Ensuring Success for your Graph Team

Clair Sullivan, PhD

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Agenda

- Wait, are data teams NOT successful??? Some stats on the success of general data teams
- “A Data Fable”
- The “upside-down approach” to data
- Graphy implications and fixes for being upside down
- “Oops, I did it again!”

Some stats

- 82.6% of respondent companies had a CDO but only 40.5% say the role was well understood in their organizations
- 87.8% reported increase in spending in data initiatives
  - 40.7% identified data modernization as their highest-priority expenditure
- 23.9% of respondents identified their organizations as being data driven
- 20.6% identified that they have developed a data culture
- 79.8% cited cultural issues as greatest obstacle for delivering business value from data investments
  - 1.6% identified creating data literacy as top investment need

"Data and Analytics Leadership Annual Executive Survey 2023", New Vantage Partners

More stats

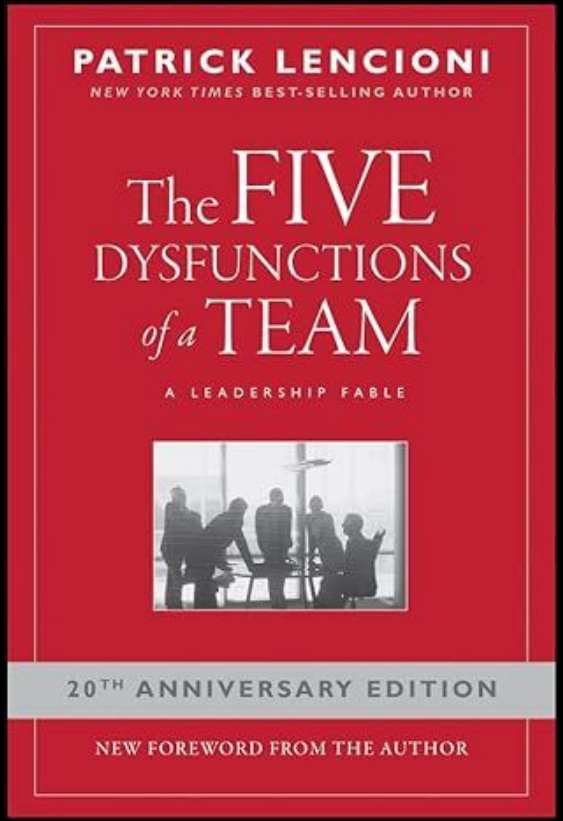
- Less than half of an organization's structured data is used in making decisions
  - Less than 1% of unstructured data is analyzed or used at all
- More than 70% of employees have access to data they shouldn't have
- 80% of analyst's time is spent simply discovering and preparing data
- "Data breaches are common, rogue data sets propagate in silos, and companies' data technology often isn't up to the demands put on it."

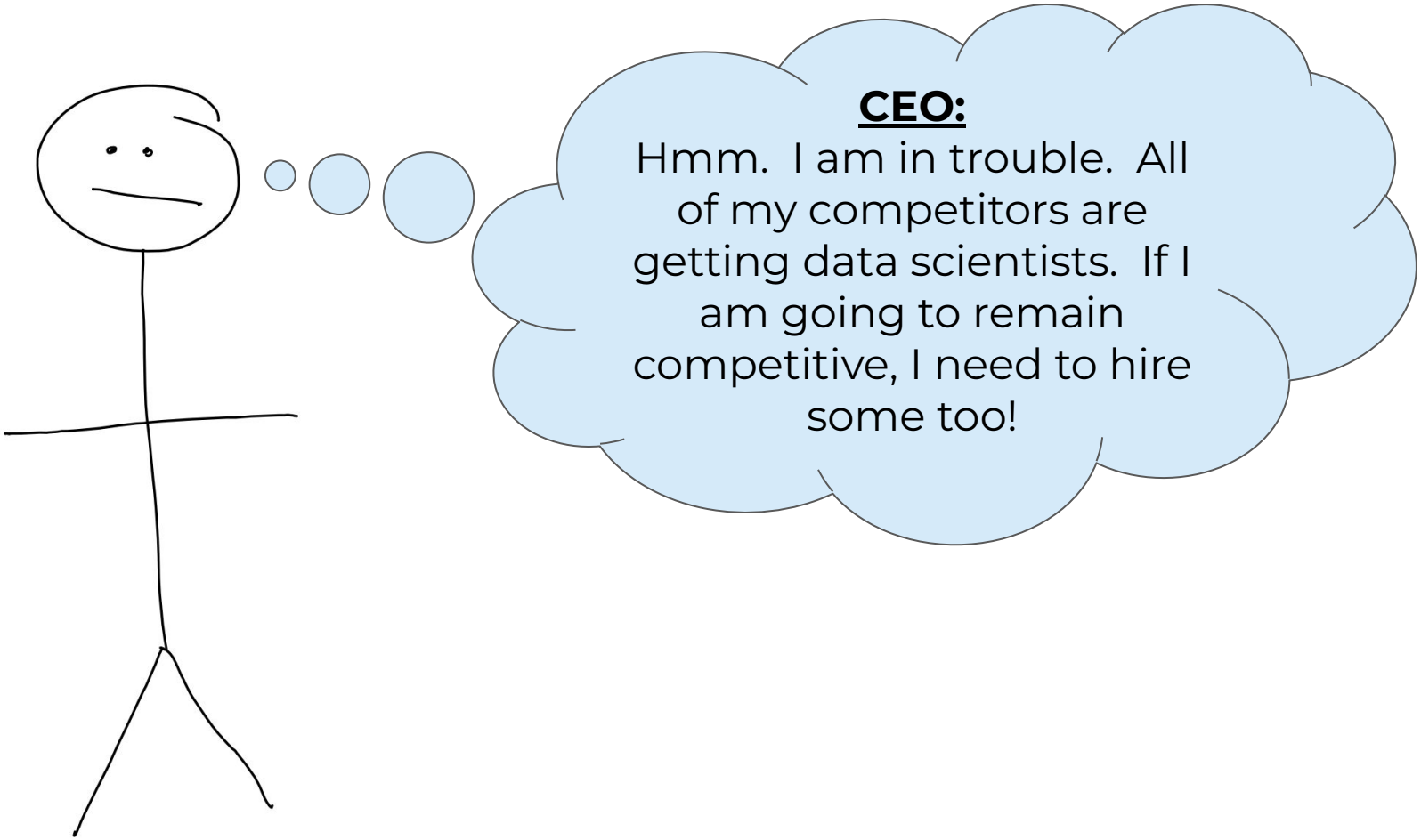
https://hbr.org/2017/05/whats-your-data-strategy

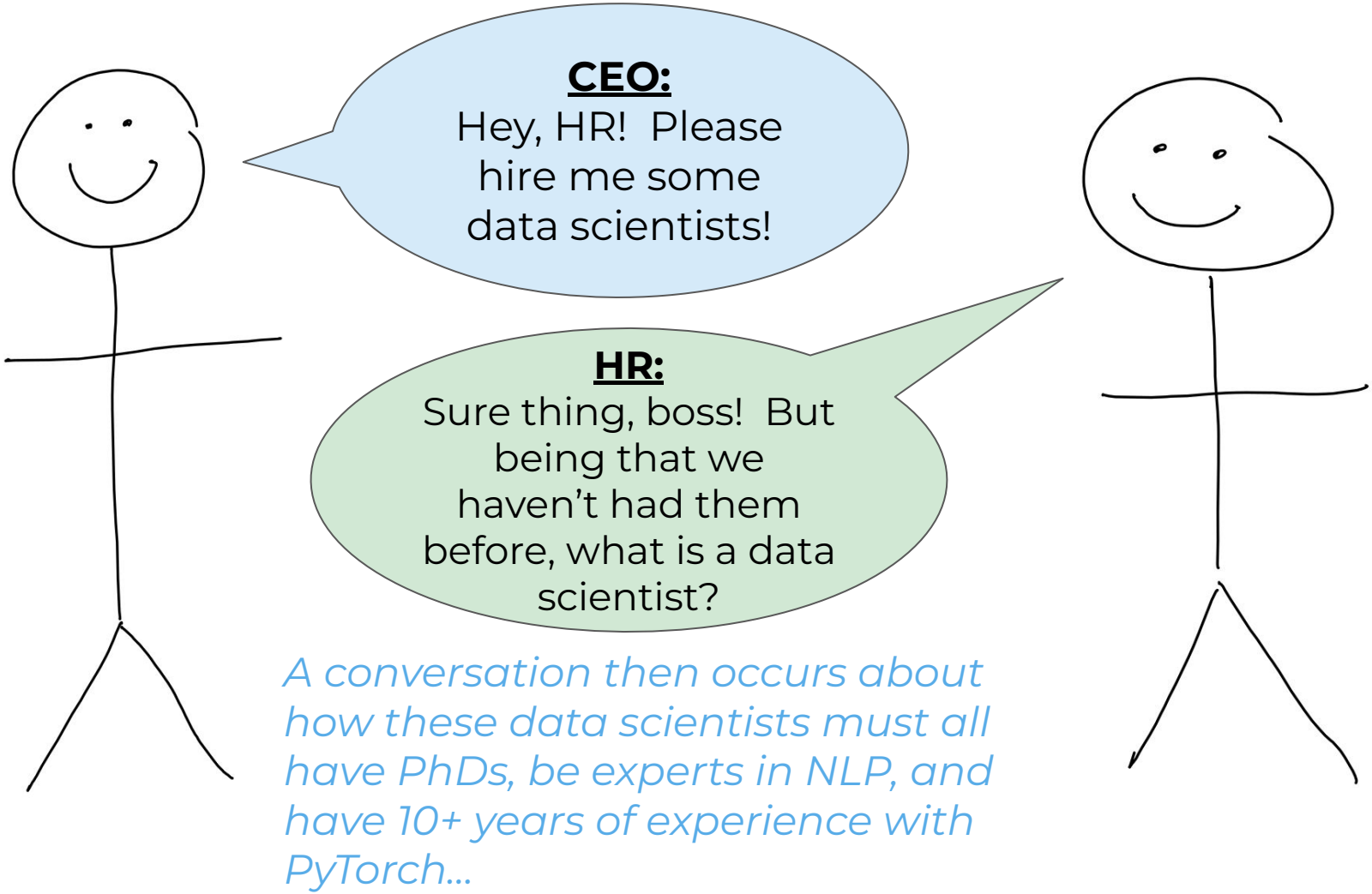
87% of data science projects never make it to production

https://venturebeat.com/ai/why-do-87-of-data-science-projects-never-make-it-into-production/

A Data Fable


PATRICK LENCIONI
NEW YORK TIMES BEST-SELLING AUTHOR
The FIVE DYSFUNCTIONS of a TEAM
A LEADERSHIP FABLE
20TH ANNIVERSARY EDITION
NEW FOREWORD FROM THE AUTHOR


CEO:
Hmm. I am in trouble. All of my competitors are getting data scientists. If I am going to remain competitive, I need to hire some too!



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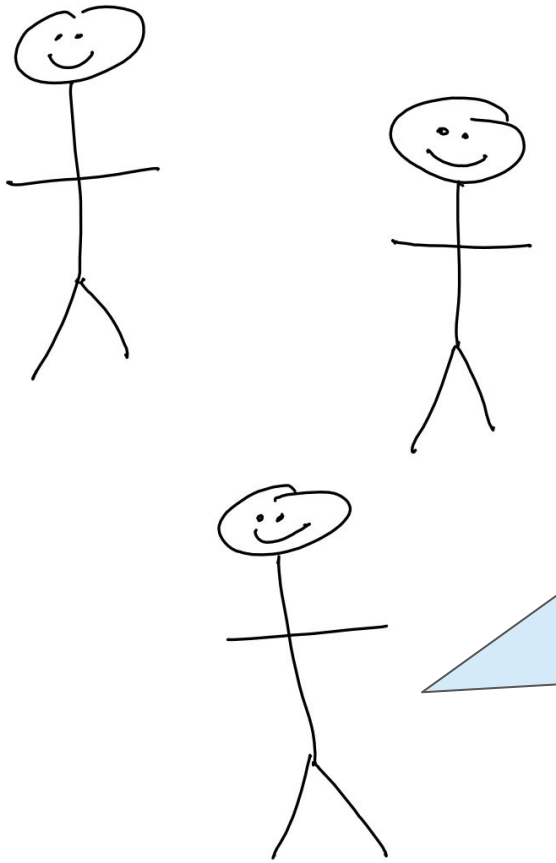


Team of Data Scientists:

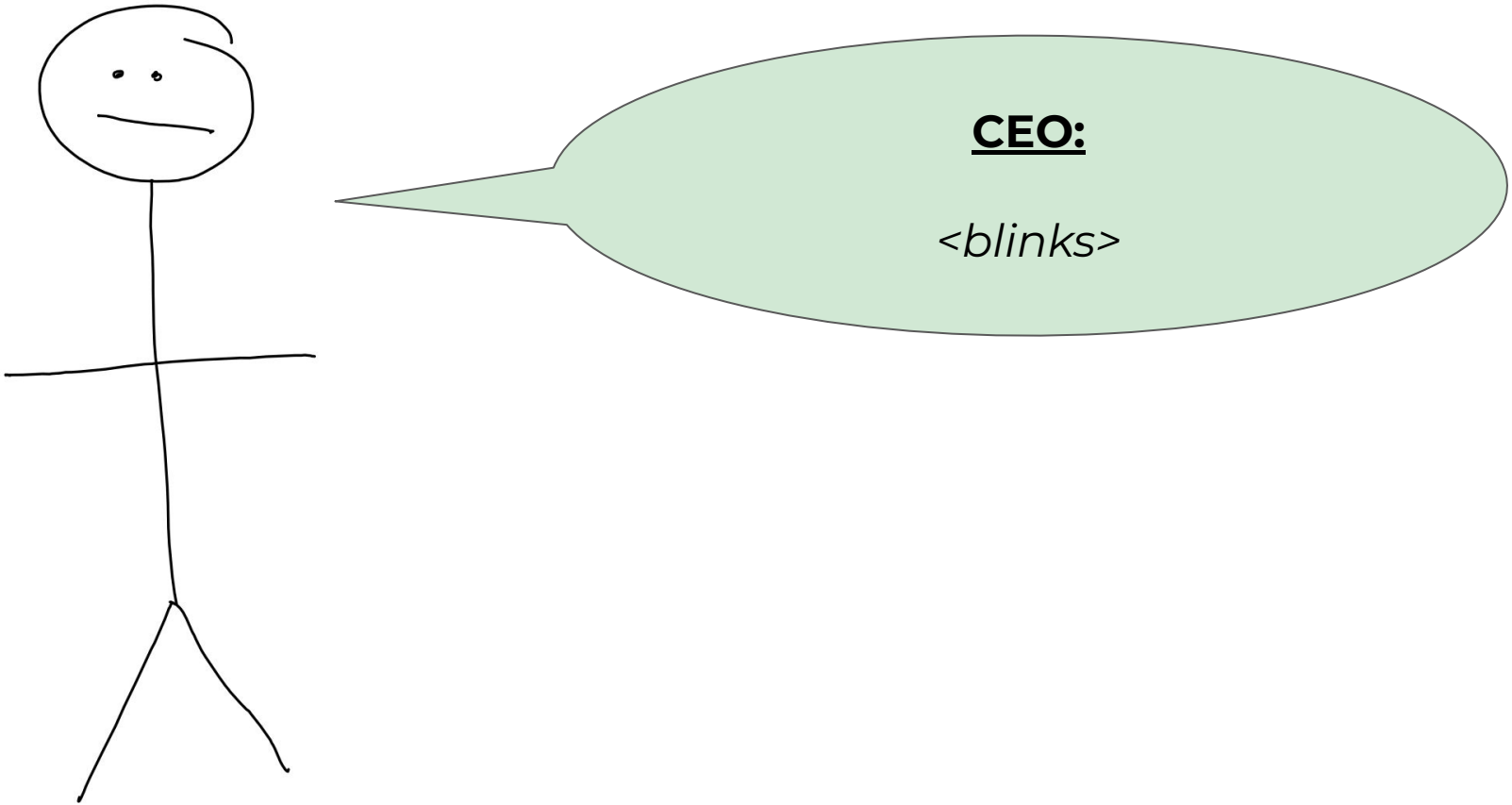
We're here and ready to get started!

Who is our manager? I expect mentoring!

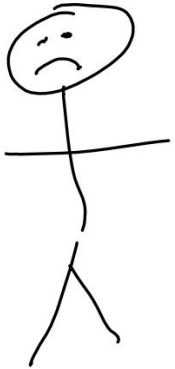
What projects are we being assigned to?

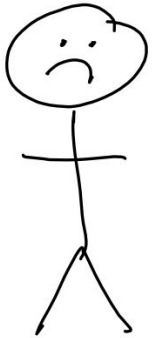
Who is our PM?

...


CEO:
<blinks>

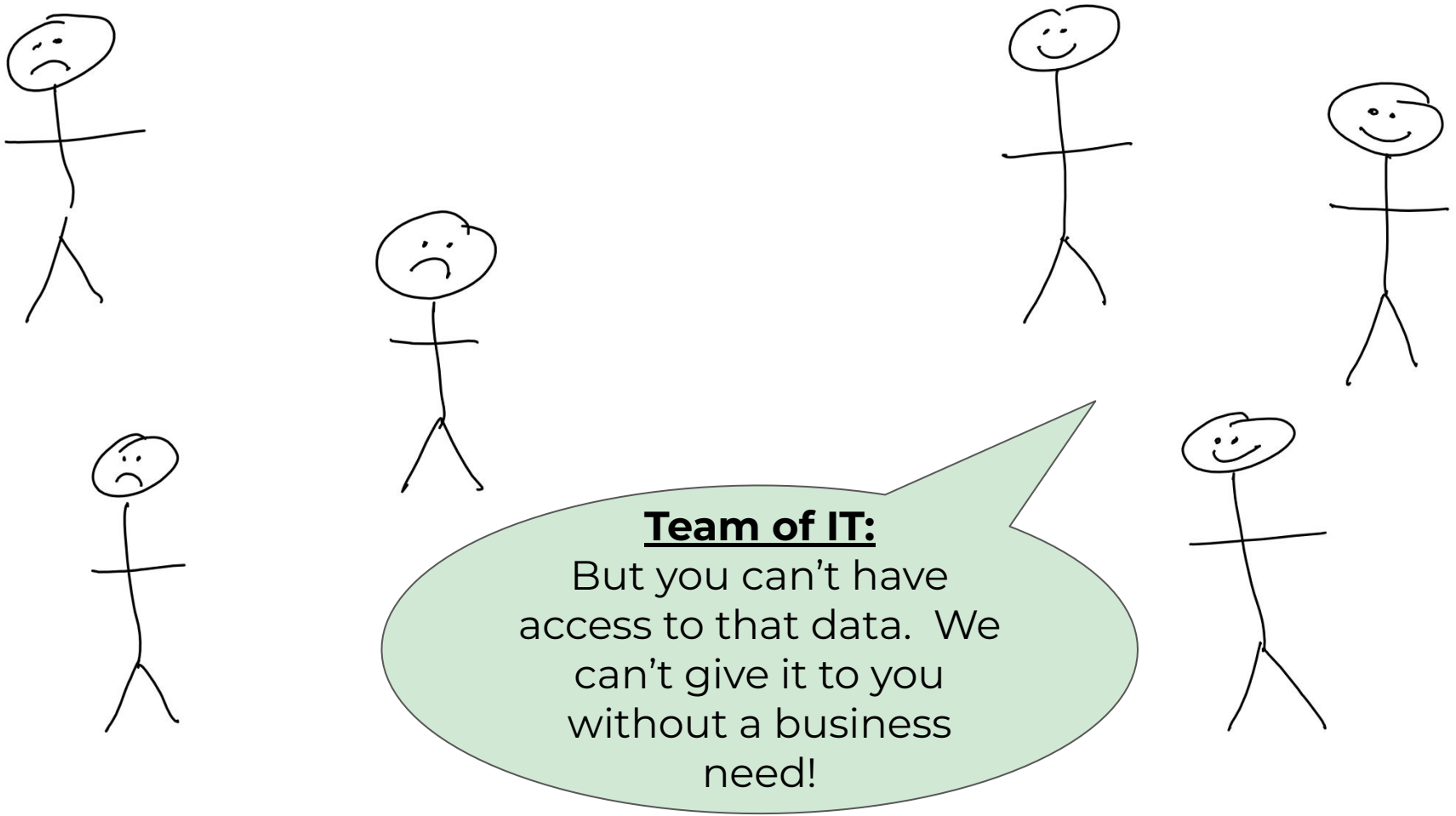
The data scientists huddle and come up with some ideas of things they could work on...



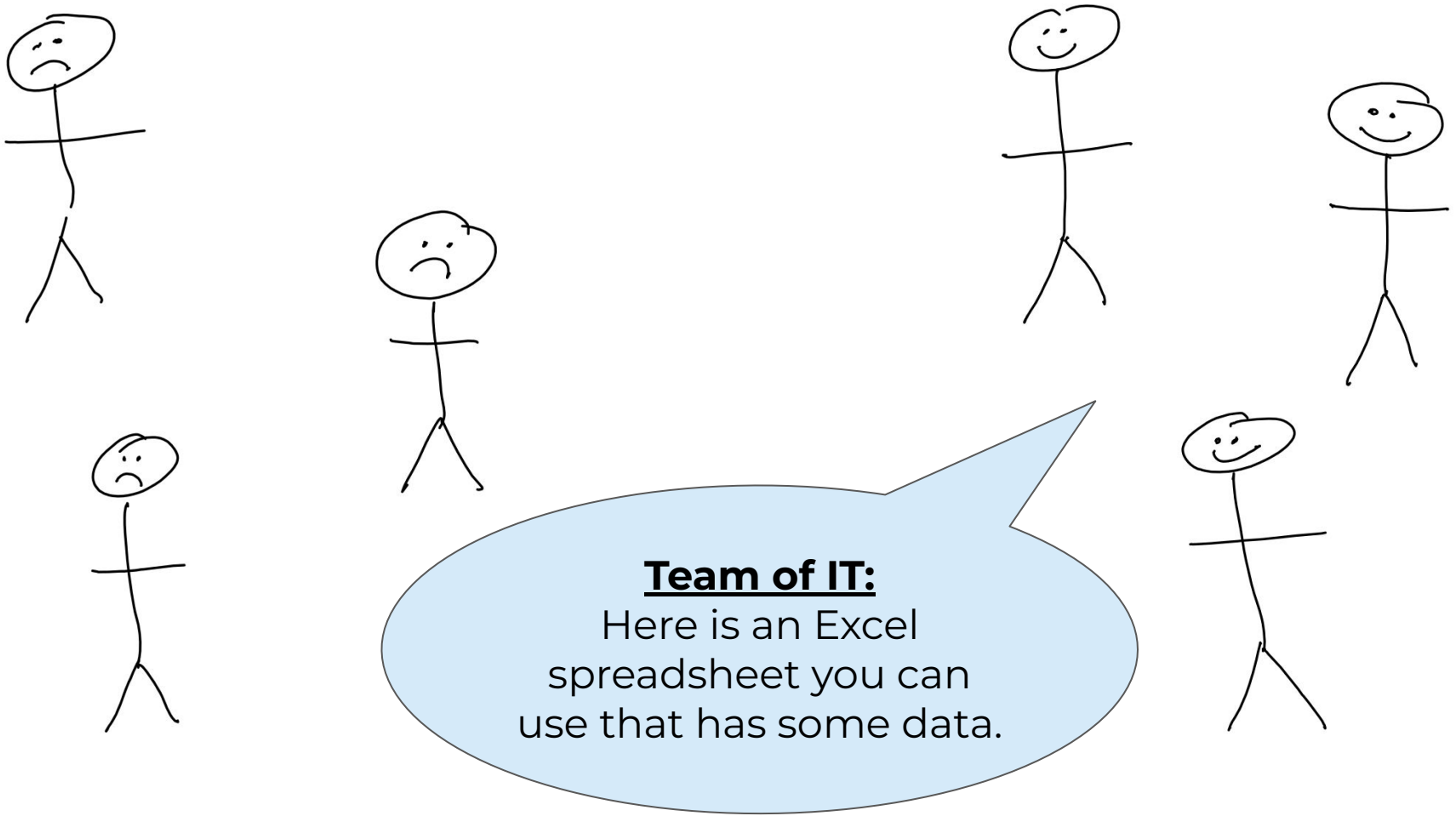


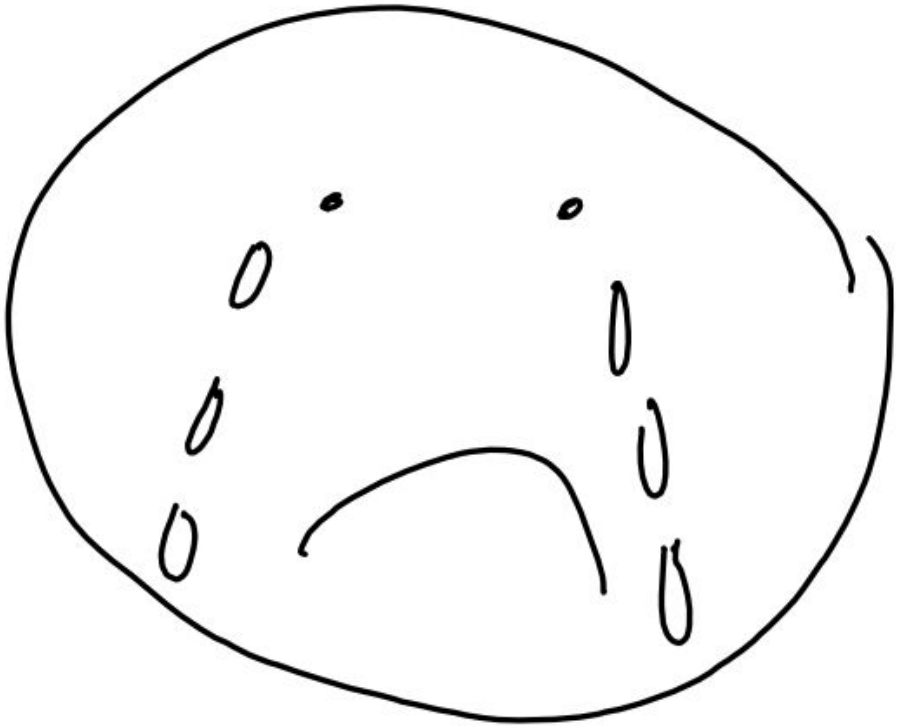
Team of Data Scientists:

Where is the data???

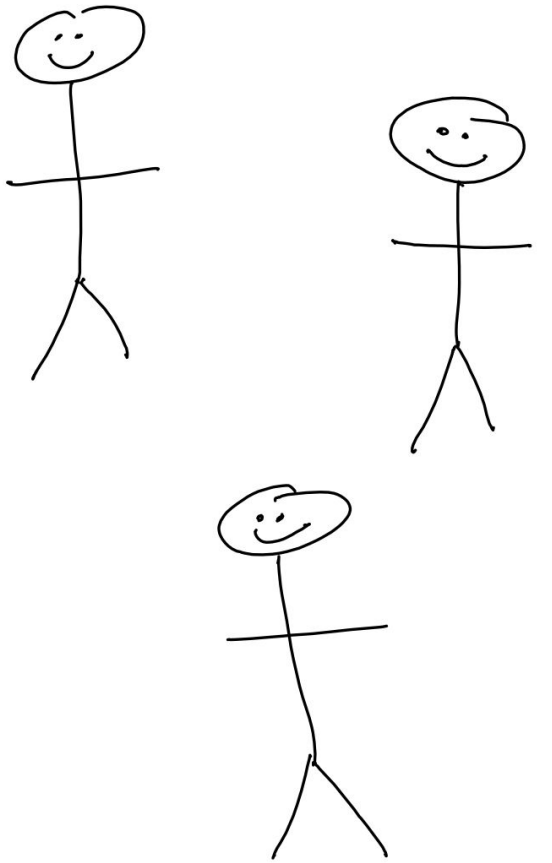

Team of IT:
But you can't have access to that data. We can't give it to you without a business need!

Data scientist tears


Team of IT:
Here is an Excel spreadsheet you can use that has some data.

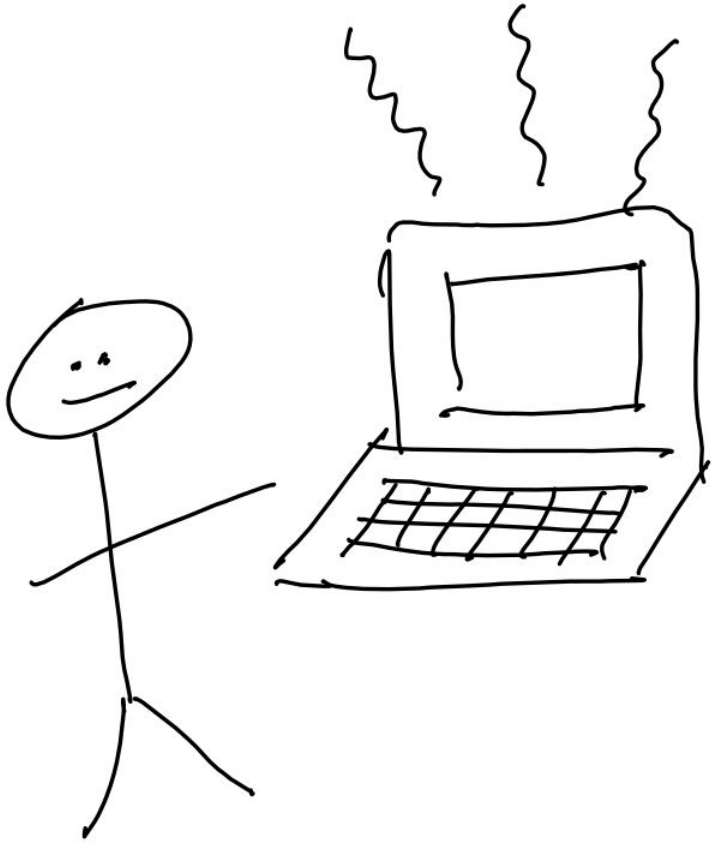


More data scientist tears

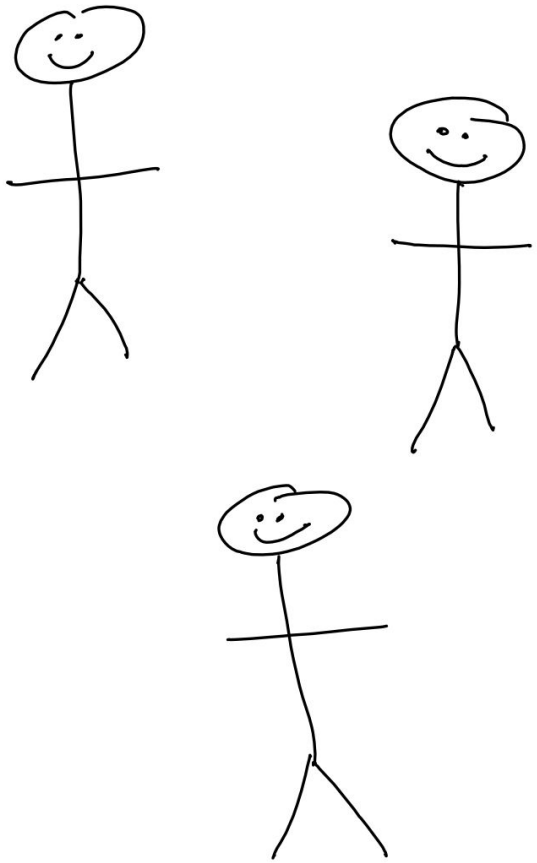


Team of Data Scientists:
Wait, I have an idea! If we can just collect this type of data by creating this pipeline...

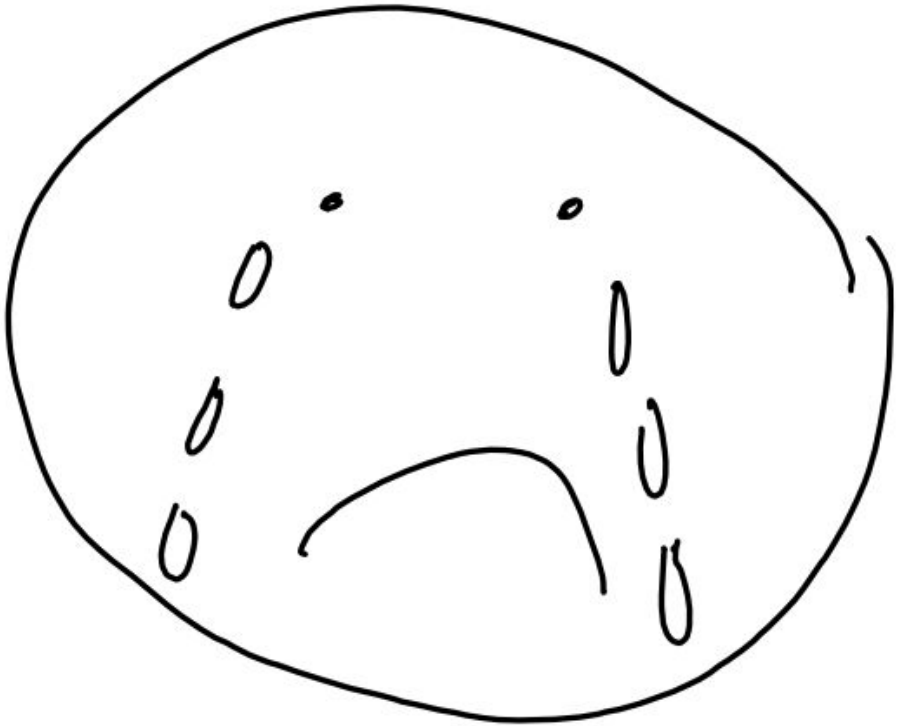
The data scientists jump through millions of hoops and seek billions of different permissions to create a pipeline to collect the data. Not being data engineers, this takes them a while, but they eventually get some usable data.



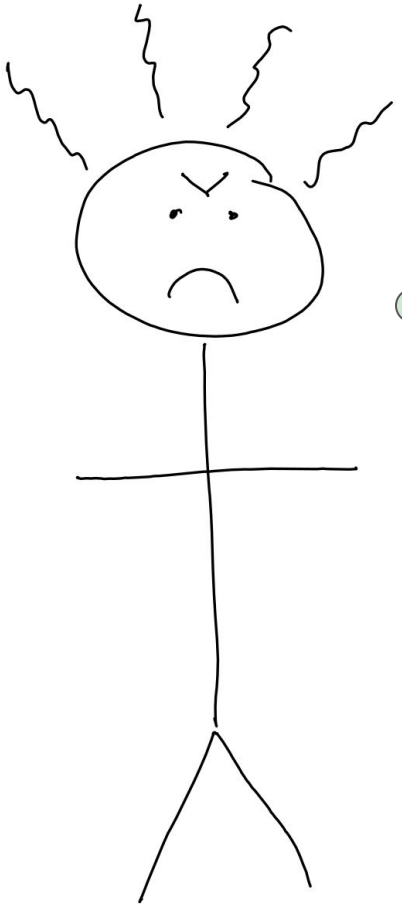
Now that they have the data, the team of data scientists works furiously to create a model, finally getting to do what they have been hired to do and are good at...



FINALLY, the team has results and they are anxious to show them. However, without a champion they spend a lot of time getting on the calendars of a lot of people who are not able to do anything with their results.

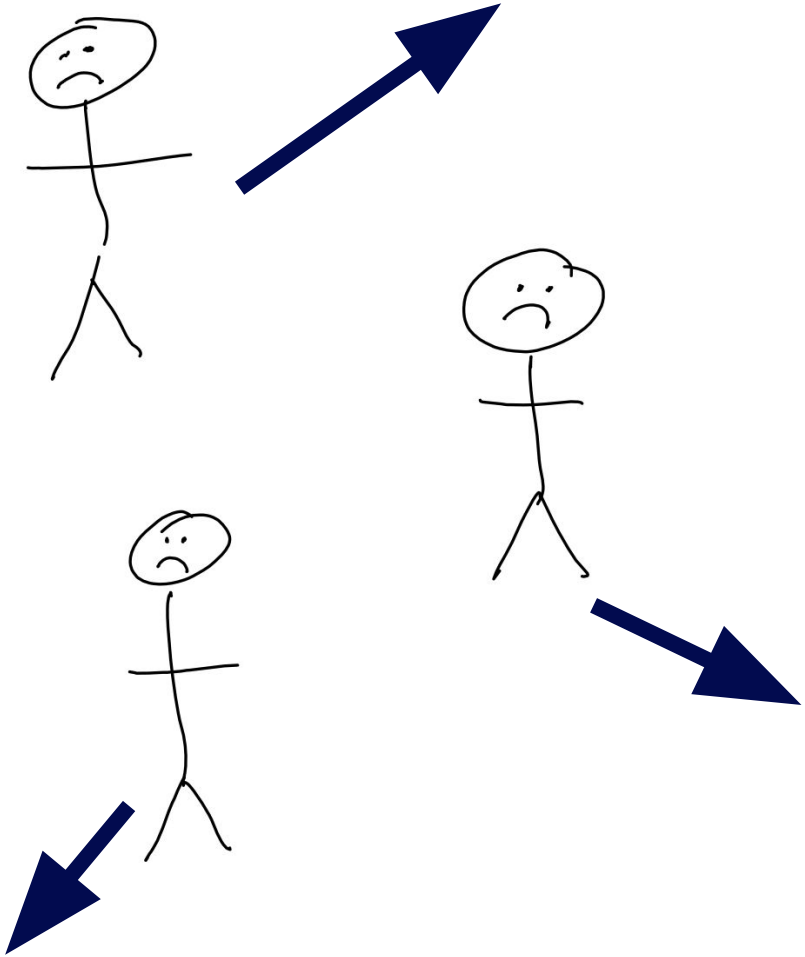


More data scientist tears

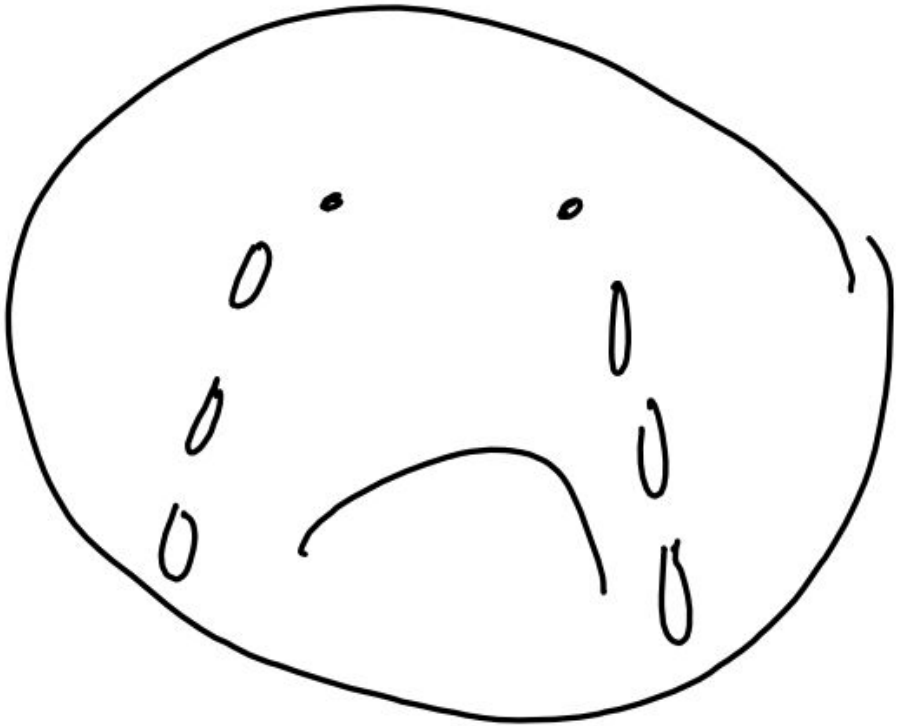


CEO:

Why did I spend all of this money on this team? They haven't created anything of value! Where is my ROI?!?

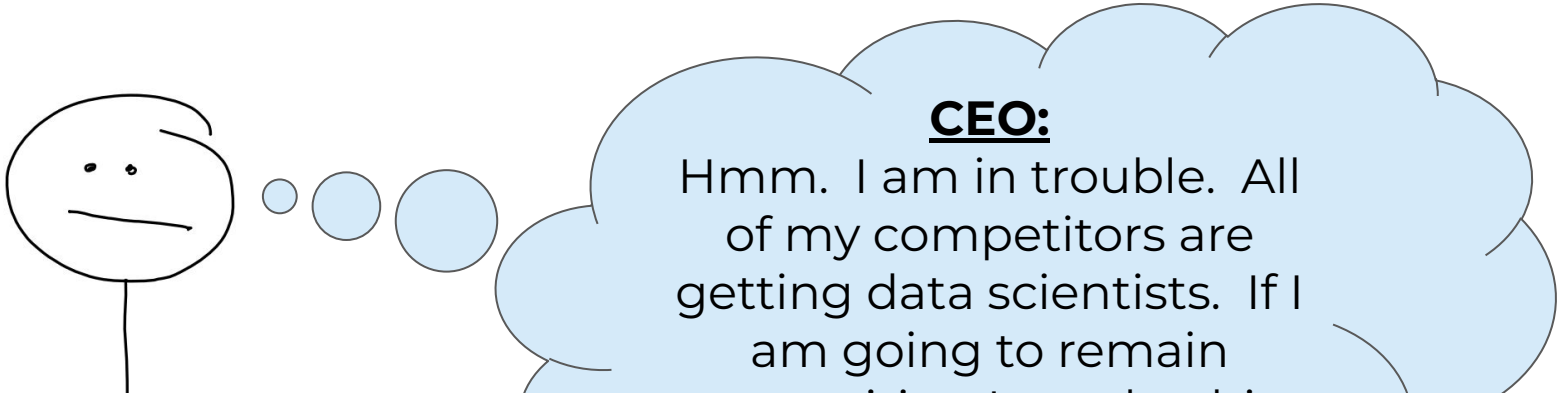


The data scientists all start leaving the company, either voluntarily or involuntarily, because there is nothing for them to do, no job impact or satisfaction, no growth, and no long-term prospects at the company.

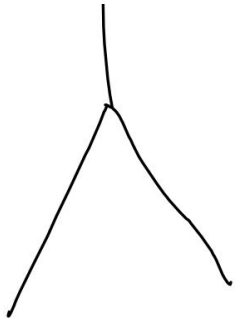


CEO tears

Fin

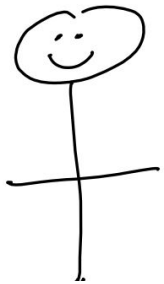


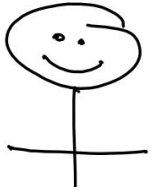
No business problem was identified that could only be solved with data



Without an identified business problem there is no way to provide requirements on the skill sets for the data scientists

A conversation then occurs about how these data scientists must all have PhDs, be experts in NLP, and have 10+ years of experience with PyTorch…





Team of Data Scientists:

We're here and ready to get started!

In addition to the lack of a problem for the team to work on, the hiring was not done in an effective sequence

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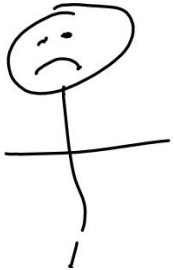
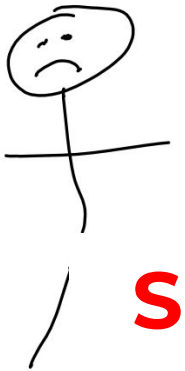
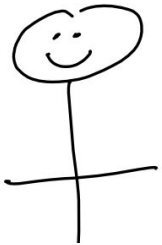
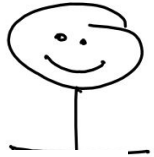


The data scientists huddle and come up with some ideas of things they could work on…

The next key problem: it doesn't make sense to hire a team when there is no data to solve the business problem

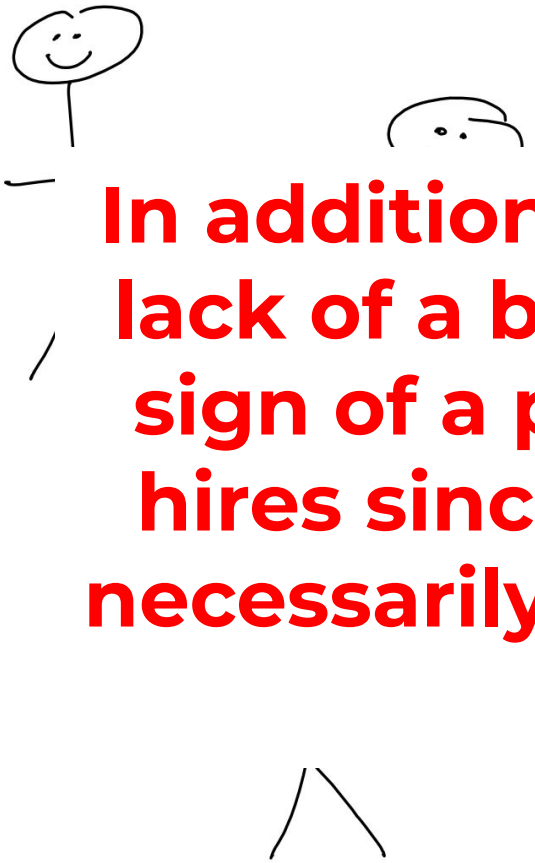






Siloing of data (beyond appropriate data governance practices) is another sign of a data culture problem

But you can't have access to that data. We can't give it to you without a business need!

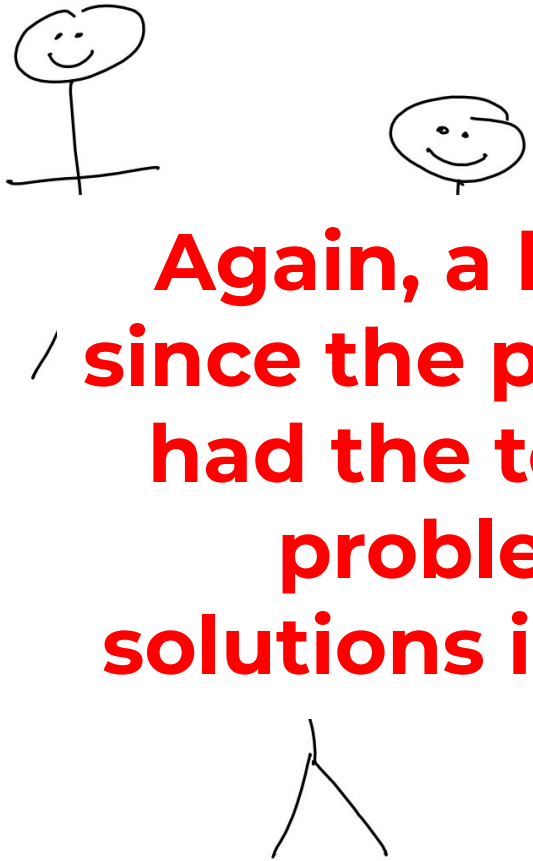


Team of Data Scientists:

Wait, I have an idea! If we can just collect this type of data

In addition to the continued issue of lack of a business problem, another sign of a problem in sequencing of hires since data engineering is not necessarily in the skill set of the data scientists

get some usable data.



Again, a hiring sequence problem since the presence of PM would have had the team working on relevant problems and getting those solutions in front of the right people

This is even more problematic for graph work!

- “A solution looking for a problem”
- What is the cost of maintaining multiple databases relative to the overall ROI?
  - The perception that you must operate at a very large scale to justify the cost
  - Most data is already stored in relational databases, so this doubles the cost
- Graph analytics is seen as a speciality and many CEO’s+HR will not know the need to hire for it

People	People are your strength, but only if you hire the right ones.
Data	The value of data is not in volume but in the problems it can solve. You don't know what you need if you don't know the problem.
Problem	Data for the sake of data is a great way to waste money. What is it doing for the business?
Culture	Understands how to identify business problems solved by data, KPIs, ROI, and data silos.

Culture	Starting at the top, sets up the organization for success.
Problem	Not all problems need sophisticated data approaches to solve them.
Data	The organization creates strategies around collection, control, and usage; invests in gaps.
People	Strategic, sequential hiring with an eye to hit the ground running once everything is in place.

A Data Culture is the collective behaviors and beliefs of people who value, practice, and encourage the use of data to improve decision-making. As a result, data is woven into the operations, mindset, and identity of an organization. A Data Culture equips everyone in your organization with the insights they need to be truly data-driven, tackling your most complex business challenges.

https://www.tableau.com/why-tableau/data-culture

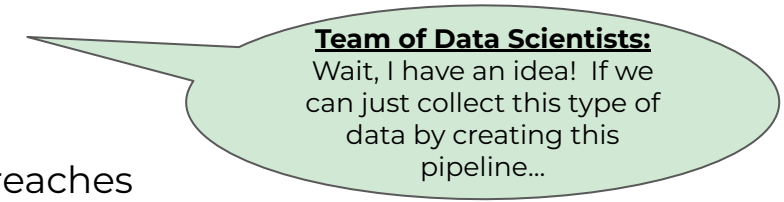
A good data culture is / has / includes...

- A participatory sport with a role for *everyone*
- Cultivated and grown over time
- A way of thinking, not just about tooling
- Efforts to level people up, training opportunities, and continuous learning
- A strategy specific to data
- An understanding of how to measure ROI from a data product
- “Do we have the data to back that up?”

This requires commitment from the top!

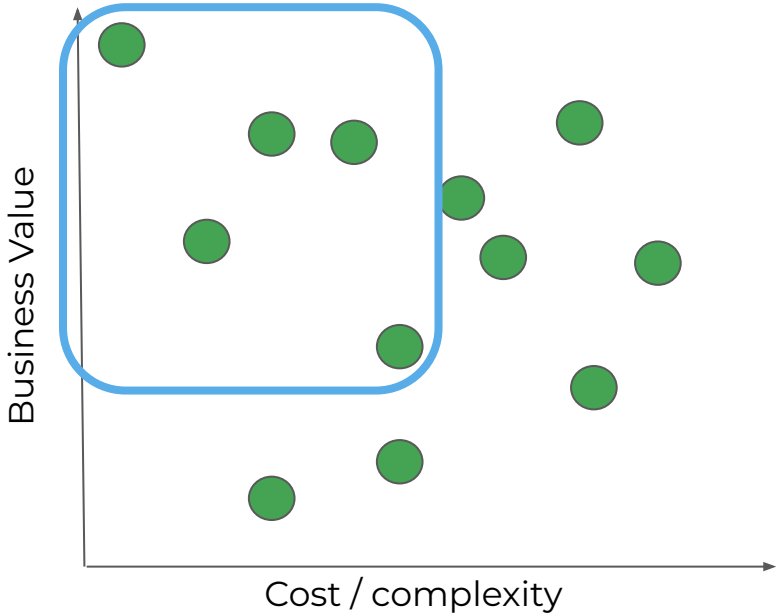
Identifying the right business problem

- It cannot be answered by a simple SQL query
- It will drive ROI
  - ROI can be measured in many ways, not just $
  - Depends on how “success” is defined (which implies it must be defined up front)
  - Data can contribute in both direct and indirect ways, making ROI difficult to determine
- Common ROI measures
  - Increase revenue / reduce cost
  - Direct data monetization
  - Faster time to market
  - Free up resources
  - Security and compliance losses due to data breaches



How graphs come into play in data culture

- Need a community-wide effort to educate all levels on the importance and benefits of linking data
  - Must include everyone from executives down
- Graph skills should be part of the standard toolbelt of all data practitioners
- Seek out tooling to combat the cost/ROI concerns
- Connect graphs to other parts of the data strategy*



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How graphs come into play in data culture

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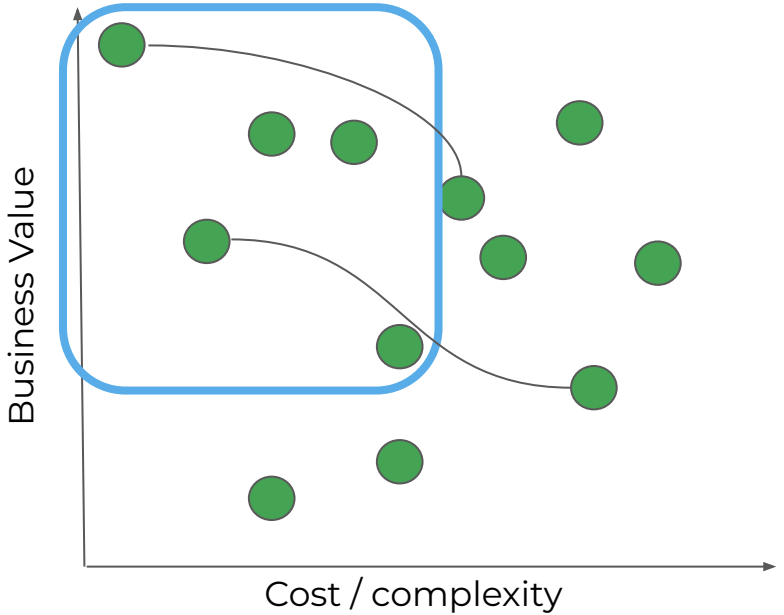

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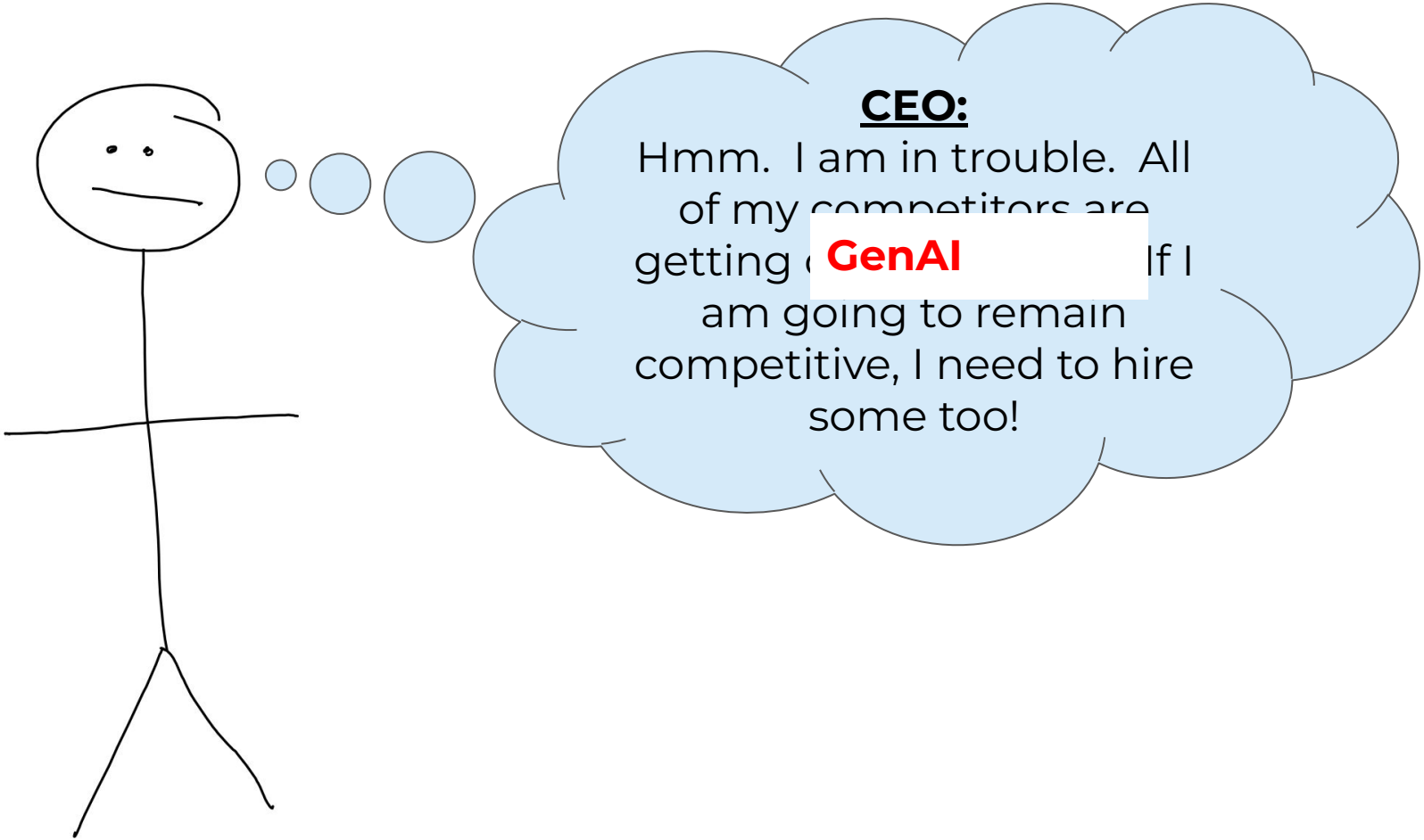
CEO:
Hmm. I am in trouble. All of my competitors are getting GenAI If I am going to remain competitive, I need to hire some too!

Graph people have a unique opportunity to be part of the strategy with GenAI boom!

How to lean in on this?

- Knowledge graphs are key to creating functional GenAI solutions
- Start with the business problem and metrics for success!
- Do not be the “hammer looking for a nail”
- Demonstrate the need for graphs as part of the solution
    - Must be able to demonstrate improved performance in LLM behavior by using graphs

A data culture for everyone

Apr 15, 2014 | Satya Nadella - Chief Executive Officer, Microsoft

In a mobile first, cloud first world, one of the most fascinating truths is that data is not only consumed but also generated at accelerating rates and exponentially increasing quantities.

However, a data culture isn't just about deploying technology alone, it's about changing culture so that every organization, every team and every individual is empowered to do great things because of the data at their fingertips. This means bringing together people, IT and developers to create a cultural shift that is just as important as systems and infrastructure. In a data culture, everyone benefits when more people can ask questions and get answers. In a data culture, the entire effectiveness of an organization can elevate. This is especially true when every employee can harness the power of data once only reserved for data scientists and tap into the power of natural language, self-service business insights and visualization capabilities that work inside familiar apps such as Office.

Thank you!

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& ASSOCIATES