

# **Data science, entrepreneurship, and economic inclusion**

**J.P. Allen**

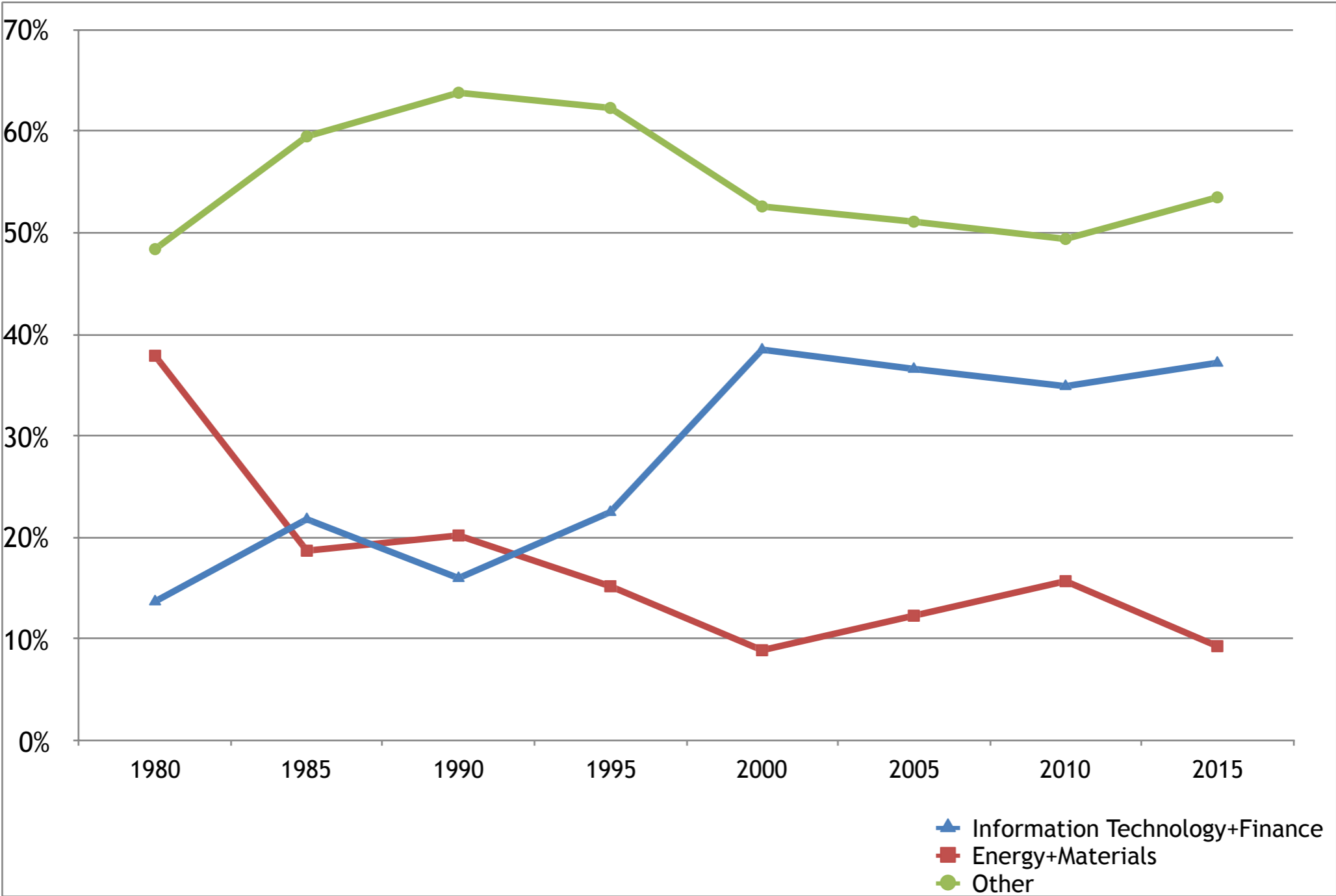
School of Management  
University of San Francisco

**Digitization creates (lots of) value -> wealth**

**My interests: More inclusion in digital wealth creation.  
Addressing the challenges of sharing digital value  
through labor markets and entrepreneurship.**

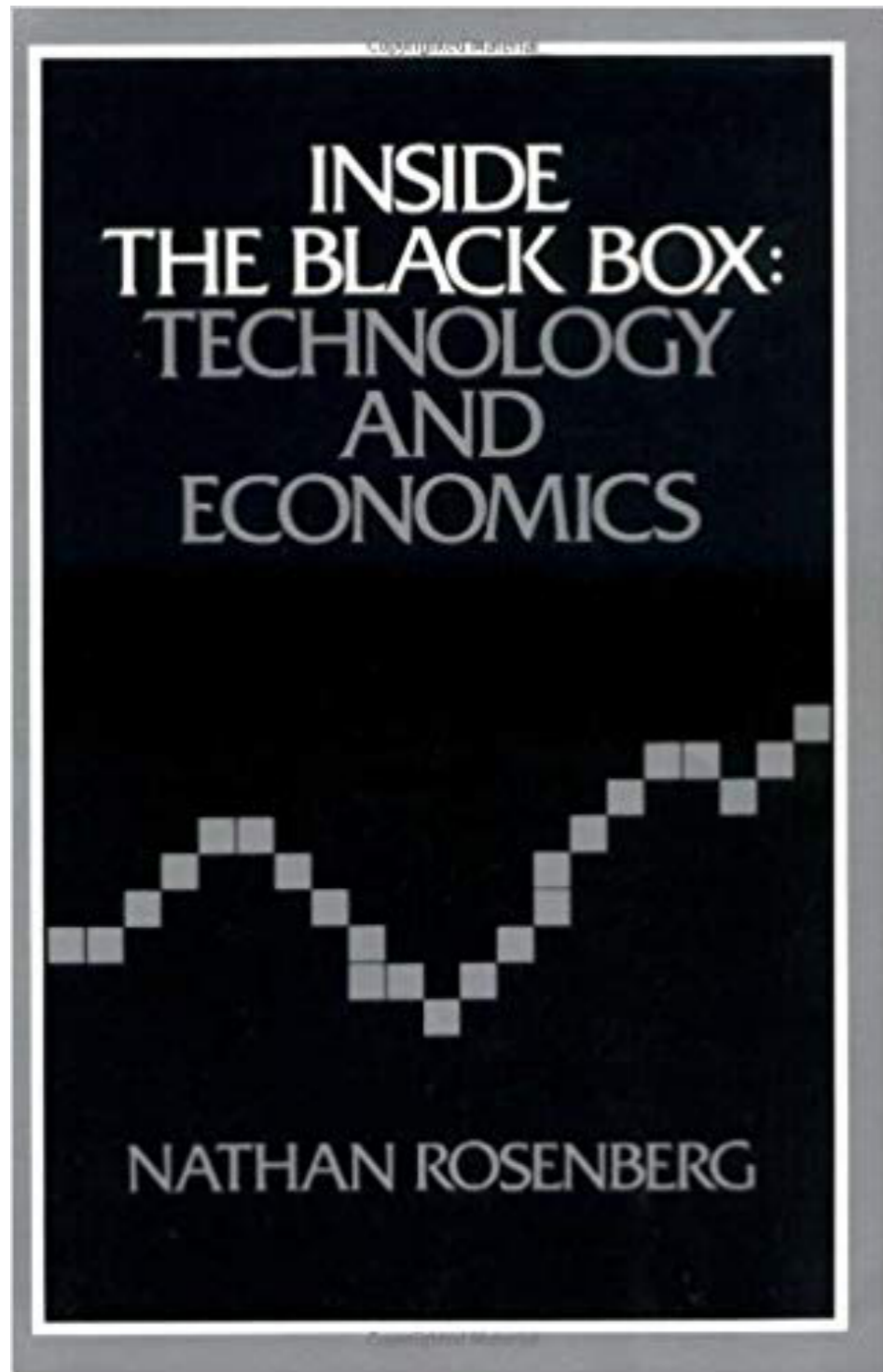
**‘Data science’ represents a new chapter in digitization.**

# Wealth shift to digital sectors (IT, Finance) from commodities (Energy, Materials)



**%age S&P500 Market Capitalization, by Sector, 1980-2015**

**Inside the black box  
of the new digital era**



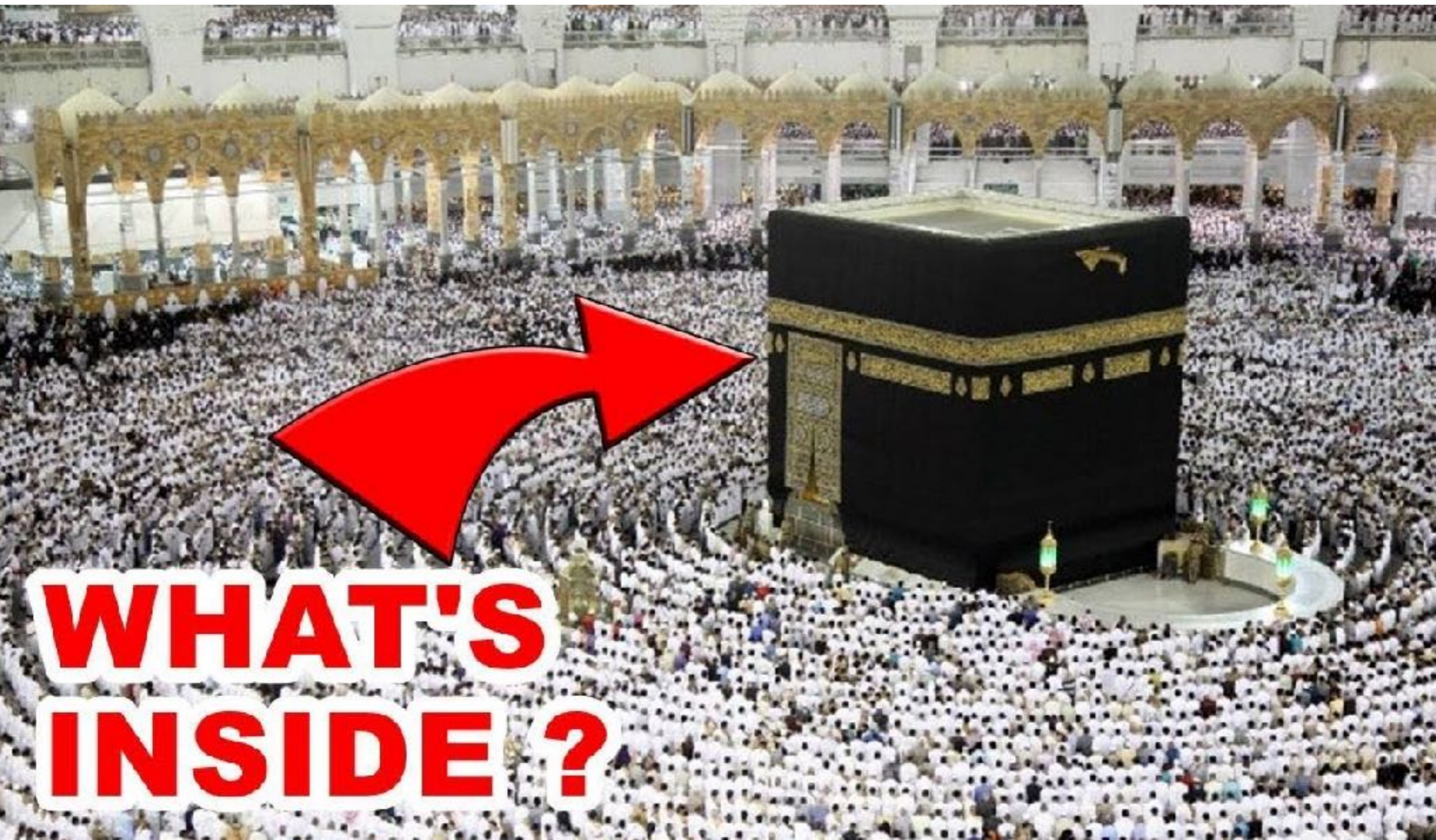
**“On Technological Expectations”:  
The shaping of technological  
capabilities**

**“Learning by Using”:  
The mediating factors between  
capabilities and commercial  
success**

**(Rosenberg, 1982)**

A red flight recorder is being cut by a circular saw. The recorder is mounted on a metal base. A sign on the recorder reads "FLIGHT RECORDER DO NOT OPEN". Sparks are flying from the cut. The recorder is red and has some wear on the top. The sign is white with black text. The background is a blurred outdoor setting with green foliage.

**FLIGHT  
RECORDER  
DO NOT OPEN**



**WHAT'S  
INSIDE ?**

# Inside the black dot.

## Echo & Alexa

Designed around your voice

[See Echo and Alexa Family](#)



Echo Dot - 2nd Gen  
~~\$39.99~~ \$19.99



**NEW** Echo Dot  
~~\$49.99~~ \$29.99



Echo  
~~\$99.99~~ \$69.99



**NEW** Echo Plus  
\$149.99



Echo Dot Kids Edition  
~~\$69.99~~ \$49.99



Roll over image to zoom in

## All-new Echo Dot (3rd Gen) - Smart speaker with Alexa - Charcoal

by Amazon

★★★★☆ 8,185 customer reviews

| 1000+ answered questions

**#1 Best Seller** in LED Bulbs

List Price: \$49.99

With Deal: **\$29.99** & **FREE Shipping**. [Details](#)

or 5 monthly payments of **\$6.00**

**Buy 2 for \$50**. Price at checkout will reflect \$50.00 before tax. [Terms and conditions](#)

You Save: **\$20.00 (40%)**

**prime** | Try Fast, Free Shipping

**Available to ship in 1-2 days.**

**Expected to arrive after Christmas. Need a gift quickly?** [Send the gift of Prime](#) or an Amazon Gift Card by [email](#) or [text message](#).

**Get it as soon as Thursday, Dec. 27** if you choose **Two-Day Shipping** at checkout. [Details](#)





## Create your Lex bot

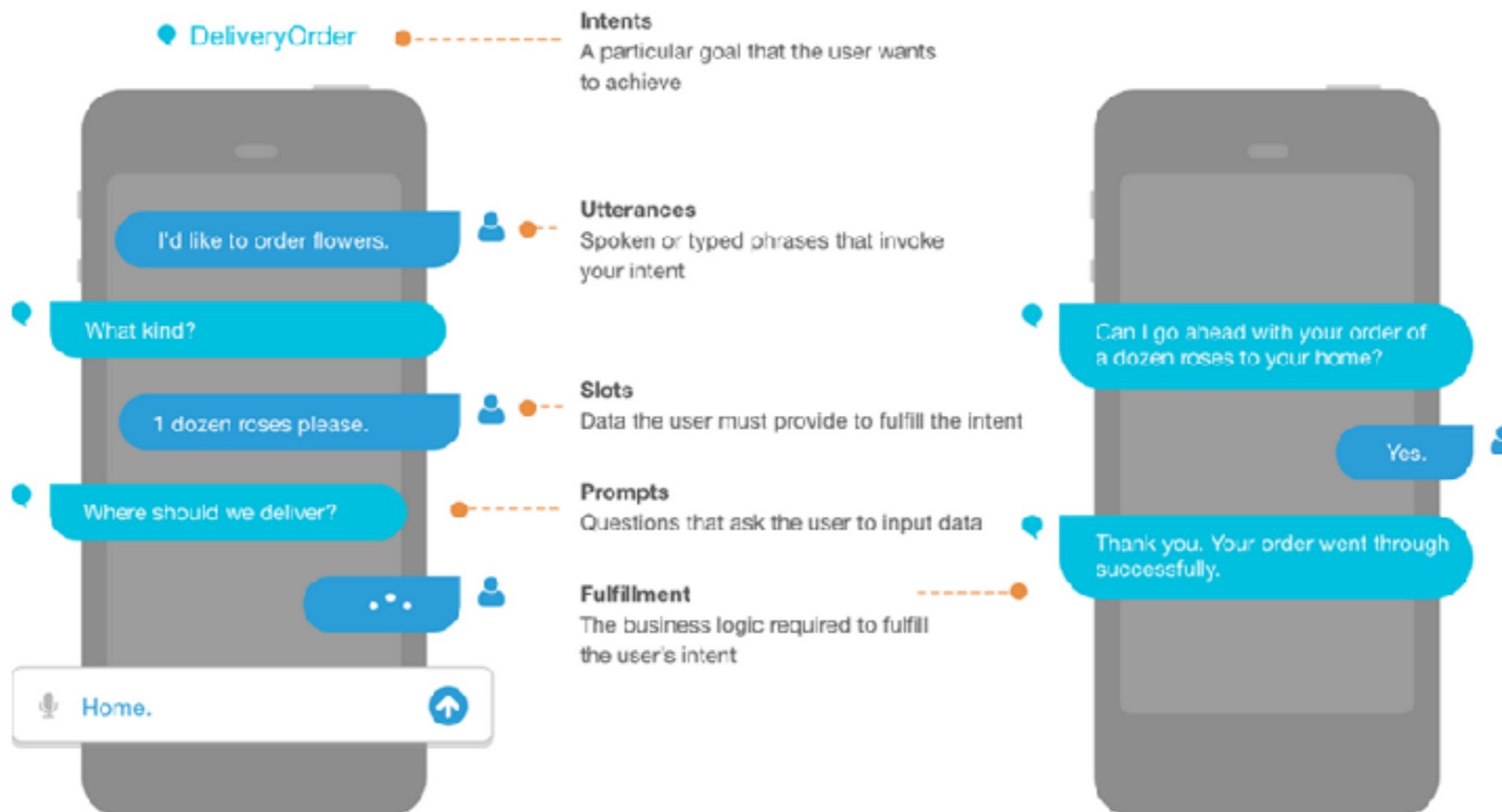
Amazon Lex enables any developer to build conversational chatbots quickly and easily. With Amazon Lex, no deep learning expertise is necessary—you just specify the basic conversational flow directly from the console, and then Amazon Lex manages the dialogue and dynamically adjusts the response. To get started, you can choose one of the sample bots provided below or build a new custom bot from scratch.

CREATE YOUR OWN      TRY A SAMPLE

Custom app      BookTrip      OrderFlowers      ScheduleAppointment

Bot name

OrderFlowers



IAM role

Select an IAM role

Cancel

Create

## PRICING EXAMPLE 2

A bot that sends 500 speech requests and 500 text requests in December. Monthly charges for December:

Input requests to process	Cost per request	Number of requests	Total
500 speech requests	\$0.004	500 requests	\$2.00
500 text requests	\$0.00075	500 requests	\$0.38
<b>Total Amazon Lex charges for 500 speech and 500 text requests</b>			<b>\$2.38</b>

# Alexa's persona

Alexa's personality is friendly, upbeat, and helpful. She can handle daily tasks with ease and accuracy. She's honest about anything blocking her way, but also fun and personable, able to make small talk without being obtrusive or inappropriate.

## Key elements across Alexa

There are some guiding principles used across all Alexa skill experiences. These include:

- Speaking naturally and conversationally
- Having variation in the responses given
- Engaging the customer with questions
- Staying true to Alexa's personality

Learn more about [Alexa's personality](#).



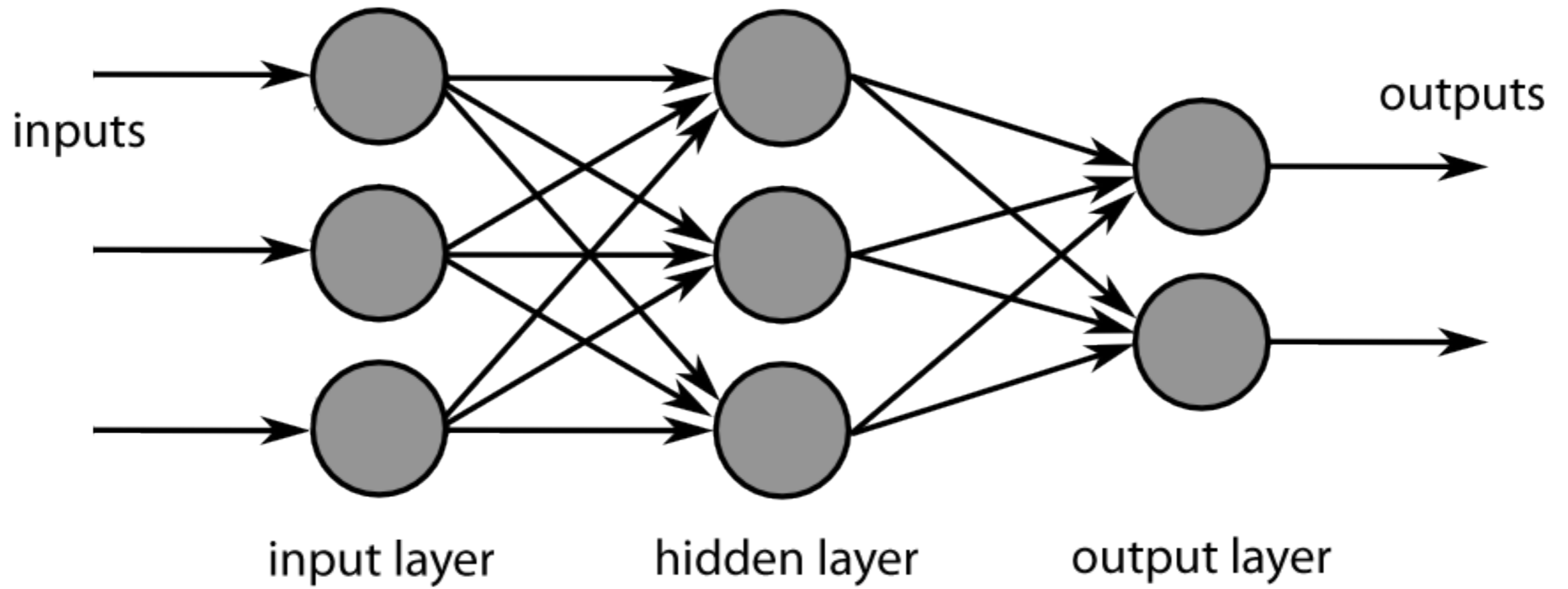
(Amazon, Alexa Design Guide)

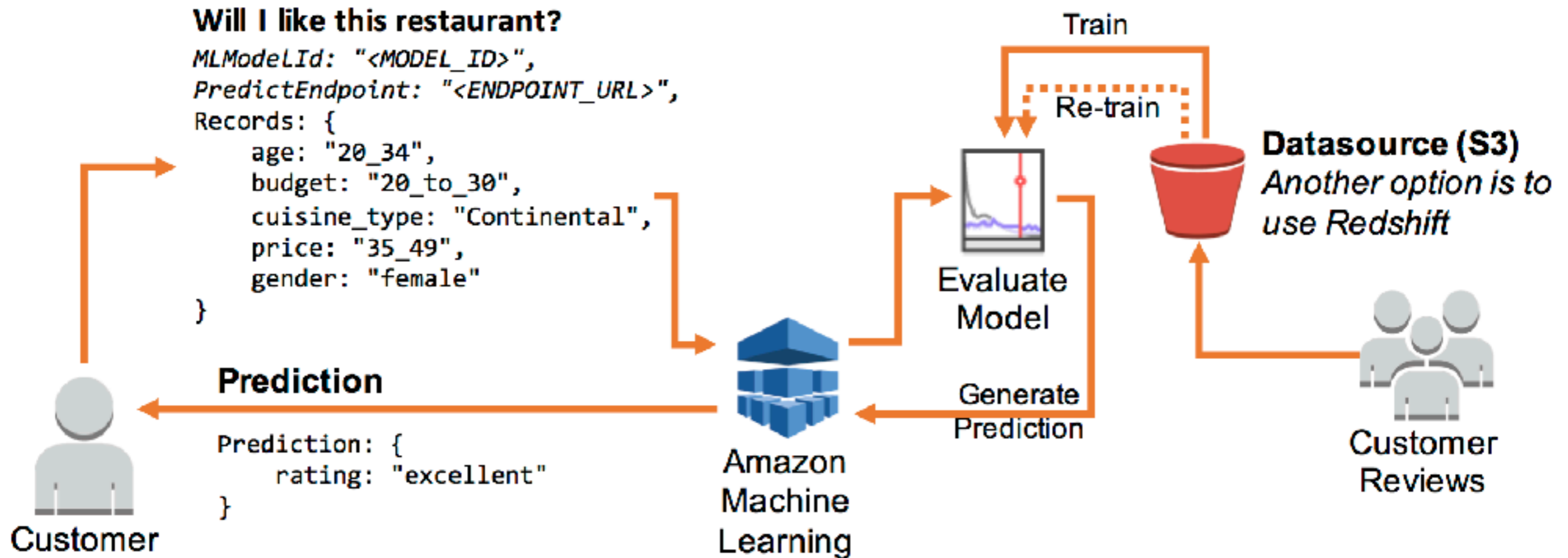
**Amazon  
Alexa**

## Alexa's advice to 'kill your foster parents' fuels concern over Amazon Echo

Smart speaker's remarks, apparently quoted from Reddit, come as Amazon tries to boost speaker's conversational capacity

([theguardian.com](https://www.theguardian.com), 12/22/18)





# Explore Our Products



Analytics



Application Integration



AR & VR



AWS Cost Management



Blockchain



Business Applications



Compute



Customer Engagement



Database



Desktop & App Streaming



Developer Tools



Game Tech



Internet of Things



Machine Learning



Management & Governance



Media Services



Migration & Transfer



Mobile



Networking & Content Delivery



Robotics



Satellite



Security, Identity & Compliance



Storage



## PERIMETER LAYER

AWS data center physical security begins at the Perimeter Layer. This layer includes a number of security features depending on the location, such as security guards, fencing, security feeds, intrusion detection technology, and other security measures.

[EXPLORE »](#)



## INFRASTRUCTURE LAYER

The Infrastructure Layer is the data center building and the equipment and systems that keep it running. Components like backup power equipment, the HVAC system, and fire suppression equipment are all part of the Infrastructure Layer.

[EXPLORE »](#)



## DATA LAYER

The Data Layer is the most critical point of protection because it is the only area that holds customer data. Protection begins by restricting access and maintaining a separation of privilege for each layer. In addition, we deploy threat detection devices and system protocols, further safeguarding this layer.

[EXPLORE »](#)



## ENVIRONMENTAL LAYER

The Environmental Layer is dedicated to environmental considerations from site selection and construction to operations and sustainability. AWS carefully chooses our data center locations to mitigate environmental risk, such as flooding, extreme weather, and seismic activity.

[EXPLORE »](#)



1-16 of over 10,000 results for "my little pony"

Sort by Featured

Show results for

Toys & Games

- Action & Toy Figures
- Stuffed Animals & Plush Toys
- Dolls
- Kids' Party Supplies
- Action & Toy Figure Playsets
- See more

Girls' Fashion

- Girls' Clothing
- Girls' Fashion Hoodies & Sweatshirts
- Girls' Sleepwear
- Girls' Dresses
- Girls' Tops & Tees

Books

- Children's Books
- Children's Beginner Readers
- Children's Horse Books
- Children's Action & Adventure Books
- Children's Humor

Movies & TV

- Kids & Family
- Prime Video
- DVD
- Movies
- TV
- Comedy



Amazon's My Little Pony Page

Discover books, read about the author, find related products, and more. More about My Little Pony

Bestselling Books: My Little Pony: Coloring Harmony: Dazzling Designs in Equestria, My Little Pony Official 2019 Calendar - Square Wall Calendar Format, My Little Pony Winter Wonderland Creative Colouring.



Sponsored

My Little Pony Mermaid Blanket for Teen and Adult MLP Fans - Super Soft My Little Pony Fleece Blanket Featuring Three Favorite Ponies -

by Blankie Tails

\$19.95 prime

5 stars 8

Get it as soon as TODAY, Dec 30 FREE Shipping

Amazon's Choice



My Little Pony My Little Pony Necklace Activity Set

by My Little Pony

\$9.98 prime

5 stars 333

Get it as soon as TODAY, Dec 30 FREE Shipping

More Buying Choices \$9.28 (20 used & new offers)

Manufacturer recommended age: 3 - 10 Years

Product Description

... Design your very own My Little Pony necklaces with this fun easy to use ...



## How is Amazon's Choice selected?

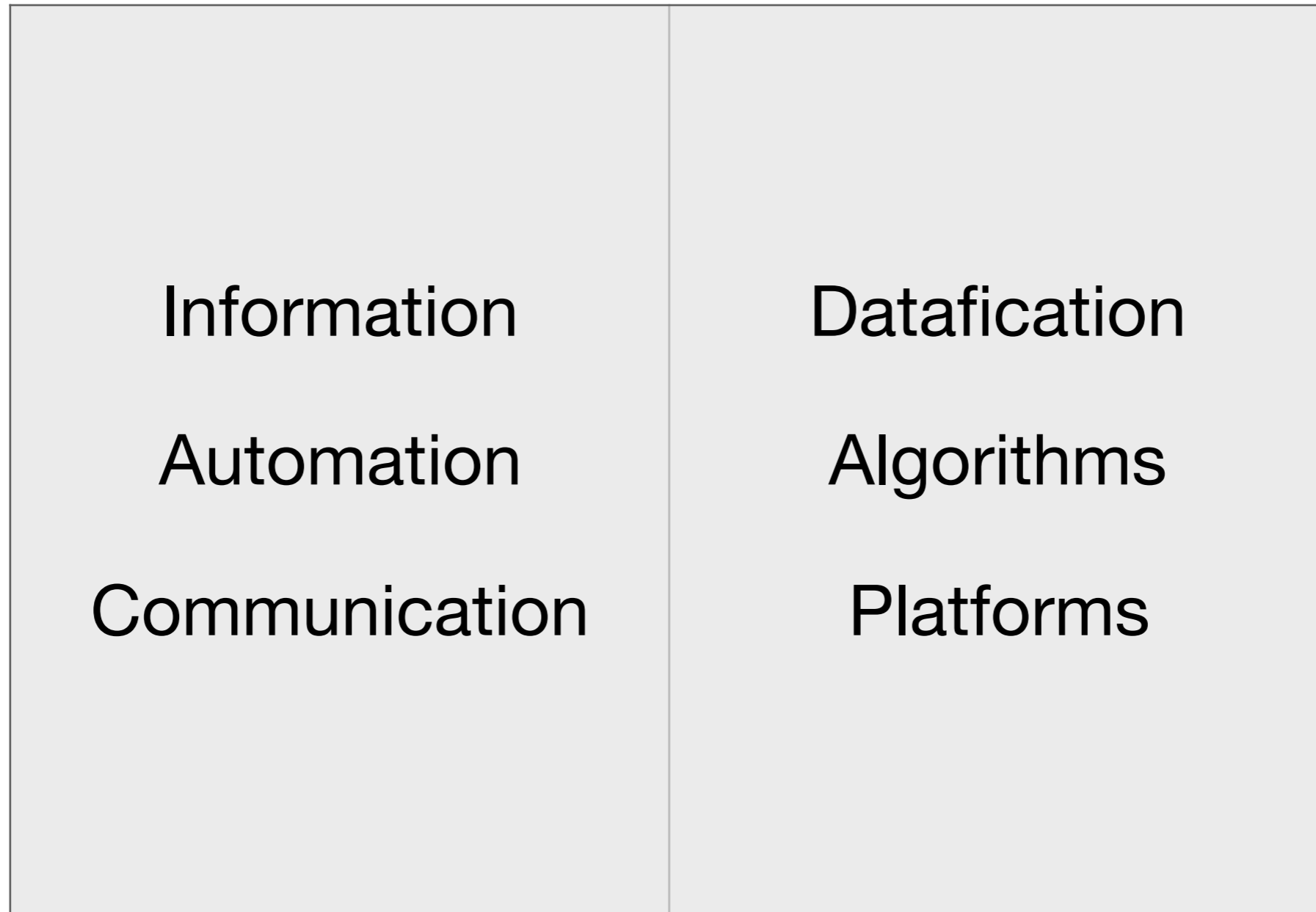
Much like with search ranking, Amazon does not spell out exactly what its criteria are for Amazon's Choice, and how they are weighted against each other. But they do provide some information to the shopper, which gives us an indication of what criteria is being taken into account.

- **Highly rated from user reviews**
- **Competitively priced**
- **Popular with shoppers searching for that keyword**
- **Bestseller in its category**
- **Available to ship immediately**
- **Eligible for Prime delivery**
- **Lower return rate than similar products**

We've also seen that Amazon's Choice products consistently have Prime delivery, so marketplace sellers must be using FBA or [Seller-Fulfilled Prime](#). Many items with the badge are branded items sold by Amazon themselves, but there are also plenty of Amazon's Choice items from third-party sellers, including those with their own private label brands.

**([webretailer.com](http://webretailer.com), 2018)**

# Vocabulary for a new 'data science' black box



# **Questions of entrepreneurship and economic inclusion in the new 'data science' world**

**Openness to new entrants - businesses and labor.**

**Openness to digital business models  
with different types of value sharing.**

**Entrepreneurship and skill-building  
in the context of giant platforms,  
operating through complex and opaque algorithms,  
and uniquely detailed data sets.**

# Three quick examples

- **Datafication:** Predictive policing in Netherlands

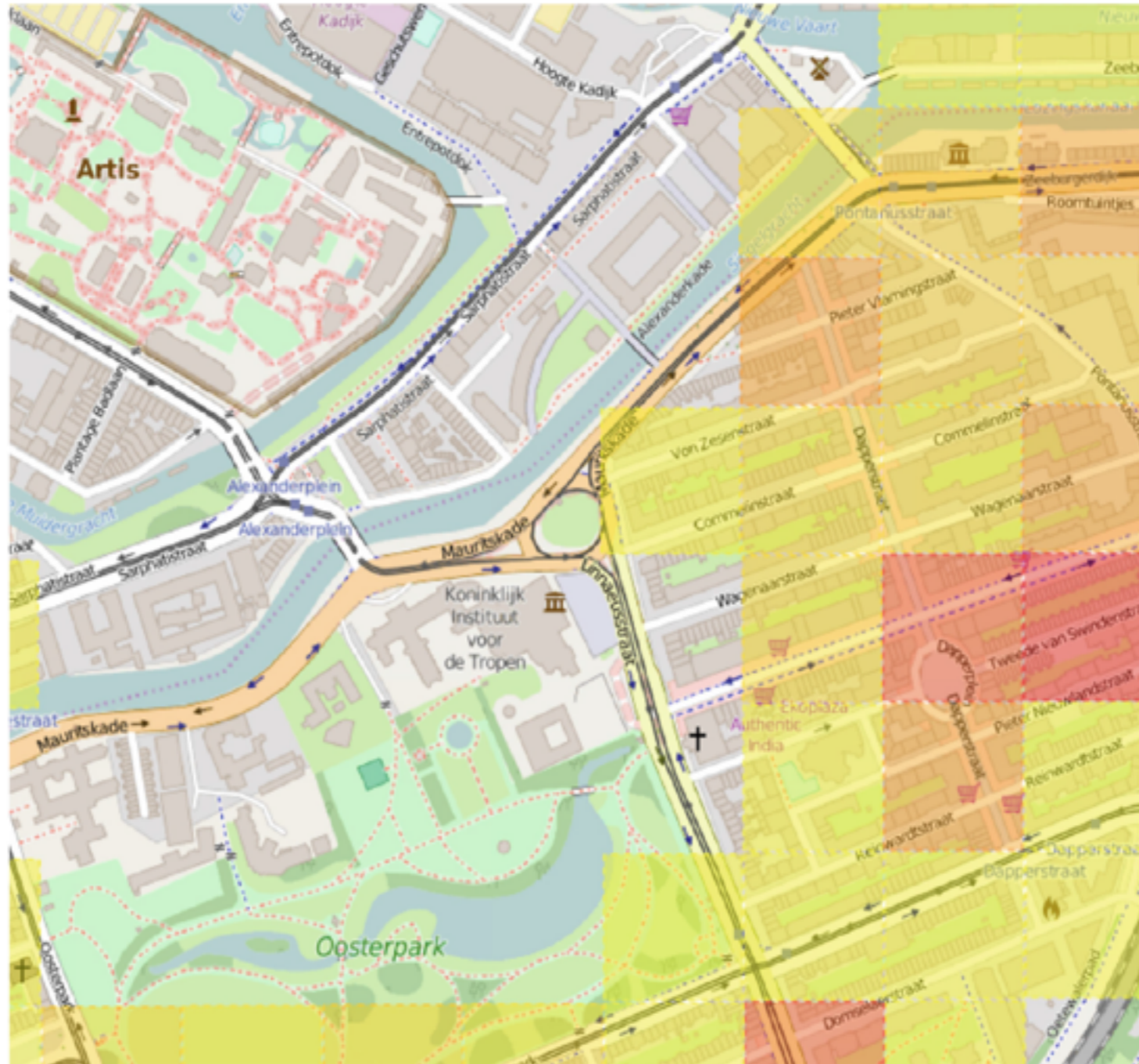
Growth of intermediary role: Intelligence officers.  
Questions of reinforcement and bias.

- **Algorithm:** Predictim baby-sitter screening startup

Data scientists meet the real world. How do sitter-entrepreneurs react?

- **Platform:** YouTube 'Up Next' video recommender

Algorithm focused on engagement-maximizing business model. As many human content moderators as engineers.




**Fig. 1.** An example of a CAS heat map.

**(Waardenberg et al., 2018)**

**TABLE 1**

**Overview of the data included in the predictive policing algorithm**

<b>Type of data included</b>	<b>Input variables of the algorithm</b>
Crime reports	<ul style="list-style-type: none"><li>· Number of times the crime occurred</li><li>· Specific location of the crime</li><li>· Specific time of the day</li><li>· Season</li></ul>
Socio-demographics and location-specific data	<ul style="list-style-type: none"><li>· Number and kind of companies present in the neighborhood (e.g., bars, coffee shops, banks)</li><li>· Distance to closest known offender (e.g., mugger, robber, burglar)</li><li>· Mean distance to 10 closest known offenders</li><li>· Distance to nearest highway exit</li><li>· Number of burglaries, robberies, etcetera, in several different time periods (relative to the reference moment)</li></ul>

 Predictim

# Artificial Intelligence For Child Safety And Security

Predictim helps parents conduct an evaluation of a sitter, using publicly available data in the same way that a parent might do an online search to check for red flags.

**Algorithms arrive from CS with a set of practices and understandings that open up relatively inexpensive value creation opportunities, as well as resources for creating legitimacy.**

# Perfected and Proven Using **Billions** Of Data Points

We trained our AI algorithms using billions of social media data points to increase the accuracy of our reports about important personality traits. Our proprietary technology can identify social media content that is aggressive, abusive, explicit, or offensive with a very high accuracy rate, and it continues to improve.

## Parts of a Predictim Report

### Report Summary

[Initiate A New Scan](#)

<b>Bullying / Harassment:</b>	Very High Risk	⊕
<b>Disrespectful Attitude:</b>	Very High Risk	⊕
<b>Explicit Content:</b>	Very Low Risk	⊕
<b>Drug Abuse:</b>	Very High Risk	⊕

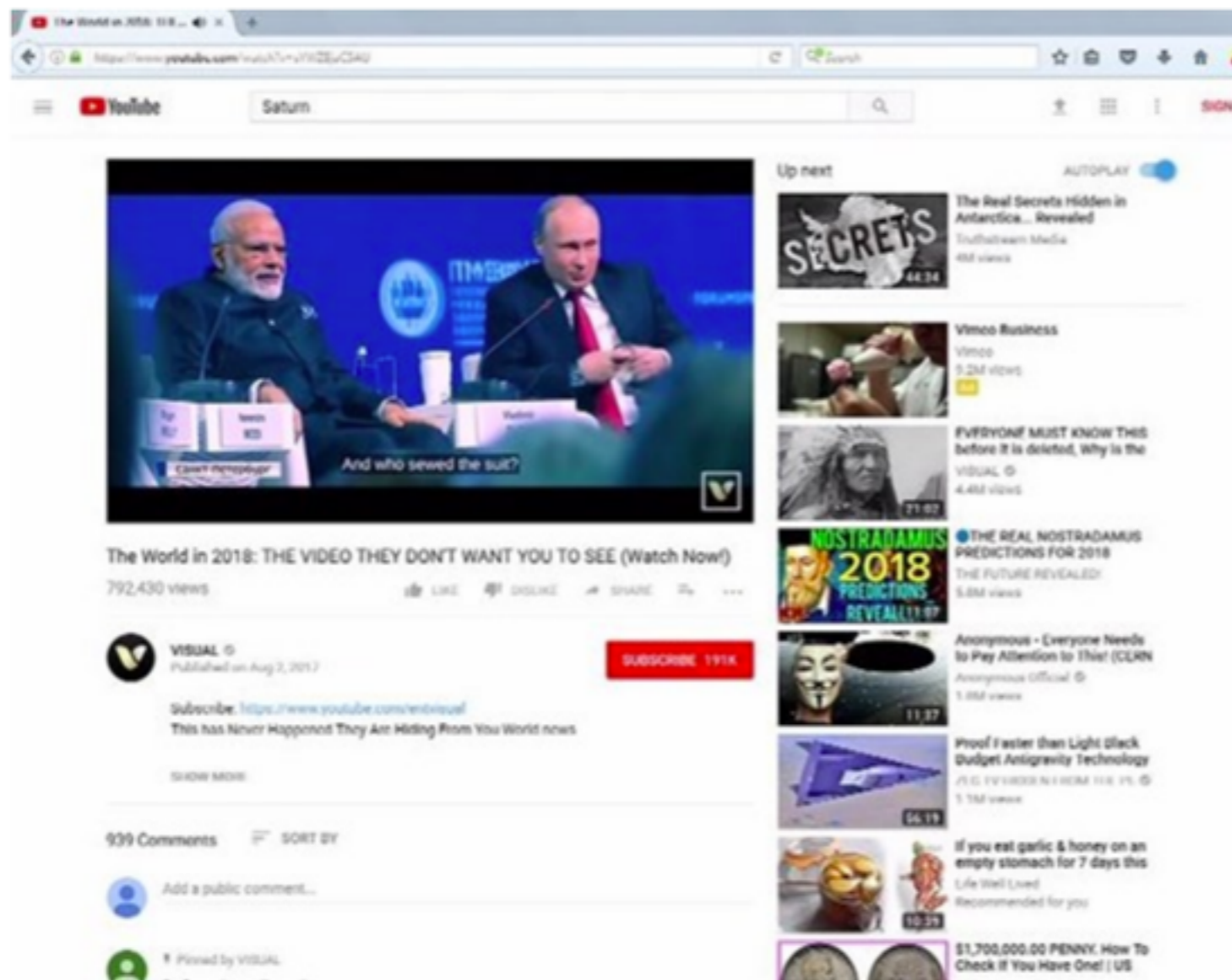
### Personality Features

Each Predictim Report contains an assessment of four different personality features: propensity towards Bullying / Harrassment, Disrespectfulness / Bad Attitude, Explicit Content, and Drug Abuse.



# As algorithms take over, YouTube's recommendations highlight a human problem

A supercomputer playing chess against your mind to get you to keep watching.



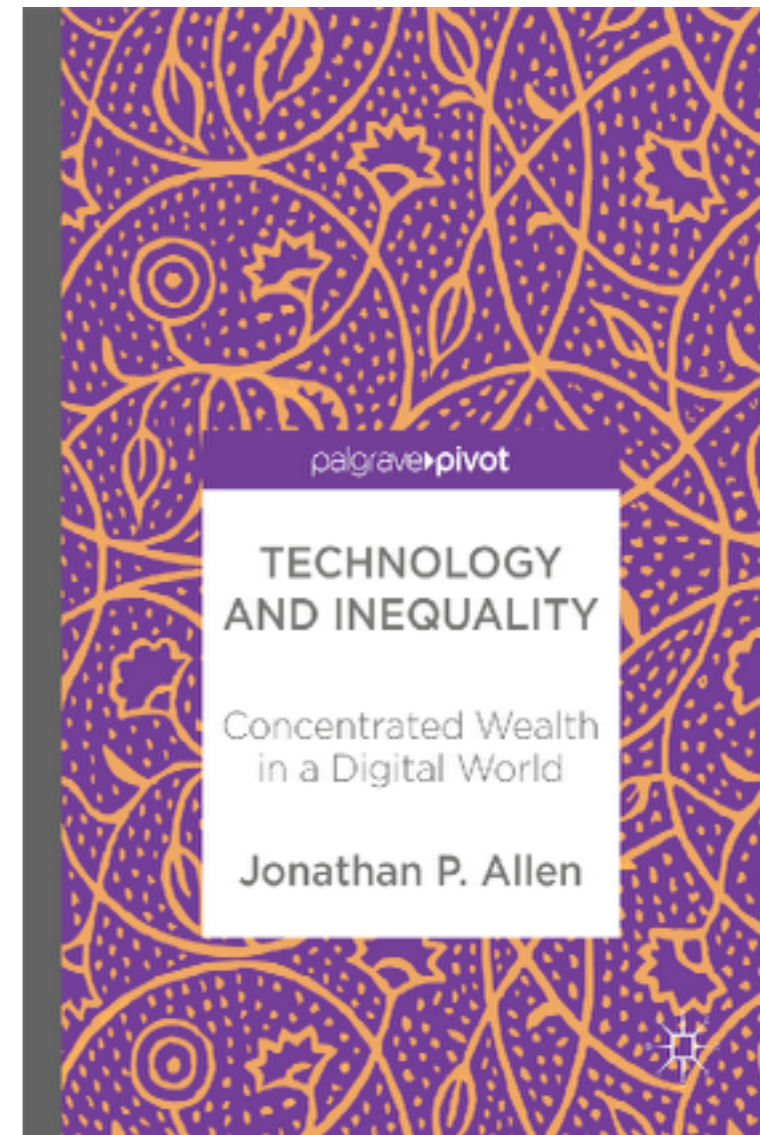
**YouTube Algorithm/  
Business Model**

**(nbcnews.com, 2018)**

— Within a few clicks, a search for "Saturn" and other science topics on YouTube lead to recommendations for clusters of conspiracy and propaganda videos. YouTube

# Responses to technology-related inequality in developed economies

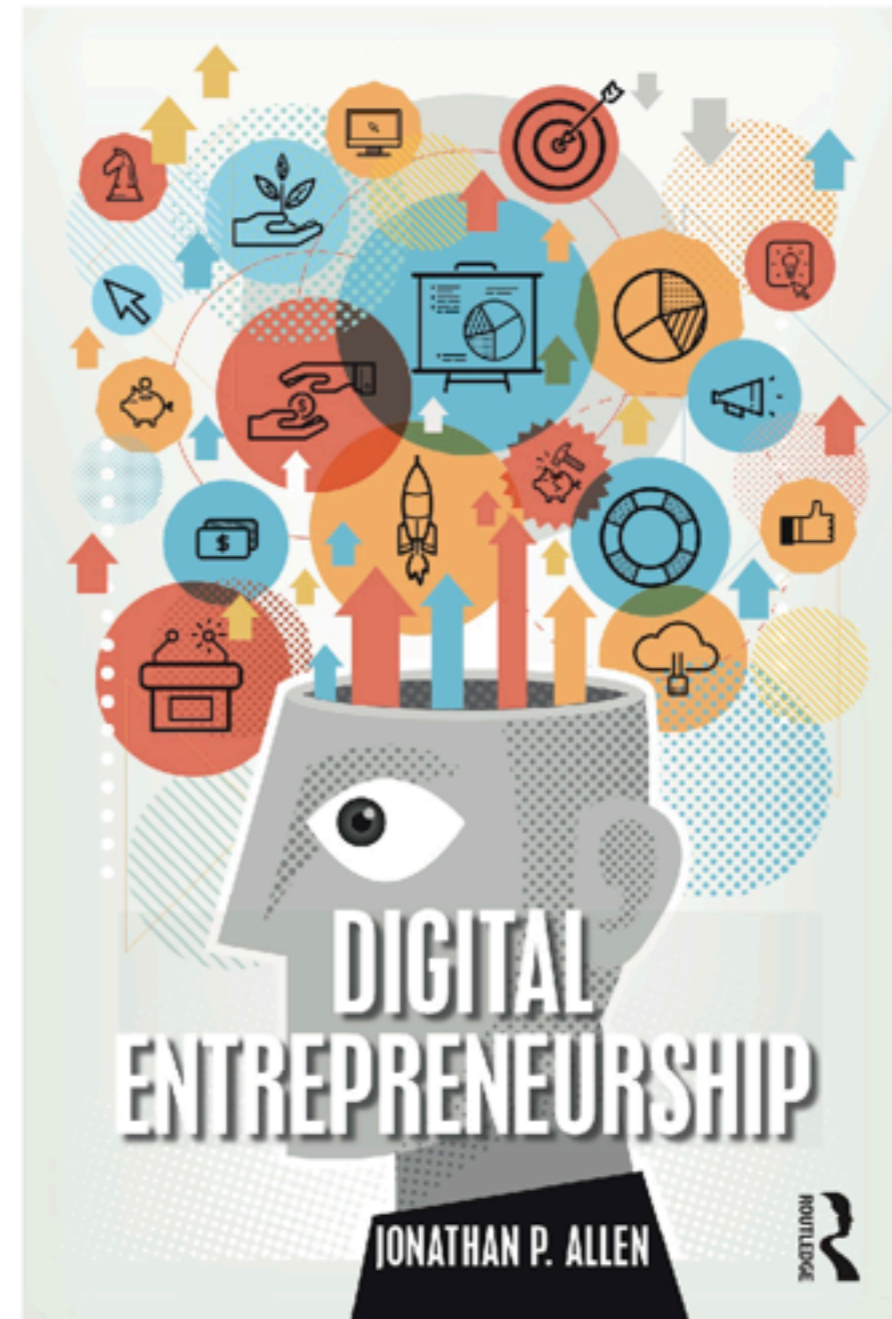
- Education and skills
- Regulations (taxation, IP, antitrust)
- Gender and ethnic inclusion efforts
- \* *Alternative business models and platforms*



(Allen, 2017)

# Empowering non-Computer/Data Science people in this new digital era

- Quickly prototype
- Create or access unique data sets
- Experiment and learn faster in ‘use’
- Shift between multiple business models



(Allen, 2019)

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University of San Francisco

Thanks for your time!

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