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Solving for Data Literacy

A CDO's Guide to Data Storytelling at Scale

“Times have changed”

Perhaps the most cliched phrase of an aging and, dare we say, sentimental generation. In this instance, however, it’s being used in a relatively adolescent context.

The first chief data officer (CDO) was appointed in 2002. Here we are 18 years later and the job title is prevalent. Why? Because being a data-driven culture is a much older concept. The innovators of the early 2000s realized they needed a way to track and manage the path forward. Probably more accurately, they needed a role to hold accountable. A leader whose sole focus was to consider the data strategies for the whole company.

Part 1.

So here we are

Last year, Gartner published its Fourth Annual CDO Survey. MIT is hosting its 14th Annual Symposium (which is already sold out, by the way), just one of many events for this group. Countless articles have been published loosely titled “The CDO in 2020.”

The next phase of the journey for the one who thinks about all things data and analytics is getting the output to the masses. Maybe this has always been the goal. However, if there is one thing we can collectively attest to it's in the last decade, the budding role of CDO was fraught with challenges.

We collectively saw ways that data *could* be used, but when it came down to action, questions arose on *would* it be used and *should* it be used. What does this mean? There were issues in deciding how we would use data: data cleanliness, preparation, organizational silos, distrust of the output, inaccurate analysis, and lack of skills to effectively manipulate and make sense of the results. The “should” is more of a philosophical debate. From data privacy to questioning who actually owns the data, these discussions still rage on.

Part 2.

Where do we go next?

If the 2010s were about laying the groundwork, the 2020s will be about finally enjoying the fruits of our collective labor. You may have expected us to kick this off by citing the volume of data our society is generating. Whether you noticed or not, there is no such reference here. Making the case for big data is not the insight it once was. Said differently, this is the transition from being data driven to becoming insights driven. Enter data storytelling.

"By 2025, data stories will be the most widespread way of consuming analytics, and 75% of stories will be automatically generated using augmented analytics techniques."

- Gartner

What is data storytelling?

In its most basic form, Gartner says, “Data storytelling can help decision makers engage with data and analytics by delivering insights in compelling forms that are more readily consumed and easily assimilated than those commonly used, such as dashboards and reports.” Many people today feel that they are currently telling stories in the way they visualize data. But data storytelling is much more than that, and requires the combination of both technology and humanity to accomplish a goal. Data storytelling is an approach for communicating insights, not just displaying data.

Historically, the story behind a dataset was written manually. A skilled analyst dug in, found something interesting, and explained what they found to someone else. Eventually they gained help from BI tools to help find insights and share their work. The idea was that others would be able to use those same tools. Humans were not scaling to the needs of the business, mainly because most do not have the skills to find key insights on their own.

However, today technology is helping us automate the approach altogether. We can use machine learning and AI to assist with data preparation, insight generation, and insight explanation to augment how people explore and analyze data in analytics and BI platforms. We do not have to rely on effort or understanding, there are tools that can help with both.

What data storytelling is not

At this point, it could be helpful to say what data storytelling is not. This may be nuanced, but there are three reasons this is helpful.

First, data storytelling is not a BI platform, a dashboard, or any other data visualization tool alone. This can be inferred from the earlier definition, but let's come out and say it: a dashboard *in it of itself* does not tell a story. A story has an arc; a beginning, middle, and end. That story has to be told in a common language - sentences or paragraphs - that people can simply read, understand, and retell. Someone (or something) has to write that story.

Second, data storytelling is not a feature of a product. But rather the concept is supported by other software, tools, or innovations. Particularly artificial intelligence and specifically natural language technology. It is a misconception in artificial intelligence to lump various types of natural language technology together.

Here's a quick primer on what we mean. Natural language generation (NLG), natural language processing (NLP), natural language understanding (NLU), and any other interaction natural language technology are the approaches used to automate data storytelling. They're not one in the same.

Third, data storytelling is not a replacement for people. Yes, the process can be automated. It takes away menial tasks for humans and provides insight, but it still requires humans to take action. Ultimately, it helps people to quickly and easily understand insights from data. In the case of modern BI platforms, that means enabling dashboard creators to become better storytellers and dashboard readers to more easily understand data.

Tying it together

Data storytelling is not a silver bullet that is going to solve all of your problems, but it does help CDOs address some crucial initiatives. Here are three ways:

1. Enhance communication.

Like it or not, there is an endless game of telephone going on inside your organization. Analysts are frustrated by a never-ending backlog of requests, and decision makers can't find the results they need without digging in themselves. Committing to data storytelling helps everyone get on the same page by accessing a centralized source.

2. Create a data culture.

Isn't this your ultimate goal? Then it shouldn't be so hard for the business leaders, middle managers, and individual contributors to get information. They should be able to simply read the results. If you forgot that stories provide insight in plain-English, reread the previous section.

3. Go on the offensive.

Stop playing defense, exclusively. Sure, you'll still have to maintain the security policy and do your due diligence when it comes to new technology. When you can harness innovative approaches like data storytelling, it puts you in the driver's seat to be a change agent for your company.

A real world example



How does this actually play out? Let's look at an example.

Part 5.

Overview

One of the largest multinational insurance firms committed to using business intelligence (BI) across its organization. It was an extremely costly and time-consuming program. The goal was to empower analysts to create dashboards that would be used by thousands of users to better understand the status of some of the organization's key performance metrics.

The viewers of these dashboards were people on the frontlines. People who were in roles to help process claims, drive revenue, and make strategic decisions. They all recognized they needed more data to make more accurate and precise decisions. So, they deployed a single platform in an effort for everyone to be “data-driven.”

The Opportunity

BI dashboards do a great job at giving users a ton of data to look at. You can build charts, graphs, line charts, and a ton of really fancy-looking visualizations that attempt to convey a lot of information. There are approximately 5,000 users that have viewer-based licenses. We conducted in-depth interviews with different personas of viewers.

These individuals ranged from heavy users, casual users, and dashboard creators. We worked together to create an outline of how many hours every year were being consumed either interpreting a dashboard or reporting off from it. With all of this time, we talked a lot about opportunity costs, such as what else could these users be doing with time back in

their day? We also talked about how improving the efficacy of dashboards would benefit the analytics team as well. On average, 100 builders were spending at least 15 minutes every day reporting and responding to inquiries about the data. It doesn't sound like much, but that accumulates to 25 hours per day, or 500 hours per month.

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Adding automated summaries

We took a few of the organization's most used dashboards and constructed a personalized demo. We talked about what the organization was looking to solve for, and it was clear it was solving for time savings at scale. The organization decided to move forward with Quill, which is a data storytelling solution that automatically puts plain-English explanations in every dashboard. The organization started with 200 users. It measured success by tracking login and engagement rates, as well as conducting additional interviews to determine if any time savings had occurred.

The results were outstanding:

- **Login rates jumped from 30% to 65%**
- **There was almost a 70% decrease in time spent on reporting**
- **After 6 months, the organization called Narrative Science and requested 1,000 more licenses**

For the organization, the key success metrics were increasing views on its dashboards by 50 percent and saving its analytics team at least 100 hours a month spent in answering executive questions.

Making (dollars and) sense of it all

This is just one example of how enterprises are transforming their operations, but it's not an uncommon scenario. Here's how this one broke down in terms of return on investment.

One hundred hours per month saved by its employees at an average rate of \$40 per hour is conservatively \$4,000 per month. That's \$48,000 every year. That may not sound like a lot of money, but this is only the direct benefit of time savings by staff. The beauty of this modest number represents a breakeven point for the project in less than 12 months.

Let's explore three of the biggest indirect benefits. They are less tangible but are associated with

higher costs particularly in the long term.

- 1. Improved adoption.** You've already invested thousands—both dollars and hours—in setting up a BI platform. Depending on the size and investment by your organization, this could easily be in the millions of dollars. Yet adoption hovers around 30 percent, according to Gartner. Adding stories makes dashboards more approachable for more people, which brings us to ...
- 2. Increased understanding.** All too often, we get a new dashboard only to be left thinking, “Huh?” You were excited to get the viz, and in all reality, you probably

asked for it. You had some questions to be answered by data. Now that you have it, you're not quite sure what the colors mean. Why is that icon bigger? What conclusion should I be making? This is largely replaced by ...

- 3. Filling a skill gap.** Let's face it, not everyone is a data person. To the analyst or BI admin who makes your dashboards, they all are crystal clear. To the rest of the organization, not so much. You can't expect everyone to understand the output, and you can't afford to have high-value experts acting like admins and explaining the results to everyone else.

How to get started

- 1. Do your research.** There are not many data storytelling vendors out there, but that doesn't necessarily mean the process is simple. However, it is important. Not every organization has committed to a data storytelling solution, nor has an understanding of both language and technology required to make an impact on your business. Ask your trusted software analysts or research firm. As discussed earlier, make sure you're inquiring on a solution that is designed to address your needs.
- 2. Determine your goals.** Not all vendors take the same approach. Think about what's important to you.

Do you want to scale insights using your BI tools? Do you want automated stories in *every* dashboard? Is it more important to have custom language?

- 3. Try it for yourself.** Once you have your key priorities, make sure you're starting with the team that can deliver on your goals. Request a demo. See how the text is generated. Ask questions about the process. Of course, a demo dataset, sample dashboard, or final report will look good—it was designed to. Take it to the next level. How does the solution work with your data? Request a trial license or proof of concept. Choose the low-hanging fruit to get started.

Here are some examples:

- What department is leaning into BI?
 - Which dashboards are consistently getting the most questions?
 - Where is your team spending the most time doing ad-hoc analysis, explaining results, or manually writing reports?
- 4. Start reading the story about your business.** Planning is often the hardest part. Once you've committed to automating writing in your organization, keep track of three things: How much time are you saving? What new insights have you uncovered? How are your people reallocating their time?

Part 10.

This is just the beginning

Was this a quick and fun guide to get you started? We hope so.

Do you have everything you need to implement a data storytelling project? Probably not.

Whether you're interested in the technical foundation of natural language technology, want to hear some use cases about how to get started, or if you just want to chat, get more at narrativescience.com.

Who is Narrative Science?

We know a thing or two about data storytelling. Since our founding in 2010, we have nearly 60 patents under our belt and quite literally have written the [book on storytelling](#). We live at the intersection of technology and humanity.

Narrative Science creates software that writes stories from data to drive understanding and results. Powered by artificial intelligence, our technology automatically turns data into easy-to-understand reports, transforms statistics into stories, and converts numbers into knowledge.

Narrative Science works with customers including Deloitte, USAA, Credit Suisse, and members of the U.S. intelligence community, empowering them to understand and act on key business metrics, make better decisions, and focus talent on higher-value tasks—all through the power of data storytelling.

Send us your thoughts or say hello at:

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We'd love to hear from you.

Sources:

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