

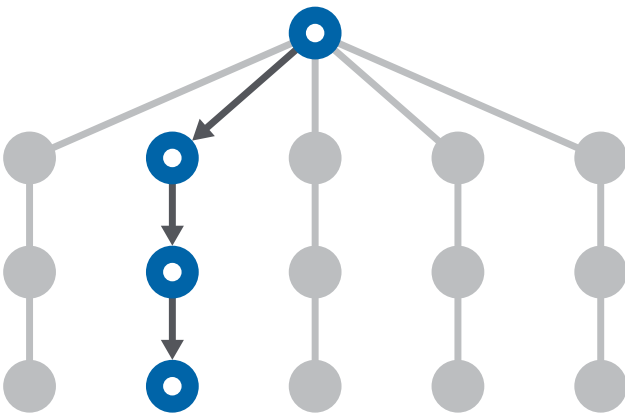
DATA ANALYTICS

The Associative Difference

Your unique advantage for
uncovering hidden insights

THE LIMITS OF QUERY-BASED TOOLS

Almost all of the analytics tools on the market today share the same essential architecture. They're built on relational databases, and they use SQL and query-based approaches for analytics. That's a major flaw. Because while SQL is required to pull data from many sources, it was never designed to support interactive analytics, and it places strict limits on how data can be accessed and explored.



- ✘ Partial subsets of data
- ✘ Restricted linear exploration
- ✘ Slow performance
- ✘ “Ask, wait, answer” cycle”

In query-based BI tools, data sources have to be brought together using SQL joins, and assumptions must be made in advance about what types of questions users will have. All other data is left behind. If a user discovers something interesting and wants to pivot their analysis to an adjacent question or data set, they'll almost certainly have to re-build complex queries – and that means going back to the data experts. We call this the “ask, wait, answer cycle,” where every new type of question has a waiting period.

The Qlik Associative Engine – Built for Modern Analytics

Qlik offers an entirely different technology for exploring your data: The Qlik Associative Engine. Designed specifically for interactive, free-form exploration and analysis, the Associative Engine fully combines large numbers of data sources and indexes them to understand the associations – without leaving any data behind. It offers powerful on-the-fly calculation and aggregation that instantly updates analytics and highlights relationships in the data, exposing both associated and unrelated values after each click.

This means that any user – at any skill level – can search and explore their data in any direction, following their curiosity wherever it leads. It's like having peripheral vision, removing blind spots and uncovering hidden insights that aren't available in query-based tools. That's why Qlik users consistently drive tremendous value by discovering completely new insights. We call it The Associative Difference® – and only Qlik can deliver it.

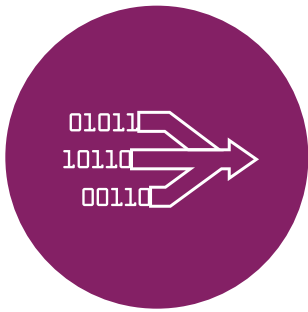


What makes Qlik's associative technology so powerful? Three major characteristics:

- First, the ability to bring together all your data, from all your different sources, without leaving any data behind or getting anything wrong.
- Second, users of all skill levels can explore without boundaries, asking all the questions and follow-up questions they have, through simple searches and selections.
- And third, people can work at the speed of thought, without having to wait or go back to the experts for new questions.

Qlik combines these key attributes to create an unmatched experience for any user of any skill level.

- ✓ All your data
- ✓ Explore without boundaries
- ✓ Speed of thought
- ✓ **Unexpected insights**

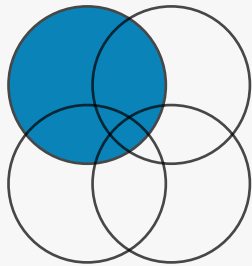


All Your Data

Query-based tools typically require primary and secondary data sources to be defined. As a consequence, result sets are limited, and data is left behind.

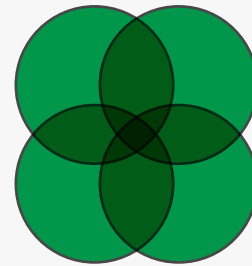
Qlik is different. Qlik's Associative Engine fully combines all data – even imperfect data – from large numbers of disparate sources, without suffering data loss or inaccuracies. This is the equivalent of what's technically known as a “many-to-many full outer join.” Simply put, users have access to all their data from all their sources, in any combinations they need.

Query-Based Tools



- You don't know what's been left behind.
- You don't know what has been counted or how often.

Qlik's Associative Engine



- No data is left behind.
- No data is double-counted.

The Qlik Associative Engine also allows imperfect data to be loaded without having to be fully cleansed and modeled in advance. This helps expose areas of your data and your business where issues may exist and value can be created. And users can create hierarchies on the fly, without having to pre-aggregate data in advance.

Qlik offers both smart, self-service data preparation tools for business users and powerful data integration scripting for complex scenarios, allowing users to create limitless combinations of data for analysis without the need for external tools or data warehouses.



Explore Without Boundaries

With Qlik's Associative Engine, people can explore and analyze freely, in any direction, without restrictions or boundaries. **Here's how:**



- Users can make selections within all visualizations, tables, charts, and other objects.



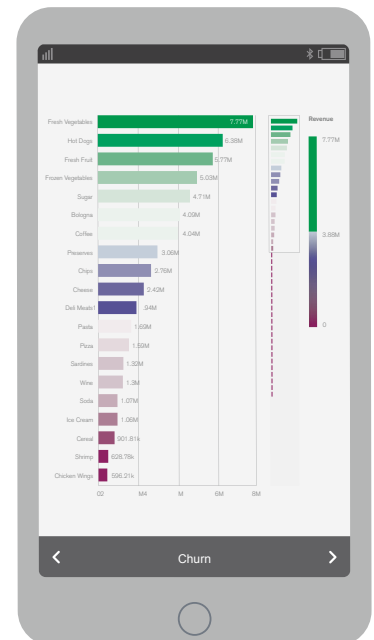
- Or they can use global search to uncover associations and refine context.



- After each click, the engine instantly responds by
 - Recalculating all analytics to the new context (selection state)
 - Highlighting associations in the data values using green (selected), white (associated), and gray (unrelated)

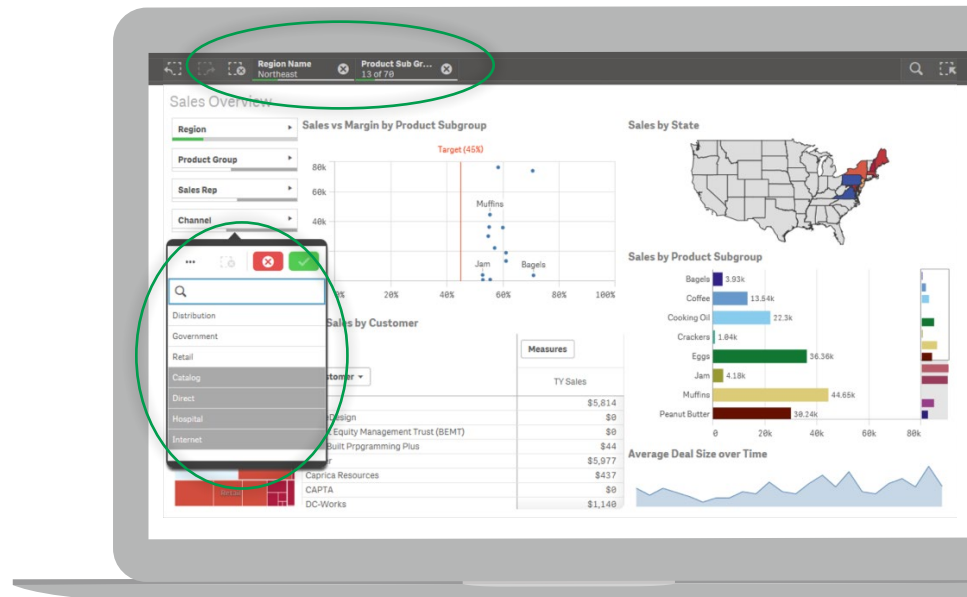
Because the Associative Engine dynamically calculates analytics instead of pre-aggregating data, users can pivot their thinking to new ideas or data sets. This means any user can ask any question, at any level of detail, without being limited by predefined queries or hierarchies.

Qlik has a unique and powerful capability not available in query-based tools; we call it the “power of gray.” It’s the ability for users to see unrelated values in their analysis in addition to related data, relative to their selections. This information often conveys the most impactful insights – products that didn’t sell, for example, or customers who didn’t buy – giving users peripheral vision and helping them discover hidden areas of opportunity or risk. With query-based tools, these values are filtered out, leaving people with only a partial data set and an incomplete perspective.



In addition, with Qlik, whenever a user makes a selection or performs a search, all visualizations, analytics, and associations are instantly updated to the new context. That's because the Qlik Associative Engine is context-aware, maintaining the selection state for all analytics across an entire application.

This capability gives people the ability to understand the impact of their questions on surrounding analytics, at different levels of detail, at the “speed of thought.” Users can immediately spot potential areas of interest, think of new questions, and continue to explore further. With query-based tools, users have to wire objects together and run multiple queries to simulate this experience, but it quickly breaks down.



A leading global bank and investment firm discovered nearly \$20 million in mortgage pipeline that wasn't associated with any particular loan processor. These mortgages showed up “in the gray.” The firm immediately pursued the lost pipeline, generating tremendous value from a single discovery that wouldn't have been possible with query-based tools.



Speed of Thought

Query-based tools may be sufficient for creating visualizations, but only a handful of skilled users can or want to do that. And even fewer people can create the queries to support these visualizations. So what happens to the majority of your business users? They end up with slow, static visualizations and reports – which are restricted to linear exploration on partial subsets of data. Unless the exact questions are predicted in advance, and the queries are built appropriately, people have to go back to the data experts. Once again, the “ask, wait, answer” cycle puts the brakes on getting insights.

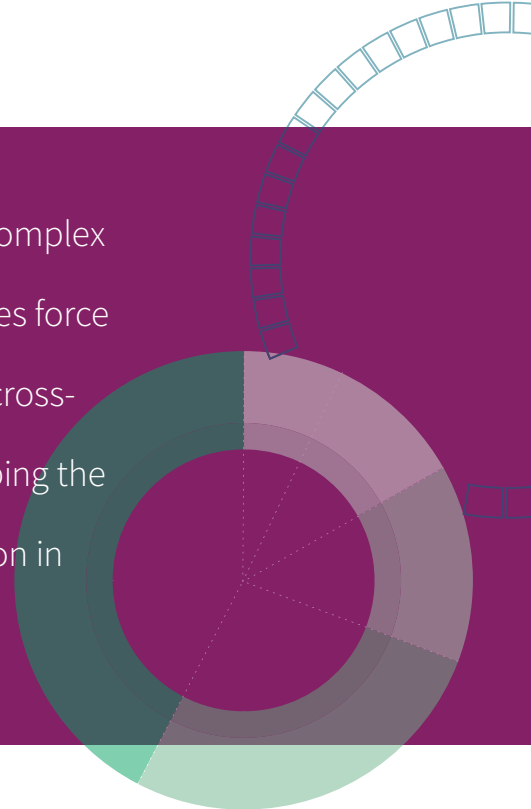
In contrast, the Qlik Associative Engine dynamically calculates analytics and highlights associations as quickly as users can think of questions. With instant responses to any question, people can get the answers they need without having to wait – for the system or for the experts. This means faster time-to-value and hundreds of more informed decisions every day.



The Associative Engine achieves an unmatched combination of speed and flexibility that simply isn't possible with query-based tools. How? By combining several unique, patented, in-memory innovations – including compressed binary indexing, logical inference, and dynamic calculation. And Qlik delivers this unprecedented performance on big and small data sets, in combination with each other. As a result, large communities of concurrent users can ask unanticipated questions and get instant feedback, leading to new questions and new discoveries.

This engine is our core technology advantage – and the brains and brawn behind Qlik's Associative Difference.

Global tech giant Cisco brought together 500 million records of complex customer data from multiple systems and allowed their large sales force to freely explore customer portfolios. Users uncovered the best cross-sell opportunities for maintenance and additional products, helping the company generate \$100 million in support renewals and \$4 million in cost savings – and greatly improving customer satisfaction



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About Qlik

Qlik's vision is a data-literate world, one where everyone can use data to improve decision-making and solve their most challenging problems. Only Qlik offers end-to-end, real-time data integration and analytics solutions that help organizations access and transform all their data into value. Qlik helps companies lead with data to see more deeply into customer behavior, reinvent business processes, discover new revenue streams, and balance risk and reward. Qlik does business in more than 100 countries and serves over 50,000 customers around the world.

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