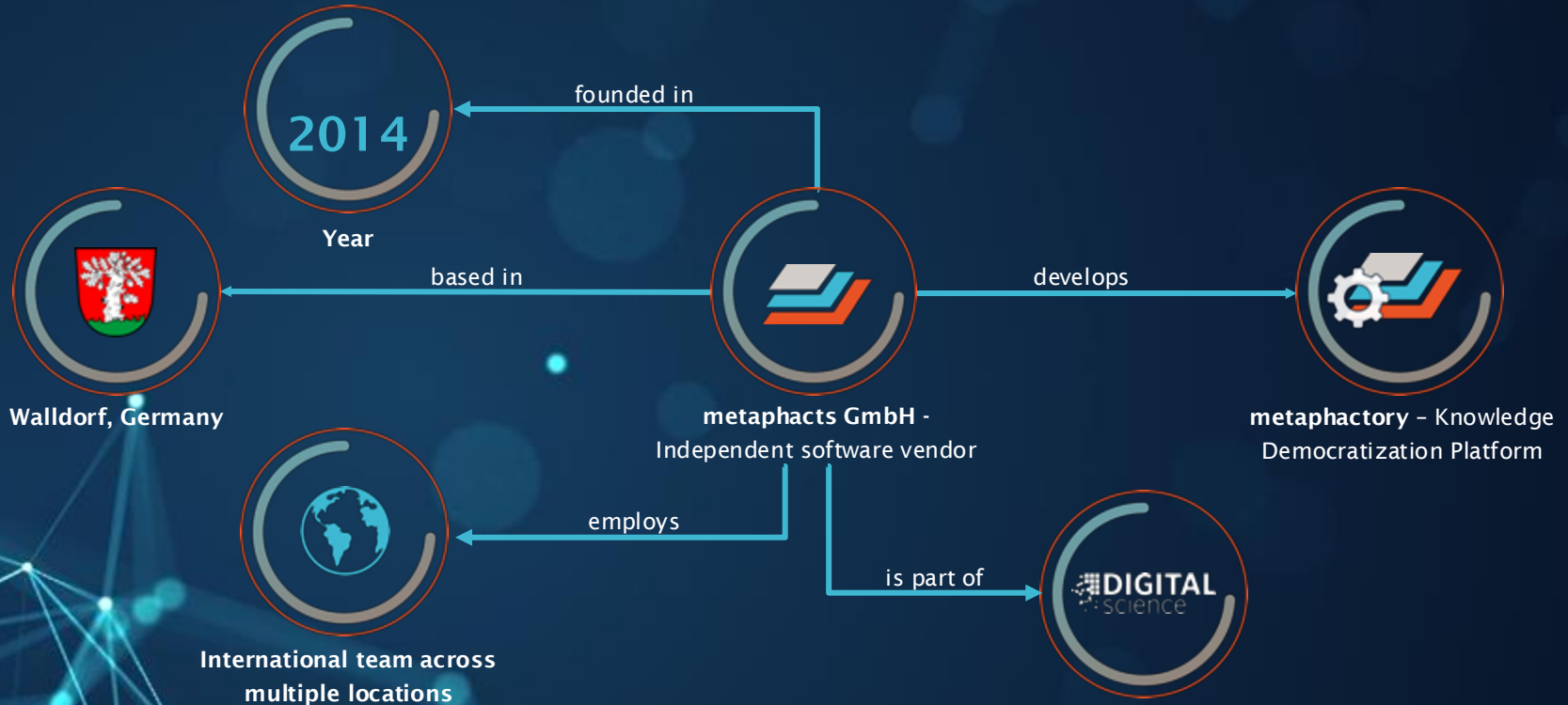
A part of
DIGITAL
science

Harnessing neuro-symbolic AI to help customers build knowledge- centric organizations

Peter Haase
Linked Data Symposium
12.-13.12.2024 - Berlin

Unlocking the value of your data with knowledge graphs

Company Snapshot



Building the knowledge graph



Knowledge
Graph
Engineer

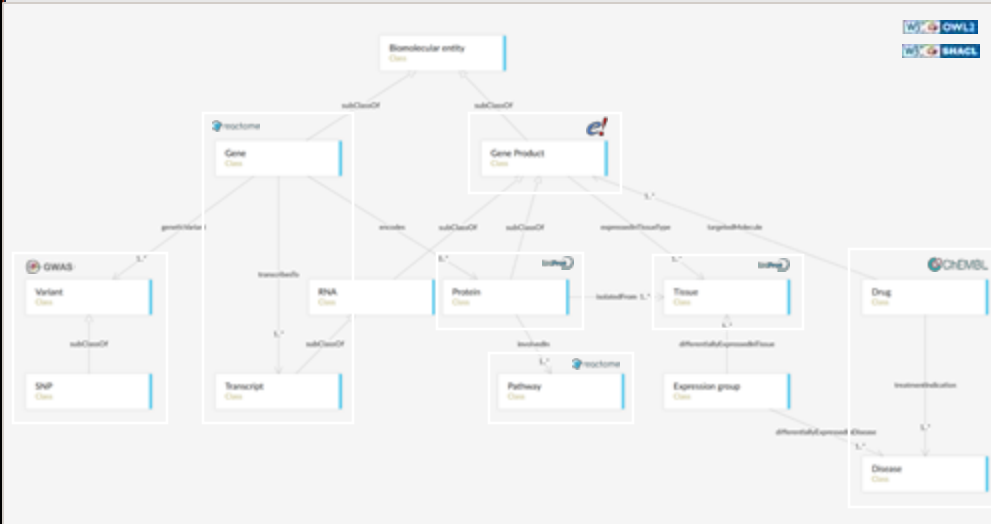


Knowledge
Steward
(Domain Expert)



Data
Steward

Example Ontology from the Life Sciences Domain

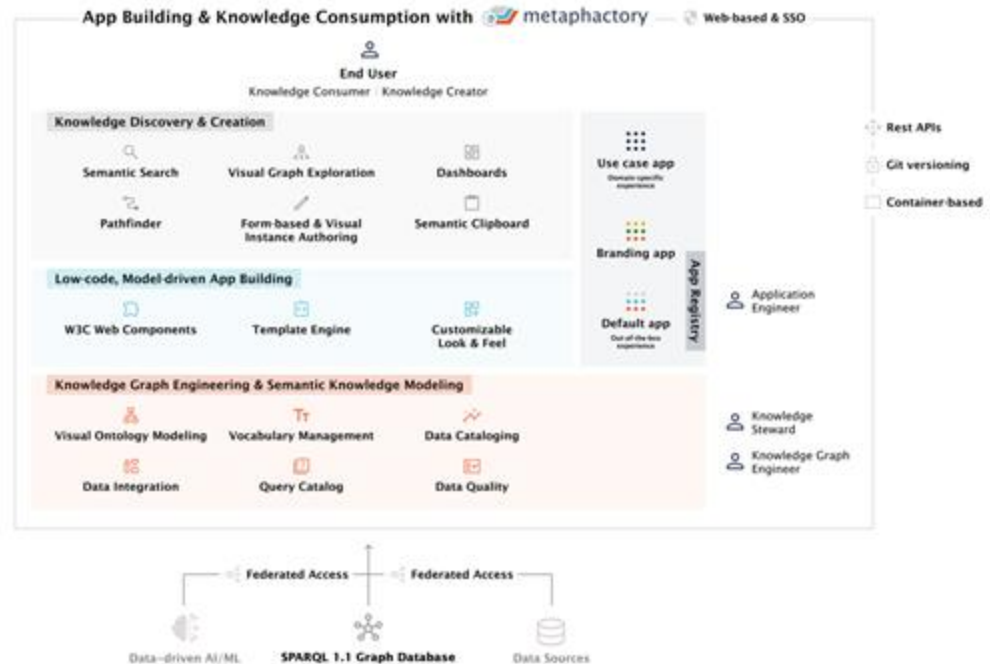


Visual Ontology Modeling

- All stakeholders are empowered to actively participate in the modeling process
- Agile processes for ontology design, implementation, documentation and governance

Model-driven App Building & Knowledge Consumption

- » Build **use-case specific knowledge graph apps** that meet enterprise requirements
- » Drive knowledge democratization by empowering **end users** to discover, consume & create knowledge & insights in a self-service manner
- » Support **application engineers** with a model-driven, low-code approach for app building



Based on open standards



W3C OWL2

W3C SHACL

W3C SKOS

W3C SPARQL

Knowledge Graphs & Generative AI



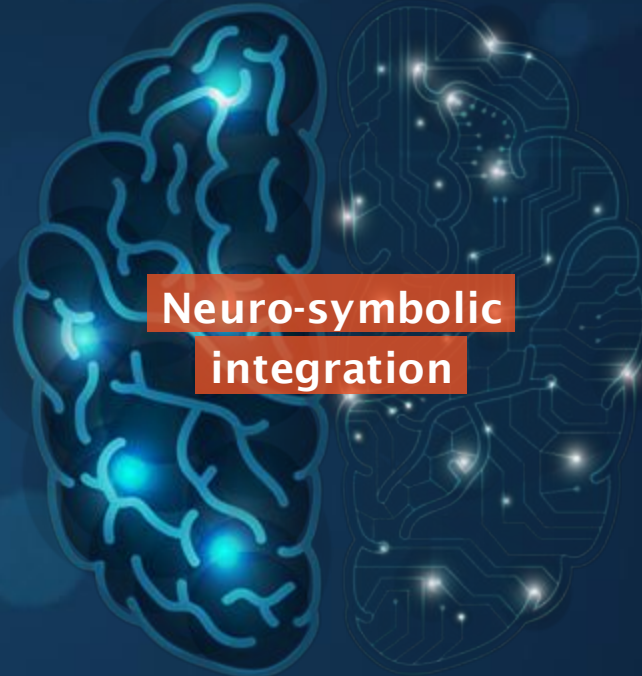
Symbolic AI

Knowledge Graphs

Explicit knowledge

Symbolic reasoning

Interpretability & explainability



Neuro-symbolic
integration



Neural AI

LLMs

Implicit, general knowledge

Artificial neural networks

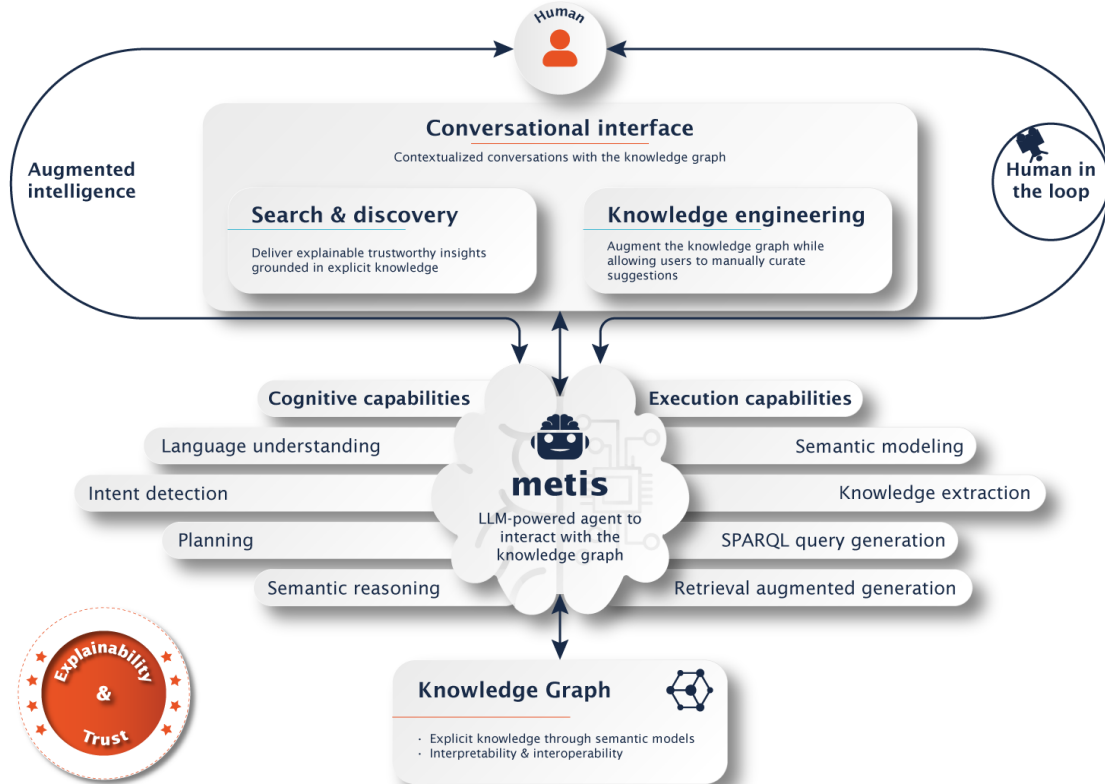
Black-box & latent semantics

Explain & Train

Augment & Complete

Build Trust

Neuro-symbolic AI powered by metaphactory

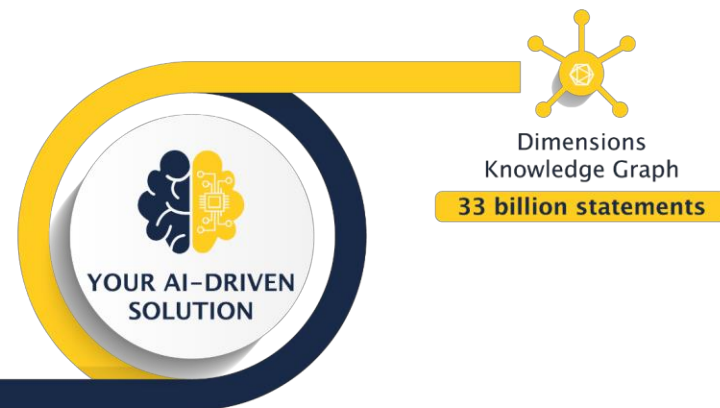


Introducing the Dimensions Knowledge Graph

A large knowledge graph to enable AI-based decision making

- Ready-made knowledge graph with normalized & contextualized data
- Based on an explicitly defined & flexible semantic layer (**Symbolic AI**)
- Integrated with public taxonomies & ontologies
- Created for **connecting with existing internal data** and knowledge (incl. federation)
- **Powered by AI** for relation discovery, cause & effect, inference
- Supports **decision making**, to provide actionable knowledge
- **Trust & explainability layer for AI**

Your internal
knowledge graph(s)
(clinical studies, lab data, etc.)



Findable **A**ccessible **I**nteroperable **R**eusable

A large knowledge graph of semantically annotated knowledge

Metadata from

- » 143 million publications
- » 160 million patents
- » 21 million scientific data sets
- » 1.9 million policy documents

Semantic annotations

- » 307 billion linked semantic annotations
- » Identified biochemical relationships
- » 35 million Research Integrity Markers



People and organizations

- » 34 million researchers
- » 129 thousand research organizations

Pharma ontologies / Vocabularies

- » 30 millions concepts & synonyms
- » 38 domains

* All publishers, built from full texts

Demo: metis Conversational AI

Conversational AI Clear chat

List the three most cited publications by Yoshua Y Bengio

- 1. [Deep learning](#) - "Deep learning" with 59,480 citations
- 2. [Gradient-based learning applied to document recognition](#) - "Gradient-based learning applied to document recognition" with 38,381 citations
- 3. [Learning Phrase Representations using RNN Encoder-Decoder for Statistical Machine Translation](#) - "Learning Phrase Representations using RNN Encoder-Decoder for Statistical Machine Translation" with 14,722 citations

Are his most recent publications addressing similar topics?

Yoshua Y Bengio's most recent publications cover a variety of topics, including AI-assisted generation of math questions, technical AI governance, generalization for generative flow networks, model merging, visual caption restoration, symmetry in GFlowNets, molecular generation, inference in diffusion models, attacks on large language models, and quantization techniques. These topics are diverse and not strictly limited to the themes of his most cited works, which focus on deep learning and neural networks.

Quick search

publication	title	datePublished
AI-Assisted Generation of Difficult Math Questions	AI-Assisted Generation of Difficult Math Questions	2024-07-30
Open Problems in Technical AI Governance	Open Problems in Technical AI Governance	2024-07-20
On Generalization for Generative Flow Networks	On Generalization for Generative Flow Networks	2024-07-03

Talk to Conversational AI...