

THE KNOWLEDGE GRAPH **COOKBOOK**

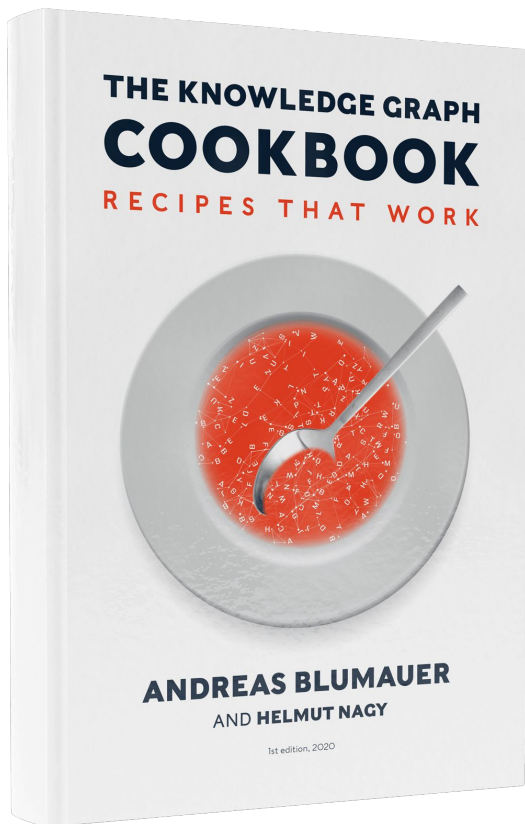
RECIPES THAT WORK

ANDREAS BLUMAUER

AND **HELMUT NAGY**



The Knowledge Graph Cookbook—Facts and Figures

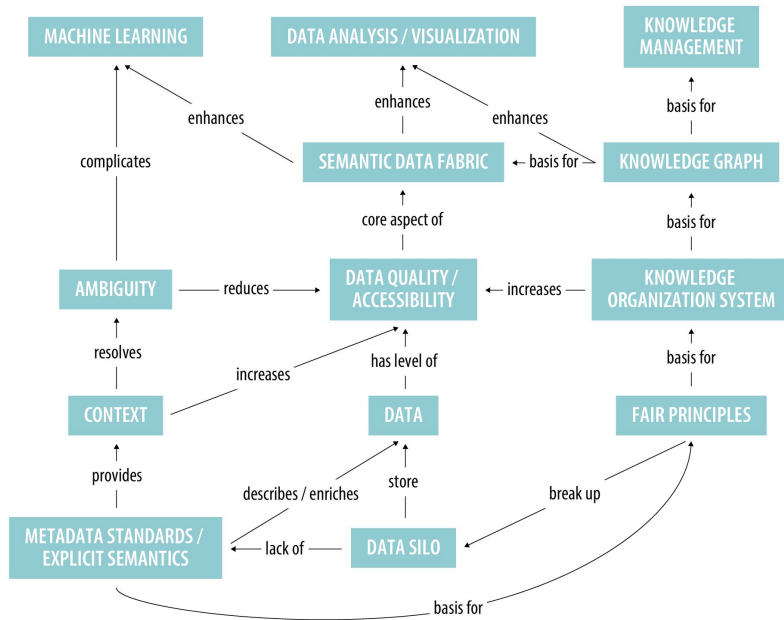


- ▶ 1st edition, available from April 2020
- ▶ Available in 3 versions
 - ▷ Free PDF
 - ▷ Kindle edition (EUR 9.99 or **kindle**unlimited)
 - ▷ Hardcopy (available end of May)
- ▶ Based on more than 20 years of industry experience
- ▶ 256 pages (7 chapters + addendum)
- ▶ 49 infographics
- ▶ 177 bibliographic references
- ▶ 11 Expert interviews



**HUNGER
IS THE
BEST
SAUCE**

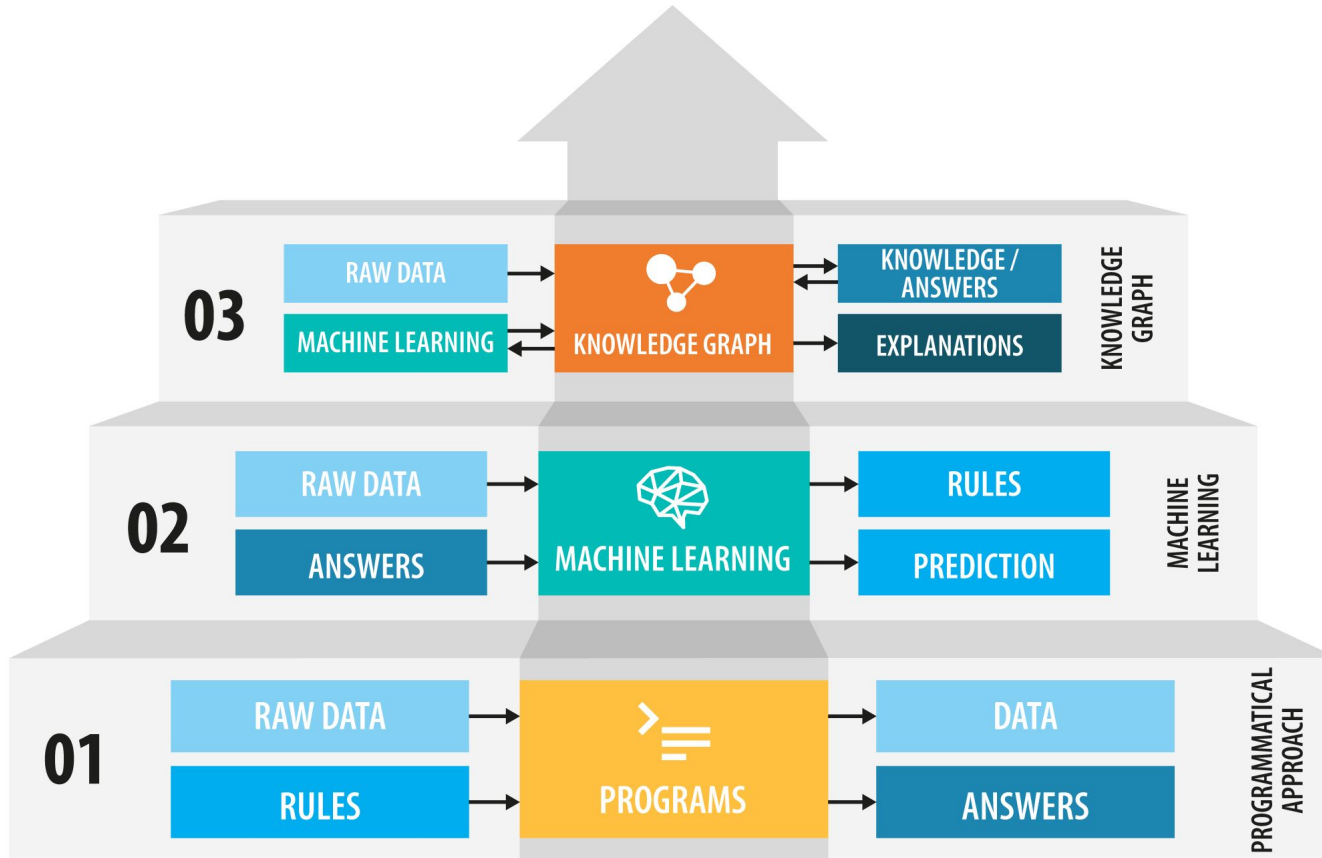
Core principles



$$\text{FAIR} + \text{HITL} = \text{XAI}$$

- ▶ It's all about **things**, not strings.
- ▶ Metadata should comply with **FAIR principles**.
- ▶ Data warehouses and data lakes are no longer state-of-the-art paradigms of data integration, but a data fabric will ultimately help dismantle **data silos**.
- ▶ Use established **standards** and methods for knowledge organization.
- ▶ **Ambiguous data** is often a burden on data management. Adding more **contextual information** is the key to solving this problem.
- ▶ **Knowledge graphs** are regularly confused with a methodology for knowledge visualization.
- ▶ **Knowledge management** often strives to design systems in which knowledge sharing on a large scale becomes possible.
- ▶ Only an **explainable AI** creates trust.

Towards Explainable AI (XAI)



Based on: [Knowledge Graphs: The Third Era of Computing](#) by Dan McCreary

Atanas Kiryakov (Ontotext)



“ We cannot get accurate results from the machine if we cannot agree amongst ourselves what the correct output is.



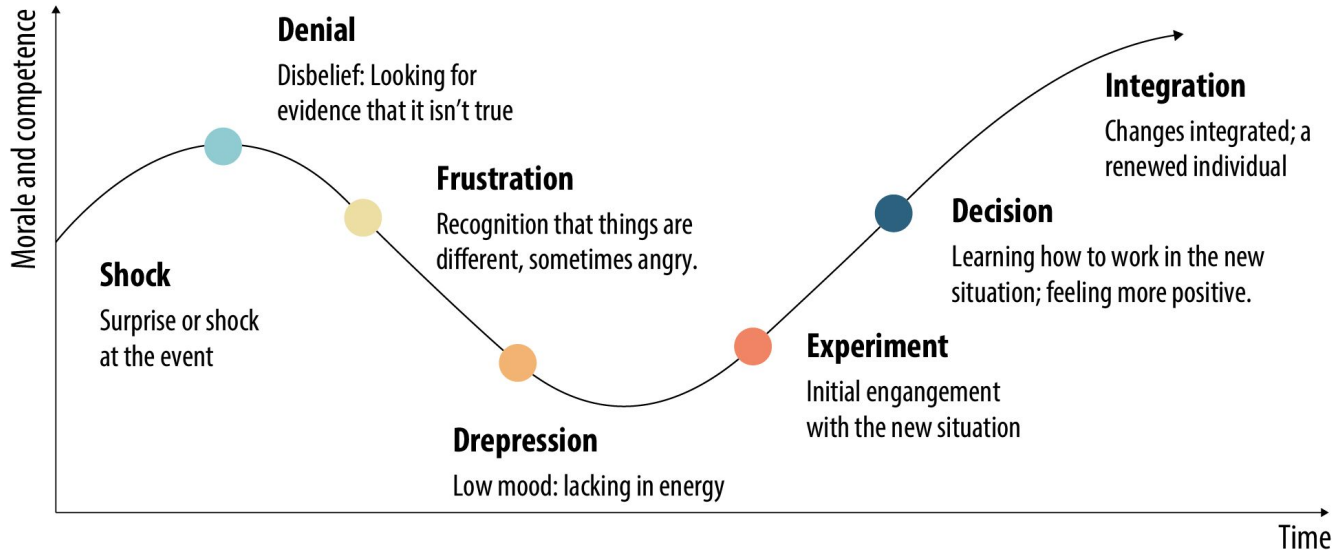
PREPPING THE KITCHEN

Embedding in a Change Management Process



The Kübler-Ross Change Curve

Emotional Response to Change

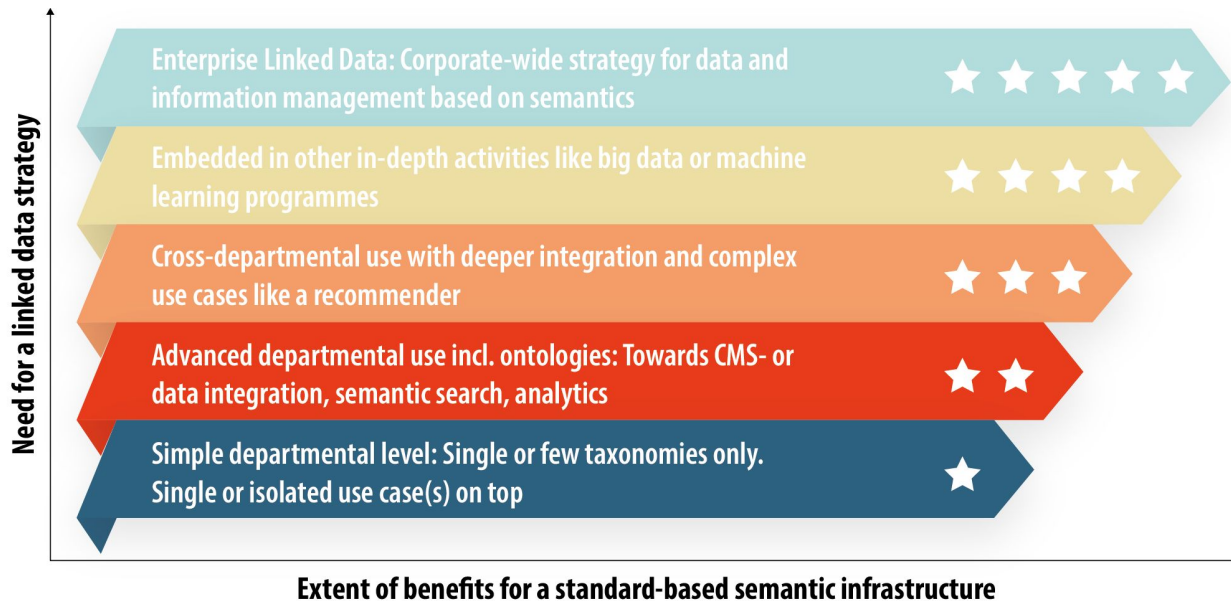


Joe Pairman (SDL)



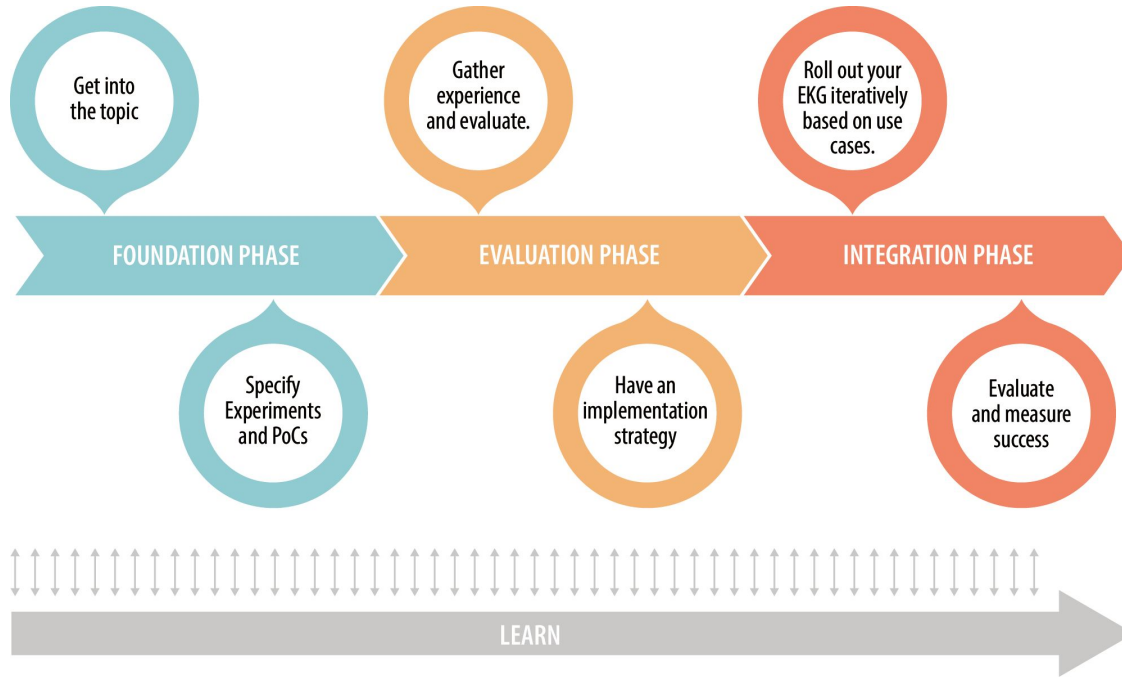
“ We have to make these mental connections and drop our old, application-exclusive thinking.

Enterprise Semantics Maturity Model



- ▶ Start simple and grow,
- ▶ develop your knowledge graph in an agile way,
- ▶ build up the necessary skills and roles, and
- ▶ understand that it is not a replacement, but an extension.

Setting up an Enterprise Knowledge Graph Project

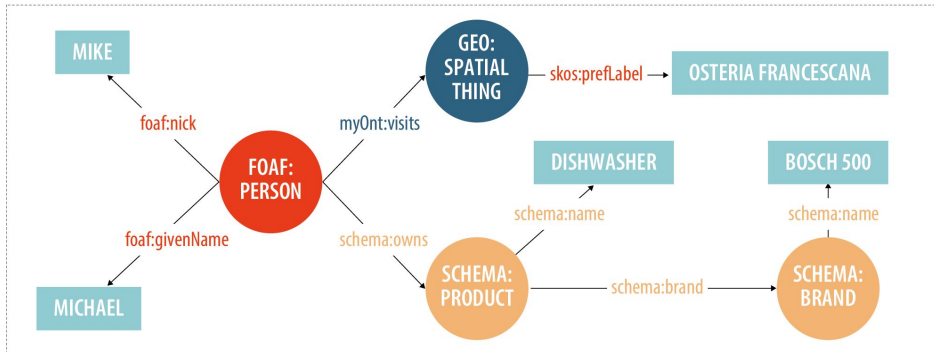
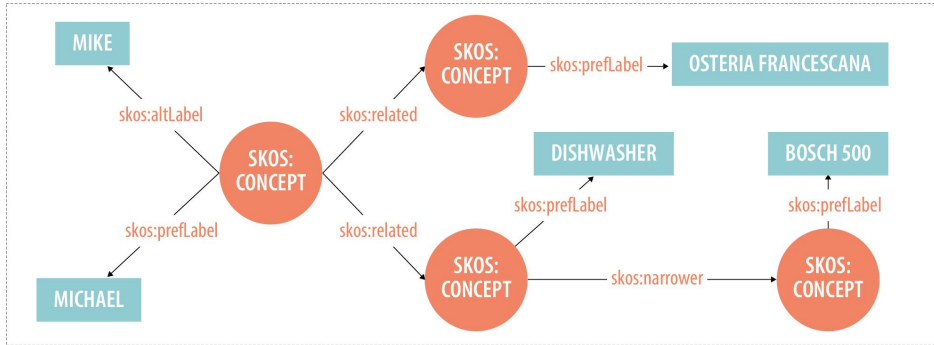


- ▶ Are you an **enthusiast** who wants to become a prophet of change in your organization?
- ▶ Do you belong to a group of people who have identified this as the next **strategic goal** to be achieved (and are in a position to achieve it)?
- ▶ Are you the one your management has chosen to **evaluate** this strange new promising thing and implement it based on the results?



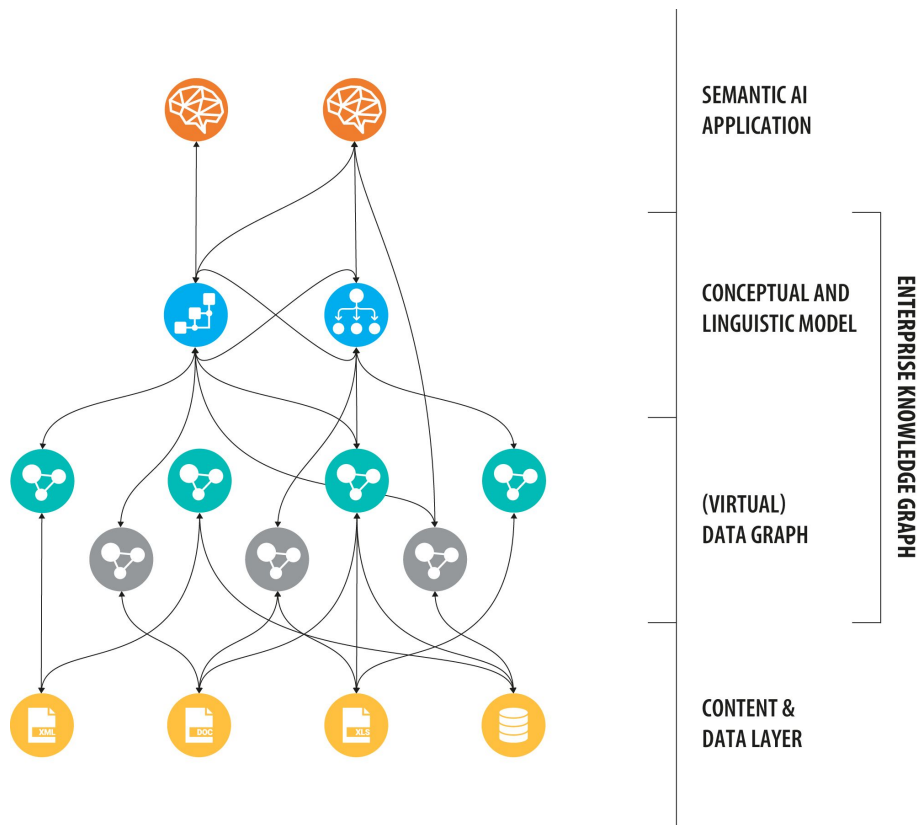
**THE
PROOF
IS IN THE
PUDDING!**

Taxonomies and Ontologies



“ Ontologies are used to give more dimensionality to a knowledge graph.”

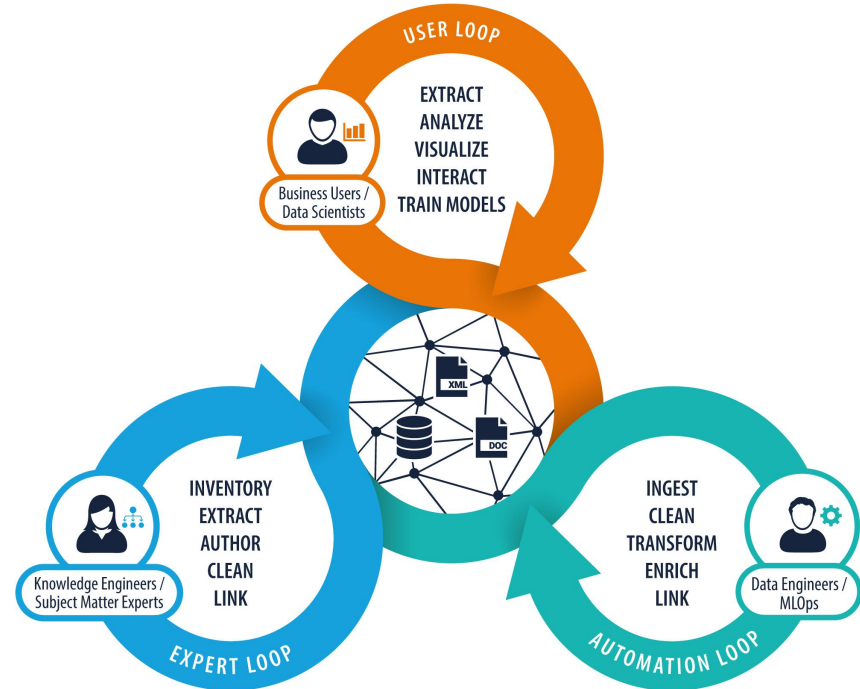
What is an Enterprise Knowledge Graph (EKG)?



- ▶ A **domain model**—consisting of a conceptual and linguistic model—is maintained by knowledge engineers and SMEs using ML, providing a structure and common interface for all your data to enable the ‘data graph’ to be created automatically.
- ▶ A **data graph** that consists of or represents intelligent multilateral relationships in your databases, content, and document repositories, all structured as an additional virtual data layer
 - ▶ As part of the data graph, a **user graph** can evolve, which contains semantic profiles of the users—partly automatically derived from user behavior.

Methodologies & Governance models

- ▶ Card Sorting
- ▶ Taxonomy Management
- ▶ Corpus Learning
- ▶ Ontology Management
- ▶ RDFization
- ▶ Text Mining
- ▶ Entity Linking
- ▶ Data Fusion
- ▶ Querying KGs
- ▶ Search & Analytics
- ▶ Data & Graph Validating
- ▶ Reasoning
- ▶ Measure Quality of an EKG



The Knowledge Graph Life Cycle

Jans Aasman (Franz Inc.)

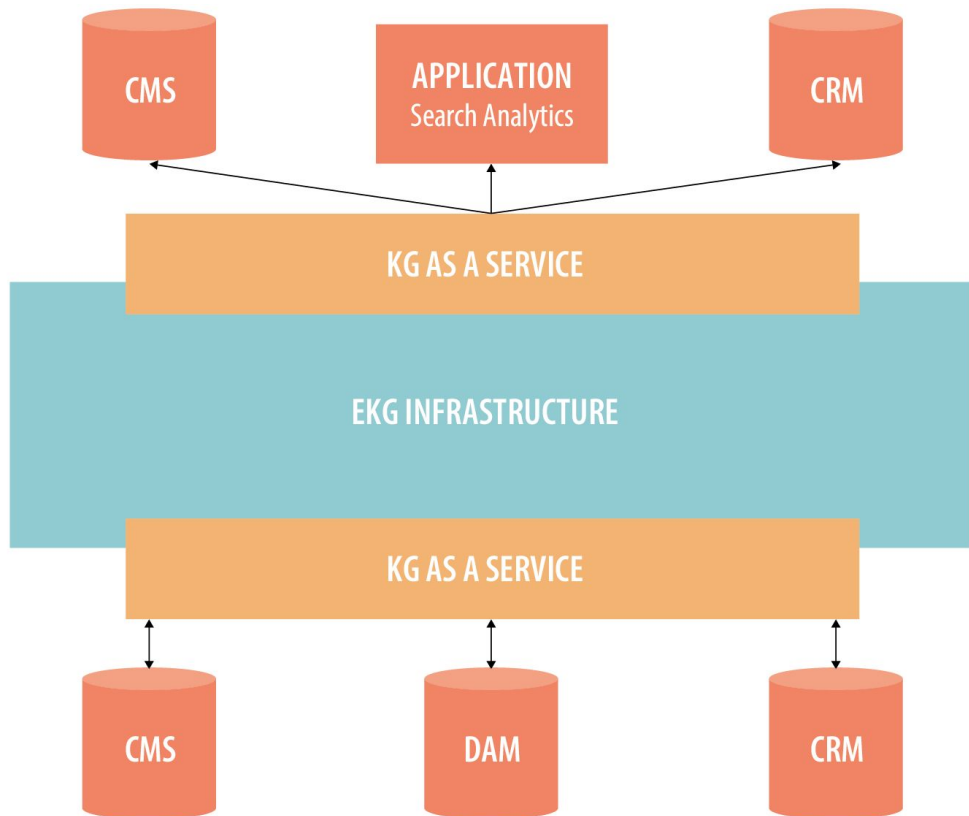


“ Knowledge graphs aren't worth their name if they don't also learn and become smarter day by day.



**A GREAT
CHEF IS
FIRST
A GREAT
TECHNICIAN**

KG as a Service



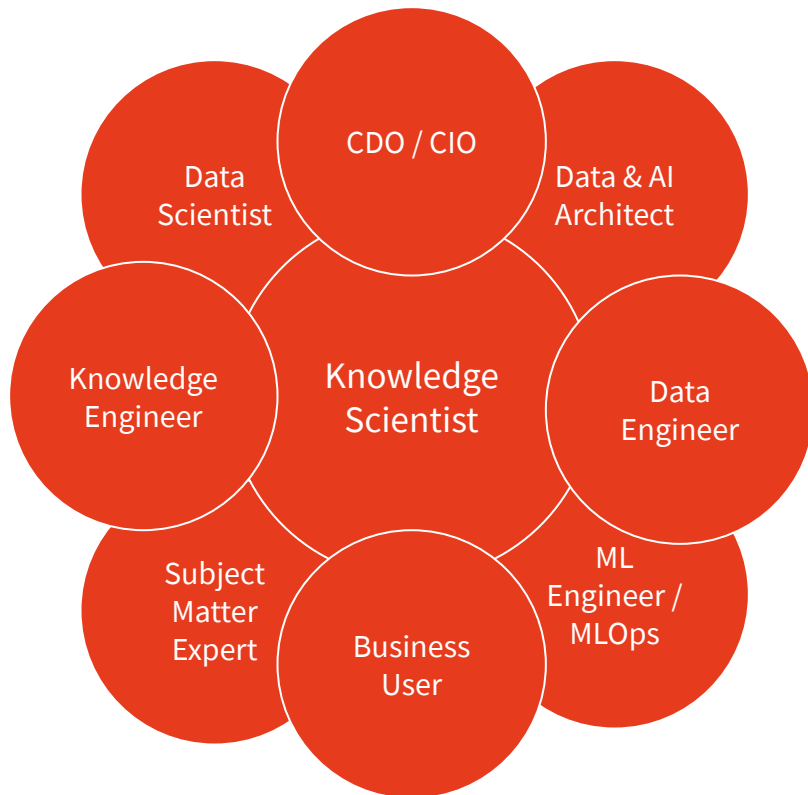
The ultimate goal is to have the Knowledge Graph as a service providing:

- ▶ Ingestion services
- ▶ Enrichment services
- ▶ Consumption services
- ▶ Orchestration services



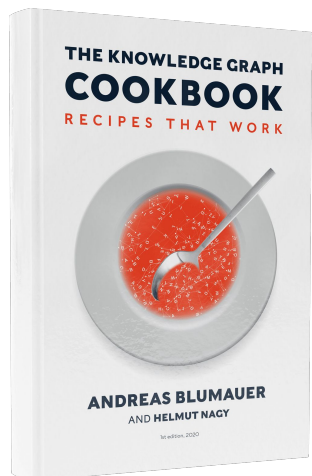
**READ
THE TEA
LEAVES**

New Roles: The Rise of the Knowledge Scientist



- ▶ Knowledge scientists combine the more holistic and connected views of the knowledge modelers with the more pragmatic views of the data engineers.
- ▶ Knowledge scientists work closely together with business and understand their actual needs, which are typically centered around business objects and facts about them.
- ▶ Eventually, this results in a more complete and entity-centric view of knowledge graphs.

Get in contact



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