

# Future of Automation

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# The world is changing!

Reduced  
Time-to-  
Market

Enhanced  
flexibility

Optimize  
maintenance

Documentation  
of quality

New  
business  
models

Security

Data  
transformation  
into valuable  
insights

Intuitive  
User  
Interface

Improve  
Quality

Optimized  
failure  
search

Increase  
efficiency



# What is next in automation?



# Edge Computing



**The need to process data next to the machine  
has become an obligation**



**Cloud**



**Control level**

**Siemens closes the gap!**



**Cloud**



**Industrial Edge**



**Control level**

# Siemens Industrial Edge brings IT mechanisms into the OT world



## Edge Management System

Central infrastructure to manage Edge devices



## Edge Apps

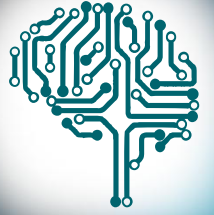
Applications for intelligent data use



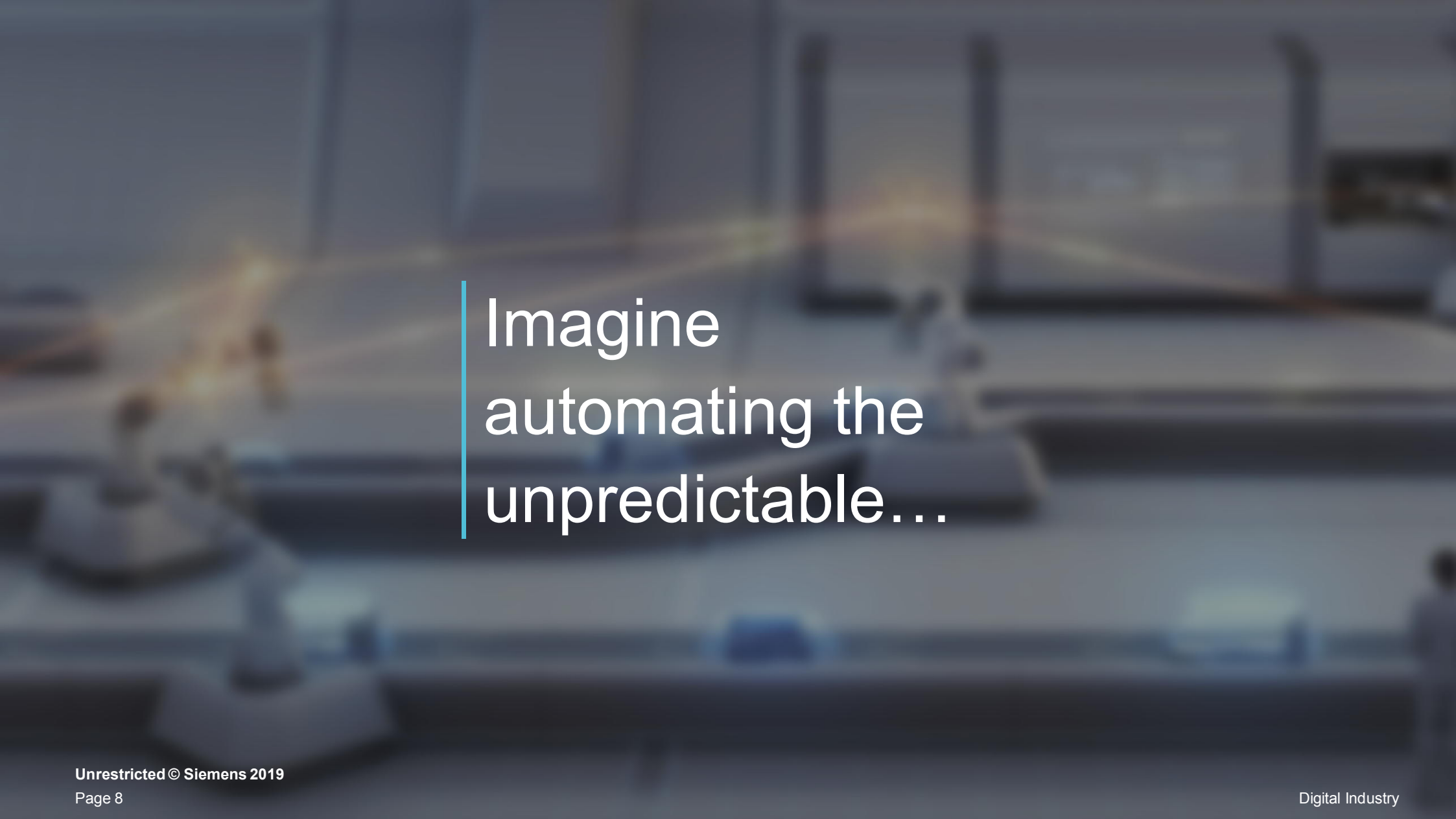
## Edge Devices

Secure, future-proof basis for running Industrial Edge applications



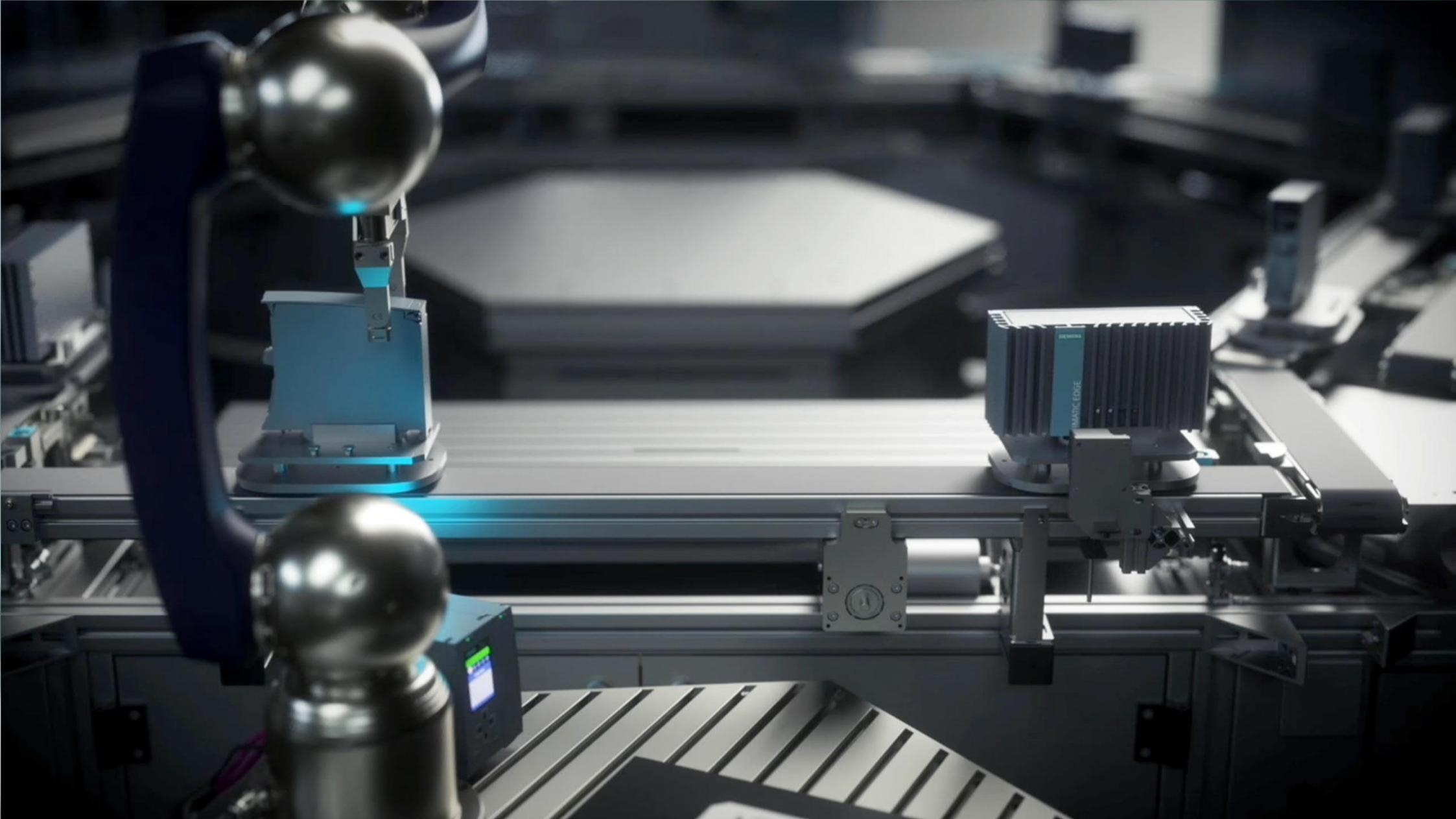


# Artificial Intelligence



Imagine  
automating the  
unpredictable...





Siemens is the first company to enable Artificial Intelligence on the control level.

NPU module



Powerful AI chip

Sensor connection

TIA Portal AI toolkit

# Artificial Intelligence

## Today

We are telling the robots how to perform.

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## Tomorrow

We will tell the robots what to do, and they will decide themselves how they do it.

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**X-RAY ON**

## X-ray-based PCB quality assurance

**Siemens Electronics Factory  
Amberg, Germany**

### **The Challenge**

Production output of SMT line limited  
by time consuming X-ray Quality tests

Every further X-ray machine requires  
additional invest of €500,000

# Non Production Critical Level

AI

Training of Algorithm

MindSphere

Continuous data storage

App Deployment/Update



Proxy

# Production Critical Level

Peak volume of 10 MB/s

Captured Data Real time capturing of >40,000 production parameters

AI

PCB Quality Prediction Algorithm

X-RAY Testing necessary?  
YES or NO

Edge Device

Assembly line

Manufacturing Execution System

Closed loop control

X-RAY

YES

NO

EWA Production Line

# Benefits of Edge Computing and Artificial Intelligence



Minimization of  
necessary X-ray tests  
by up to

30%

A solid orange horizontal bar is positioned below the 30% value.

Quality rate of

100%

A solid teal horizontal bar is positioned below the 100% value.

Reduced capital  
invest for further  
X-ray machines of

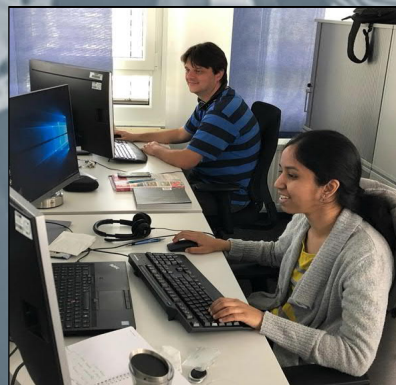
€500,000

A solid teal horizontal bar is positioned below the €500,000 value.

# How I adapted my organization to the needs of digitalization



# Diversity, complementarity, and peer recruitment are essential to build a high-performance team





# Building internal start-ups with great independence and empowerment for disruption





- **Apply Edge technology to drive IT / OT Convergence and new business models**
- **Leverage AI to increase flexibility and increase degree of automation**
- **Discover new organizational setups to support your digitalization journey**