

Creating a Data-Driven Organization

Carl Anderson

9:15am, Grand 2

Why data-driven?



Controlling for other factors, data-driven orgs are

5% more productive



Analytics pays back

\$13 / \$1 invested



What is data-driven?



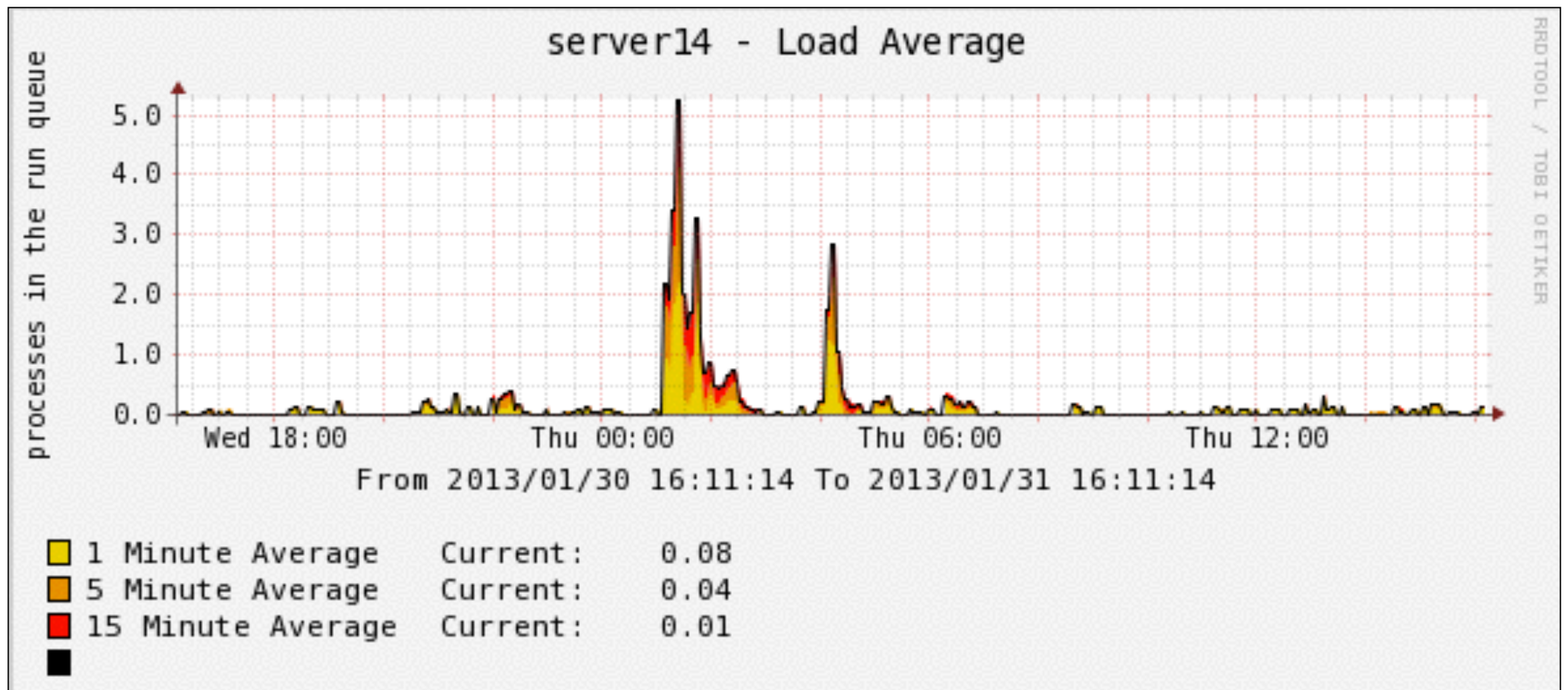
Having lots of reports does not make you data-driven.



Having lots of dashboards does not make you data-driven.



Having lots of alerts does not make you data-driven.

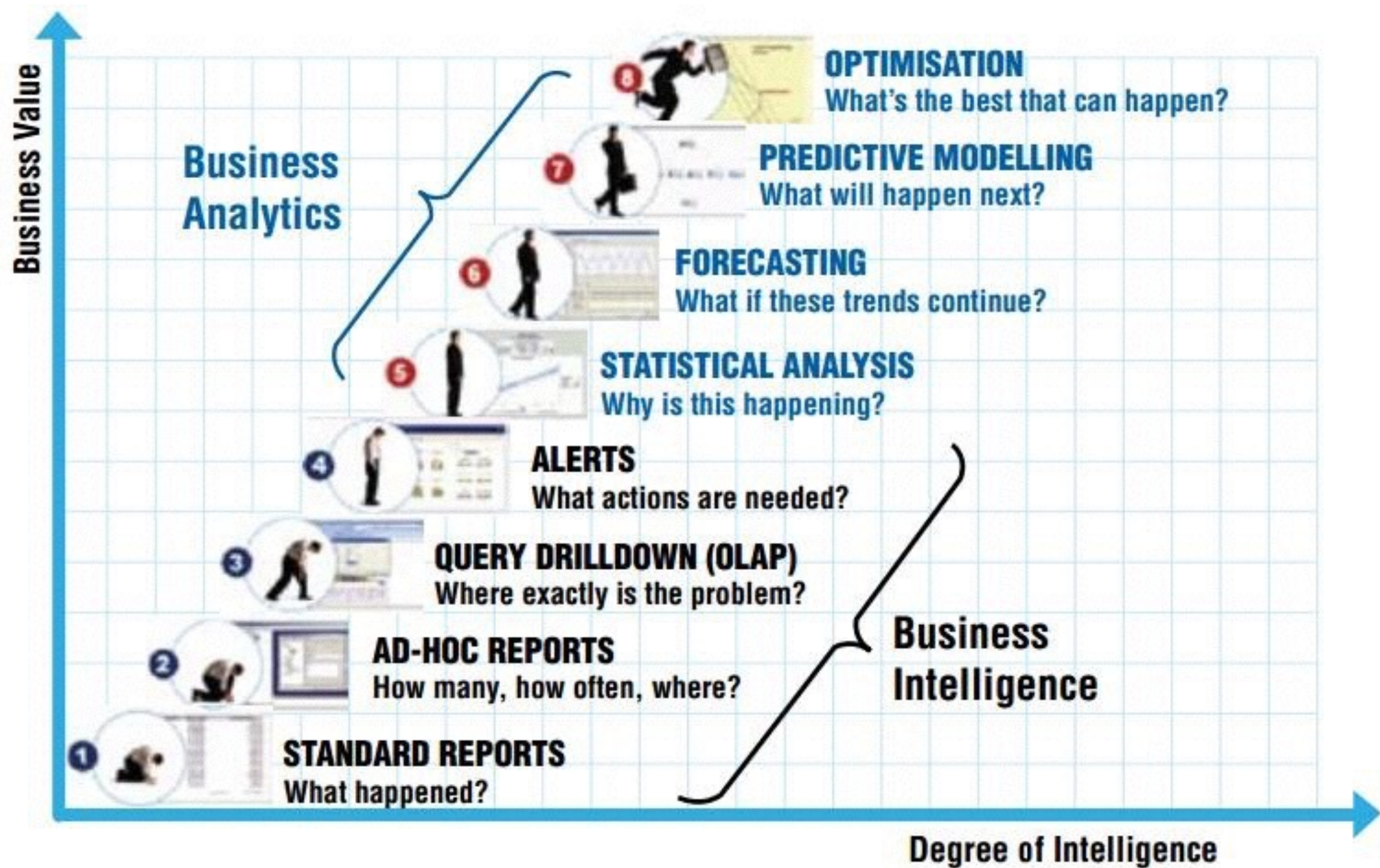


Data-driven: you must have analytics

Reporting	Analysis
Descriptive	Prescriptive
What?	Why?
Backward-looking	Forward-looking
Raise questions	Answer questions
Data → Information	Data + Information → insights
Reports, dashboards, alerts	Findings, Recommendation
No context	story telling

Not necessarily data-driven !

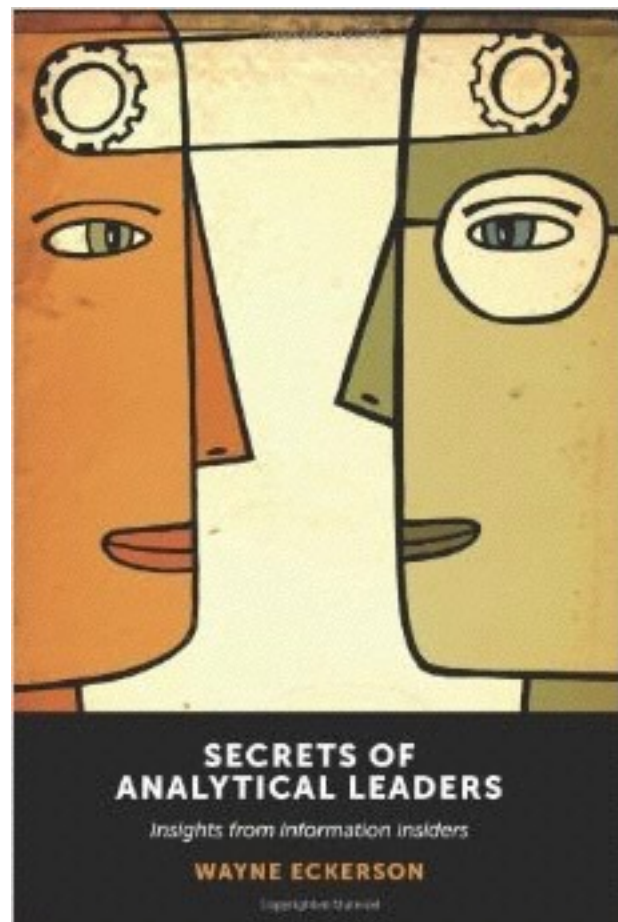
Levels of Analytics



Analytics Value Chain



“Analytics is about **impact**...In our company [Zynga], if you have brilliant insight and you did great research and no one changes, you get zero credit.”



Ken Rudin

Facebook





Train analysts to be business savvy



Having a hadoop cluster does not make you data-driven.

WHY ARE WE DOING
A/B TESTING?



WHY ARE WE PREDICTING
FUTURE TRENDS?



WHY ARE WE ANALYZING
SENTIMENT?



WHY ARE WE CREATING
A RECOMMENDER SYSTEM?



WHY?
WHY?
WHY!



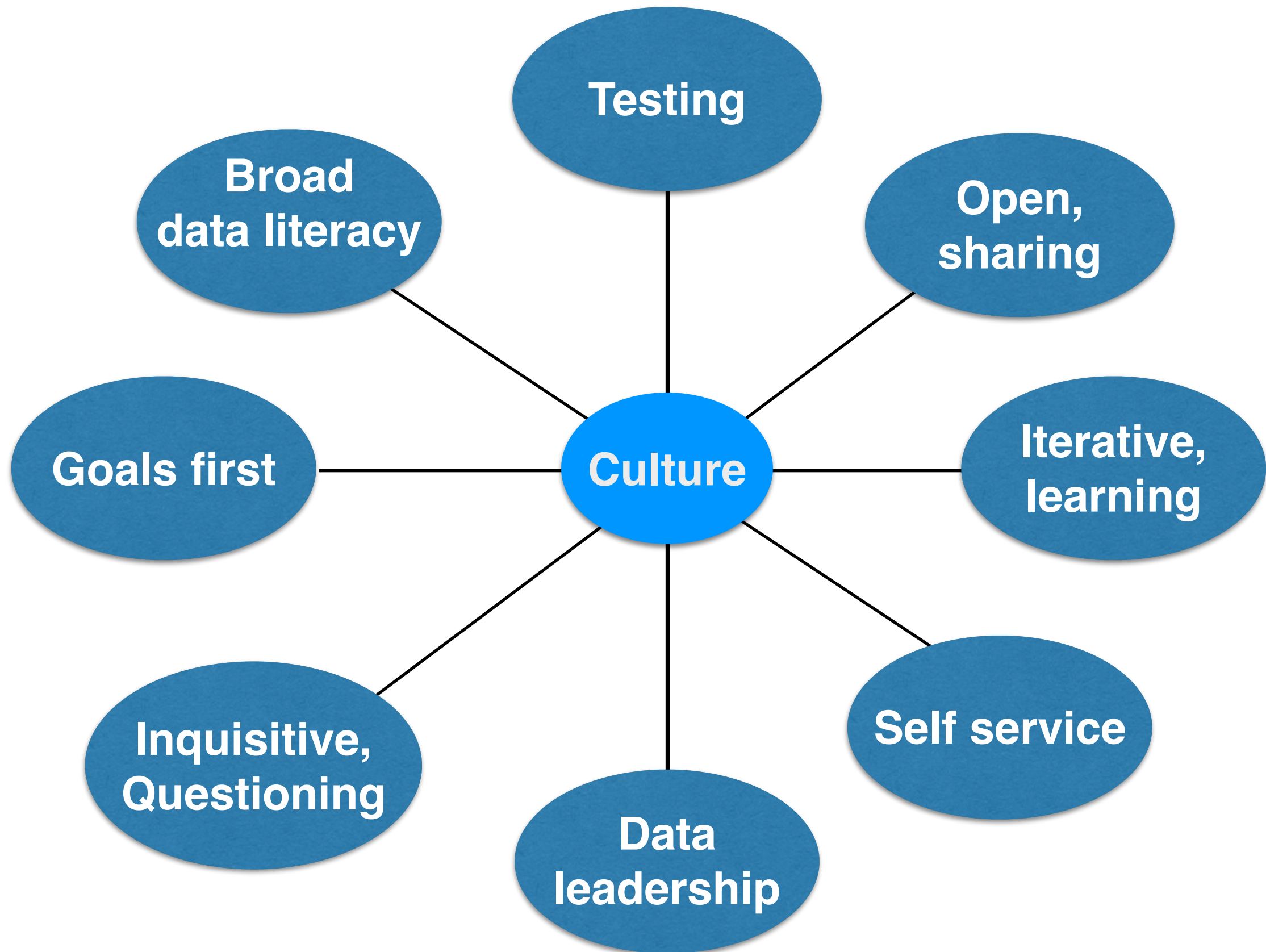


Leverage data as a strategic asset.



Data-driven requires a **data culture**

Data Driven Culture



Being data-driven means having...



a strong testing culture

Innovate through online and offline experimentation.
Encourage hypothesis generation broadly across org.

“you get surprises more often, and surprises are a key **source of innovation**. You only get a surprise when you are trying something and the result is different than you expected, so the sooner you run the experiment, the sooner you are likely to find a surprise, and the surprise is the **market speaking to you**, telling you something you didn’t know.”

Scott Cook

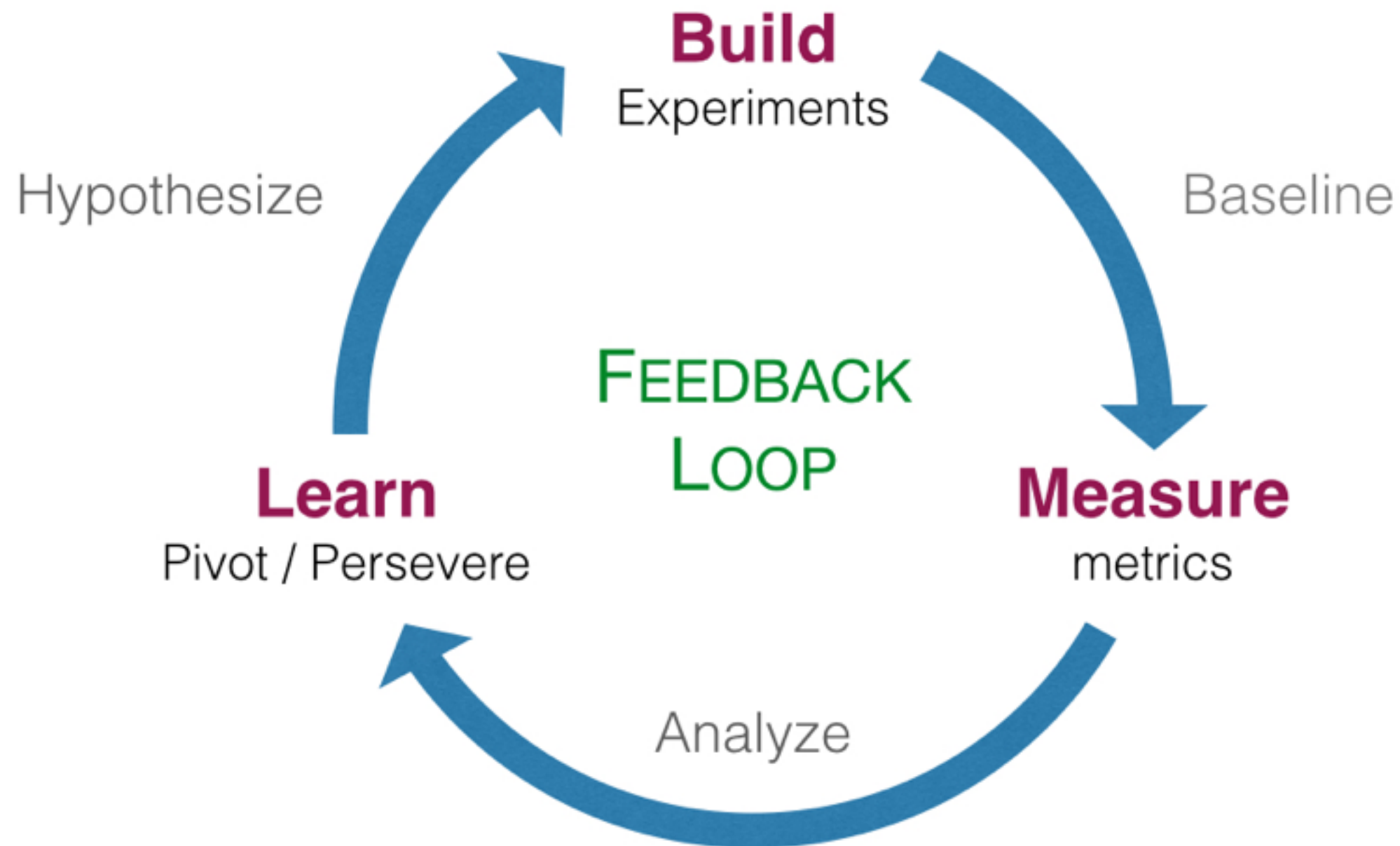
Intuit



Optimize for Right Thing



Iterate





Let data drive decisions, not the Highest Paid Person's Opinion.

Being data-driven means having...



an open, sharing culture

No data hoarding or silos. Bring data together to create rich contexts. Connect the dots.

Context is King

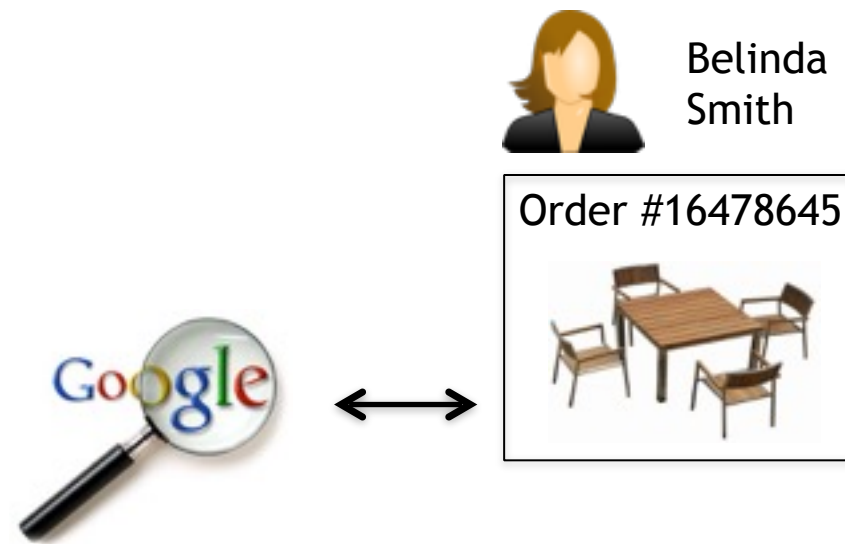


Belinda
Smith

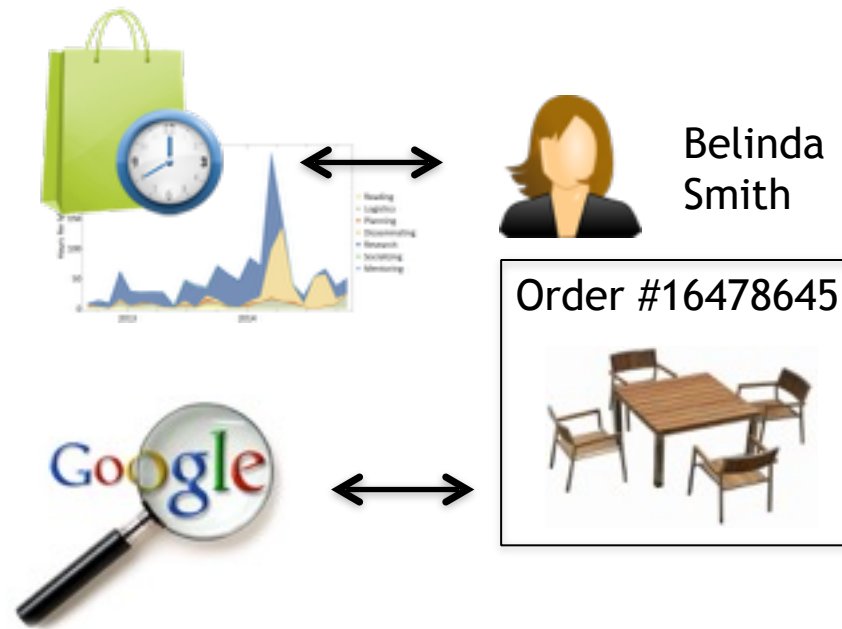
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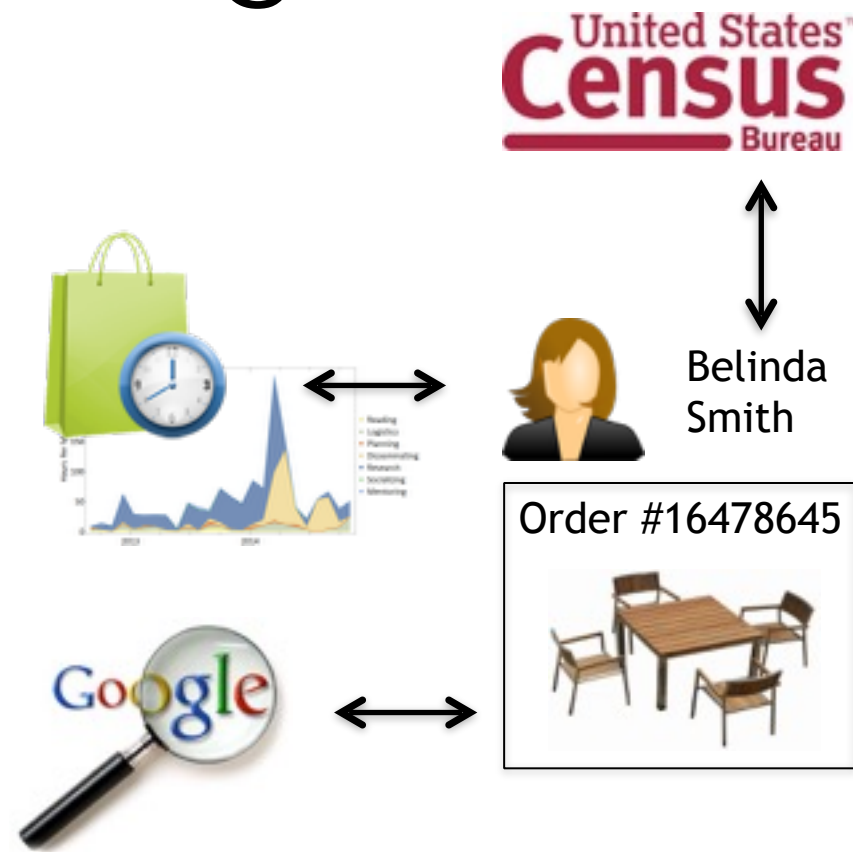
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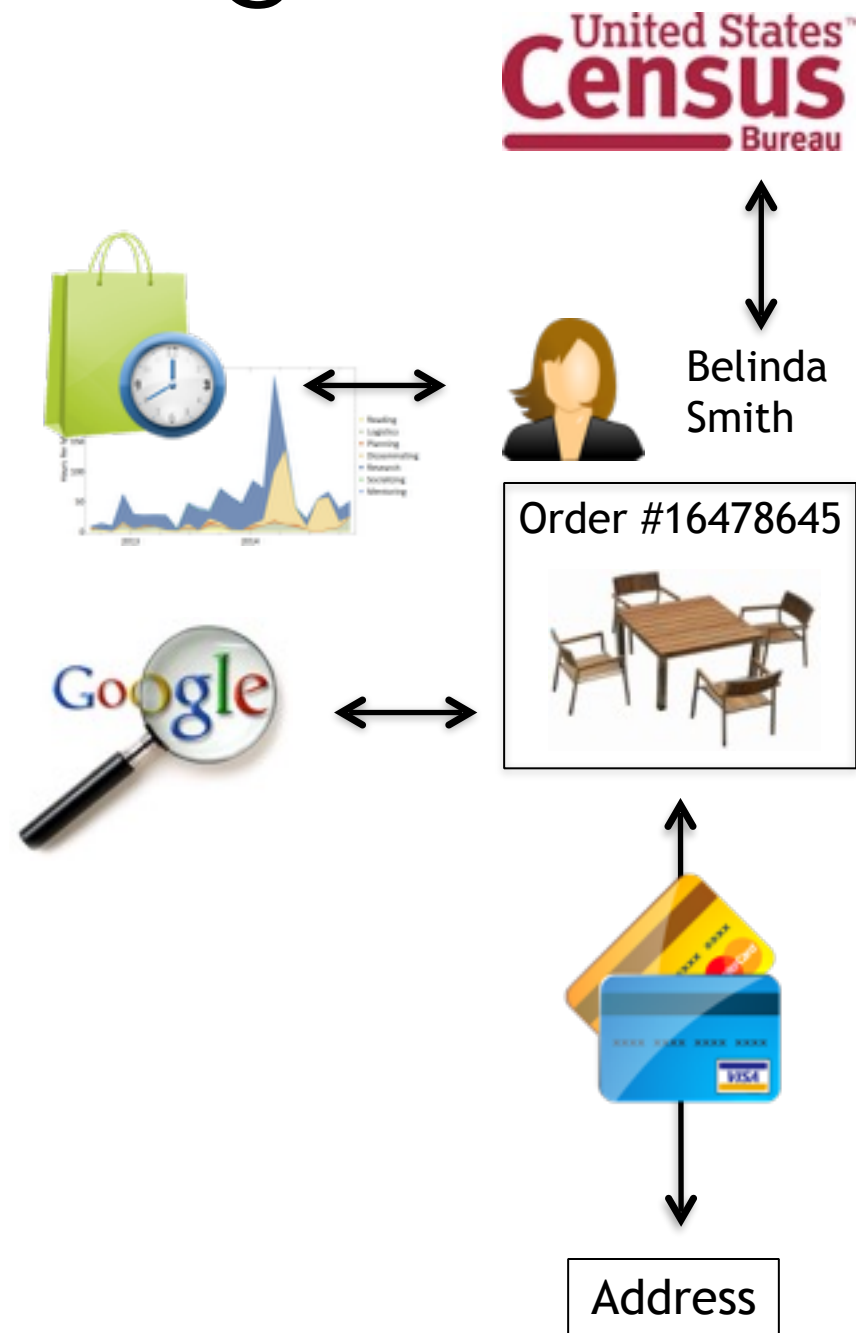
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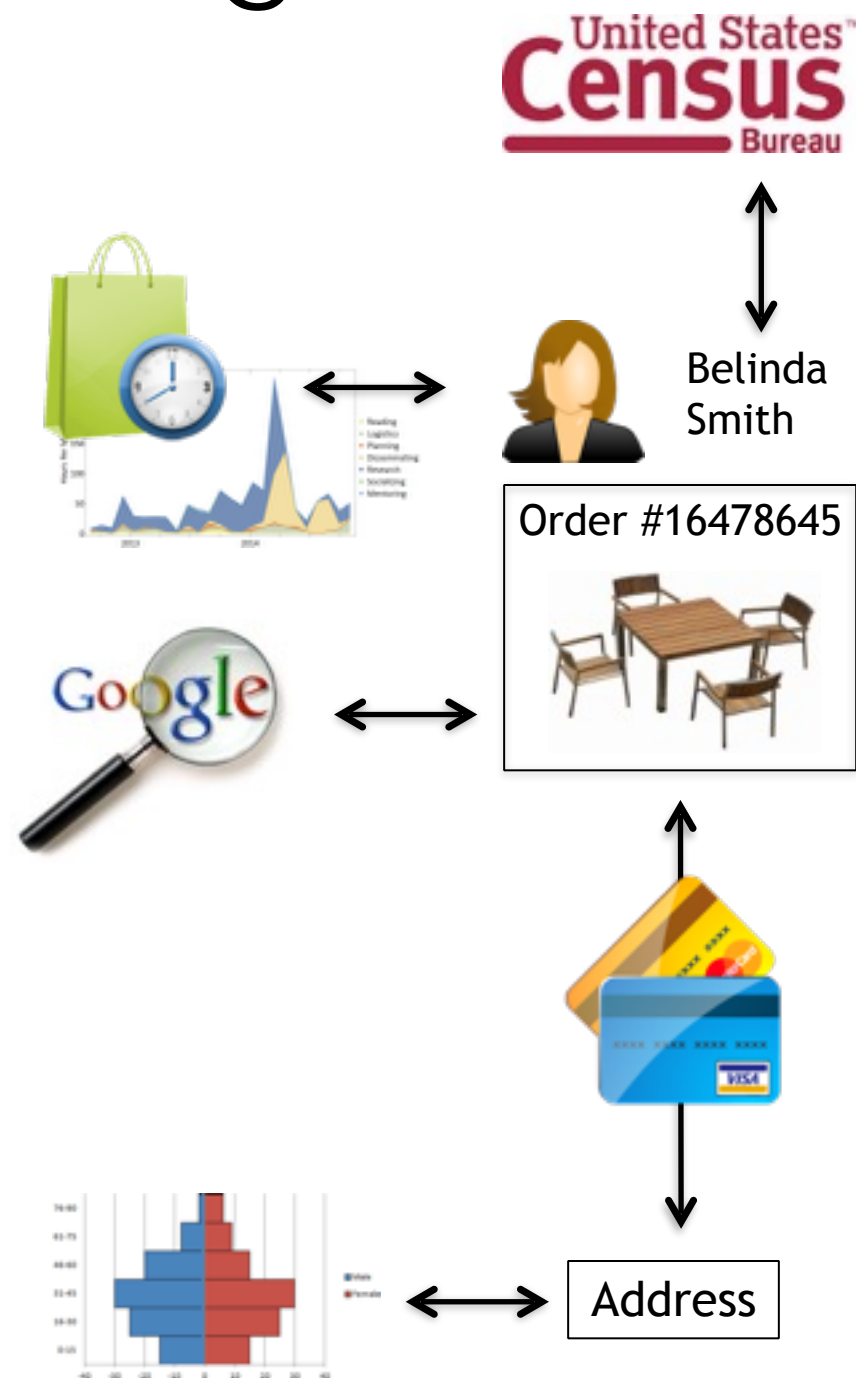
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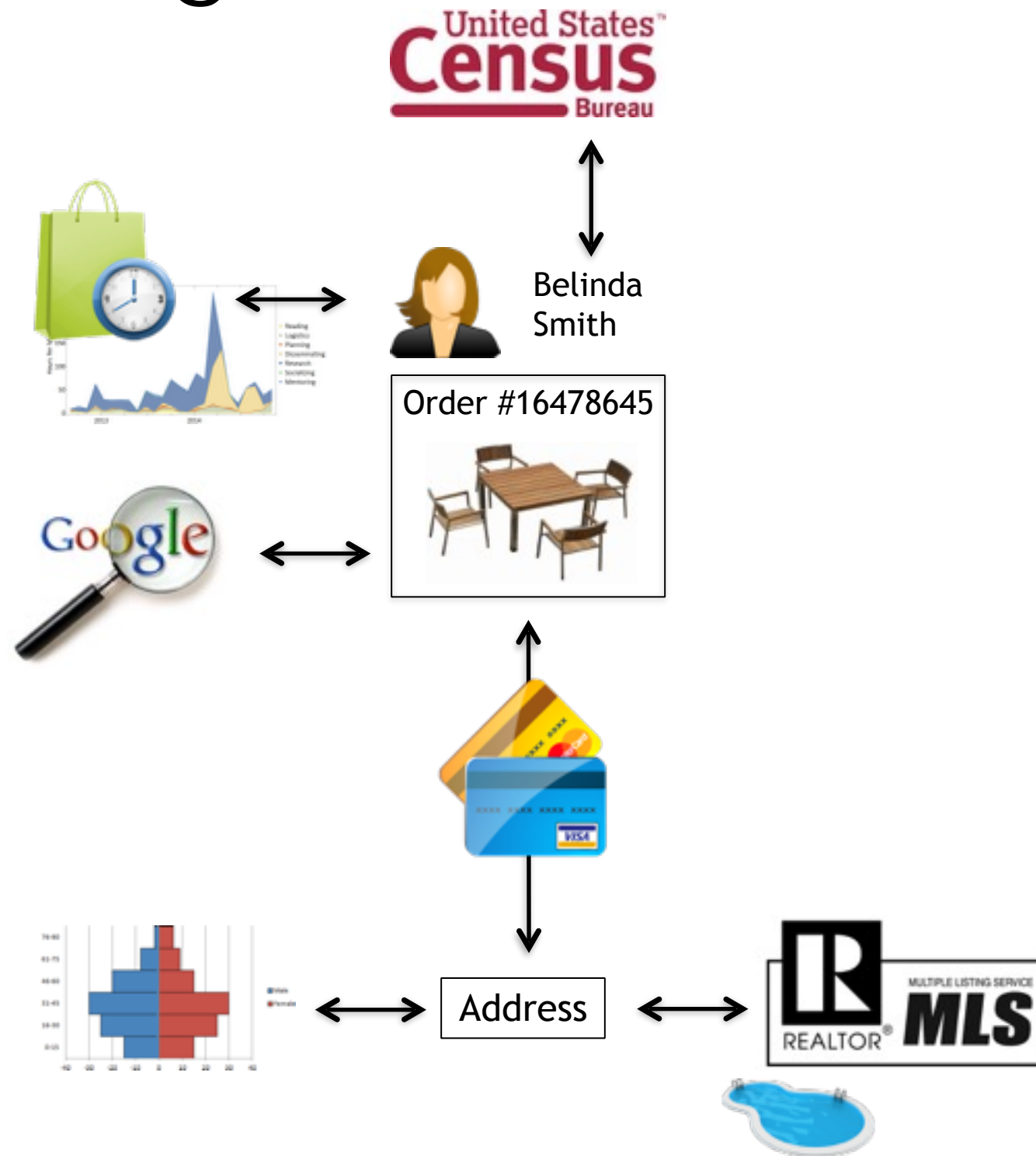
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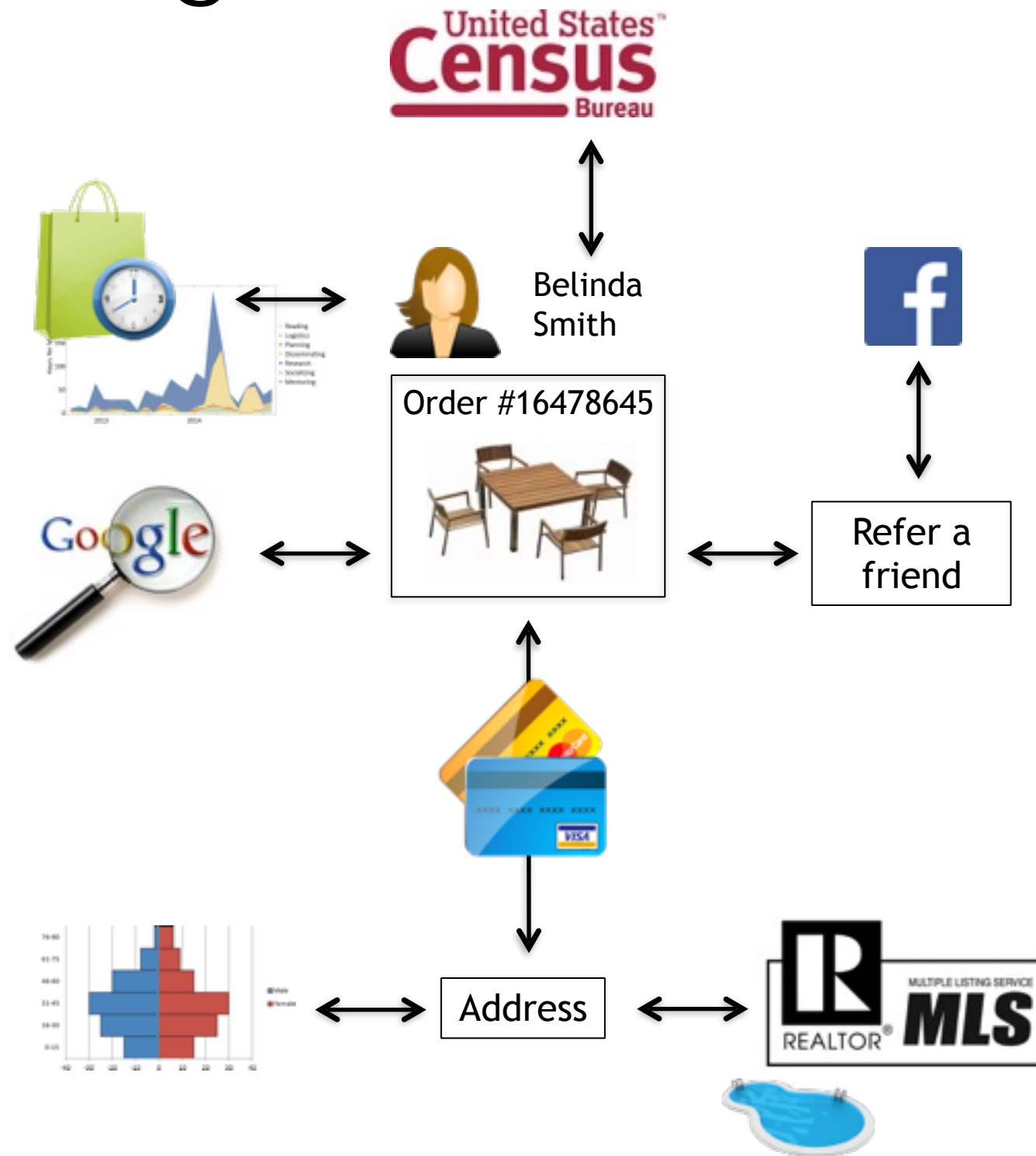
Context is King



Context is King



Context is King



Invest in data quality

1/3

business leaders frequently make decisions
with data that they cannot trust

Being data-driven means having...



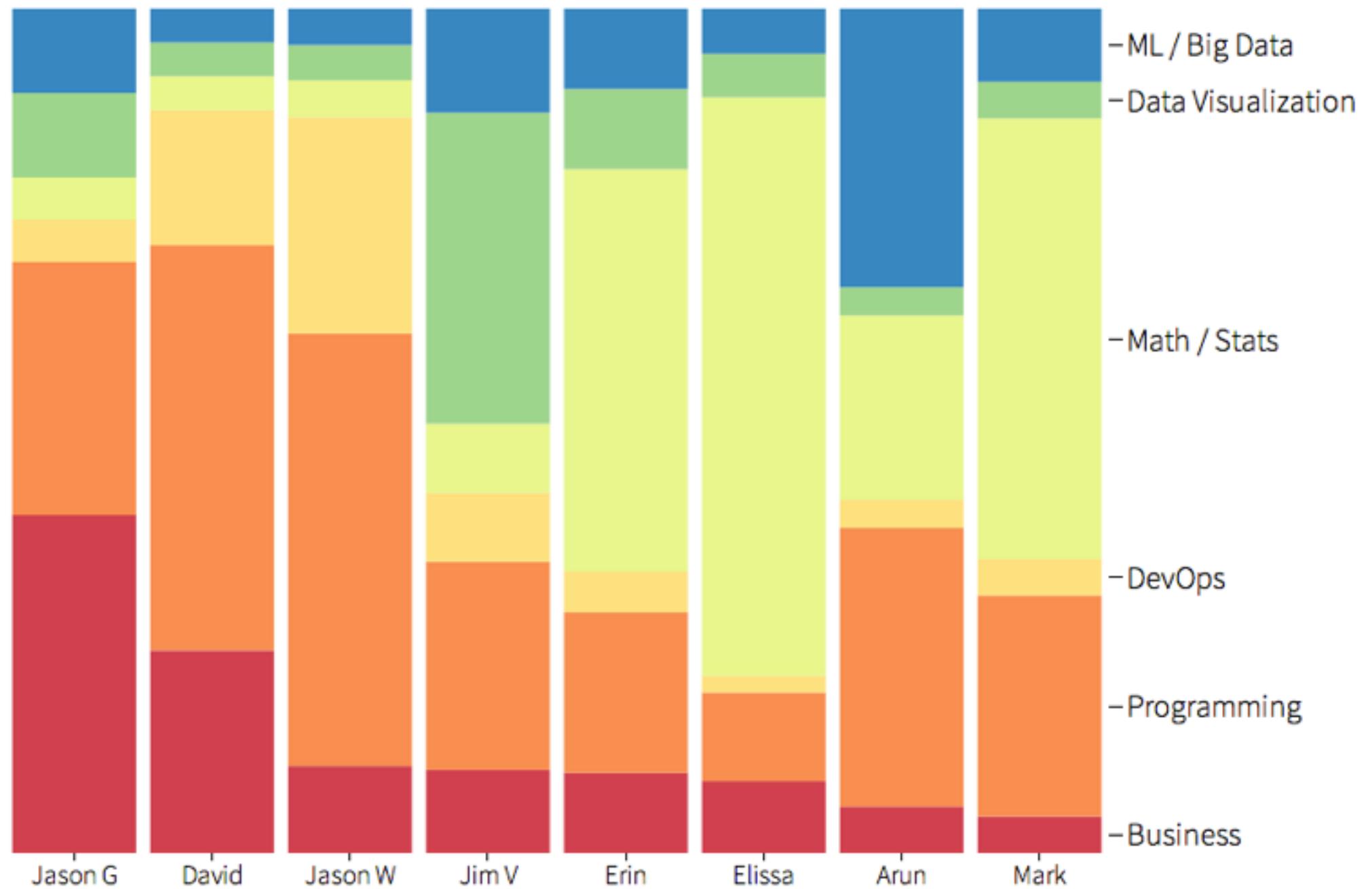
a self service culture

Business units have necessary data access as well as within-team analytical skills to drive insights, actions, and impact.

Traits of great analysts

- Numerate
- Detail-oriented
- Skeptical
- Confident
- Curious
- Communicators
- Data lovers
- Business savvy

Hiring not just as individuals but to complement team



Nordstrom data lab (as of Strata 2013)

Being data-driven means having...



a broad data literacy

All decision-makers have appropriate skills to use and interpret data.

Analysts must sell, sell, sell their product



Tie actions to outcomes

Demonstrate Value: Connect Actions & Outcomes

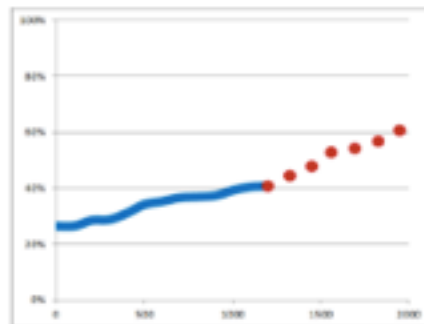
Show the decision

Explain with data

If you take this action

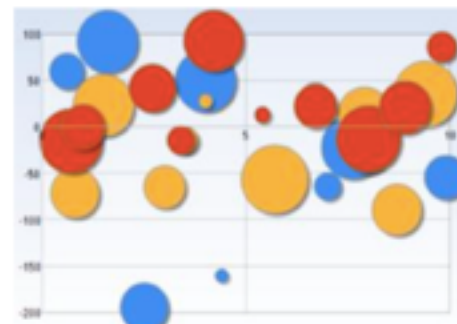
You can expect this outcome.

Here's why:



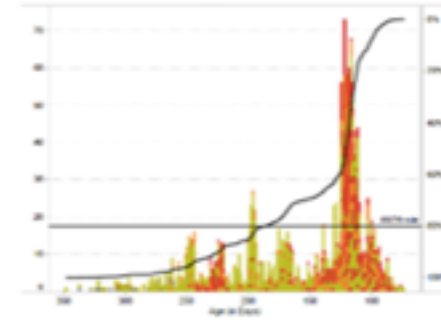
Evidence

Method: Linear
Source: RCT
"Historical trends show that ..."



DataSci

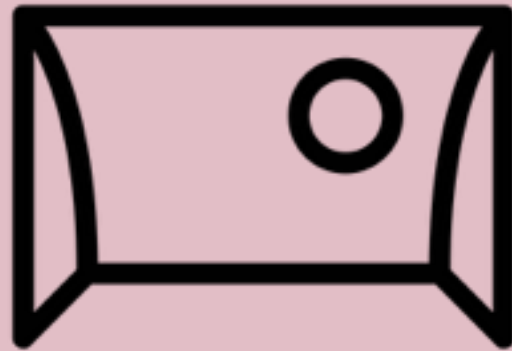
Method: Bubble
Source: Customer
"Analytics predict better outcome..."



Cruncher

Method: Dynamo
Source: SAS
"Evidence shows this action will..."

Being data-driven means having...



a goals first approach.

Set out metrics before experiment. What does success mean?

Have an analysis plan. Prevent gaming the system.

Being data-driven means having...



an objective, inquisitive culture

“Do you have data to back that up?” should be a question that no one is afraid to ask and everyone is prepared to answer’—Julie Arsenault.

Being data-driven means having...



a visible, clearly-articulated strategy

Commonly understood vision. Suite of well-designed, accessible KPIs. All staff understand how their work ties back to these metrics.

Being data-driven means having...



strong data leadership

A head of data to evangelize data as strategic asset with budget, team, and influence to drive cultural change.

Which strategies have proved successful in promoting a data-driven culture in your organization?

Strategy	% of respondents
Top-down guidance and / or mandates from execs	49
Promotion of data-sharing practices	48
Increased availability of training in data analytics	40
Communication of the benefits of data-driven decision-making	40
Recruitment of additional data analysts	17

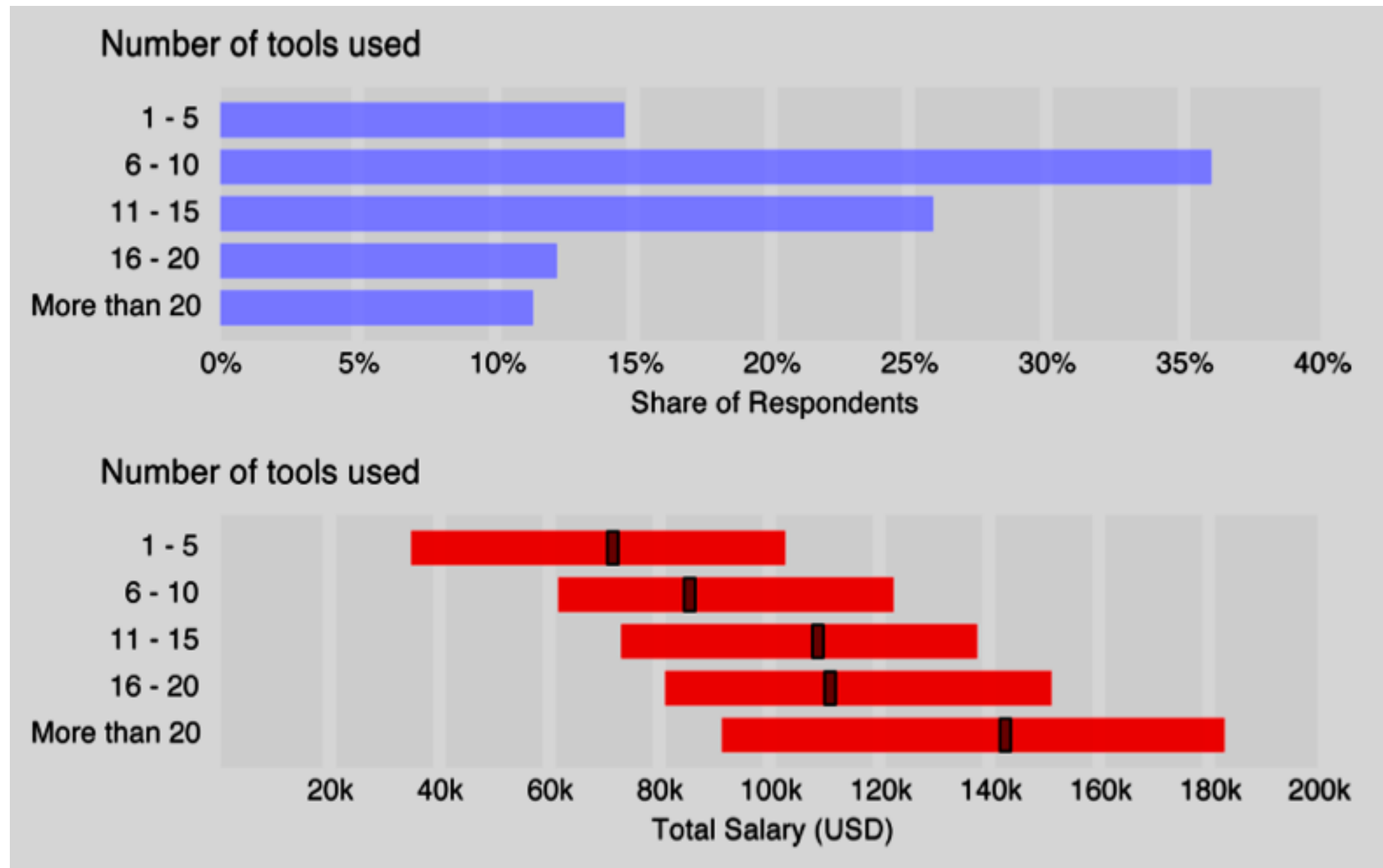
Change should not just be top-down



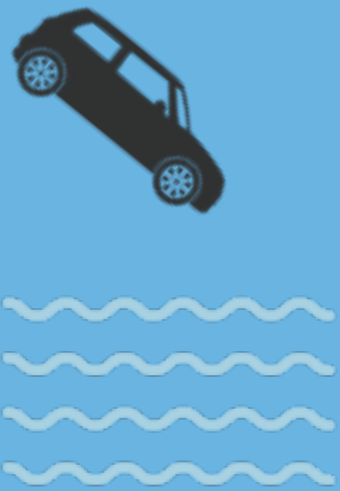
but bottom up too

Everyone in org has role and responsibility through “leveling up” their data skills, mutual mentoring, and embedding data into their processes.

Learn and you shall receive



Being data-driven doesn't mean



blindly following data.

Augment decision makers with objective, trustworthy, and relevant data.



1:17 / 2:07



Girls Crash into Lake following Bad GPS directions



CrushingBastards



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744

165,605



*"You can't always make a data-driven decision --
sometimes you have to trust your gut!"*

Ultimately, data-driven means



using data to effect impact and results

Push data through “analytics value chain” from collection, analysis, decisions, action, and finally to impact. Partway along chain doesn’t count.

Example actions

- Analyst competency matrix
- Raise bar for new analyst hires
- Vision statement: data culture
- Stats for managers class
- Mentor / train analysts to improve skills such as stats, SQL
- Mentoring staff in experimental design
- Democratizing data access through BI tools
- Push on ROI, tie back to strategic objectives

Don't get complacent!



“With the exception of, say, an Amazon, no global store chain was thought to have demonstrably keener data-driven insight into customer loyalty and behavior”

Tesco Today



- Stock at 11 year low
- Shedding 9000 jobs
- Closing 43 stores
- \$9.6B loss for 2014 fiscal year
- Dunhumby, their analytics gem, up for sale
- Warren Buffett: “I made a mistake on Tesco”

Summary

Culture

Collaborative, inclusive, open, inquisitive

Data Leadership

Chief Data Officer / Chief Analytics Officer

Decision Making

Testing mindset, fact-based, anti-HiPPO

Organization

Embedded, federated analytics

People

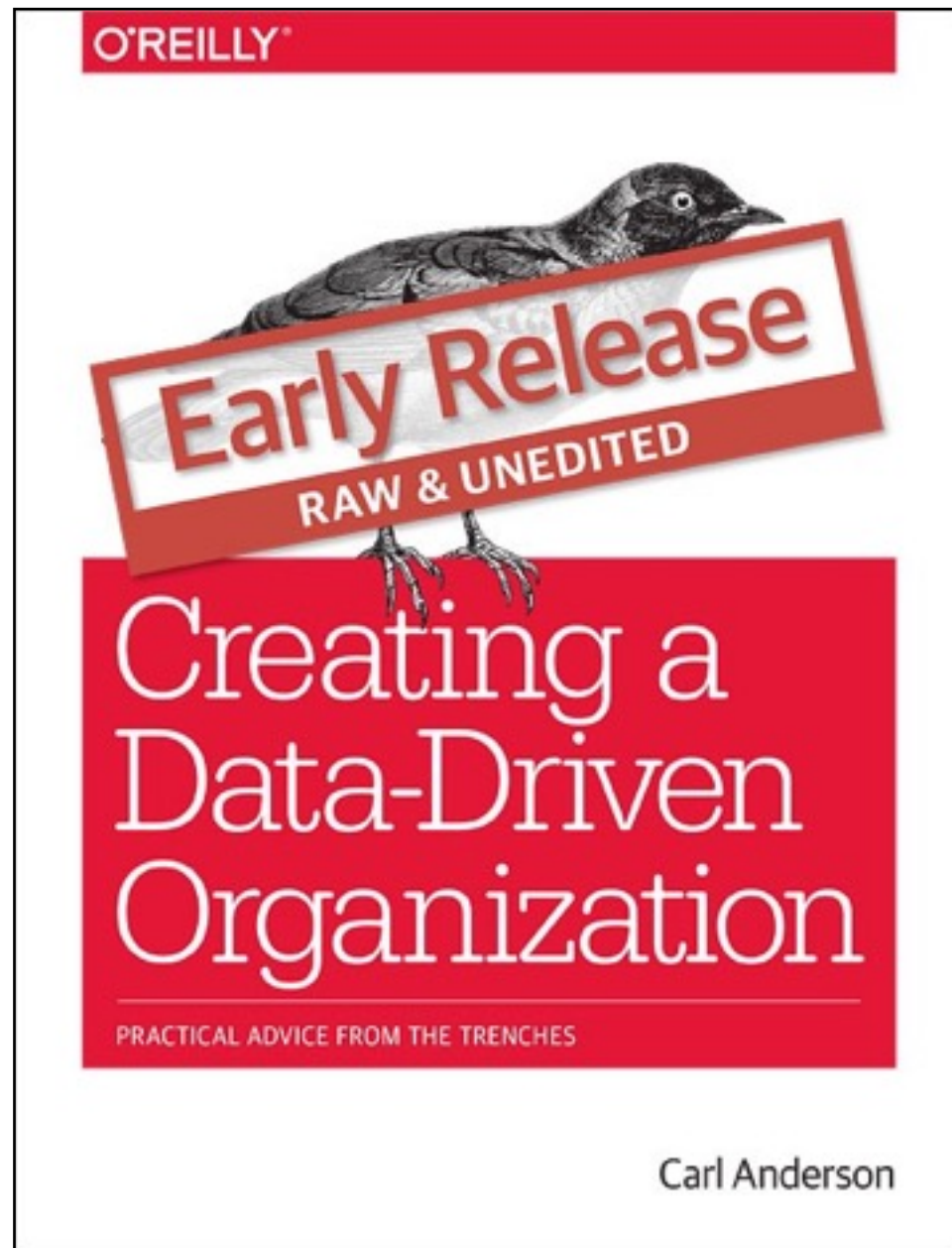
Analytics org: composition, skills, training

Data

Data quality, data management



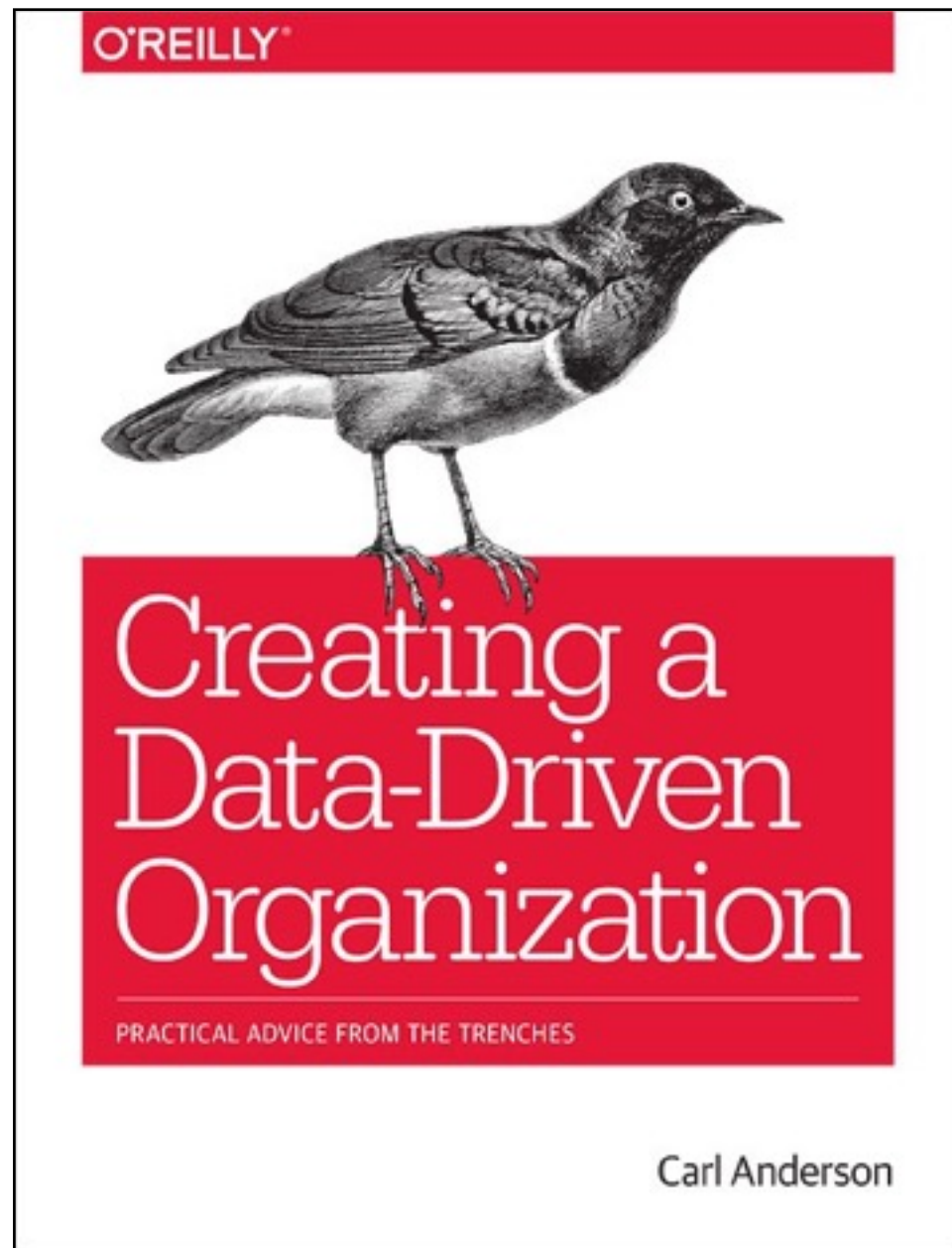
Bake in data-driven culture early!



1. What is Data-Driven?
2. Data Quality
3. Data Collection
4. Analyst Org
5. Data Analysis
6. Metric Design
7. Story Telling
8. A/B Testing
9. Decision Making
10. Data-Driven Culture
11. Data-Driven C-suite
12. Privacy, Ethics
13. Conclusions

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Questions?



@leapingllamas



<http://p-value.info>



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spares

Vision Statement: data culture

vision statement—an aspirational description of what an organization would like to accomplish in the mid-term or long-term future

STRONG DATA LEADERSHIP

- Data leaders that actively evangelize data as a strategic asset, leveraged to its fullest to impact all parts of the business.
- Strong data leadership that understands and support the needs of the business. It supports the analytics organization by providing them with a clear career path, enables them to perform their best, to be happy and productive, and to maximize their impact.
- Managers that expect and rely on data insights to make informed decisions. More generally across organization, data and analytics are deeply embedded into our processes and decisions

Vision Statement: data culture

OPEN, TRUSTING CULTURE

- A centralized set of coherent data sources without any silos.
- Business units have a sense of data ownership, proactively managing data quality of their sources.
- Broad access to data
 - Everyone who needs access to data to perform their function, has access.
 - Everyone only has access to the data that they need to perform their function. Sensitive data, such as customer and Rx data, should be treated with extreme caution: highly restrict access, anonymize, and encrypt.
 - All staff can easily get a holistic view of the company through highly visible and accessible dashboards, reports, and analysis. Systems are instrumented and alerted as reliable early warning systems.
- Analysts are highly collaborative, proactively reaching out (across departments) to help validate ideas and ensure objectivity.