Ready to monetize your data?

36 questions to shape your approach

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Picture a symphony. Everyone in the performance space has the ability to make noise—by playing instruments, speaking, clapping, coughing. Before the show starts, while players are tuning and audience members are trickling in, the ambient noise exists as a kind of general, directionless hum.

That's also the way data exists in many organizations.

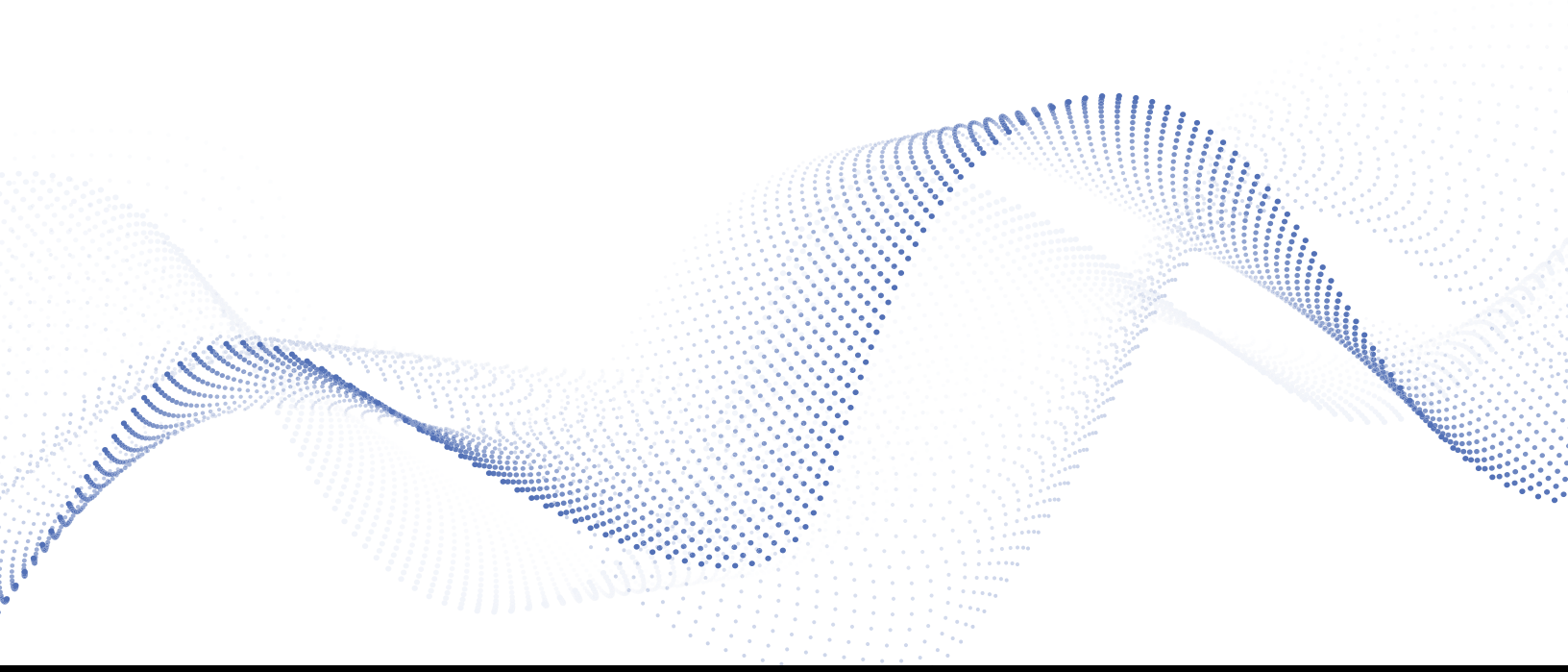
It's everywhere, being created by everyone, serving various purposes—but it's not being used in a coordinated way that lets it rise above the sum of its parts. The clarinet player is tuning; the oboist is warming up. The person in row three is greeting an old friend.

But then the performance starts. Suddenly, thanks to a system of organization and a way of working together, the noise becomes a powerful—even transcendent—experience. Music. Listening. Applause.

A similar transformation happens when organizations decide to tap their data to create knowledge that is usable and valuable to everyone. "White noise" data becomes a force that shapes the business and enables it to achieve things that were impossible before.

In this whitepaper, we provide a framework for making that transition. You have the data already. But without a deliberate system in place—without appropriate tools, processes, and ways of working—your data is not creating organization-level knowledge able to transform what your organization and its people are capable of.

Read on for 36 questions to answer to assess the data-to-knowledge readiness of each of six business areas.



1) Business strategy & use cases

The first set of questions an organization should ask are about business goals. Do you want a "smart factory" to guide decision-making? Do you want a way to speed up research and development?

Creating a cogent business strategy is essential to realizing the latent value of your data. Answering these three questions will help you shape that strategy.

Where are you on the spectrum of continuous innovation to disruptive invention?

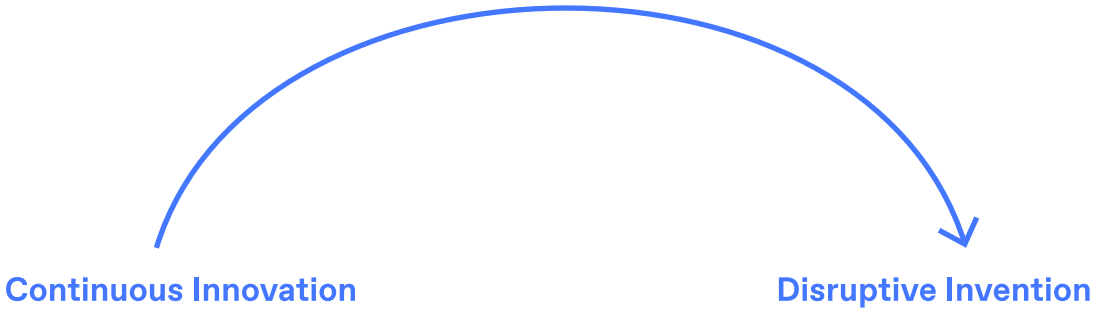


Figure 1: Continuous innovation vs. disruptive invention

In other words, do you want to make small, frequent changes or larger, less frequent changes? Here's a sense of what each looks like in practice.

Continuous Innovation is characterized by gradual advancements to existing business models and capabilities. Continuous innovation often leads to improved customer satisfaction and operational efficiencies. For example, a nonprofit that sees an opportunity to change their internal capabilities and provide improved analytics at lower cost to their customers.

Disruptive Invention is characterized by the creation of new capabilities and business. It's a high-risk, high-reward approach that demands resilience and a visionary outlook. An example would be a biopharma that moves from answering questions in a wet lab to answering them with existing data fed to AI and ML.

Are your biggest opportunities operational, analytic, or experiential (or some combination)?

Most organizations have multiple types of opportunities. This question pushes you to think about which can deliver the greatest ROI:

- **Operational:** These applications improve day-to-day business processes, often by automating workflows. E.g., monitoring transactions in real time, managing supply chain logistics, tracking customer interactions. They are often examples of continuous innovation, but can occasionally constitute disruptive invention.

- **Analytic:** These applications leverage data to make informed business decisions, from product development to financial planning. E.g., analyzing historical data to identify trends, forecasting future outcomes, and segmenting markets to better understand customer behaviors.

- **Experiential:** These applications are primarily external, focused on improving the customer's interactions and experiences with the company. E.g., personalizing digital experiences, optimizing customer touchpoints, using feedback to improve products and services.

Have you built the foundation of support?

No magic here. This is necessary for any major initiative.

Some follow-up questions to get you thinking about what it will take to grow support for your organization's data-to-knowledge initiative:

- **Have you told the story of what you plan to do to build support among both leadership and users?** Narratives win buy-in by helping stakeholders visualize a compelling future state where your data has been turned to knowledge.

- **Do you have a path?** To start, you may want to prioritize low-hanging fruit – that is, use cases you already have the data for. Then look to use cases with high strategic value.

- **Do you have a budget for this work?**

When you've got answers to these questions, it's time to move to the next set.

2) People & culture

Once you have a clear vision for business strategy and use cases, it's time to consider your people and culture. We can't overstate how important this puzzle piece is. Without buy-in from the people who will be using knowledge to drive their work—and without cultural norms that validate the use of that knowledge—even the most sophisticated, exciting, high-potential programs will fail.

To understand where you are on this journey, you can answer questions that address three facets of your organization:

- Employees' readiness to operate in a **data-driven** way
- Plans to eliminate **data silos**
- Plans for building **trust** among end users of the data products and processes you'll build

How ready are your people to change their ways of working to be more data-driven? To take advantage of more data and knowledge?

This question asks about readiness to make a specific change, but the challenge for most teams is not the specificity but the fact of change. Change is difficult. Even if the data tools you build make everyone in your organization more efficient and better at their job, there will be a learning period where they are less efficient and worse at their job.

Preparing people for this reality, providing adequate training, and helping them understand the end goal and the benefits of the new way of working are essential for making the transition to knowledge-driven.

How are you preparing your people and organization to work in a more data-driven manner?

For example, what training will employees in various roles need? Will you need to hire new people? What workflows will change? What tools will you need to build to accommodate the new way of working?

To answer these questions, you'll need a clear vision of your end goal, as well as a deep understanding of how things operate today. Consulting with employees from various functions is essential to both gathering this information and building the trust and buy-in needed to make the transition to knowledge-driven.

Where does data live in your organization?

Many organizations have data that exists in silos, meaning various datasets are not connected. Maybe your CMS doesn't connect to your inventory database. Both are separated from your website analytics. Customer service uses a portal that connects to none of these.

Silos limit the power of data. By removing silos, organizations can create holistic, contextual knowledge about the organization and its facilities, employees, partners, and customers.

What are the barriers to breaking down these silos?

In many cases, the barriers are logistical: it takes a lot of work to restructure data within an organization. They may also be financial: work costs money. The upfront investment is a big reason many organizations have resisted restructuring their data.

Another common barrier is a lack of vision or understanding of how democratized, unified data might function within an organization. There is no single way to remove data silos, which means undertaking this work requires careful consideration and assessment. In organizations where nobody has experience doing this work, the risk of doing it wrong is significant. This is one reason enlisting the help of an experienced partner often makes strategic sense.

How motivated are people to break down data silos?

We mentioned earlier the “story” of your plans for becoming knowledge-driven. That story comes into play here: crafting a compelling narrative about your desired end state is a powerful way to motivate people to make necessary changes.

The reverse is also true: if you haven’t communicated the benefits of eliminating data silos, you might be met with an “if it ain’t broke” mentality that leaves people unmotivated.

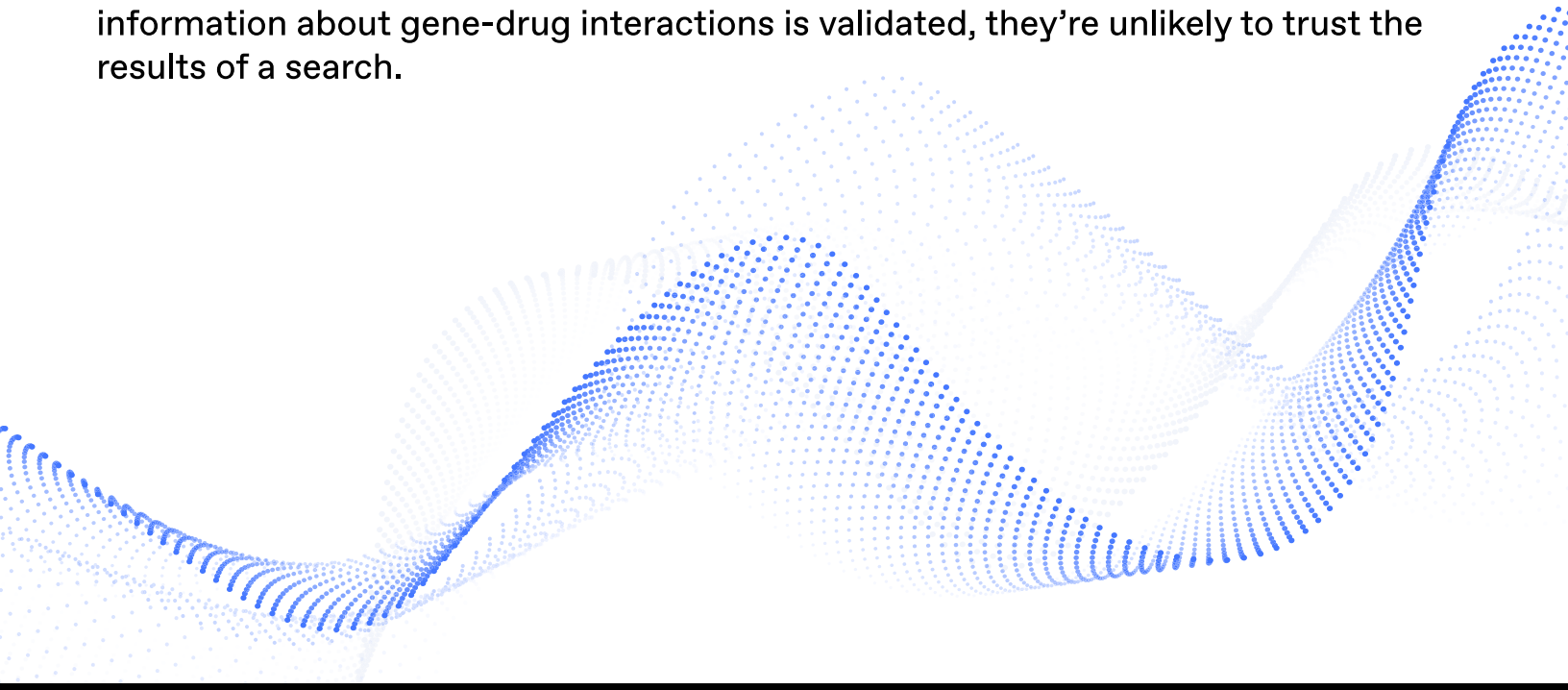
What is necessary to get your people to trust the knowledge from data products?

This is a hugely important question.

Becoming data-driven often means giving up some control. Experts who have relied on their experience and “rules of thumb” may be asked to trust an answer they didn’t create themselves.

For example, researchers used to running every experiment from start to finish in a wet lab may be able to speed up their process by first searching for promising gene-drug interactions from colleagues’ past work.

But without having done that work themselves and without understanding how information about gene-drug interactions is validated, they’re unlikely to trust the results of a search.



DIGITAL + DATA SOLUTIONS

We specialize in turning data intelligence into user-centered digital solutions.

- Partner with our clients to leverage their date and expertise and translate into an intuitive solution
- Extract meaningful value out of complex data in a clear, scalable, and sustainable way
- Deliver a dynamic experience as the story your data tells changes
- Meld the analytic model iteration process with agile software practices
- Improve and decrease uncertainty over time

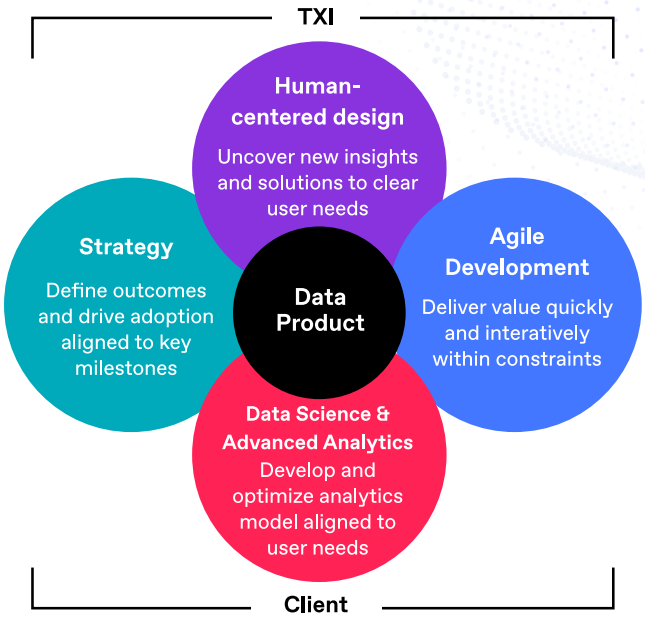


Figure 2: Build trust by centering users in the development process

What is necessary to enable users to trust answers powered by a data product?

What control should you leave in users' hands?

Don't guess. Get end users involved. Understand what kind of visibility they need into data sources (e.g., data's traceability and freshness) and the functionality of the tools you're building. It's important to recognize that the path from where you are today to full trust in what you build may be a long one. There may be many incremental steps.

Building the products that turn your organization's data into usable knowledge will likely take some time. Building user trust in those products should be considered a core part of the work; without that trust, employees won't use products, which means they will deliver no value.

We see these principles as critical to consider when collaborating with clients to create powerful data products.

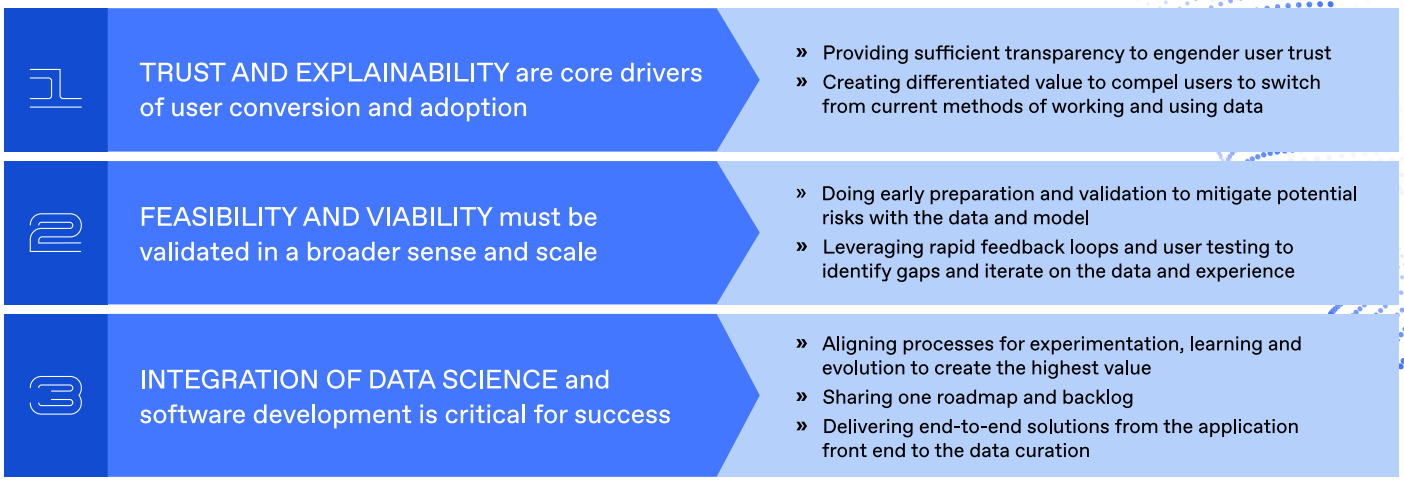


Figure 3: Core collaboration principles for creating data products

3) The data itself

Once you've established business goals and identified a path for getting your organization on board with the transition, it's time to dig into the data itself.

What data do you already have?

Data case study:

A client whose work relies heavily on research created a large internal team to bring together data from 170 internal data sets to build a search tool. They also created a smaller "moonshot" team to pursue ways of gathering big-opportunity but hard-to-access (and therefore high-risk / -cost) data that would add tremendous value to their products if they're able to secure it.

https://txidigital.com/case-studies/converging-data-and-digital-to-accelerate-the-development-of-life-changing-therapies-for-patients

Most organizations are awash in data. Simply identifying all the data you have—from customer addresses to research findings—is the first step to identifying ways it can make your organization stronger. Think of this question as a bit like looking to see what's in the refrigerator and pantry to know what you can cook for dinner.

Keep in mind, too, that in addition to the data itself you'll need certain tools, skills, and time periods to realize various goals.

How can you use your data better?

Review your answers to the question in section 1 about your opportunities.

Again, don't limit your thinking here. Who can generate ideas for how to use your data better? If possible, interview people from around your organization. Often, pain points around current processes are opportunities for data- and knowledge-powered improvements.

Use cases for existing data will often be low-hanging fruit. These applications may provide quick wins that can get team members excited for the larger project of becoming a knowledge-driven organization.

What data do you want but not yet have?

Undoubtedly, as you sort through data sources, you'll come up with use cases that you could pull off if you had additional data. The next question to ask is how you can secure that data. To help assess which additional data sets it makes sense to pursue, try plotting them on this chart:

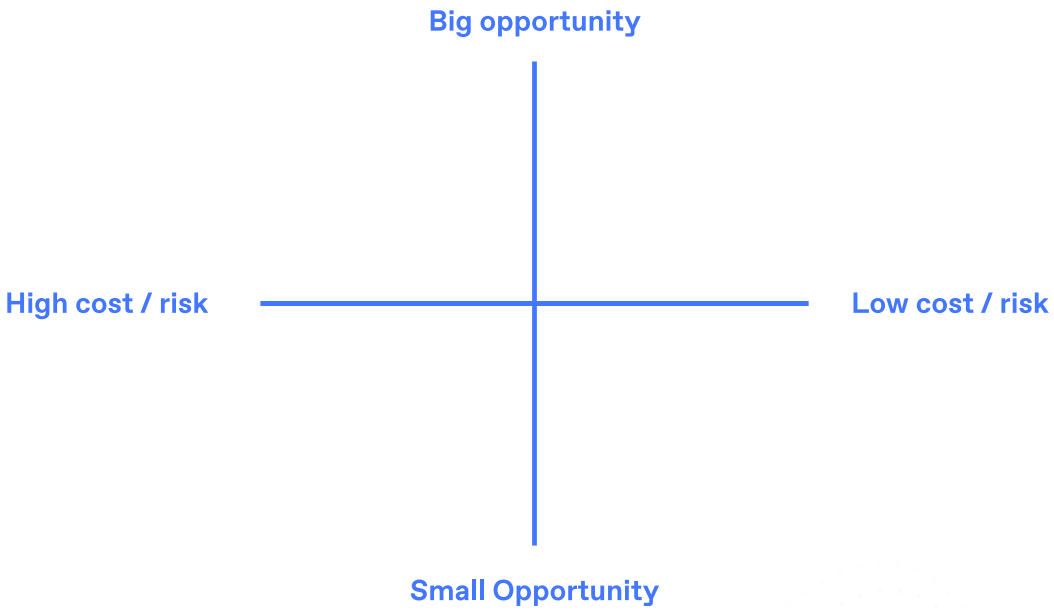


Figure 4: Graph for assessing external data sources

The data sets that land in the upper-right quadrant should take top priority, and the ones in the lower left should be deprioritized. Your team can discuss how to approach the remaining opportunities, as the specifics of each organization will matter a lot.

What opportunities exist to purchase new data sets? Stop purchasing low-value data sets?

Once you decide which data sets would be most valuable, it's time to consider whether you can purchase them. Or can you pay someone to build scrapes to gather that data? Or do you have to create a team to gather data more manually (e.g., by interviewing potential end users)?

Similarly, this is a good opportunity to review data you're currently paying for to see if there are low-value datasets you should stop paying for.

What kinds of structured and unstructured data do you have?

Structured data exists in a database or spreadsheet or similar structure. Unstructured data exists in non-"data" formats—journal articles, for example, or call logs. Unstructured data may have incredibly rich knowledge in it, but extracting it can be challenging.

When you do your data inventory, it's important to consider both structured and unstructured sources.

How well organized is your structured data?

Is it spread out? Centralized? Normalized and integrated?

Defining this will help you determine the scope of work to get your structured data into a format that can power data tools, including those that use AI and machine learning to make recommendations.

How much of your data is unstructured?

Again, answering this helps define scope of work. Also consider: how and how much do you currently use unstructured data? And, crucially: what opportunities do you perceive to be buried in the unstructured data?

Again, you'll get your best answers by speaking with people who use various kinds of unstructured data most often. Be sure to consult with stakeholders from around your organization to understand the full potential of your data.

Do you distinguish between knowledge and data?

So far, we've been using the terms "data" and "knowledge" without defining either. To better illustrate how data products can empower your organization, it's time for a definition. The image below shows the relationship between data, information, knowledge, and wisdom. We call this the "DIKW pyramid," which consists of the following elements:

- **Data:** raw signals (e.g., red, latitude and longitude points)
- **Information:** organized, structured data (e.g., the traffic light at the intersection of Pitt and Pine Streets is red)
- **Knowledge:** contextualized, synthesized information (e.g., the traffic light I'm driving toward has turned red).
- **Wisdom:** understood, actionable knowledge (e.g., I'd better stop the car!).

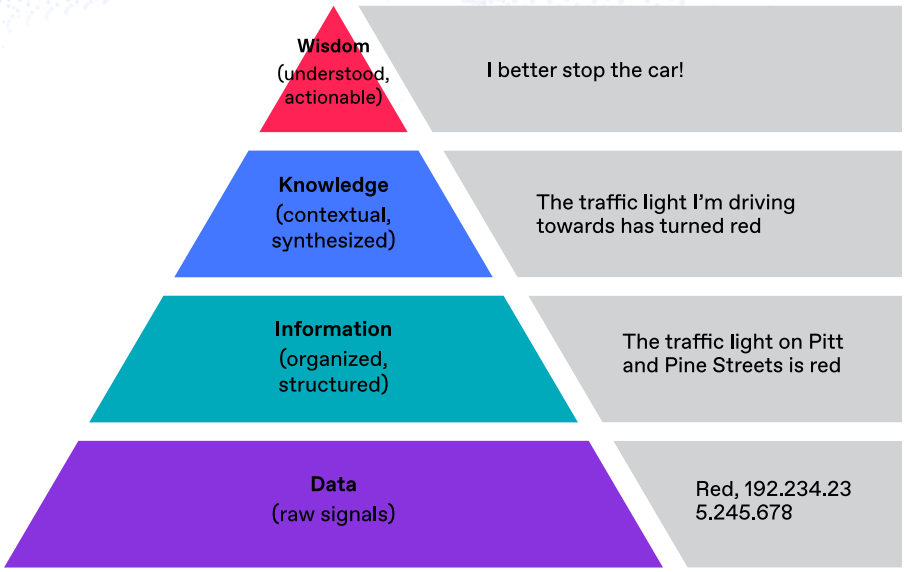


Figure 5: Data, information, knowledge, wisdom pyramid

Turning data into knowledge requires...

1. Organizing and structuring raw signals
2. Synthesizing them and presenting them within a relevant context.

A concrete analog can be found in your kitchen: "data" exists as the ingredients in your pantry and refrigerator. A recipe offers information about how they fit together. Preparing them for a meal is possible with knowledge synthesized from other places: how many will be eating, what food restrictions everyone has, when everyone will be ready, how to adapt the recipe to quirks of your cooking equipment.

In our discussion of building products that use your organization's data to create knowledge, we're talking about gathering the raw signals from around your organization (how often customers request equipment maintenance, call volume to customer support line, warehouse inventory, current weather in prospects' locations, etc.) and organizing them so that they offer valuable insights: e.g., customers in humid climates need more frequent maintenance and repairs.

That kind of knowledge can lead you to rework your policy for managing customer relationships based on geography, reduce client downtime, free up call center resources, and more confidently sell to similar customers.

Have you extracted knowledge from your data?

Your employees almost certainly extract knowledge from your organization's data on a daily basis. But they likely do it in a manual, one-off way, using their own knowledge and experience to interpret and use raw signals.

What we're talking about in this piece is the work of creating digital products that automate extraction on an ongoing basis so everyone in your organization can benefit from the knowledge that currently exists in a latent state in your data.

In other words, this question asks whether you have existing digital products that ingest data, organize and structure it, then synthesize and contextualize it to provide actionable knowledge to your employees.

How can employees make use of that knowledge?

Whether or not you have such products already, it's important to understand how they'll impact employees' day-to-day work. Will they be able to ask questions of the products? Will the products automate workflows that are currently manual? Will the products exist as a web interface? A graph? A dashboard? Will they live as apps that provide push alerts telling employees what actions to take?

The possibilities are limited only by your imagination and the needs of your team.

4) Data governance & democratization

The above section dealt with the "what" of fueling a data product. In this section, we'll start to get into the "how." Data governance and democratization are essential forces that exist in tension with each other in any data-to-knowledge effort.

Data governance is all about controlling data: how do you make sure it stays protected? How do you ensure it doesn't get into the wrong hands?

Democratization, on the other hand, is all about providing universal access to the data so that everyone's work can be enriched and improved by the knowledge the data can fuel.

In this section, we'll look at questions to help you define your approach to both governance and democratization, as well as your management of the tension between these forces.

What are the barriers to full democratization of your data?

In some cases, the biggest barrier is cultural. If your organization has a "need to know" culture or a default approach of denying access to data unless someone has a demonstrated need, shifting to a culture of universal (or near-universal) access will be significant and will require the same care and attention as any other cultural shift (see the People & culture section for more).

Maybe your barriers are primarily technological or personnel-related: culturally, you're all for universal access but your tech or teams don't have the bandwidth to make it happen.

Either way, you'll want to clearly define barriers.

What barriers can you break down? How?

Cultural and mindset barriers require long-term work to shift. Just as it can take months or longer to build trust in data among end users, it can take months to shift a mindset around data.

If your barriers are cultural, think how you can introduce and cultivate a mindset that defaults to full data access rather than restricted access.

One thing to define as you do that: who can define the guidelines for when restricted data access is necessary?

If the barriers are technical or logistical, think about what skills or technologies you need to build or adopt.

How well do you understand and follow regulations your organization is subject to?

If you have a team dedicated to regulations, it's time to bring them into the conversation. You'll need a clear sense of both industry regulations around how you use, store, share, and handle data, as well as state, federal, and international data privacy regulations that apply to your customer base (or are likely to in the near future).

What is your organization's approach to privacy? Is it well understood? Are there processes enforcing it?

One of the secondary benefits many organizations enjoy when they get their data in shape is that they're much better able to comply with state and international privacy laws. This benefit alone can translate to savings in time and resources. As data privacy laws become more common, having well-structured data can make it easier to adjust internal practices as needed to comply.

How do you ensure data is broadly accessible?

This is a question of both establishing cultural norms around data accessibility and ensuring employees around the organization have the tools, skills, and motivation to access data to do their jobs.

This access, of course, has to exist alongside appropriate governance practices, which means the tools for access are appropriately secure; employee skills include understanding how to work with data to maintain security; and motivations and job incentives align with best practices for data governance.

5) Capabilities & tools

Data is an incredibly valuable raw material. And like any raw material, realizing its business value requires the right tools, platforms, and expertise. The questions in this section aim to help you think through what steps you need to take to establish these resources in your organization.

How ready is your data platform? Where are the key gaps and what are your options to fill them?

Are your current resources adequate to achieve the business goals you laid out in the first section?

For context: To manage data at scale, you have to have resources to collect, store, integrate, curate, and aggregate data from structured and unstructured sources. You need a way to provide it to users. You must be able to manage access, day-to-day operations, reporting, and more.

What's more, you must be able to do these things while adhering to established governance norms.

For most organizations, the tools and platforms involved in this work are a combination of custom and off-the-shelf

Do you understand your costs and do you actively manage them?

This includes everything from understanding maintenance costs of custom products to actively managing the costs of off-the-shelf—and especially cloud-based—products.

To what extent is your data centralized vs. decentralized?

For example: are your data analysts working with data that's local to their machines? If so, your organization is missing out on an opportunity to create a fuller picture—not to mention creating additional data management work for those analysts.

What is your service model?

If your organization is large enough, you may need an internal team that provides data services to other parts of the organization. In that case, you'll need to have a clear service model so all employees understand protocol for requesting services, prioritizing requests, and so on.

Given your vision, do you have the right employees? If not, how do you build the right team to achieve your vision?

Will your vision require hiring additional data specialists? Upskilling existing data specialists? Training employees across the organization in how to use various data products? Will your data expertise live on dedicated teams or will data specialists be distributed throughout the organization?

If you don't currently have the personnel or expertise you need, you'll need a plan to get there.

In many cases, the majority of the work in becoming knowledge-driven is data engineering: getting data from how it exists today into a format capable of powering machine learning algorithms, AI tools, and other data products.

Will you use a data expert / data owner model?

This model is less common but can provide great value. It involves having experts in certain types of data who "own" that data and make decisions about how it's cleansed and modeled. They also understand where problems exist within a given dataset.

One benefit of this model is that "owners" have domain expertise and therefore may have the unique ability to drive consensus around various process, cultural, and mindset changes necessary to shift to a knowledge-driven operation.

PROPOSED ORGANIZATIONAL MODEL

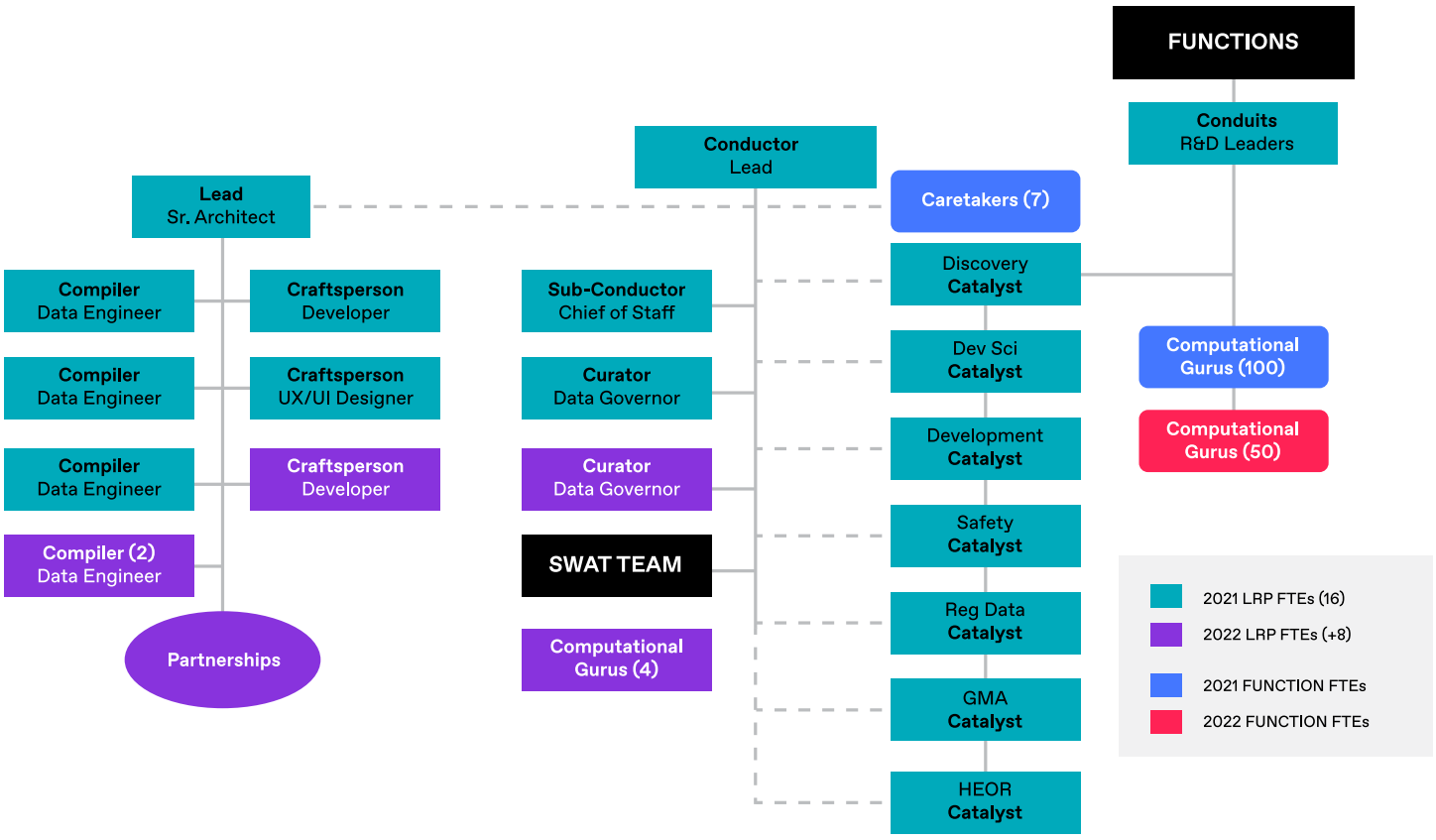


Figure 6: Org chart featuring data experts

Will you use a catalyst model?

We've mentioned several times the importance of the human and cultural facets of transitioning to a knowledge-driven organization. Embracing a catalyst model involves assigning catalyst(s) whose role involves evangelizing for the data-led culture and leading teams to secure quick and strategic wins using new data-first ways of working.

Catalysts and other strategic roles can bridge the gaps between the data-driven platform and its expertise and users (with varying levels of skepticism about the platform and its outputs)

6) AI & ML readiness

Artificial intelligence (AI) and machine learning (ML) have become unignorable forces in contemporary business. Leaders in every industry are finding ways to apply AI and ML to out-predict, out-produce, and outperform competitors.

Everyone else is becoming aware that they can't afford to ignore these technologies. Crucially, everything in the realm of AI and ML requires a foundation of well-organized data (that is, exactly what we're outlining in this guide).

How are you already using AI and ML?

Your organization is almost certainly already using AI and ML in some capacity. Understanding what those uses are—and what kind of work AI and ML automate, simplify, speed up, or make possible—is a great way to start thinking about what other valuable AI and ML applications might exist.

What opportunities exist to expand your use of AI?

As with data more generally, these opportunities might fall into analytical, operational, or experiential buckets. They may involve a variety of types of AI and ML:

- **Computer vision:** Extracting data and knowledge from visuals
- **Machine learning:** Using systems that learn from data without human intervention
- **Large language models (LLMs):** Models that generate original text or images from existing datasets
- **Expert systems:** Automating complex decision-making
- **Robotics:** Automating rote work

AI and ML applications exist to improve products, processes, user experiences, employee experiences, and more.

What opportunities exist to create new value with LLMs?

LLMs like ChatGPT have gotten a lot of attention recently. For the foreseeable future, any AI plan must at least consider the potential of LLMs, if only because CEOs and boards are certain to ask about them.

Think not only about the LLM itself but also about the data that will train the model: will you use entirely proprietary data, or combine owned data with purchased or publicly available data?

Turn ambient data into a symphony of knowledge

Organizations are awash in data. From customer interactions to internal operations, from IoT devices to social media feeds, every touchpoint generates vast amounts of data. Today, organizations with the right tools, platforms, skills, and approach can turn that sea of data into actionable knowledge that drives new value.

But getting to that end state requires organization, discipline, and vision. It requires expertise and dedication. It requires committed leaders who can inspire their organizations to step away from the status quo into a new, more rewarding way of working. When you're ready to take the first step forward, get in touch. We'd love to help you arrive.

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