

IN THIS BUILDING DURING THE SUMMER OF 1956

JOHN McCARTHY (DARTMOUTH COLLEGE), MARVIN L. MINSKY (MIT)
NATHANIEL ROCHESTER (IBM), AND CLAUDE SHANNON (BELL LABORATORIES)
CONDUCTED

THE DARTMOUTH SUMMER RESEARCH PROJECT
ON ARTIFICIAL INTELLIGENCE

August 2017

**Artificial Intelligence Applications in Retail –
ComCap discussion materials**

FIRST USE OF THE TERM "ARTIFICIAL INTELLIGENCE"
FOUNDING OF ARTIFICIAL INTELLIGENCE AS A RESEARCH DISCIPLINE

"To proceed on the basis of the conjecture
that every aspect of learning or any other feature of intelligence
can in principle be so precisely described that a machine can be made to simulate it."

IN COMMEMORATION OF THE PROJECT'S 50th ANNIVERSARY
JULY 13, 2006

Because of minds and dreamers like these we stand at the precipice of life changing experiences made possible by over 60 years of hardware and data evolution



We are pleased to present our Artificial Intelligence (AI) Applications in Retail overview

- In the following slides we have synthesized our views on the key themes regarding artificial intelligence and its applications and implications for retail, which holds the promise of completely reshaping the retail ecosystem and consumer experience
- With wide ranging applications throughout the online and offline retail industry, AI is receiving intense interest from investors and established strategic participants. These applications have significant implications for areas such as supply chain and merchandizing improvements, and the customer experience across pre, during and post purchase
- ComCap is a premier boutique investment bank focused on the intersection of commerce and capital, with key subsectors including B2C ecommerce (retailers, marketplaces and digitally native brands), B2B SaaS, B2B services for retail (IT and marketing services, fulfillment and logistics and call center) and payments
- Headquartered in San Francisco, our firm works with **mid-cap public companies on buy-side initiatives**, and with **public and private growth companies on equity financings and strategic M&A**
- In addition to being the only boutique focused exclusively on disruptive commerce models, we differentiate by bringing bulge bracket techniques to emerging models, a strong and uncommon buy-side/strategy practice, deep understanding of industry drivers and synergy analyses, deep relationships across the sector and worldwide coverage with closed transactions in the United States, Japan, China, the ASEAN region, Western and Eastern Europe and Latin America
- We have also provided a brief overview of our firm in this deck as well. If you'd like to connect with us over the phone and/or meet in person to discuss your strategic initiatives, please contact either Aron, or Steve



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ComCap's perspectives on AI applications in retail is shared with 250+ financial and 100+ strategic investors

- ComCap's perspectives on various industries, including AI applications in retail, are being shared with our large network of strategic and financial investors globally
- This facilitates a better understanding of sweet spots for these investors; and ultimately helps to better position a mandated client with selected players
- Unique disruptors are gaining additional global coverage via ComCap's reach

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May 2017
Artificial Intelligence A in Retail – ComCap discussion m

Artificial Intelligence – Key themes for 2017

- Revenue generated from the application of AI software is expected to grow at CAGR of over 56% from 2016 to 2025 which is mainly driven by cyber intelligence and security
- "Conversational commerce" is continuously growing
- Shoppable Content: Buying Direct from Branded Content Enhances Consumer Experience
- Disruptors include startups entering the AI space
- Bringing a complete change in the retail landscape and enhancing the online shopping experience
- Big data will b
- Investors continu
- Various big corporat
- Software is Eating the World

AI disruptors

Potential strategic partner cohorts

Big Data: A game changer in the retail sector

Applied at all stages of the retail sector – assist in predicting trends, forecast the demand, optimizing pricing, identify appropriate customers and approaching them.

Benefit of Retail	Retail Functions	Description
Predict trends, trend forecasting algorithms comb social media posts and web browsing habits	Inventory	Assist in identifying inventory requirements in order to facilitate real-time delivery. Automate order processing to eliminate "out-of-stock" goods
Assist in analyzing customer traffic, flow within the store	Store layout	Sensor data such as RFID's or QR codes can be used to track in-store traffic and shopping habits
Checkout data and monitoring online behaviour can help optimize e-commerce sites	Pricing	Price optimization software helps online merchants to determine hike or reduce prices to make it more competitive. Allows to implement time-based pricing that can be re-adjusted
Customized promotions can be used for localized marketing, pushing coupons and offers to smartphone users based on their location or to visit a commerce sites	Branding	Price optimization software helps online merchants to determine hike or reduce prices to make it more competitive. Allows to implement time-based pricing that can be re-adjusted
Conducts a customer brand sentiment analysis based on behavioural trends	Promotions	Assist in creating custom offers based on browsing history and other data sources
Inventory model being accepted by fast e-commerce players	360 degree view of the customer	Helps analytics assist in understanding the customer behavior, refining the way to interact with the customers
Behavioural targeting, psychographic segmentation, or purchase pattern analysis assist in offering personalized products	Marketing	Conducts a sentiment analysis to understand the nature of the customers and to develop the marketing strategy accordingly

Financial and corporate investors landscape

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1 AI applications and implications in retail: An overview

AI in Retail – Key Themes for 2017

1

Revenue generated from the application of AI software is expected to grow at CAGR of over 56% from 2016 to 2025; 45% of retailers plan to utilize AI through chatbots or digital assistants to enhance the customer experience

2

“Conversational commerce” is continuously growing

3

Contextual commerce: native advertising evolves to buying direct from branded content, enhancing consumer experience

4

Disruptors include startups entering the AI space

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AI brings a complete change in the retail landscape and enhancing the online shopping experience

6

Big data will become the big friend of customer insight professionals

7

Continued investment in the industry at all stages

8

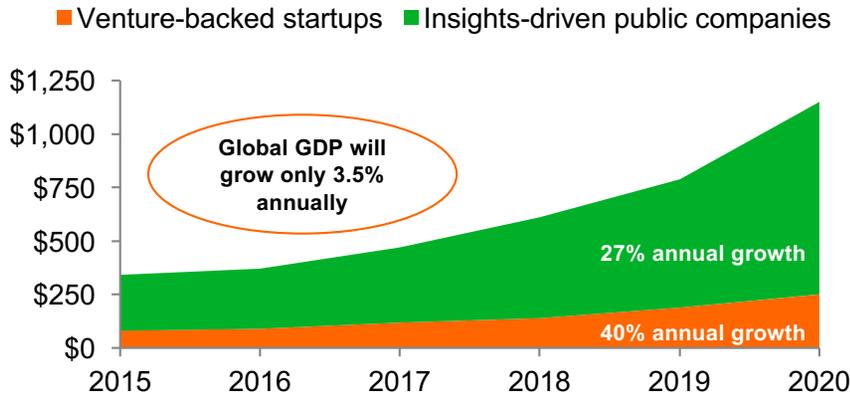
Strategics acquiring start-ups: creating an “arms race for intelligence”

9

Software is eating the world, but AI is going to eat software

1 AI software to grow from \$644m in 2016 to \$37b in 2025

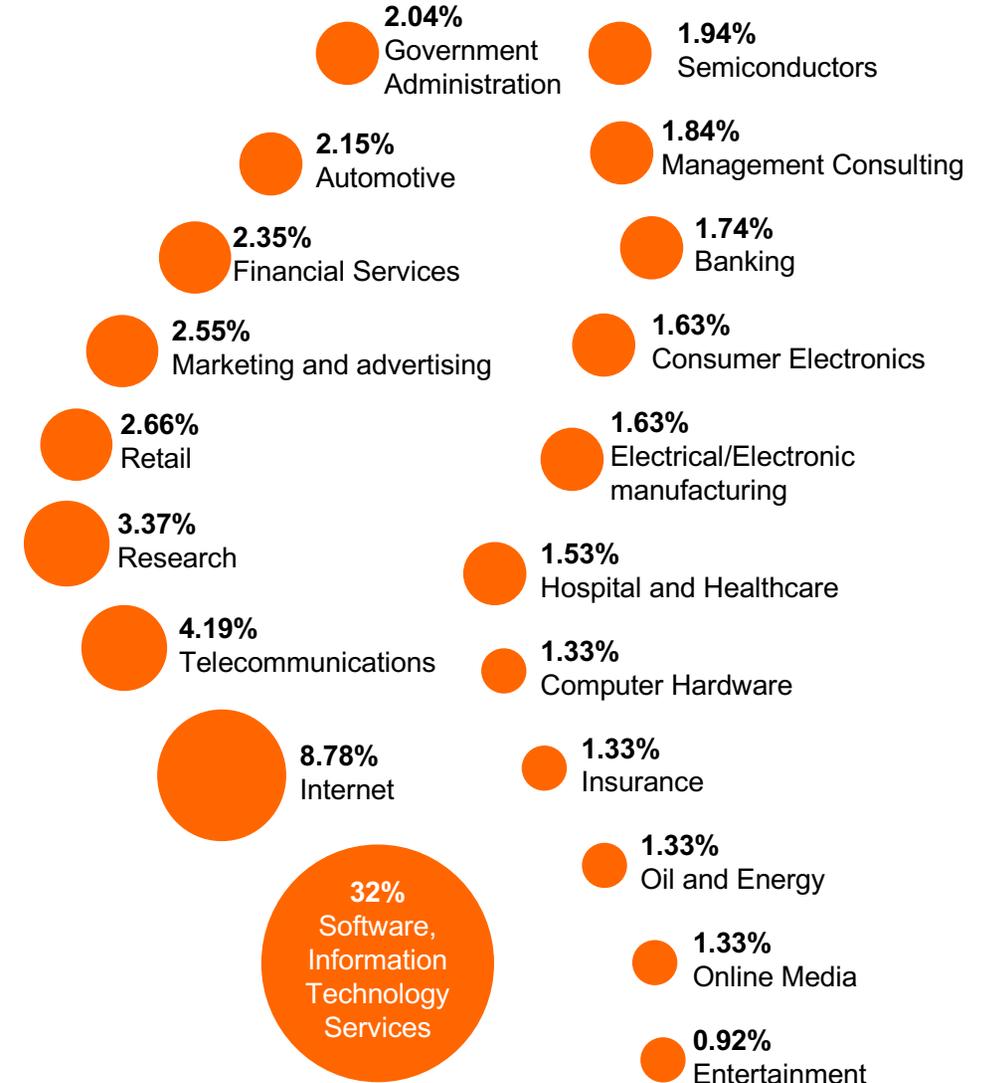
Insight driven businesses will yield \$1.2 trillion annually by 2020
(Revenue forecast of insight driven business, \$bn)



Note: The data point for public companies in 2015 is actual revenue; all other data points shown are estimates or projected figures
Source: Economic Intelligence Unit, Morningstar, Pitchbook data

Global AI revenue: 2016 - 2025
(\$ bn)

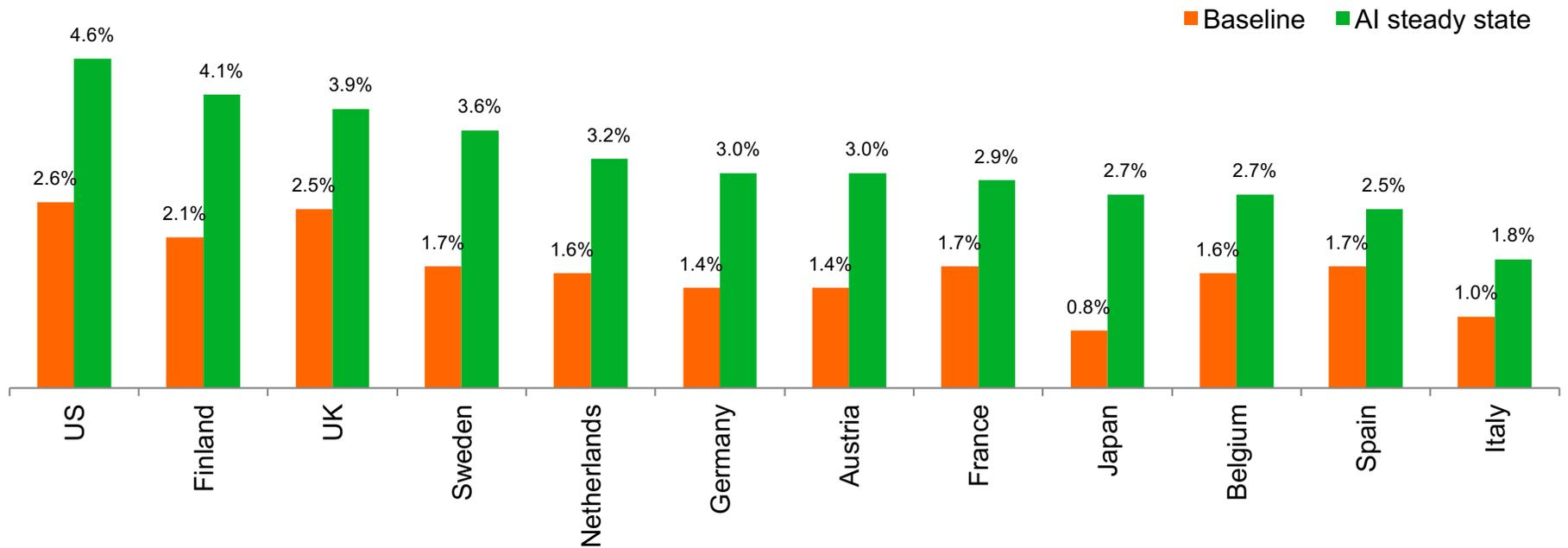
Sectors investing in AI by industry
(In %)



Source: Accenture; Spiderbook

① AI has the potential to double annual economic growth rates...

Real Gross Value Added
(% Growth)

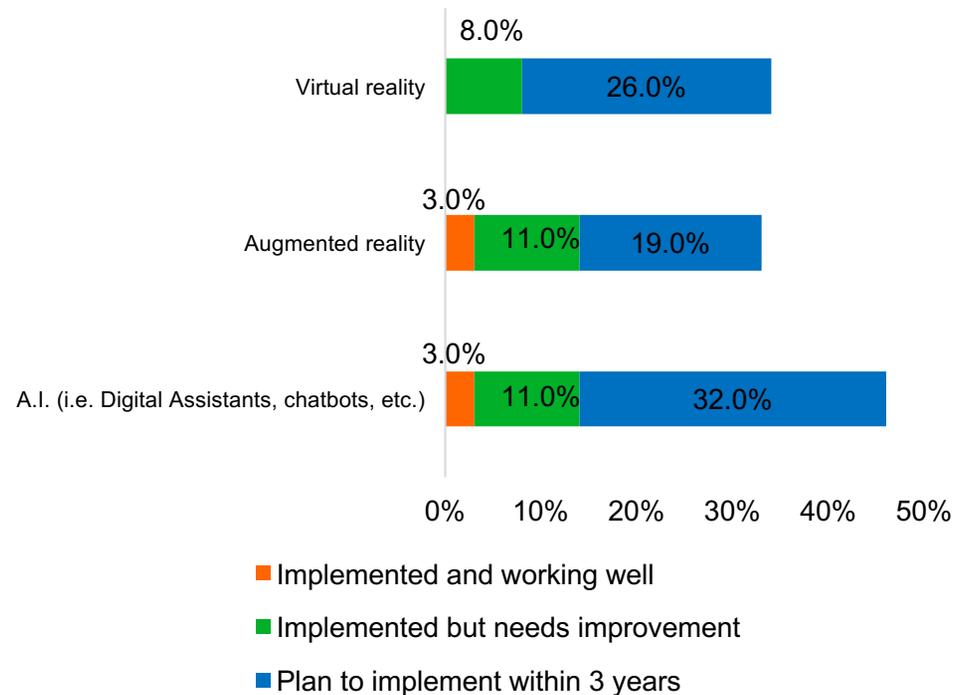


- **Baseline** indicates the expected annual economic growth rate under current assumptions about the future
 - **AI Steady State** shows expected economic growth once the impact of AI has been absorbed into the economy
- According to Accenture, AI yields the highest economic benefits for the US in absolute terms, culminating in a 4.6% growth rate by 2035
 - The two main factors that are enabling AI growth are unlimited access to computing power and growth in big data
 - With AI as the new factor of production, it can drive growth in at least three important ways
 - First, it can create a new virtual workforce, known as “intelligent automation”
 - Second, AI can complement and enhance the skills and ability of existing workforces and physical capital
 - Thirdly, AI can drive innovations in the economy

1 45% of retailers plan to utilize AI through chatbots or digital assistants to enhance the customer experience

- Consumers are becoming more comfortable with chatbots that will gradually replace the traditional customer service. Marketers expect that human interaction may be perceived as less efficient than artificial intelligence
- In 2016, virtual and augmented reality gained acknowledgement and hype with the advent of Pokémon Go and virtual reality glasses, such as Google Cardboard, which made the technology available to the everyday consumer
- According to a GPSopper survey, consumers are interested in using virtual and augmented reality as part of the shopping experience
 - Half of the GPSopper respondents want to use AR to get additional information about a product, such as ingredients or the materials used, while 42% want to use VR to see where / how a product was made
- AI offers the ability to exploit the vast amounts of data gathered on customers and their preferences to personalize the customer experience
 - Amazon and other multi-channel retailers are currently experimenting with AI to offer purchasing suggestions based on answers to a series of questions and past purchase history

Customer Service Technologies



Disruptive technologies such as artificial intelligence, augmented reality, and virtual reality are changing the shopping experience and the customer journey

① Value proposition offered by chatbots...



1 Chatbots transforming the retail industry

Retailers	Description
	<ul style="list-style-type: none"> • Taco Bell has teamed with Slack to launch “TacoBot” • TacoBot, will answer questions and also make recommendations from the menu along with keeping a tally of the order • The user can pay through TacoBot and pick up the order from the nearest Taco Bell participating store • Currently, it is being tested with a number of companies including Giphy, Fullscreen, and FoodBeast
	<ul style="list-style-type: none"> • H&M launched chatbot “H&M KIK” bot in April 2016 • The H&M KIK bot is a brand extension tailored towards customizing the user’s shopping experience • Consumers can look for outfit inspiration or try out a new style by browsing through options by chatting with H&M on KIK, as if they had a personal stylist
	<ul style="list-style-type: none"> • “eBay ShopBot“ has been launched in beta on Facebook messenger • eBay ShopBot is a personalized shopping assistant that helps users find the best deals from eBay’s one billion listings
	<ul style="list-style-type: none"> • “Anker Chat” was launched on Facebook messenger in 2011 • Anker Chat is one-stop-shop for all the Anker products • Anker Chat guides the user through conversation funnels based on some simple questions to recommend a product at the end
	<ul style="list-style-type: none"> • “Niro bot” was launched on Facebook messenger in 2016 • KIA launched Niro bot for campaign of its new Niro hybrid model • Niro bot provides with the features of the car including guided vehicle discovery, expansive technical knowledge, step-by-step tutorials and test-drive scheduling • The bot is supported by Kia representatives who can enter the conversation, if a customer asks to speak with a person
	<ul style="list-style-type: none"> • Nordstrom launched its first chatbot on FaceBook and KIK messaging services in December 2016 • The chatbot engages with the users by asking questions and responds with tailored gift ideas based on their answers.

② “Conversational commerce” is continuously growing

Conversational commerce indicates convenience, personalization, and decision support while people are on the go, with only partial attention to spare.....according to Chris Messina, a former Uber developer

Goodbye chat, hello conversations

- Social media, mobile devices and bots assist in creating conversational commerce. The practice of establishing a direct, colloquial connection with consumers to create brand awareness, facilitate CRM and enable transactions

Messaging apps create a new ecosystem for brands

- To inquire about the store working hours, location or inventory; ask general questions; make an order; take an appointment, share photos and feedback messages

Where the conversations are happening now

- Facebook Messenger and Facebook-owned WhatsApp have the largest global user base, dominating throughout The Americas and EMEA

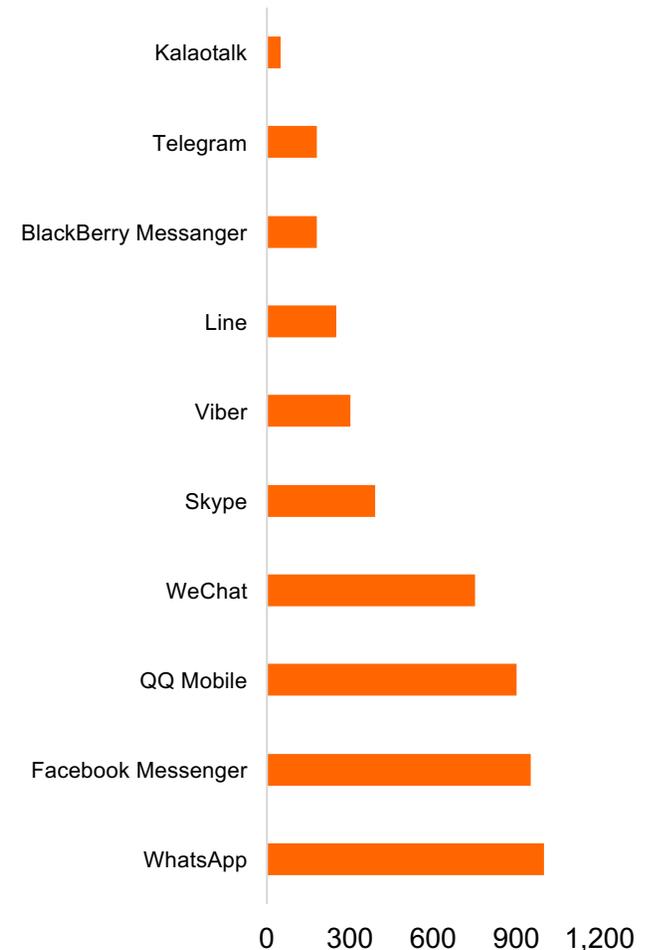
The majority of people use more than one app, so brands must diversify

- Apart from Facebook, marketers need to identify what are the other messaging apps that are popular among the target audience

MEC Consumer Pulse: A look at consumer behavior

- Smartphone owners are more likely to use Snapchat, WhatsApp, Instagram, Viber, WeChat, and Telegram
- Messaging app usage drops off among 45+ year olds, but is still relatively high among Facebook and Skype

Global Monthly Active Users By App (In Millions)



② “Conversational commerce” is continuously growing (continued)

Creates value throughout the consumer journey

- Bots can scan a database and return product details, advice or account information in a matter of seconds
- Customer service requests will begin to flow to conversational channels and bots, leading to greater efficiency and lower CRM costs for brands

Evolving conversational channels

- Voice assistants are becoming a common user experience layered in mobile. and will be integral to the connected home, connected car and other touchpoints in the internet of things

Near-future conversational apps

- Messaging is now a standard feature of many types of apps and bots
- Some of the new apps including dating apps, lifestyle apps and networking apps
- IoT opportunities are continuously emerging, but brands need not wait to test the waters

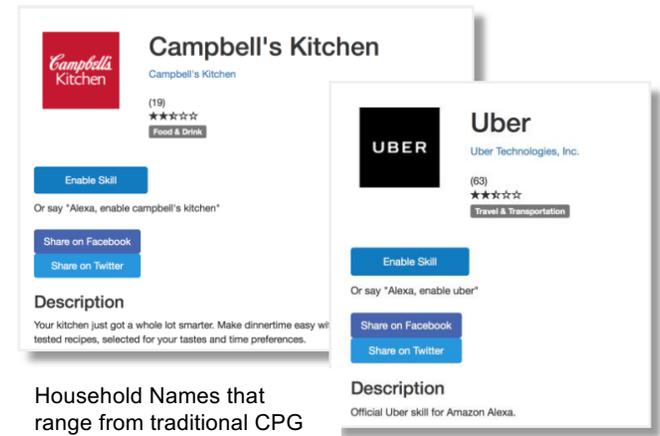
The majority of people use more than one app, so brands must diversify

- Select the appropriate platforms and map out a content & UX strategy for each
- Consider long-term distribution outside of messaging
- Plan for natural—and eventually paid—search

Innovative use of conversational commerce

- Various companies are using chatbots to get benefits of conversational commerce such as discovery, brand awareness, commerce and CRM

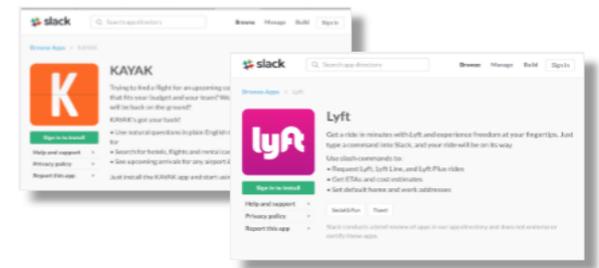
Evolving conversational channels



Household Names that range from traditional CPG brands like Campbell's to new digital-first titans like Uber are developing skills for Amazon Alexa

Source: Spot-Light on Conversational Commerce

Business productivity apps, like Skype and Slack, are likely to be the forerunners on bot interoperability



Source: Spot-Light on Conversational Commerce

3 Contextual commerce: buying direct from branded content enhances consumer experience

Contextual commerce is online content – videos, articles, reviews, photos and so on – from which consumers can buy the items featured within it directly, without being redirected to another site

- ✓ *In 2017 shoppable content will turn the smartphone into a mobile shopping experience*
- ✓ *The new technology that is artificial intelligence is weaving together content and shopping*
- ✓ *Consumers can take pictures of items they like, search visually online and get personal recommendations based on AI-generated models*
- ✓ *Machine learning can analyse every click on an online inventory in real time to understand customer preferences and create a personalised shopping experience*



bringhub

- Developing platforms that add full commerce functionality to publishers' content
- These new tools are empowering brands and publishers to monetise their content without requiring developer resources or complicating existing infrastructure and workflows

Brands take advantage of the trend

- Allows advertisers and publishers to keep consumers on both their owned sites and editorial platforms rather than forcing them to go elsewhere to buy
- The brands need to plan their strategies around a circular consumer decision journey rather than a linear sales funnel.

Implications for brands

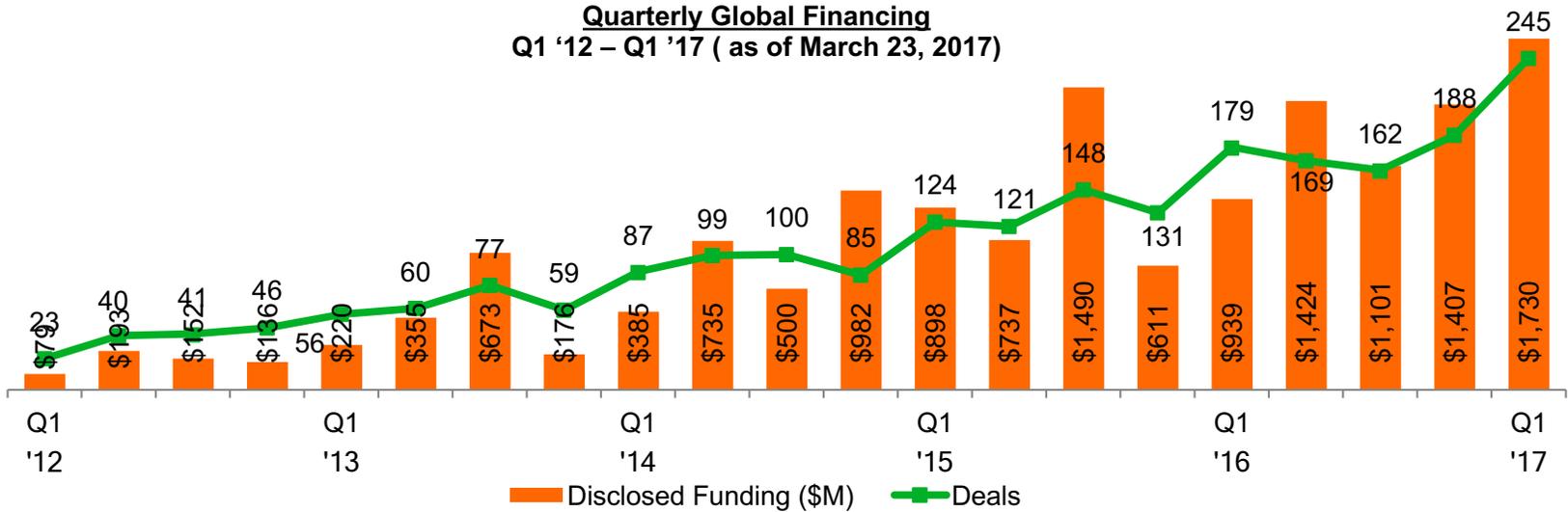
- Brands need to make the route from discovery to purchase as easy as possible
- Content creation is a combination of visually compelling images and interactive features
- Consumers are interested in the stock, ease of payment, prompt delivery and free returns

3 Contextual commerce – the next big wave

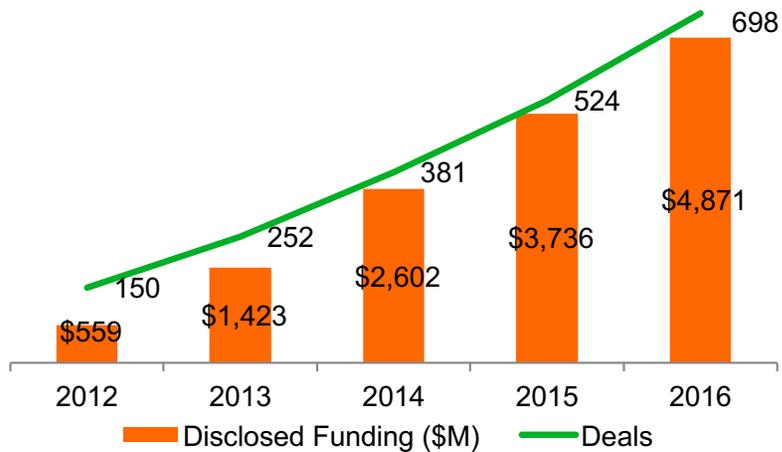
Retailers	Description
	<ul style="list-style-type: none"> • Harper's Bazaar partnered up with Hannah Bronfman to make a "Hannah Bronfman for <i>Harper</i>" touchable ad • The video featured high-fashion garments streamed in from Bazaar's own online shop • The viewers had to just press "play" and on tap the clothes, and shop directly from the screen • The video was followed by a digital issue. The shoppable video got 80K shares on social media while the "normal" article received only 138 shares
	<ul style="list-style-type: none"> • Puma created a shoppable video "Forever Faster" to launch its new collection of football sportswear • The video allowed viewers to click on the screen to purchase products • According to Fashion & Mash, the video boasted a 6.9% conversion rate, earning a 24x times higher earning per click than is usual in in the e-commerce industry
	<ul style="list-style-type: none"> • One Kings Lane, uploads a new photo daily of a stylishly furnished room in its "Today's Room Crush" category • Each and every piece of furniture displayed has a hotspot mark, which leads the viewer to a detailed product description and an option to add the product to cart and immediately proceed to checkout
	<ul style="list-style-type: none"> • Bravo TV, a part of Bravo Media, is a pioneer of T-Commerce (trade via smart digital TV-set) • It launched an interactive TV series called "The Girlfriend's Guide to Divorce". Wherein, the viewers could hover over the bubble on top of the video screen, that showed exactly the same products that the star is wearing on the screen. The viewer could review details and buy them
	<ul style="list-style-type: none"> • Ted Baker launched a shoppable video during Christmas, "Ted Presents" presenting products in a interactive and simple way • The video had clickable embedded hotspots • Viewers could open a pop-up, read more information about the item and either hit the "shop now" button or continue watching the video
	<ul style="list-style-type: none"> • Monsoon, created a digital lookbook "Swoon" for its Autumn / Winter collection, 2014 • The viewers could play with the products , see what happens and be entertained and inspired, before they were ready to make an actual purchase

4 AI global financing history

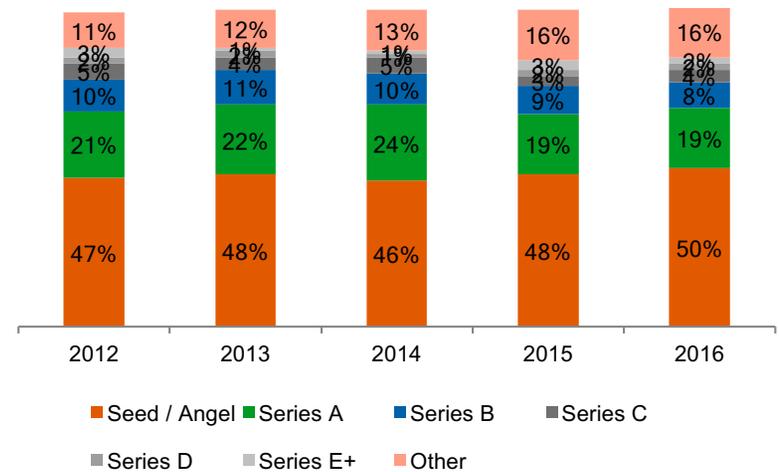
Nearly 48% of the deals in 1Q 17 were in seed / angel stage, indicating newer companies are continuing to enter the industry. Deals to AI start-ups increased 4.6x in the last 5 years, from 150 in 2012 to 698 in 2016



AI annual global financing history (2012-2016)

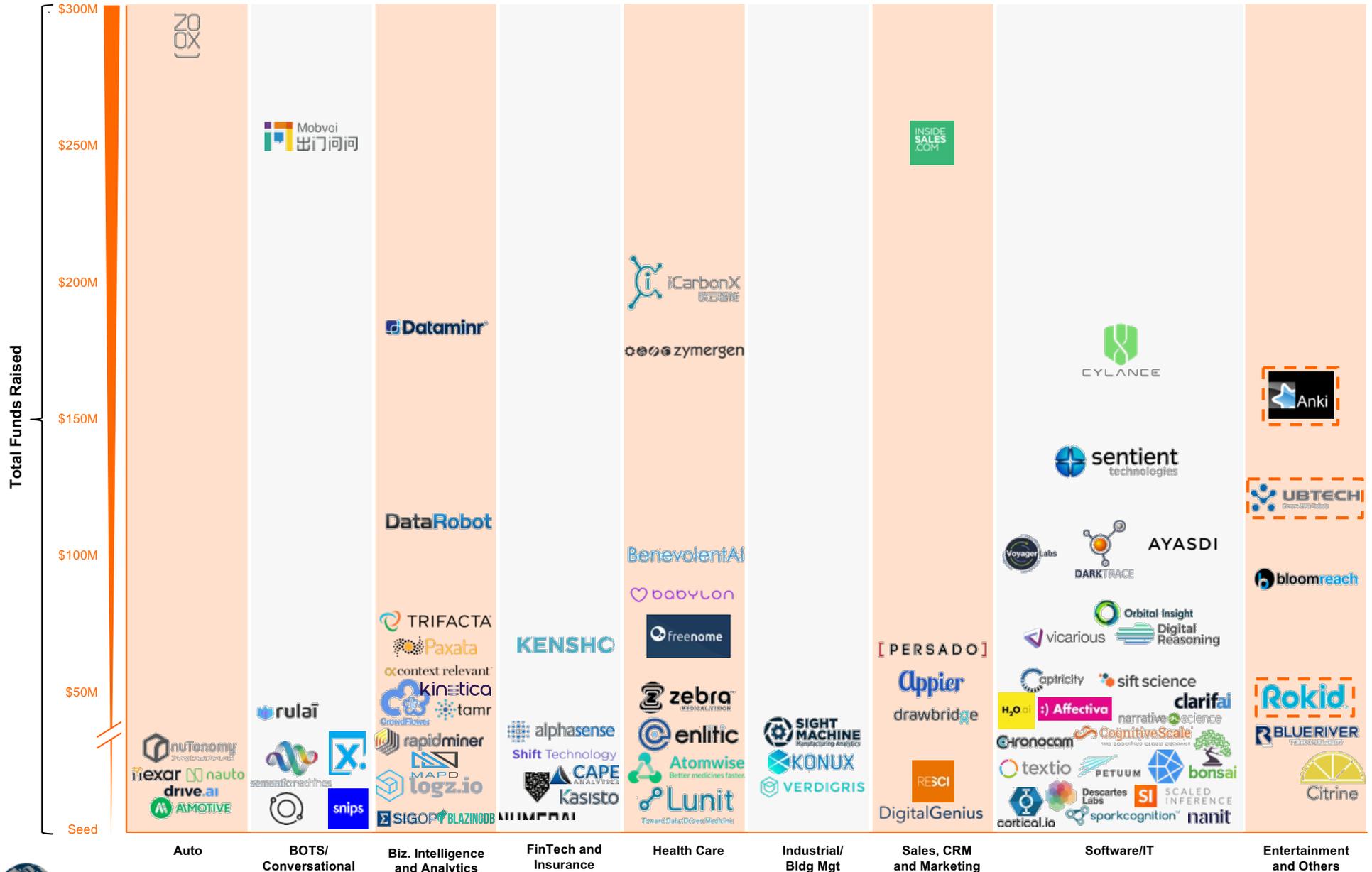


AI annual deal share (2012-2016)

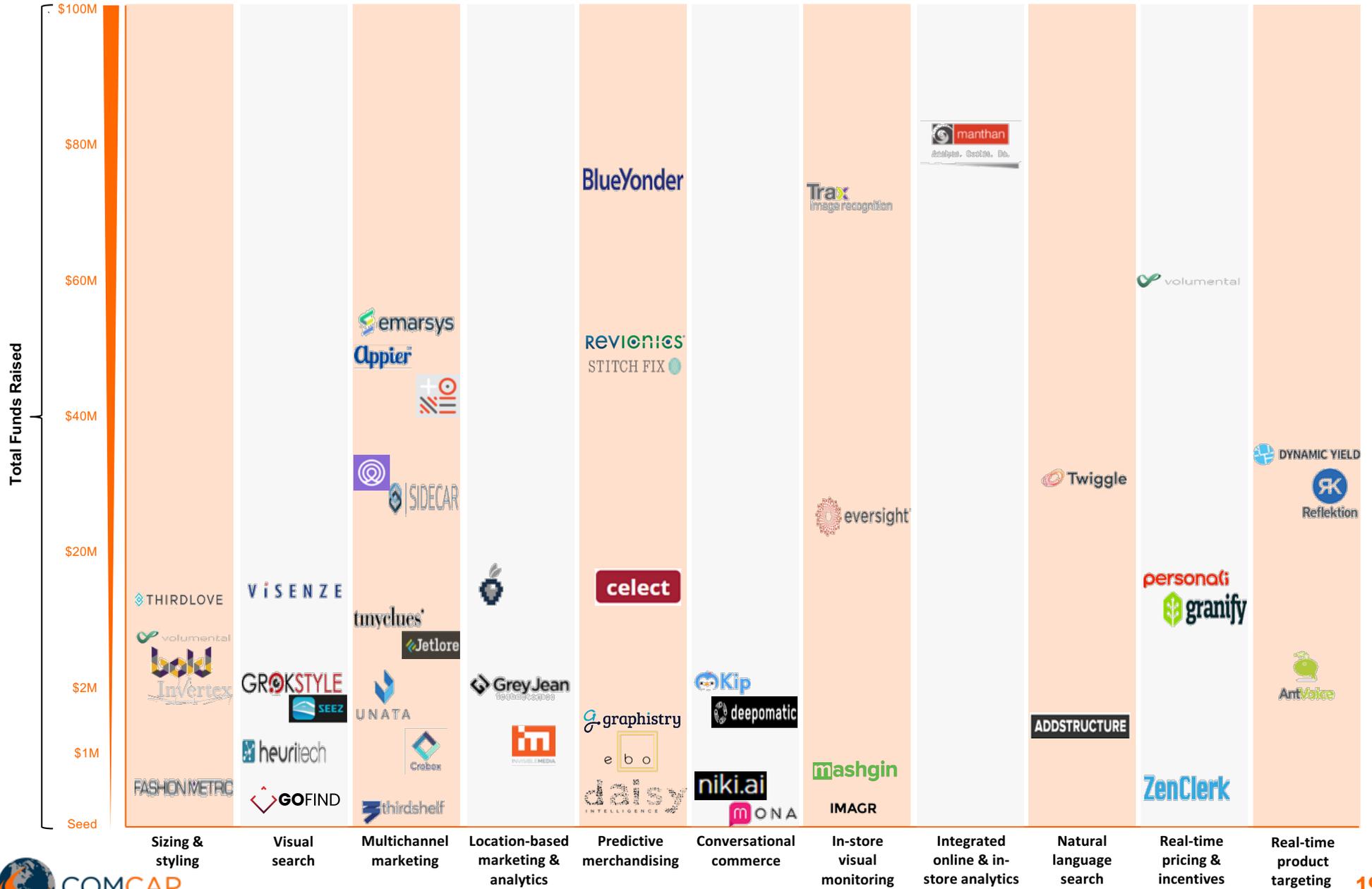


4 AI disruptors

 Entertainment



4 AI disruptors



5 AI strategies that are transforming the retail industry

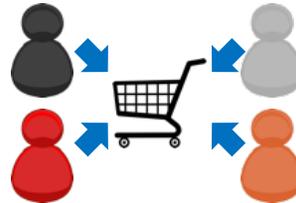
Strategies	Description
Personalized online shopping	<ul style="list-style-type: none"> Personalised shopping experience has given a rise to personalised page, personalised search results, personalised product recommendations, and personalised offers <ul style="list-style-type: none"> Personalised pages: It can be the landing page as well as the product page. By tracking the user's past activities on the website, the company can analyse and predict the likes and dislikes of the user Personalised products recommendations: After understanding the behaviour of the consumer, the company can make recommendations the possible items to be purchased
Virtual reality	<ul style="list-style-type: none"> Through VR, the user can visit various stores, view their entire catalogue, look for all the latest collections from their favourite brands or designers VR store is very well arranged to locate the category of the products and helps you find what you are looking for
Video analytics	<ul style="list-style-type: none"> Provide useful insights on how much time a user spent on each product, who is taking the product from the self and without putting it to the cart keeping it back on the self This information assist in analysing the offers to be given and to increase the footfall in the physical stores
Augmented reality	<ul style="list-style-type: none"> Various brands / retailers can promote their product using the technology. The can launch their user manual in a short video for the user on hovering the camera over the logo on the product packaging For example: For home decor industry, from the store catalogue, user can scan the barcode of the item he likes, and after coming home can see the product in the real world with the camera positioned at the place where he wants to keep the liked
Offline Stores	<p>Assist in improving the buying experience at physical stores:</p> <ul style="list-style-type: none"> Kiosk implementation: Can share the image of a particular product either through Bluetooth/ Wi-Fi and the kiosk pops up with the exact product / similar products present in the store Virtual trial mirror: If a client stands in the front of mirror, he can have a view of the entire catalogue in the front of big mirror. The customer can view different product on themselves, change the background, the colour of the dress, take a selfie, match with the complementary products and see the entire look without actually wearing the dress

5 Main Applications of AI in Retail

AI Empowers Retailers to a more efficient use of data



Analyze shoppers' behaviour



Optimize approach to customer



Anticipate consumer demand

Retailers use AI to analyze customer data in order to gain a better understanding of consumer behaviour, to adapt the approach through which the company interacts with shoppers and to predict consumer demand

Personalization

- AI enables retailers to offer a personalized approach to each customer through customization of shopping recommendations, eCommerce and m-commerce portals layout and promotions

Customer service

- AI is used to operate chatbots that mimic the client's interaction with a sales associate or customer-care assistant
- The technology is able to detect the tone of the user's messages and understand what is the best way of responding to the client's need

Inventory management

- Retailers can predict what customers are likely to buy in the near future
- Enables retailers to maximize the probability of having the right items in stock as the customers order them, which results in faster fulfilments & leaner inventory operations

5 Improving online shopping experience for consumers and retailers

AI is altering and changing the ways the e-commerce stores operate as they are offering new ways of analyzing Big Data that helps retailers to have a better engagement with their customers and create better customer experiences

1. Personalizing the customer experience



- The right person needs the right message at the appropriate time – this increases client conversions



- Technology will assist in analyzing what the customer has done in past and on that basis they can predict the future course of action – results in machine learning systems and cognitive computing
- With the assistance of self learning algorithms they can deconstruct **Big Data** to create incredibly targeted user experiences

2. Creating Virtual Buying Assistants

AI can be used to create virtual buying assistants:

For example: you can already be notified when an airfare drops

But at present, these can be unpredictable and frequently change



Rather than an alert, you will be sent a ticket confirmation which has been achieved at the best possible price

This could be tailored across all e-commerce situations

5 Improving online shopping experience for consumers and retailers (continued)

3. Making conversions and improving order fulfilment

Creating conversations through AI is something many are predicting:



Voice activated apps



Chatbots



Chatbots will be valuable when they can operate autonomously in a variety of contexts

For example: if a chatbot was connected to a customer relationship management system



The chatbot looks through their personalized profile and the delivery status to provide the right response



This response is personalized and helps to improve customer satisfaction and the fulfilment process with real-time updates being available to customers

This chatbot can create a richer experience by pulling together a number of different sources

4. Analyzing Big Data



Assist marketers in increasing their overall profit by having fewer discounts or markdowns



Assist brands to be the first to start marketing styles that are likely to be on-trend in the short or medium-term



Assist merchandisers, buyers and designers to use these insights to predict what clothes a customer wants before they know themselves

5 Retailers and Tech Firms are collaborate to implement AI

Retailers	Description
	<ul style="list-style-type: none"> • Amazon Echo is a small device with an embedded microphone that connects the user to Amazon's AI-powered intelligent personal assistant Alexa • Users of the Amazon Echo device can ask Alexa to shop for products, but only those users with Prime memberships can buy directly through the virtual assistant via voice command • The device enables the user to receive information and services by voice command • Amazon Echo is one of the best known applications of AI by a retailer
	<ul style="list-style-type: none"> • Lingerie firm Cosabella collaborated with tech company Sentient Technologies to deploy AI on its website • Cosabella uses an AI-powered algorithm to test alternative options for its website design based on the conversion rate generated by each variant • Sentient also uses AI to help retailers increase m-commerce conversion rates
	<ul style="list-style-type: none"> • Vue.ai, a sub brand of Indian tech start-up Mad Street Den • The AI technology behind Vue.ai enables retailers to personalize the website based on individual shoppers' preferences • The technology learns from shoppers' browsing and shopping histories and displays items that match their preferences and provides personalized shopping recommendations
	<ul style="list-style-type: none"> • British pure-play online retailer, Shop Direct has worked with IBM to develop an AI-powered chatbot that can detect a customer's mood • The service used IBM's AI software Watson to detect users' moods based on the words they use and the tone of their messages • The main aim is to free its workforce from repetitive tasks and to focus more on the interactions that really help customers
	<ul style="list-style-type: none"> • Otto Group worked with Blue Yonder, a provider of AI solutions, to predict what consumers will purchase in the near future • The technology enables Shop Direct aims to free its workforce from repetitive tasks and to focus more on the interactions that really help customers

5 Large number of retailers are implementing AI in e-commerce

Retailers	Description
	<ul style="list-style-type: none"> Netflix uses AI algorithms to review each frame of a video and compress it only to the degree necessary without degrading the image quality <ul style="list-style-type: none"> Improves streaming quality over slower speeds, but also tailors content for customers that view Netflix on tablets and phones Collaborated with the University of Southern California and the University of Nantes in France to train the system, using hundreds of viewers and hundreds of thousands of scenes Has developed its own content delivery network in a program it calls Open Connect. It provides specialized Netflix servers directly to the ISPs, whose sole function is to deliver Netflix content to local subscribers
	<ul style="list-style-type: none"> Use AI to reach out customers in India who have feature phones instead of smartphones, therefore communicating predominately through SMS Uses cognitive technology, a component of AI, in its recent Love at First Taste campaign. A 'Flavour Profiler' is integrated into the brand's site and offers tailored recipes Unilever is planning to implement the technology across its other brands like Knorr
	<ul style="list-style-type: none"> WayBlazer is a travel app that uses IBM's Watson AI technology to give personalised recommendations. The B2B company works with businesses that merchandise hotels, tours, cruises and activities Using Watson's natural language abilities, it provides a way to personalise recommendations for travel, including local insights and points of interest for consumers
	<ul style="list-style-type: none"> Collaborated with IBM's Watson to create an app that help users to track their fitness and health Sports apparel brand Under Armour's UA Record fitness app integrates machine learning technology to get under the skin of users. The app analyses personal food, exercise and sleep data in combination with insights from other anonymised members of the community, providing timely advice and motivation
	<ul style="list-style-type: none"> EasyJet is using AI to analyse mind-boggling amounts of data. The airline plans to use AI to provide a service to match consumer demand. It is already a part of EasyJet's revenue management strategy and the airline will apply it in areas such as predicting catering needs and optimising destinations and flight times.

5 Large number of retailers are implementing AI in store

Retailers	Description
	<ul style="list-style-type: none"> • Apple Pay, a digital wallet, was introduced in 2014 • Apple Pay works with iPad, iPhone, Mac book and Apple watch • The service enables consumers to make simple and secure payments at retail outlets • The consumer has to bring the service enabled device close to the merchant terminal and transaction is complete
	<ul style="list-style-type: none"> • Based on Microsoft’s Kinect technology, Adidas has launched BodyKinectizered • BodyKinectizer takes precise 3D scans of customers and makes size recommendations based on customers’ physical measurements • Provides an interactive touch-screen interface, that allows the customers to dress their virtual self • This helps customers to visualize themselves in outfits of their choice thereby providing an enriched retail experience
	<ul style="list-style-type: none"> • Collaborated with Fellow Robots, a technology firm, to create LoweBot • Uses 3D scanning to detect the human frame and communicates with customers through speech recognition. It can speak multiple languages and assists customers in locating things in the store • Also scans shelves using computer vision to send up-to-date information to store associates, hence facilitating inventory tracking
	<ul style="list-style-type: none"> • Walmart has partnered with Five Elements Robotics to develop a shopping cart “Dash” • Dash would assist customers in finding items while relieving them from pushing a heavy cart • Also accept shopping lists transferred through a phone, scan items for purchase as they are placed into the cart, and even take payment using services such as credit cards, Apple Pay or Google Wallet
	<ul style="list-style-type: none"> • 1-800-Flowers.com launched Gifts When You Need (GWYN), which the company calls an AI gift concierge • Through information provided by consumers about a gift recipient, the software tailors gift recommendations by comparing specifics provided to gifts purchased for similar recipients • Main aim was to replicate the role of a concierge at a store through a personal and detailed conversation with users

6 AI-powered Big Data analytics could completely change the retail landscape

- By 2020, 85% of customer interactions in retail will be managed by artificial intelligence, according to Gartner
- According to market firm Tractica, global revenue from AI will skyrocket from \$643.7 million in 2016 to \$36.8 billion by 2025
 - Forrester estimated that cognitive technology including AI and automation will replace 7% of the US jobs by 2025
 - The key strength of the AI is that it gets more intelligent with increasing quantity of data. For retail players, as their system become more intelligent, predictions become more accurate and increased profits follow
- 2.2 Exabytes (EB) of virtual data is generated everyday globally. The volume of data is so large that 90% of the global data has been created in the last 2 years alone
- Annual global IP traffic is estimated to have passed the zettabyte (ZB) threshold by the end of 2016, and is expected to reach 2.3 ZB per year by 2020
 - Google is the best example of AI as it uses all of its 3.5 billion daily searches to constantly improve its results
 - eBay alone produces 50TB of machine-generated data, and needs to process over 100PB of data daily
- Early adopters can gain a real advantage and place themselves differently in the marketplace



- ✓ In 2011, IBM brought AI into the mainstream when its supercomputer Watson won \$1.0m on Jeopardy
- ✓ Several large retailers have signed up such as Macy's, Under Armour, 1-800-Flowers.com, The North Face, Sears and others
- ✓ Processes "hundreds of millions of pages" worth of data each second



- ✓ AI-powered, voice controlled multi-function home device
- ✓ Plays music, controls all home devices, reads news, reports weather, orders food, .
- ✓ Runs on proprietary AI software – Alexa
- ✓ Plans to sell 41.3 million of the cylinder-shaped units by 2020
- ✓ Retailers such as General Electric, 1-800-Flowers and others are implementing the device



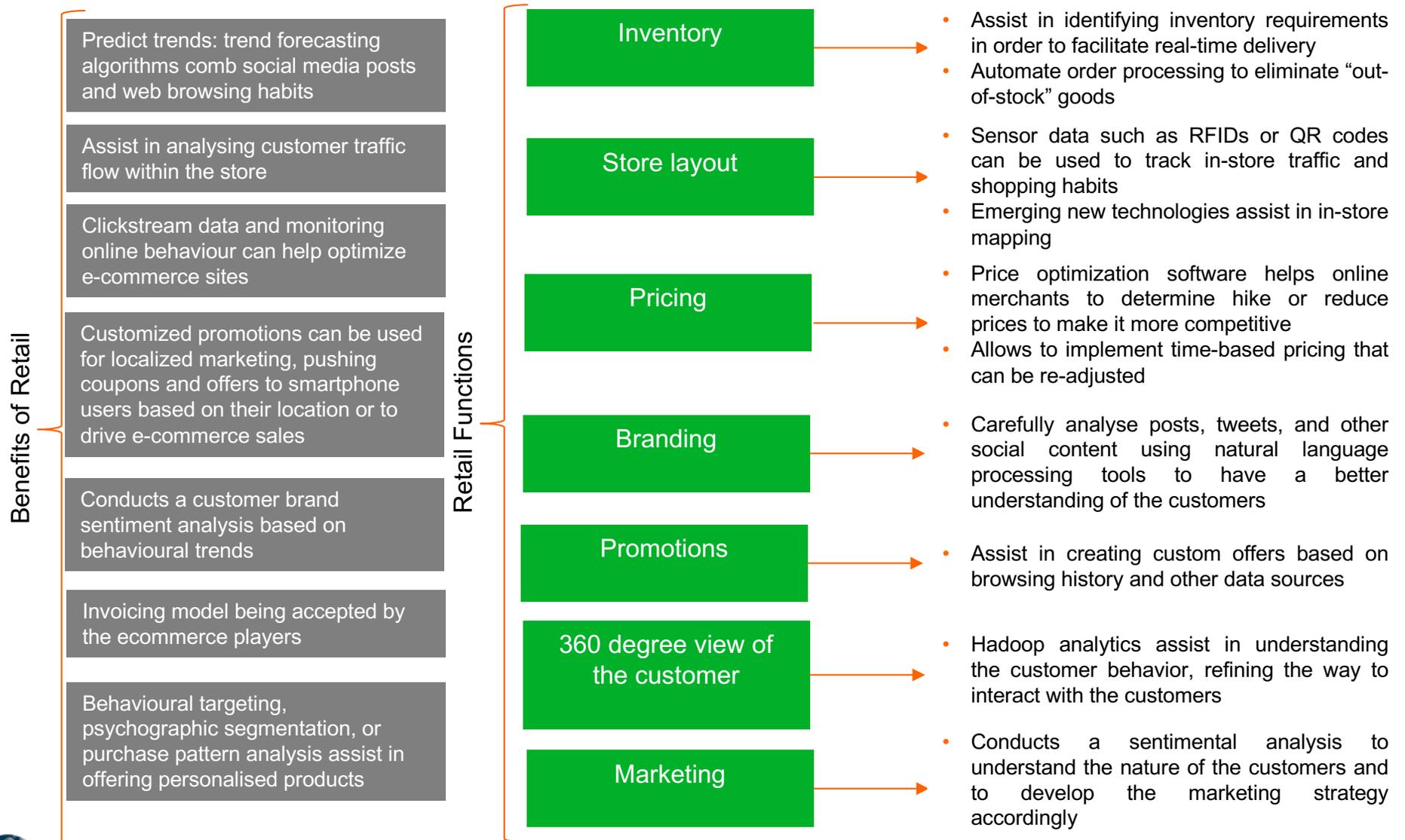
- ✓ DeepMind is more open-ended, and is also comparatively simpler to use because of its deep learning capabilities
- ✓ Acquired by Google in 2014
- ✓ The AI does not forget how it solved past problems, and uses the knowledge to tackle new ones



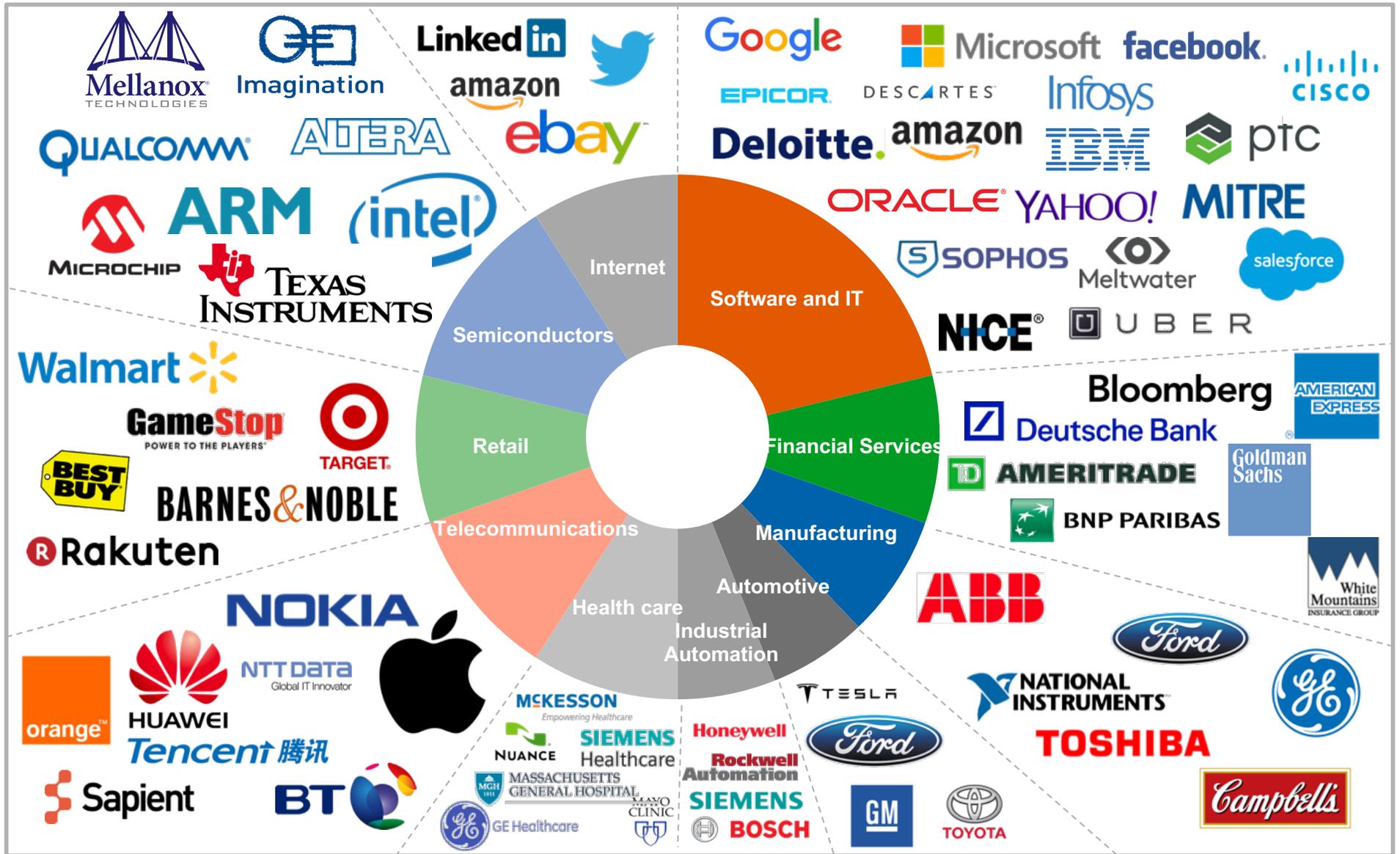
- ✓ Minwa is an image recognition engine, and a very powerful one too, with a 36-server node set-up, 6.9 TB of host memory and a 0.9 petaflop peak performance
- ✓ The company has over 72 processors and 144 graphics processors
- ✓ Its image recognition capabilities are among some of the best in the world of AI

6 Big data: A game changer in the retail sector

Applied at all stages of the retail sector – assist in predicting trends, forecast the demand, optimizing pricing, identify appropriate customers and approaching them,



7 Potential strategic partner cohorts



7 Financial and corporate investors landscape

US

International

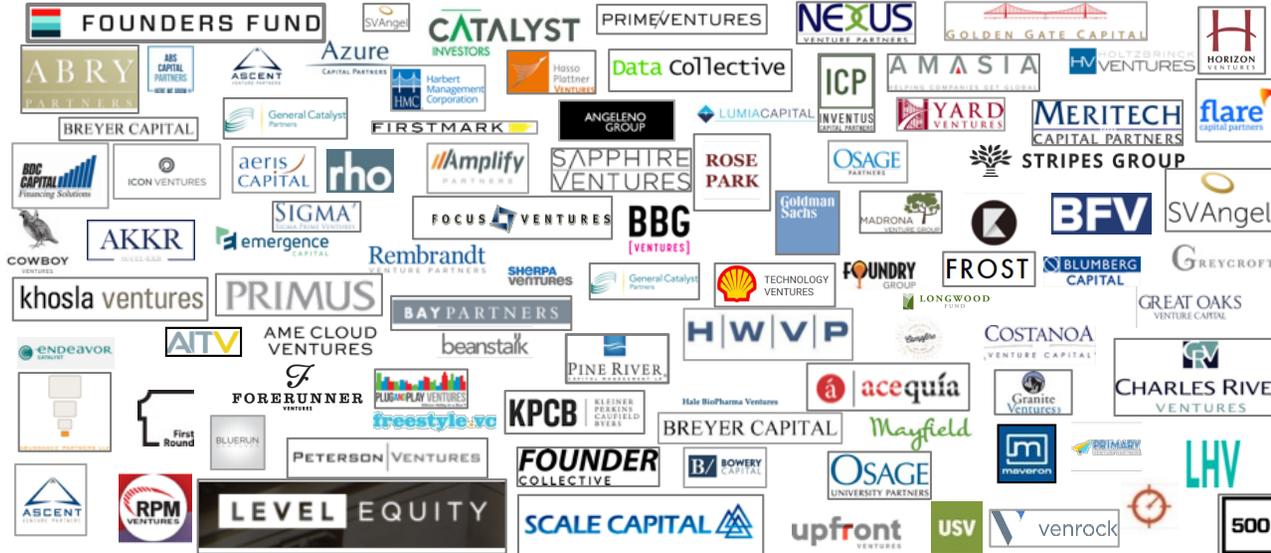
Buyout / Alternate



Stage agnostic



Late stage



Early stage

Corp. VC



Investors with AI investments

7 Public comparable's

(US\$ million, except per share amounts)

Company (FYE)	Trading Performance		FD Capitalization		Enterprise Value /						Operating Statistics					
	Stock Price 5/31/2017	%52W High	Equity Market Value	Enterprise Value	Revenue			EBITDA			P/E Multiples		Y/Y Rev. Growth		EBITDA Margin %	
					LTM	CY16	CY17	LTM	CY16	CY17	CY16	CY17	CY16 / CY15	CY17 / CY16	CY16	CY17
AI Companies																
Amazon.com, Inc.	\$991.30	99%	\$476,398	\$476,466	3.3x	3.5x	2.9x	39.1x	30.9x	25.2x	203.4x	148.4x	27.1%	22.1%	11.4%	11.4%
Microsoft Corporation	\$69.98	99%	\$543,601	\$508,020	5.8x	5.5x	5.1x	17.6x	14.1x	13.2x	33.5x	22.7x	5.5%	7.5%	38.9%	38.6%
Apple Inc.	\$152.69	97%	\$801,211	\$832,825	3.8x	3.8x	3.6x	11.9x	11.9x	11.5x	18.5x	16.5x	(7.2%)	6.9%	32.0%	31.0%
Facebook, Inc.	\$151.47	99%	\$441,624	\$409,318	13.5x	14.8x	10.6x	25.0x	22.6x	17.4x	43.6x	30.7x	54.2%	39.4%	65.4%	61.2%
Alphabet Inc.	\$985.71	99%	\$682,063	\$593,561	6.3x	6.6x	5.5x	19.0x	16.2x	13.6x	35.7x	29.4x	20.4%	19.0%	40.5%	40.7%
International Business Machines Corporation	\$152.18	83%	\$142,550	\$174,762	2.2x	2.2x	2.2x	9.7x	9.2x	9.4x	12.2x	11.1x	0.1%	(2.1%)	23.9%	23.6%
Shutterstock, Inc.	\$46.46	71%	\$1,614	\$1,364	2.7x	2.8x	2.5x	21.2x	14.3x	12.7x	51.3x	31.9x	16.3%	11.8%	19.3%	19.4%
Intel Corporation	\$36.06	94%	\$170,372	\$178,828	3.0x	3.0x	3.0x	7.6x	8.7x	7.2x	17.1x	12.7x	7.5%	1.2%	34.7%	41.3%
Baidu, Inc.	\$186.22	94%	\$65,864	\$61,683	5.9x	6.0x	5.0x	23.9x	26.8x	23.8x	41.4x	33.6x	4.2%	19.9%	22.4%	21.0%
Salesforce.com, inc.	\$89.88	98%	\$64,632	\$63,948	7.2x	7.6x	6.2x	142.5x	36.7x	28.9x	NM	69.8x	25.9%	22.6%	20.8%	21.5%
NVIDIA Corporation	\$143.95	98%	\$86,198	\$82,200	10.9x	11.9x	10.0x	33.6x	38.8x	29.4x	56.4x	41.4x	37.9%	19.5%	30.7%	33.9%
Twitter, Inc.	\$18.19	72%	\$13,375	\$11,150	4.5x	4.4x	4.8x	130.9x	14.8x	17.9x	NM	52.6x	14.0%	(8.0%)	29.7%	26.8%
Mean	\$252.01	92%	\$290,792	\$282,844	5.8x	6.0x	5.1x	40.2x	20.4x	17.5x	51.3x	41.7x	17.1%	13.3%	30.8%	30.9%
Median	\$10.71	72%	\$172,567	\$33,944	5.0x	4.9x	4.9x	20.1x	15.5x	15.5x	33.6x	30.7x	15.2%	37.0%	30.2%	28.9%

(US\$ million, except per share amounts)

Company (FYE)	Trading Performance		FD Capitalization		Enterprise Value /						Operating Statistics					
	Stock Price 5/31/2017	%52W High	Equity Market Value	Enterprise Value	Revenue			EBITDA			P/E Multiples		Y/Y Rev. Growth		EBITDA Margin %	
					LTM	CY16	CY17	LTM	CY16	CY17	CY16	CY17	CY16 / CY15	CY17 / CY16	CY16	CY17
Big Data																
Inovalon Holdings, Inc.	\$13.50	67%	\$1,978	\$1,704	3.9x	4.0x	3.8x	21.0x	17.0x	15.9x	75.5x	44.9x	(2.2%)	4.9%	23.4%	23.9%
Mobileye N.V.	\$61.87	100%	\$13,754	\$13,354	37.3x	37.3x	26.7x	106.8x	NM	48.9x	134.4x	59.3x	48.7%	39.8%	53.2%	54.6%
Cloudera, Inc.	\$20.69	89%	\$2,755	\$3,177	0.0x	NA	9.4x	0.0x	NM	NM	0.0x	NM	(100.0%)	NA	NA	(39.8%)
Tableau Software, Inc.	\$62.07	93%	\$4,876	\$3,921	4.6x	4.7x	4.5x	NM	43.8x	NM	NM	NM	26.5%	6.1%	10.8%	6.0%
Splunk Inc.	\$61.01	88%	\$8,522	\$7,435	7.4x	7.8x	6.2x	NM	NM	NM	NM	117.8x	42.1%	26.3%	9.6%	11.2%
Mean	\$43.83	87%	\$6,377	\$5,918	10.6x	13.5x	10.1x	42.6x	30.4x	32.4x	70.0x	74.0x	3.0%	19.3%	24.3%	11.2%
Median	\$61.01	89%	\$4,876	\$3,921	4.6x	6.3x	6.2x	21.0x	30.4x	32.4x	75.5x	59.3x	26.5%	16.2%	17.1%	11.2%

7 Public comparable's (continued)

(US\$ million, except per share amounts)

Company (FYE)	Trading Performance		FD Capitalization		Enterprise Value /							Operating Statistics				
	Stock Price 5/31/2017	%52W High	Equity Market Value	Enterprise Value	Revenue			EBITDA			P/E Multiples		Y/Y Rev. Growth		EBITDA Margin %	
					LTM	CY16	CY17	LTM	CY16	CY17	CY16	CY17	CY16 / CY15	CY17 / CY16	CY16	CY17
	Partly Big Data Analytics Provider															
HP Inc.	\$18.78	96%	\$32,073	\$32,670	0.7x	0.7x	0.7x	7.6x	7.9x	7.6x	12.4x	11.3x	(2.4%)	3.0%	8.5%	8.6%
SAP SE	\$107.08	100%	\$127,704	\$128,575	5.1x	5.2x	4.8x	19.5x	14.5x	13.9x	31.3x	22.5x	9.8%	8.6%	35.8%	34.4%
Salesforce.com, inc.	\$89.88	98%	\$64,632	\$63,948	7.2x	7.6x	6.2x	142.5x	36.7x	28.9x	NM	69.8x	25.9%	22.6%	20.8%	21.5%
General Electric Company	\$27.38	83%	\$237,593	\$363,083	3.0x	2.9x	2.9x	20.6x	14.8x	16.9x	27.4x	16.8x	16.9%	1.3%	19.8%	17.2%
StarTek, Inc.	\$11.40	97%	\$184	\$211	0.7x	0.7x	0.6x	12.6x	12.4x	9.9x	NM	36.3x	8.9%	6.9%	5.5%	6.5%
Mean	\$19.39	90%	\$118,889	\$181,647	1.9x	1.8x	1.8x	16.6x	13.6x	13.4x	27.4x	26.5x	12.9%	4.1%	12.7%	11.8%
Median	\$19.39	90%	\$118,889	\$181,647	1.9x	1.8x	1.8x	16.6x	13.6x	13.4x	27.4x	26.5x	12.9%	4.1%	12.7%	11.8%

(US\$ million, except per share amounts)

Company (FYE)	Trading Performance		FD Capitalization		Enterprise Value /							Operating Statistics				
	Stock Price 5/31/2017	%52W High	Equity Market Value	Enterprise Value	Revenue			EBITDA			P/E Multiples		Y/Y Rev. Growth		EBITDA Margin %	
					LTM	CY16	CY17	LTM	CY16	CY17	CY16	CY17	CY16 / CY15	CY17 / CY16	CY16	CY17
	AR / VR															
Snap Inc.	\$21.32	72%	\$25,289	\$22,062	42.8x	NA	22.2x	NM	NM	NM	NM	NM	(100.0%)	NA	NA	(69.2%)
Facebook, Inc.	\$151.47	99%	\$441,624	\$409,318	13.5x	14.8x	10.6x	25.0x	22.6x	17.4x	43.6x	30.7x	54.2%	39.4%	65.4%	61.2%
Alphabet Inc.	\$985.71	99%	\$682,063	\$593,561	6.3x	6.6x	5.5x	19.0x	16.2x	13.6x	35.7x	29.4x	20.4%	19.0%	40.5%	40.7%
NVIDIA Corporation	\$143.95	98%	\$86,198	\$82,200	10.9x	11.9x	10.0x	33.6x	38.8x	29.4x	56.4x	41.4x	37.9%	19.5%	30.7%	33.9%
HTC Corporation	\$2.41	65%	\$1,982	\$967	0.4x	0.4x	0.4x	NM	NM	NM	NM	NM	(29.7%)	3.5%	(14.4%)	(5.1%)
Sony Corporation	\$36.45	99%	\$46,022	\$44,730	0.7x	0.7x	0.6x	6.7x	10.3x	5.5x	70.9x	17.9x	15.8%	4.8%	6.4%	11.3%
Mean	\$60.94	87%	\$44,734	\$42,632	4.0x	4.3x	3.6x	20.2x	24.5x	17.5x	63.6x	29.6x	8.0%	9.3%	7.6%	13.4%
Median	\$36.45	98%	\$46,022	\$44,730	0.7x	0.7x	0.6x	20.2x	24.5x	17.5x	63.6x	29.6x	15.8%	4.8%	6.4%	11.3%

7 Key private placement

ClosedDate	Investor	Company	Deal Value (\$m)
6-Jan-17	Bank of Communications Trustee Limited	HNA Ecological Technology Group	216.8
30-Mar-17	Volkswagen Group China	Mobvoi, Inc.	180.0
18-Jan-16	Tencent; Zhongyuan Union Cell & Gene	iCarbonx	154.5
23-Nov-14	Horizons Ventures Limited	Sentient Technologies	103.5
1-Nov-16	Horizons Ventures Limited	Voyager Labs	100.0
3-Jun-16	Draper Fisher Jurvetson	Cylance	100.0
18-Mar-15	Hummer Winblad Venture Partners	InsideSales.com	90.0
5-Apr-17	China Merchants Venture Capital Management Co. Ltd; SIG Ventures; Forebright Capital Management Limited; Lingfeng Capital; JoinHope Capital	Wecash	80.0
10-Nov-16	Acer; CRV; Dentsu Ventures	Jibo	72.7
17-Apr-14	Bay Partners, LLC; Focus Ventures; Norwest Venture Partners; Sapphire Ventures LLC; BlackRock, Inc. (NYSE:BLK); Wellington Management Group LLP; Accenture plc (NYSE:ACN); Third Point LLC; Pine River Capital Management L.P.	Apigee Corporation	60.1
24-Nov-14	Accel Partners; Breyer Capital	kensho	57.8
14-Dec-16	Ben Brigham; Kennet Partners	Conversica	56.0
20-Mar-15	IPV; KPCB	Ayasdi	55.0
9-Dec-15	Acer; CRV; Dentsu Venture	jibo	52.3
1-Nov-16	Advantech Capital; IDG Capital Partners	Rokid	50.0
23-Aug-16	Acacia Research Corporation (NasdaqGS:ACTG)	Veritone, Inc.	50.0
30-Nov-16	FIRSTFLOOR CAPITAL	Appier	48.5
2-Jun-15	Sequoia Capital; Technology Crossover Ventures; Granite Ventures, LLC; Investor Growth Capital; Rose Park Advisors, LLC; Peterson Ventures, LLC	HireVue, Inc.	45.0
15-Jul-16	China Bridge Capital	iCarbonx	44.9
23-Jan-17	BlueRun Ventures	Hangzhou Lwan Network Technology Inc.	43.8
28-Jul-15	DFJ; KKR; Blackstone Group	Cylance	42.0
1-May-16	Bain Capital Venture	Apixio	41.9
20-May-14	Madrona Venture Group; MeriTech Capital Partners; Technology Crossover Ventures	ExtraHop Networks, Inc.	41.0
15-Jan-16	Goldman Sachs Group	Digital Reasoning Systems	40.0
21-Dec-15	White Mountains Insurance Group	Captricity	35.4
20-Oct-15	New Enterprise Associates	DataRobot	33.0
26-Oct-16	Campbell Soup Company	Habit	32.0
23-Sep-16	Primus Capital	Certona Corporation	30.0
29-Mar-16	Intel Capital; Chevron Ventures	Maana	30.0
14-Jul-15	Frontier Capital, LLC	Tango Analytics LLC	30.0
17-Dec-14	Technology Crossover Ventures; Bain Capital Ventures	Rapid7, Inc. (NasdaqGM:RPD)	30.0
4-Dec-14	Goldman Sachs Private Capital Investing	Revionics, Inc.	30.0
15-Dec-16	Acequia Capital (Acecap)	HyperScience	28.9
1-Nov-16	500 Startups; 8VC; A16z	uBiome	27.0
19-Jun-15	New Enterprise Associates	Tamr	25.2
4-Oct-16	IBM Intel capital	Cognitive Capital	25.0

7 Key private placement (continued)

ClosedDate	Investor	Company	Deal Value (\$m)
1-Jan-16	Adam Balon	Babylon Health	25.0
10-Jun-16	BDC Capital Corporation	bitstew	24.3
1-Dec-14	Flare Capital Partners	Predilytic	20.5
27-Jun-16	Sequoia Capital; InQ-Tel	Orbital Insight	20.0
26-May-16	Blue Cross Blue Shield	lumiata	20.0
9-Nov-15	Nexus Venture Partners	H2O.ai	20.0
12-Feb-15	Battery Ventures; Venrock	6Sense Insights	20.0
10-Mar-14	Horizons Ventures	Cortica	20.0
11-Feb-16	Battery Ventures; Intel Capital; Hasso Plattner Ventures	Reflektion, Inc.	18.0
21-Mar-17	Index Ventures; Isai Gestion, SAS; Mosaic Ventures	DataBerries SAS	16.2
23-Feb-17	-	Mattersight Corporation (NasdaqGM:MATR)	16.0
27-Mar-17	IDG Ventures	SafeGraph Inc.	16.0
12-Jun-14	Intel Capital; Nokia Growth Partners; Inventus Capital Partners; Ojas Venture Partners; Ascent Capital Advisors	Vizury Interactive Solutions Private Limited	15.9
29-Apr-16	Private Investors	Vicarious FPC	15.0
15-Jul-14	-	Veritone, Inc.	15.0
6-Jan-17	Zero2IPO Ventures; Matrix Partners China; Fosun Kinzon Capital	Beijing Shenxing Technology Co., Ltd.	14.5
14-Oct-14	Lux Capital Management	Scaled Inference	13.7
29-Mar-17	FirstMark Capital, L.L.C.; Sequoia Capital; Amplify Partners; Bowery Capital; Stanford Engineering Venture Fund	ActionIQ, Inc.	13.0
18-Dec-14	IDG Ventures; Samsung Ventures	MindMeld	13.0
15-Jan-16	General Catalyst Partners; Founder Collective; SV Angel; Breyer Capital	B12	12.4
4-Apr-16	Level Equity Management, LLC; Scale Capital; Amasia	Inbenta Technologies Inc.	12.0
5-Apr-17	JAFCO Investment (Asia Pacific) Ltd.	AdAsia Holdings Pte. Ltd	12.0
28-Feb-17	Toppan Forms Co., Ltd. (TSE:7862); SBI Investment Co., Ltd.	Cogent Labs Inc.	11.4
14-Apr-15	Osage Partners LLC; QUALCOMM	Clarifai	11.3
26-Apr-17	Ascent Venture Partners; Osage Partners LLC; Harbert Growth Partners; The Yard Ventures	Sidecar Interactive, Inc.	11.0
29-Mar-17	DCM; Sequoia Capital China	Shence Network Technology (Beijing) Co., Ltd	11.0
26-Apr-17	DAH Beteiligungs GmbH	Flytxt B.V.	10.9
29-Mar-17	-	Osaro, Inc.	10.8
Median			29.5

8 Key M&A transactions

Closed Date	Acquirer	Target	Enterprise Value (\$m)	LTM	EV /	NTM	EV /
				Revenue	EBITDA	Revenue	EBITDA
13-Mar-17	Intel Corporation (NasdaqGS:INTC)	Mobileye	15,004	41.9x	120.0x	30.1x	55.2x
7-Sep-16	Micro Focus International plc (LSE:MCRO)	Hewlett Packard Enterprise Company, Software Business	8,730	2.8x	13.3x	NA	NA
7-Apr-15	Microsoft Corporation (NasdaqGS:MSFT); Permira Advisers Ltd.; Canada Pension Plan Investment Board; Salesforce Ventures	Informatica Corporation	5,350	5.1x	28.3x	4.7x	19.5x
18-Aug-16	Uber Technologies	Otto	680	NA	NA	NA	NA
22-May-15	Twitter	TellApart	653	NA	NA	NA	NA
27-Jan-14	Alphabet	Deepmind Technologies	625	NA	NA	NA	NA
8-Sep-16	Google Inc.	Apigee Corporation	562	6.1x	NA	5.0x	NA
3-Aug-15	Advance Communication Corp.	1010data, Inc.	500	NA	NA	NA	NA
29-Aug-15	-	Beyondsoft Corporation	460	1.7x	13.4x	NA	9.7x
9-Aug-16	Intel	Nervana Systems	400	NA	NA	NA	NA
9-Feb-17	Nokia Solutions and Networks Oy	Comptel	373	3.5x	29.6x	3.1x	17.5x
5-Sep-16	Intel	Movidius	355	NA	NA	NA	NA
9-Nov-15	Blue Coat Systems Inc.	Elastica	280	NA	NA	NA	NA
3-Feb-16	Microsoft	SwiftKey	250	NA	NA	NA	NA
6-Oct-16	Samsung Electronics	Viv Labs	212	NA	NA	NA	NA
5-Aug-16	Apple	Turi	200	NA	NA	NA	NA
19-Jan-15	Microsoft	Equivio	200	NA	NA	NA	NA
7-Sep-16	Splunk	Caspida	190	NA	NA	NA	NA
15-Nov-16	GE Digital	Bit Stew Systems	153	NA	NA	NA	NA
10-Jun-14	Amobee, Inc.	Kontera Technologies	150	NA	NA	NA	NA
20-Jun-16	Twitter	Magic Pony Technology	150	NA	NA	NA	NA
11-Jan-16	NICE	Nexidia	135	NA	NA	NA	NA
30-Dec-13	PTC Inc. (NasdaqGS:PTC)	ThingWorx, Inc.	130	NA	NA	NA	NA
11-May-17	Cisco Systems, Inc. (NasdaqGS:CSCO)	Mindmeld	125	NA	NA	NA	NA
5-May-15	PTC Inc. (NasdaqGS:PTC)	ColdLight Solutions, LLC	104	NA	NA	NA	NA
6-May-14	AOL	Convertro	101	NA	NA	NA	NA
18-Jul-16	Luxoft Holding, Inc. (NYSE:LXFT)	INSYS Group Inc.	71	NA	NA	NA	NA
3-Nov-15	Twenty First Century Utilities, LLC	GridPoint, Inc.	63	NA	NA	NA	NA
14-Apr-16	Oracle	Crosswise	50	NA	NA	NA	NA
4-Apr-16	salesforce.com	MetaMind	48	NA	NA	NA	NA
7-Oct-14	Comerstone OnDemand, Inc. (NasdaqGS:CSOD)	Evolv	45	7.3x	NA	NA	NA
1-Feb-17	HPE Aruba	Niara	40	NA	NA	NA	NA
11-Jul-16	ebay	salespredict	40	NA	NA	NA	NA
27-Oct-16	Aspen Technology, Inc. (NasdaqGS:AZPN)	Mtelligence Corporation	37	NA	NA	NA	NA
7-Jun-16	Fortinet, Inc. (NasdaqGS:FTNT)	AccelOps	32	NA	NA	NA	NA
29-Mar-17	Progress Software Corporation (NasdaqGS:PRGS)	DataRPM Corporation	30	NA	NA	NA	NA
Median				4.3x	28.3x	4.9x	18.5x

8 Recent M&A activity in the AI space

Many large transactions marking an expansion of the industry

Target	Buyer	Date Announced	Implied EV	Multiples	Deal Rationale
		Mar 13, 2017	\$15.0bn	LTM Rev \$358.2m: 41.9x LTM EBITDA \$125.0m: 120.0x NTM EV/Rev: 30.1x NTM EV/EBITDA: 52.2x	<ul style="list-style-type: none"> ▪ Strengthen the market position: Together, they can accelerate the future of autonomous driving with improved performance in a cloud-to-car solution at a lower cost for automakers and enhance Intel's market position in the automotive suppliers industry and consumers.
		May 11, 2017	\$125.0m	NA	<ul style="list-style-type: none"> ▪ Expansion of product offering: With the acquisition of MindMeld, the company enhance its Collaboration suite, adding new conversational interfaces to its collaboration products starting with Cisco Spark
		Feb 9, 2017	\$372.6m	LTM Rev \$105.6m: 3.5x LTM EBITDA \$12.6m: 29.6x NTM EV/Rev: 3.1x NTM EV/EBITDA: 17.5x	<ul style="list-style-type: none"> ▪ Expansion of the offering: Acquired Comptel to advance its software strategy and provide service providers with a comprehensive solution to design, deliver, orchestrate and assure communications and digital services across physical, virtual and hybrid networks
	 a Hewlett Packard Enterprise company	Feb 1, 2017	\$4.0.0m	NA	<ul style="list-style-type: none"> ▪ Expansion of capabilities: The acquisition is will provide HPE with scalable machine learning approaches to improve enterprise security, as it gears up to expand its offerings to mid-market and large enterprises transitioning to the cloud
		Oct 6, 2016	\$211.6m	NA	<ul style="list-style-type: none"> ▪ Expansion of the services: The deal focuses on Samsung's commitment to virtual personal assistants and is part of its broader vision to deliver an AI-based open ecosystem across all of its devices and services. Samsung will be able to unlock and offer new service experiences for its customers

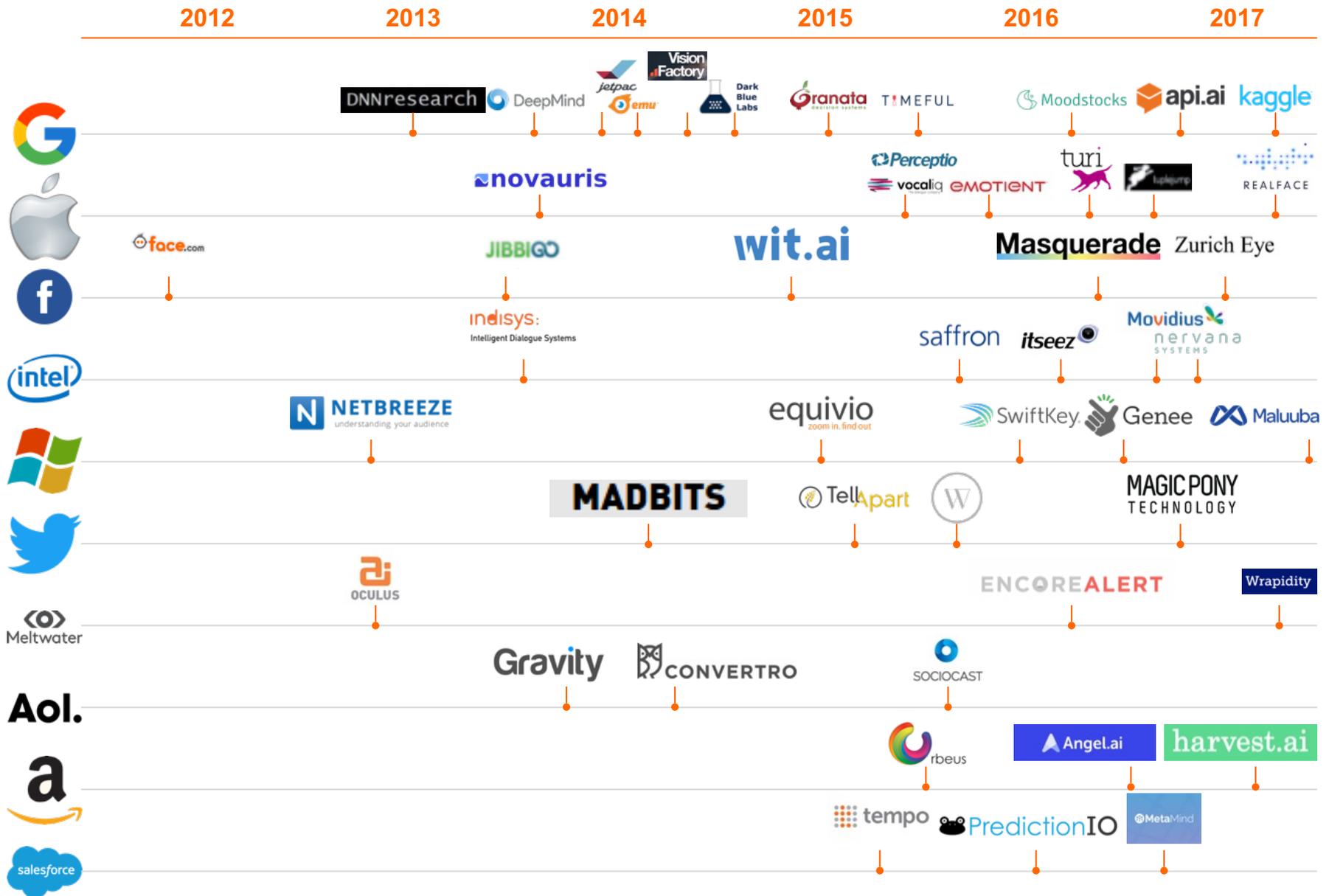


8 Recent M&A activity in the AI space

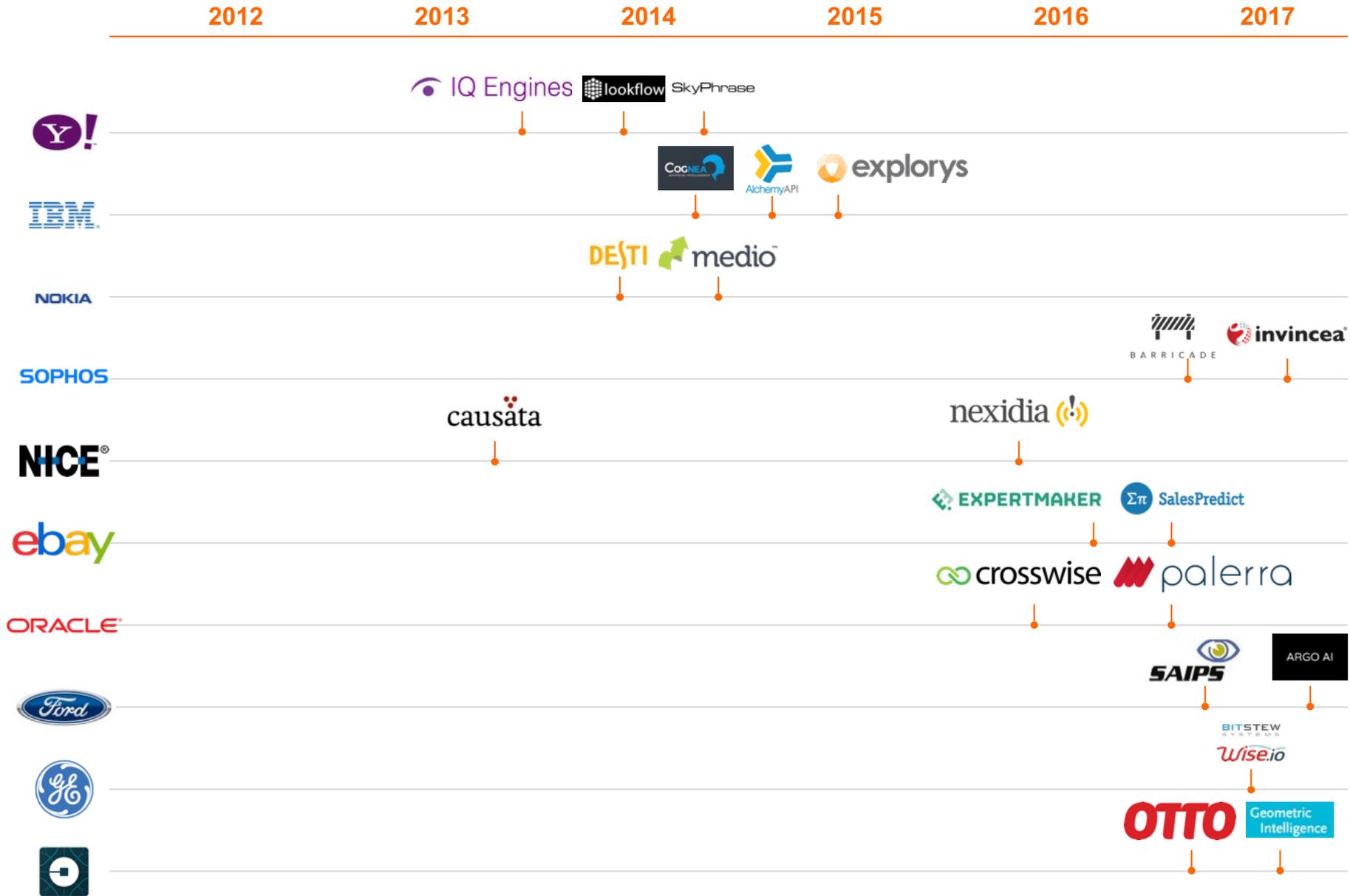
Many large transactions marking an expansion of the industry

Target	Buyer	Date Announced	Implied EV	Multiples	Deal Rationale
		Sep 8, 2016	\$561.8m	LTM Rev \$92.0m: 6.1x NTM EV/Rev: 5.0x	<ul style="list-style-type: none"> ▪ Enhance enterprise business: With Apigee's strong reputation in the API space, the acquisition will strengthen Google's enterprise offerings. Apigee's technology can work as a differentiator, driving Google's growth in this segment in future.
		June 20, 2016	\$150.0m	NA	<ul style="list-style-type: none"> ▪ Expansion of the services: Twitter aims to build up its machine learning muscle, and potentially improve how it delivers photos and videos across its apps through the acquisition of Magic Pony Technology, which develops techniques of using neural networks and machine learning
		Feb 03, 2016	\$250.0m	NA	<ul style="list-style-type: none"> ▪ Expansion of capabilities: Microsoft acquired SwiftKey to support re-invention of productivity ambition. It plans to bring all its software and services to all platforms. It also plans to develop SwiftKey's market-leading keyboard apps for Android and iOS.
		May 22, 2015	\$652.9m	NA	<ul style="list-style-type: none"> ▪ Expansion of capabilities: The deal reflects a continued investment in Twitter's direct response advertising capabilities through additional tools for cross-device identity, targeting and attribution.
		Jan 19, 2015	\$200.0m	NA	<ul style="list-style-type: none"> ▪ Expansion of capabilities: Microsoft made this acquisition to help its customers tackle the legal and compliance challenges inherent in managing large quantities of email and documents. It plans to use Equivio's machine learning technology to make its Office suite intelligent and easy to use.

8 Race for Intelligence



8 Race for Intelligence (continued)



9

Software is eating the world, But AI is going to eat software

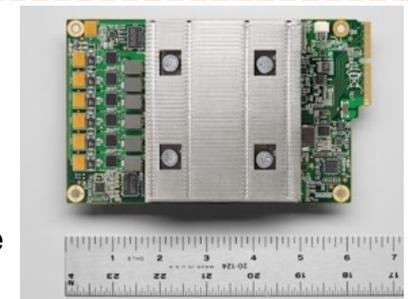
AI developers are racing to build new frameworks to tackle some of the greatest challenges . The main aim is to create an AI software on everything from powerful cloud services to devices at the edge of the cloud



- Launched Volta, a powerful GPU computing architecture, created to drive the next wave of advancement in artificial intelligence and high performance computing
- It's built on a 12nm NVIDIA-optimized TSMC process
- It includes the fastest HBM memories from Samsung.



- Launched its second-generation Tensor Processing Unit (TPU2) chip, with 45 teraflops of performance
- This is known as new generation “Google Cloud TPUs”
- It will only provide direct access to TPU2 hardware through the TensorFlow Research Cloud to accelerate focused deep learning workloads behind its core consumer-facing software



First of all, AI is going to infuse all of software. AI is going to eat software and it's going to be in every aspect of software. Every single software developer has to learn Deep Learning. Every single software developer has to apply machine learning. Every software developer will have to learn AI. Every single company will use AI. AI is the automation of automation and it will likely be the transmission. We're going to, for the first time, see the transmission of automation the way we're seeing the transmission and wireless broadcast of information for the very first time. I'm going to be able to send you automation. Send you a little automation by email.

Jen-Hsun Huang, CEO of Nvidia, PR dated May 10, 2017

“AI has quickly emerged as the single most powerful source of technology”

Colette Kress, CFO at Nvidia, PR dates May 10, 2017

② ComCap overview

Why ComCap?

▪ Who is ComCap?

- eCommerce-focused boutique, 100% focused on the eCommerce value chain
- Proven team with background at Credit Suisse, UBS, J.P. Morgan, with 50+ years of experience
- Senior execution, no bait-and-switch, but with a strong bench team for support
- We are small, so we must be selective, working only on the best probability engagements, but working ferociously to achieve a great outcome
- We do deals where we add unique value – not untargeted auctions to test the market

▪ How do we differentiate?

- Vertical focus enables deep understanding of your value proposition
- Unique synergies identification and advocacy process – based on bottoms up revenue and profit analysis of the value of entering new geographies, new verticals for strategic investors / buyers
- Huge network among strategics in the US, Europe and Asia
- 50% of our transactions are cross border (active in the US, Asia, Europe and LatAm)
- New market entry experience on buy-side

▪ Win-win proposal and differentiated proposition for our clients

- While we may charge premium pricing, we offer greater levels of service than other firms, and our client references will attest to this

ComCap – A leading boutique at the intersection of capital and commerce

Value Proposition	Unique, Focused, Global, Strategy and Investment Banking Boutique Recent transactions completed or underway in the United States, Japan, China, Singapore, Argentina, UK, Sweden, Belgium, France, Germany					
Selected ComCap Clients	\$2B revenue Japanese ecommerce BPO co. #3 Russian Internet company #1 UK Internet company Multiple private B2B ecommerce systems integrators			#1 Asian ecommerce B2B company \$200M rev US public company Multiple US and EU private equity funds Many ecommerce SaaS companies		
Previous Clients						
Selected Team Members	 Aron Bohlig Managing Partner	 Steve Terry Managing Director	 Matt Nemer Managing Director	 Swetha Vijay Director	 Fermin Caro Vice President	 Collin Rice Associate
Experience	23 years Credit Suisse Become, Nortel	20 years Credit Suisse Battery Ventures Robertson Stephens	20 years Wells Fargo Thomas Weisel	9 years DBS, Deloitte Avista/Houlihan Lokey	12 years Credit Suisse	5 years Ultra Capital, Wells Fargo
Education	Wharton MBA	McCombs School of Business MBA	Vanderbilt	IIM Ahmedabad MBA	Yale MBA	University of Southern California
Location	San Francisco	San Francisco	San Francisco	Singapore	San Francisco	San Francisco
Back office Team	Sakshi Goel Associate		Sabeeh Mohsan Analyst		Shiv Ng PPG	Charlotte Brook Administration and Ops

Matt Nemer: unique perspective as only lead equity research analyst covering offline and online retail



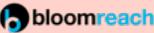
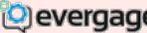
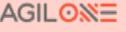
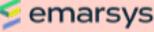
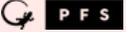
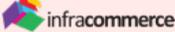
- Matt Nemer has 15+ years of experience covering retail and digital commerce at Wells Fargo Securities, Thomas Weisel Partners, and DLJ
- He was the first and only retail analyst to cover physical retail with pure play ecommerce, video commerce, and marketplaces
- Matt has been a regular contributor on CNBC, Bloomberg, and the WSJ
- Matt is in regular dialogue with C-level executives at the major retailers

Retail coverage experience

eCommerce & Marketplaces	Broadlines	Hardlines

IPO experience

ComCap's current thematic focus areas

Theme	Description	Select companies
Digitally Native Vertical Brands (DNVBs)	D2C digitally native brands covering clothing, accessories, personal care, home and kitchen, furniture, and other consumer-focused products.	 
Beauty, health and wellness	Universe of beauty companies, including product manufacturers, retailers, disruptors and new entrants.	   
Analytics	Focus on disruptors in the analytics space focused on ecommerce, logistics, retail, predictive, payment, risk and marketing	  
Personalization	Emerging players in the ecommerce personalization space	   
Marketing Suites	Emerging platforms in the digital marketing space	  
Mobile	Focused on mobile solution providers optimizing the mobile experience from desktop-to-mobile website conversions, targeted mobile marketing, to simplifying the mobile checkout experience.	  
Fintech	Retail and commerce-related disruptors in the fintech universe. Current focus areas include payments, risk analytics, false declines and retail POS.	 
Outsourcing and service providers	Companies that provide outsourcing and end-to-end ecommerce services, such as contact centers, platform, marketing, photo services, logistics, warehousing etc.	   
System Integrators	Focus on large SIs covering multiple platform as well as smaller SIs covering just one or a handful of platforms.	 
Ecommerce SaaS	Emerging and disruptive SaaS businesses in the ecommerce sector.	   
Other (IoT, SMB, POS)	We are constantly evaluating new themes and evolving our focus. Other categories currently include logistics, shipping, IoT, and SMB.	

ComCap – Active in 13 countries, including 11 of the Top 22 global ecommerce markets

