

From Sensors to Services

Power of Intelligent Systems

Amit Verma
Microsoft Corp.

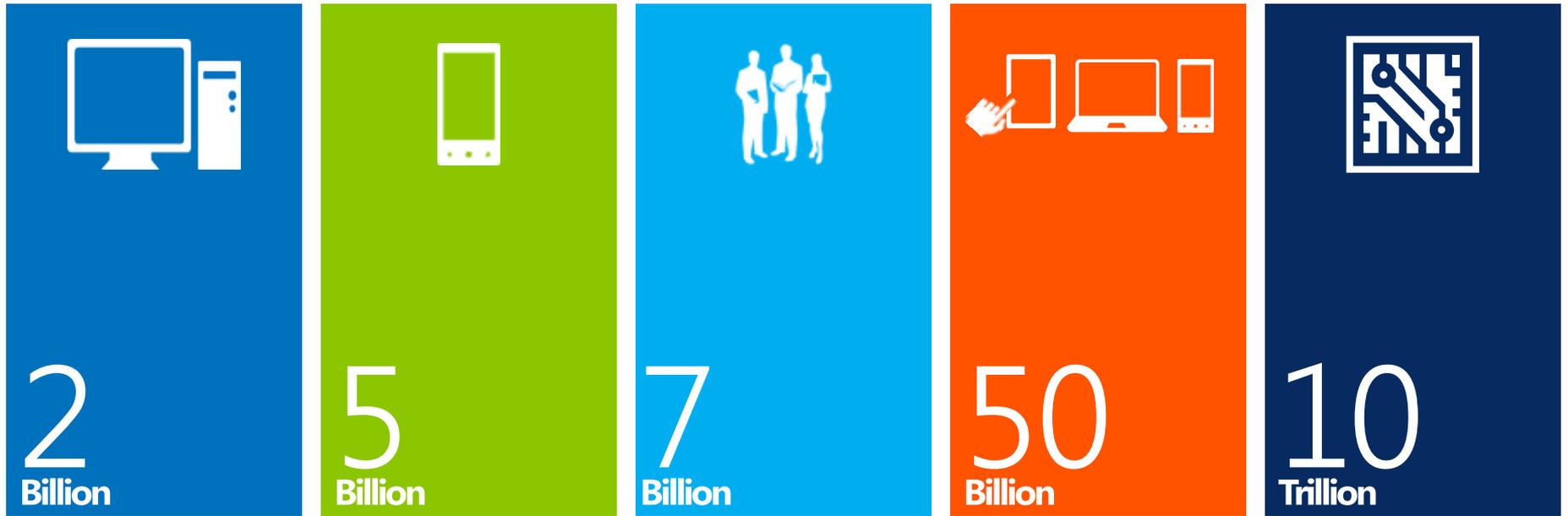


50

Billion connected devices by 2020



The Growth of Connected Devices



Technological Trends Driving Change

- ▶ Connectivity
- ▶ Big data
- ▶ Computing power
- ▶ Human Interactivity
- ▶ Security

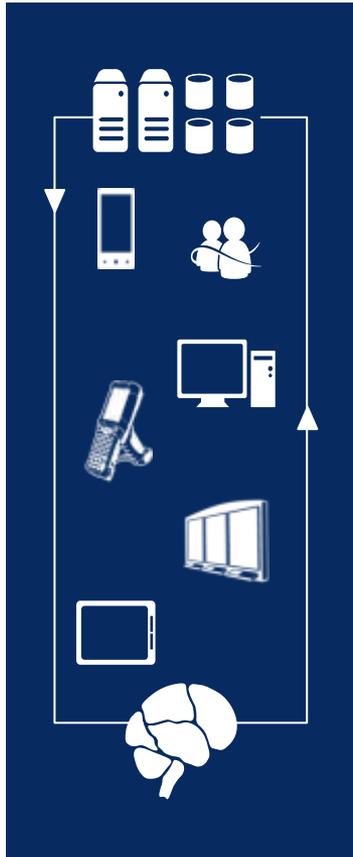


Dramatic Change in Data Processing

Data
becomes
the new
currency



Birth of the Intelligent System

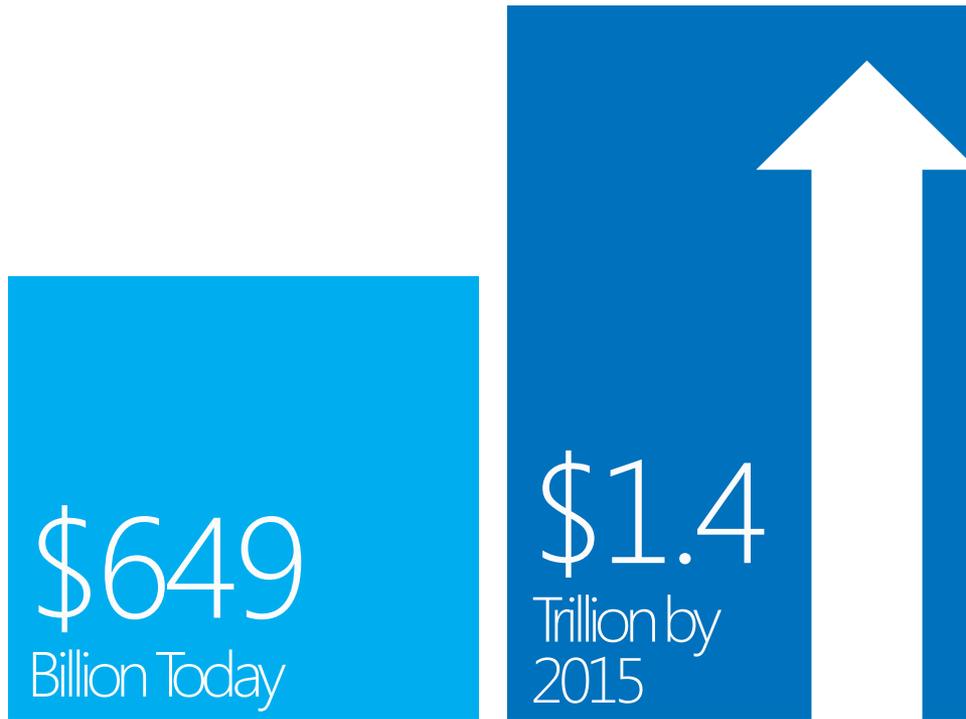


Intelligent Systems

An intelligent system enables **data** to flow across an enterprise infrastructure, spanning the **devices** where valuable data is gathered from employees and customers, to the **back-end** systems where that data can be **translated** into insights and **action**.

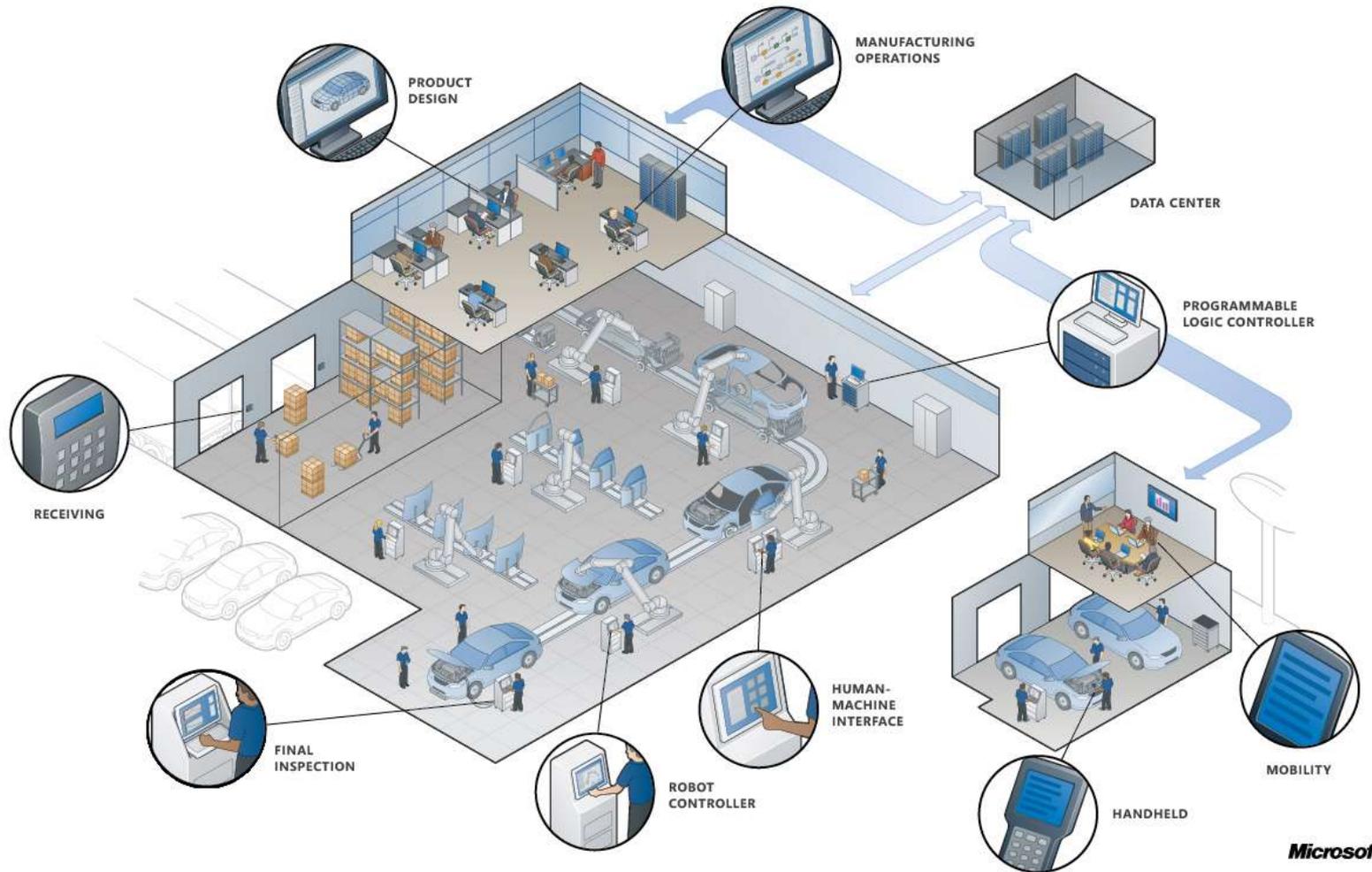
Intelligent Systems

Revenue and Shipments by 2015

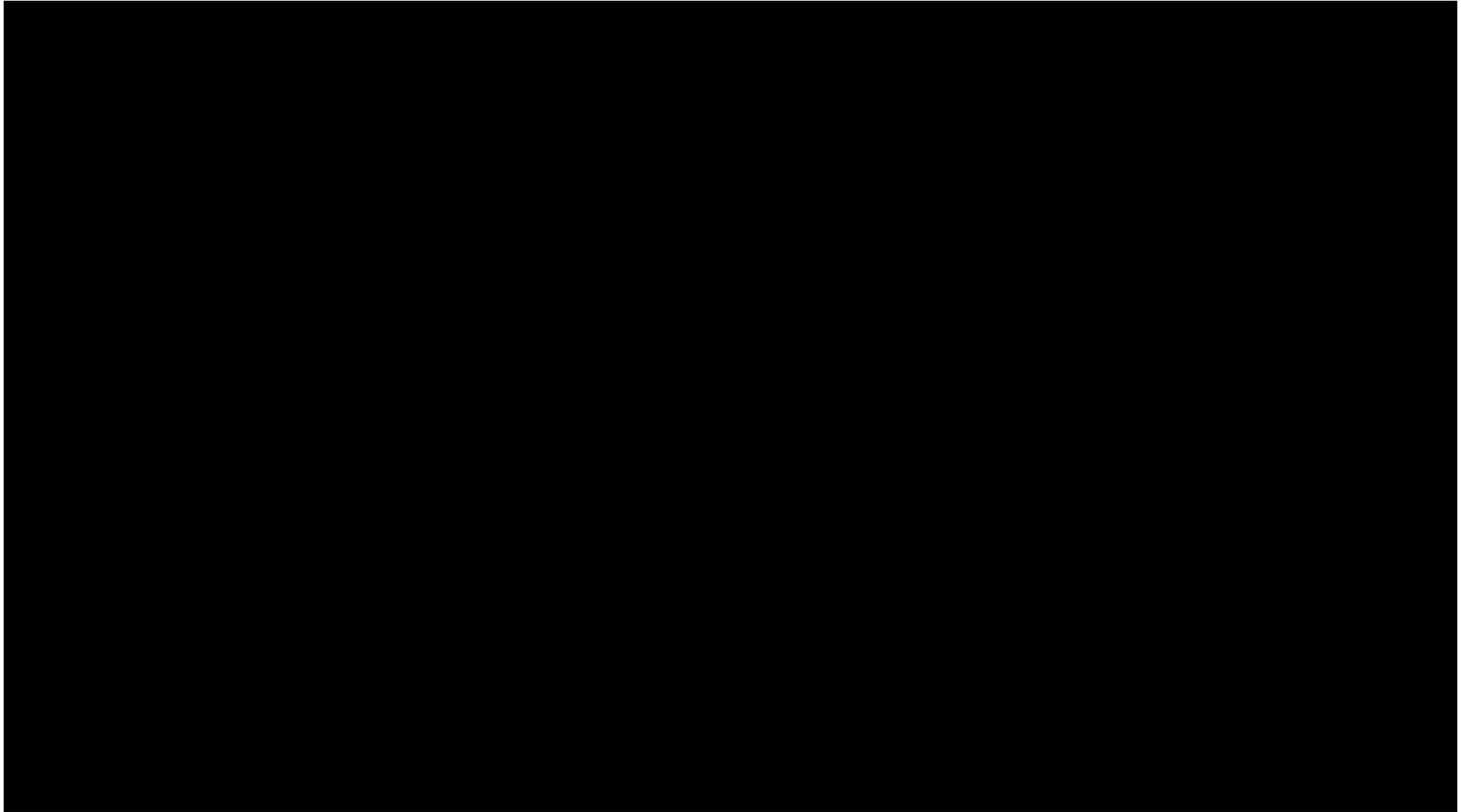


Example:

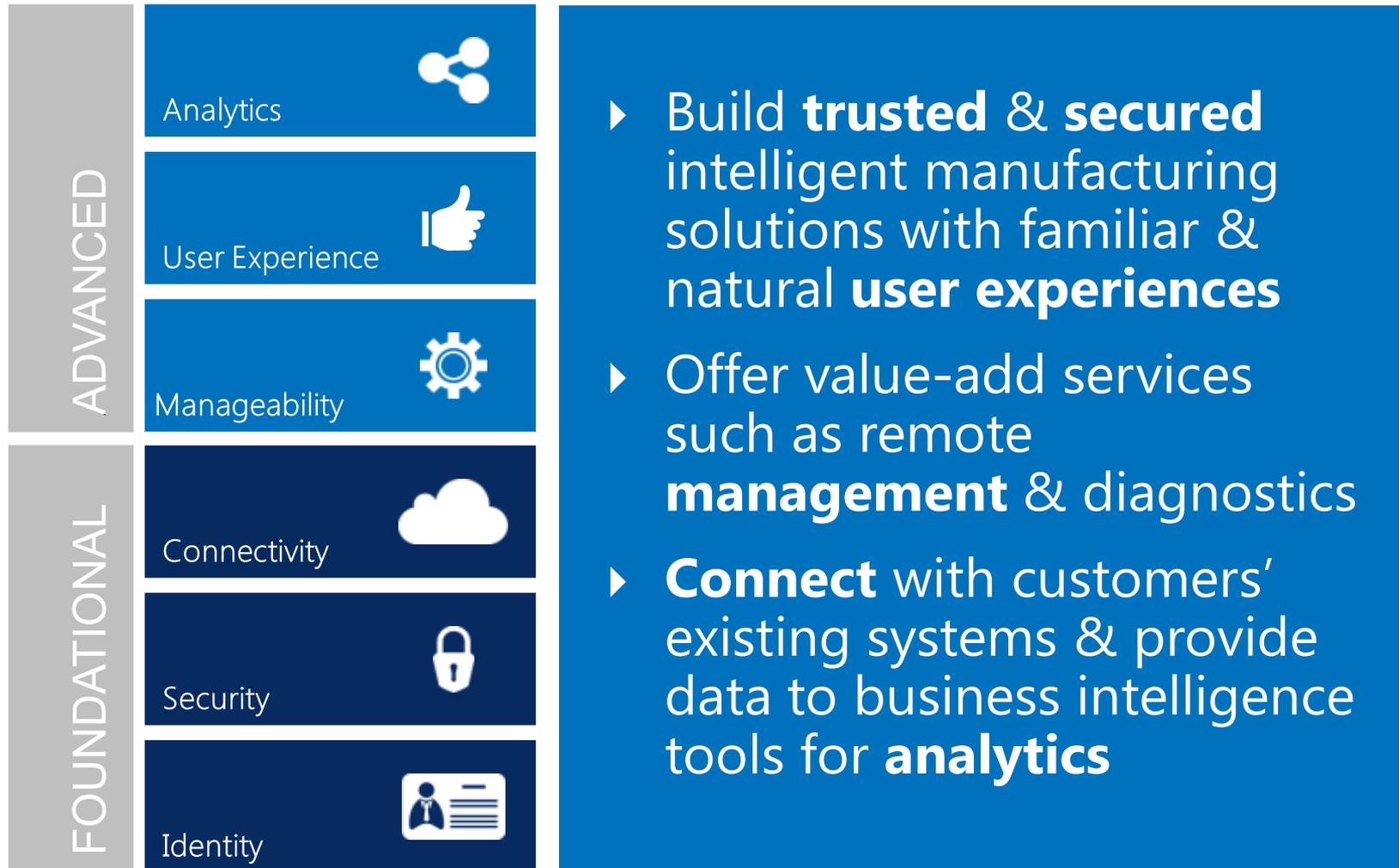
Intelligent Systems in Manufacturing



Manufacturing meets cloud - POC



Intelligent Systems in Manufacturing



Case Study - Summary

I N T E L L I G E N T S Y S T E M S I N A C T I O N

CHALLENGE

To handle continuous production for **Chrysler Group's Jeep® Wrangler**, KUKA Systems Group **needed an automated manufacturing solution** that would connect **assembly-line robots** with a controller, multiple devices, applications, and back end systems.

SOLUTION

The Kuka Systems implemented an **intelligent system** anchored by Windows Embedded and Microsoft SQL Server that **controls 246 robots** and produces more than **700 car bodies each day**.

BENEFITS

- **Flexibility** to adapt quickly to **daily changes** in production requirements
- **Enhanced usability** with an integrated system
- **Continues availability** operating manufacturing for **20 hours a day for 6 Yrs**

KUKA


Windows
Embedded



K U K A S Y S T E M S G R O U P

Business Needs

The KUKA logo is displayed in orange capital letters on a blue square background.

I N T E L L I G E N T S Y S T E M S I N A C T I O N

KUKA Toledo Production Operations (KTPO), the company's American subsidiary in Toledo, Ohio, successfully competed for a contract to manufacture Jeep Wrangler car bodies for the Chrysler Corporation. As part of the agreement, KTPO would be responsible for the complete assembly of multiple car models in one factory.

- Assembly of **multiple car** models in **one factory**.
- **First time integration** of devices, software, and controllers.
- Needed networked controller for **fluctuating production requirements**.

"To handle the high volume, the company required **outstanding reliability** and **continuous uptime**"

"We couldn't have any latency in the manufacturing system, so we **needed tools** and technology that allow us to **access information** without affecting the flow of the shop floor."

**Craig
Niedermier**

IT Manager,
KTPO

Intelligent Solution

I N T E L L I G E N T S Y S T E M S I N A C T I O N

KUKA

A Jeep Wrangler JK model underbody is robotically validated for **dimensional control**



A Jeep Wrangler JK model of full body gets **welded on the framing line.**



"The idea was to use a **mainstream technology** that was developed for other domains like the consumer industry, and drive **service-oriented** technology into the automation world"

"And of course we were able to **benefit** from **built-in technologies** right from the beginning, including the Microsoft .NET Framework and network connectivity."

Michael Haag

Head of R&D
- KUKA
Robotics Corp

Intelligent Solution

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I N T E L L I G E N T S Y S T E M S I N A C T I O N

The **246 robots** on the shop floor are connected to **33 controller** points, which connect to the **primary controller** and a **Microsoft SQL Server cluster** running on Windows Server. The cluster is used to manage production data, and it also shares data with a **manufacturing execution system** that runs the shop floor. **Other SQL Server** clusters support an **SAP** enterprise resource planning system and **quality** assurance programs.

The network architecture supports **1,444 nodes** capable of connecting with approximately **60,000 devices** such as welding and sealing equipment. KTPO is also implementing Microsoft SharePoint Server 2010 to support facility administration.

246

ROBOTS

33

CONTROLLERS



SQL SERVER
CLUSTER

1444

NODES

60,000

DEVICES

Benefits

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I N T E L L I G E N T S Y S T E M S I N A C T I O N

An end-to-end, automated manufacturing solution based on Microsoft technology, KUKA Toledo Production Operations has gained better business agility, continuous operations, and a more accessible system with a simplified, Windows-based interface.

Better Flexibility

By implementing a solution as a service driven by an intelligent system, KTPO has realized multiple benefits, including **the ability to adapt quickly to daily changes in production requirements.**

Continuous Uptime

At KTPO, manufacturing operates **20 hours a day, and IT processes run without stop.** Microsoft also provide a long term technical support/upgrades for hassle-free operations on production line.

Enhanced Usability

Providing a similar environment (UI) to users which they are adapted to, **reducing the effort of doing fresh trainings & education.**

“We manufacture a complete car body every 82 seconds.... (using an) intelligent system built with Microsoft technology.”

- **Jake Ladouceur, Managing Director, KPTO**

Success Story

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I N T E L L I G E N T S Y S T E M S I N A C T I O N

“We don’t have time to **adjust source code**, and we can’t introduce something that isn’t trusted and proven. Our intelligent system built with Microsoft technology enables us to **react very quickly**.”

- **Jake Ladouceur**, Managing Director, KPTO

“We wanted to give users in a manufacturing environment the same interface they worked with in the office. With a solution powered by Windows Embedded, there is no need for specialized training. They can also run their own Windows-based applications on the same PC with our controller”

- **Michael Haag**, Head of R&D, - KUKA Robotics Corp

Take the next step

Learn more

About Intelligent Systems

www.UnlockIntelligence.com

Download Case Study:

www.microsoft.com/casestudies

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www.windowembedded.com

For any queries, please write to me:

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