

# LESSONS ON DRIVING DATA SCIENCE AND ANALYTICS TRANSFORMATION

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MAY 23, 2019



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# A new style of IT emerging



## Every 60 seconds



**98,000+** tweets



**695,000** status updates



**11 million** instant messages



**698,445** Google searches



**168 million+** emails sent



**1,820TB** of data created



**217** new mobile web users



**217** new mobile web users

Source: HP Transforming IT Blog, August 2013

<1%

Amount of world's  
data analyzed





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# Analyzing the Analyzers

An Introspective Survey of  
Data Scientists and Their Work

Harlan D. Harris, Sean Patrick Murphy  
& Marck Vaisman



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Making Data Work

Data Developer	Developer	Engineer	
Data Researcher	Researcher	Scientist	Statistician
Data Creative	Jack of All Trades	Artist	Hacker
Data Businessperson	Leader	Businessperson	Entrepreneur

Source: Analyzing the Analyzers, 2013



# Key Questions Addressed by Analytics

	Past	Present	Future
Information	What happened?  (Reporting)	What is happening now?  (Alerts)	What will happen?  (Extrapolation)
Insight	How and why did it happen?  (Modeling, experimental design)	What's the next best action?  (Recommendation)	What's the best/worst that can happen?  (Prediction, optimization, simulation)

# Applications of Data Science and Analytics

## Making Better Decisions

*Measure, Experiment, Analyze*

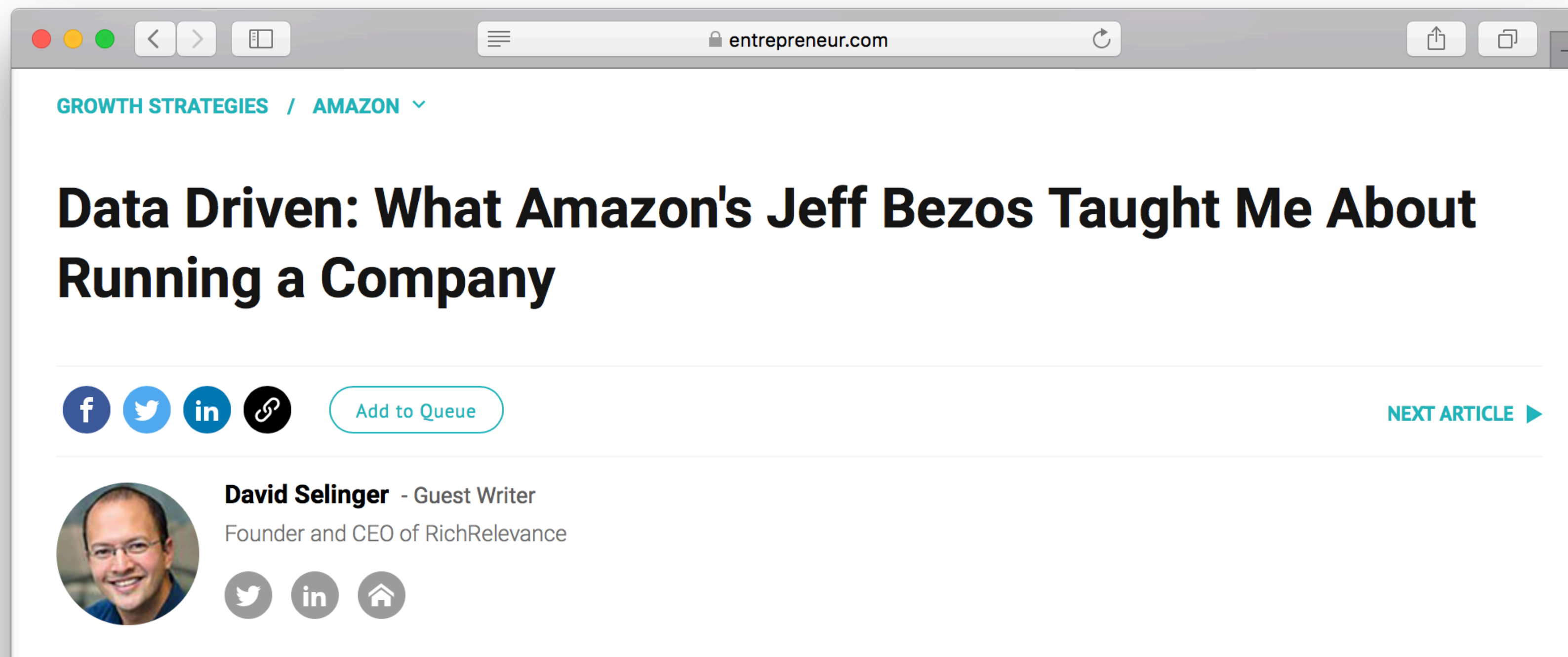
## Powering Product Experiences

*Design, Build*

**“The value of an idea  
lies in the using of it.”**

- Thomas Edison



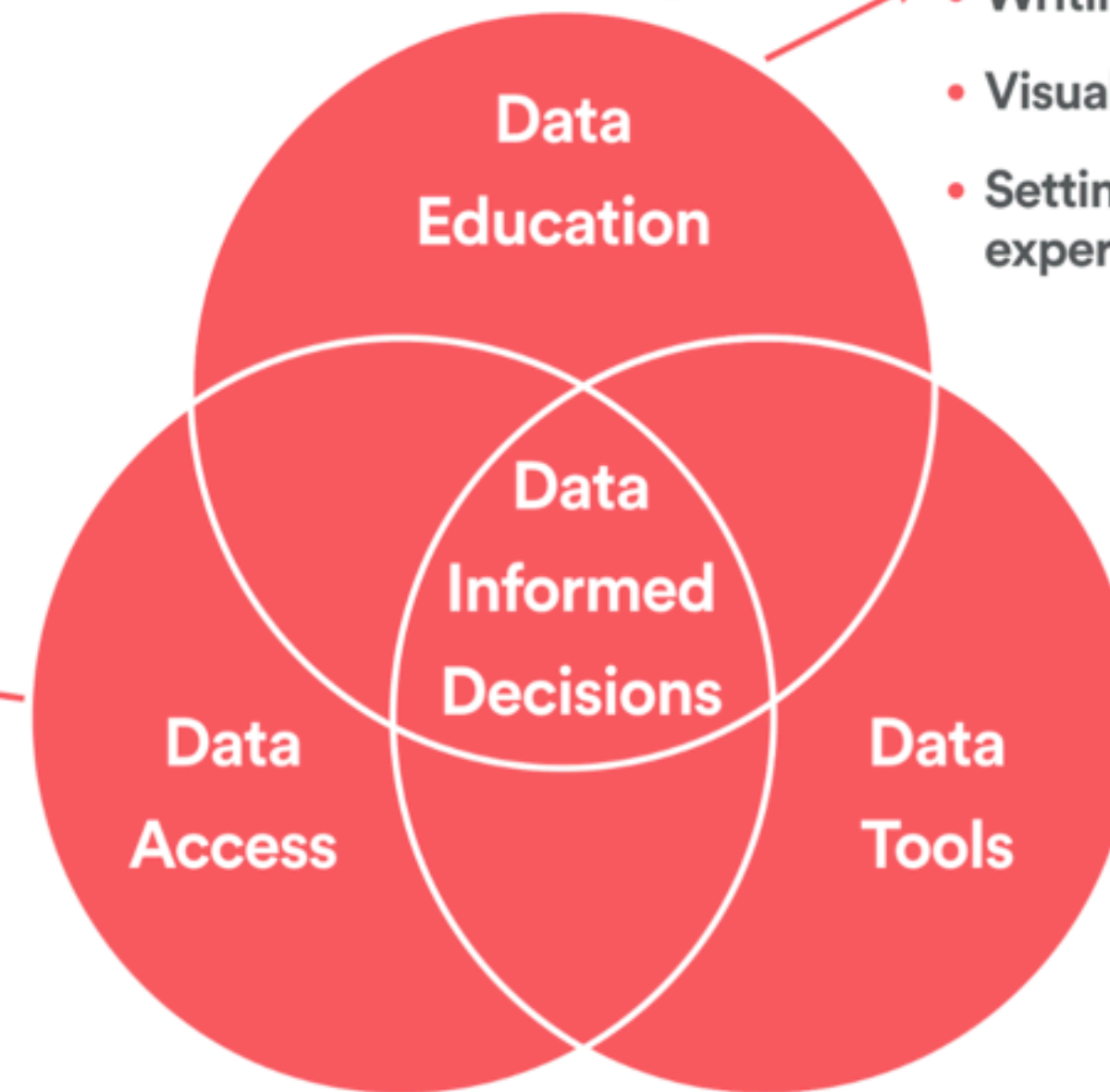


**2. Listening to data starts at the top.** A data-driven culture is meaningless without the support of the CEO and executive team -- and their own willingness to challenge assumptions that they hold dear. A top-down approach is the only way to break the tyranny of the “HiPPOs” (Highest Paid Person’s Opinions).

Seattle, I was bounced around from one manager to another, including working directly with Bezos himself.

Bezos tasked me with digging into Amazon's data to unearth new ways to grow the business. My team responded with three new data-driven systems that delivered a

- Single source of truth
- Access permissions
- Data documentation ←
- Data & tools request process



- Problem solving with data
- Using statistics & analysis
- Writing SQL & using data at Airbnb
- Visualizing data
- Setting up, delivering & interpreting experiments

- Airpal
- Dataportal
- ERF
- Knowledge Repo
- Microsoft Excel
- Superset
- Tableau



Never miss a story from **Airbnb Engineering & Data Science**, when you sign up for Medium. [Learn more](#)

**GET UPDATES**

1

**Start at the top but  
build from the masses**



A photograph of a narrow, muddy path in a forest. The path is covered with a thick layer of fallen yellow and brown leaves. The surrounding trees are green, and the ground is dark and wet.

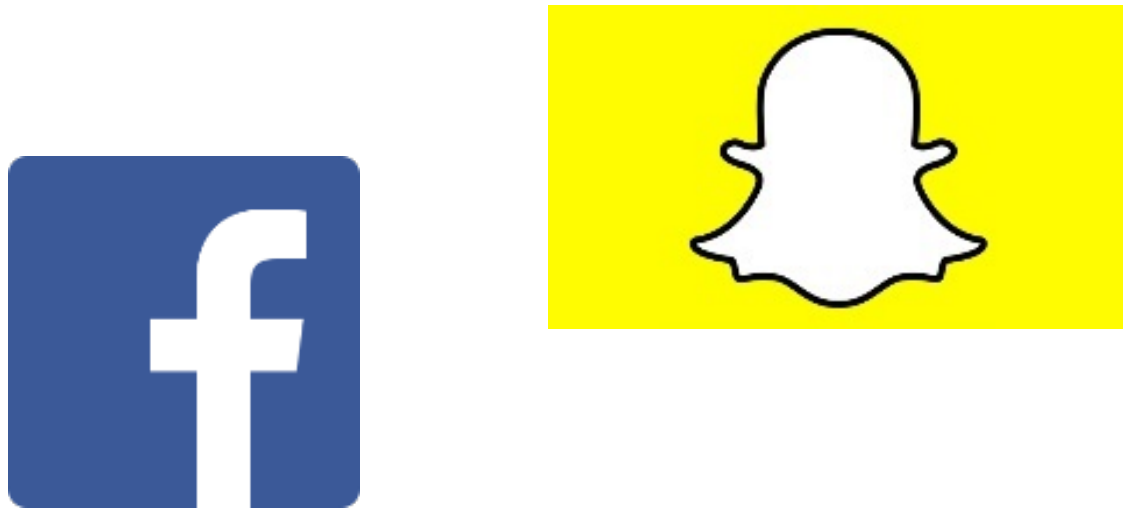
**BUILD**

A photograph of a gravel path in a forest. The path is covered with a thick layer of fallen yellow and brown leaves. The surrounding trees are green, and the ground is dark and wet.

**BUY**



# EXPANDING PARTNERSHIPS



# CUSTOMER 360

KNOWING OUR  
CUSTOMERS BETTER  
THAN THEY KNOW  
THEMSELVES

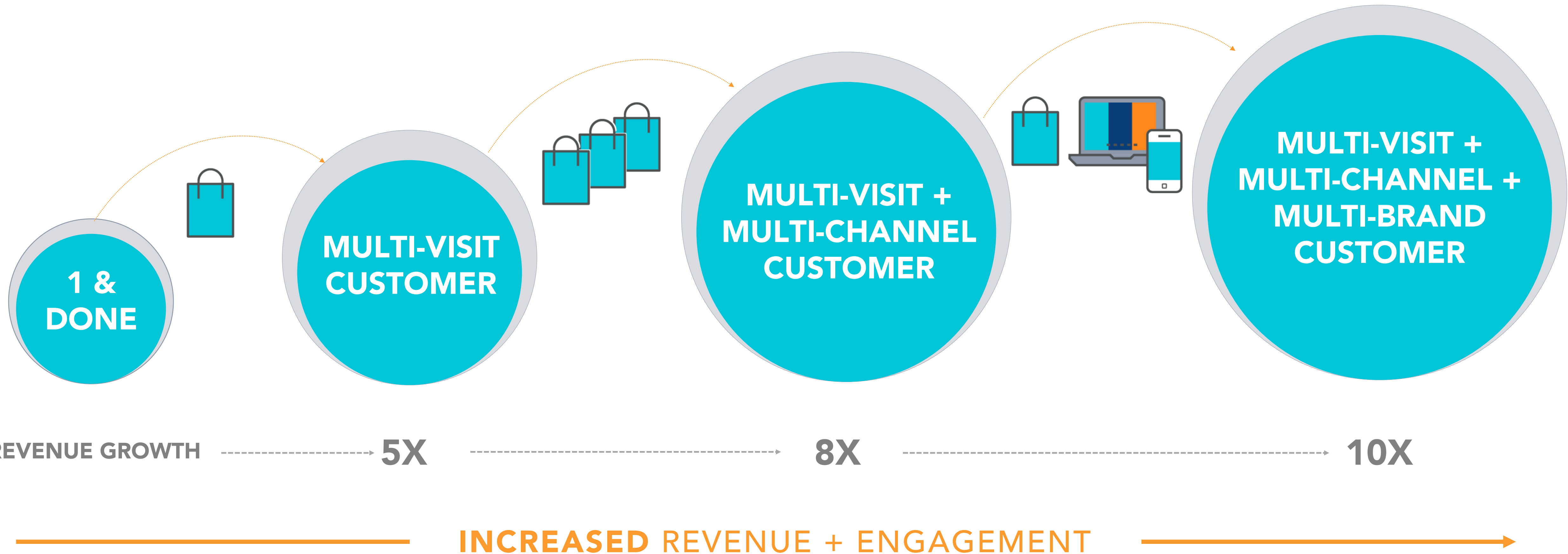




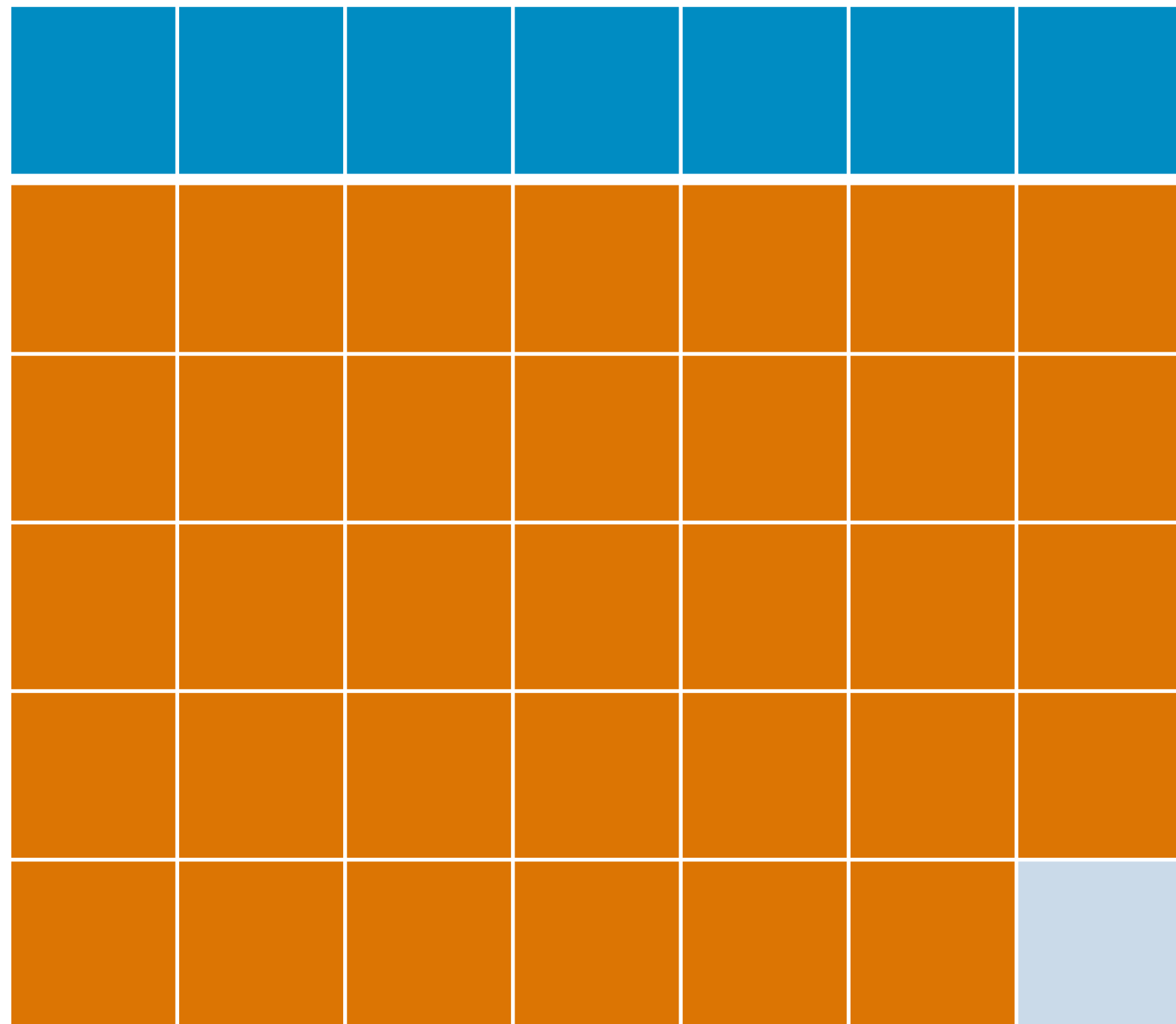
2

Leverage partners  
along the way

# UNDERSTAND WHAT DRIVES ENGAGEMENT



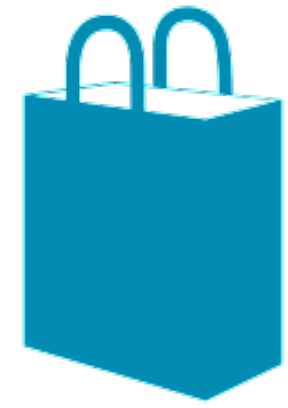
# UNDERSTAND THEIR HABITS



34 days

median time  
between 1X→2X

# ANALYZE THEIR PURCHASES



First Purchase Basket



Second Purchase Basket





# TEST NEW COMBINATIONS

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WomenMen



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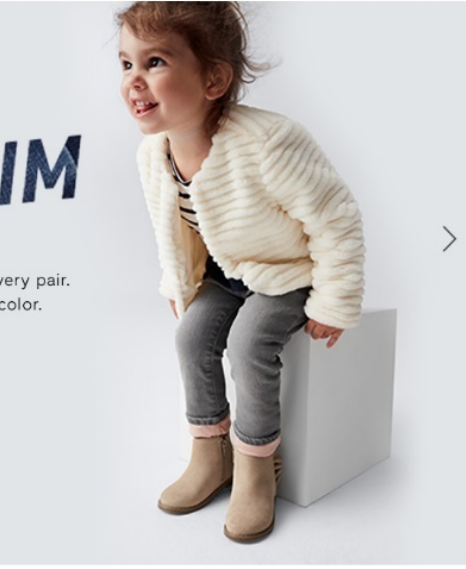


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GirlsBoys




#### Try something new.



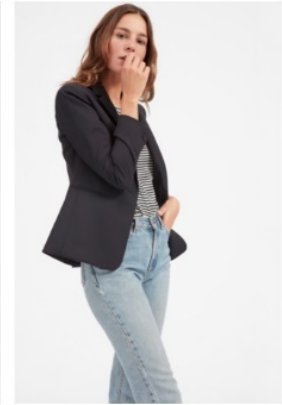
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\$59.95




Textured mockneck pullover  
\$69.95



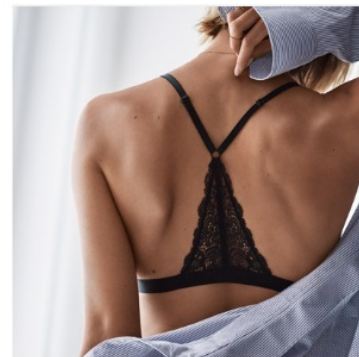
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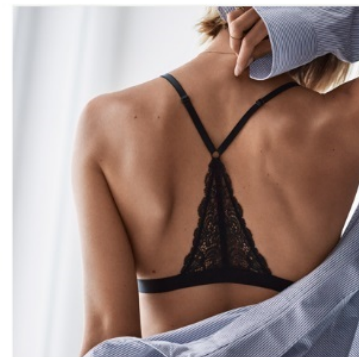
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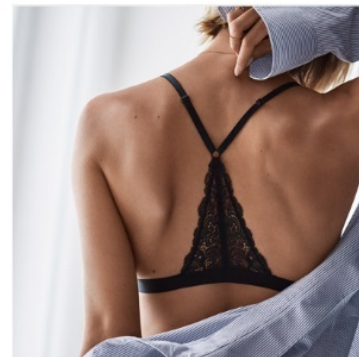
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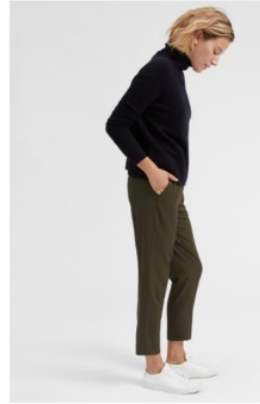
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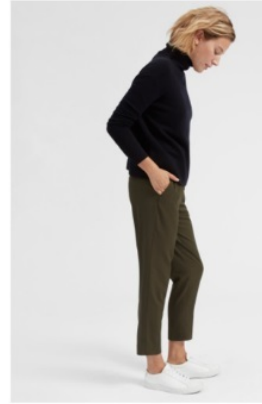
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# PROGRESS WITH PERSONALIZATION



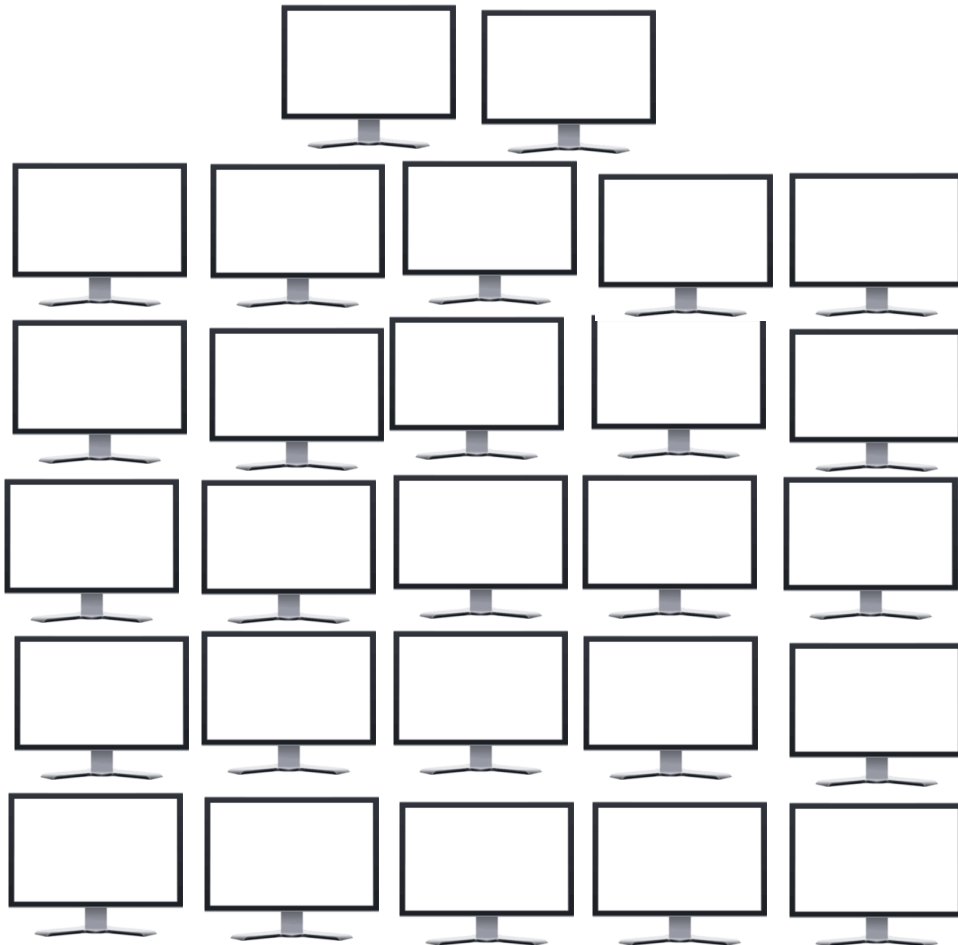
2017

One Experience



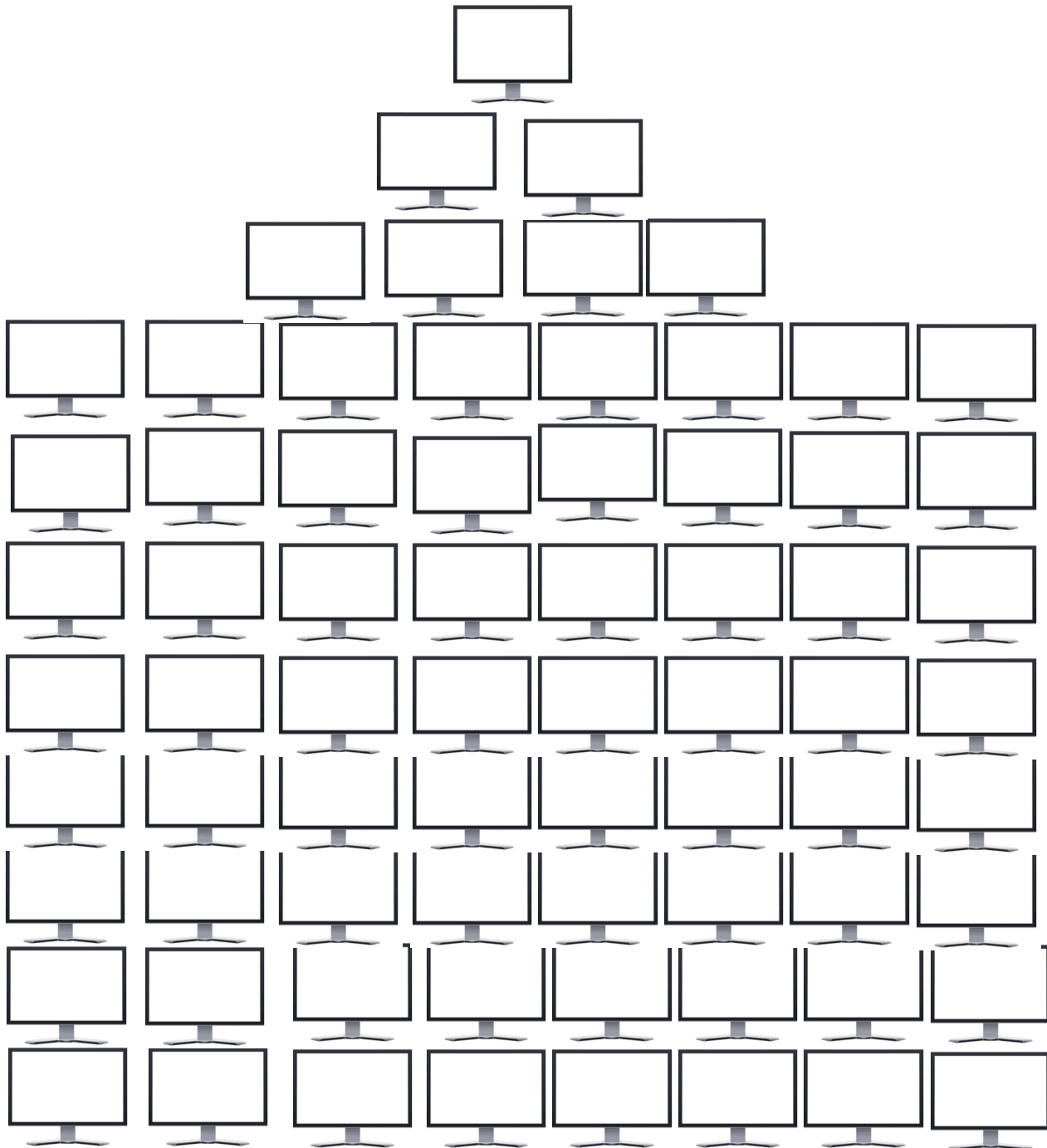
JAN 2018

4 Segments



APRIL 2018

27 Segments



TODAY

87 Segments

3

**Keep it simple**  
(at least at the beginning)

# DATA SCIENCE AND ANALYTICS ORGANIZATION

## KEY FUNCTIONAL GROUPS (EXAMPLE)

### Decision Support and Analytics

**scope:** discover insights that deliver  
stakeholder outcomes / data-driven  
solutions

### Advanced Analytics and Data Science

**scope:** understand complex relationships / models /  
foundational analytics and tools

### Informatics and Governance

**scope:** deliver data stewardship / analytics tools  
/ instrumentation / visualization





4

**Embed data entrepreneurs  
to drive value**





At Disney Parks, a Bracelet Meant to Build Loyalty (and Sales) – NYTimes.com

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# At Disney Parks, a Bracelet Meant to Build Loyalty (and Sales)

By BROOKS BARNES  
Published: January 7, 2013 | 133 Comments

**Editors' Note Appended**

ORLANDO, Fla. — Imagine [Walt Disney World](#) with no entry turnstiles. Cash? Passé: Visitors would wear rubber bracelets encoded with credit card information, snapping up corn dogs and Mickey Mouse ears with a tap of the wrist. Smartphone alerts would signal when it is time to ride Space Mountain without standing in line.

[Enlarge This Image](#)



Kent Phillips/Disney

MagicBands will function as a room key, ticket and more.

**Related**

[Inside Disney's New Fantasyland](#)  
(December 23, 2012)

Fantasyland? Hardly. It happens starting this spring.

Disney in the coming months plans to begin introducing a vacation management system called MyMagic+ that will drastically change the way Disney World visitors — some 30 million people a year — do just about everything.

The initiative is part of a broader effort, estimated by analysts to cost between \$800 million and \$1 billion, to make visiting Disney parks less daunting and more amenable to modern consumer behavior. Disney is betting that happier guests will spend more money.

"If we can enhance the experience, more people will spend

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5

**Power new product  
experiences with data**

- 1 Start at the top but build from the masses
- 2 Leverage partners along the way
- 3 Keep it simple (at least at the beginning)
- 4 Embed data entrepreneurs to drive value
- 5 Power new product experiences with data

THANK YOU



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