The future of BI is networked: A networked model for business intelligence and analytics

Businesses today no longer operate like a collection of disconnected silos. Your BI and analytics solution shouldn't either. But this is what happens with expanding data ecosystems and desktop-based data discovery tools that can't support enterprise-wide analytics governance. This can force you to make decisions in a vacuum and work with conflicting and unreliable interpretations of the data. As these analytical silos proliferate, companies suffer from what experts call a "spreadmart effect," which undermines trust in the data and leads to poor decision-making.

Networked BI is a breakthrough approach to analytics that connects every part of your organization via a shared analytical fabric that every person can easily access and extend. It eliminates analytical silos once and for all, empowering everyone with self-service BI capabilities that enable you to leverage the collective intelligence of your organization.

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Business intelligence today: The centralized and decentralized divide

Much has been written about the evolution of the business intelligence (BI) and analytics space. While opinions differ about where the market is headed, there is no debate about how substantially it has been transformed. Evidence of this transformation has been mounting in recent years, with the emergence of data discovery tools aimed at business users frustrated with long wait times and lack of access to data. This has resulted in declining market share for vendors of traditional—or "legacy"—enterprise BI platforms, which dominated the industry throughout much of the late 90s and 2000s but have failed to keep up with growing business requirements for ease of use, speed, and agility.

According to Gartner, "there is significant evidence to suggest that the BI and analytics platform market's multiyear transition to modern agile business-led analytics is now mainstream."[1] Legacy BI platforms that support the traditional centralized model are generally known for delivering sophisticated analytical capabilities, high scalability, robust security, and strong governance management mechanisms. These legacy tools, however, require extensive BI expertise and have a reputation for high cost of ownership, long development cycles, and limited self-service capabilities that hinder users' ability to work with data on their own.

The decentralized model, on the other hand, is supported by desktop-based data discovery tools designed for ease of use and speed. These products make it possible for a business person without broad BI experience to access and analyze data independently. But despite their benefits, decentralized tools are not without problems. Among them, data discovery products generally lack the underlying technology architecture necessary for data governance and high scale. As analyst Wayne Eckerson points out, desktop discovery tools, left unchecked, result in "ungoverned spreadmarts that increase your support costs, undermine data consistency and waste your staff's time reconciling reports."[2]

Legacy BI platforms and desktop discovery tools present organizations with a risky choice between governance and agility. This leaves IT leaders ill-equipped to extend the use of BI across the enterprise to a user community that demands greater self-service, but without compromising consistency

"With its Networked BI capability, Birst comes close to the ideal of a 'single version of the truth' with one corporate-wide semantic layer. The solution supports centralized governance while allowing business units and individuals freedom via the use of 'virtual spaces.'"

Martha Bennett
The Forrester Wave™: Cloud Business Intelligence Platforms, Q4 2015

and trust in the data. Gartner writes that "as demand from business users for pervasive access to data discovery capabilities grows, IT wants to deliver on this requirement without sacrificing governance—in a managed or governed data discovery mode."[3]

Imperfect but fast: The return of analytical silos

Lacking a solution that combines centralized governance with decentralized self-service, business users will most likely choose products that provide the latter—at the expense of the former—in order to meet their demands for ease of use and speed. This ungoverned approach results in the creation of analytical silos that hinder the ability to make decisions with confidence. But despite these risks, many business users have come to accept data inconsistency as the price to pay in order to analyze data without depending on a central BI team. As such, they have adopted the maxim "imperfect but fast is better than perfect but slow."

"BI has overestimated the need for a single version of the truth for decades," says analyst Boris Evelson. "If it costs far more to get a single version of the truth, maybe it's wiser to take a cheaper version which is 80 percent good."[4]

In an attempt to propagate this view, many data discovery suppliers downplay the importance of a unified view of a

business. They state that the proverbial "single version of the truth" is a myth and not indicative of the realities of today's business climate.
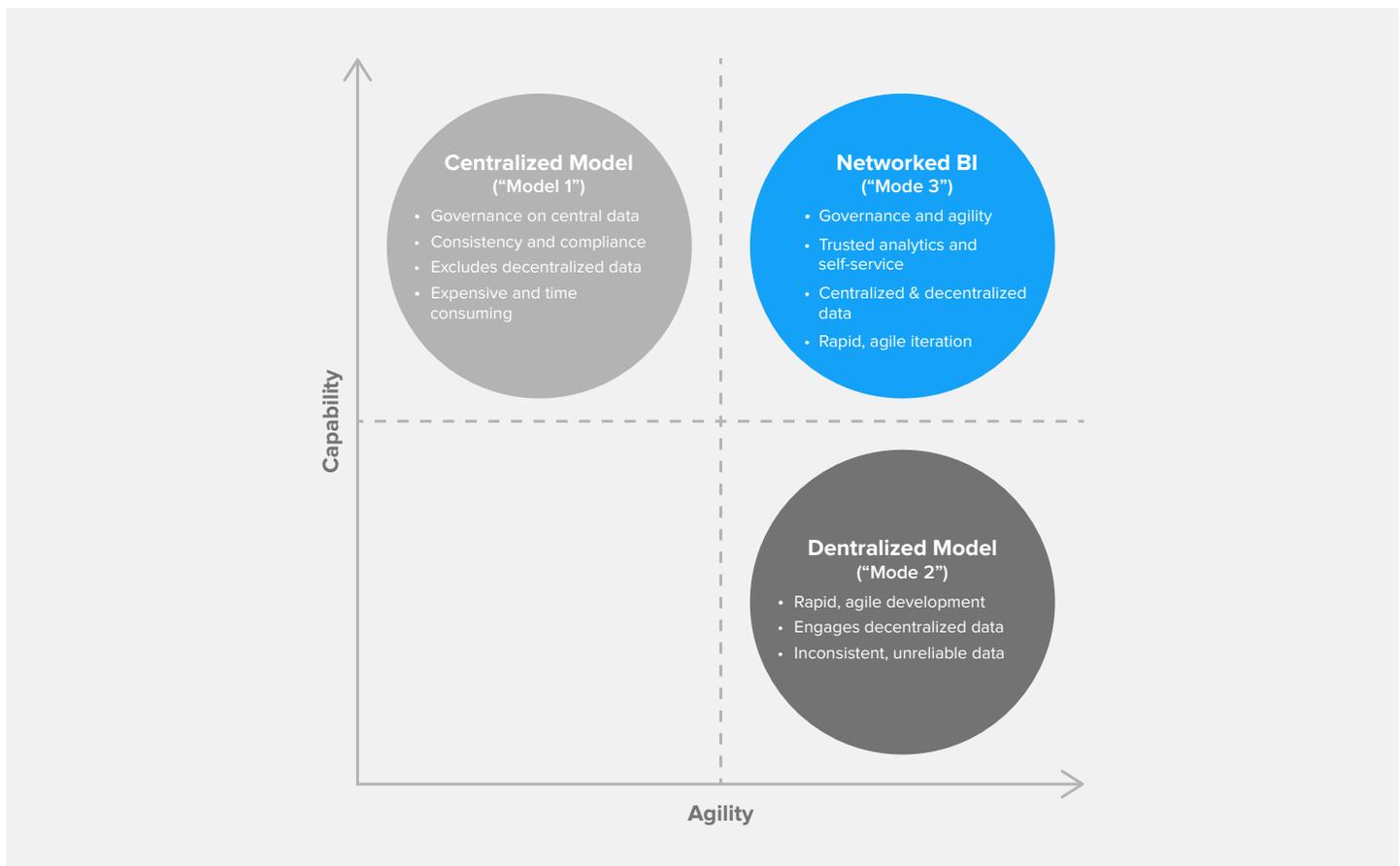
But undervaluing the importance of governance is a flawed approach that erodes a company's efforts to deliver trusted insights across the enterprise. Gartner finds that enterprise buying of BI and analytics platforms "has grown to the point where the purchasing influence is tipping back to include IT and central purchasing groups. This is further evidence of market mainstreaming and has caused buyers to place greater emphasis on enterprise readiness, governance and price/value, in addition to the agility and ease of use demanded by business users."[5]

The backlash against the idea of a "single version of the truth" is rooted in pragmatism, not in a rejection to good analytical governance. What people reject is the daunting task of manually delivering a governed layer of data using traditional legacy approaches (i.e., understanding core business logic, building and testing integrated data models, developing ETL routines across corporate systems, assembling and maintaining enterprise-wide metadata, etc.).

It can be reasonably argued that most people would choose a governed model that delivers trusted, reliable data across the enterprise as long as it could be delivered without slowing down the business or inhibiting user access to information. Unfortunately, until today, companies have to accept the rigidity of legacy BI platforms or the shortcomings of popular contemporary discovery products.

It is clear that neither a centralized ("Mode 1") nor decentralized ("Mode 2") model by itself is sufficient to solve this challenge. Ensuring success with BI and analytics requires a new approach that bridges the divide between governance and agility. A modern BI solution must support an entirely new model for delivery and consumption of analytics—a "Mode 3"—that enables decentralized self-service with centralized governance.

Capability / Agility quadrant diagram

Centralized Model ("Model 1")
- Governance on central data
- Consistency and compliance
- Excludes decentralized data
- Expensive and time consuming

Networked BI ("Mode 3")
- Governance and agility
- Trusted analytics and self-service
- Centralized & decentralized data
- Rapid, agile iteration

Dentralized Model ("Mode 2")
- Rapid, agile development
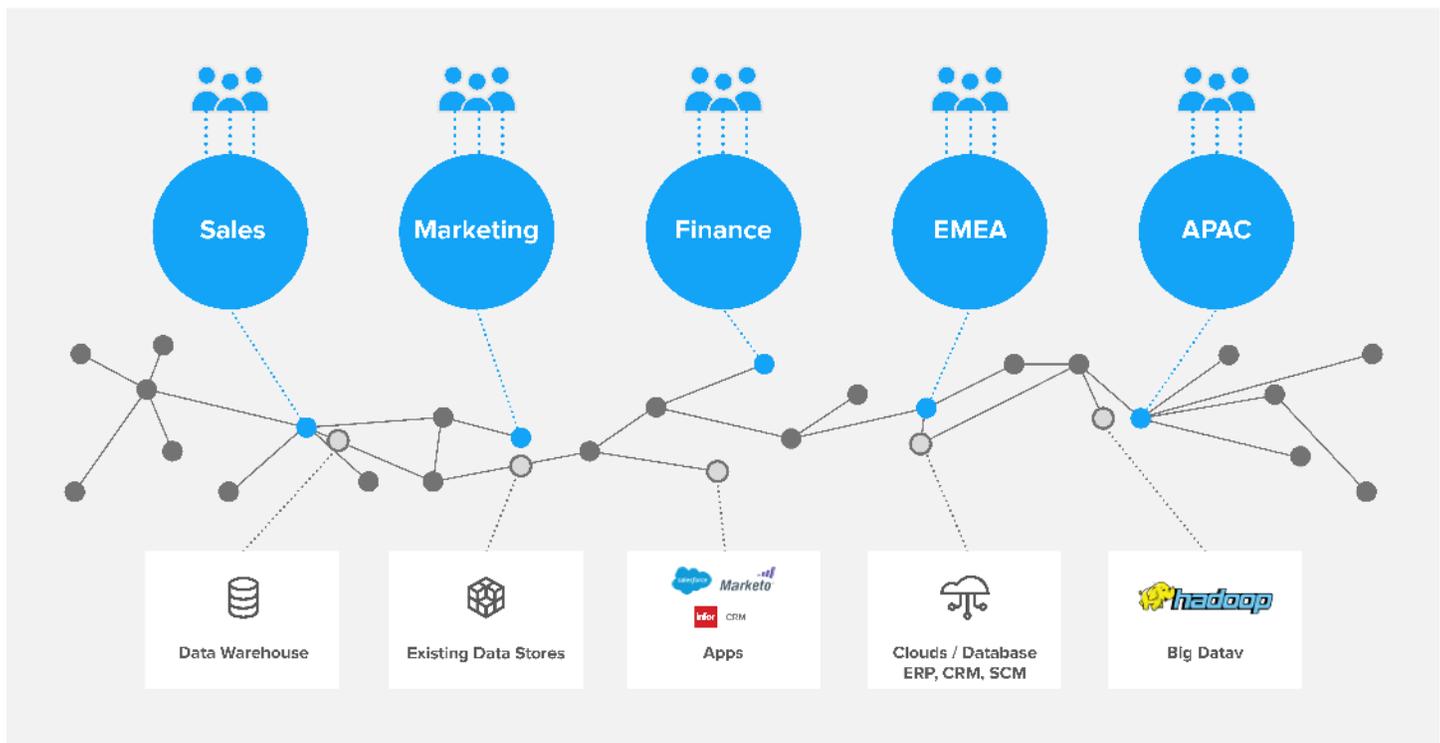- Engages decentralized data
- Inconsistent, unreliable data

Introducing networked BI: Moving beyond centralized and decentralized analytics

Networked BI is a new approach to analytics based on the idea that trusted and well-governed data is not at odds with speed and ease of use. It leverages new capabilities made available by modern technologies like cloud computing—multi-tenancy, virtualization, and web-scale architectures—to truly combine the centralized and decentralized models of BI, delivering the best aspects of both: end-user self-service without analytical silos.

In a networked BI model, analytics are delivered and consumed in a way that mirrors how companies operate in the real world: by empowering business units and individuals to act independently, establishing mechanisms by which they can leverage and extend the work produced by other teams, and defining a common set of business rules that govern how everyone interacts.

At the core of Networked BI is the concept of a "shared analytical fabric". The analytical fabric is a living network of data and insights that connects every part of an organization. Every person plugged into the network can benefit from data produced by other people, as well as extend it with their own data. And because all data added to the fabric is governed under the same business logic, analytical silos are never created so there is no ambiguity around what a particular dimension or KPI means.

Sales | Marketing | Finance | EMEA | APAC

Data Warehouse | Existing Data Stores | Apps | Clouds / Database ERP, CRM, SCM | Big Datav

In a networked BI model, for instance, a sales operations manager can analyze opportunities by salesperson across different regions. This analysis becomes part of the analytical fabric and can be shared with the marketing team. A campaign manager may then augment this analysis with her own data and expand it to include market segments, without impacting the work of the sales ops manager. The new insights extend the analytical fabric which, if appropriate, the entire company can share further for trusted collaboration. End users have autonomy to work with data on their own, while governance is maintained transparently.
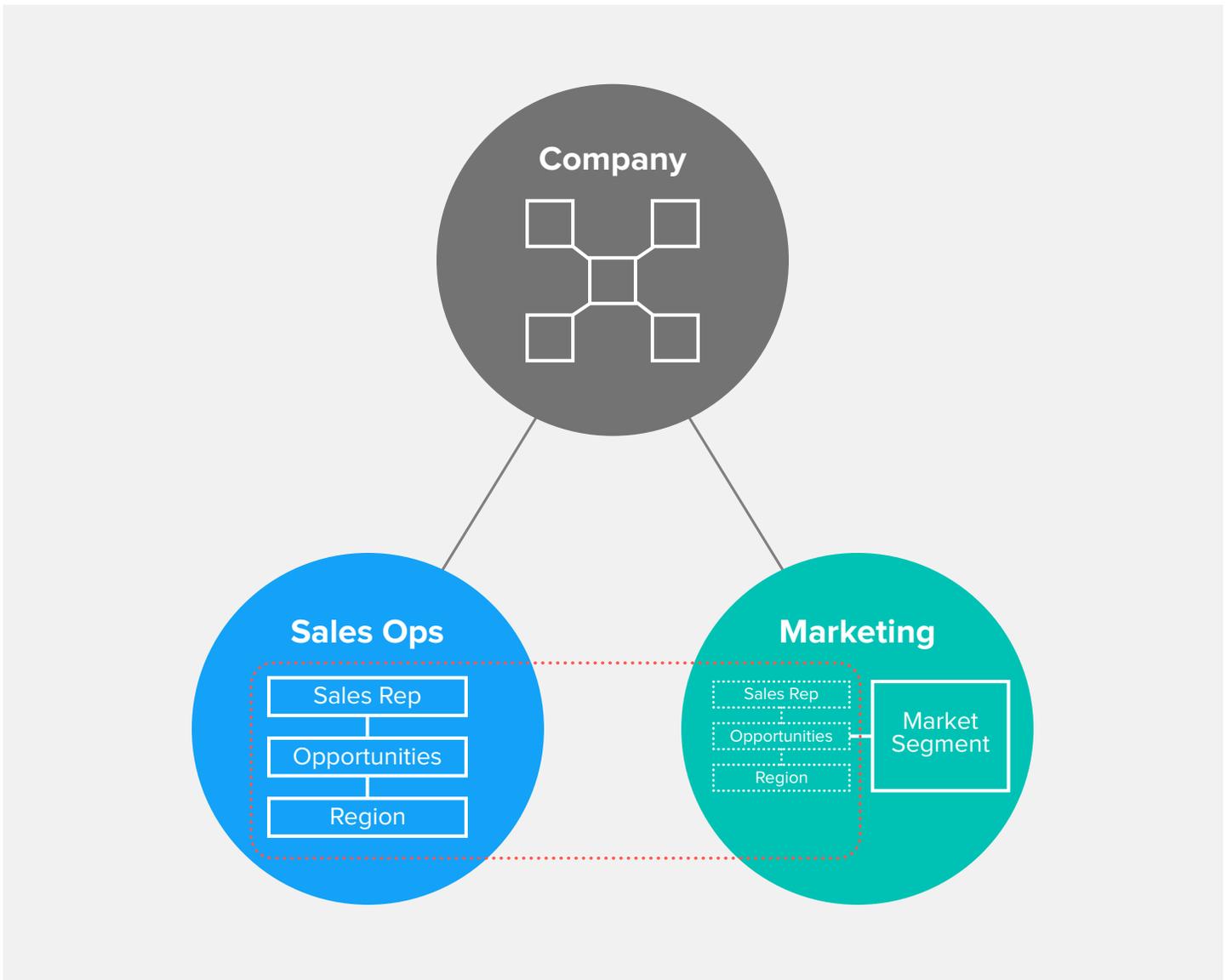
This model creates fascinating possibilities. If one thinks of the analytical fabric as an organically grown— "crowdsourced," if you will—network of insights, it becomes a powerful method for harnessing the collective intelligence of an organization, turning the idea of "enterprise business intelligence" into a reality.

Another fundamental capability of Networked BI is multi-tenancy, which enables the creation of virtual—not physical— BI tenants that are connected with each other. The use of virtual instances is important because, traditionally, delivering trusted and reliable data across the enterprise (i.e., many individual users from multiple business units or multiple territories) largely depends on physical replication of BI infrastructure—not just hardware but also data, metadata, user profiles, system configurations, etc.—making it a time-consuming and expensive effort. Locally dedicated

environments are required for development, testing and production, often with backup instances for mission critical applications. Administrators are tasked with managing constant data loads and metadata updates to maintain synchronization across different environments. The result is restricted access to data, long wait times for the business and, ultimately, a barrier to end user self-service.

Thanks to multi-tenancy, a networked BI model enables IT organizations to deploy virtual copies of their production environments for testing and development at a dramatically faster rate than using a traditional approach. All configurations, data flows, analytic models, reports and dashboards are copied in one step. Once tests are complete, development, test, and production instances can be swapped instantaneously and without any interruptions to users.
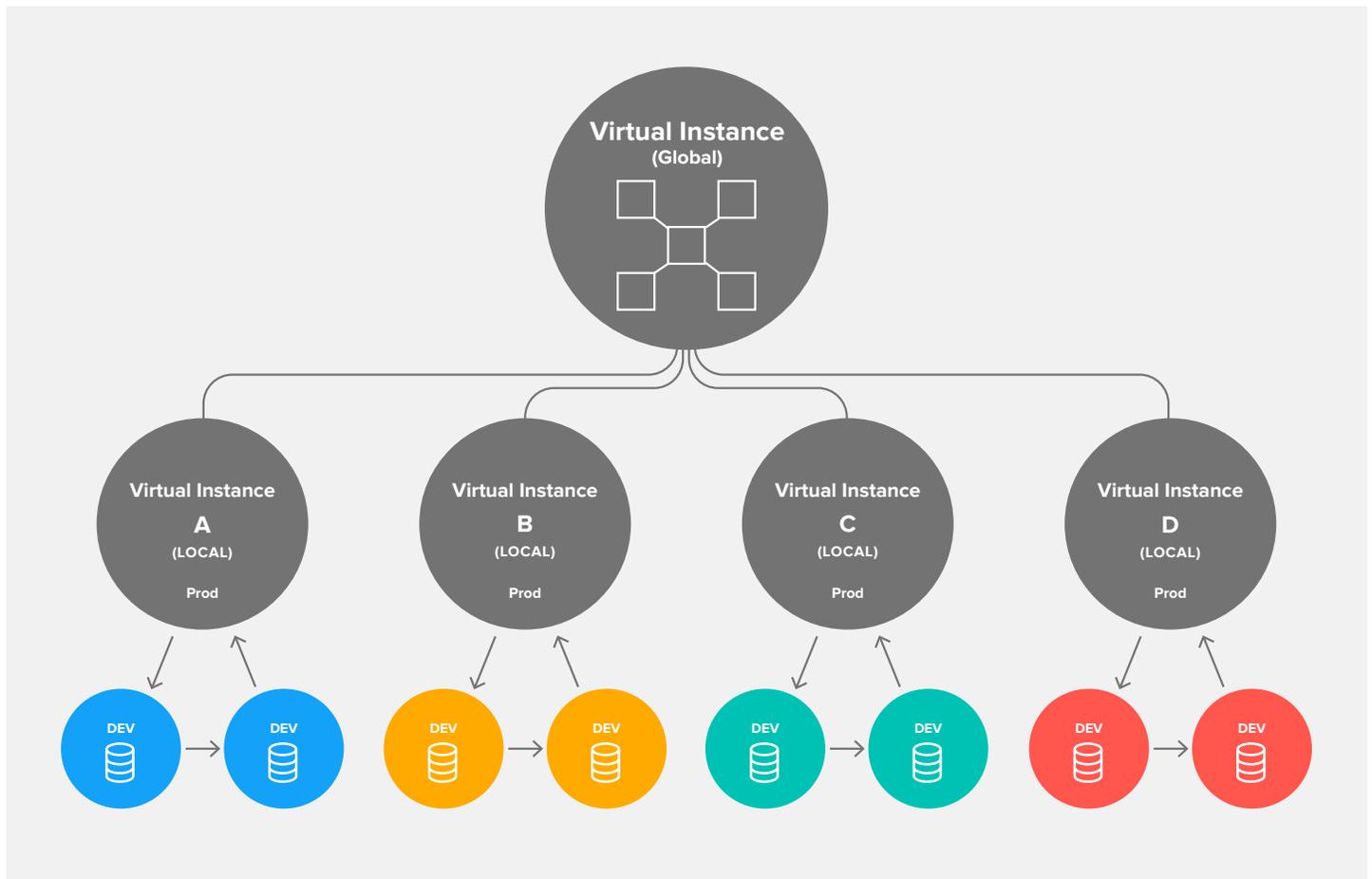
Networked BI real world use case:

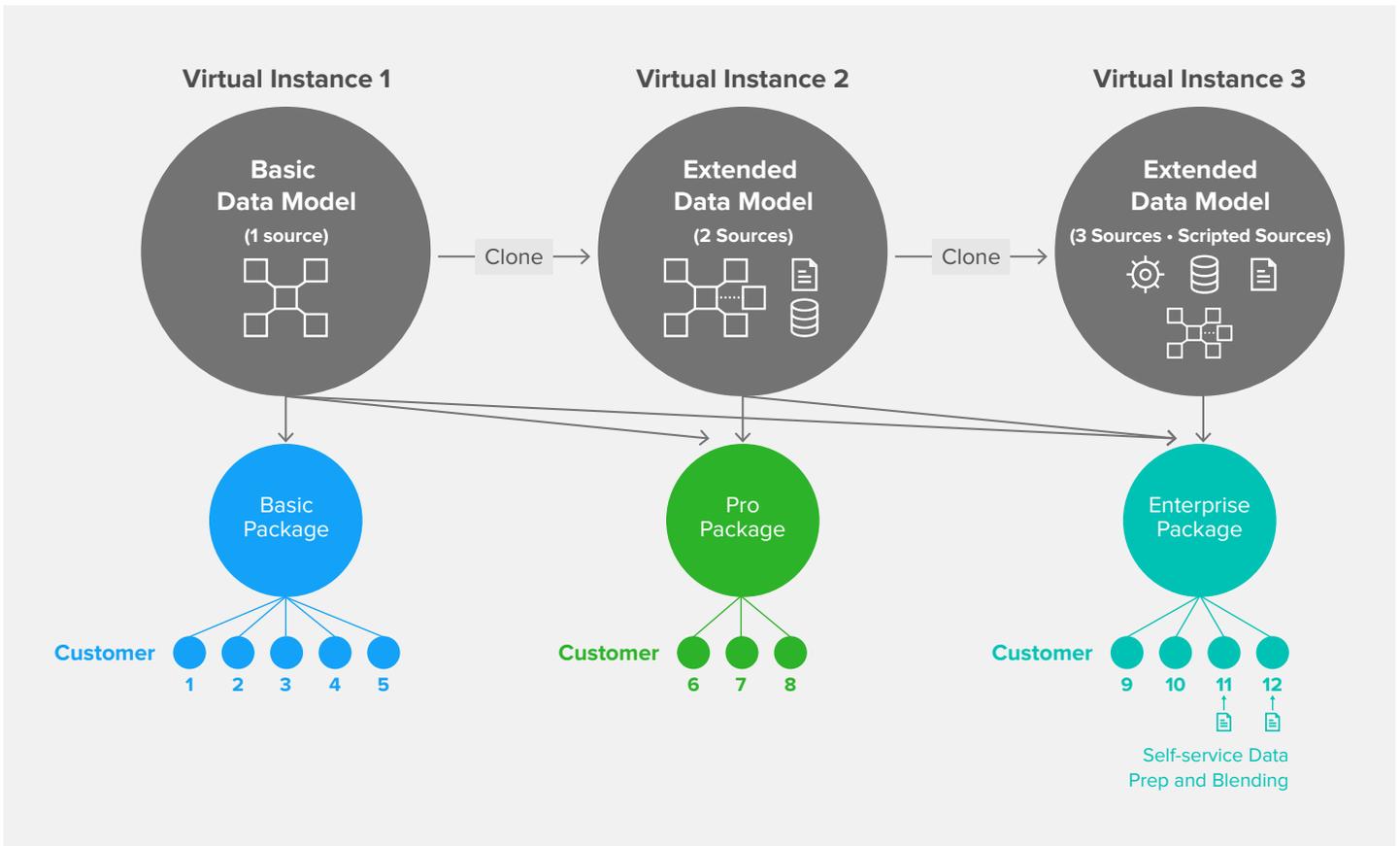**Global and local market agility at enterprise scale**

A global consumer products company with operations in 78 countries struggled to obtain a complete view of the business. The company was experiencing rapid international growth, with 50% of its net revenues coming from outside its main location. Each country's point-of-sale and data systems were unique, so there were no common mechanisms to extract reporting from them or analyze the sales data. Replacing the patchwork of systems with a common data collection infrastructure was not feasible.

Without reliable sell-in/sell-out visibility and analytics, it was impossible for the company to proactively manage its business on a global basis. They considered bypassing IT and began evaluating desktop discovery tools for self-service. The Information Systems Director wanted to maintain centralized governance to avoid analytical silos, but knew that he had to meet demand for decentralized selfservice. He also had to respond quickly. By choosing a Networked BI solution, the company deployed a worldwide solution that blends global Sales, Marketing and Finance data with regional point-of-sale data, maintaining data integrity and improving decision-making capabilities for the business. Using a traditional approach, this deployment would have taken several quarters of work. With Networked BI, the entire project took 24 weeks.

Now, each decentralized market region is empowered to create their own report or dashboard specific to their needs, but the data remains centrally governed, so the regions don't spend time reconciling conflicting data and metrics. Business users are thrilled that they can stop arguing over numbers and concentrate on strategy and execution. For CPG companies, developing countries provide significant opportunities for growth. The winners will be those who can utilize trusted data and better analytics, and then apply it, very granularly, to local points of sale and markets.

A networked BI model can also completely transform a company's approach to product development. With networked BI, software vendors can create and roll out new, virtual instances of analytics to expand their products across a broad user base without having to physically recreate metadata, data and BI infrastructure for every single customer. Networked BI enables companies to extend analytics to new and existing customers fast and at scale, creating opportunities for new revenue generation, customer growth and retention.

For example, a networked BI model can be useful for developing a pricing strategy for the vendor's analytic product. The vendor may want to create a baseline package that contains a single data source and a basic data model. From there, advanced packages layer the base package with additional data sources, advanced analytics such as time series or scoring, or allow end users to mash up their own data sets with your application data.

Virtual Instance 1

Basic
Data Model
(1 source)

Clone →

Virtual Instance 2

Extended
Data Model
(2 Sources)

Clone →

Virtual Instance 3

Extended
Data Model
(3 Sources • Scripted Sources)

Basic
Package

Pro
Package

Enterprise
Package

Customer
1 2 3 4 5

Customer
6 7 8

Customer
9 10 11 12

Self-service Data
Prep and Blending

With a networked BI model, virtual BI instances enable organizations to extend analytical capabilities across multiple territories, departments and customers at a dramatically accelerated pace. Companies can unify global and local data without any physical replication. They can deliver federated data access across the globe with local and aggregate views.

Software vendors can scale out multi-tenant BI environments to onboard new customers faster than before. What used to take quarters can now happen in a few weeks, maybe days. This delivers substantial benefits in terms of faster time to value, reduced risk, and lower total cost of ownership.

Siloed BI	Networked BI
• Inconsistent and unrellable data	• Single networked view of data trusted by all users
• Different people receive different answers	• 100% alignment across the enterprise
• Long wait times to access data	•Users empowered with self-service analytic tools
• High costs to support ETL, data prep and reporting	• Lower total cost of ownership, upgrade in place
• Constant maintenance backlog, user frustration, upgrade cycles	• Higher adoption and lower risk

Success with BI: The seven critical requirements

The networked BI model identifies seven requirements associated with modern analytics programs and considered critical to their success. These requirements, in combination, deliver the best aspects of centralized and decentralized analytics. Companies evaluating BI and analytics solutions should look for products that can support all these requirements.

1. Unify data from multiple source systems or complex structures

Solutions that support a Networked BI model must be capable of rapidly unifying data within and across a multitude of heterogeneous data sources and present them as if they were a single source. Companies should understand if the BI solution combines data sources physically—by moving data from source systems to a target system—or logically—using federated queries to access data where it resides and return results to the user as a single source.

2. Analyze complex business processes or business models

A networked BI model recognizes that different people may need to understand different parts of the organization depending on their role, but must be aligned with each other via virtual—not physical—instances. The BI solution should be able to give insights into complex business processes that span multiple functions and multiple stakeholders, inside and outside the organization.

3. Blend centralized and decentralized data and analytical content

Providing a complete view of the business that blends centralized (global) with decentralized (local or "edge") data is fundamental to networked BI. This enables analysis of business structures where individual teams have local data requirements but can still leverage global data, and executives can analyze the business in aggregate across different lines of business, geographies, or distribution channels.

4. Create and maintain reusable metrics and definitions

The key to ensuring analytical governance in a networked BI model is the existence of a single set of unique business definitions that everyone can use. Networked BI creates a common and reusable semantic layer that eliminates ambiguity over what a particular business dimension or KPI means. This allows people to trust their data and spend more time deriving insights from it instead of arguing over metrics and where data comes from. Reusable business definitions also reduce administration overhead and accelerate time to value.

5. Empower users with role-specific analytical tools

Networked BI breaks traditional BI paradigms of "builders" and "viewers," by turning all consumers of information into producers of intelligence. A networked BI solution should blur the lines between dashboards and discovery, creating an adaptive user experience that adapts to modern work styles. In this model, users will see same exact interface and data, whether on a desktop, laptop or mobile, either online or offline. Additionally, a networked BI solution should fit with tools users may already be familiar with like Microsoft Excel, Tableau, or R, while giving everyone access to a highly-scalable and trusted source of analytic-ready data. This approach drives higher user adoption, extends the ROI of third-party tools, and eliminates the need for IT to act as a "reporting factory".

6. Deliver fast time to value with iterative and agile deployment

Today's business environment demands that projects be deployed quickly, following an agile and iterative process that involves actual end users. Networked BI enables companies to be more agile by dramatically accelerating the rate of progress and shortening the time required to deliver value to the business. By eliminating many of the tasks associated with traditional deployments, Networked BI gives organizations the ability to experiment with much less risk and respond to business changes more quickly.

7. Economically scale on-demand—both users and data volumes

Delivering analytical capabilities across the enterprise requires supporting large data volumes and high levels of concurrency. A networked BI solution built on top of a modern, multi-tenant architecture should deliver infinite scalability across a multi-node environment. This means that, unlike traditional client-server based solutions, there is no single bottleneck to hinder performance. This significantly minimizes the time and cost required to add new users and data to the system.

Requirements	Values	Legacy	Networked BI	Discovery
Unify data from multiple source systems or complex structures	Rapidly refine any data anywhere, retire ETL tools, give users trusted insights and a complete view of the business.	half	full	half
Analyze complex business processes or business models	Align stakeholders by unifying business processes using virtual – not physical – instances. Reduce IT BI costs.	half	full	empty
Blend centralized and decentralized data and analytical content	Give users the ability to augment global governed data with their own local data. IT is no longer a "reporting factory".	quarter	full	half
Create and maintain reusable metrics and definitions	Stop arguing over metrics and where data comes from. Enable transparent governance. Reduce admin resources.	full	full	quarter
Empower users with role-specific analytical tools	Drive higher user adoption. Extend ROI of tools like Excel and Tableau by connecting them to networked data.	half	full	half
Deliver fast time to value with iterative and agile deployment	Make the business productive in less time. Deploy faster with instant, automatic upgrades. Optimize FTEs.	empty	full	three-quarter
Economically scale on-demand– both users and data volumes	Instantly scale as your requirements change. Support massive data volumes and the largest user communities.	quarter	full	empty

Networked BI real world use case:

Profit optimization across the supply chain

Executives at a leading producer of juice-based drinks in North America would receive conflicting figures because end users were working off unique silos of data. This disparity led to revenue unpredictability, lower margins than necessary, high inventory buffers, and a lack of understanding true profitability from sales promotions. The company embraced the opportunity to modernize and take a strategic approach to business intelligence. The CIO recognized that data democratization has empowered end-users to make decisions at the speed of business. At the same time, IT must provide governance and a holistic view of the company's data, so that decisions aren't made using conflicting metrics.

The legacy systems the company had in place were too monolithic to support user self-service and agility. End-user data discovery tools, on the other hand, would amplify existing data silos. Therefore, the CIO, working closely with the CFO, created a cross-functional team from managers in six lines of business: sales, marketing, production, logistics, warehouse, and accounting. They evaluated 17 different vendors before deciding on a Networked BI approach. Their Networked BI solution integrates data from multiple sources with transparent data governance, while at the same time providing self-service analytic capabilities to both technical and non-technical users.

Now the company has an all-in-one platform for data aggregation, refinement and governance, with department-level dashboards customized on-demand. Its comprehensive solution enables the lines of business with department-level agility, but also provides enterprise-wide data consistency. This cross- functional visibility has created tremendous business value. For example, promotional uplift, traditionally measured by marketing, also impacts shipping expenses, which are measured by logistics. By recognizing this interaction, the company has been able to make improvements in both areas.

Where to get started with networked BI

The agile nature of a networked BI approach eliminates the need for lengthy and costly "waterfall" development projects. Because the networked analytical fabric can be extended without any physical replication of existing BI content, it's entirely possible to begin a networked BI implementation with a single, defined use case and build on top of it over time. After the initial use case is complete and proves successful, additional use cases can be added to the network in an accelerated fashion by leveraging existing data and semantic objects. This approach lowers risk, reduces cost and speeds time to value.

The first step for organizations considering a networked BI approach is to identify a specific analytical use case that can act as a starting point. Here are six common use cases that can help companies take their first step:

- **Analyze a complex process—**Companies depend on multi-functional business processes to run effectively. The ability to analyze and optimize a complex business process with various centralized and decentralized stakeholders, data sources, and metrics is a common need.

- **Sales, marketing, and financial analytics—**Gaining greater visibility into KPIs from core operations—pipeline velocity, campaign attribution, lead-to-cash ratio – helps business leaders understand their company's performance from top of the funnel to bottom-line revenue.

- **Adopt a "cloud first" strategy—**As traditional on-premises solutions no longer meet the needs of the business, companies are increasingly looking to cloud-based BI as a more modern and agile alternative that increases time to value and drives down cost of ownership.

- **Migrate from legacy BI—**The cost to continue maintaining a legacy environment is greater than the cost of making a switch. IT leaders are looking at modern solutions to abolish centralized reporting bottlenecks, free up resources, and empower decentralized end users with self-service analytics.

- **Create revenue from your data—**Organizations thinking about how to leverage accumulated data and analytics to differentiate their product and grow revenue can use a networked BI approach to extend analytics to new and existing customers faster and at greater scale.

Networked BI real world use case:

Real-time intraday data visibility, connecting 1,000s of manufacturers to 10,000 retailers

A sales and marketing services company that serves the largest retailers and brands in the world struggled to support their growing business with their traditional BI solution. The challenge facing the Chief Data Officer was finding a way to scale a lean IT organization to support user populations in the tens of thousands. The CDO realized that the company's existing centralized process relying on manual data movement, outdated database platforms, and cube farms—would not scale as needed. It also involved excessive time and cost (building one analytic application for one customer took six months, just to build data movement routines). Their decentralized desktop discovery tools did not solve the problem either.

They required too much technical expertise and resulted in analytical silos throughout the organization.

By adopting a networked BI approach, the company was able to deliver near real-time intraday analytics to thousands of decentralized end users who can now focus on understanding their business instead of manipulating data. They can provide greater visibility to manufacturers into their sell-through rates, and to retailers into product sales and propensity to buy based on geography, demographics and brand. These networked insights guide decisions about merchandising, campaign planning, and product placement.

	Traditional Approach	**Networked BI**
Data Movement	Expensive data extracts. Additional systems required to move and monitor.	No additional data movement.
Integration	Costly development. Resources required to monitor.	Integration done in the semantic layer.
Modeling	Data is modeled for every environment it is in.	Data is modeled once and shared.
Consistency	Highly probability of inconsistent use of data.	Complete control over how information is defined.
Security	Security managed in each environment. No control once data is outside your doors.	Control over who has access to information.
Advanced Analysis	Potential for inconsistent analytic methods to be applied.	Opportunity to drive consistent statistical model management across uses.

Networked BI helps the company drive greater platform stickiness, lower total cost of ownership by eliminating unnecessary spending, and realize value significantly faster by reducing development timelines from quarters to weeks.

Conclusion

The shift from centralized to decentralized analytics has addressed some of the problems with traditional BI approaches, but created or exacerbated others. It has become clear that neither a centralized or decentralized approach by itself is sufficient. Successful companies understand that solving modern BI problems requires a new approach that combines decentralized self-service with centralized governance.

The evolution of the BI space, along with the emergence and large-scale adoption of technologies like cloud computing, enable modern alternatives to traditional analytics that present exciting opportunities. Networked BI will reshape how we think about enterprise analytics. It will enable IT leaders to extend the adoption of BI across the enterprise with confidence. By building networks of virtual instances, businesses can deliver governance that moves at business speed, eliminating data silos once and for all and giving people freedom to work with data on their own terms.

Learn more about Networked BI ›

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Birst is an advanced networked business analytics platform. Organizations can achieve a new level of trusted insight and decision-making by connecting their data and people via a network of analytics services. Birst scales from individuals to the enterprise in a manner that is smart, connected, and scalable. Learn more at www.birst.com.

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