# Specs for ‘Knowledge as a Service’ (KaaS) project

Product Requirements Document with hints of Implementation

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## Introduction

This document outlines the product specifications for Knowledge as a Service (KaaS), a cloud-based platform designed to provide curated knowledge in the form of knowledge graphs (KGs) and vectors. KaaS aims to address the growing demand

for high-quality, readily-available knowledge resources for various industries and applications.

### Problem Statement

While data is readily available, its raw form is often unusable for practical applications. Refining or curating data, especially for training machine learning algorithms, presents a significant challenge. This process requires expertise, labor, and ongoing maintenance, making it difficult and expensive for many organizations.

### Value Proposition

KaaS offers a solution by providing access to pre-built and curated KGs and vectors. This eliminates the need for organizations to invest in building their own data curation infrastructure and expertise. KaaS offers the following key benefits:

- High-quality knowledge: Curated by experts using natural language processing (NLP) techniques to ensure accuracy and relevance.
- Ready-to-use: Easily integrated into various applications and tools.
- Cost-effective: Eliminates the need for in-house data curation infrastructure and expertise.
- Scalable: Flexible to meet the needs of growing organizations.
- Privacy-preserving: Data is provided in a binary/vector format to protect sensitive information.

### Target Audience

KaaS is targeted towards organizations that require high-quality knowledge resources for:

- Machine learning and artificial intelligence (AI) development: Training machine learning algorithms and developing AI applications.
- Natural language processing (NLP): Extracting insights from text data and building NLP-powered applications.
- Business intelligence and analytics: Gaining deeper insights from data and making informed decisions.

- Research and development: Accelerating research efforts by providing ready-to-use knowledge resources.
- Education and training: Providing students and learners with access to high-quality knowledge resources.

### Product Features

KaaS will offer the following features:

- Access to pre-built KGs: Covering various domains and topics.
- Vector representation of knowledge: Efficient and privacy-preserving format.
- Flexible querying capabilities: Using Graph Query Languages (GQLs) for specific knowledge retrieval.
- API integration: Seamless integration with various applications and tools.
- User management and access control: Secure and controlled access to knowledge resources.
- Scalable infrastructure: Able to accommodate growing data volumes and user demands.

### System Architecture

KaaS will utilize a cloud-based architecture with the following components:

- Knowledge Acquisition: Automatic and manual processes for extracting and curating knowledge from various sources.
- Knowledge Processing: NLP techniques for entity recognition, relationship extraction, and knowledge graph construction.
- Vectorization: Conversion of knowledge graphs into efficient vector representations.
- Knowledge Base: Scalable storage for KGs and vectors.
- Query Engine: Enables efficient retrieval of knowledge based on user queries.
- API Gateway: Provides secure and controlled access to KaaS features.
- User Interface: Web-based interface for managing knowledge resources and accessing KaaS functionalities.

### Technology Stack

KaaS will be developed using the following technologies:

- Cloud platform: AWS, Google Cloud, or Azure
- Programming languages: Python, Java
- Graph database: Neo4j, Amazon Neptune
- NLP libraries: spaCy, NLTK
- Vectorization libraries: Gensim, Faiss
- API framework: Django, Flask
- Web framework: ReactJS, Angular

### Future Roadmap

The KaaS development roadmap includes the following features:

- Support for additional knowledge representations: e.g., rules, logic
- Machine learning integration: Enabling predictive capabilities based on knowledge graphs
- Customization options: Tailoring KaaS to specific domain needs
- Integration with various AI platforms: e.g., TensorFlow, PyTorch
- Marketplace for knowledge resources: Allowing users to buy and sell pre-built KGs and vectors

### Conclusion

KaaS addresses a critical need for readily available, curated knowledge resources. By providing pre-built KGs and vectors in a privacy-preserving format, KaaS enables organizations to unlock the power of knowledge and achieve their goals.

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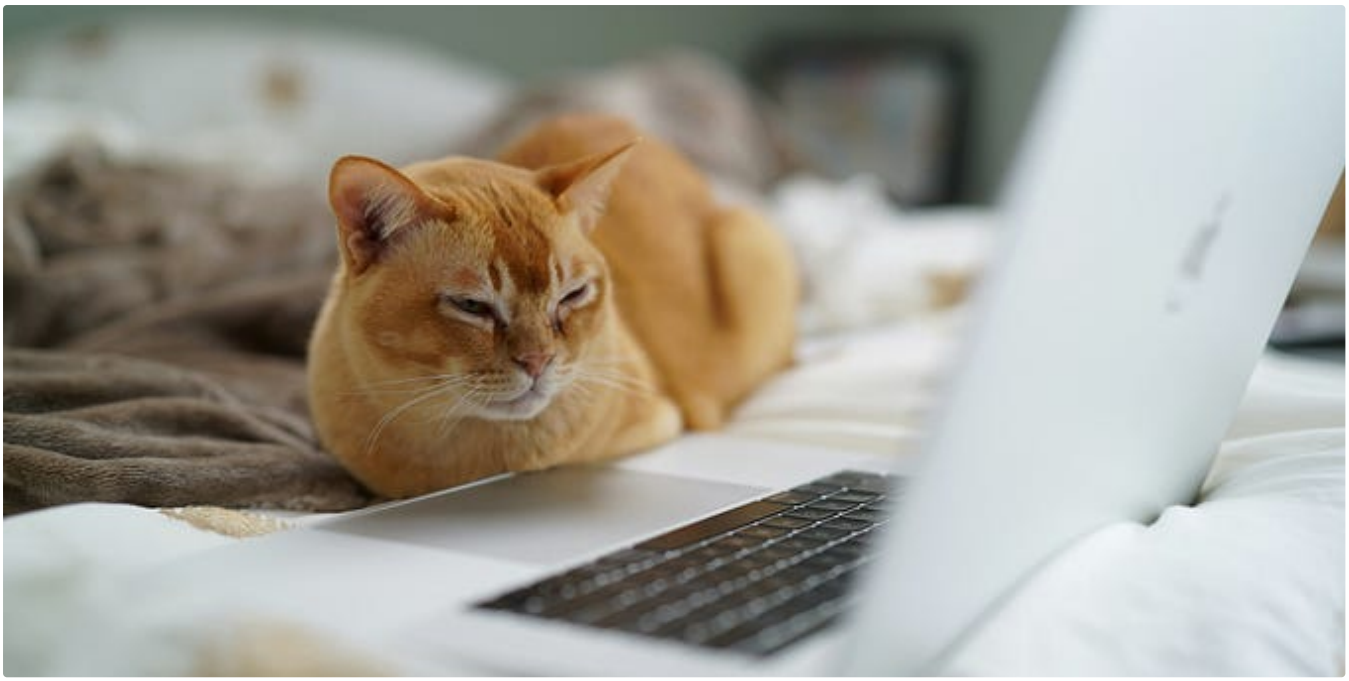

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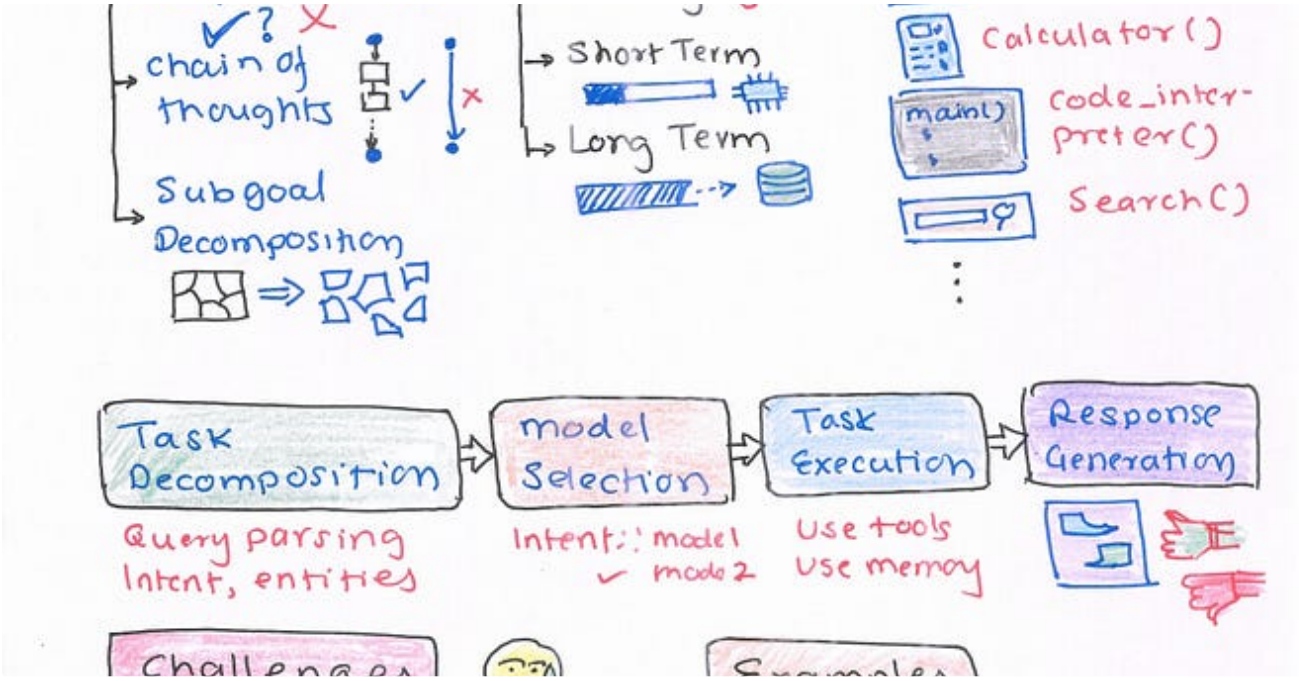


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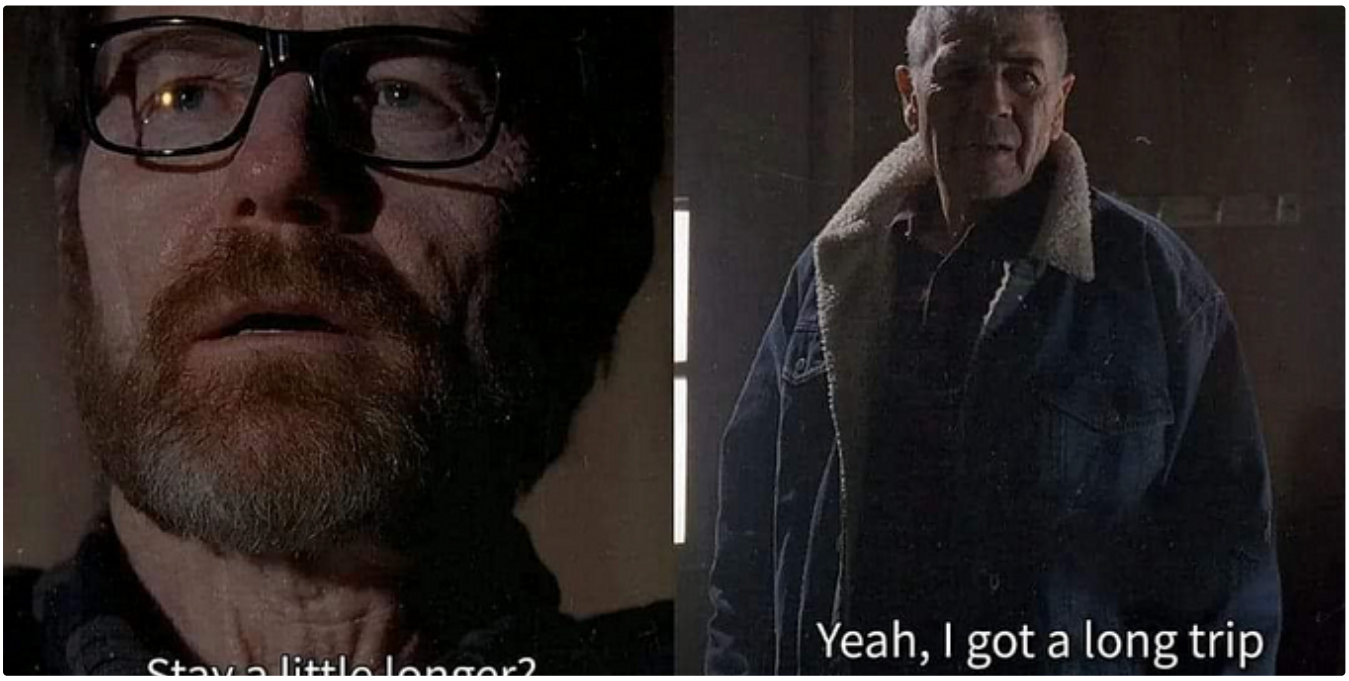


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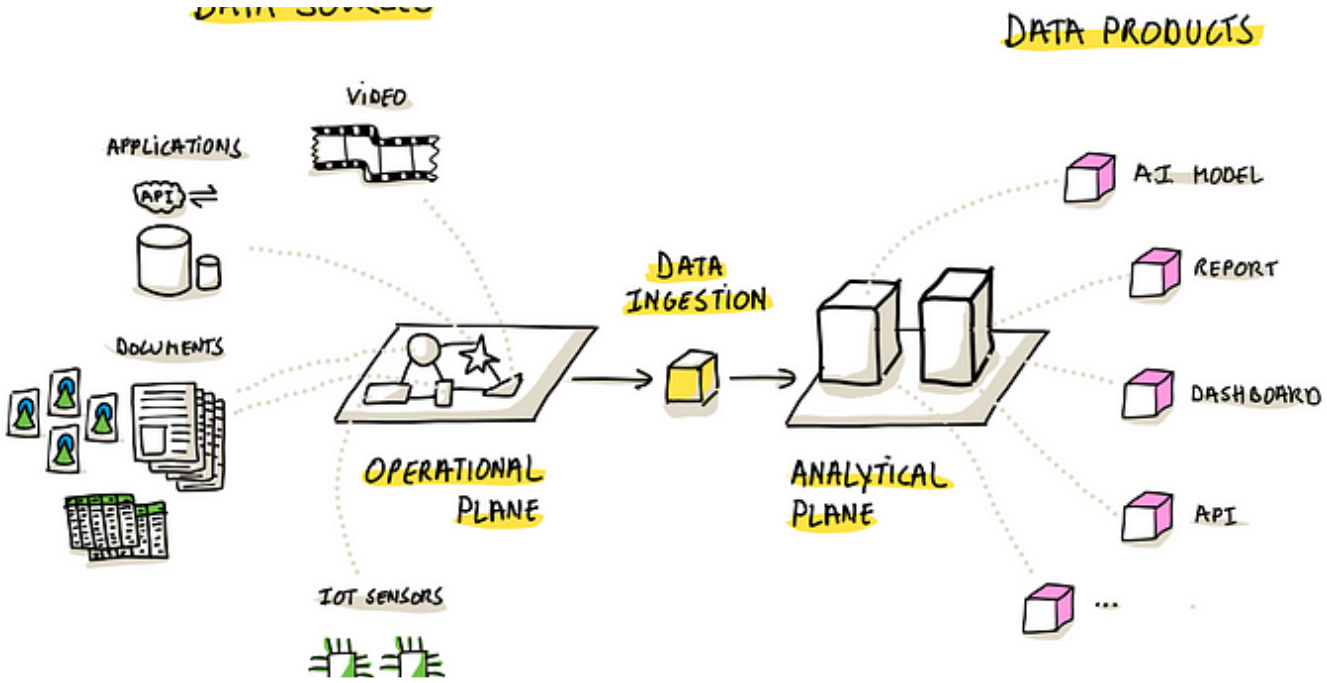


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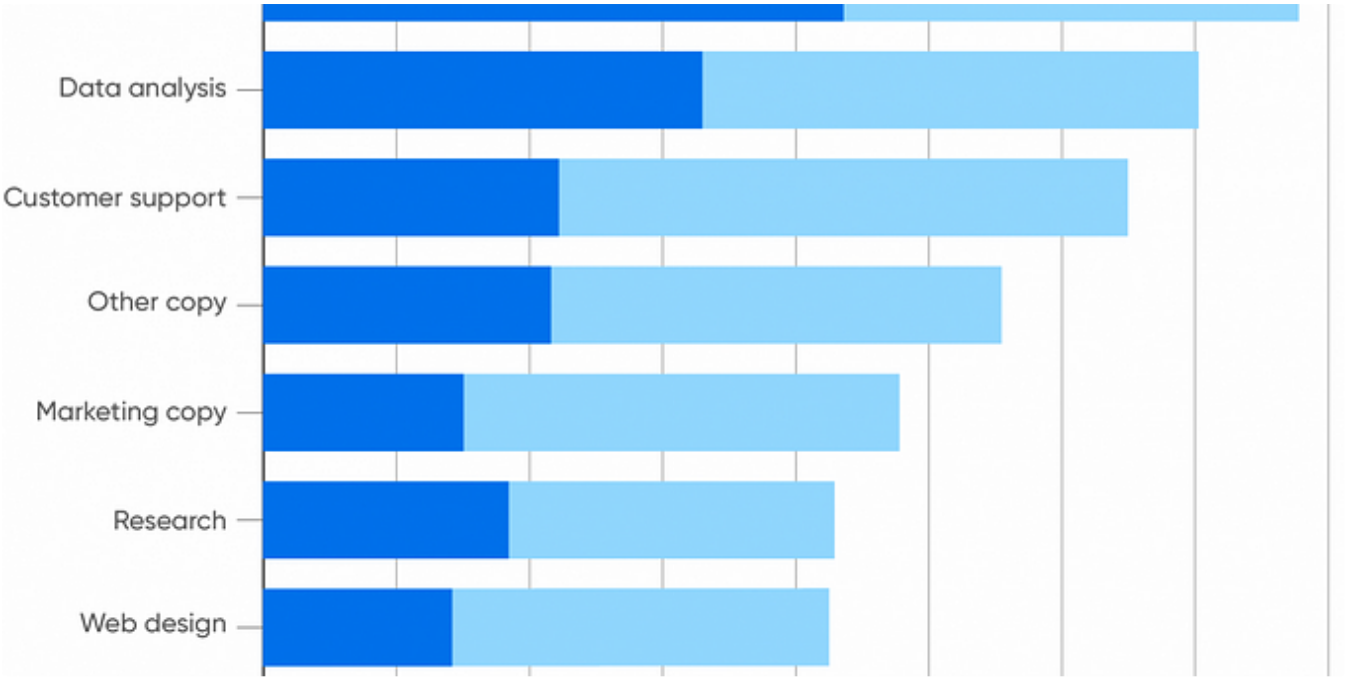


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