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# The Smarter Store

How AI is powering the future of retail

# The technology market **intelligence platform.**

CB Insights software lets you predict, discuss and communicate emerging technology trends using data in ways that are beyond human cognition.

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Sequoia Capital on disrupting venture capital



**Sequoia Capital on disrupting venture capital**

Sequoia's Pat Grady says "CB Insights is positioned to be a leader in helping companies find investments" on stage at the Future of Fintech Conference (<https://youtube.com>)

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# The Smarter Store: How AI is Powering the Future of Retail

- 1** Macro trends in retail
- 2** AI in e-commerce
- 3** Startup ecosystem
- 4** AI in the physical store
- 5** Trends to watch

Macro trends  
**Automation, AI reshapes retail**

# Amazon dominates e-commerce, with AI core

The e-commerce giant has a strong AI focus. Its internal projects include Lex (NLP), Rekognition (vision). Prime customers can now place orders through Alexa.



# A 'retail apocalypse': Stores close at record rates

More than 3,200 stores are shutting down – here's the full list

April 17, 2017

BUSINESS INSIDER

Brick-and-mortar retailers in a death spiral against online stores

March 26, 2017

Newsweek

Another major clothing retailer files for bankruptcy

May 17, 2017

c clark

As shoppers shift online, so do Southern California jobs

Los Angeles Times

April 28, 2017

Stores are closing at an epic pace

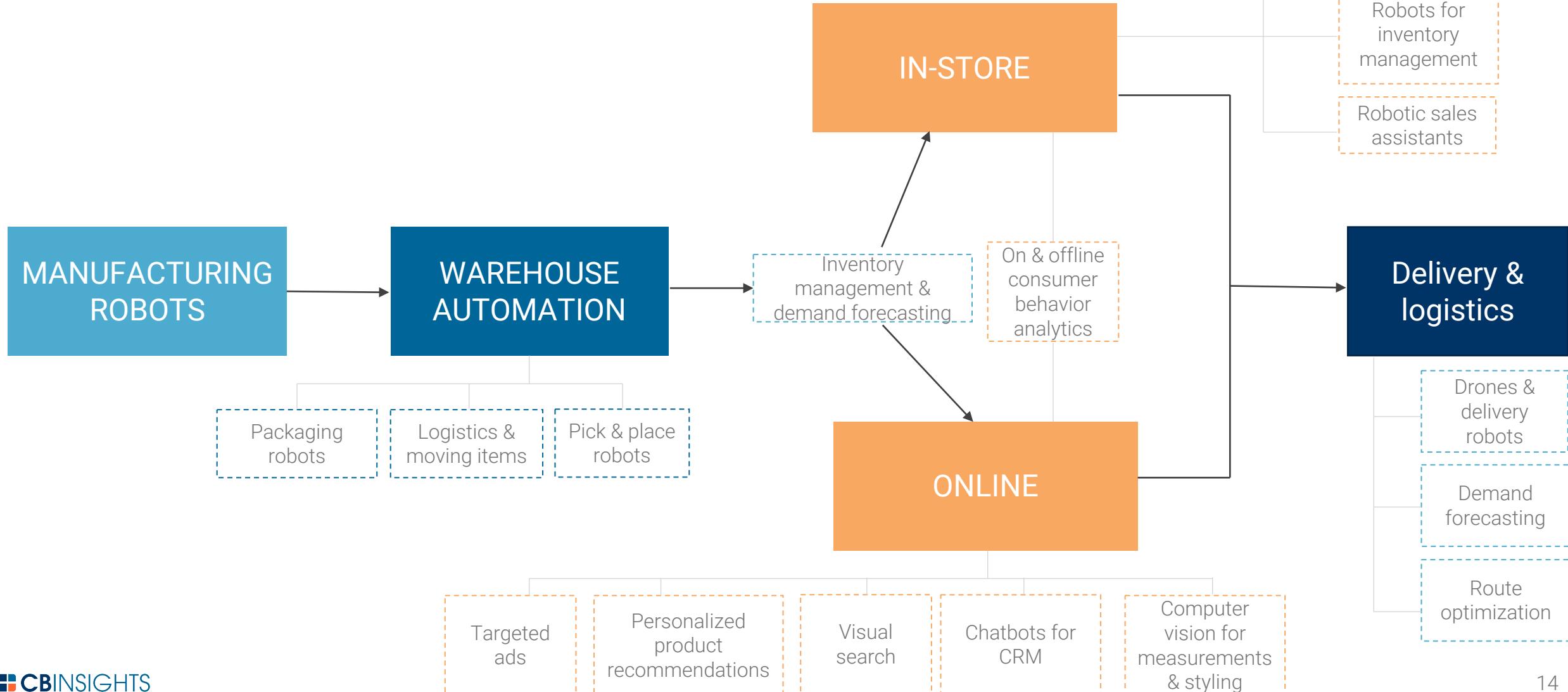
April 22, 2017

CNNMoney

# Adapt or die.

Retailers are partnering with startups to **survive** in a highly competitive landscape, understand their customers, and **drive traffic** both online and offline.

# How automation is transforming retail



# AI in e-commerce

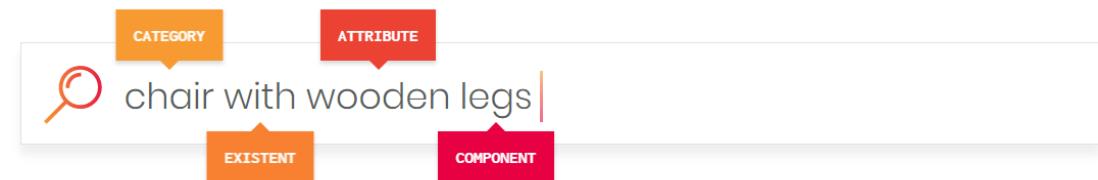
## **Use cases of artificial intelligence**

# Customers want to easily find what they're looking for.



Round	Date	Funding	Investors
Series B	May 11, 2017	\$15M	Korea Investment Partners and MizMaa Ventures
Series A - II	May 31, 2016	\$5.3M	Alibaba Group
Series A	Apr 7, 2016	\$12.5M	Naspers, Ronald Cohen, State of Mind Ventures and YJ Capital
Seed VC	Jan 30, 2015	\$2.2M	State of Mind Ventures
Other Investors			AfterDox

Alibaba Group backed Israel-based e-commerce search startup Twiggle in Q2'16.



# Vision: Finding items without keywords



Wine

Round	Date	Funding	Investors
Series B	Aug 11, 2016	\$10M	Haier Capital
Series A	Jan 2, 2015	\$1.5M	Balintimes Media
Angel	Jan 2, 2013	\$500K	Undisclosed Investors



General retail

Round	Date	Funding	Investors
Series B - II	Apr 3, 2017	\$2.49M	Touchstone Innovations
Series B	Mar 18, 2015	\$3.45M	Touchstone Innovations
Series A	Jun 16, 2014	\$2.54M	Touchstone Innovations
Seed	Aug 11, 2009	\$550K	Touchstone Innovations



Automobiles

Round	Date	Funding	Investors
Seed VC	Jun 1, 2017	\$1.8M	B&Y Venture Partners, Phoenician Funds and Wamda Capital



Round	Date	Funding	Investors
Incubator/Accelerator - II	Oct 25, 2017		Unilever Foundry
Series B	Sep 15, 2016	\$10.5M	Enspire Capital, FengHe Fund Management, Phillip Private Equity, Raffles Venture Partners, Rakuten Ventures, SPH Media Fund, UOB Venture Management and WI Harper Group
Incubator/Accelerator	Feb 18, 2016		MasterCard Start Path
Series A	Feb 19, 2014	\$3.5M	Rakuten Ventures, UOB Venture Management and Walden International

# Retailers want customers to never leave.

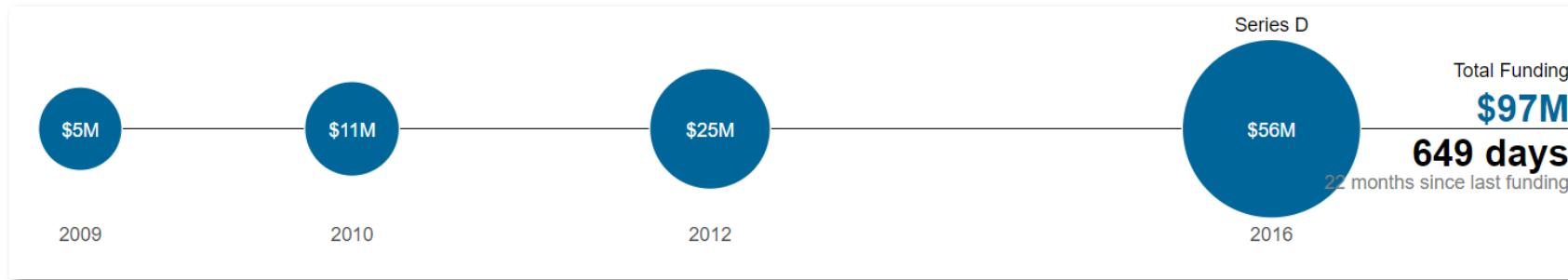


Dynamic Yield focuses on personalized search, recommendations, and behavioral messaging, among other things.

**Select investors:** Baidu Capital, Bessemer Venture Partners, ClalTech, Global Founders Capital, Innovation Endeavors, Marker and Vertex Ventures Israel



# 1:1 targeting and merchandising



Select investors: Bain Capital Ventures, Battery Ventures, Lightspeed Venture Partners, New Enterprise Associates, and Salesforce Ventures

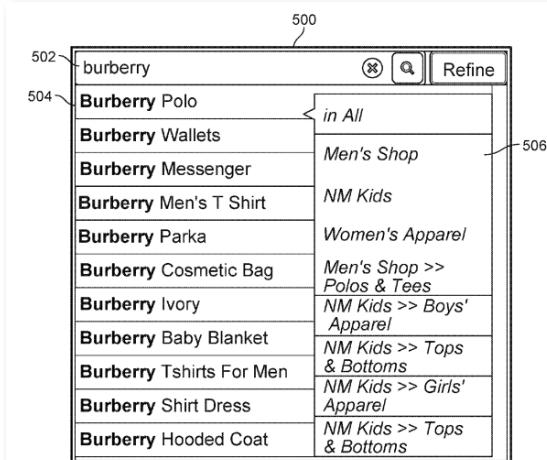


FIG. 5

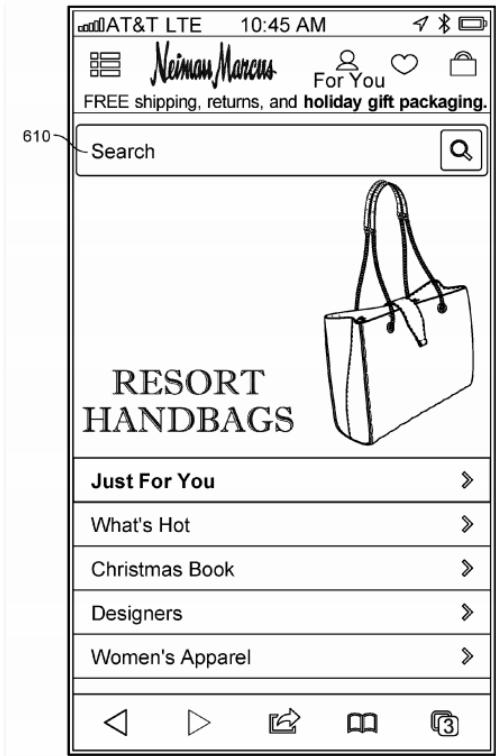


FIG. 6A

# Retailers want to understand consumer behavior across devices.

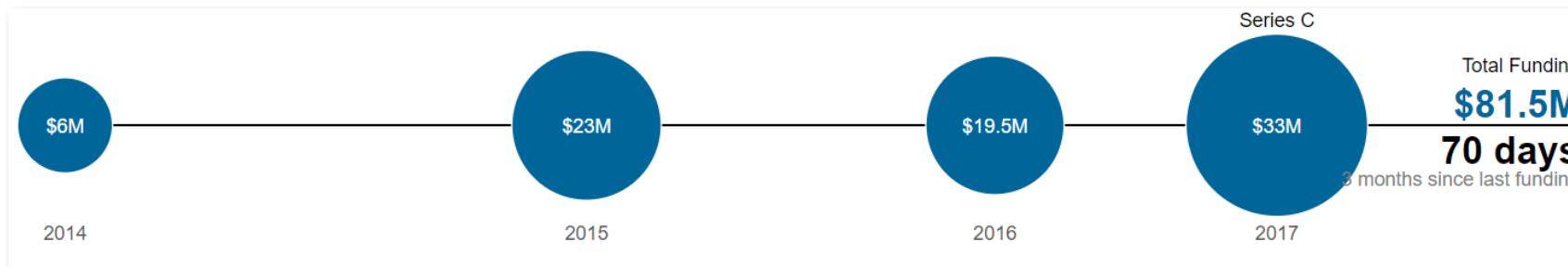
Appier



ESTĒE LAUDER

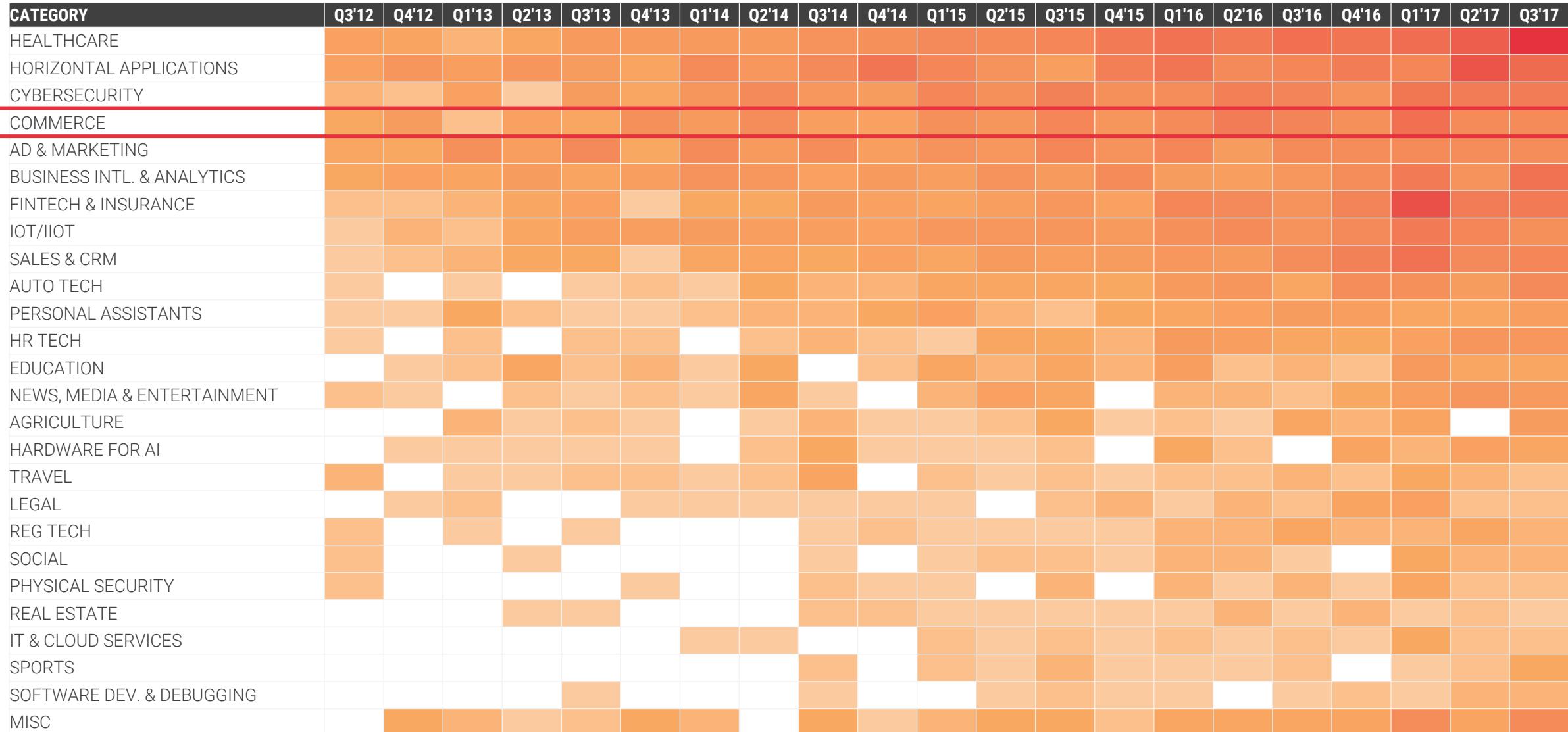
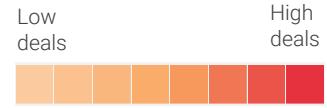
Appier uses deep learning to collect and analyze audience behavioral and browsing data.

Select investors: AMTD Group Company, EDBI, Line Corporation, NAVER Corporation, Sequoia Capital India, and SoftBank Group



# AI in commerce **Startup trends, deals, top investors**

# Commerce is a leading industry for AI deals



Global AI commerce equity funding since '13:

**\$1.26 BILLION**

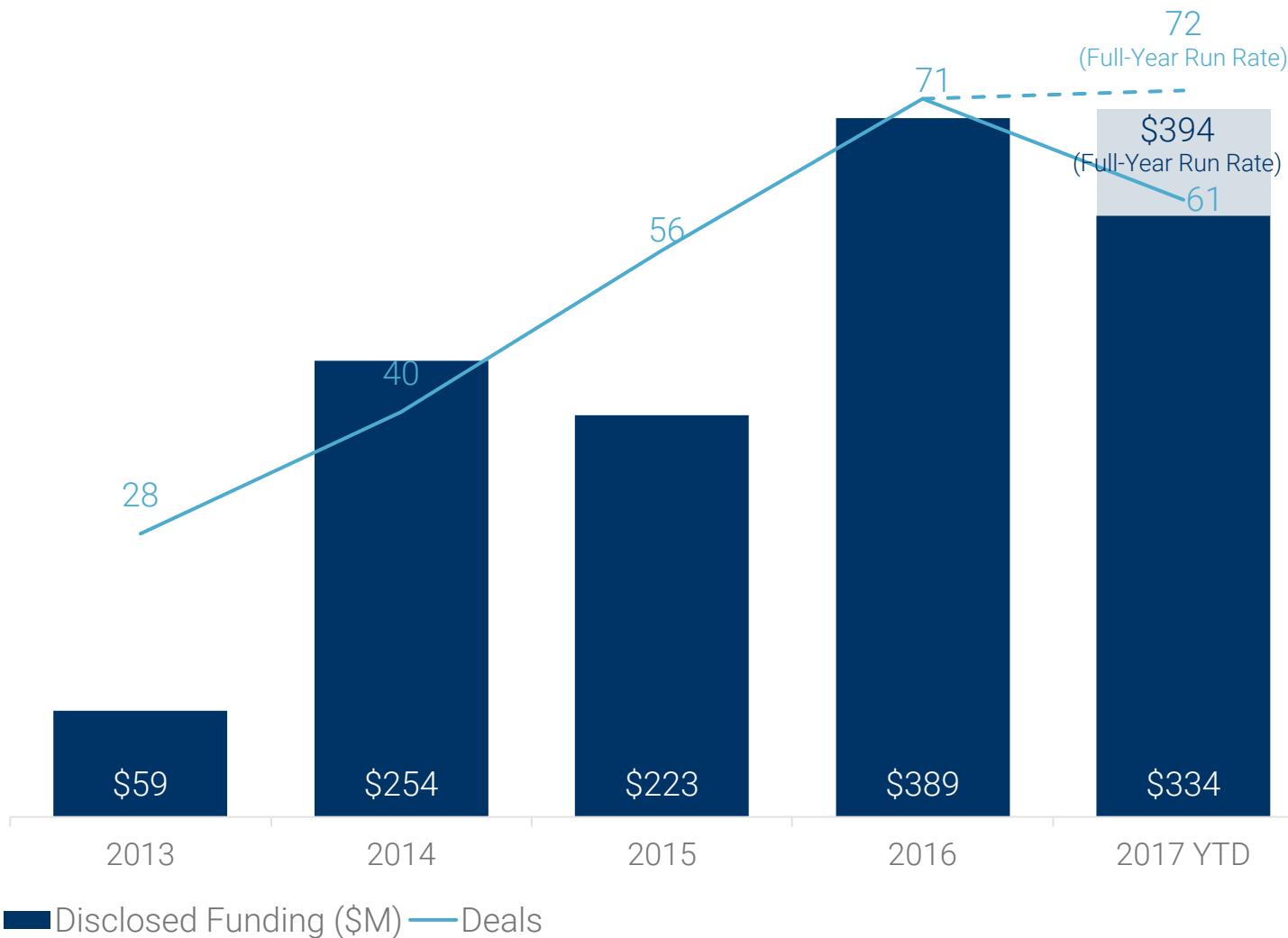
across

**256 DEALS**



## AI commerce: Annual global financing history

2013-2017 (as of 11/617)



Top 2017 rounds go to startups in Asia

Top rounds in 2017

**Trax** (Singapore)  
64M/Private Equity  
Computer vision for retail

**Appier** (Taiwan)  
\$33M/Series C  
Cross screen consumer behavior analysis



## AI commerce: Quarterly global financing history

Q1'13 – Q3'17



**Q1'17 busiest quarter for AI commerce deals**

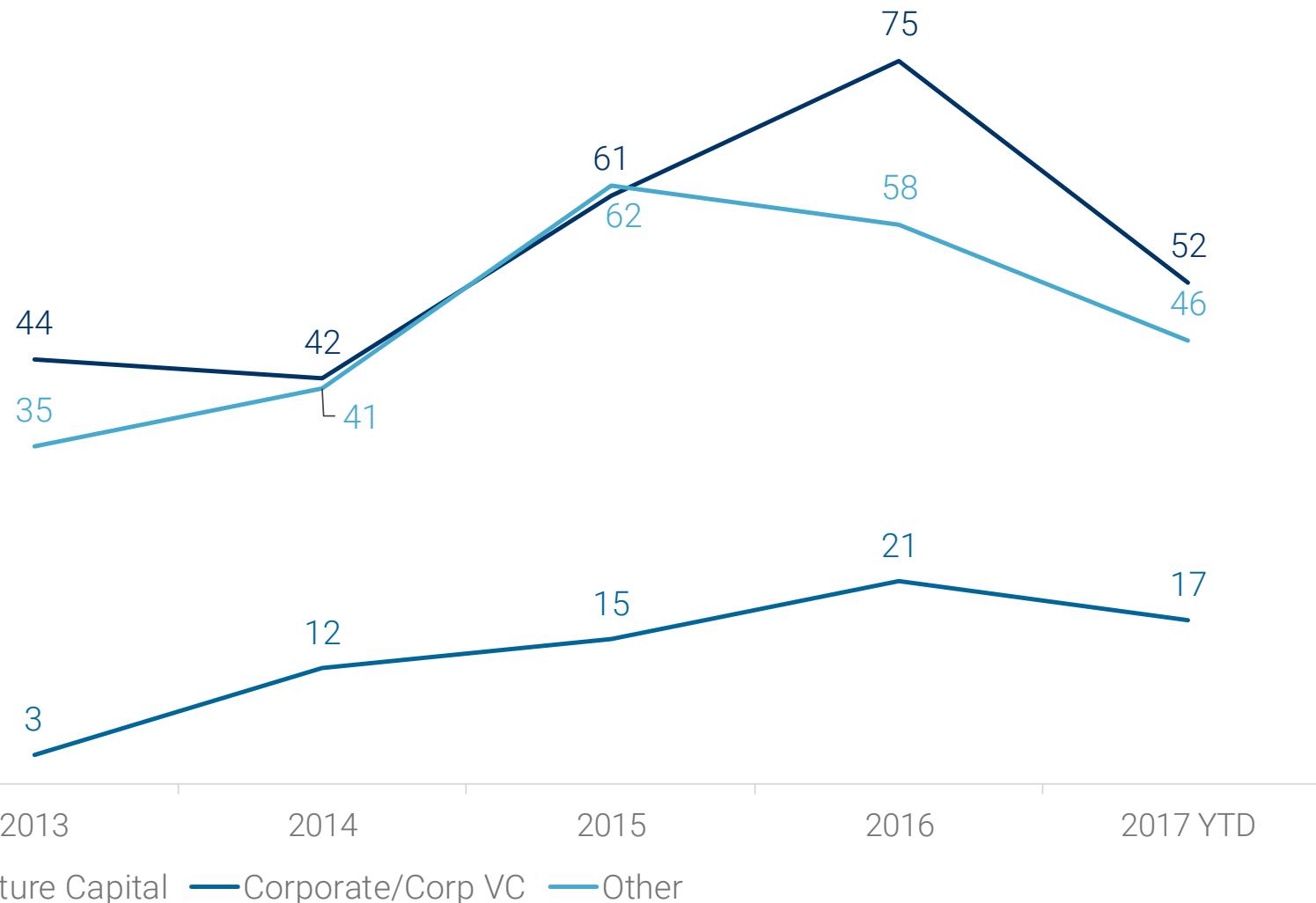
2017 opened with the busiest quarter for deals, followed by a slowdown in the following quarters.

Outside the US, Q3'17 saw 7 deals to countries in Asia, including 4 in China, as well as 3 deals to startups in France and United Kingdom.



## AI Commerce: Unique investors

2013-2017 YTD (as of 11/6/2017)

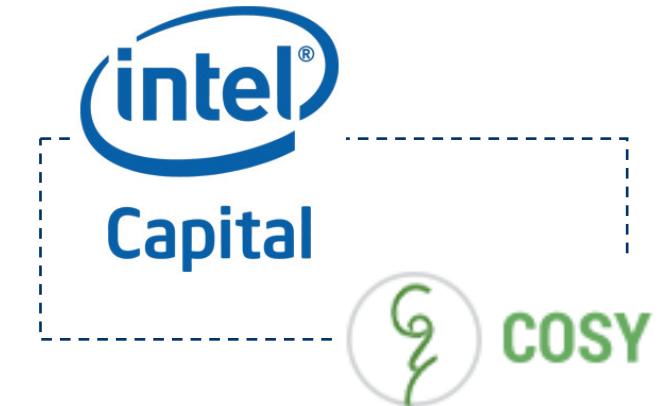


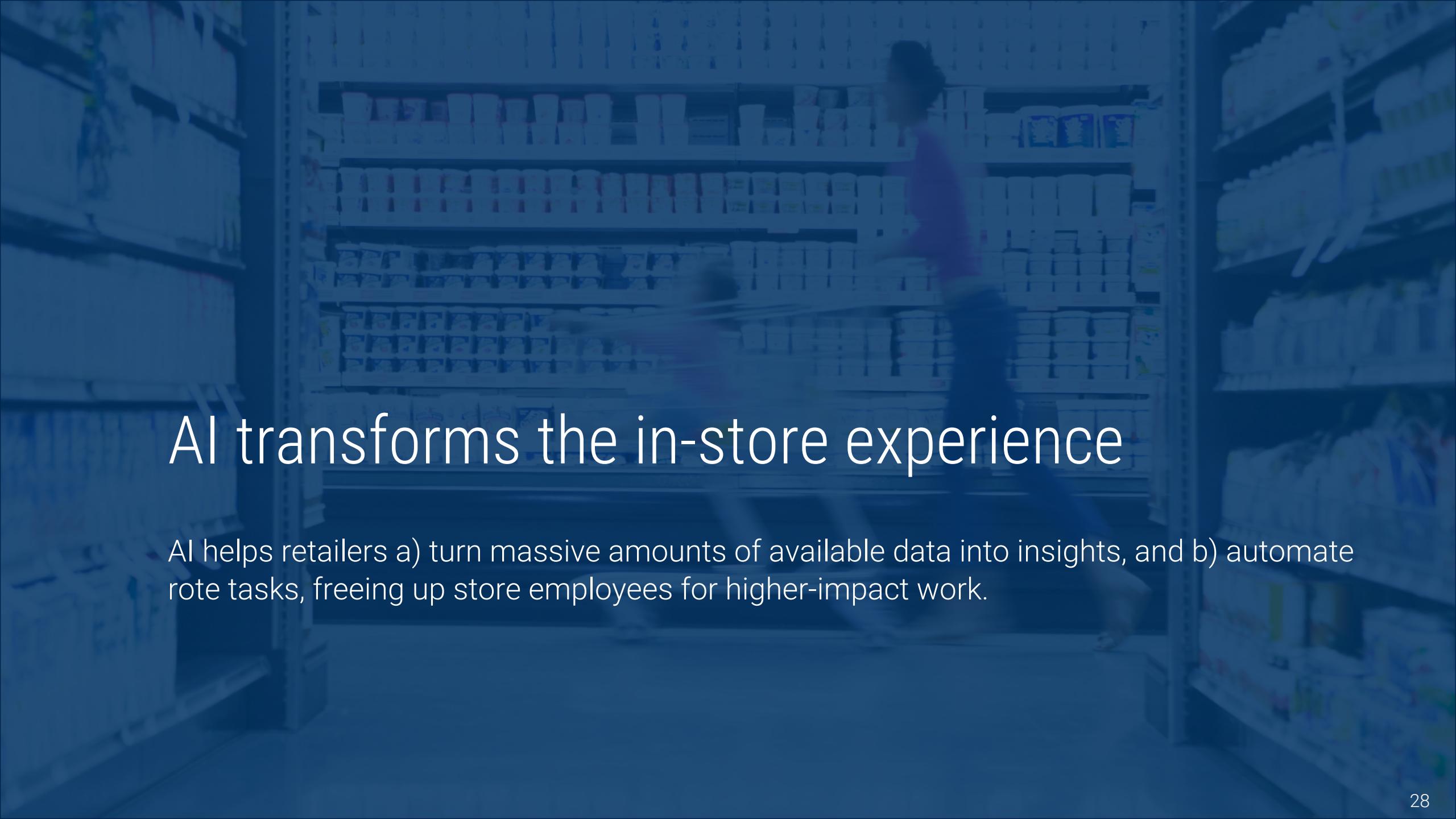
## VC interest in AI commerce peaked in 2016

VC and corporate interest in AI commerce picked up in 2015, when investors like Google and Salesforce backed startups including Modsy and Msg.ai. The trend continued in 2016, before a slowdown this year.

# Recent VC-backed deals

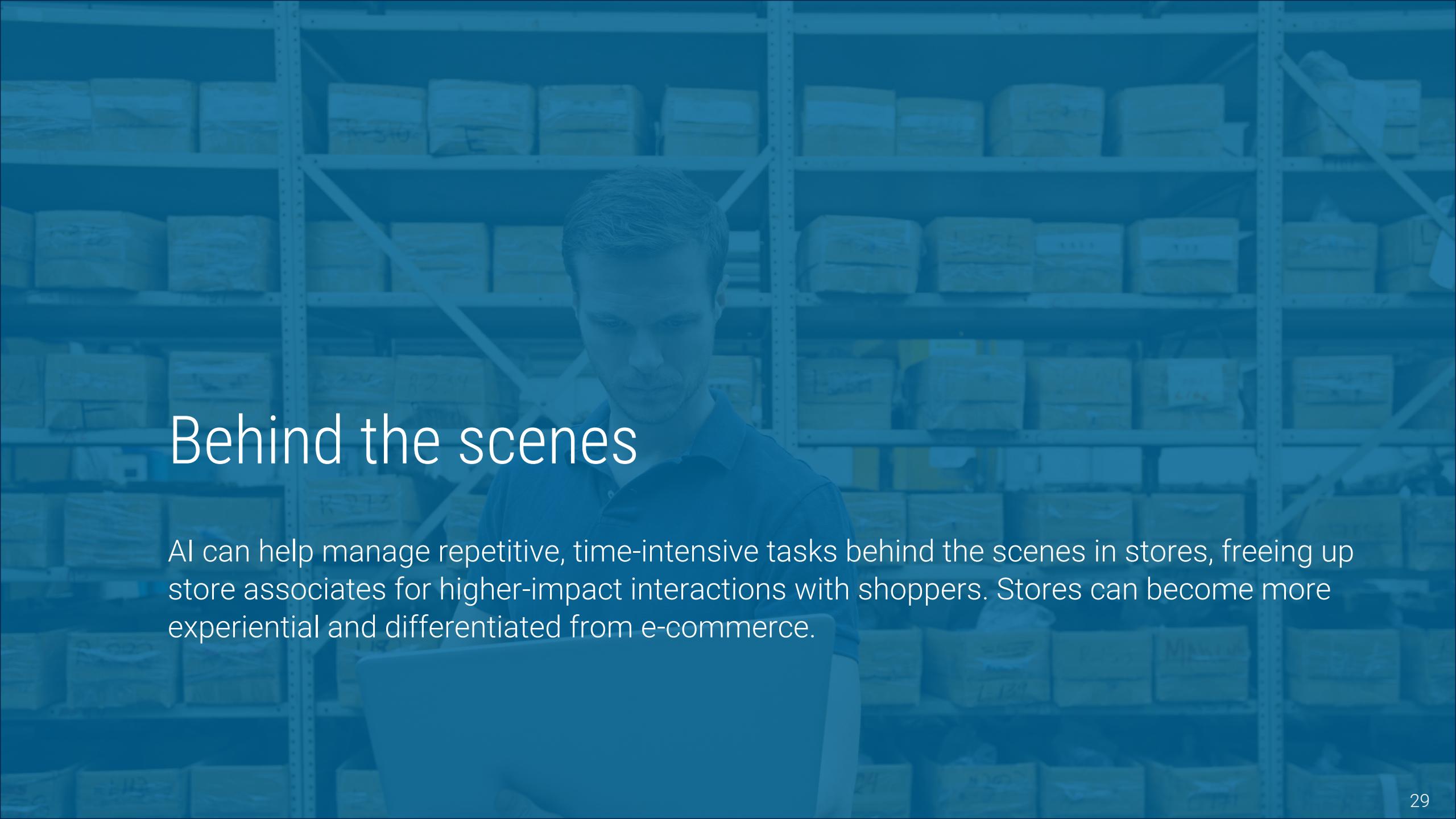
2017





# AI transforms the in-store experience

AI helps retailers a) turn massive amounts of available data into insights, and b) automate rote tasks, freeing up store employees for higher-impact work.

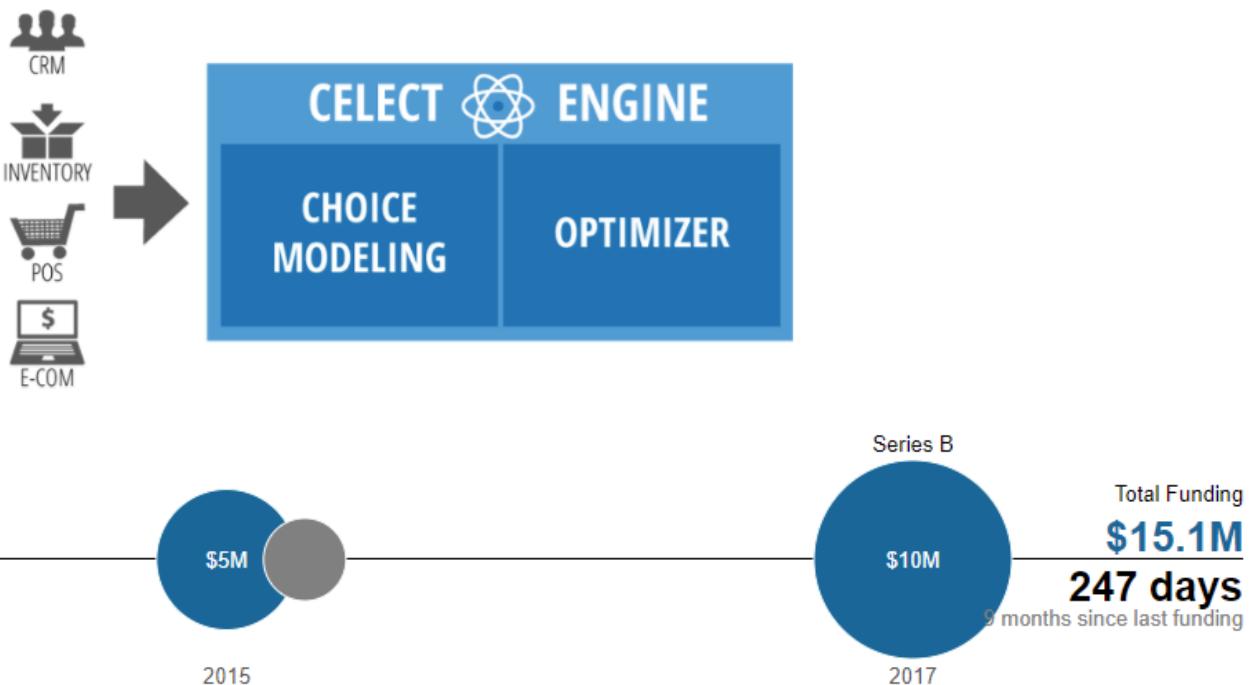
A photograph of a man with short brown hair, wearing a blue polo shirt, standing in a warehouse. He is positioned in the center of the frame, facing slightly to his left. He appears to be looking down at something he is holding in his hands. The background consists of several tall metal shelving units filled with numerous white cardboard boxes stacked in rows.

## Behind the scenes

AI can help manage repetitive, time-intensive tasks behind the scenes in stores, freeing up store associates for higher-impact interactions with shoppers. Stores can become more experiential and differentiated from e-commerce.

# Inventory Optimization for Retail

IT'S ALL IN YOUR DATA



**AI can analyze disparate data streams to optimize retail planning**

Celect, spun out of MIT, uses machine learning to model customer behavior and optimize retailers' merchandising, assortment, and pricing strategies.

Celect raised \$15.1M from In-Q-Tel, Activant Capital, August Capital, Fung Capital Management, and others.

# AI supports inventory management



## nextail

Nextail uses AI to help retailers improve inventory allocation and manage daily store replenishments.

**Disclosed funding:** \$1.6M

**Select investors:** Nauta Capital

## everseen

Everseen uses machine vision and video analytics to monitor the point of sale and reduce losses.

**Disclosed funding:** N/A

**Select investors:** Marcol

## BlueYonder

Blue Yonder uses AI to help retailers improve inventory planning and reduce out-of-stocks.

**Disclosed funding:** \$75M

**Select investors:** Warburg Pincus



## eversight®

Eversight uses machine learning to help retailers and CPG brands test and deploy better promotions.

**Disclosed funding:** \$25.2M

**Select investors:** Bow Capital



#### What goes in?

Images of store shelves captured from any source.

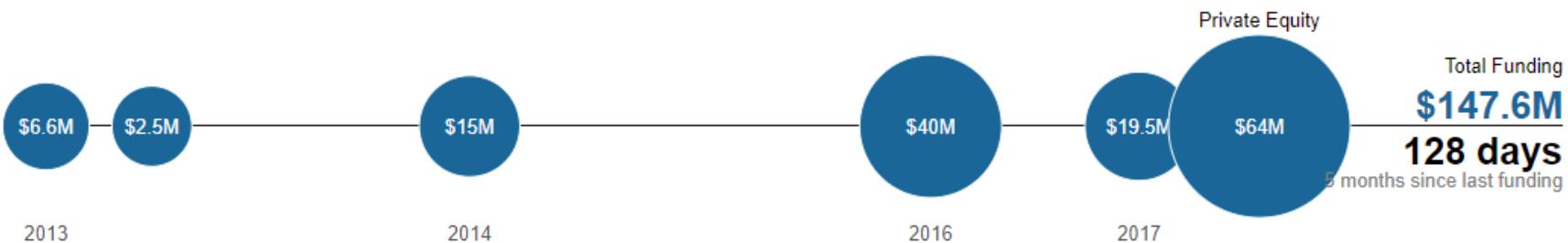
Mobile Apps, Fixed Cameras, Robots, Drones, etc.

#### Under the hood

Proprietary Computer Vision and Deep Learning methods identify objects on the shelf.

#### What comes out

A fully recreated shelf with every single SKU (e.g. Coca Cola 300ml) or object (Price label) accurately identified.



#### Select Clients:



## Trax Retail combines AI, IoT, augmented reality

Trax uses machine vision to help CPG brands monitor their products on store shelves and create detailed augmented reality recreations of store environments for audits. It also works with retailers to observe stores in real time.

Trax raised \$147.6M from Warburg Pincus and others, and in July it acquired Nielsen's store observation unit.

# Stores roll out robot staffers

Walmart is Putting Shelf-Scanning  
Robots in Over 50 U.S. Stores

October 26, 2017

FORTUNE

Robot Workers Will Soon Be Roaming  
the Aisles at Schnucks Stores

July 26, 2017

ST. LOUIS POST-DISPATCH

Lowe's Introduces LoweBot, a New  
Autonomous In-Store Robot

August 30, 2016

SoftBank's Humanoid Robot Pepper is  
Improving Sales at Brick-and-Mortar Stores

January 4, 2017

recode

Ahold USA Tests Robots to Detect  
Hazards, Out-of-Stocks

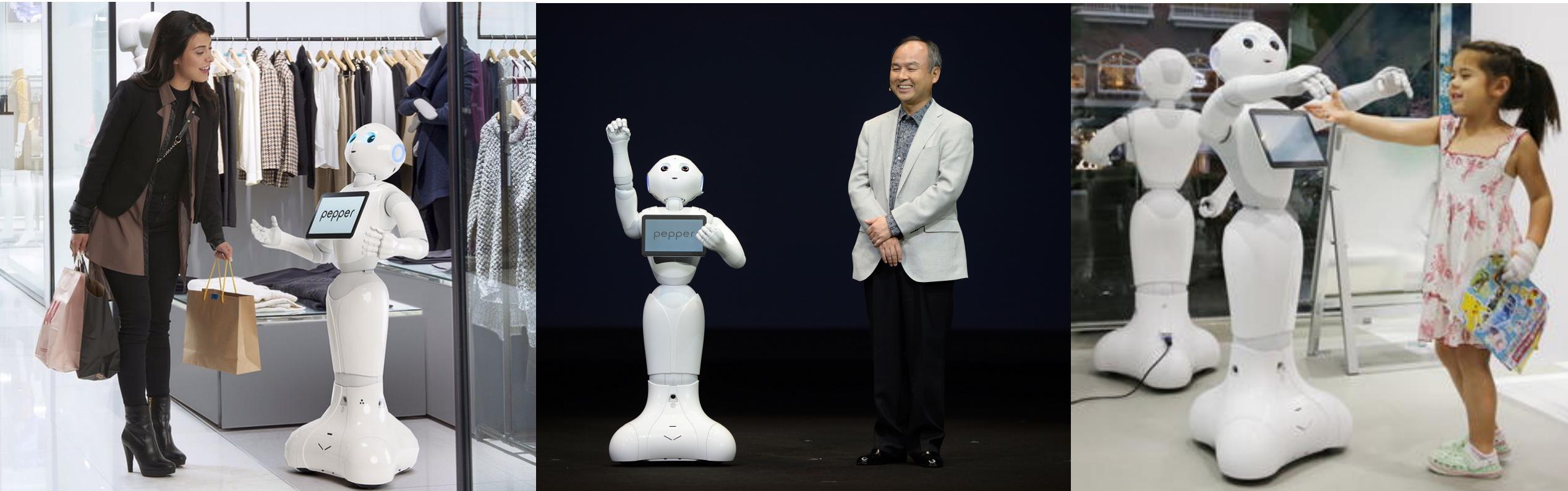
October 9, 2017

PROGRESSIVE  
GROCER



# Humanoid Robots Attract Shoppers...

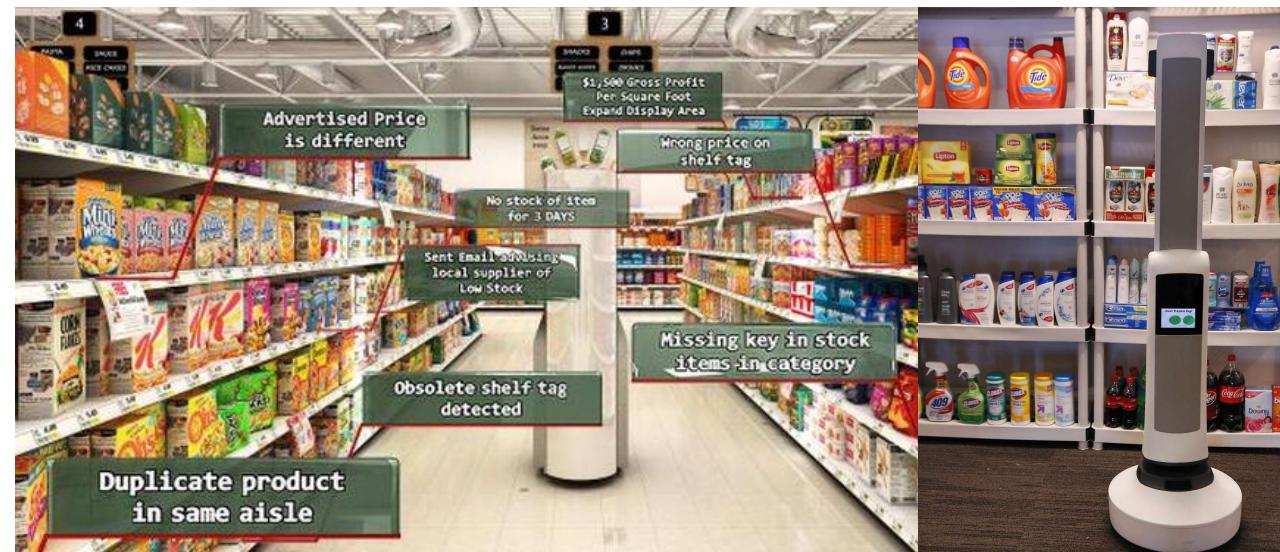
SoftBank's humanoid Pepper robot already greets shoppers at 10K+ venues around the world. Pepper can answer questions, interact via touchscreen, and collect shopper data. Pilot programs reportedly boosted shopper traffic by 20-70%. However, if robots do not add clear value for shoppers, the novelty may wear off and Pepper's impact on foot traffic may fade.



# ...While B2B Robots Scan Shelves and Inventory

Simbe Robotics and Fellow Robots produce in-store robots that scan shelves and monitor inventory to reduce out-of-stocks, correct misplaced items and labeling errors, and gather analytics for store management. Fellow works with Lowe's, Yamada, and others, and Simbe works with Schnuck's, Ahold, and others.

simbe

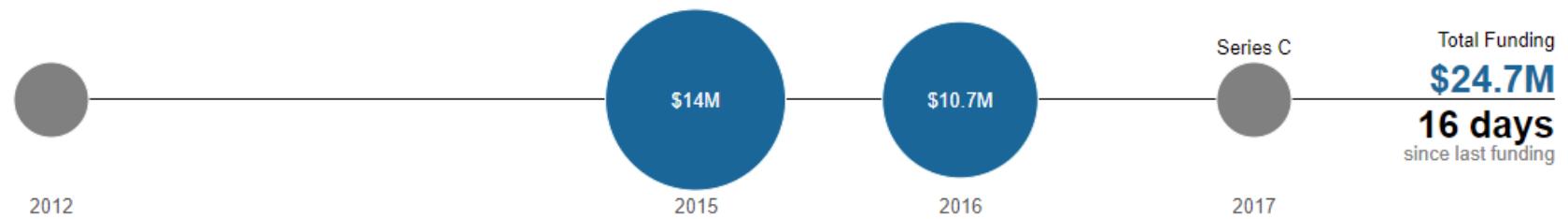


fellow<sup>®</sup>  
ROBOTS



# Walmart Taps Bossa Nova Robotics for Inventory Management

Walmart plans to expand its partnership with Bossa Nova's robots to 50+ stores. The fully autonomous robots use machine vision to scan shelves and monitor inventory. Bossa Nova has raised over \$24M in funding, and Intel Capital led its Series C in October.





The Hologram



## Beyond robots: could holograms be on the rise?

NY-based Satisfi, a platform for conversational commerce, recently partnered with augmented reality company VNTANA to launch an interactive AI hologram.

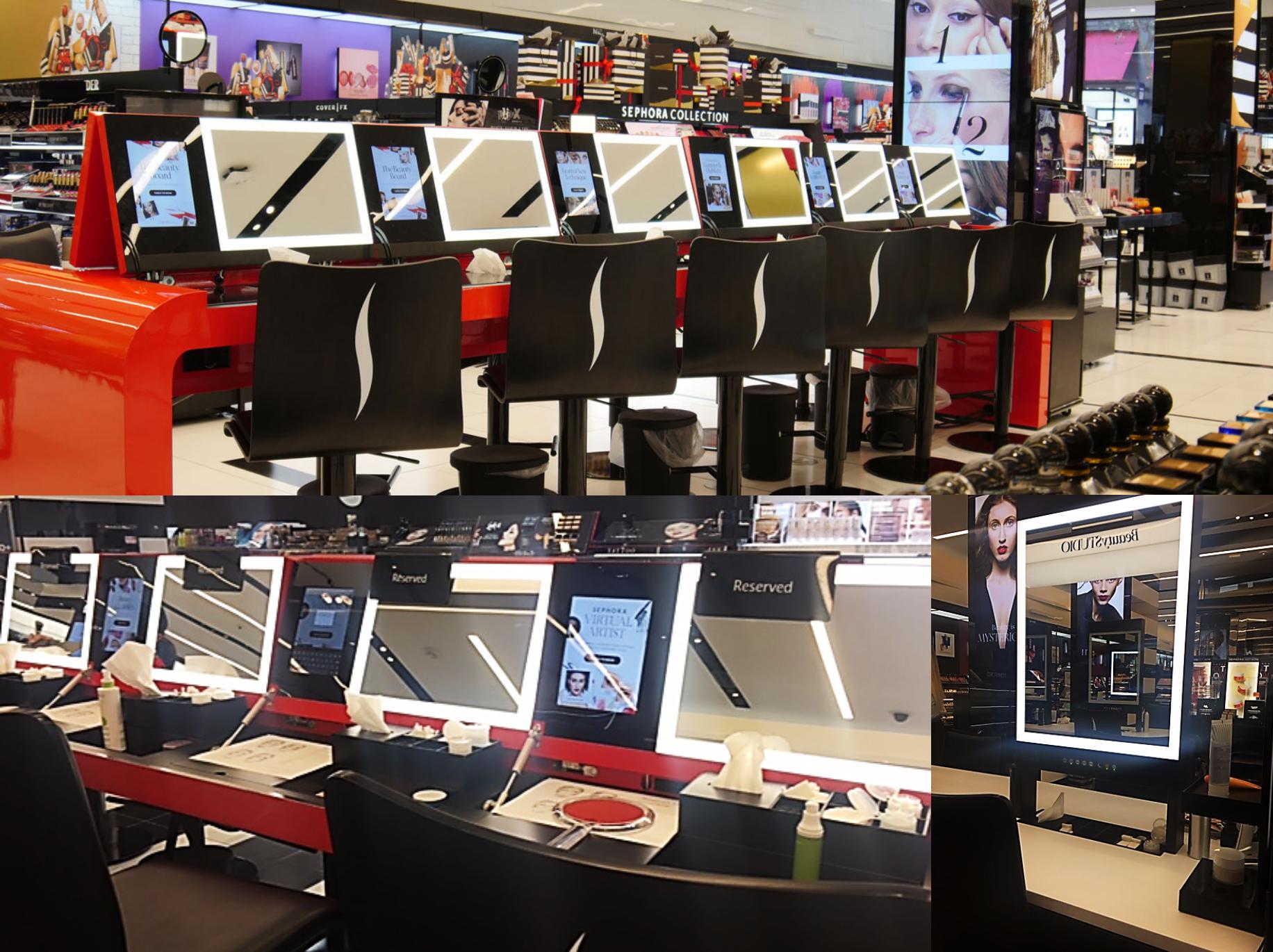
AI-powered holograms could answer basic questions for shoppers, while observing store activity and visitor demographics.

### Select Clients:



## In-store engagement

Facial recognition and AI-powered digital screens can make stores more engaging, while collecting shopper interaction data.



## Sephora's smart mirrors drive in-store engagement

While Sephora has long driven engagement by offering in-store product try-on, today it uses screens to offer virtual try-ons and makeup tutorials.

These screens offer memorable in-store experiences, reduce staff time spent on managing try-ons, and collect and record data about which products shoppers try.

# MODIFACE + SEPHORA

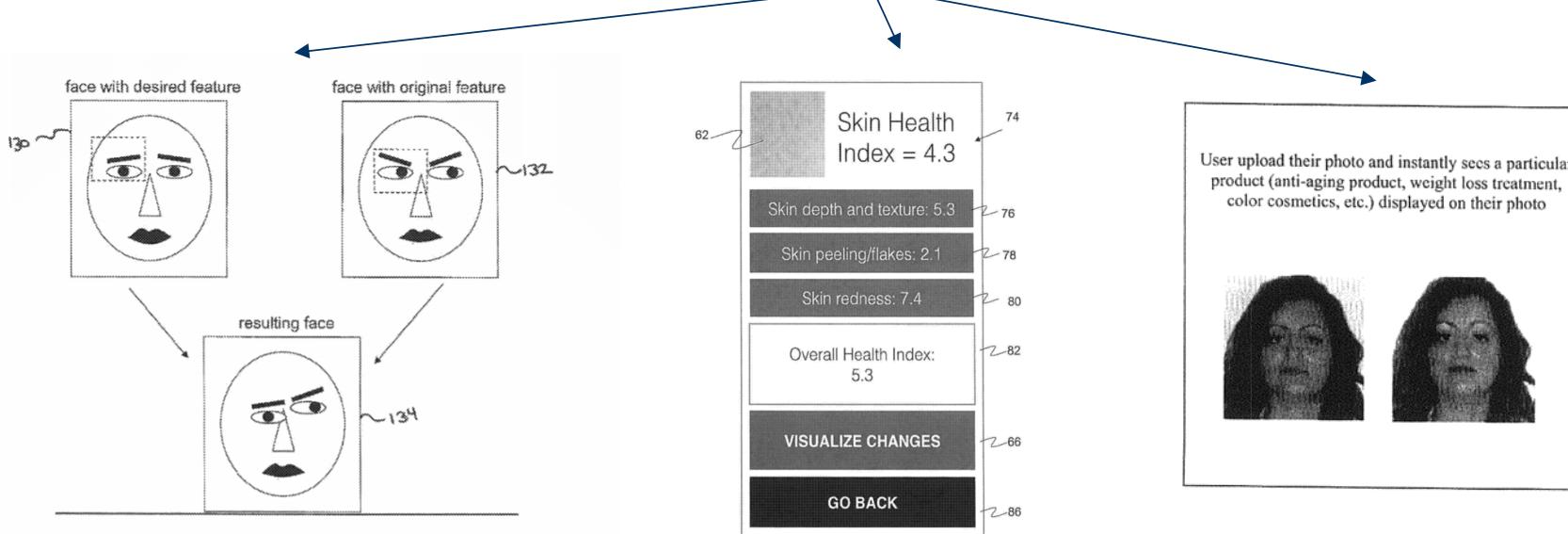


FIG. 18

Patent: Method, system, and computer program product for generating recommendations for products and treatments

Patent: System, method and application for skin health visualization and quantification

Patent: Method and system for simulated product evaluation via personalizing advertisements based on portrait images

## ModiFace technology powers Sephora's screens and app

ModiFace uses AI and augmented reality to power virtual try-on experiences for Sephora and other beauty brands.

ModiFace's patented technology can identify facial features and skin conditions, then make personalized product recommendations or show shoppers how they would look using different products.

# AI Startups Battle for Beauty Brands

## MODIFACE

Select Reported Clients:

SEPHORA

BOBBI BROWN

ESTĒE LAUDER

  
URBAN DECAY

SHISEIDO

AVON

## PERFECT

Select Reported Clients:

LANCÔME  
PARIS

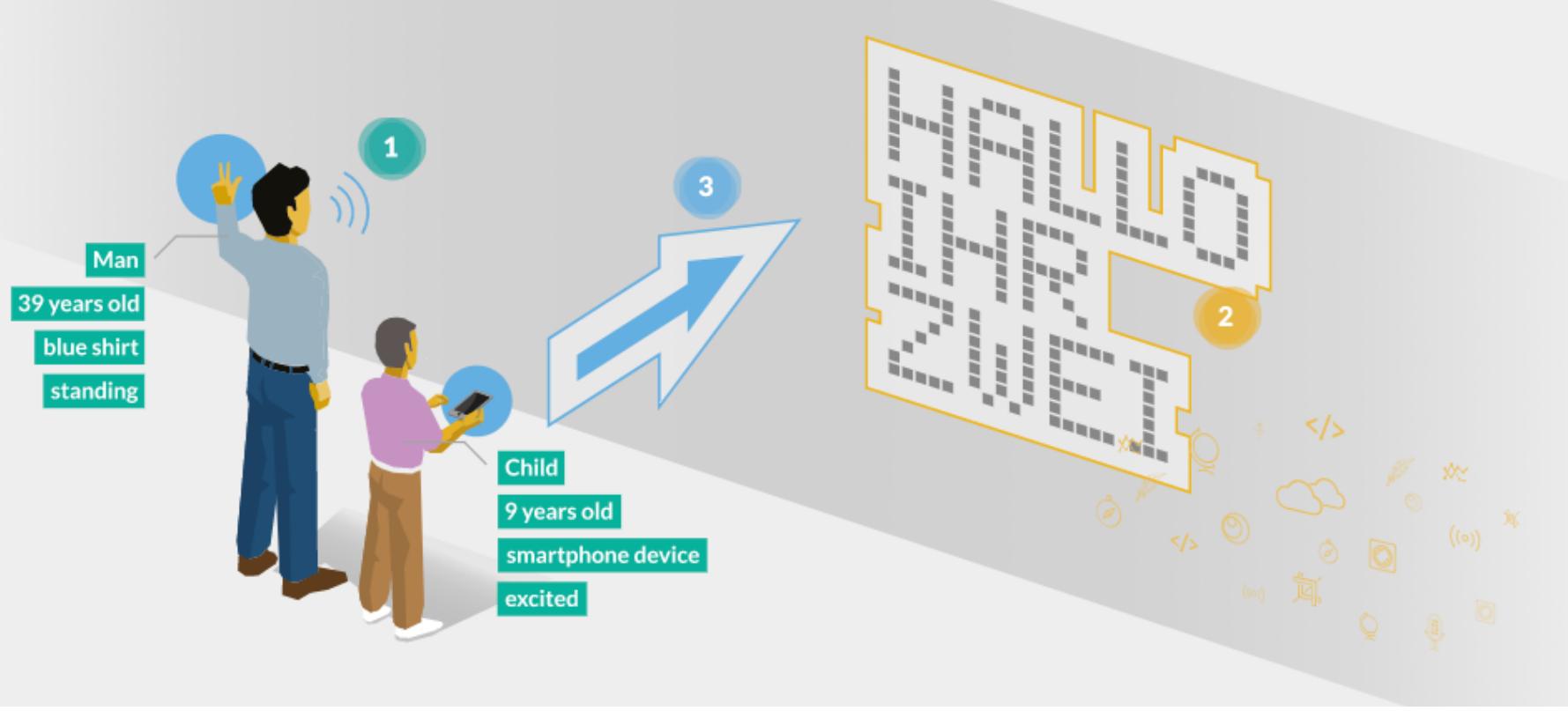
L'ORÉAL

Elizabeth Arden

YVES SAINT LAURENT

macys<sup>®</sup>

MAC



## Adaptive screens help engage and monitor shoppers

Advertima offers digital screens that can analyze in-store shoppers and adapt content in real time to engage them. It aims to detect gender, age, and other data, and will allow shopper interaction via speech, touch, gesture, or smartphone.

Swiss-based Advertima raised \$5M from Migros, Switzerland's largest retailer.

## Could facial recognition replace payments?

Alibaba partnered with Chinese startup Face++ to unveil facial recognition-based payments.

Face++ has raised \$608M from Foxconn and others, and earned a \$1B valuation in Oct'17.

Alibaba is currently piloting the pay-by-face technology in select KFC locations, and could expand it to retail.



# Automating checkout

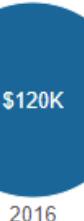
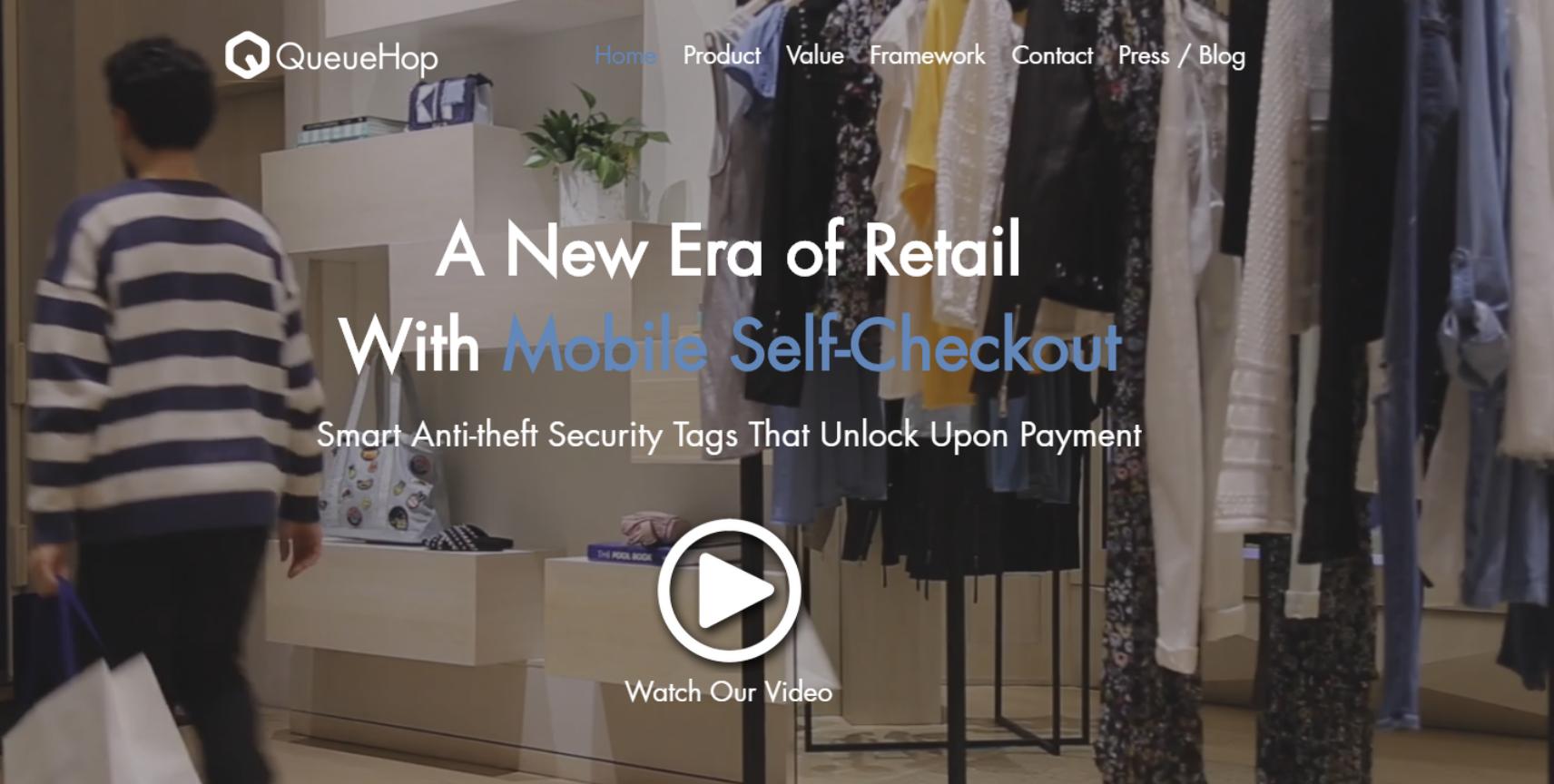
Startups aim to use AI to automate the checkout process and take cashiers, and even cash registers, out of the store.

# A New Era of Retail With Mobile Self-Checkout

Smart Anti-theft Security Tags That Unlock Upon Payment



Watch Our Video



Seed - II

Total Funding  
**\$120K**  
**437 days**  
15 months since last funding

Select Clients:

REBECCA MINKOFF

**QueueHop smart tags help secure self-checkout**

QueueHop provides connected security tags, which unlock automatically once the shopper has paid at a self-checkout kiosk or via mobile app.

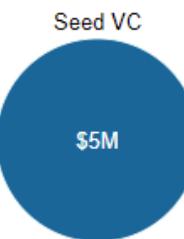
It aims to help retailers speed checkout and reduce cart abandonment, while providing AI-powered personalized suggestions to shoppers.

# AI-powered Checkout

SKIP THE LINE



2017



Total Funding  
**\$5.12M**  
24 days  
since last funding

**Machine vision makes first steps toward checkout automation**

Pre-launch startup Standard Cognition aims to use machine vision to enable automated checkout. The system would track shoppers' carts throughout the store, and automatically display the charges at a self-serve kiosk by the door. In the future, shoppers could pay automatically via mobile app.

# Human-free storefronts roll out across China

Numerous startups already operate fully automated, human-free convenience stores in China. These modular stores integrate with mobile payment apps such as Alipay and WePay. Shoppers scan their phones to access the store, then scan again to pay and exit. The stores aim to use AI and machine vision to track shoppers throughout the process.



**Xiaomai**  
Disclosed Funding: \$36.9M  
Select Investors: Sequoia Capital China,  
Junzi Capital, Aplus Capital



**BingoBox**  
Disclosed Funding: \$14M  
Select Investors: GGV Capital, Ventech China



**F5 Future Store**  
Disclosed Funding: \$5.9M  
Select Investors: Sinovation Ventures, TCL  
Capital

# Managing the customer journey

As retailers face new opportunities to gather direct data from consumers online and offline, they can use AI tools to turn that data into action.

# THE RETAIL STORE TECH MARKET MAP

## LOCATION ANALYTICS & PROXIMITY MARKETING



## STORE MANAGEMENT/POS SYSTEMS



## SHELF MONITORING



## PACKAGING TECH



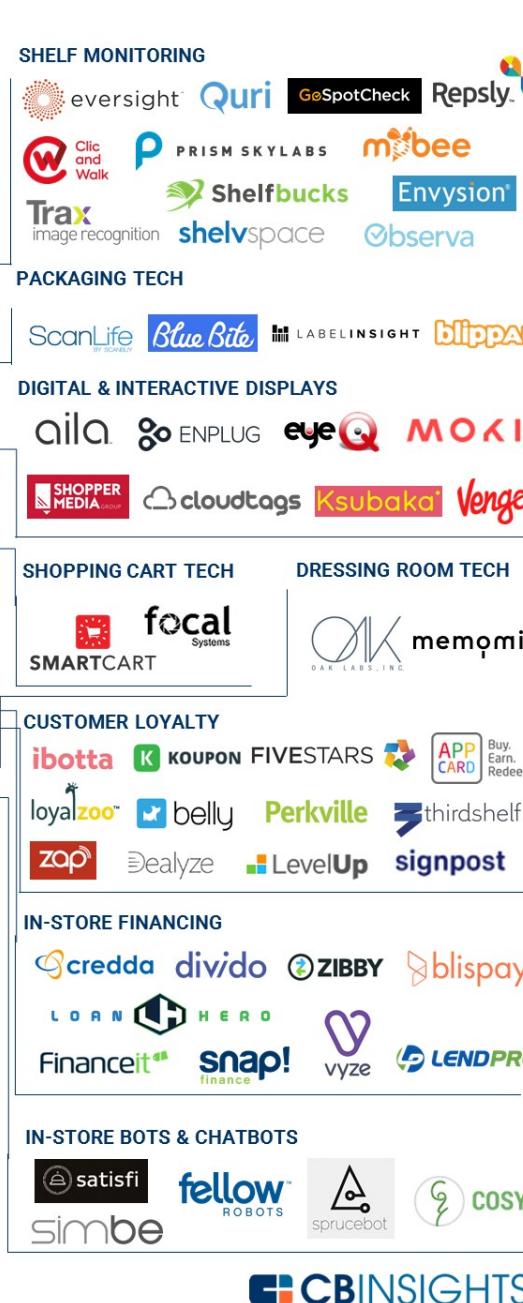
## DIGITAL & INTERACTIVE DISPLAYS



## SHOPPING CART TECH



## DRESSING ROOM TECH



Hundreds of startups help retailers gather offline data...

Startups are using AI, IoT, Bluetooth, and other new technologies to crack open the “black box” of brick-and-mortar stores. These new observation methods help retailers build a clearer picture of offline shopper activity.

## AUGMENTED/VIRTUAL REALITY TOOLS



## GUEST WIFI



## MUSIC SYSTEMS



## WORKFORCE TOOLS



## OMNICHANNEL ANALYTICS



## Reinventing offline marketing

REAL-LIFE  
TARGETING      X      OFFLINE  
MEASUREMENT



### Select Clients:



...And AI can help merge online and offline data to create better customer profiles

Paris-based Teemo (dba Databerries) tracks shopper activity to provide targeted offline mobile marketing.

Its personalized messaging aims to drive in-store sales.

Teemo raised \$17.9M from Index Ventures, Mosaic Ventures, and others.

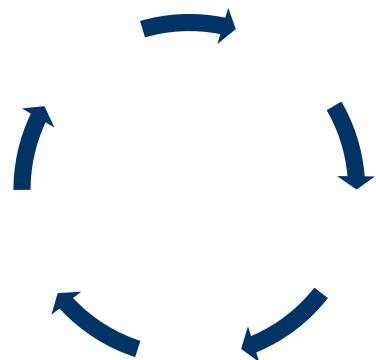


Google  
Reviews ★★★★☆



facebook®

twitter



signpost

<remesh>

QUANTIFIND



CONVERSEON  
socially-intelligent

AI helps brands track and parse online feedback

Startups such as Quantifind (\$49M in disclosed funding), Remesh (\$3M), Revuze (\$4M), and Converseon (\$7.5M) use AI to help brands monitor consumer sentiment.

Others, such as Yotpo and Signpost.ai, use AI to drive shoppers to contribute reviews.

A woman with short brown hair, wearing a light-colored jacket, is seen from the side and back, looking at shelves filled with various condiments and oils in a grocery store aisle. A shopping cart is visible in the foreground.

# How does AI support Walmart's strategy?

Walmart's patents focus on guiding shoppers through stores, speeding up the checkout process, and keeping the shelves stocked.

# AI supports omnichannel growth



“We are enhancing the shopping experience through machine learning ... we want to make sure there is a **seamless experience** between what customers do online and what they do in our stores.”

**Laurent Desegur**

VP Customer Experience, WalmartLabs

# Walmart builds and partners for AI growth

Walmart Expands Use of In-Store Inventory Robots

October 30, 2017

**D** RetailDIVE

Walmart Taps Nvidia for Massive Cloud to Take on Amazon

August 30, 2017

**FORTUNE**

Walmart Uses Google's AI Shopping Assistant to Fight Amazon

August 23, 2017

**engadget**

AI Startup Raises Millions to Digest Intel for Spies, Financiers, and Walmart

October 24, 2017

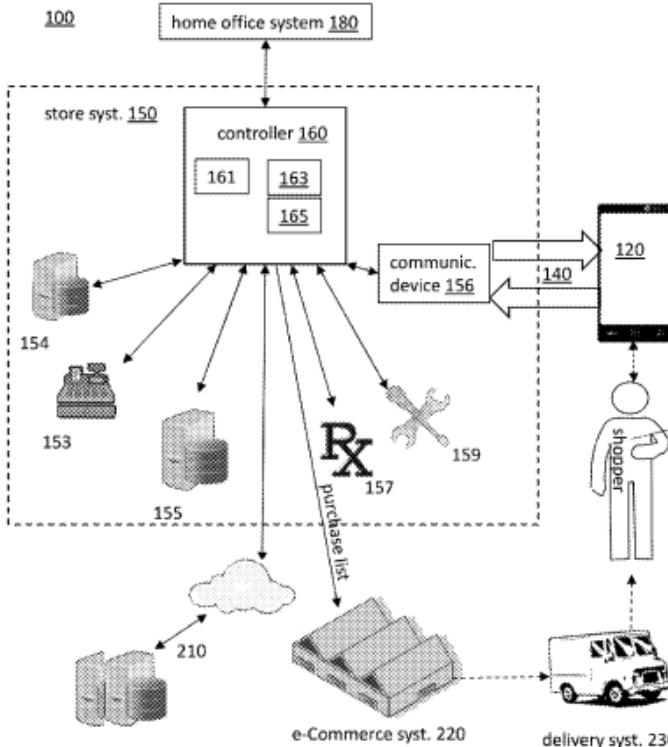
**FORTUNE**

How Walmart Uses AI to Serve 140 Million Customers a Week

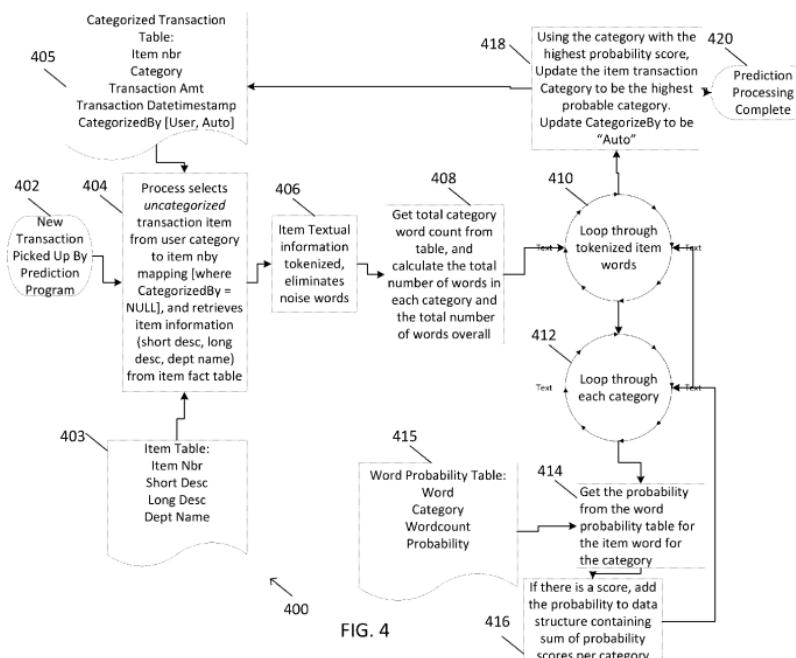
July 11, 2017

**VentureBeat**

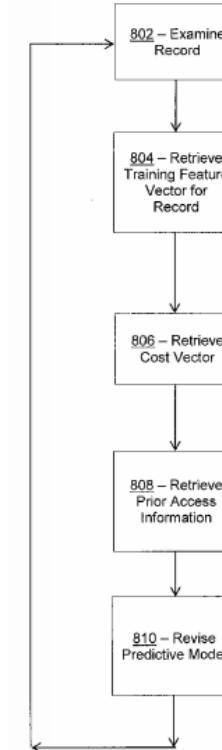
# Improving e-commerce through AI



Patent: Predictive shopping  
Application: March 2017

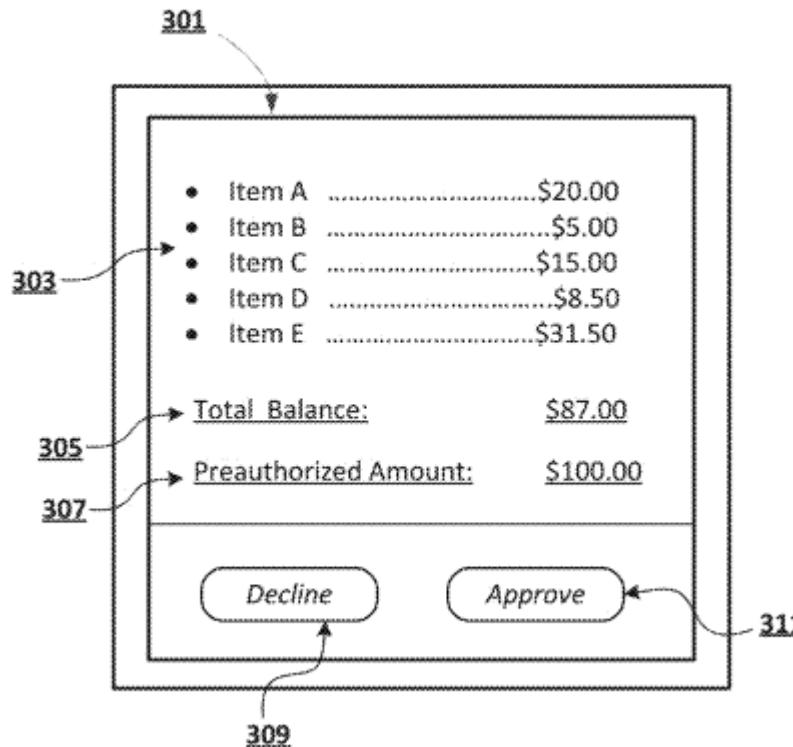
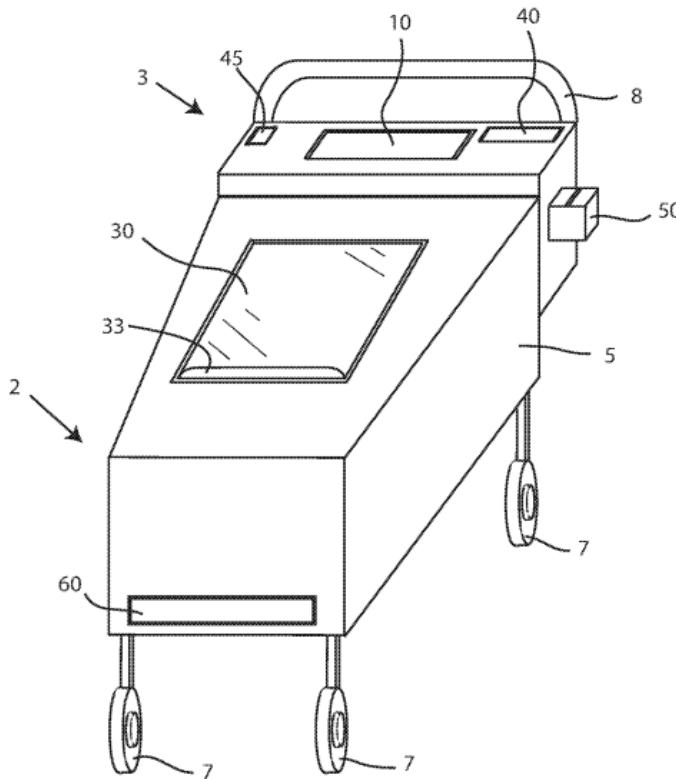


Patent: Machine learning system  
Application: October 2016



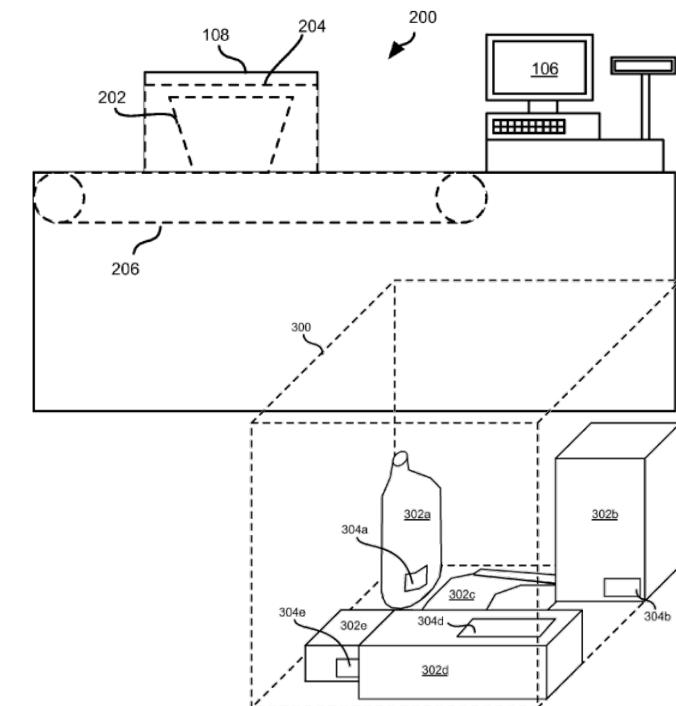
Patent: System and method for calculating search term probability  
Application: July 2017

# Dozens of Walmart patents focus on checkout



Patent: Smart cart for self-checkout of retail merchandise  
Application: November 2016

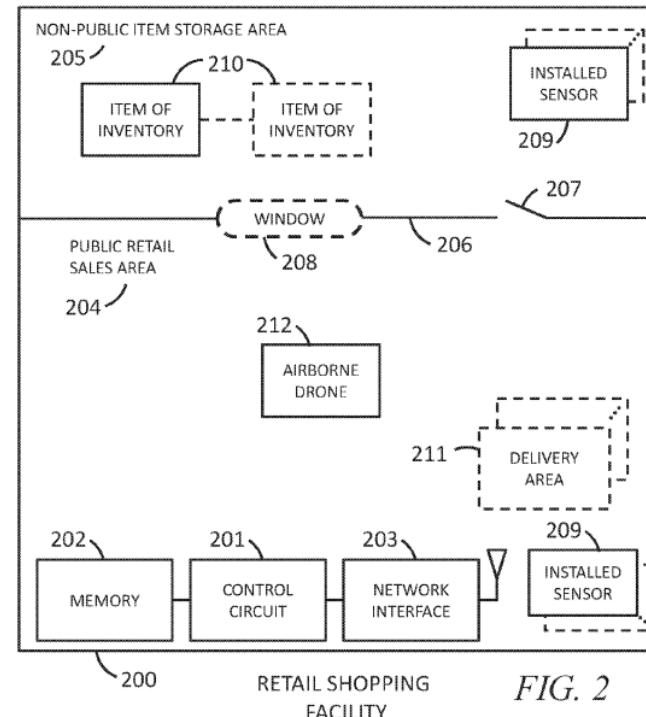
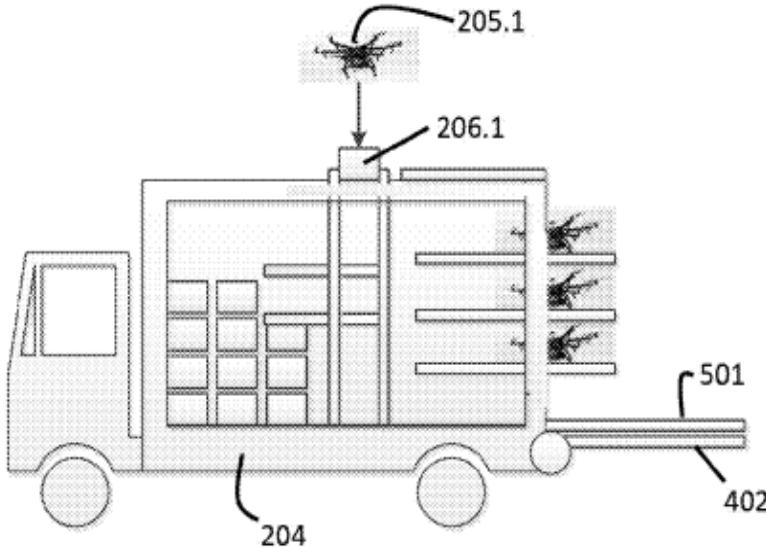
Patent: Distributed processing for preauthorized payment  
Granted: July 2017



Patent: Simultaneous item scanning in a POS system  
Granted: February 2017

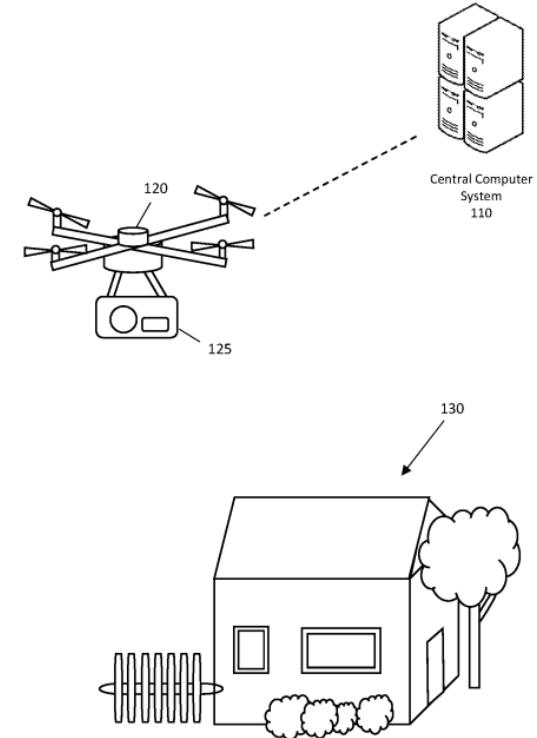
# Observing and serving shoppers by drone

Walmart has filed 25+ patent applications related to drones since 2016.



**Patent:** Dispatching an airborne drone to carry an item to a customer  
**Application:** November 2016

**Patent:** Method to carry an item within a retail shopping facility  
**Application:** September 2016



**Patent:** Apparatus and method for monitoring premises  
**Application:** December 2016

# What's Amazon doing in AI?

AI infuses Amazon's B2C and B2B businesses, while helping Amazon internally.

# Amazon focuses AI efforts on:

Logistics



E-Commerce



Business Services



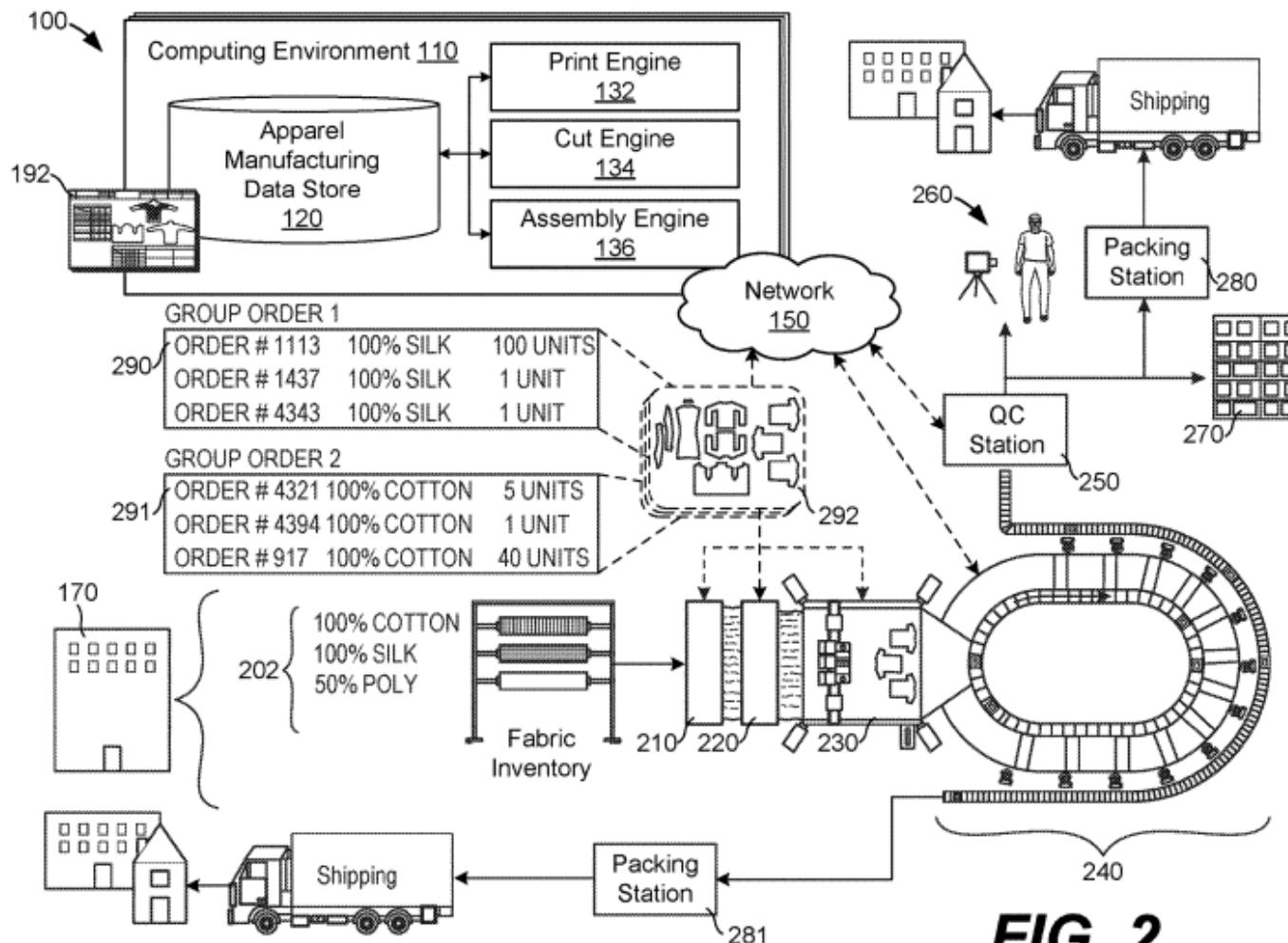
Search

Title	Application Date	Patent Date	Status (Patent / Application)
Unmanned aerial vehicle motor driving randomization for noise abatement	Aug 02, 2016	Oct 30, 2017	Patent
Transportation network utilizing autonomous vehicles for transporting items	Jun 09, 2015	Oct 09, 2017	Patent
Multi-level fulfillment center for unmanned aerial vehicles	Dec 18, 2015	Oct 02, 2017	Patent
Mobile tunnels for operational testing	Mar 12, 2015	Oct 02, 2017	Patent
On-board redundant power system for unmanned aerial vehicles	May 25, 2016	Sep 25, 2017	Patent
Unmanned aerial vehicle secure egress and ingress	Jun 09, 2015	Sep 18, 2017	Patent
Commercial and general aircraft avoidance using light pattern detection	Dec 12, 2014	Sep 11, 2017	Patent
Speech interaction for unmanned aerial vehicles	Feb 27, 2015	Aug 28, 2017	Patent
Tracking unmanned aerial vehicles using reflected light	Aug 18, 2015	Aug 21, 2017	Patent
Airborne unmanned aerial vehicle monitoring station	May 28, 2015	Aug 21, 2017	Patent
Aerial vehicle delivery shroud	Dec 18, 2015	Aug 14, 2017	Patent
Analyzing navigation data to detect navigation data spoofing	Sep 25, 2015	Aug 07, 2017	Patent
Ground-based mobile maintenance facilities for unmanned aerial vehicles	Mar 16, 2017	Jul 31, 2017	Patent
Unmanned vehicle rollback	Mar 27, 2015	Jul 24, 2017	Patent
Trigger agents in video streams from drones	Sep 25, 2015	Jul 24, 2017	Patent
Determining landing locations	Jun 15, 2015	Jul 10, 2017	Patent
Detecting of navigation data spoofing based on image data	Sep 25, 2015	Jun 26, 2017	Patent
Stabilized airborne drop delivery	Dec 02, 2014	Jun 26, 2017	Patent

## Dozens of patents aim to automate supply chain and logistics

By searching on the CB Insights platform for the keyword “unmanned” within Amazon’s patents, we can pull up dozens of automation patents.

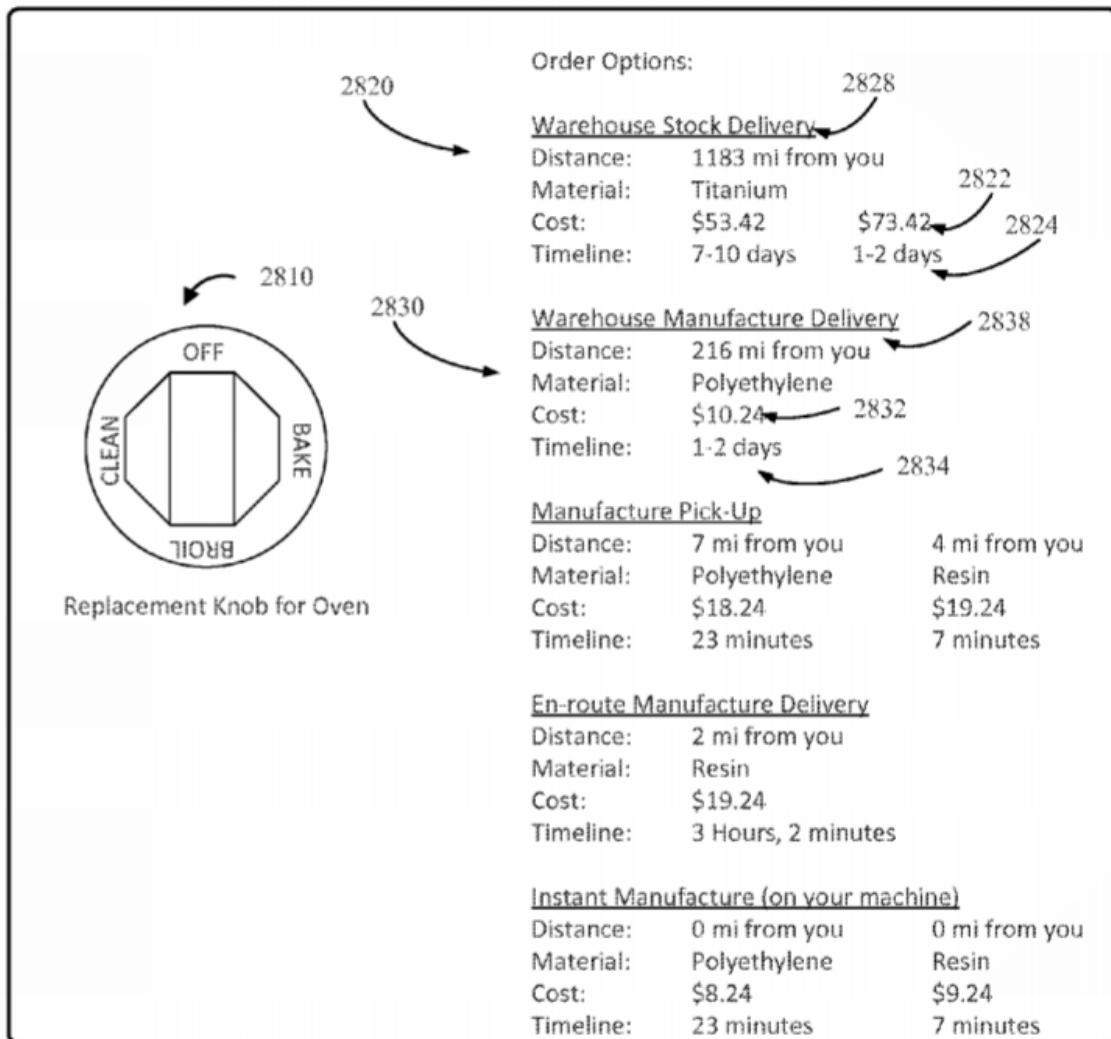
# Amazon considers AI for manufacturing



Patent: On demand apparel panel cutting  
Granted: October 2017

**FIG. 2**

# AI and 3D printing create personalized products



**Patent:**  
Fulfillment of  
orders for items  
using 3D  
manufacturing  
on demand  
Granted: June  
2017

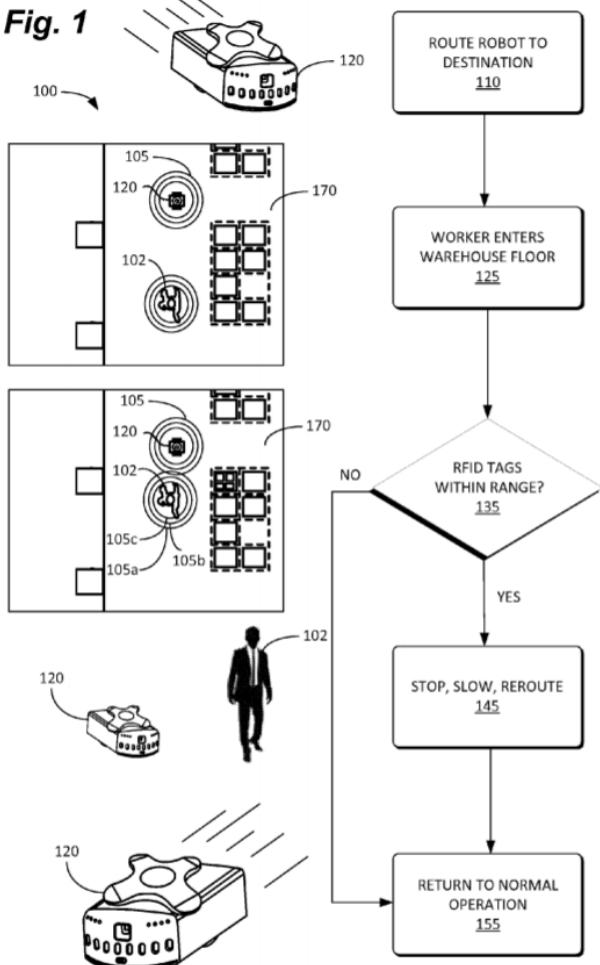
**2206**  
Designs + Manufacture  
“Select a featured item and we  
make it for you”

**2202**  
Designs  
“Select a featured item and  
print it at home”

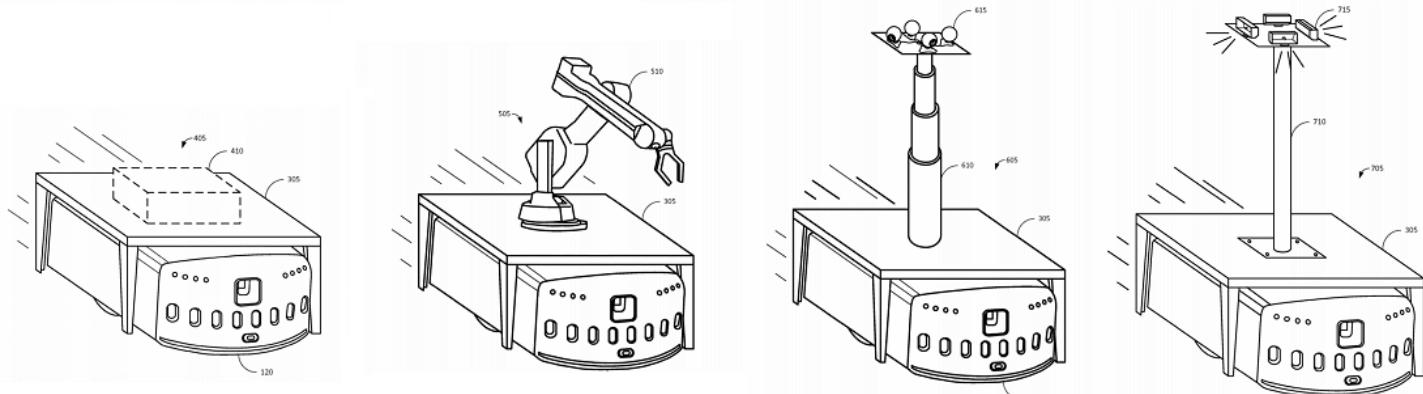
**Patent:** Item delivery using 3D  
manufacturing on demand  
Granted: June 2017

# Amazon automates the warehouse

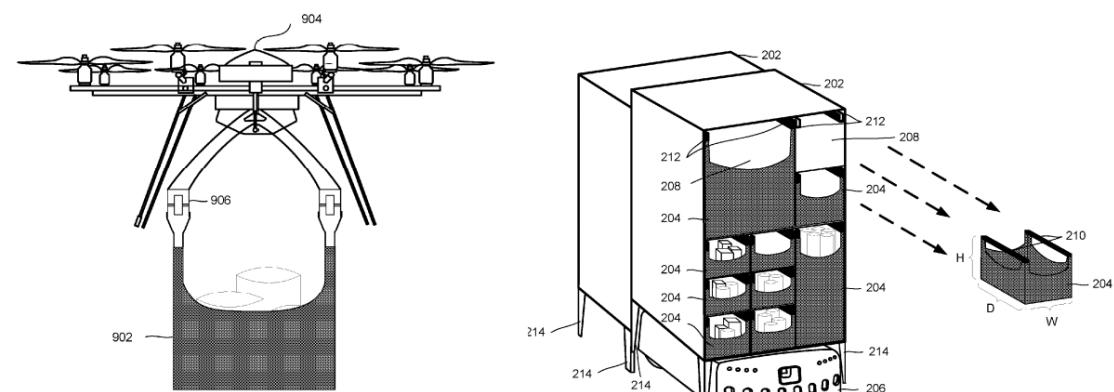
**Fig. 1**



Patent: Systems and methods to facilitate human/robot interaction  
Granted: May 2017

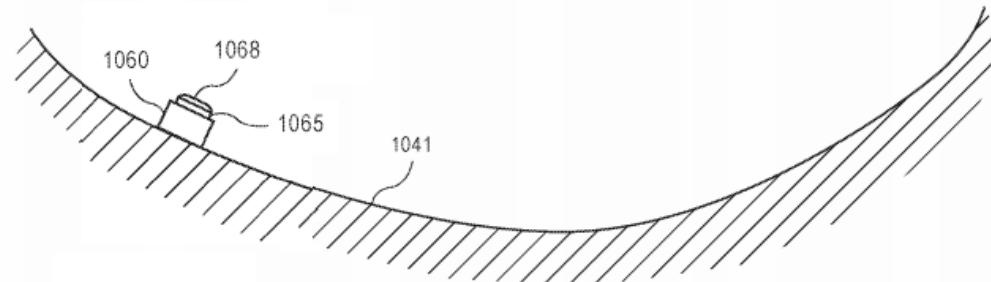
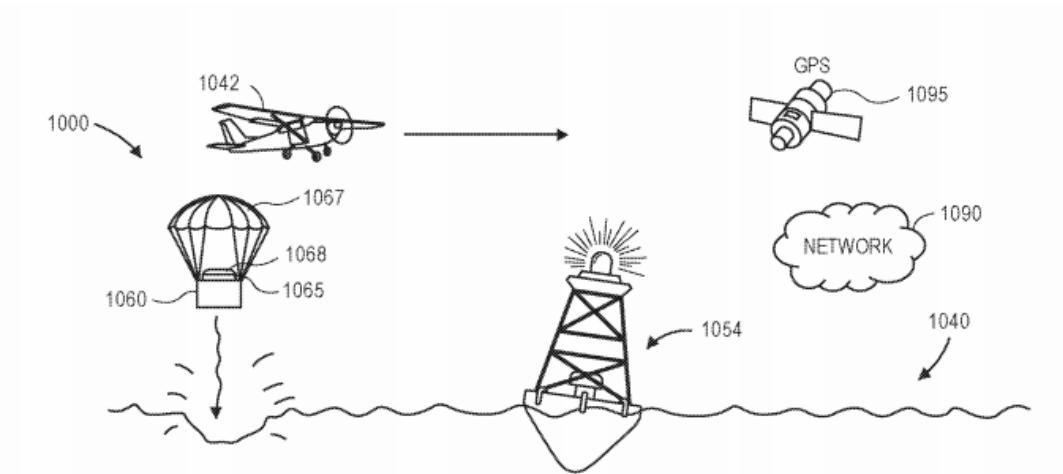
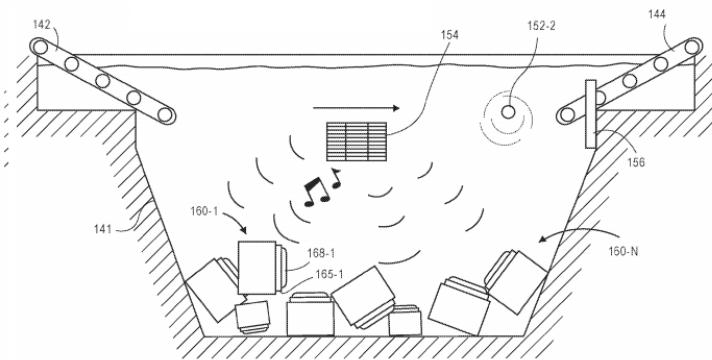
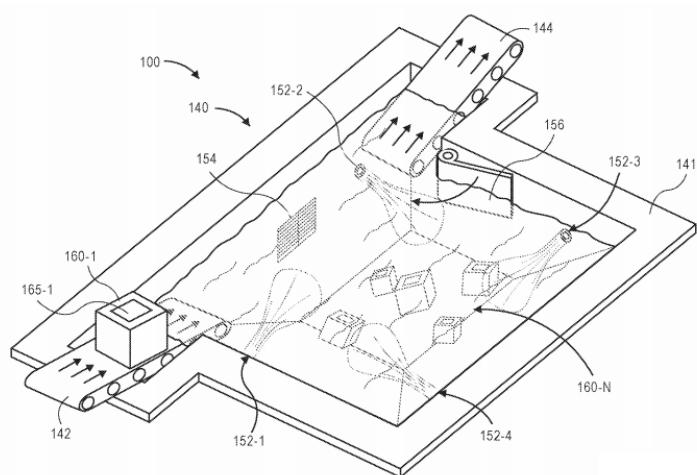


Patent: Modular, multi-function smart storage containers  
Granted: May 2017

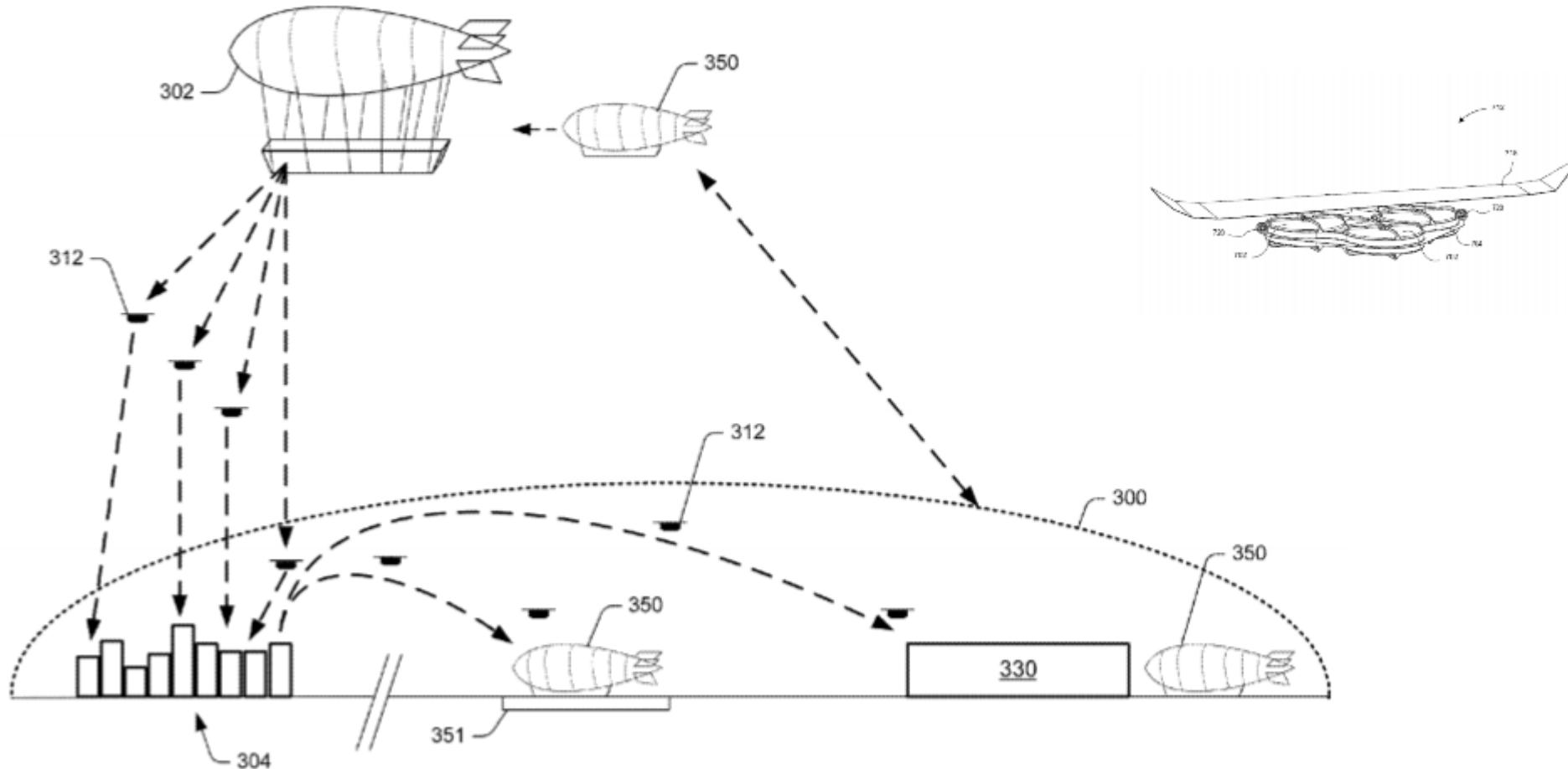


Patent: Inventory facility  
Granted: January 2017

# AI supports entirely new warehouse methods: Under water



# And Above the Clouds



# AI supports e-commerce leadership

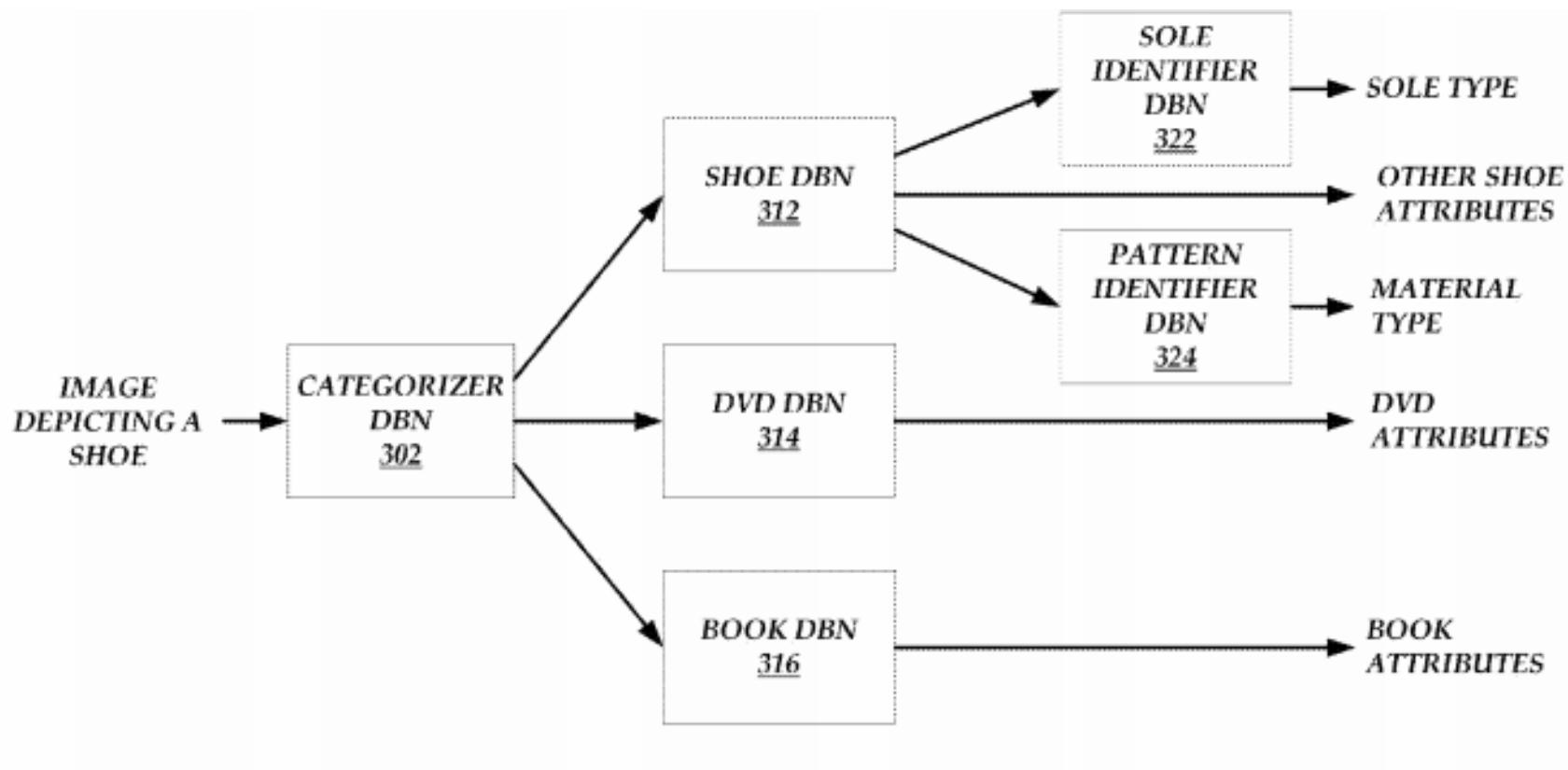


“Machine learning drives our algorithms for demand forecasting, product search ranking, product and deals recommendations, merchandising placements, fraud detection, translations, and much more.”

**Jeff Bezos**

CEO, Amazon

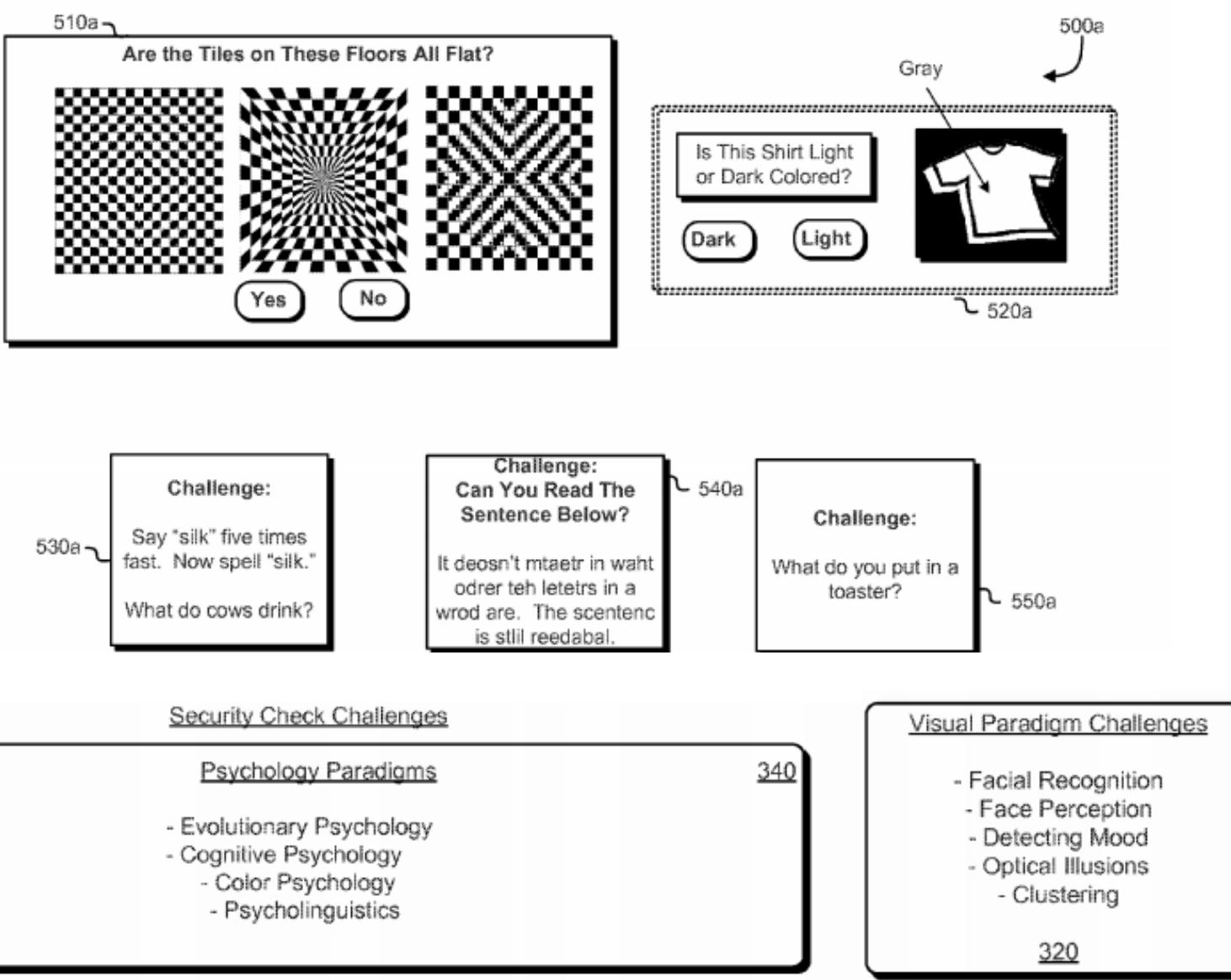
## In e-commerce, patents improve search



Patent: Identification of item attributes using artificial intelligence

Granted: October 2017

AI helps Amazon automate product identification and image tagging. This supports faster categorization of merchandise, and helps the site pull up more relevant products in response to search terms.



## Amazon considers enhanced security in the face of AI

In several patents, Amazon notes that as AI improves, e-commerce sites may have more difficulty separating bots from human users.

In response, Amazon proposes advanced CAPTCHA tests using optical illusions, facial recognition, and more, to verify human users.

Patent: Turing test via reaction to test modifications

Granted: August 2017

# AI creates new purchase platforms

Amazon's consumer smart home products use natural language processing and machine vision – opening new platforms for ordering products, while gathering new data streams about consumers' at-home activity.



Always ready, connected, and fast. **Just ask.**



## Introducing echo show

Now Alexa can show you things

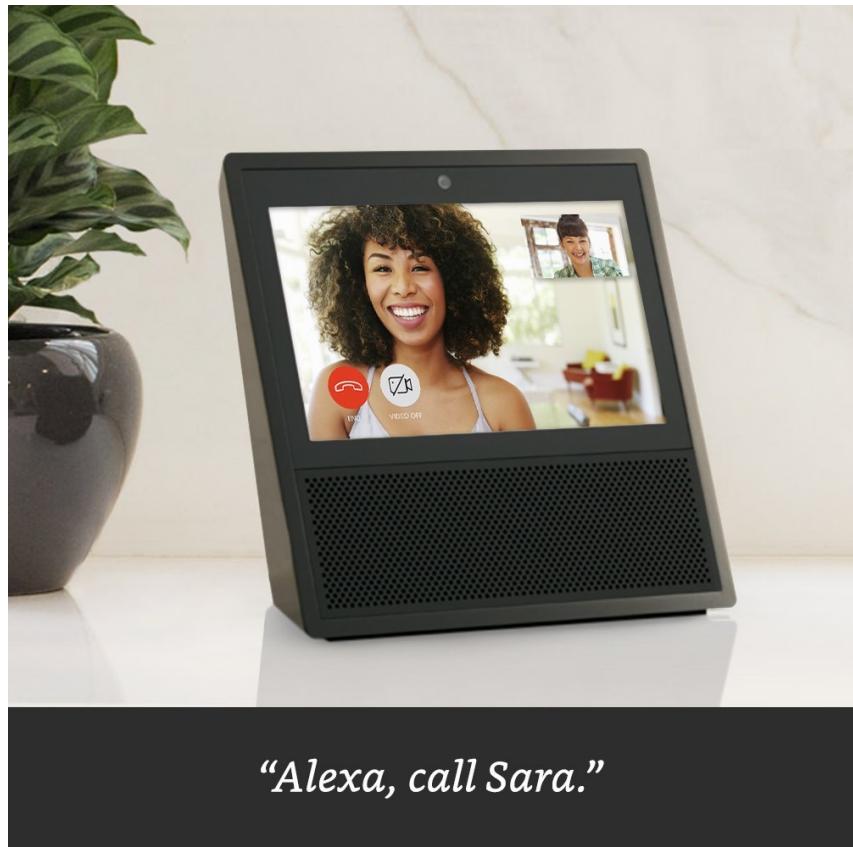


## Your New Personal Stylist echo look



# Combining sales and data collection

In a recent patent, Amazon proposes using at-home video hubs (similar to the Amazon Show) to observe people's activities, emotions, biometric data, and more.



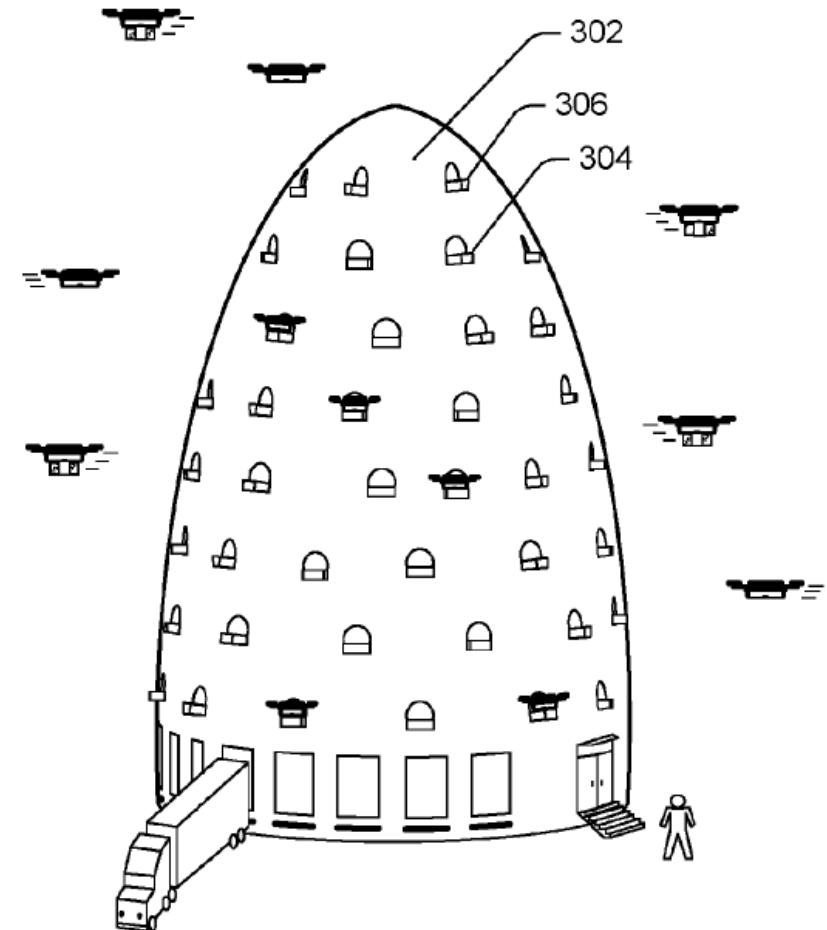
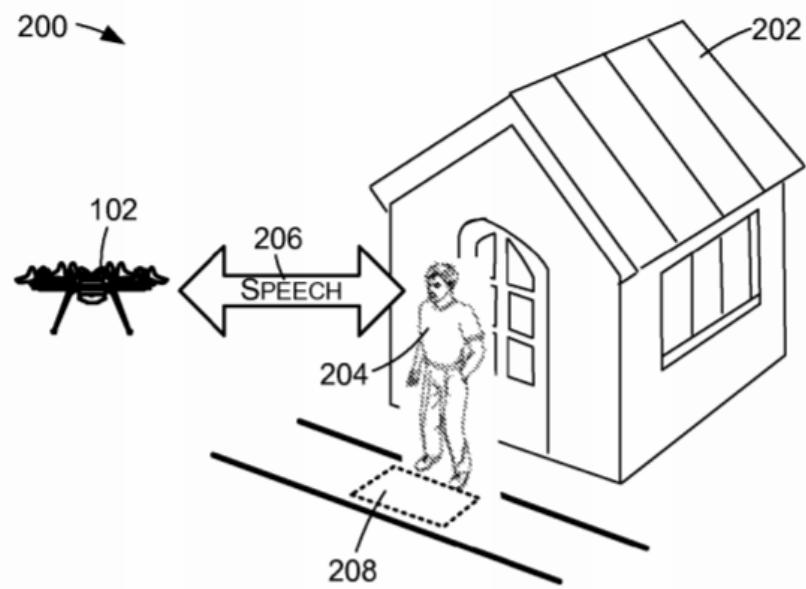
Amazon Show image

Generally, the optical/surface analysis component **412** may be configured to perform any combination of one or more of the following:

- face detection and face-based user identification;
- object recognition;
- product recognition;
- bar code detection and decoding;
- skeletal extraction and tracking;
- gaze detection;
- user attention tracking;
- body and body part detection;
- proximity detection;
- background subtraction;
- document capture and normalization;
- text recognition;
- scene analysis;
- face expression detection;
- smile detection;
- biometric analysis such as pulse detection;
- motion detection;
- distance determination and tracking;
- mood and emotion detection and tracking;
- etc.

Patent: Automatically staged video conversations  
Granted: October 2017

# AI could power drone delivery





Introducing Amazon Go and the world's most advanced shopping technology. No lines, no checkout—just grab and go!



## *Amazon Delays Opening of Cashierless Store to Work Out Kinks*

**Amazon's cashier-free store reportedly breaks if more than 20 people are in it**

Amazon's store of the future is delayed. Now what?

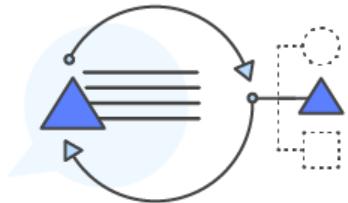
## **However, Amazon struggles with human-free stores**

Amazon delayed the launch of its much-hyped automated grocery store, Amazon Go.

Amazon Go opened a pilot location in Seattle in late 2016 for Amazon employees, with plans to launch publicly in 2017. However, it failed to open as scheduled, facing problems in handling store traffic.

## API-driven Services Bring Intelligence to Any Application

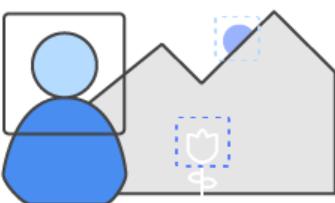
Our AI services provide developers with the ability to add intelligence to their applications through an API call to pre-trained services rather than developing and training their own models.



Amazon Lex



Amazon Polly



Amazon Rekognition

More AI Is Built on AWS Than Anywhere Else



The Washington Post



## Amazon productizes its AI, serves other retailers

Amazon offers APIs that let clients integrate chatbots, voice functionality, and image recognition into products without training their own AI models.

It serves retailers including Nordstrom, Nike, Stitch Fix, and Brooks Brothers.

# AI & AWS: Retail support or threat?

Walmart to Vendors: Get Off Amazon's Cloud

June 21, 2017

THE WALL STREET JOURNAL.

Target is Planning a Big Move Away From AWS As Amazon Takes Over Retail

August 29, 2017



Amazon is Crushing Retailer Load Times

October 17, 2017



The Massive AWS Outage Hurt 54 of the Top 100 Internet Retailers – But Not Amazon

March 1, 2017

BUSINESS INSIDER

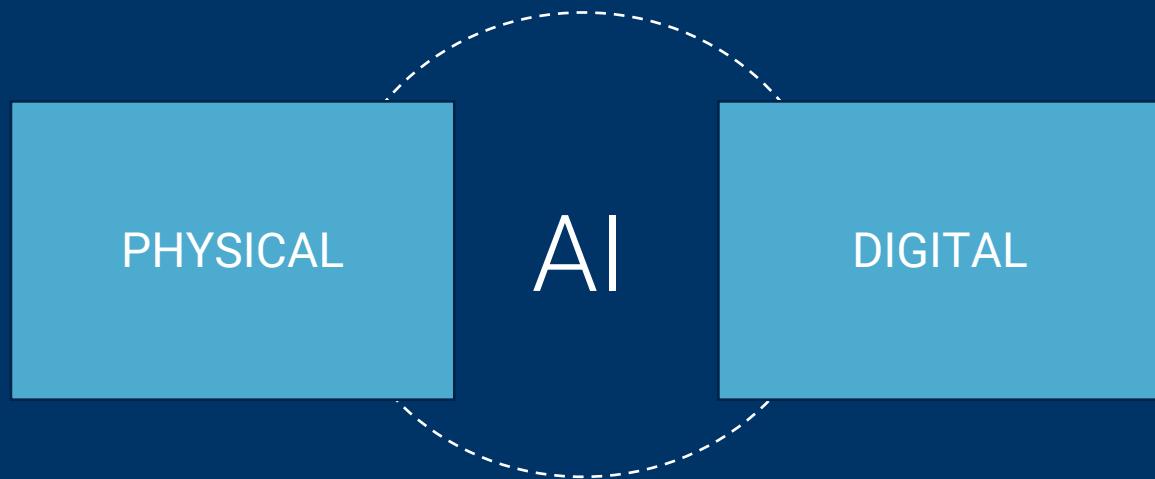
Stitch Fix is Worried About Amazon, but Not For the Obvious Reason

October 19, 2017



Trends to watch  
**M&A targets, big players, future jobs**

# Future of retail is a **fusion** of two worlds



# Startups are acquisition targets for brands and big tech companies

Company	Company Description	Round	Date	Round Investors
Sophia	Sophia is an Ireland-based advertising platform....	Acquired	07/26/2017	Aiquid
UpPoints	UpPoints is a company in Florianopolis that has...	Acquired	03/07/2017	Embraco
Angel.ai	Angel.ai, formerly GoButler, is a technology co...	Acq - Talent	09/20/2016	Amazon
Blackbird Technologies	Blackbird Technologies has developed proprieta...	Acquired	09/19/2016	Etsy
Imagu Vision Technologies	Imagu Vision Technologies, a privately-held Isra...	Acquired	09/10/2016	iCarbonX
Crosswise	Crosswise provides authoritative anonymous cr...	Acquired	04/14/2016	Oracle
Zoyo	Zoyo is an artificial intelligence-powered shoppi...	Acquired	10/28/2015	MagicTiger
TellApart	TellApart is creating a predictive customer analy...	Acquired	04/28/2015	Twitter
Veenome	Veenome identifies objects, brands, products an...	Acquired	03/04/2015	Integral Ad Science

# E-commerce giants will continue pushing the boundaries of artificial intelligence

Alibaba is spending \$15 billion on researching quantum computing, AI, and more

10/11/2017

**THE VERGE**

Walmart will use Nvidia and AI to gain ground on Amazon

9/10/2017

**BUSINESS  
INSIDER**

Alibaba, Amazon Are Picks to Play the AI Future

9/28/2017

**BARRON'S**

To Compete With Amazon, Retailers Reach For AI -- Here's How Some Get It Wrong

10/31/2017

**Forbes**

# Measurable impact and barriers to entry



“The costs out of the gate for these robots are high, especially to run many of the tests. The use cases are still being understood and I think right now most retailers are trying to focus on their e-commerce integration with stores.”

**Bill Lewis**

EVP of Consumer Products (Retail and Distribution)  
Capgemini Consulting

# Preparing for a reshaping of the workforce.

- If retailers look to develop tech in house, AI talent will continue to be in high demand.
- In-store automation would eventually lead to fewer hands on deck for repetitive tasks. But it would put the focus back on customer-facing tasks, strategic planning, and product design, among other things.
- Retraining employees is a recurring theme. But with advances of AI in e-commerce, retail jobs like sales may not translate into e-commerce sales positions.

# Where is **all this data** from?

The CB Insights platform has the details on all the deals included in this report

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