



# USE OF EMERGING TECHNOLOGIES IN ADDRESSING THE CYBERSECURITY SKILLS GAP

NICE CONFERENCE  
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# AGENDA

- SCOPE AND CONTOURS OF THE GAP
- HOW TECHNOLOGY CAN HELP
- HIRING & EDUCATION
- SUPPORTING A DIVERSE WORKFORCE
- DOING WHAT MACHINES ARE GOOD AT

# The Scope of the Global Skills Gap



50M

People who are needed to fill open technical jobs by 2030.

Source:  
Burning Glass Technologies, 2015

800M

Individuals need to learn new skills for their jobs by 2020.

Source:  
LinkedIn

40%

Employers reporting that skill shortages have a negative impact on their business.

Source:  
Manpower Group 2017

65%

Of students today will do jobs that don't yet exist.

Source:  
The Future Laboratory



Jobs requiring technical skills

77%

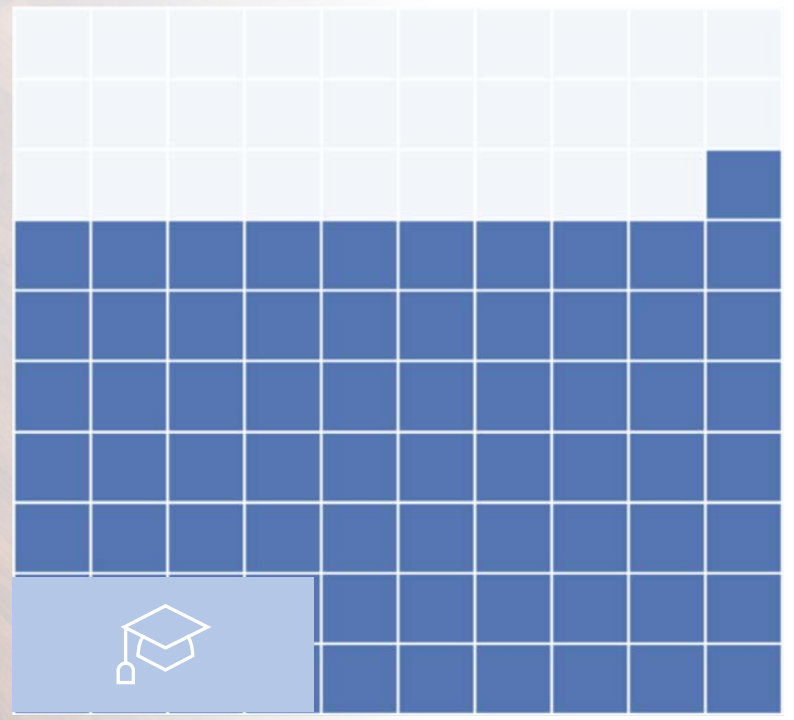
NEXT 10 YEARS

50%

TODAY



**71%** of STEM jobs are in Computer Science.

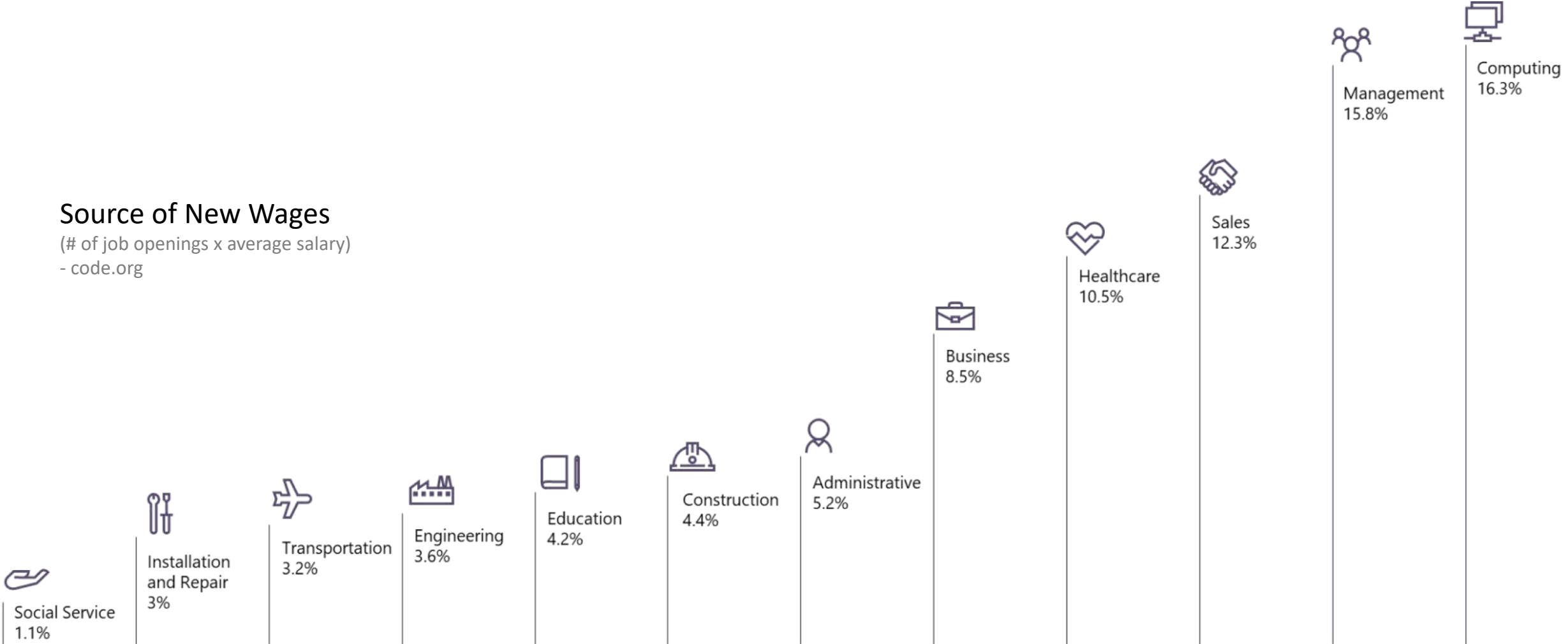


Yet **only 8%** of STEM graduates fill the pipeline

# The #1 Source of New Wages is COMPUTING

## Source of New Wages

(# of job openings x average salary)  
- code.org



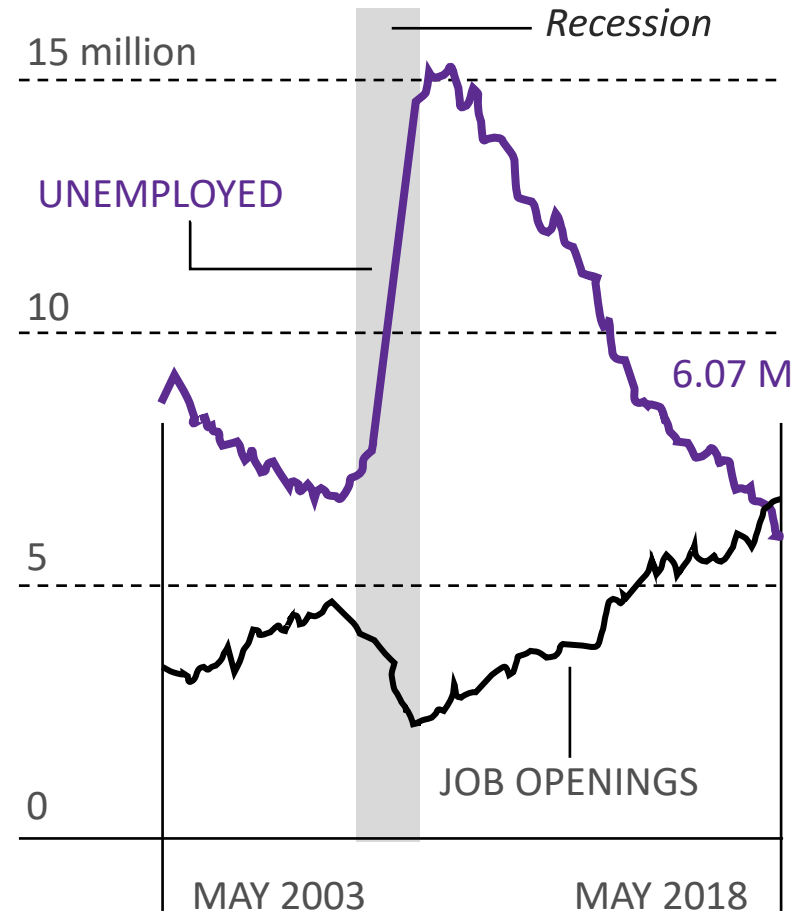
# What's happening NOW

For the first time on record, U.S. job openings exceeded the number of unemployed

April, 2018 had 6.7 million postings against 6.3 million people seeking work

That trend may continue with the number of unemployed falling under 6.1 million in May

Wages for job stayers rose a muted 2.9% in April, job switchers gained 4%





Source: BLS data seasonally adjusted, nonfarm job openings


# The CyberSkills Gap

## A Costly Gap

The effects of the cybersecurity skills gap cited most by cybersecurity professionals


Increasing workload on existing staff  
 **63%**

Hiring and training of junior employees rather than people with the appropriate level of cybersecurity skills  
 **41%**


Cybersecurity staff time is spent disproportionately on high-priority issues and incident response, with limited time for planning, training or strategy  
 **41%**

Cybersecurity staff has limited time to work with business units to align cybersecurity with business processes

 **39%**

Inability to fully learn or utilize some of our security technologies to their full potential  
 **39%**

High burnout and/or attrition rate among the cybersecurity staff  
 **38%**

Increase in the use of professional and/or managed services  
 **34%**

Source: Survey by Enterprise Strategy Group and the Information Systems Security Association of 343 cybersecurity professionals and ISSA members, conducted in August and September 2017



# Hard to Hire



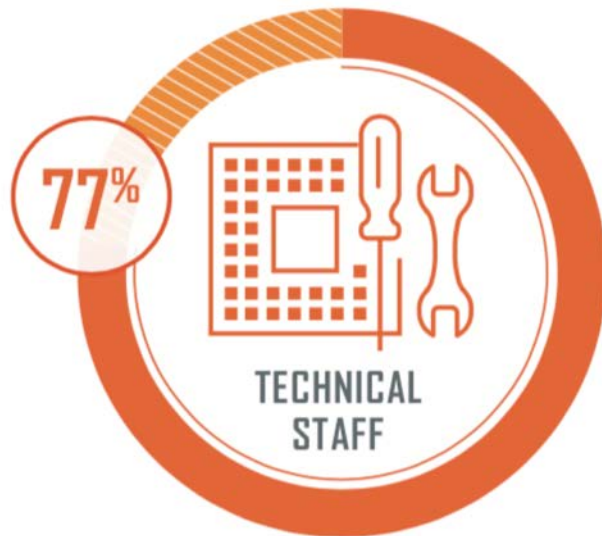
**3 IN 5 ORGANIZATIONS**  
have unfilled cybersecurity/  
information security positions

**54%**

Respondents who  
say their organizations take  
**3 MONTHS OR MORE**  
to fill open positions

# Yes, tech gap – but business too

## WHERE IS THE GAP FELT MOST ACUTELY?



**77%** see most need for technical staff compared to **46%** for non-technical staff

## TOP TWO GAPS IN TODAY'S SECURITY PROFESSIONALS:



**39%** of respondents say inability to understand business needs

**33%** of respondents say technical skills



# HOW TECHNOLOGY CAN HELP

HIRING, EDUCATION, & DIVERSITY

# GETTING CREATIVE WITH TECH FOR HIRING



## EXAMPLE:

DIGITAL ANALYTICS COMPANY IN CHICAGO

## OBJECTIVE:

HIRE EXPERIENCED ENGINEERS

## APPROACH:

1-MONTH AD CAMPAIGN PLACED AT 150  
BUS STOPS THROUGHOUT CHICAGO  
FEATURING A CODING CHALLENGE

## RESULTS:

800 PEOPLE STARTED THE CHALLENGE, 200  
COMPLETED THE CODING CHALLENGE AND  
50 WERE SELECTED TO PARTICIPATE IN  
HACKATHON RESULTING IN ...

**5 ENGINEERS HIRED**

**COST PER HIRE\*: \$121,500+**

\* ASSUMES 1 MONTH OF ADS AT \$4,050 PER MONTH/PER  
LOCATION X 150 LOCATIONS.

SOURCE: [HTTP://WWW.BLUELINEMEDIA.COM/OUTDOOR-  
ADVERTISING/CHICAGO-IL](http://www.bluelinemedia.com/outdoor-advertising/chicago-il)

# EXAMPLE - CLOSING THE SKILLS GAP WITH MICROSOFT PROFESSIONAL PROGRAM

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**10,000+**

open jobs in IT within the top five major tech companies.

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**Source:**

LinkedIn, September 2017

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**32%**

of IT execs say they will increase their headcount in the next 12 months.

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**Source:**

Bersin by Deloitte, Predictions for Talent Strategy 2017

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**40%**

of employers worldwide had difficulty filling jobs in 2015.

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**Source:**

Bersin by Deloitte, Predictions for Talent Strategy 2017

## How MPP Helps Close the Skills Gap

### **Massive Open Online Courses (MOOC)**

Content created by Microsoft and other leading partners teaching key skills and concepts in core technology

### **Courses arranged in a Curriculum**

The MPP combines MOOC content into a curriculum that culminates with a capstone project that allows learners to demonstrate their learning. Each MPP that is released will align to a tech job role.

### **Microsoft Certificates**

As students work through the curriculum they will receive verified certificates that accrue to a Certificate of Completion for the entire MPP track upon completion of the Capstone.

# CURRENTLY & FUTURE MPP TRACKS



## Data Science

8-12 hours per course

Opportunities for data scientists—one of today's hottest jobs—are rapidly growing in response to the exponential amounts of data being captured and analyzed. Companies hire data scientists to find insights and to solve meaningful business problems.

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[Read curriculum release notes](#)



## Big Data

12-30 hours per course

Designing systems that capture, process, and analyze data is critical for companies in order to have a competitive advantage. This curriculum takes students from their first select statement to orchestrating big data workflows in the cloud.

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[Read curriculum release notes](#)



## DevOps

8-16 hours per course

To support companies to be more agile, the lines between development and operations are becoming increasingly blurred. Through continuous integration and deployment, students will learn how to react to changing market conditions.

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## Front-End Web Development

15-30 hours per course

The demand for Front-End Web Developers is expected to increase by 27% through 2024. That's why companies need people who are fluent in programming languages and frameworks ranging from HTML, CSS, and JavaScript, to Angular, Bootstrap, and jQuery.

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## IT Support

8-16 hours per course

The help desk is the front line of engagement for customers when problems arise. With the IT Support track you will learn a wide range of skills to diagnose, troubleshoot, and solve customer issues.

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## Artificial Intelligence

8-16 hours per course

Artificial Intelligence (AI) will define the next generation of software solutions. Human-like capabilities such as understanding natural language, speech, vision, and making inferences from knowledge will extend software beyond the app.

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## Entry Level Software Development

8-16 hours per course

Nearly all tech that you engage with relies on software. The job outlook for software developers is growing year after year. Simply put, Software Developers are the people bringing the modern world to life.

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## Cloud Administration

12-18 hours per course

As companies move to the cloud, the need for cloud skilled professionals continues to rise. Companies need people with a range of skills; such as automation of deployments and workloads, to understanding how to best manage security and compliance.

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**New in Market**

AI Developer	Data Analyst
IT Security	Internet of Things (IoT)

October 2018

# Example Use Cases

**Mission Play:** Offensive and defensive missions are available for users to complete on their own or as a team, each with its own unique set of mission orders, rules of engagement and training objectives.

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**Battle Rooms:** Objective-based, skill building challenges and tasks within a live, virtual environment that allows students to practice tactics and procedures with real-world tools.

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**Mini Games:** Skill- or task-specific games designed to teach core competencies and encourage the repetition needed for knowledge retention.



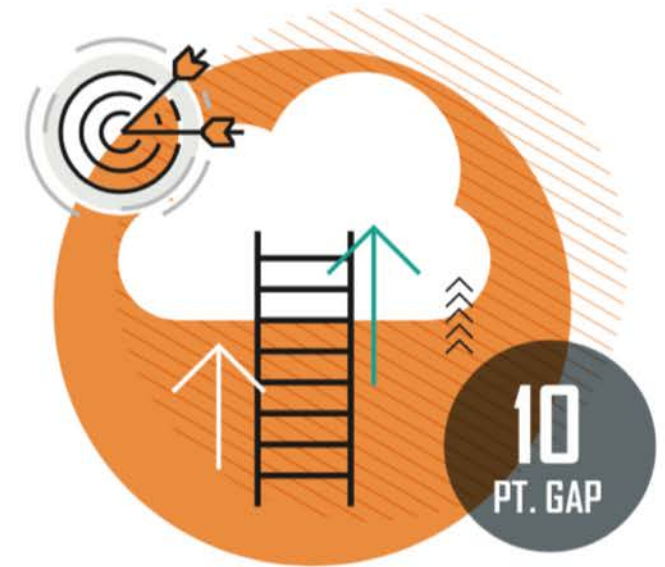
# GENDER DISPARITY



**82% of male respondents** say men and women are offered the same opportunities for career advancement in cybersecurity, compared to **51% of female respondents**



**51%** of respondents say their organizations have **diversity programs in place** to support women cybersecurity professionals



At organizations where a diversity program is in place, **87% of men** and **77% of women** say women are offered the same opportunities



# Supporting Diversity



Hiring is only part of the problem, must also retain



Create online communities for support using collaboration tools - ex: Vegans at MS



Leverage the cloud to engage with social networks – sharing and awareness



V-Lunch/Happy Hours/Book Clubs – bringing people together



# HOW TECHNOLOGY CAN HELP

DOING WHAT MACHINES ARE  
GOOD AT

# THE SCALE OF CLOUD DATA

Each physical datacenter requires, multi-layered protection



Over 100 datacenters across the planet



Global cloud infrastructure with custom hardware and network protection

Cutting-edge operational security

- Restricted access
- 24x7 monitoring
- 3,500 Global security experts
- 6.5 trillion signals a day



# AI and ML - Computers understanding the world

Perception

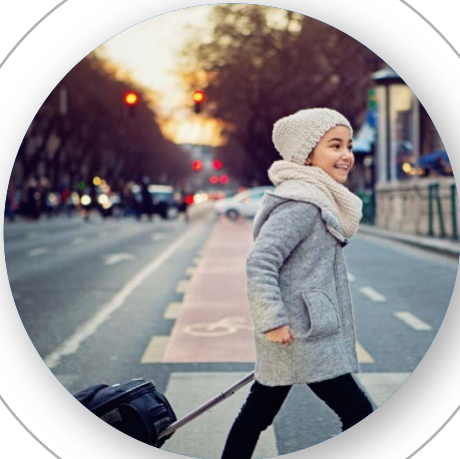
Cognition

Vision

Speech

Language

Knowledge



# Skype Translator



**“Ultimately the question is not only what computers can do. It’s what computers should do.”**

– The Future Computed

AS COMPUTERS BEHAVE  
MORE LIKE HUMANS,  
HOW WILL THEY IMPACT  
REAL PEOPLE?



**“Skilling up for an AI-powered future requires more than science, technology, engineering and math. As computers behave more like humans, the social sciences and humanities will become even more important.”**

– The Future Computed

**WHAT JOBS CAN AI REPLACE?**



Vision + Analysis + Decision making



Speech + Analysis + Decision making



Language

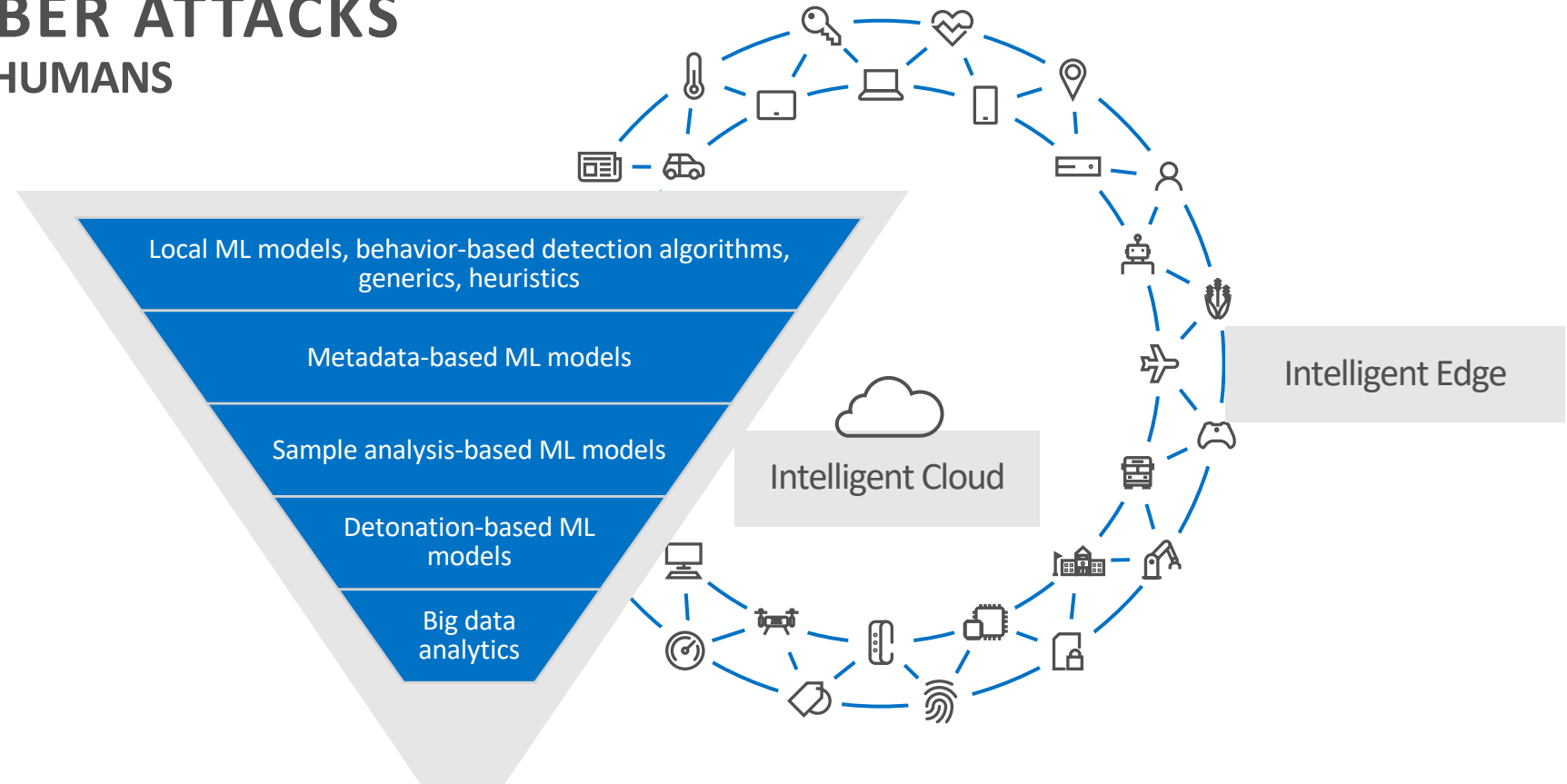


Learning



# STOPPING CYBER ATTACKS

## MACHINES HELPING HUMANS



October 2017 – Cloud-based detonation ML models identified [Bad Rabbit](#), protecting users 14 minutes after the first encounter.

March 6 – Behavior-based detection algorithms blocked more than 400,000 instances of the [Dofoil](#) trojan.

February 3 – Client machine learning algorithms automatically stopped the malware attack [Emotet](#) in real time.

August 2018 – Cloud machine learning algorithms blocked a highly targeted campaign to deliver [Ursnif](#) malware to under 200 targets

2017

2018

HOW CAN WE EQUIP  
EVERYONE WITH **SKILLS TO**  
**THRIVE** IN THE  
DIGITAL ECONOMY?





QUESTIONS?

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THANK YOU!