# Multiplying the Value of Big Data

How Qlik Sense gives you an edge
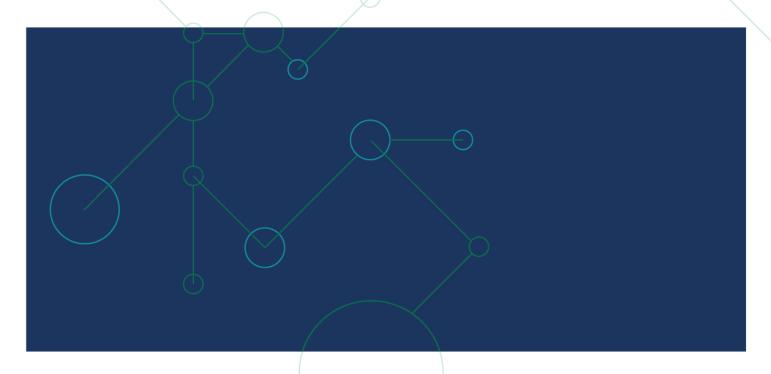
LEAD WITH DATA  Qlik Q

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## SUMMARY

- You can't get all of Big Data's benefits until you make it easy for all your business users to analyze it.

- The key to empowering business users to analyze Big Data is to make it easy for them to access this information and then show them only what's relevant to them.

- There could be multiple methods for making Big Data relevant, and they depend on the volume and complexity of your data.

- Qlik Sense has a variety of options for enabling all your users to explore your Big Data and make discoveries within it — fast.

## INTRODUCTION

Big Data is no longer a new term, it's the new reality. But while most organizations are already putting it to use in terms of storing vast quantities of data, many are still struggling to figure out how to best work with Big Data. What are the best options for making it beneficial?  How can one best utilize this vast repository to discover new opportunities, solve challenging problems and get an edge on their competitors?

This paper walks through Qlik's approach to making Big Data accessible to your Qlik Sense users, including a series of options for keeping your data relevant and in-context.

# Using Big Data: Making it relevant, in-context and cost-effective

Business users need their own way to navigate through massive amounts of data, find what's relevant, and get answers. Thus, there are some important aspects to consider when you're giving business users the ability to work with Big Data: the relevance and context of the information as well as the cost-effectiveness of delivering the data.

## Relevance: The right information to the right person at the right time

Qlik's approach is to start with what users need. And for users, access to the right data at the right time is more valuable than access to all the data, all the time. For example, a local bank branch manager would only want to understand the sales, customer intelligence, and market dynamics in their branch— not in the nationwide network. With that one consideration, we go from data overwhelm to data relevance.

## Context: Allowing users to explore, dive deeper, and pivot

Qlik Sense is different from other analytics solutions. Our one-of-a-kind Associative Engine dynamically associates every piece of your data with every other piece, in all your data sources. That makes it possible for users to dive in, explore freely, and always be surrounded by context. And whenever a user makes a selection, Qlik instantly updates all analytics and all associations to reflect that selection.

Let's look at an example. On the Qlik platform, a Sales by Region chart will be surrounded by related information — a Sales by Product chart or an interactive list of categories including date, location, customer, and sales history. If the user selects one region in the Sales by Region chart, the Sales by Product chart updates to show sales from the selected region. That makes it incredibly easy to focus on (for example) a particular product in a particular geography sold to a particular customer.

This associative experience becomes even more useful where there are hundreds or thousands of products, customers, and geographies. Rather than scrolling through thousands of items, users can slice massive datasets with a few clicks.

**CUSTOMER EXAMPLE:** Major Package Delivery Service

**Up to 1.6 billion records per week**
Could previously only look at one week of data at a time

**Solution:**
- ODAG provides users with a rolling multi-week overview of package volume and delivery performance.
- Users then drill into detail to compare trends and seasonal activity to better understand performance

**Applications:**
- Predictive workloads
- Delivery accuracy
- Customer campaign performance
- Problem package sources
- Route coverage
- Workload efficiency

**Cost-effective:  Compute power vs. demand for real-time data vs. budget**

In a perfect world, every user would have unlimited compute power to view and analyze unlimited amounts of up-to-date data.  But the reality is that organizations need to balance desired compute resources vs. budget constraints as well as business needs vs. data recency.  What information does the business (and/or the user) require to be up-to-the minute?  What segments of data does each department need to analyze?  How can compute usage be optimized to ensure the company is effectively spending its IT budget?  Qlik Sense gives you the capabilities to:

- Fine-tune which dashboards should be refreshed at regular intervals vs. having the user control when information is updated.
- Provide everyone with pre-selected sets of data for analysis or let each user select for themselves which data they want to explore in detail.
- Analyze the quantity and variety of queries against a data repository to better optimize user interaction vs. server costs

## Qlik's options for handling your Big Data

How you structure, access, and use your Big Data differs, of course, depending on what you do and what type of data you're working with. Qlik Sense offers a range of built-in capabilities and multiple techniques that you can use individually or in combination:
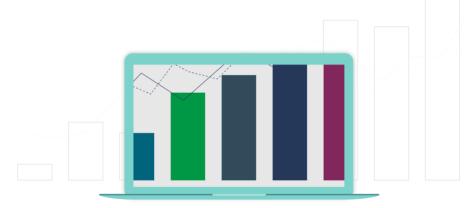
- In-memory

- Segmentation

- On-Demand App Generation

- Dynamic Views

- Custom and other methods

In some cases, one method will be enough. In others, you'll want to use several methods. As always, you'll have to navigate some tradeoffs between flexibility; user performance; and data volume, variety, and velocity.

**In-memory**

The Qlik Associative Engine optimizes the speed of exploration by automatically compressing data to 10% of its original size and storing it on the server, not the local machine — giving you fast response rates even with millions of rows. For many Qlik customers, this capacity alone is enough to satisfy their Big Data requirements.

And because the memory on standard computer hardware continues to grow in size and decrease in price, Qlik can handle larger and larger volumes of data. For example, a single 512GB server can handle uncompressed data sets near 4TB in size. With Qlik's compression scheme, the more redundancy in the data values, the greater the compression.

Unlike technologies that simply "support" multi-processor hardware, the Client-Managed version of Qlik Sense Enterprise takes full advantage of all the power of multi-processor hardware. It distributes number-crunching across all available processor cores, maximizing performance. Qlik Sense Enterprise SaaS provides the option to have extended or dedicated capability that reserves extra resources just for apps that contain very large data sets.

**Segmentation**

Segmentation is the process of dividing one Qlik application into multiple apps to optimize performance, security, scalability, and maintenance.

Users can segment data by region or department, or they can segment a small dashboard or summary app from another app containing the detailed data.

For example, say a retail company has a massive set of data, and they want to enable their executives, their business users, and a few power analysts to explore it. They can use segmentation to "break up" the data into chunks that serve those different groups. Each of these groups can use their app without the RAM and CPU required for the full version. And with Qlik, the segmented versions require almost no maintenance or overhead.

## On-Demand App Generation

On-Demand App Generation (ODAG) is a function that automatically creates an analysis app when the user selects a "slice" of data.

The vast majority of users don't want to analyze the entire Big Data source, so they need a way to slice the data into relevant sections. Segmentation could work, but only if the user already knows what they need — and often, they don't. Plus, if different users want to look at different segments, the process becomes too cumbersome.

Segmentation also limits users' ability to explore freely in any direction. If they want to pivot to an area outside the selected segment, they'll have to start over with a new app.

ODAG solves both of those problems. First, the user works within a selection app, choosing from a "shopping list" of company-defined subsets like Time Period, Customer Segment, or Geography. This triggers the immediate creation of a detailed app containing the data selected. Within this detailed app, like any other Qlik app, the user can explore that data in any direction or even include other data sources. And since these apps are governed by the standard Qlik security rules, your administrator can control who can access the detailed data versus summary information.

With ODAG, users have the freedom to "fail fast," investigating different slices of the data source without having to develop a new app every time they pivot. At the same time, administrators can give users broad access to massive troves of Big Data, since only the requested slice is being managed in-memory at any time.

## Dynamic Views

Dynamic Views is the ability for users to have control over what and when data within a chart can be updated.

While users would always prefer to see the latest information related every data element, one needs to balance data source usage cost vs. system performance vs. business requirements.  Qlik provides a hybrid approach where one can utilize the in-memory capabilities of the Associative Engine as well as deliver near real-time data directly from the source.

This capability in Qlik Sense is called Dynamic Views and it gives users the ability to refresh the data

within one or more charts on-demand.  If there are multiple users of the same app, each user individually controls when the chart they see is updated.  Dynamic Views will work with any kind of chart, including extensions, as well as with any data source that's connected to the app.  And an app can contain both Dynamic Views and regular charts.

## Custom and other methods

When you take advantage of the 1700+ member Qlik partner network and our open APIs, you have even more options for working with your Big Data. For example, you could develop a custom app using the same APIs used by our ODAG apps, where user selections would trigger the creation of filtered data sets for analysis. The development of custom apps requires more advanced technical skills, but it gives you the freedom to precisely tailor the UI and functionality to your user's needs.

# Big Data uses cases vs. Qlik options

There's no one right way to access and analyze your Big Data. The key is to understand what's driving the need to access big data.  Take a close look at the use case along with related business requirements and data sources and then decide which method or combination of methods makes the most sense.

| | In-Memory | Segmentation | On-Demand App Generation | Dynamic Views | Custom & other methods |
|---|---|---|---|---|---|
| **What It Does** | Highly compresses data into memory. | Users move among multiple related segmented apps (e.g. by region) | User selections trigger the creation of a related app for analysis | Within a single app, the user selects when to refresh data within one of more charts | • Partner technology<br>• Custom-built app in which user selections trigger the generation of a filtered data set for analysis via Multiple APIs in Qlik Sense<br>• Other custom solution |
| **When To Use It** | • The compressed data source fits into server memory<br>• Only aggregated or summary data is needed<br>• Only record-level detail over a limited time period is needed | A data source that's too unwieldy to be managed in server memory and *can* be split into pre-defined segments | A data source that's too unwieldy to be managed in server memory and *can't* be split into predefined segments | Enable users to see the latest information, but without overloading system performance | When you want functionality that goes beyond what the other options offer |
| **Data Volume** | 100's of millions to billions of rows | 100's of millions to billions of rows per segmented app | Billions of rows | Billions of rows | Billions of rows |

# Qlik Sense and Big Data connectivity

Qlik is an open platform, and it gives you a number of built-in and third-party options for connecting to Big Data repositories.

- **ODBC Connectivity.** Out-of-the-box, Qlik Sense includes drivers for connecting with Apache Hive, Cloudera Impala, Google BigQuery, and other software. You can also access other Big Data tools by combining the vendor's ODBC driver with Qlik's ODBC connectivity.

- **Data-source specific connectivity.** We've partnered with multiple vendors to be certified. Two examples: We're certified with Cloudera (Impala) and with SAP for their HANA ODBC driver.

- **Partner-developed connectivity.** A number of Qlik partners have developed additional connectors designed to work with data sources or applications that fall outside current Qlik connectivity.


# Going the last mile with Big Data

Big Data analytics shares a common challenge with the telecom industry — the last mile.

Bringing telephone, cable, and Internet service to end points in customers' homes is expensive. Service providers have to fan out the network from the backbone, rolling out trucks, digging trenches, and installing lines. In some cases, providers pass high installation costs to the customer, or they neglect to go the last mile at all.

Today, most technology providers working on Big Data are focused on processing it — dealing with the backbone, not the last mile. They're not delivering analytics platforms that empower business users to make real discoveries with real business outcomes. That's what Qlik Sense does.

Qlik Sense gives every user the power to access Big Data, collaborate on it, use it in combination with traditional data sources, and explore it to make discoveries that make a difference. By doing so, Qlik is enabling businesses around the world to increase the value of their Big Data investment.

## About Qlik

Qlik's vision is a data-literate world, where everyone can use data and analytics to improve decision-making and solve their most challenging problems. Qlik provides an end-to-end, real-time data integration and analytics cloud platform to close the gaps between data, insights and action. By transforming data into active intelligence, businesses can drive better decisions, improve revenue and profitability, and optimize customer relationships. Qlik does business in more than 100 countries and serves over 50,000 customers around the world.

**qlik.com**

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