

Manufacturing's Greatest Asset:

# The Connected Worker

Natan Linder & Caglayan Arkan

# Today's Speakers



**Çağlayan Arkan**

Vice President, Manufacturing Industry  
Microsoft Corporation

&

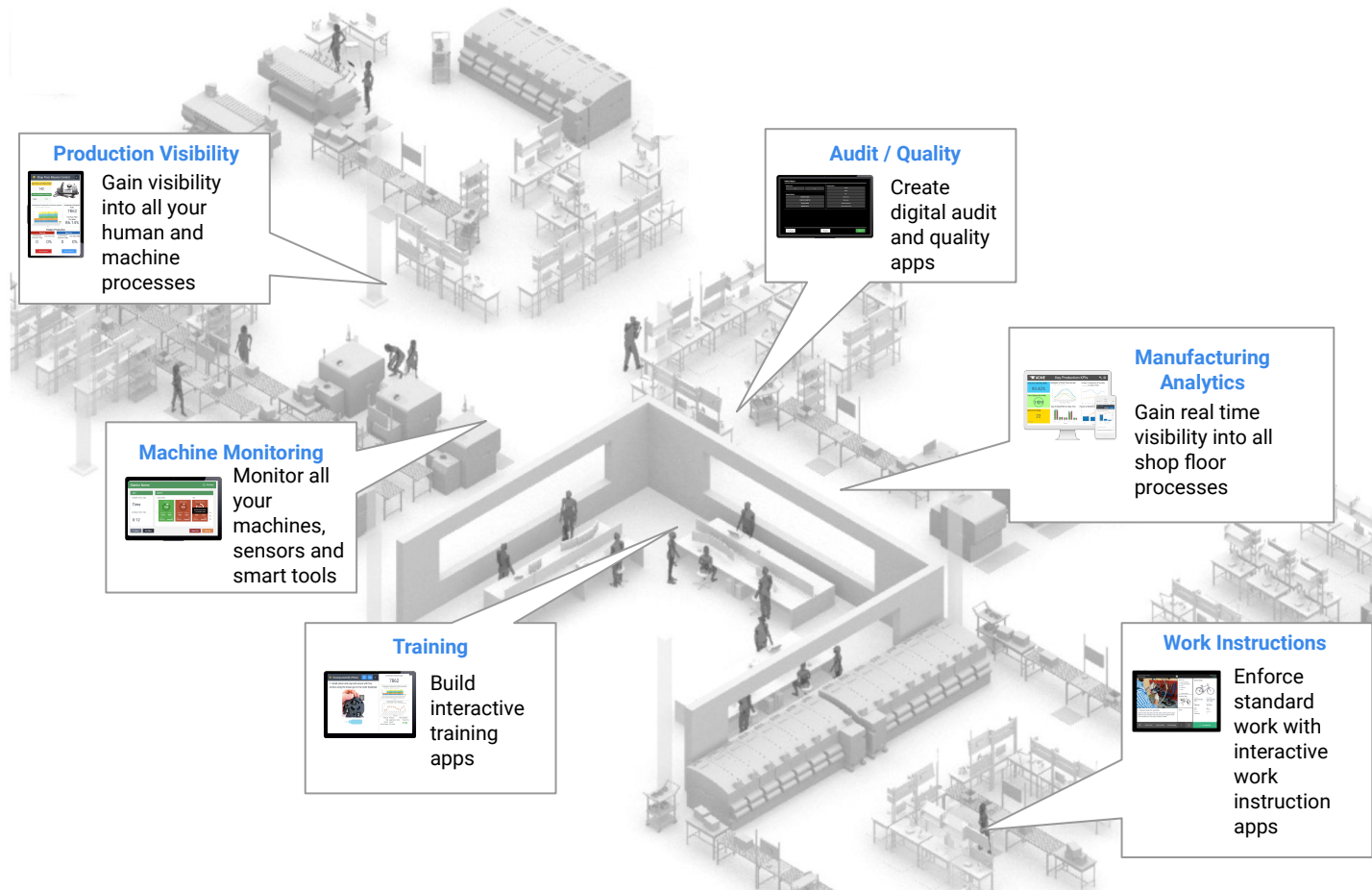


**Natan Linder**

CEO, Tulip

# There's an app for that!

We enable manufacturing engineers to focus on solving 10's of \$100k manufacturing problems - at the same time



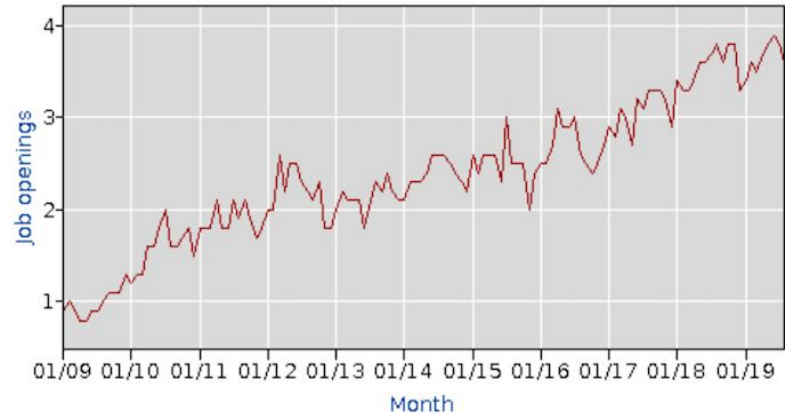
# What we'll talk about:

1. **Why** manufacturing needs the connected worker now
2. **How** the connected worker is solving manufacturing's greatest challenge: the workforce
3. The **value** of integrated digital technologies for all manufacturers

# Manufacturing Workforce Challenges

# Manufacturing Jobs are Sitting Open

- Turnover is high
- Skills gap is growing
- Retirements are increasing



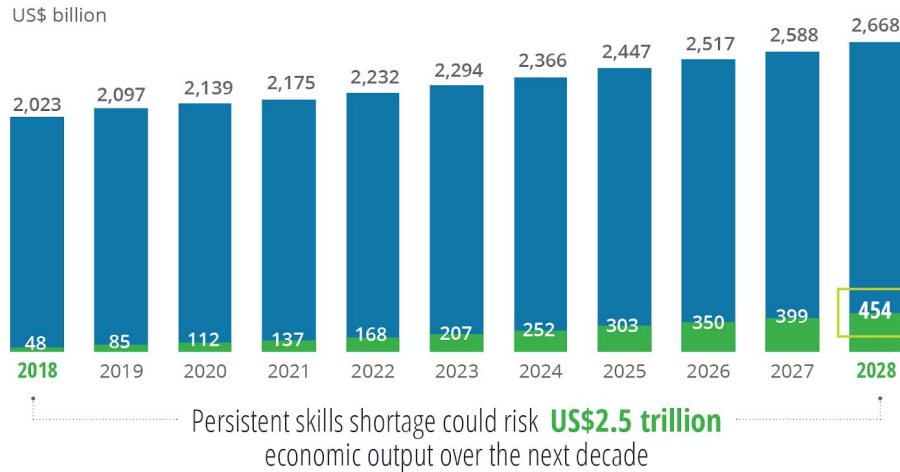
The number of unfilled manufacturing jobs since January, 2009, in hundreds of thousands (source: Bureau of Labor Statistics)

# The Cost is Growing

FIGURE 2

**Skills shortage could put US\$454 billion of manufacturing GDP at risk in 2028 alone**

■ US manufacturing output/GDP ■ Manufacturing output/GDP at risk due to skills shortage



Note: 2017 base year.

Source: Data from BLS and Oxford Economics Model, Deloitte and Manufacturing Institute skills research initiative.

Deloitte Insights | [deloitte.com/insights](https://deloitte.com/insights)

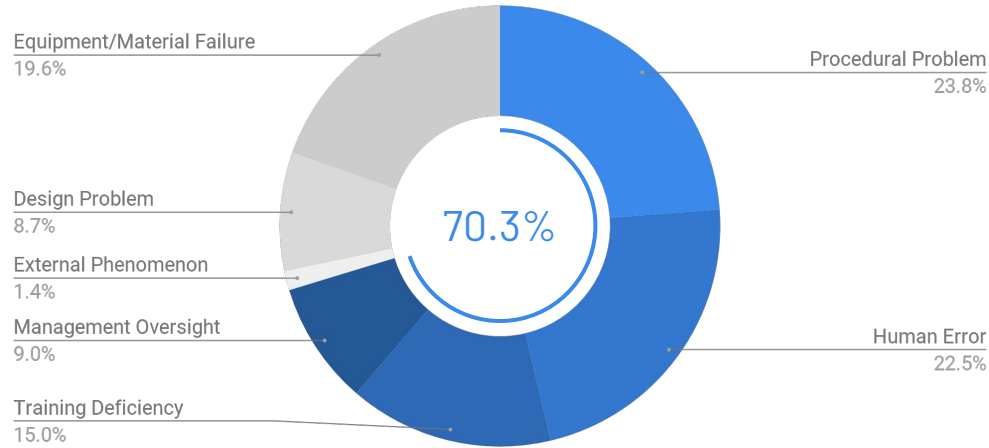


# Why automation fails



# We're wasting money

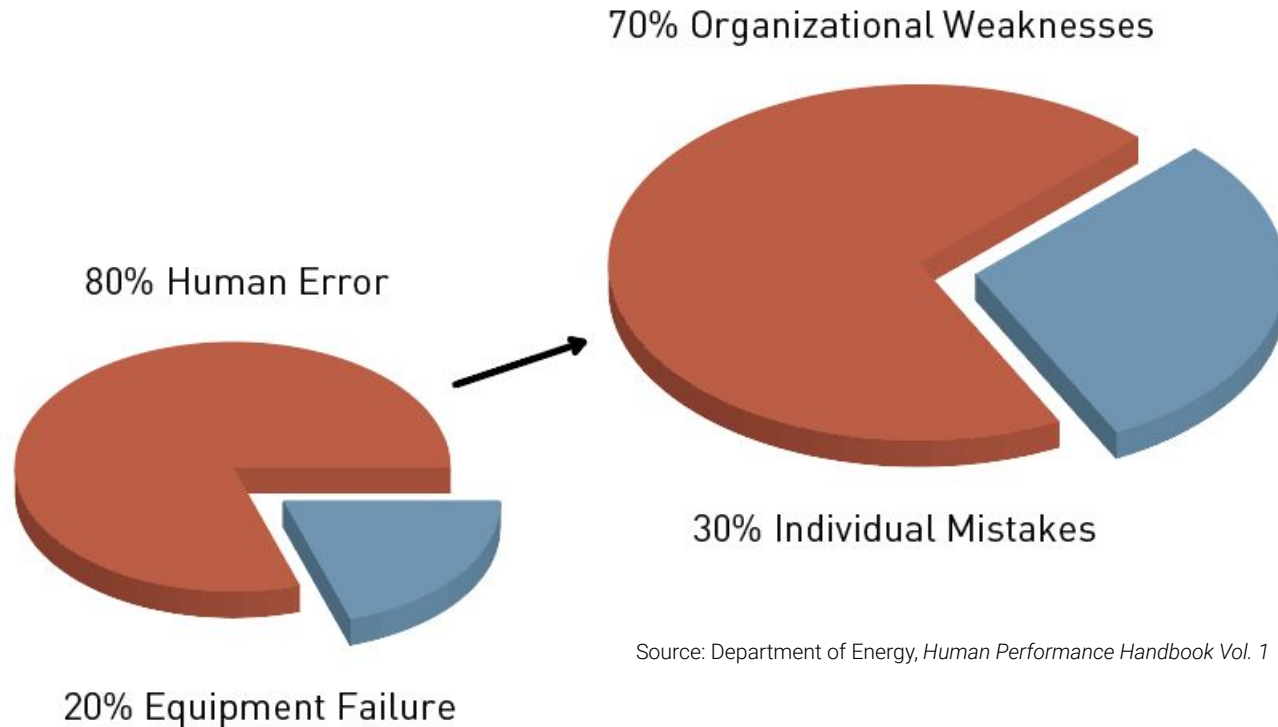
Manufacturers spending \$2T/year on automation, but **it's not solving their biggest problems**



Source: IHS Markit, DOE "Human Performance Improvement Handbook", Noria research

70-80% of factory failures are caused by **human-centric processes**

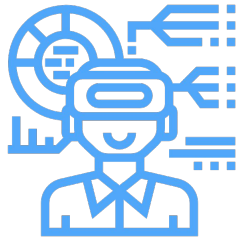
These “human problems” are symptoms of other failures



Source: Department of Energy, *Human Performance Handbook Vol. 1*

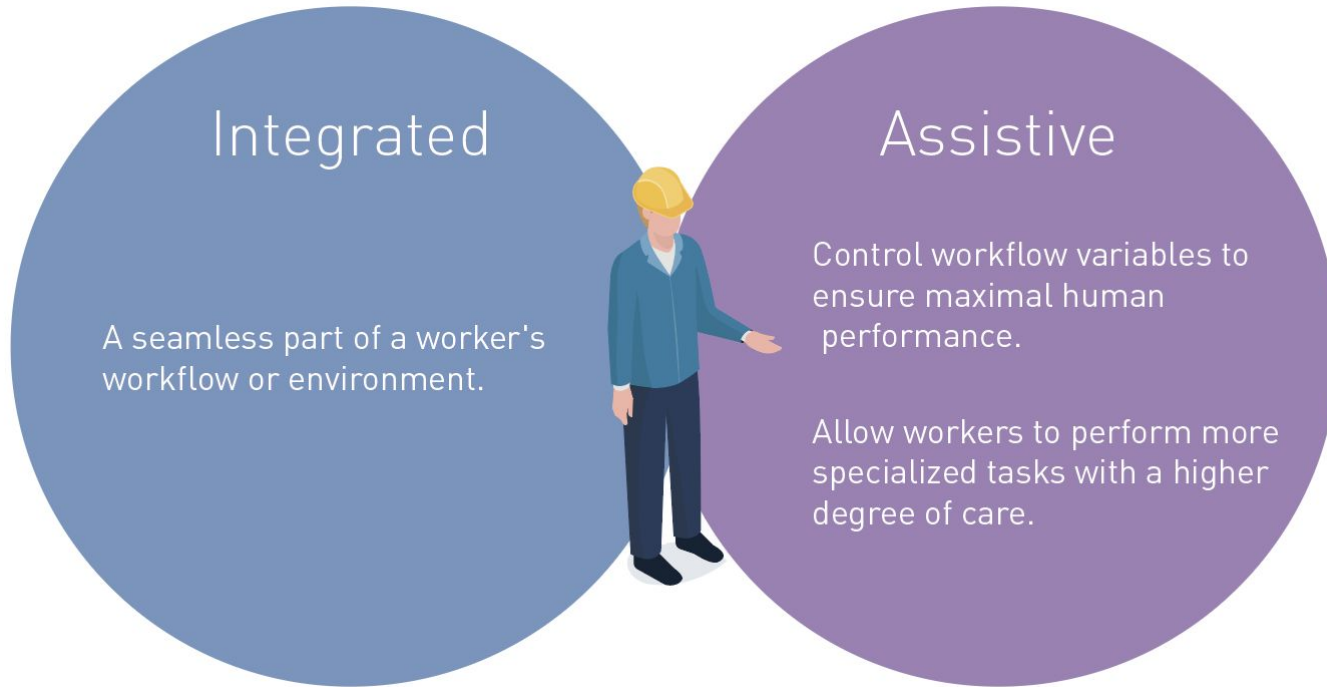
# Augmentation as a solution

# Augmentation



(noun): the use of technology to improve how *human* workers do their jobs

# What makes technology augmentative?



# Augmentation scales human capabilities

**Humans are magnificent machines.**

Excellent visual context analysis.



Real Intelligence.



Mobile articulated grippers.



- + Cloud enabled technologies --- supplement the hard skills, support uniquely human skills
- + Not just physical skills, but people management, creativity, adaptability

How does this relate to digital manufacturing?

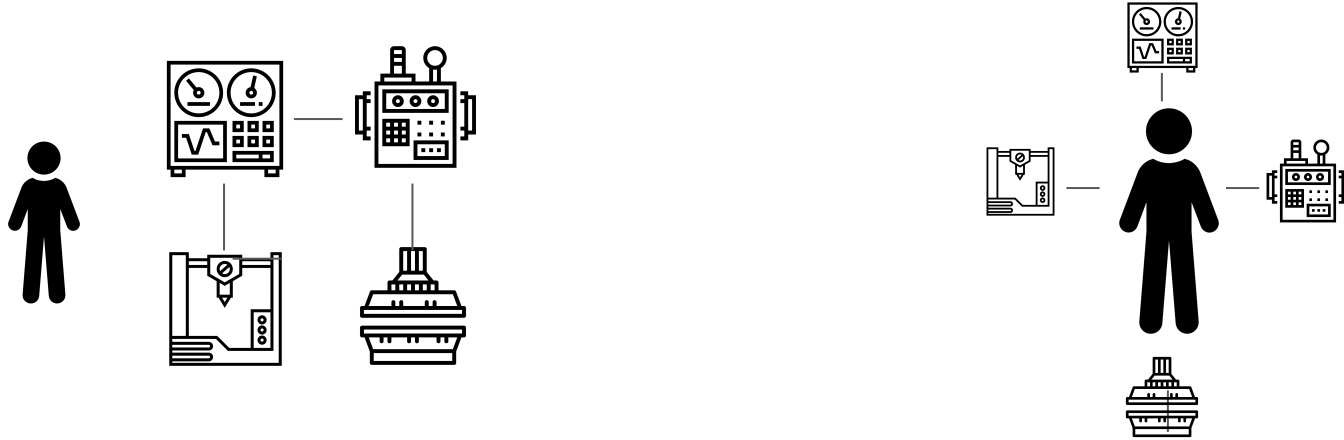
# Fundamentals of digital manufacturing

- + Connected machines and devices
- + Connected digital workflows
- + Cloud computing





Human + machine driven processes = digital manufacturing



Process Centric



Human Centric



# Benefits of connecting & augmenting workers

## Manufacturing Benefits

## Human Benefits

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↓ Fewer Errors

↑ Better Attention

↑ Higher Quality

↑ More Comfortable Conditions

↑ Higher Throughput

↑ More Innovative Thinking

↑ Faster Changeovers

↑ Long Term Worker Well-Being

↓ Less Downtime

Case Studies

# The Connected Worker Today



# Targeted training improves labor utilization at Nautique

## The Problem

Paper tracking of high mix operations made it impossible to track the success of training programs

## The Solution

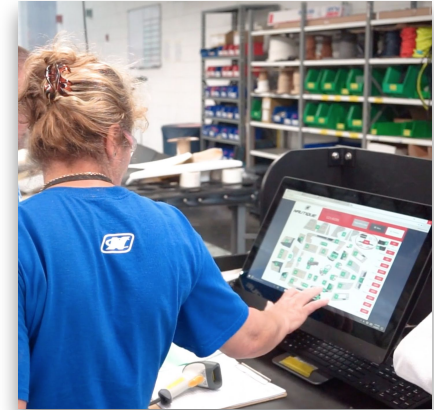
Process visibility and training applications helped engineers identify areas for improvement and design targeted training programs

## The Impact

**30%** reduction in cycle time

**\$500K** Projected annual savings

**7%** increase in production



Nautique used Tulip to locate and deliver targeted training opportunities on their upholstery line



[Watch the full case study here](#)



# Digital work instructions reduce server build time at Jabil

## The Problem

Highly variable assemblies were prone mistakes, and process data was taken manually.

## The Solution

Instrumented digital work instructions guided operators through high mix assemblies while automatically collecting production data.

## The Impact

**10%** increase in production yield

**25%** faster build time

**60%** fewer errors

**JABIL**



*["Now we have the insights to optimize even low volume production runs" - Justin Barr, Lean \(watch the full case here\)](#)*

 **TULIP**



# Empowering the new manufacturing workforce

Çağlayan Arkan, Vice President  
Manufacturing Industry  
Microsoft Corporation



# Fueling tech intensity

with



People-centered  
experiences



AI



Ubiquitous  
computing



# Trust



Privacy



Responsible AI



Security

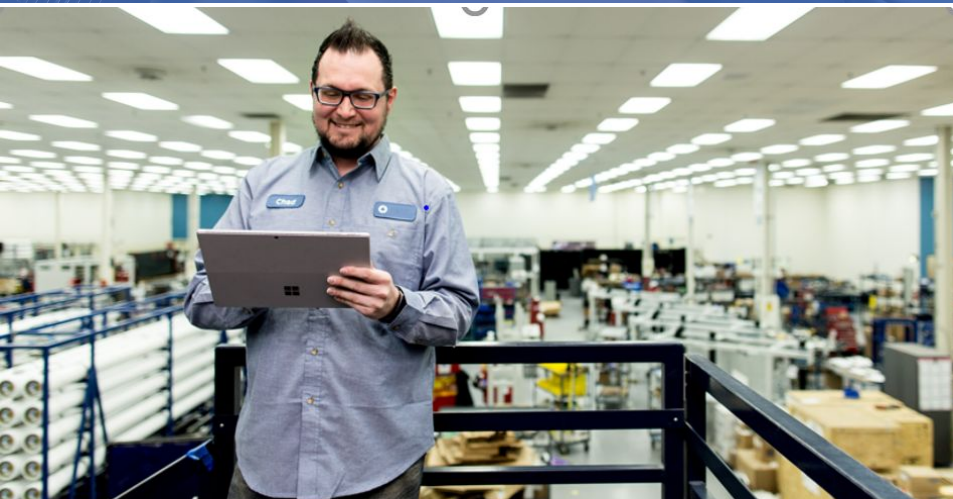




Empower your workforce



Deliver new services



Optimize digital operations



Reimagine manufacturing



Empower your workforce



Deliver new services



Optimize digital operations



Reimagine manufacturing

# Microsoft's approach to empowering the manufacturing workforce



## Modern HR & Talent Management

Empower organizations to hire top talent, onboard, and retain people who can deliver impactful results.



## Skills Enhancement

Address growing skills gap in manufacturing through reskilling with advanced capabilities like Mixed Reality, Cognitive Search and utilizing robotic process automation



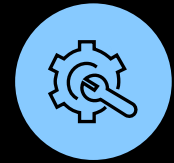
## Productivity and Teamwork

Equip manufacturing organizations and Firstline Workers with powerful and intuitive tools that deliver a connected and integrated business experience



## Connected Workplace and Health & Safety

Transform manufacturing workplace as a dynamic work environment for next generation workforce

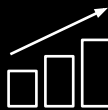


## Security & Compliance

Provide essential security and compliance in keeping critical information safe while enabling increased connectivity and mobility.

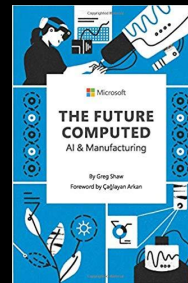


What's Next?



## Prepare your workforce

- *The Future Computed: AI in Manufacturing*  
<https://news.microsoft.com/futurecomputed>
- *The New Face of Manufacturing: Find, Train, and Keep the Workers You Need*  
[http://bit.ly/workforce\\_ebook](http://bit.ly/workforce_ebook)
- Our perspectives in blogs, videos and articles at [microsoft.com/manufacturing](https://microsoft.com/manufacturing)



Digital manufacturing is key to solving manufacturing's challenges



**2.2 Million Jobs**  
will be unfilled in manufacturing.

# Q & A

Thanks for joining!