



# Trends in Technology Education Series

## 2019: The Year of Data

HOW DATA IS DRIVING DECISIONS IN CYBERSEC,  
PRIVACY, AND ANALYTICS

PRESENTED BY “JEDI” JON O’KEEFE



# Introduction



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# 500 Billion Internet Connected Devices by 2030







# **IDC: Expect 175 zettabytes of data worldwide by 2025**

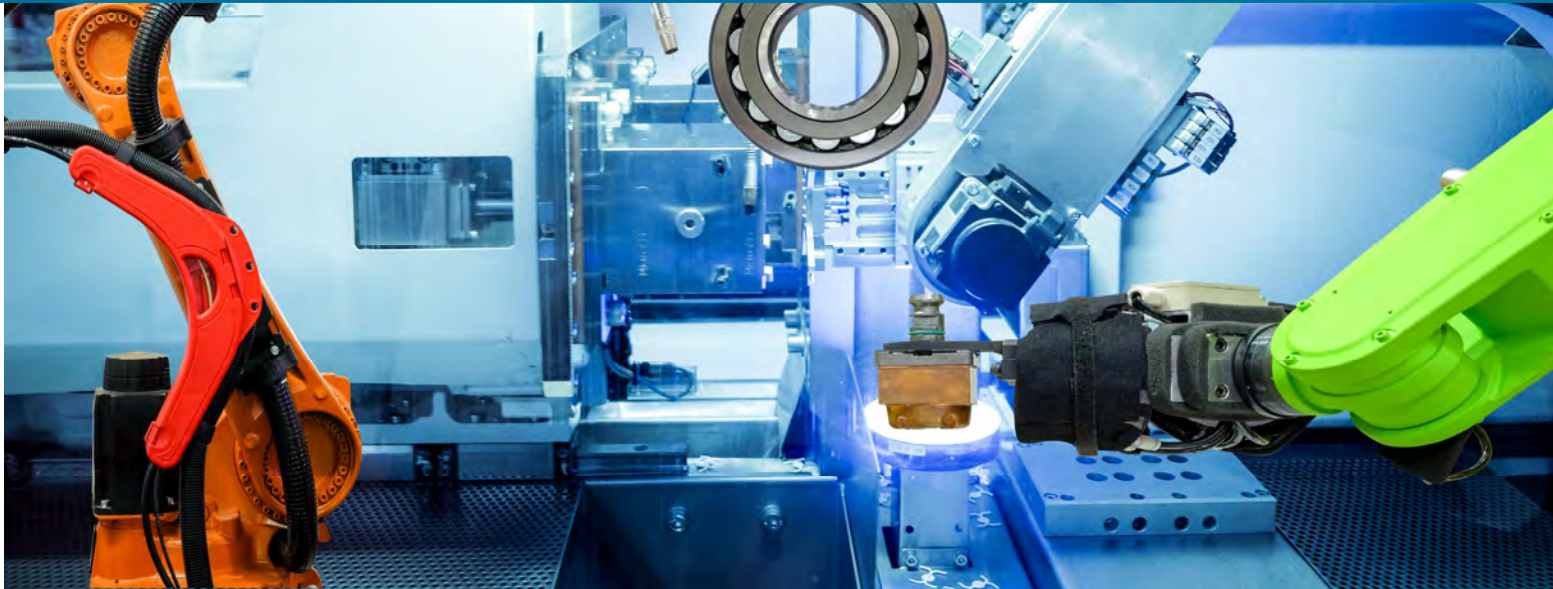
By 2025, IDC says worldwide data will grow 61% to 175 zettabytes, with as much of the data residing in the cloud as in data centers.























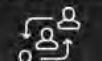













**GLOBALY 375 MILLION** Employees may need to switch occupational categories by 2030, and will need proper training to do so





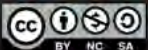
# Top 30 Technologies of the 2020s




 <b>#1 Artificial Intelligence</b> AI /Machine Learning / Deep Learning	 <b>#2 Internet of Things</b> IOT , IIOT, Sensors & Wearables	 <b>#3 Mobile/Social Internet</b> Advancements - Search/Social/ Messaging/Livestreams	 <b>#4 Blockchain</b> Distributed Ledger Systems, Apps, Infrastructure, Technologies, Cryptocurrencies & DApps	 <b>#5 Big Data</b> Apps, Infrastructure, Technologies + Predictive Analytics
 <b>#6 Automation</b> Information, Task, Process, Machine, Decision & Action	 <b>#7 Robots</b> Cons./Comm./Indus., Robots, Drones & Autonomous Vehicles	 <b>#8 Immersive Media</b> VR/ AR/ MR/ 360°/ Video?Gaming	 <b>#9 Mobile Technologies</b> Infrastructure, networks, standards, services & devices	 <b>#10 Cloud Computing</b> SaaS, IaaS, PaaS & MESH Apps
 <b>#11 3D Printing</b> Additive Manufacturing & Rapid Prototyping	 <b>#12 CX</b> Customer Journey, Experience Commerce & Personalization	 <b>#13 EnergyTech</b> Efficiency, Energy Storage & Decentralized Grid	 <b>#14 Cybersecurity</b> Security, Intelligence Detection, Remediation & Adaptation	 <b>#15 Voice Assistants</b> Interfaces, Chatbots & Natural Language Processing
 <b>#16 Nanotechnology</b> Computing, Medicine, Machines + Smart Dust	 <b>#17 Collaborative Tech.</b> Crowd, Sharing, Workplace & Open Source Platforms & Tools	 <b>#18 Health Tech.</b> Advanced Genomics, Bionics & Health Care Tech.	 <b>#19 Human-Computer Interaction</b> Facial/Gesture Recognition, Biometrics, Gaze Tracking	 <b>#20 Geo-spatial Tech.</b> GIS, GPS, Mapping & Remote Sensing, Scanning, Navigation
 <b>#21 Advanced Materials</b> Composites, Alloys, Polymers, Biomimicry, Nanomanufacturing	 <b>#22 New Touch Interfaces</b> Touch Screens, Haptics, 3D Touch, Paper, Feedback & Exoskeletons	 <b>#23 Wireless Power</b> Bio-/Enviro-Materials + Solutions, Sustainability, Treatment & Efficiency	 <b>#24 Clean Tech.</b> Bio-/Enviro-Materials + Solutions, Sustainability, Treatment & Efficiency	 <b>#25 Quantum Computing</b> + Exascale Computing
 <b>#26 Smart Cities</b> + Infrastructure & Transport	 <b>#27 Edge/Computing</b> + Fog Computing	 <b>#28 Faster, Better Internet</b> Broadband incl. Fiber, 5G, Li-Fi, LPN and LoRa	 <b>#29 Proximity Tech</b> Beacons, RFID, Wi-Fi, Near-Field Communications & Geofencing	 <b>#30 New Screens</b> TVs, Digital Signage, OOH, MicroLEDs & Projections

## THE 30 TECHNOLOGIES OF THE NEXT DECADE

Created by: Sean Moffitt @seanmoffitt, Managing Director, @Wikibrands







500 Billion Internet Connected Devices — Symantec



175 Billion Terabytes of Data and Growing — IDC



375 Million People Displaced by AI — Forbes.com

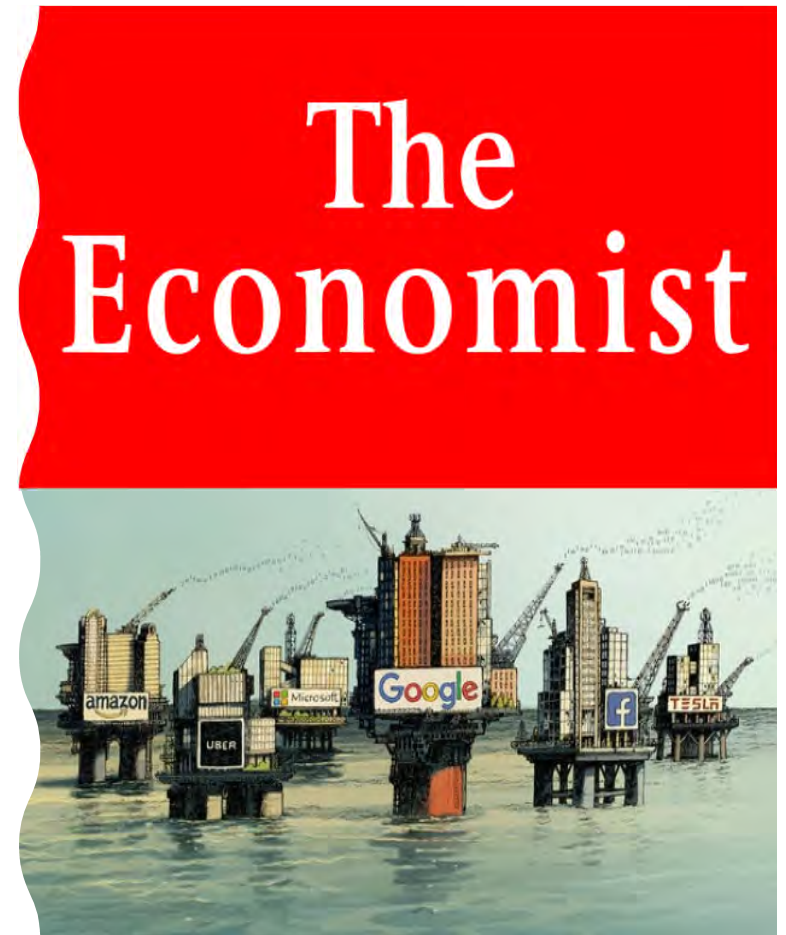




## 2019 is the Year of Data

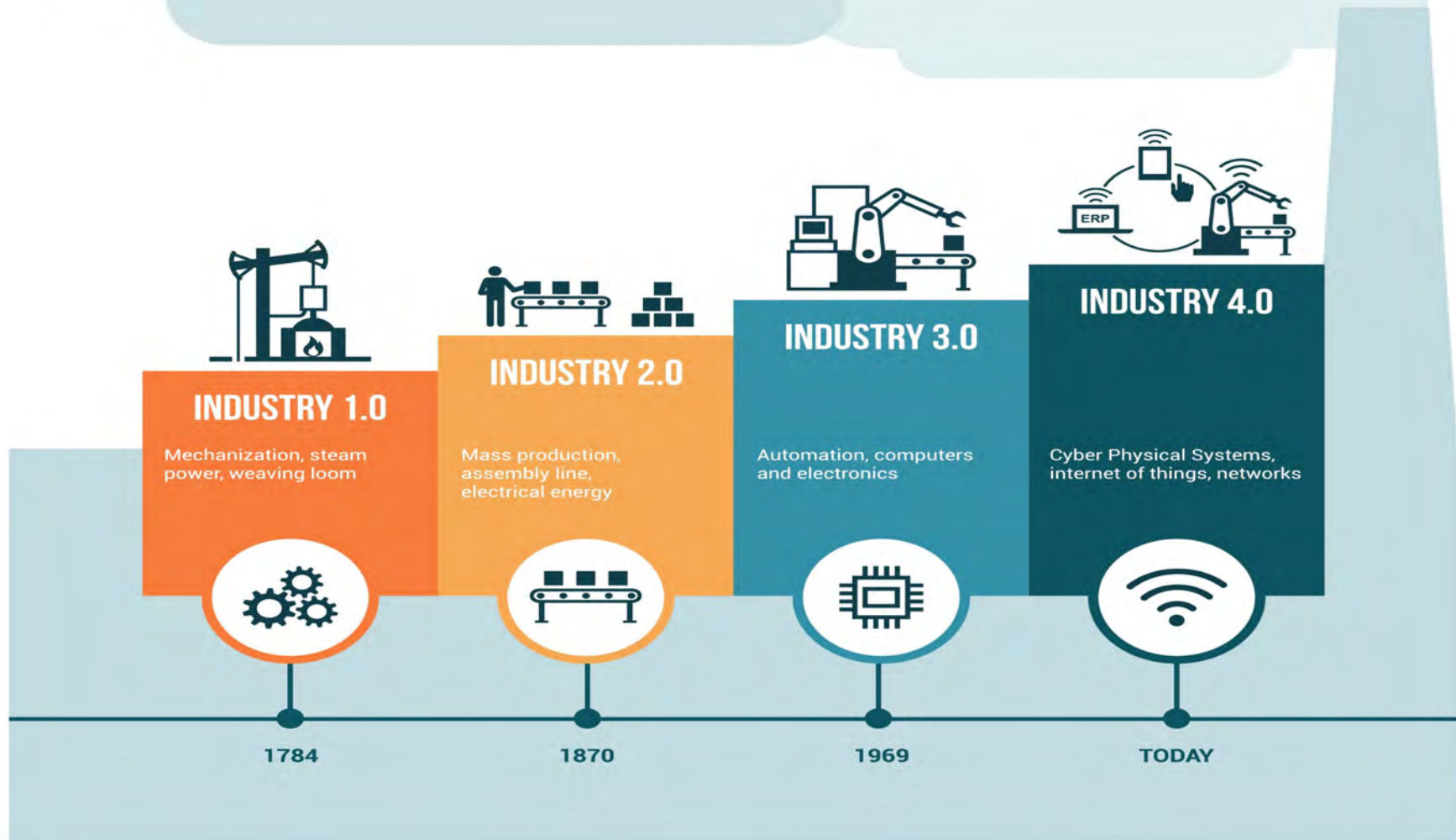
“The world’s most valuable  
resource is no longer oil, but  
data.”

7 of the 10 most valuable  
companies in the world are built  
on tying data to human behavior



# INDUSTRIAL REVOLUTION

TRANSFORMING INDUSTRIES AND INNOVATION





# The Fourth Industrial Revolution

Google



amazon





### EMPLOYEE TRAINING

and development is the biggest HR focus area in 2019

**IT Certifications will  
be a \$3 Billion  
Industry in 2019**

### 66 PERCENT

of all organizations agree or strongly agree that retention is a growing concern (**up from 59 percent last year**)

### NEARLY HALF

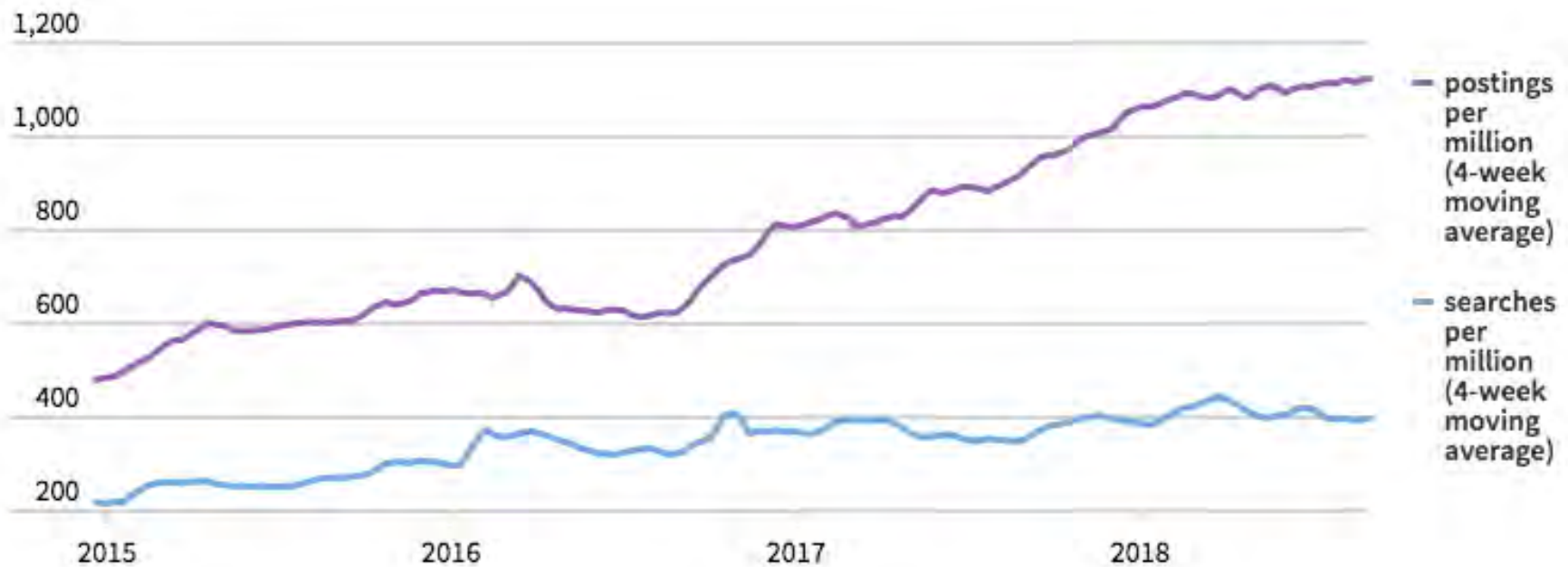
of all organizations say that strong job market has increased their turnover rate



# Data Science and Analytics



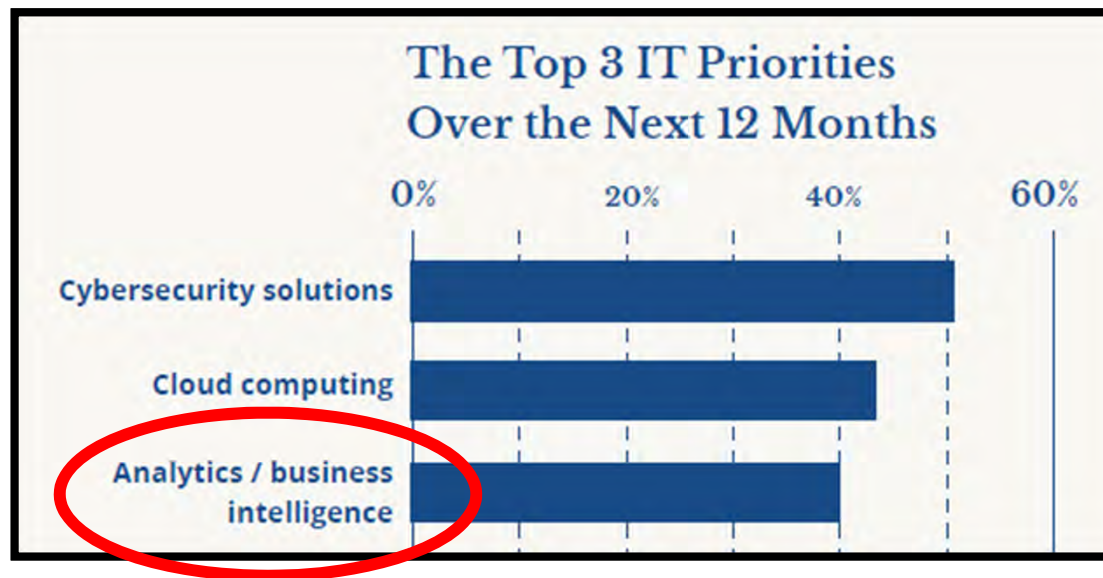
## Data Science has taken off like discounted Nutella in a European supermarket – Clint Chegin, [Product Scientist at Indeed](#)







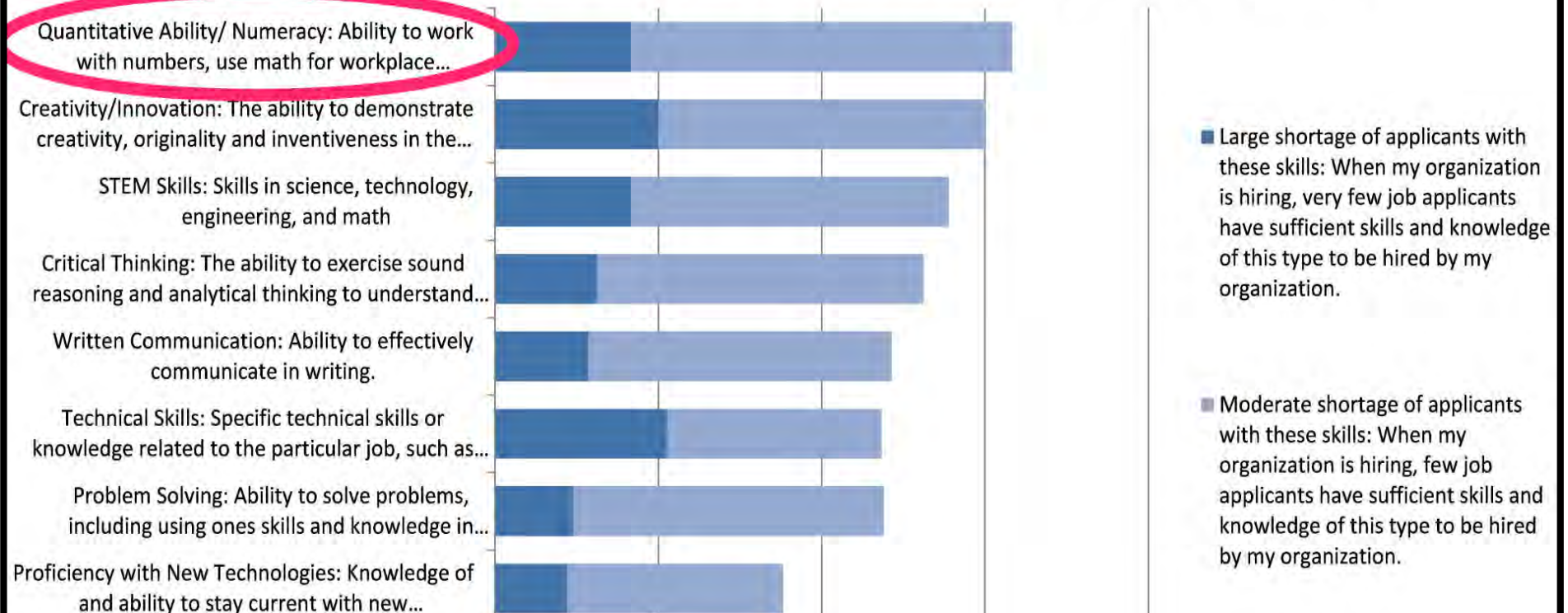
## Recent 2019 State of IT Training Report



Source: NH 2019 State of IT Training Report



## Which Competencies Are Hardest to Hire? (Responses from Members who Rated the Skill "Essential" or "Very Important")





**Demand for Data Scientists currently outpaces supply by 50%**

**“The Sexiest Job in the 21<sup>st</sup> Century” – Harvard Business Review**

**“Demand for Data Scientist will Soar 28% by 2020” – IBM**

**Indeed.com currently has 23,000+ job listings for Tableau**



## Case Study - Chipotle

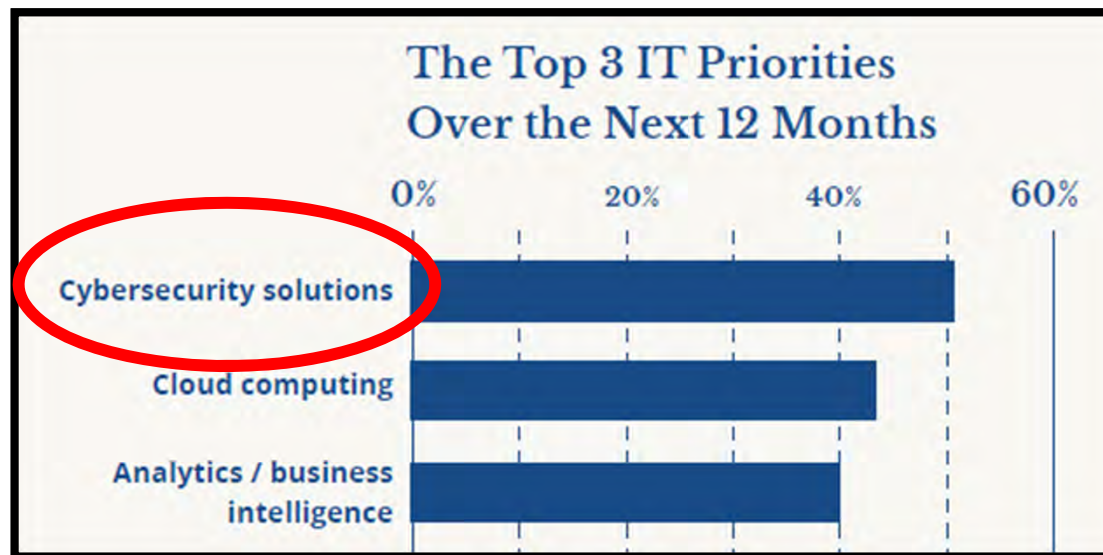


Saving 10,000 hours per month

# Cybersecurity



## Recent 2019 State of IT Training Report



Source: NH 2019 State of IT Training Report





## SKILLS GAP STILL NOT SHRINKING

**69%**

say their  
cybersecurity teams  
are **understaffed**.



**58%**

have **unfilled**  
(open) cybersecurity  
positions.



**32%**

say it **takes six months**  
**or more** to fill  
cybersecurity jobs at  
their organization.



**WANTED:  
QUALIFIED  
CANDIDATES**

**29%**

say fewer than one-quarter  
of job candidates are  
qualified for the cybersecurity  
position for which  
they applied

**NEARLY  
40%**

say university graduates  
in cybersecurity **are not**  
**prepared** for the job  
challenges they'll face





**47%**

of small businesses had at least one **cyber attack** in the past year.



**44%**

of those had two to four attacks.

  
**HISCOX**  
encourage courage

2018  
Small Business



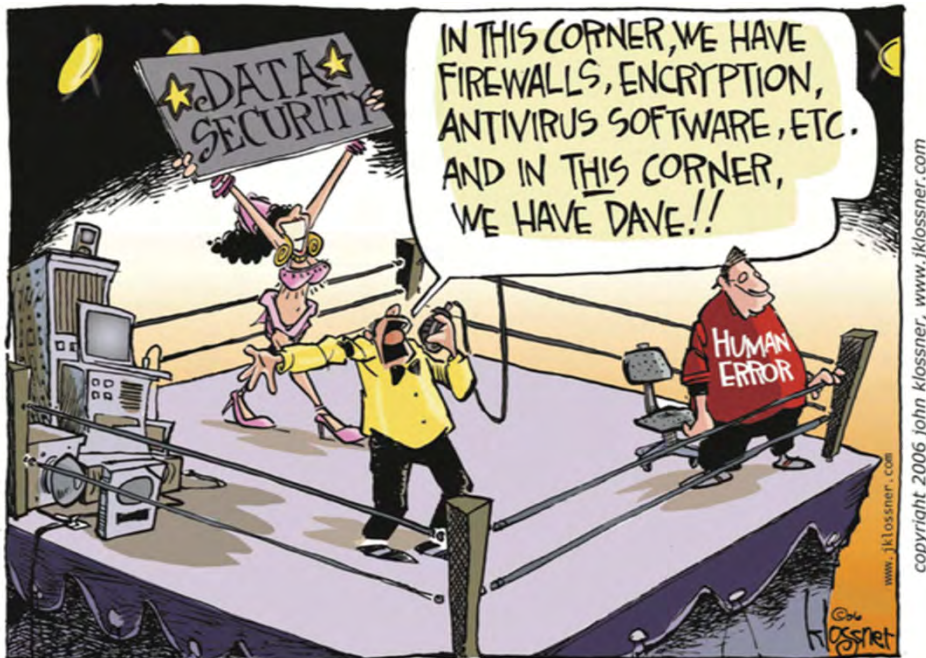
**65%**

of small businesses fail to act following a cyber security incident.

  
**HISCOX**  
encourage courage

2018 Hiscox  
Small Business Cyber Risk Report

## The Human Element



Human error accounts for **90%** of all cybersecurity incidents

- TechRadar.com





14,717,618,286

Data records lost or stolen since 2013

<https://breachlevelindex.com/>  
(April 2019)



The chances that any particular business will experience a security breach are greater than

**1 in 4**

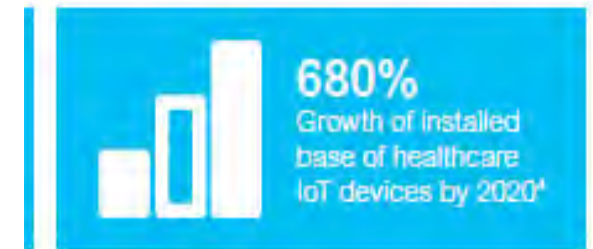
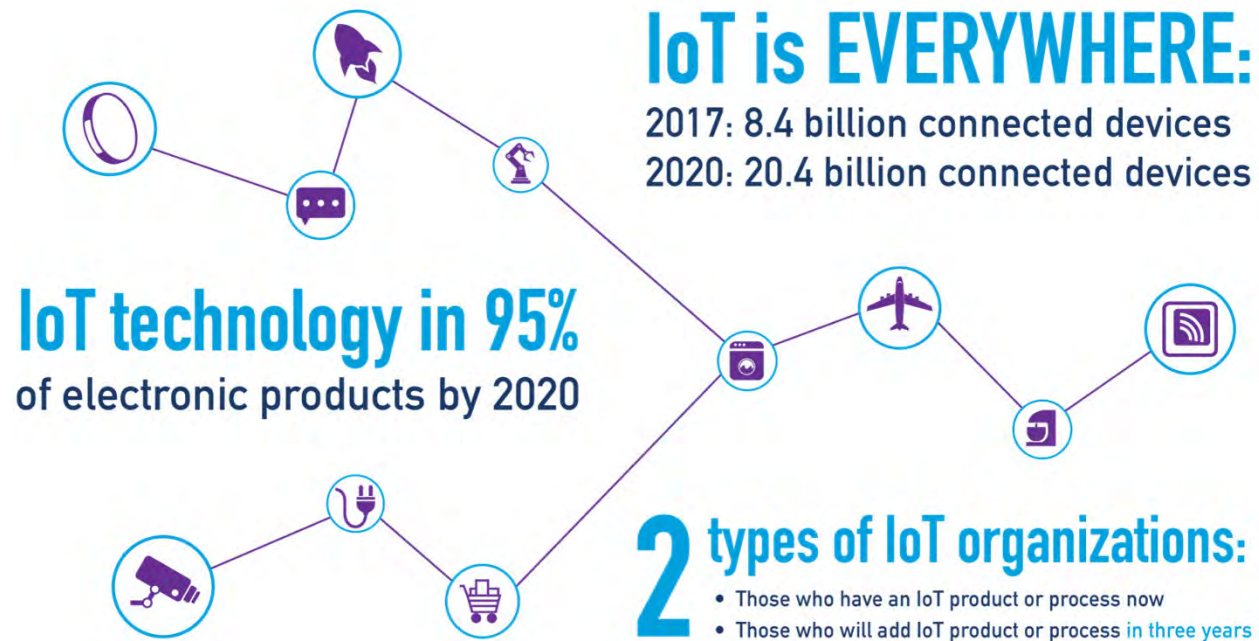
**3 OUT OF 4  
BUSINESSES  
WILL FACE A  
VISIBLE  
DISRUPTION  
DUE TO THE IT  
SKILLS GAP BY  
2020**







IoT



**IoT in Healthcare is a  
\$534 Billion Market by  
2025**



## Smart Things Automate the Home

### Baby care

Sleeping baby's diaper tells you it needs changing before the discomfort wakes him.

### Alarms

Wireless smoke and carbon-monoxide sensors sound sirens and send out alerts.

### Child and elder care

Smart doors know that the kids are home from school, and bed sensors tell you Grandpa is up from his nap.

### Kitchen help

An oven can let you know the turkey is cooked, and in the future a fridge will automatically reorder milk.

### Gardening

Sensors that track moisture send messages when it's time to water plants.

### Appliances

A washing machine tells you it's time to put clothes in the dryer or buy more detergent.

### Lights and thermostats

Homeowners can control heating and cooling remotely or turn lights on or off.

### Security

Smart video cameras survey your property and let you watch on your phone or PC.

### Personal assistants

Voice-activated devices such as Alexa can answer questions, play music or help you shop.



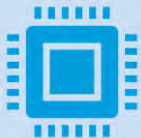




**Fewer than 20% of risk professionals can identify a majority of their organization's IoT devices – Ponemon Institute**



**IoT devices typically attacked within 5 minutes – NETSCOUT's Threat Intelligence Report**



**76% of risk professionals think IoT leaves them at risk of cyber attacks – Ponemon Institute**





# Mirai botnet attack







## TOP PASSWORDS USED IN IOT ATTACKS (YEAR)

PASSWORDS	PERCENT
123456	24.6
[BLANK]	17.0
system	4.3
sh	4.0
shell	1.9
admin	1.3
1234	1.0
password	1.0
enable	1.0
12345	0.9



# Types of botnet attacks

Price  
Scraping

Content  
Scraping

Account  
Takeover

Account  
Creation

Credit  
Card Fraud

Denial of  
Service

# Data Privacy





The New York Times

The Washington Post



Facebook CEO Mark Zuckerberg is  
testifying to Congress

He's even wearing a tie.

Forbes



TechCrunch

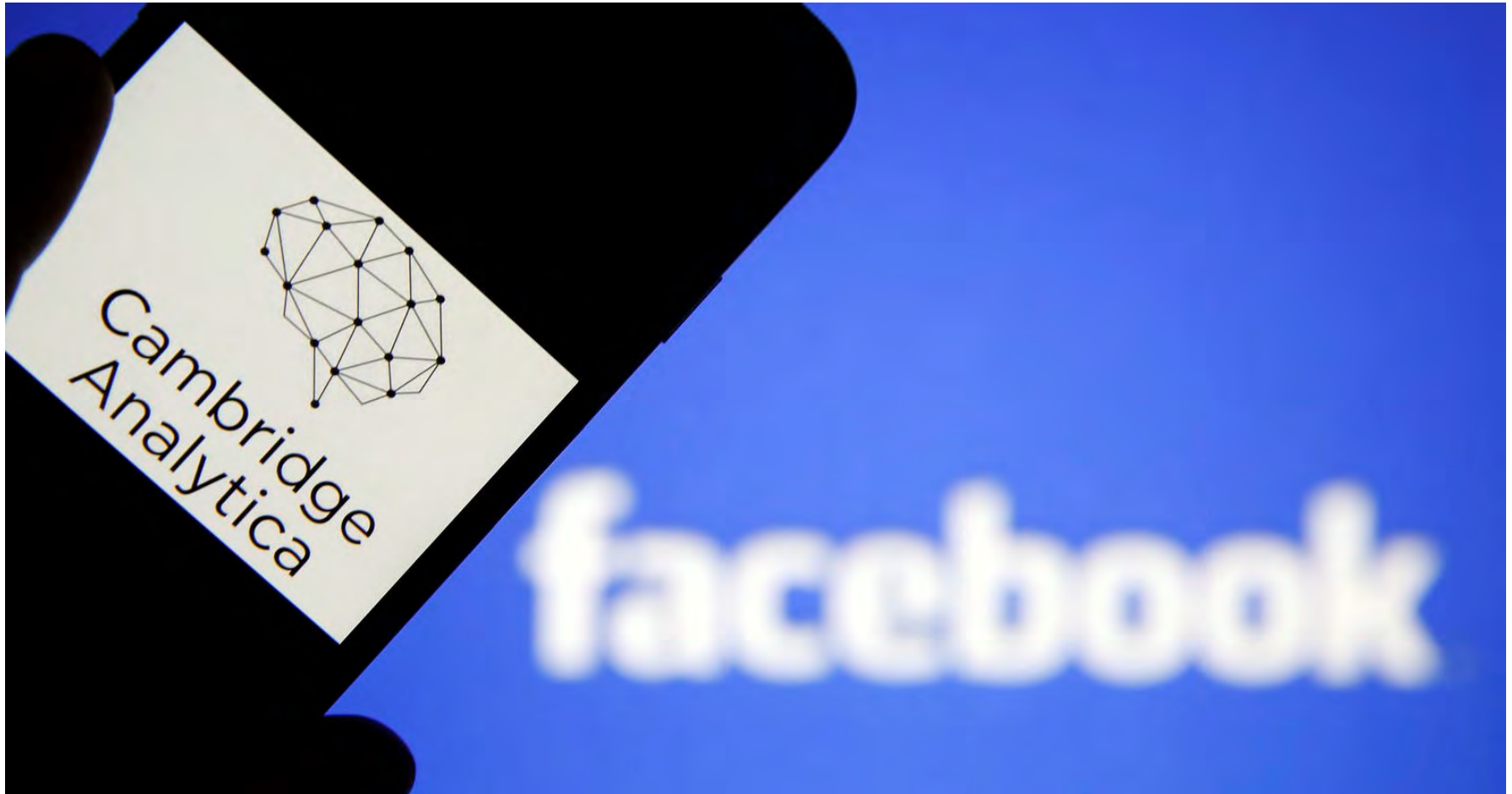
WIRED



## 6 Key Features of GDPR









# This is Your Digital Life





Your public FB profile, including Name and Gender

Birthdate

Current City

Photos

Email Address

Facebook Messages

Friends list

Posts and Posts on other users' timelines



300k people used the app, but 87m profiles were harvested



FB friends had no way of knowing their data was being harvested



Data shared with numerous entities including SCL Elections Limited (Cambridge Analytica)





**25 Oct. 2018**

Facebook fined \$650K in UK for Cambridge Analytica on October 25th, 2018



**Feb. 2019**

Facebook fined \$122m over WhatsApp integration in Germany in February, 2019 (under appeal)



**currently**

Facebook currently negotiating with FTC for multi-billion dollar fine for Cambridge Analytica



<https://www.youtube.com/user/LogicalOperations/>

# Five Good Questions Trends in Technology Education



# Questions?



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## Thank You