Authors: Gergana Petkova, Radostin Nanov

This next installment in our series of posts dedicated to Ontotext webinars has been long overdue. So far we have covered the capabilities and business applications of knowledge graphs as well as some of the major benefits of our RDF database – GraphDB. All of our webinars are available on demand, so if we pique your interest with any of these posts, you can request a free recording.

We've already discussed that enterprise knowledge graphs bring together and harmonize all-important organizational knowledge and metadata. They focus on business-specific information needs and how to properly source the needed data rather than analyze preexisting application models. But although RDF allows you to build knowledge graphs across datasets with federated queries, there is still a large number of databases that do not run on RDF. To be able to interact with such systems, we need the proper tooling for it.

Today we will show you how to build an enterprise software architecture. First, we'll introduce our tools – GraphQL, Federation and Kafka. Then, we'll take a deep dive into how to use them to form a cohesive whole.

Read on and watch the webinars to get to the details!

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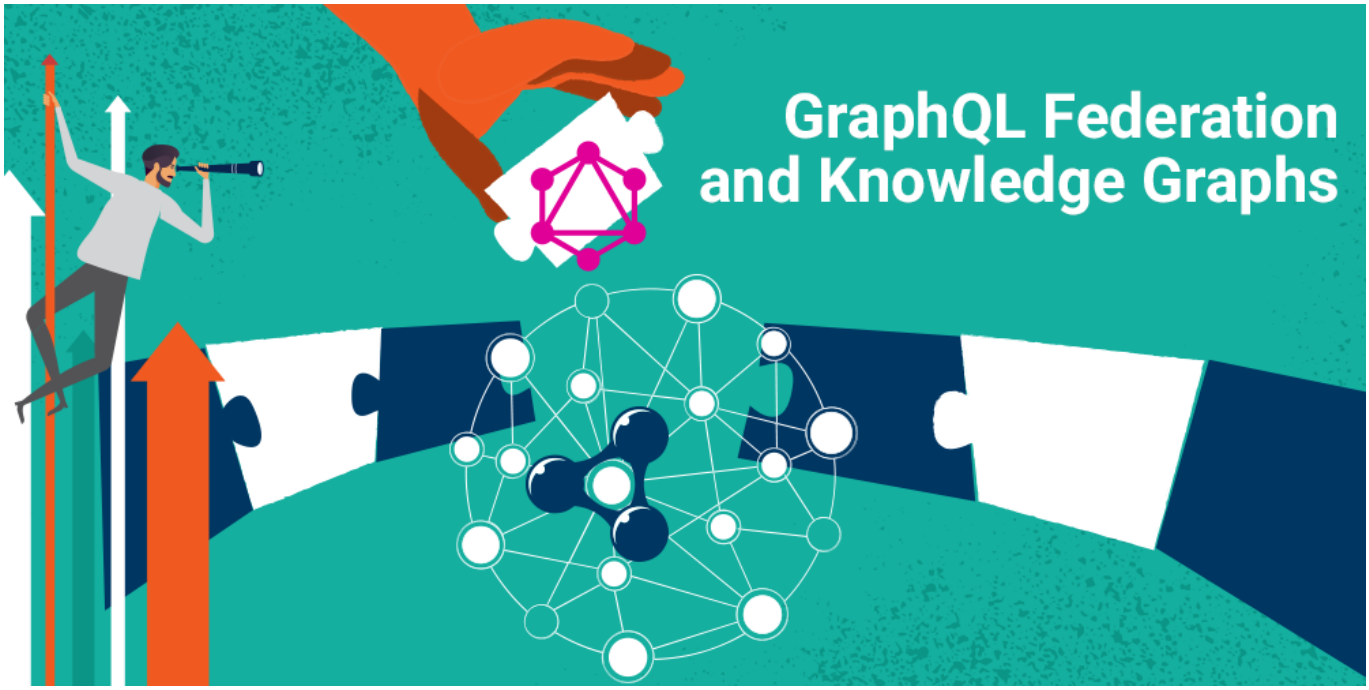
GraphQL Federation and Knowledge Graphs



We are strong believers in the expressivity and flexibility of SPARQL, the RDF query language. However, not everyone knows SPARQL, and it isn't ideal in all contexts. Not every enterprise has access to frontend engineers who know how to write SPARQL queries. Fortunately, Ontotext now offers a GraphQL layer on top of RDF. Even better, GraphQL allows you to easily scale RDF based knowledge graph projects.

In our first webinar GraphQL Federation and Knowledge Graphs, Jem Rayfield demonstrates GraphQL federation and its capabilities. He walks you through what you need to know about GraphQL, how to bridge GraphQL and RDF, what bounded context architectures are and how to improve team velocity and GraphQL federation.

The lab exercises and demos in this webinar include:

1. Building an Apollo GraphQL Service for Web Annotation JSON-LD stored in MongoDB.
2. Modelling Star Wars RDF and automatically exposing GraphQL queries and mutations.
3. Building a GraphQL Service to discover the semantic similarity between Star Wars

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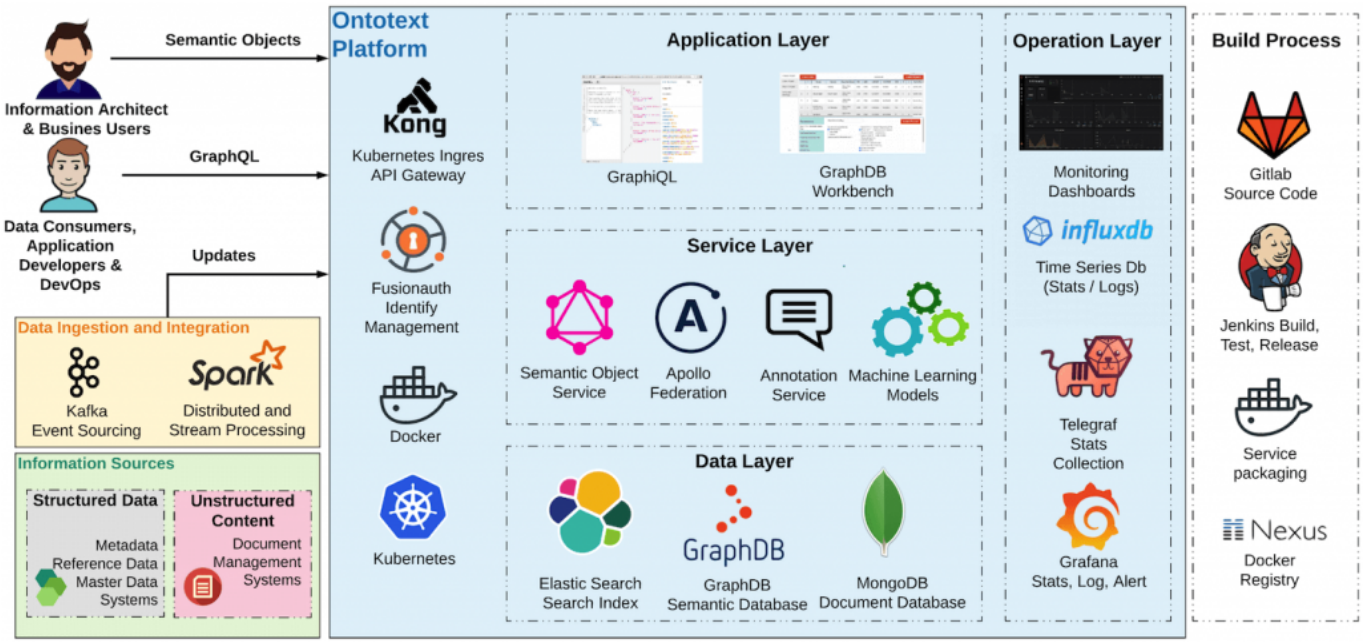
characters (using vector spaces).

4. Building a single data graph across the three services. To provide a unified GraphQL interface for retrieving Star Wars character annotations, in context within a Knowledge Graph and using semantic similarity to discovering similar characters.

You can also read more about Jem's Star Wars examples in his post Star Wars: Knowledge Graph Federation.



Interesting attendee question: Do I need to manually create Semantic Objects Modeling Language? I already have an ontology, which sort of does the same, I don't want to bother with doing that all over again.

Ontotext's answer: Certainly! We are well aware that ontologies are quite close to SOML in concept. Our model is more terse and covers some Platform-specific functionalities, but it can express most of the things you have in an ontology. There is a OWL-to-SOML converter included with all instances of the Ontotext Platform. You can get your SOML based on your ontology and then fine-tune it with our GraphQL capabilities.

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Click here to watch on demand!

Analyzing Unstructured Data with GraphDB 9.8

The first webinar explores what to do when you already have RDF data and want to access it in flexible ways. But what to do when we have information that we want to turn into RDF? In our second webinar, Analyzing Unstructured Data with GraphDB 9.8, our CTO, Vassil Momtchev shows you how to use GraphDB's text analysis plugin to populate knowledge graphs from unstructured documents and how to synchronize your data via Kafka.

In the first part of the webinar, Vassil discusses Ontotext's main principle in designing software architecture for Text Analysis applications and how to use GraphDB to implement it on your own. He focuses on the graph database and how to call external TA services, which are doing the heavy lifting of analyzing the unstructured data and returning textual annotations.

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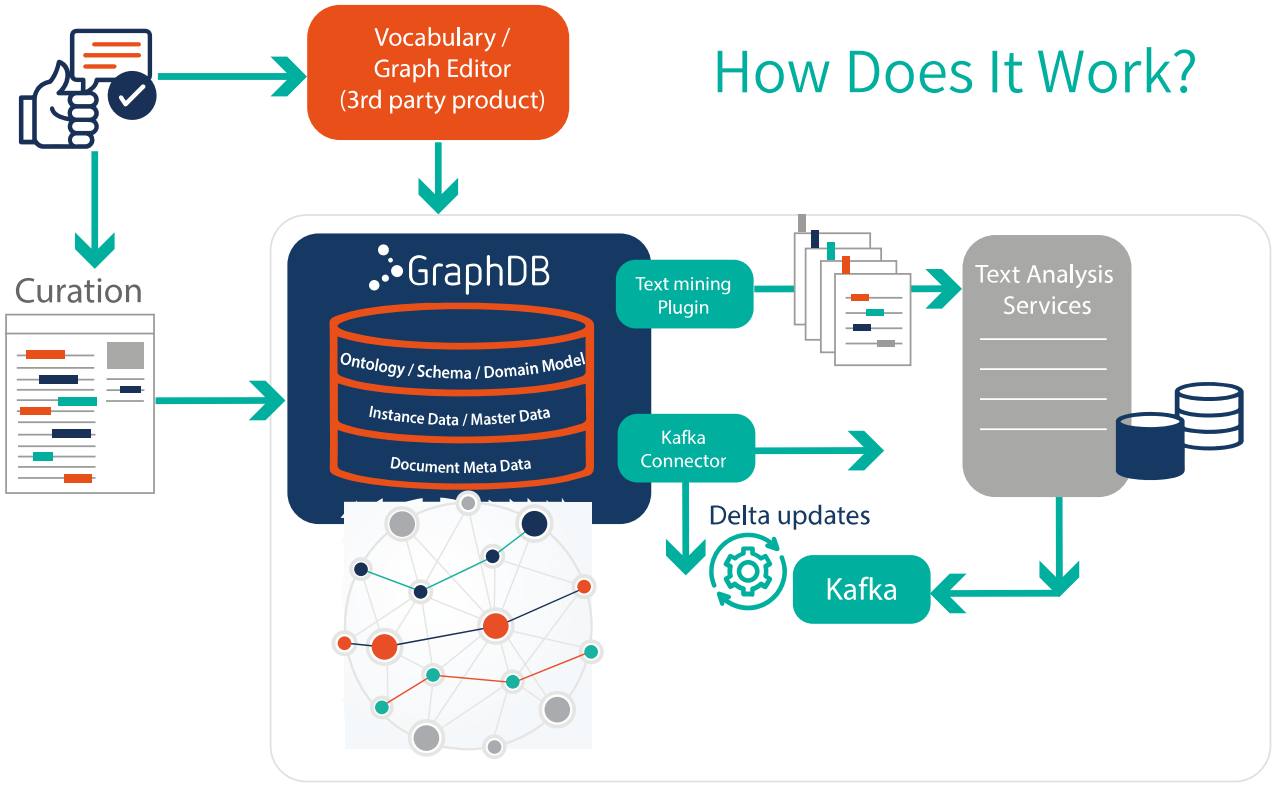
In the second part, Vassil talks about the Kafka connector. It provides a means to synchronize changes to the RDF model via the Apache Kafka framework, which enables easy processing of RDF updates in any external system and covers a variety of use-cases where a reliable synchronization mechanism is needed.



You will learn how to register external text mining services based on GATE, Spacy and Ontotext annotation services as well as how to transform external annotation models into RDF using SPARQL queries. Vassil will also show you how to extend the out-of-the-box supported services with any third party service like Refinitiv and how to subscribe for specific patterns of graph changes over Kafka Connector.

Interesting attendee question: What kind of user interface is foreseen for an end-user (not aware of SPARQL) willing to easily get data from the knowledge graph?

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Ontotext's answer: As part of our product offerings, Ontotext has built Ontotext Platform, which enables you to describe the model of your data in a very easy format and to expose it via automatically generated GraphQL interfaces. You can also use a Ontop virtual repository to access the data with SQL. Apart from products, Ontotext has solution units, providing services to implement, expose and integrate the results from a knowledge graph in whatever machine- or human-friendly forms you might need. You can find more information about our solutions and services at our website.

Click here to watch on demand!

From Disparate Data to Visualized Knowledge

Once we have tools to get our information in RDF format and to integrate different RDF databases, the natural next step is to create a complete pipeline with this knowledge. In our final webinar From Disparate Data to Visualized Knowledge, our Solution Architect Radostin

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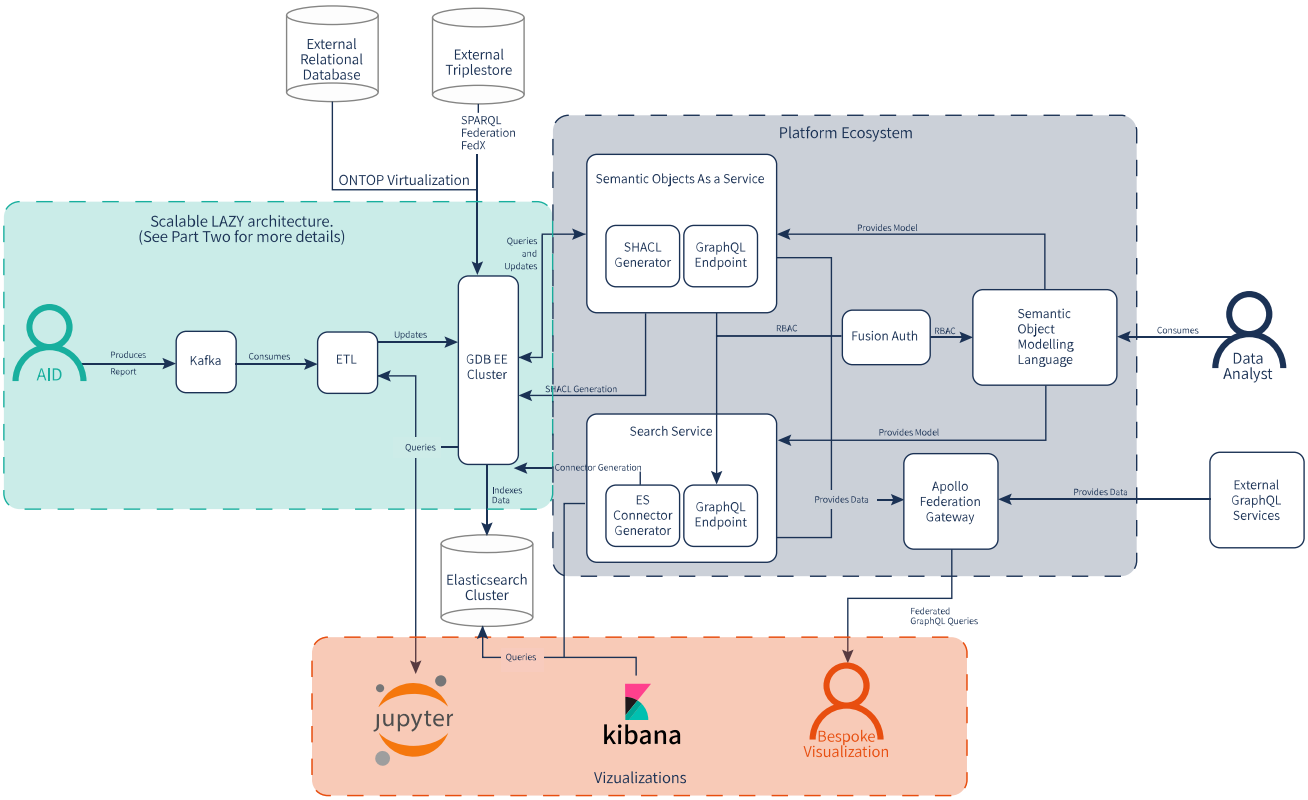
Nanov discusses how knowledge graphs help you build enterprise software architectures that can work on any infrastructure.

Radostin investigates an approach to business product growth that happens naturally and does not involve reinventing the product at each step of the process. The narrative starts at a manual data ingestion system, then it looks into unlocking this system's true potential by integrating it with a knowledge graph. It also covers automating the data gathering and transformation process and finally looks into integrating other systems.



You will learn how to use spreadsheets, but also keep a knowledge graph and what are the approaches for dynamically ingesting data and modifying it, based on what's already known. Radostin will also show you how to deploy a high availability environment without employing many different tools and how to best integrate RDF with other data sources.

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For those of you who have followed our learning path up until now, you'll get the opportunity to see how GraphQL Federation and Kafka integrate into the wider ecosystem of a complex solution.

You can also read the whole story in his series of blog posts: Moving from Spreadsheets to an RDF Database, Scaling on Both Ends and The Outsider Perspective.

Interesting attendee question: When it comes to federation with different technologies – GraphQL and SQL, in the examples here – what part of the SPARQL query language expressions are included?

Ontotext's answer: As much of it as possible. With SQL, we allow the full range of capabilities offered by SPARQL. You only lose the plugins that are part of GraphDB such as Graph path search. Naturally, some searches would be slower in SQL than they would be with RDF. With GraphQL, you also lose some arithmetic operations you could carry out inside the queries. However, with the latest releases of Ontotext Platform, you can rectify this, as it allows you to insert your custom SPARQL queries.

Click here to watch on demand!

Wrap Up

That covers the three webinars that we wanted to present to you today. Just like a hiking trail, the learning path that they follow can be taken from either direction. If you want to take a look at the tools that Ontotext offers and then examine their place in the wider context of a real-life use case, we have got you covered. Or, you can move from the bigger picture towards the fine details of the specific tools.

In the spirit of this trio of webinars, Ontotext is a good partner that can offer you in-depth technical solutions and advanced tools, while keeping the big picture front and center.

We hope you've heard enough to want to dive straight into one of them or why not all three?

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Watch out for our next post in this series ***At Center Stage*** or visit our Webinars directly to check out what is upcoming!

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