

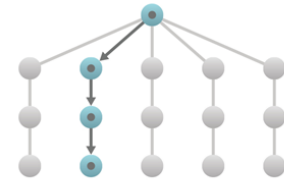
# The Associative Difference™

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Freedom from the limitations of query-based tools

## Relational Databases and Queries are Old Technology

Simply put, relational databases and SQL queries were not designed for modern analytics. While it's true that SQL is required to pull data from many sources, most analytics tools depend on SQL and query based approaches as their fundamental architecture for modeling data and supporting interactivity. This is a major flaw – resulting in restricted linear exploration and analysis on partial subsets of data. Data sources must 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 wants to pivot their analysis based on something they discover, they will likely have to re-build complex queries, which often means going back to more experienced data experts. We call this the “ask, wait, answer cycle”. Every new type of question has a waiting period.



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

## The Qlik Associative Engine – Built for Modern Analytics



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

The Qlik Associative Engine is designed specifically for interactive, free-form exploration and analysis. It fully combines large numbers of data sources and indexes them to find the possible associations, without leaving any data behind. It offers powerful on-the-fly calculation and aggregation that instantly updates analytics and highlights associations in the data, exposing both related and unrelated values after each click. This means people are free to search, explore, and pivot based on what they see, without limitations and without having to go back to experts and wait. That is why Qlik users consistently discover previously unforeseen insights which have been missed by query based tools, driving tremendous value. That's The Associative Difference – and only Qlik can deliver it.

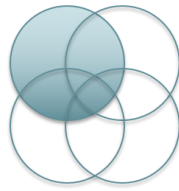
There are three major characteristics of Qlik’s associative technology that make it so powerful. The first is the ability to bring together *all your data*, from all your different sources, without leaving any data behind or getting anything wrong. Second, users can *explore without boundaries*, asking all the questions and follow up questions they have, through simple searches and selections. And last, 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 users of all skill levels.



## All Your Data

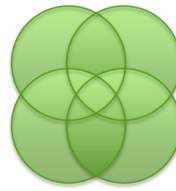
Qlik's Associative Engine fully combines data from large numbers of disparate sources, even imperfect data, without suffering the data loss or inaccuracy that typically occurs with SQL queries and joins. The Qlik Associative Engine achieves what is technically known as a “many to many full outer join”, which simply means that users have access to all their data from all their sources, instead of just the limited result sets returned by queries. Query based tools typically require primary and secondary data sources to be defined, meaning that one way or another, data will be lost.

### Query-Based Tools



“You don't know what's left behind”  
“You don't know what's counted how many times”

### Qlik's Associative Engine



“No data left behind”  
“No data double-counted”

The Qlik Associative Engine also allows imperfect data to be loaded without having to be fully modeled in advance. And hierarchies can be created on-the-fly by users without having to pre-aggregate data. Qlik offers both smart, self-service data preparation tools for business users and powerful data integration scripting for complex scenarios. These data preparation capabilities help expose areas of the data and the business where issues may exist and value can be created, without the need for external tools or data warehouses.



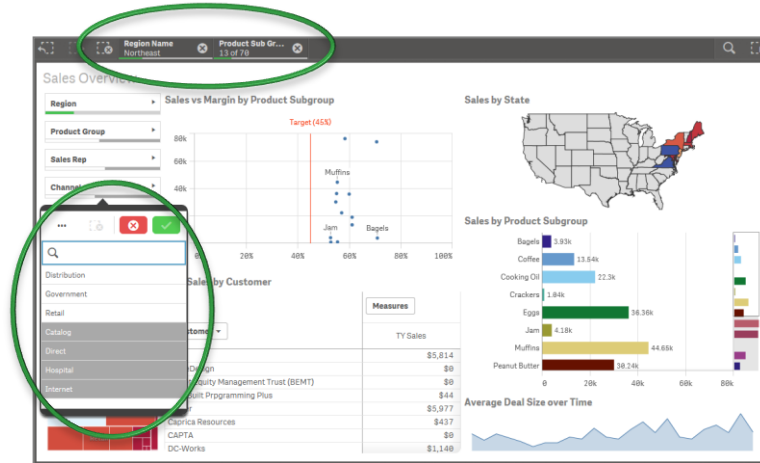
## Explore Without Boundaries

With Qlik's Associative Engine, people can explore and analyze freely, in any direction, without restrictions or boundaries. Users can make selections within all visualizations, charts, graphs, and other objects, and can use global search to surface data, associations, and analytics. After each click, the engine instantly responds by recalculating analytics to the new context and highlighting associations in the data using green (selected), white (associated), and gray (unrelated). Because the engine dynamically calculates analytics instead of pre-aggregating data, users can pivot their thinking to new ideas or data sets, asking any questions they want, at any level of detail, without being limited by predefined queries or hierarchies.

The “power of gray” is a unique and powerful capability that allows 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, such as products that did not sell or customers that did not buy, helping users discover previously unforeseen areas of opportunity or risk. With query-based tools, these values are simply filtered out, leaving people with only a partial data set and an incomplete story.

*A leading global bank and investment firm discovered nearly 20 million in mortgage pipeline that was not associated with any loan processor. These mortgages showed up 'in the gray'. The firm immediately pursued the lost pipeline, generating tremendous value from a single discovery that was not possible with query based tools.*

Another defining characteristic of the Qlik Associative Engine is that it maintains a unified context for all analytics across an entire application, without having to wire objects together or run multiple queries. When a user makes a selection or performs a search, all visualizations, analytics and associations are instantly updated to the new context. This gives people the ability to not only interact with individual visualizations, but also understand the impacts of their questions on the 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.



## Speed of Thought

Query based tools may be sufficient for creating visualizations, but only a handful of skilled users can or want to do this. Furthermore, there are even fewer people that 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 – that only offer restricted linear analysis 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. We call this the “ask, wait, answer cycle”.

The Qlik Associative Engine dynamically calculates analytics and highlights associations as quickly as users can think of questions. With this instant response, 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 each day.

The Qlik Associative Engine achieves an unmatched combination of speed and flexibility, not possible with query based tools. The reason is simple – it’s what it was designed to do. It combines several unique and patented in-memory innovations including compressed binary indexing, logical inference, and dynamic calculation, to deliver high performance on big and small data sets, for large numbers of concurrent users, asking questions that are not anticipated. This is our core technology advantage, and the muscle behind Qlik’s Associative Difference.

*A global IT and networking provider brought together 500 million records of complex customer data from multiple systems, and allowed their large salesforce to freely explore customer portfolios to find the best cross-sell opportunities for maintenance and additional products. The company generated 100 million in support renewals and 4 million in cost savings, and greatly improved customer satisfaction.*

