



Collaborative Intelligence:

The Essential Shift for Creating a Data-Driven Enterprise

The Traditional Data Warehouse Has Come Up Short

Data volumes continue to explode, and data's value is clear in nearly every business process. Unfortunately, much of the established approach to generating value from data has failed to keep up with evolving needs.

For the past 25 years, the analytics industry has relied on centralized systems (data warehouses) that would address an organization's requirement for data. These systems assumed that we could identify the use of data up front, that we could build one structure to house that data, and that requirements would remain stable over time.

Unfortunately, the broad variety of data uses and the rapid pace of change cannot be adequately supported with a centralized approach. This has resulted in an explosion of home-grown solutions being developed on the periphery of most organizations. Home-grown systems typically use individual productivity tools like Excel to support decision-making. While these individual tools produce results, they are inefficient to build, often generate contradictory results, and typically circumvent the efforts of the central analytics team. Ultimately, these systems are not maintained and analysis efforts are repeated.

These shadow systems have coincided with the rise of a data analyst class sitting outside of the central data organization. The data analyst's job is to serve the needs of the organization regardless of what the central system can produce.

Successful Data-Driven Companies Are Adopting a New Way

Frustrated by the failure of the centralized approach and recognizing the challenges with the resulting free-for-all, the most innovative organizations are adopting a new approach. These organizations have moved away from the all-purpose data warehouse. They focus on making data available to business teams, empowering them to build their own analysis, capture the best work from these teams and turn that work into standards on which everyone in the enterprise can build.

Empowerment and collaboration are at the center of these approaches. According to Gartner, organizations that have adopted these approaches are [3X more productive in their use of data](#).

What Is Collaborative Intelligence?

Collaborative Intelligence seeks to bring together the best empowerment and collaboration techniques into a common framework. The framework is organized around five key principles which provide a guide to building a truly data-driven enterprise.

5 Key Principles of Collaborative Intelligence

1. Focus on Outcomes Over Output
2. Empower Decision Makers and Their Teams
3. Treat Data as a Product
4. Foster Collaboration
5. Curate the Best Analytics

Organizations that have adopted these principles are delivering analytics throughout their organization more efficiently and flexibly. Let's take a look at how they do it:

1. Focus on Outcomes Over Output

Too often analytic programs get caught up in delivering a predefined set of analyses based on the assumption that an organization's analytic needs can be understood from the outset. However, this is often not the case.

The natural analysis process is exploratory and iterative. It is flexible and fast-changing. We cannot assume a predefined output will meet everyone's needs. As a result, the most effective analytic programs no longer focus on the specific output. Instead, they use a flexible approach aimed at reaching an outcome, regardless of what kind of analysis is produced along the way.

Organizations that recognize this change no longer focus on developing a complete monolithic architecture. They make data widely available, and they develop problem-solving and analytical skills throughout the organization.

2. Empower Decision Makers and Their Teams

Ultimately the individuals who understand an organization's needs are sitting in the operations of the enterprise. They understand the outcomes they need to deliver and are best positioned to iterate on an analysis problem. The best-performing organizations empower front-line workers.

The CEO of a global enterprise with thousands of employees recently said:

"I want 80% of my people to have access to 80% of our data."

First and foremost, they make data widely accessible. This may seem obvious but implementation is complex. Deciding which data should be accessible and to whom is a non-trivial problem. Knowing and managing who should have access to what data is often an impediment to expanding data availability – and is frequently cited as a reason for locking down data. Getting the right access to data is the first step to empowerment.

Developing analytic skills is equally important. Frequently front-line workers lack formal training. Developing sound analytical skills across the organization typically involves a combination of training and career development. Training programs focused on the analyst community consist of a wide variety of topics including:

- Data Literacy
- Problem-solving methodologies
- Hypothesis-driven analysis
- Common financial and economic models
- Data languages such as SQL and Python
- Data quality analysis
- Basic statistics

Finally, an empowered team needs access to tools to support their journey. The process of data analysis typically involves several steps: data access, validation, cleansing, building the analysis, and delivering the results to customers.

In the classic centralized process, these steps are often divided among different members of the analytics team using specialized tools. However, front-line data analysts often need to complete the entire process, and they are not equipped with tools that integrate the process. The more an organization can collapse these activities into a common toolset the more productive the empowered team can become.

3. Treat Data as a Product

Data is the foundation of analytics. Yet access to quality data is one of the top challenges organizations face.

*55% of Analytics Executives report access to Quality
Data is a top challenge.*

Coginiti Survey of Analytics Leaders

With all the money spent on Data Warehouses, Data Quality Tools, Master Data Management, etc. one would be right to be confused by this predicament.

In her work defining a “Data Mesh” strategy, Zhamak Dehghani of ThoughtWorks coined the term “Data as a Product” as a core principle to address this issue.

Zhamak traces problems with data to a lack of ownership at the source and a downstream set of data pipeline processes that can never keep up with subtle data issues and changing needs. She argues that we need to treat “Data as a Product.”

The concept of a data product is quite simple. A data product should be easy to discover. It should produce a defined set of data with known quality, timely delivery, clear definitions, and appropriate access and security. And when a data product does change, the downstream users need to be notified.

This is the responsibility of the Data Product Owner, and like all product owners, they are responsible for delivering data with a known definition. They measure their value by the usage it generates to their downstream stakeholders.

Zhamak suggests the Data Product Owner should be part of the team that produces the data in the first place. After all, data is typically a by-product of some other process, and one of the biggest challenges with data quality is that the owners of that process are responsible for what that process does. But too often they do not have ownership of the quality of the data that they produce. Yet they are also the ones who know the system the best, understand its subtleties, and will know first when changes to the system are likely to produce changes in the data.

Importantly the concept of the “Data Product” is not a technology fix, but a fundamental rethinking of how analytic teams and processes are organized. Its need persists across a variety of analytic architectures - from the grandfather data warehouse to its modern cloud variety, across data lakes, their data lakehouse kin, and into the world of data fabrics intended to span them all. Putting the Data Product Owner with the team that produces the data creates the flexibility an organization needs to solve data and analytic use cases faster.

4. Foster Collaboration

As important as empowerment is to analytics we also need to recognize that it is a team sport. The analysis is rarely done in a vacuum and frequently builds on something done before either by the analyst or someone else in the organization.

90% of data analysts report a need to share their work process and 74% report a need to share the output of their work

Coginiti Survey of Analytic Users

With this as a backdrop, collaboration is a no-brainer. However, many analysts work in isolation and under major deadline pressure. While their engineering teams may have a practice for sharing in tools like git repositories, this is rarely the case for data analysts.

Data and analytic professionals may share work, but it is often ad-hoc and done through email or a shared drive somewhere. When we talk to analytic leaders they echo the need for sharing in terms of effort and quality.

68% of Analytic Leaders report reworking output is a top challenge.

Coginiti Survey of Analytic Leaders

Collaboration is both an organizational and a tool challenge. It is one thing to say that data analysts should share their work. But practices and incentives are needed to make this happen.

When a data analyst is hired by the Head of Sales and tasked with answering questions about what is driving results, they are often given a computer, personal tools like Excel, and introduced to someone who will give them data. They are then immediately given a list of questions to answer. The fact there is someone else in finance answering similar questions or that someone else did something similar before they had the job is lost.

Even when analysts are in the same department, the pressure to generate results and the lack of any structured approach to collaboration feed a build-it-from-scratch practice. This creates enormous wasted effort. However, like anything in an organization, collaboration does not happen without focus and support from management.

As important as getting the practice right, tools are also critical. Many tools used by data analysts are personal productivity tools. Excel is by far the largest such tool in use. It is designed for one person without any way to track the steps someone took to get to a result.

If the tooling is not designed to share and the process is not repeatable, then there is little hope of getting collaboration right. This requires a new look at what we use to produce the analysis.

It seems like Excel is a no-brainer for many teams. Excel is already on everyone's desktops. It will not bring additional cost and everyone knows the basics of how to use it already. However, if analysts spend half their time redoing their work or that of someone else, free does not look so cheap.

5. Curate the Best Analytics

While collaboration is critical, it is equally important to identify what to share. Almost every business executive can tell you a story of being in a room to evaluate a decision and having two analysts show up with different results for the same question. When an organization is trying to make a timely decision, nothing could be more frustrating than spending time arguing about what the data is saying.

40% of Analytic Leaders report inconsistent results nearly half the time.

Coginiti Survey of Analytic Leaders

Thinking about that is scary. It essentially says that over 20% of the analysis being delivered to the business is wrong or indiscernible from something else. That does not even account for the other 60% of leaders who indicate it is a problem but perhaps not half the time.

This is a very big challenge for an organization that is trying to become data-driven.

When we look at this in a little more detail, one thing becomes glaringly obvious. Organizations need a way to identify analysis that is both technically correct and valid in terms of its underlying data. This is curation and mirrors the work of a curator at a museum. Someone needs to make decisions about what is correct and valid and then make that available to everyone else.

As with collaboration, there are both organizational and technical aspects to this issue.

Again, let's start with the organization. In the typical analytical organization, there is no process for curating analysis. Of course, there is an engineering process for the data warehouse, and there is a testing and quality program associated with those results. But what about the work done downstream in the hands of data analysts? There is no validation process for those activities.

It should come as no surprise that contradictory results come out of the other end. It is not enough to empower teams and foster collaboration to be effective; organizations also need curation.

Analytics is more like biology than engineering, meaning analytics evolve - often bottom up. As analytics are created or updated, we need a curation process that certifies the analysis and becomes a foundation for future work.

Unfortunately, most analytic teams are trained as engineers. They expect to know the outcome before they start, specify it in detail, and build according to the spec. As we have already argued, the analysis is frequently unknown upfront. Thus, we need a new process - Curation - and a new role - Curator.

If we have a new process, we also need it to be supported by our tools. We have already made the case that analytic tools need to support collaboration, and it seems clear they also need to support curation. That means two additional things.

First, it means that there needs to be a way to identify curated results, and, it also means that results need to be verifiable. We need a way of repeating the steps along the way, something Excel-like tools struggle to accomplish.

Importantly, this plays back to the concept of data as a product. After all, what is an analytic, but another process tied to a quality data set? Thus, the curated analysis also becomes a data product - one not built by data engineers but one that evolves through analysis.



Empower Your Organization with Coginiti

Coginiti empowers analytics teams to grow and to make the most of their data and analysis. Our collaboration software radically improves productivity for everyone (data engineers, business analysts, executives, data scientists, partners, and customers). [Reach out today](#) to connect with us. Don't just understand the new wave of analytics, join the movement of Collaborative Intelligence.