Dive Deeper into
the Black Forest

The Price/Performance Problem

The world's largest organizations struggle to extract the value they need from their largest data assets. As data volumes grow, performance becomes unaffordable. When your performance is coupled to data volume, every insight will take longer and longer and/or cost more and more as the mountain of data grows.

The last 50 years of computer science has failed to provide a data infrastructure that can efficiently organize data for rapid query at scale. Instead, the response to exponentially growing data forces organizations to choose between solutions that trade important properties for somewhat better performance or that apply unsustainable brute force techniques to mask inherently inefficient designs.

The root of this challenge is how to rapidly and efficiently organize data at any scale. If there was an effective way to do this the shortcomings of today's data management solutions could be avoided. Historically, data indexing schemes have been used to keep data organized for efficient search. These schemes were developed in a different era of computing when data volumes and velocities were exponentially lower. More data should equal more insight. Unfortunately, that is not usually the case today. The reason is the performance of traditional algorithms for indexing and querying data are coupled to the size of the data set. As the data size increases, extracting insight gets costlier, slower, or both.

Until now, there were only two approaches for handling massive data volumes: continue increasing computation resources or deal with ever increasing latency to extract value from your data. The former is unsustainable, and the latter loses productivity; neither is acceptable. The current generation of data management solutions simply do not provide the scalability, performance, and cost efficiency today's data-centric organizations require at scale. Craxel has invented and patented technology that provides a better way to organize data **at any scale**. Our algorithms make it possible to organize high volume, high velocity data at the speed it is generated at incredibly low cost. Additional capabilities include rapid and complex query for all data types, high availability and resilience, support for decentralization, and unprecedented security capabilities.

Unprecedented Price/Performance for the World's Largest Data Challenges

Craxel's Black Forest™, a next generation data analytics platform, delivers massive productivity gains through dramatically faster queries and rapid time to insight. Using a fraction of the computation of traditional algorithms, organizations can extract value faster and more efficiently. To accomplish this, Black Forest provides three key benefits:

Rapid Time to Insight: Productivity is lost when either humans or algorithms must wait for data to be ingested or for queries to complete. Making data available immediately as it arrives reduces time to insight, enabling decisions to be made faster and with the latest information. Days, hours, or even minutes to ingest data and extract useful information substantially decreases productivity. Craxel's breakthrough computer science delivers a quantum leap for ingesting and indexing data at line speed so that it is immediately available for query by both humans and algorithms.

Unprecedented Price/Performance: Many recent and prominent data platforms have given up on trying to organize data efficiently. Instead, they resort to brute force methods for supporting fast queries. Rather than suffering the immense cost of maintaining traditional indexes as data volumes grow, these "index free" platforms simply scan all the data in the relevant columns for every query. This is analogous to throwing away the card catalog at the Library of Congress and trying to find one book by looking at every book. Brute force methods use massive amounts of computational power and resources to perform, consuming massive amounts of energy. So why are brute force or "index-free" methods so prevalent today? Because without Craxel's innovation, the time and cost to index complex data is too high. Black Forest's approach to organizing data uses **less computation** and is **exponentially more efficient** than O(N). Craxel's novel O(1) technology decouples performance and cost from data set size. Powered by unique O(1) technology for indexing multi-dimensional data in constant time, Black Forest delivers extraordinarily fast time to insight for high volume, high velocity use cases, enabling both rapid human and automated decision making.

Connecting the Dots with Time Series Graphs: The world is composed of trillions of people, places, and things, each with interconnecting timelines. The digital world is even larger. A data record is information about one of these people, places, and things. Each record has a time frame, whether implicitly or explicitly specified. Explicitly specifying a time frame makes the data multi-dimensional. Today's algorithms for organizing data simply do not perform well with multi-dimensional data. This is where Craxel's patented technology can determine exactly where a multi-dimensional data value should be stored or found in what's called constant time, or O(1). This allows extraordinarily fast query times over multi-dimensional data. A natural way to organize data for many problems is as a **time series or multi-dimensional graph**. This allows capturing the changes (time series) as well as the relationships (graph) in the data over time. Building very large time series graphs for trillions of people, places, and things at line speed as the data arrives is beyond the capabilities of traditional indexing algorithms. Black Forest can: build time series graphs for millions or billions of people, places, and things; build massive time series graphs at the speed the data arrives; and support very large time series graphs with multiple years of data at any scale.

Visit [Craxel.com](https://www.craxel.com) for more information

About Craxel

Craxel is a software company empowering the world's largest organizations to extract the value they must have from their largest data assets. Craxel's patented Black Forest™ software products deliver solutions with astonishing speed, efficiency, and security for the world's largest data, analytics, and AI problems, achieving price/performance at scale that is unprecedented in the history of computing.

Powered by unique O(1) technology for indexing multidimensional data in constant time, Black Forest delivers extraordinarily fast time to insight for high volume, high velocity use cases, enabling both rapid human and automated decision making. The fast query times provided by Black Forest dramatically improve human productivity, while enabling the next generation of algorithmic and AI capabilities. Black Forest achieves both speed and efficiency because it uses a fraction of the compute power required by traditional approaches.

Speed and efficiency equals Better Decisions, Faster, At Any Scale.