



Microsoft Ignite The Tour





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Build Embedded and IoT Solutions with Microsoft Windows IoT Core (BRK30077)

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Microsoft Azure MVP

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<http://passionatecoder.ca>



@EhsanEskandarim



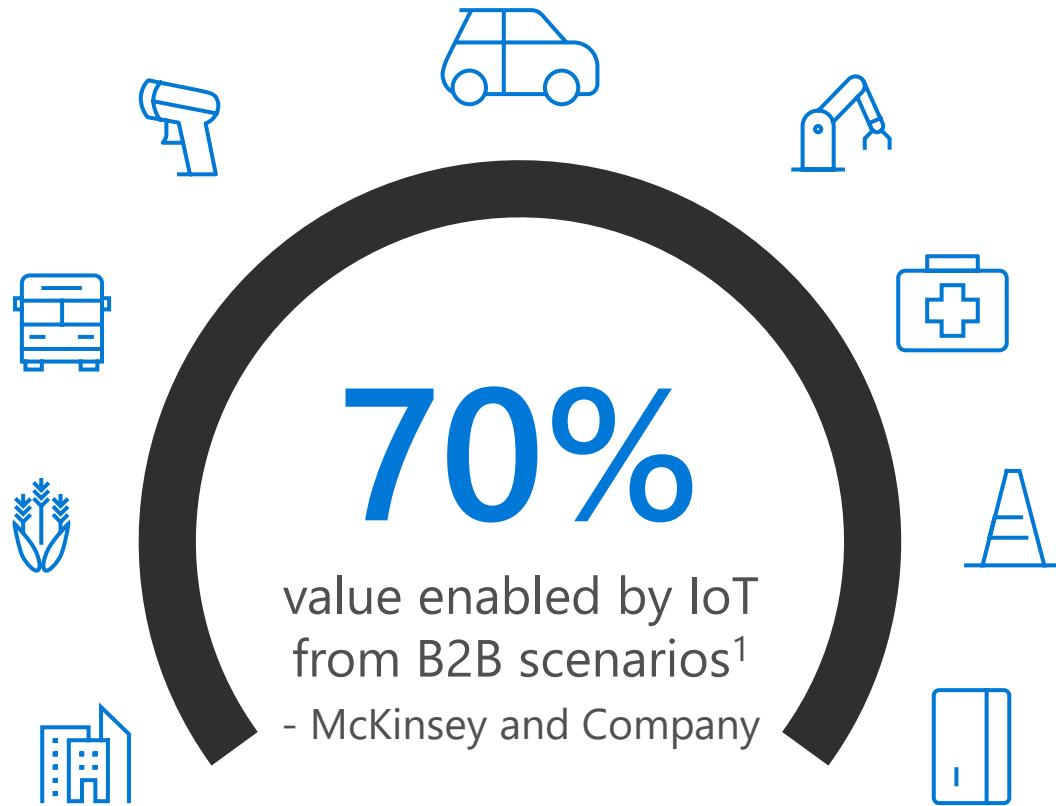
Ehsan.Eskandari@BuildOnCloud.net



Agenda

- The IoT opportunity
- What is Windows IoT Core
- Demo
- Windows IoT Core – Fast, Safe, and Smart
- Q&A

The Internet of Things opportunity



\$745 billion

worldwide spend on IoT for 2019² - IDC

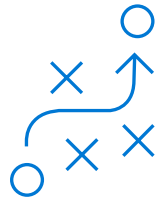
80 billion

connected "things" by 2025³ - IDC

\$250 billion

going to IoT hardware in 2019² - IDC

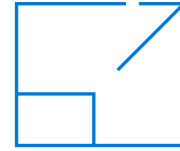
The opportunity is large, but IoT projects are complex



Difficult to
construct



Slow to
build

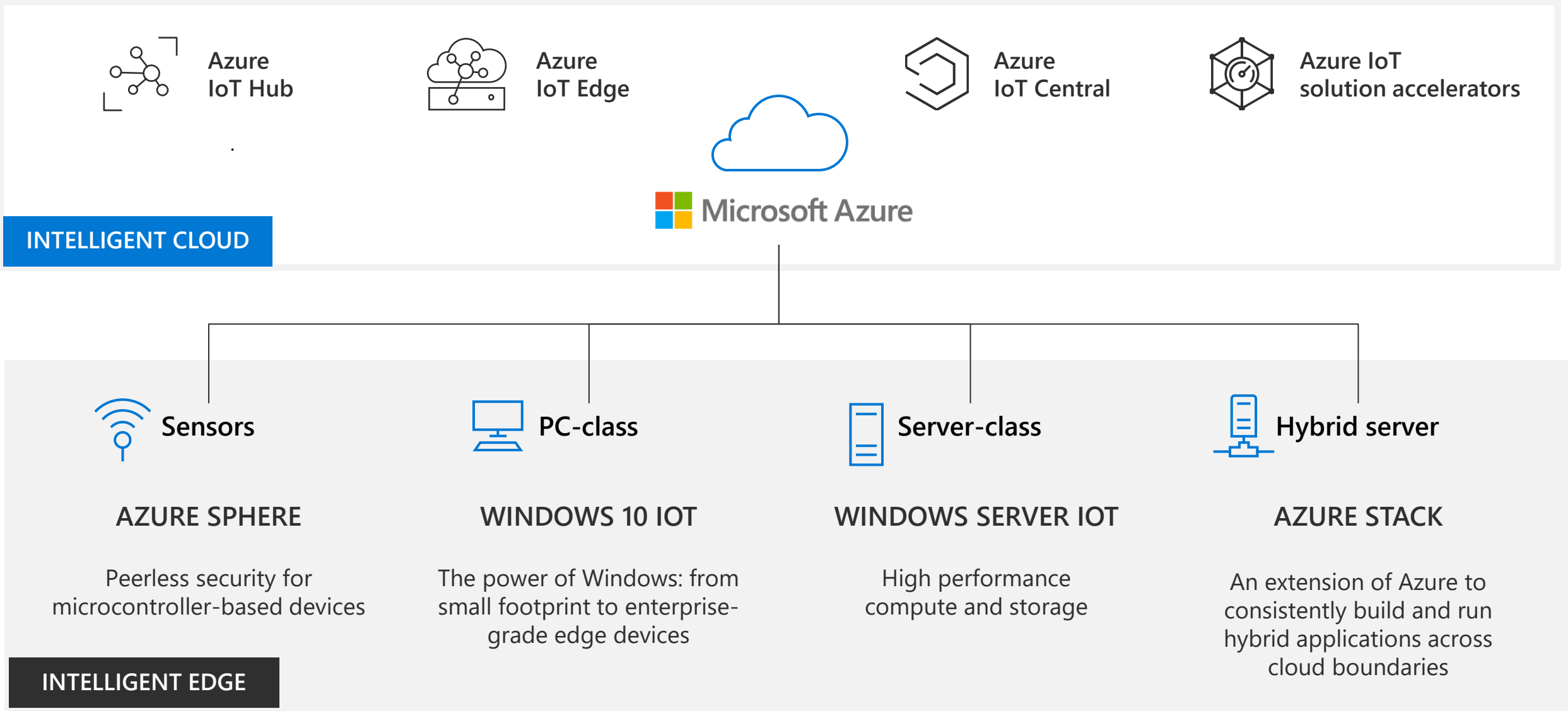


Hard to
scale



Disparate systems
& hardware

Comprehensive IoT platform from Microsoft

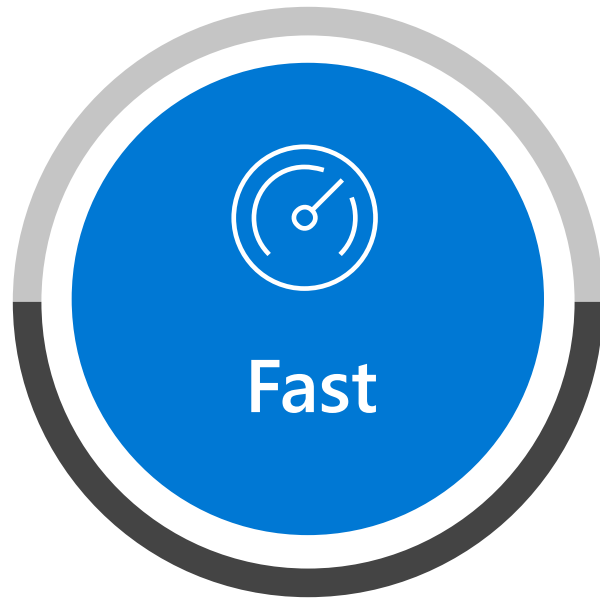


What is Windows 10 IoT?



Windows 10 IoT

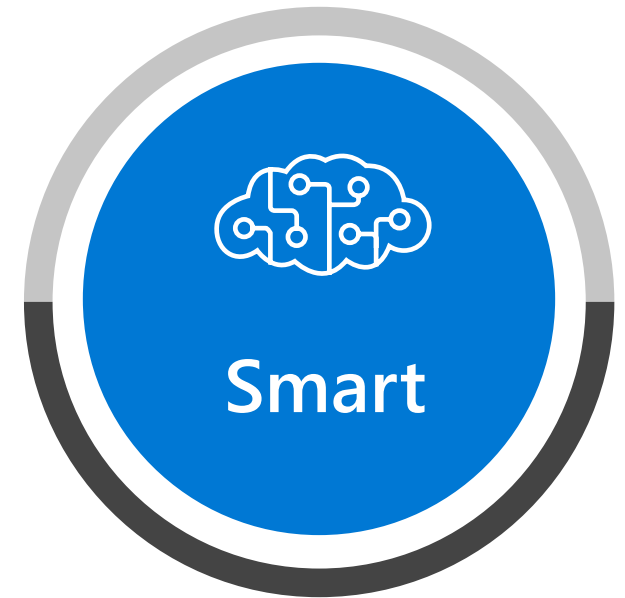
The foundation for your intelligent edge



Quickly get IoT
devices to market



Receive turnkey platform security
that's always up-to-date*



Build smart devices for the
intelligent edge

*For the supported lifetime of the device.

Windows IoT family

Windows 10 IoT Core

For small-footprint, smart devices

Enabling lower cost devices

Windows 10 IoT Enterprise

For fixed-function, smart devices

Locked down, full edition of Windows 10

Windows Server IoT 2019

For demanding edge computing workloads

Full power of Windows Server 2019, licensed for fixed function devices



10 Years of OS Support, security & manageability

Introducing Windows 10 IoT Core





Step 1

Windows 10 IoT Core

Royalty-free OS for prototyping, developing & testing IoT devices

Step 2

Windows 10 IoT Core Services

Commercialization of your IoT devices with ongoing services

Windows 10 IoT Core

For small-footprint, smart devices

MINIMUM REQUIREMENTS

400 MHz

x86, x64 or ARM CPU

512 MB

RAM

2 GB

Storage

Small footprint with familiar Windows security and manageability

Enables lower BOM costs

Support for both ARM and Intel hardware

Easy connect to the cloud to scale intelligence at the edge

Modern app platform and flexible UI customizations

Easily implement advanced features including machine learning, computer vision, and containers

For details see <https://docs.microsoft.com/windows-hardware/design/minimum/minimum-hardware-requirements-overview>



Step 1

Windows 10 IoT Core

Royalty-free OS for
prototyping, developing
& testing IoT devices

Step 2

Windows 10 IoT Core Services

Commercialization of
your IoT devices with
ongoing services

Windows 10 IoT Core Services

Commercializing Windows 10 IoT Core based devices
with updates and support

INNOVATE WITH WINDOWS 10 IOT CORE SERVICES



Improve ROI with
predictable long-
term operational
cost model. Flexible
purchase channels
with monthly
subscription or OEM
pre-pay options

Benefit from device stability with 10
years of operating system support

Reduce operating costs with over-
the-air (OTA) updates for the
operating system, as well as your
apps and drivers

Enhance security with Device Health
Attestation

Windows 10 IoT Core

For small-footprint, smart devices

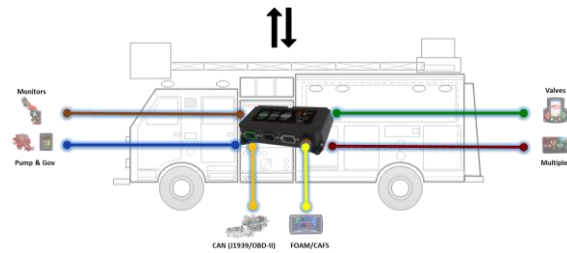
Misty Robotics

Launched at CES 2018



IDEX Fire and Safety

Technology for firefighters and EMTs



Askey Turbomate

Industrial smartwatch



XOGO Mini 4k

4K Digital Sign player

Now available to order



JCI GLAS

Smart thermostat with Cortana built-in

Launched at CES 2018

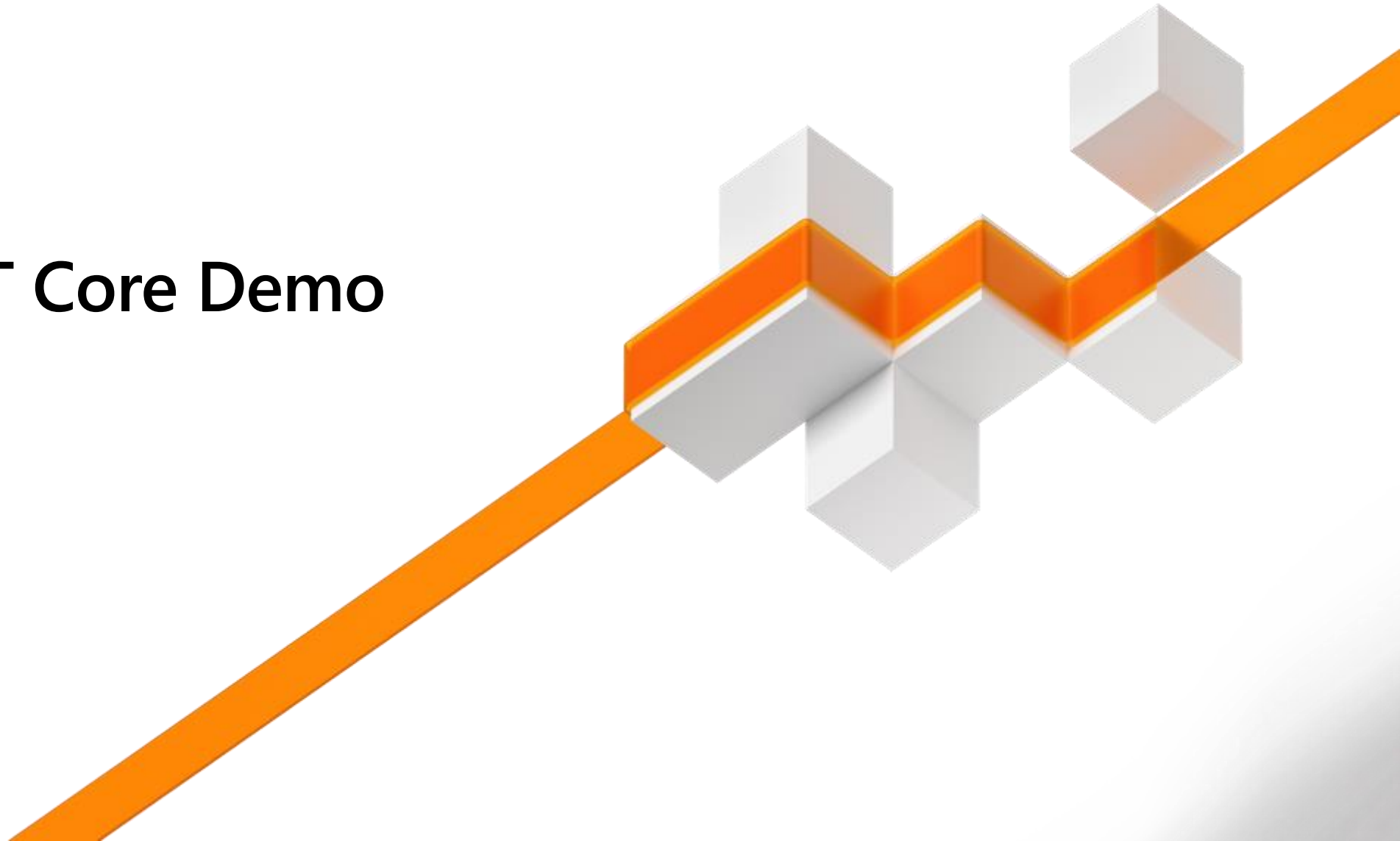


Keith & Koep Cocktail Mixer



Windows IoT Core Demo

Ehsan Eskandari



Windows 10 IoT

The foundation for your intelligent edge



Fast



Safe



Smart



Fast

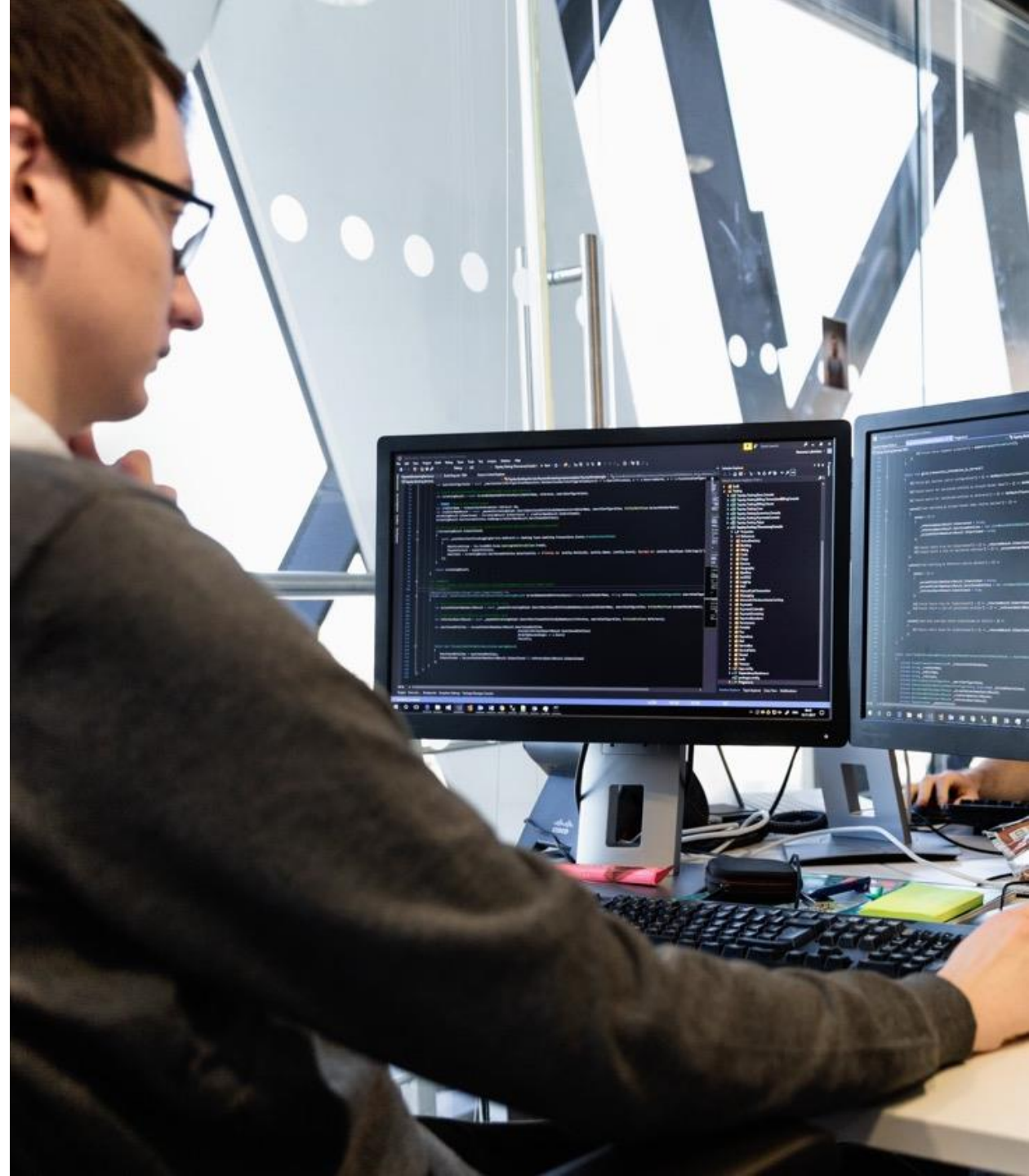
- Build
- Manufacture



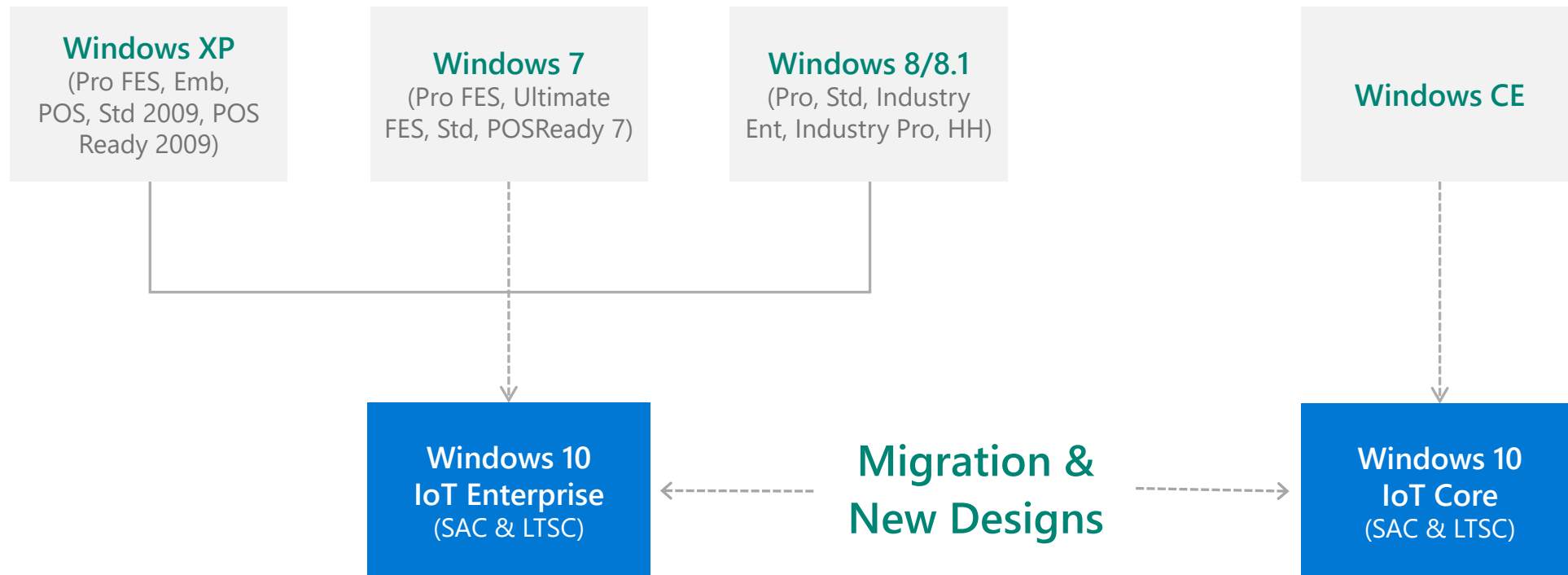
Build

Get up and running quickly

- Built-in security, connectivity, and easy access to NUI options
- Familiar development environment with best-in-class tools
- Easy access to hardware directly from app code
- Preserve your Windows CE application investments with the CE Platform Abstraction Layer
- A powerful set of language-locales that enables worldwide distribution



Customer Options – Migration & New Designs



Manufacture

Take advantage of the heritage of the world's leading business operating system

- Windows offers an extensive partner ecosystem of device makers, developers, consultants, and integrators
- Leverage the popular NXP i.MX 6/7/8 family of SoCs to create low-cost, powerful, secure IoT solutions
- Microsoft manufacturing guidance and tooling jump-starts production lines
- Scalability for build, test, gates, and flighting tools



Windows 10 IoT

The foundation for your intelligent edge



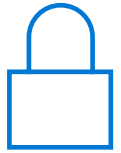
Fast



Safe



Smart



Safe

- Device protection
- Data protection
- Threat disruption
- Security management



Device Protection

Get built-in protection with security in mind

- **Secure Boot** only allows validated operating system images to boot
- **Trusted Platform Modules (TPM)** offers protection of keys and certificates
- **Trusted Execution Environments** provide additional security for code execution and I/O operations



Data protection

Keep your data safe at rest, in motion, and during execution

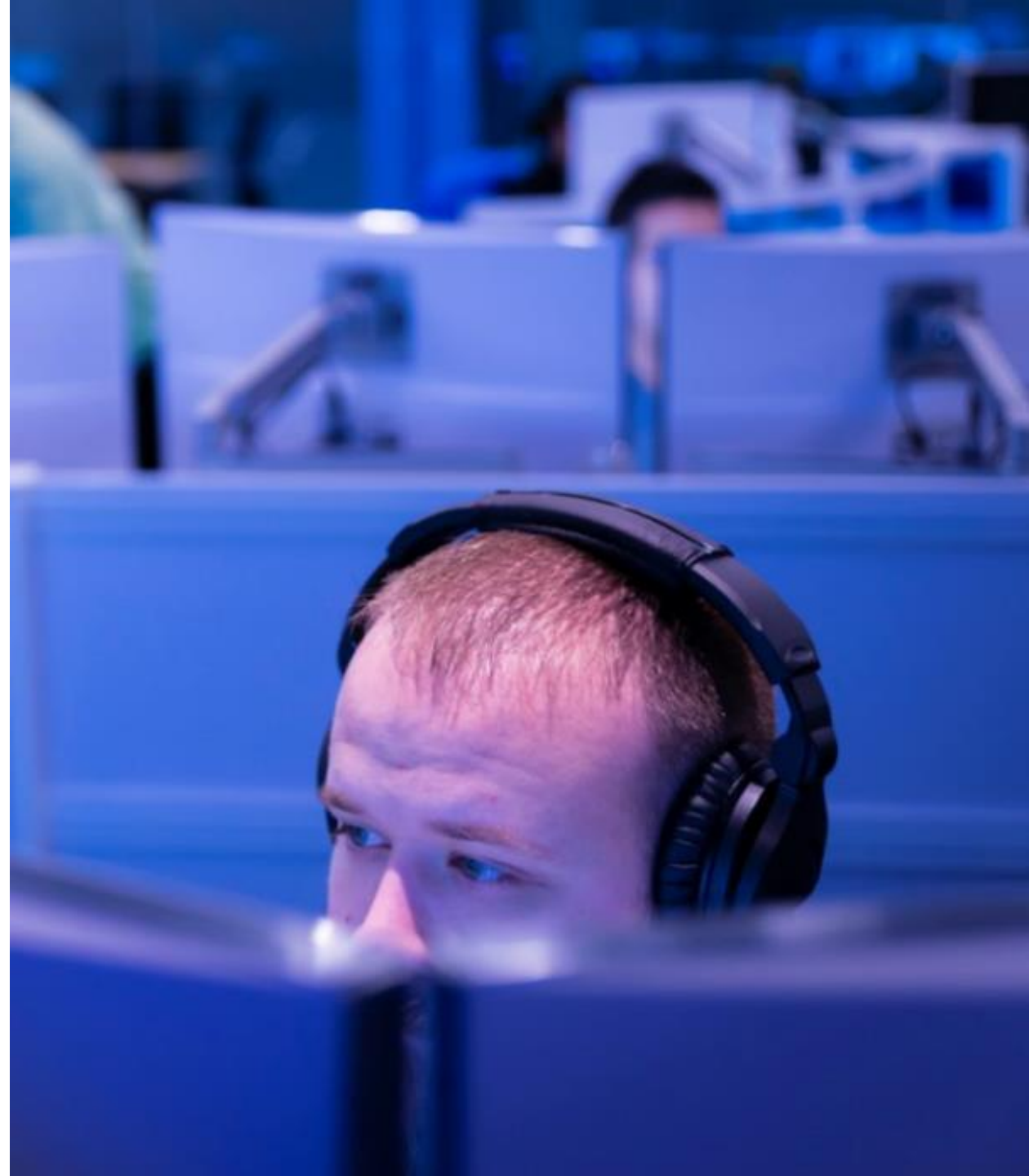
- BitLocker encryption secures on-device content
- TLS or VPN create and protect secure, authenticated connections to the intranet or cloud
- Support for secure network includes protocols like TLS 1.3 and SSL as well as IPsec VPN connections



Threat disruption

Get next-generation protections to quickly prevent, detect, and respond to attacks

- Monthly security updates help keep your devices protected
- Azure Security Center for IoT unifies security management and enable end-to-end threat analysis and protection across hybrid cloud workloads



Security management

Validate the health of a large volume of IoT devices

- Windows Device Health Attestation (DHA) offers automated security health checks
- Compliance management requires your devices to report as healthy



Windows 10 IoT

The foundation for your intelligent edge



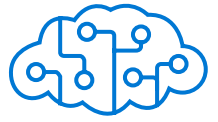
Fast



Safe

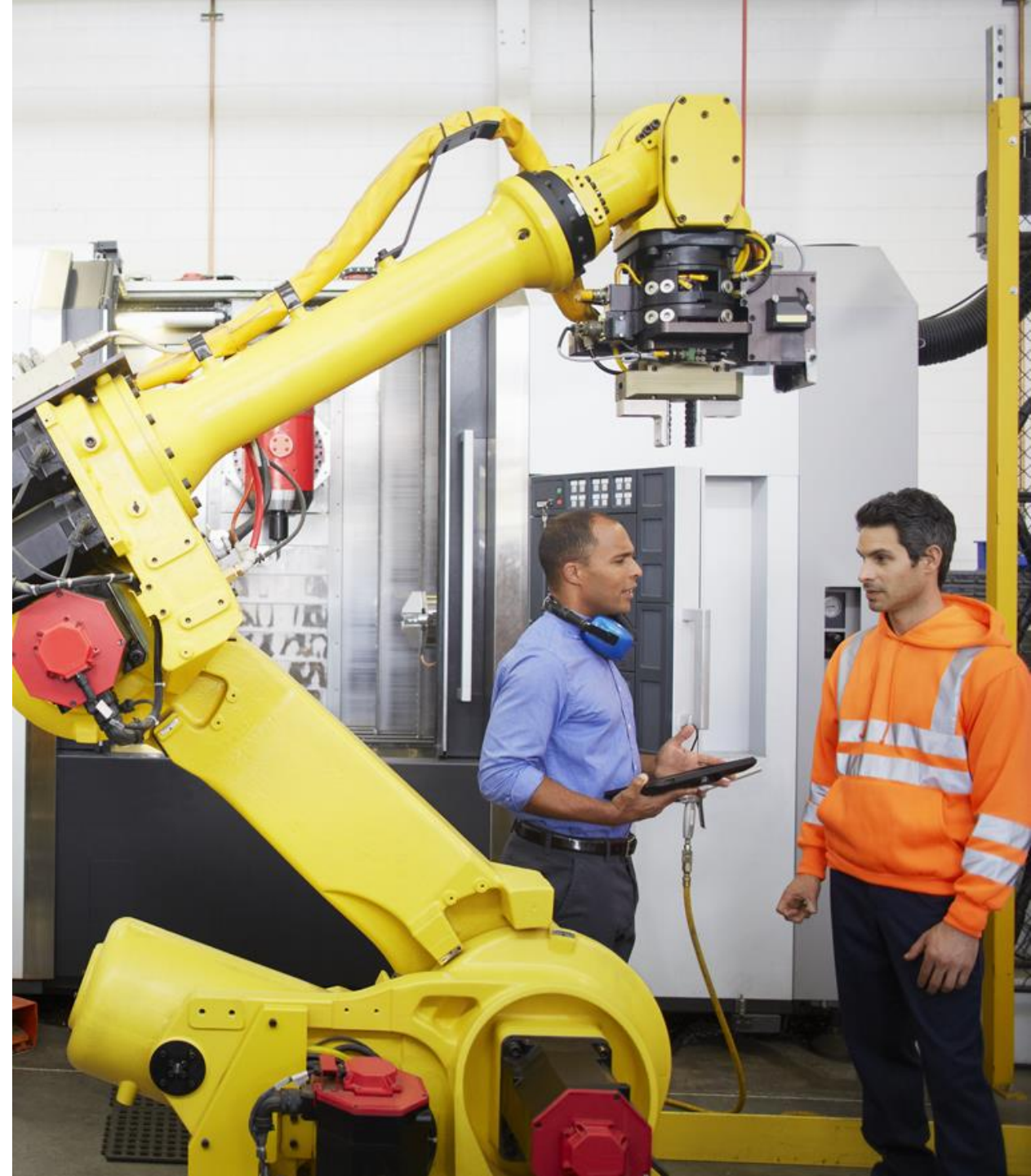


Smart



Smart

- Full-featured platform
- Azure IoT Edge support



Azure IoT Edge

Extend cloud intelligence and analytics to edge devices

- Securely move cloud and custom workloads to the edge
- Leverage the familiar security, manageability and enterprise support of Windows 10 IoT
- Seamlessly deploy AI and advanced analytics
- Configure, update and monitor edge devices from the cloud
- Code symmetry between cloud and edge for easy development and testing



An abstract geometric pattern consisting of a network of interconnected lines and nodes. The nodes are represented by small blue dots and larger grey hexagons, connected by thin white lines. The pattern is distributed across the entire dark blue background, creating a complex, web-like structure.

Robot Operating System

ROS – The Robot Operating System

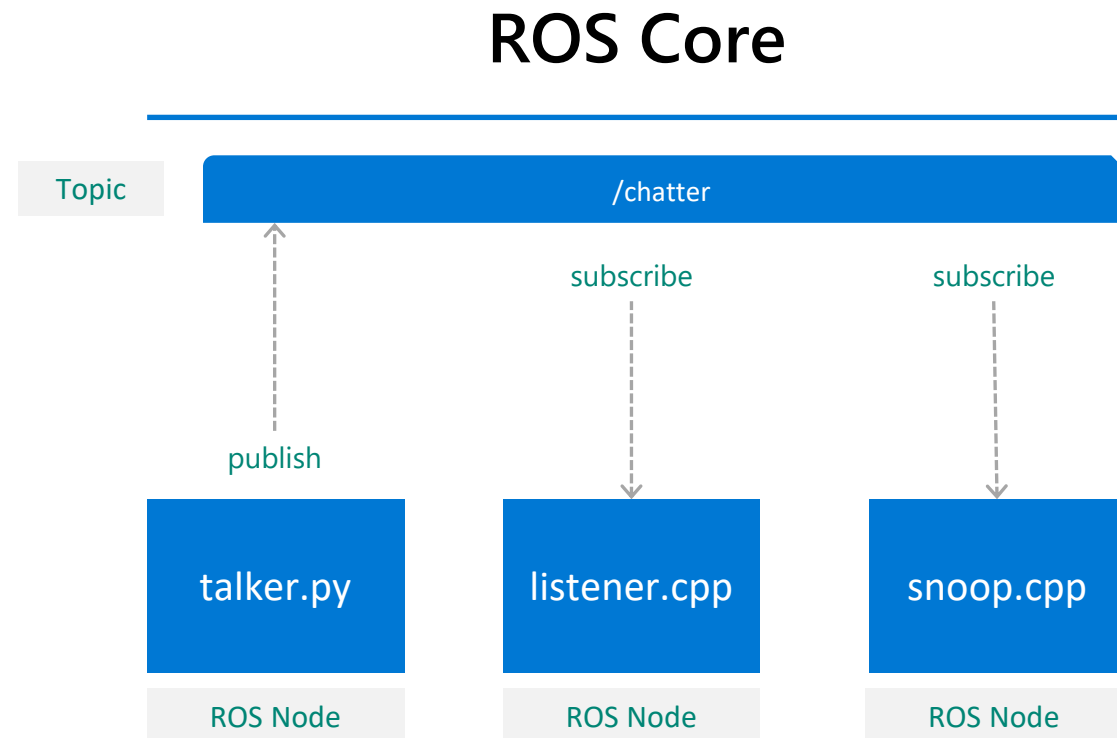
Mature open source
framework for robots

Open Robotics developing and
maintaining the core of ROS

ROS Industrial Consortium
bringing ROS to the factory

Complex robot behavior is
broken down into nodes

Thousands of community
implemented nodes





Windows 10 IoT: now a supported platform for ROS

"We're excited to add Windows IoT as a supported platform for ROS (the Robot Operating System). The ROS developer community can now take advantage of a wide array features in Windows IoT, including hardware-accelerated machine learning, computer vision, and cloud capabilities such as Azure Cognitive Services. I look forward to seeing the next generation of ROS applications that are enabled by Windows IoT support."

Brian Gerkey, CEO of Open Robotics

Windows 10 IoT Core Pricing

Purpose	Pricing
Prototyping	Free
Long-Term Servicing Channel (LTSC) for commercialization	Small fee per device with access to 10 years of support, update control and Device Health Attestation (DHA). Learn more here .
Semi-Annual Channel (SAC) for commercialization	Free, but you will not get access to 10 years of support, update control, or DHA. You will also need to sign our commercialization agreement. Request it here .

Summary

- Windows 10 IoT Core has the combination of security, connectivity, and access to make it easy to use for both prototype and production, as well as for makers and hobbyists.
- If you've invested in Windows CE, we have a path forward to you
- Windows 10 IoT all-up is a growing community, and includes support for exciting technology like the Robot Operating System (ROS)





Resources



Session Resources

<https://developer.microsoft.com/en-us/windows/iot>

<https://docs.microsoft.com/en-us/windows/iot-core/resources>

<https://docs.microsoft.com/en-us/windows/iot-core/windows-iot-core>



Session Code on GitHub

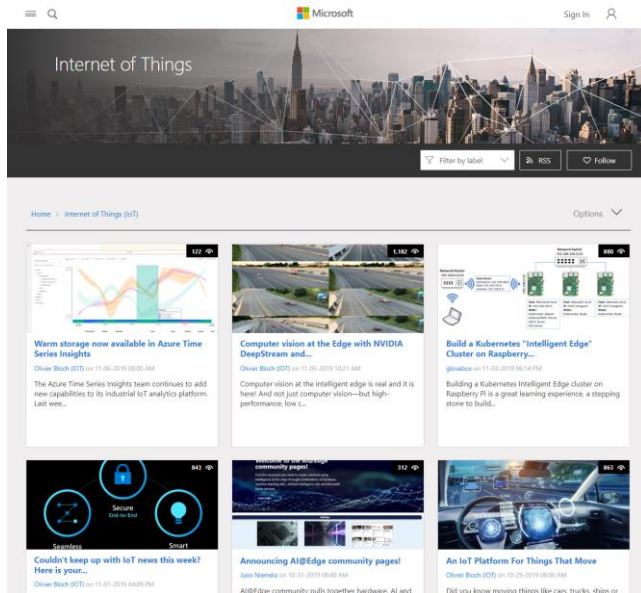
<https://github.com/calloncampbell>



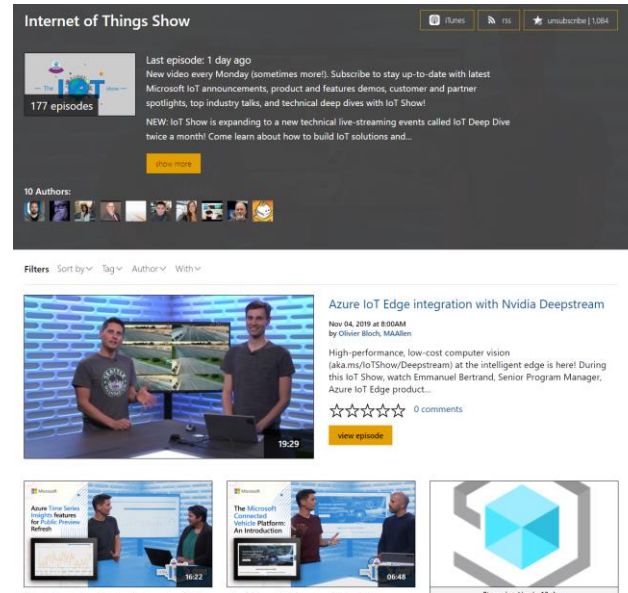
All Event Resources

<http://aka.ms/mymsignitethetour>

Additional resources



aka.ms/IoTBlog



aka.ms/IoTShow

aka.ms/IoTShow/YouTube



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Thank You

ευχαριστώ Salamat Po متشكراً شكراً Grazie
благодаря ありがとうございます Kiitos Teşekkürler 谢谢
ឧបត្ថម្ភ Obrigado شكریه Terima Kasih Dziękuję
Hvala Köszönöm Tak Dank u wel ДЯКУЮ Tack
Mulțumesc спасибо Danke Cám ơn Gracias
多謝晒 Ďakujem תודה நன்றி Děkuji 감사합니다

Q&A + Follow up Discussion

