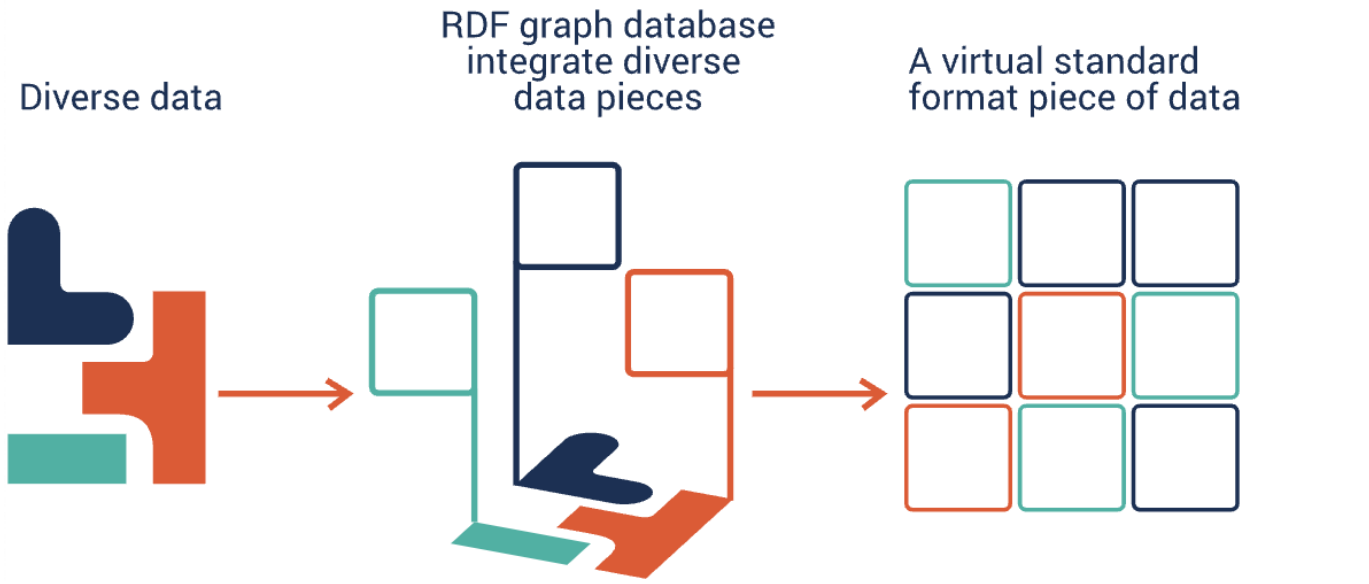
Data, “the newest purported cure to many of the world’s most “wicked” problems”, as David Beer, puts it in his praise for the book *Data Revolution*, “are ubiquitous”. Understanding them – not so much. Making sense of “what is given” (cf. the literal Latin meaning of datum: “something given”) has always been challenging but today, the challenge is growing at an exponential rate. Just like the volume and the variety of available data are. In the digital age, what we are given are tons of bits of data.

To turn these data pieces into building blocks of smart integrated approaches to solving complex business problems, we have to create systems capable of discovering relationships and detecting patterns within all kinds of data. We also have to design platforms that capture and analyze large volumes of heterogeneous information seamlessly. We are to bring meaning to the tons of bits of data.



It Doesn’t Mean a Thing if it Ain’t Got … Semantics

What does a political turmoil in Egypt mean to the travel market? How would it affect the bottom lines of a travel company and all the businesses, that provide related services: hotels, transport, tour guides, medical insurance?From a data perspective, part of the answers lies in disparate databases, which keep records of events, number of tourists, number of canceled

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bookings, etc.

Another part lies in understanding the complex relationships between these data. What do these disparate records mean in relation to one another? How are they connected and what is the nature of these connections?

There are many data management systems promising to provide ways of generating, collecting, organizing and storing an ever-growing amount of data, and, to an extent, they can help you with the first part of the answers. For example, for many years relational databases were the preferred choice for data storage and retrieval. But their powers are limited and in many cases not suitable to the nature of today's data.

Recently, with the explosion of generated data and the need to manage data silos more efficiently, many different technologies were developed and pooled under the umbrella term of 'graph databases'. Share on X

And they all seek to provide solutions for the second part of our answers. Although these databases differ in speed, properties and other technology-specific features, each can provide a successful solution to pretty complex data challenges.

Graph databases use graphs as a data model and by design, by nature, they are schema agnostic unlike, for instance, relational tables. Generally speaking, a graph is one of the most expressive and powerful models with which we can approach the challenge of huge amounts of heterogeneous, diverse data that surround us.

You will find that various graph databases exist on the market, but one type of them is especially suitable when it comes to finding intelligent data management solutions and this is the RDF Graph Database.

An RDF graph database is used for managing unstructured and structured data alike. They have minimally viable alternatives when it comes to capturing, managing and storing data that can be easily consumed by other users, federated across different information systems, or linked by a third party system. Simply put, thanks to them data got meaning.

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Bringing meaning to the tons of bits of data.

Why an RDF Graph Database is Good for Your Data (and Business)

> Data and analytics are transformational, yet many companies are capturing only a fraction of their value.

Cit.
http://www.mckinsey.com/global-themes/digital-disruption/whats-now-and-next-in-analytics-ai-and-automation

In an environment of “interconnected networks of partners, platforms, customers, and suppliers”, interconnected data is a no-brainer. The ability to integrate diverse and evolving data and see the nature of their connections gives enterprises a significant edge. An RDF graph database is good for your business for it has the potential to integrate all the required data pieces and serve as a springboard to key decisions and strategic moves.

To get back to our example with the political turmoil and its implications for the travel

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market, an RDF graph database can serve the integration of all the data needed and not only that but also provide for the smart query and analysis of these data.

As Vassil Momtchev, Ontotext's GraphDB product owner, recently put it in a write up on Zdnet – Graph databases and RDF: It's a family affair:

> RDF databases are very good at representing complex metadata, reference, and master data.

If you want to expose data, he argued, so it can be easily consumed by other users, federated across different information systems and linked by a third party system, the value of an RDF Graph database is immense.

Vassil Momtchev
CTO & Data Management and Products

"RDF databases are very good at representing complex metadata, reference, and master data.

Compared with other specialized data bases like Object-oriented, XML or time series databases, I believe RDF databases are a very mature market with many competitors, where every vendor has its strengths and weakness.

For sure,RDF/graph databases are not ubiquitous like relational systems, which still dominate the market. Probably the main reason is better predictability in working with lower data abstraction levels.

In relational, you operate with the physical data model instead of the logical model like in RDF. Still, this key advantage of the relational model is also a big disadvantage when designing very complex information systems with hundreds of concepts."

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Benefits of Ontotext's RDF Graph Database

Walking the talk about the value of RDF graph databases, Ontotext's team have been working on an RDF Graph database since 2006. A good number of users and many updates later, today GraphDB is a reliable semantic graph database.

It stays in the center of key semantic solutions in a wide range of enterprises, connecting hundreds of million facts in a Knowledge Graph. A graph composed by a number of internal and public datasets available in the Linked Open Data Cloud. At a strategic level, GraphDB can give you the benefit of data managed in such a way that will allow:

- better discoverability of content assets;
- rich semantic context;
- easier knowledge exploration, and navigation.

At an operational level, GraphDB is built to be a tool for those who want to:

- develop data-centric infrastructure;
- unlock the knowledge from the enterprise data silos;
- establish organizational information standards, compliant with W3C specifications;
- get an integrated view to all enterprise data sources using the Linked Data principles;

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To truly understand data and bring meaning to them, we are to understand the importance of data integration.

Epilogue: There Is No Silver Bullet but There Is a Smart One

RDF graph databases, GraphDB included, can work wonders with serving information needs and handling the growing amounts of diverse data. But they are not a silver bullet for all data challenges. To truly understand data and bring meaning to them, we are to understand the importance of data integration.

Because it is only when integrated and connected meaningfully that enterprise data can meet the complexity of the captured, created and curated information bits and further turn these information bits into knowledge bytes, bytes that got meaning. All it needs is meaning. Meaning that is well-described and linked.

Curious to explore how interlinking data sets and building relationships between facts allows

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for uncovering meaning inside unstructured data and for inferring new knowledge?