

# SAP S/4HANA – Intelligent cycle counting enabling Smart Warehouse



# Solution Overview

*Inventory cycle counting process in large warehouses is a tedious and time-consuming process involving risks of inaccuracies as well as employee safety, especially in high rack storages. With the Azure IoT Edge framework, reliable video streams of handling units in storage racks can be obtained from high-resolution cameras mounted on drones or at fixed places in the warehouse. These streams can be broken down and analyzed in real-time to determine inventory count per part of the number which can be reconciled with the system inventory in the system of records like SAP S/4 HANA or SAP EWM. The SAP Cloud Platform provides the best in class user experience and decision support for the user by integrating the IoT Edge feeds and enabling the next best action to update system stock or take decisions like scrapping or recount.*



# Warehouse Management in Any Industry



# Challenges in Physical Inventory Counting

**Common recurring process**

Has to be done regularly

**Manual**

Person has to walk around with a scanner and notebook to take count

**Risky and dangerous**

Personnel have to climb high racks or reach far corners

**Time consuming**

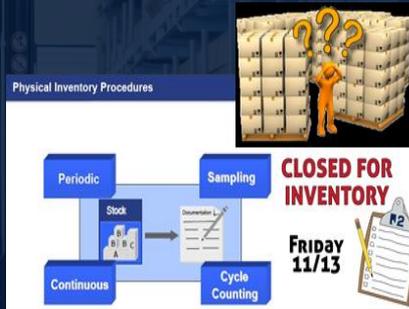
Manual thus very slow

**Prone to human error**

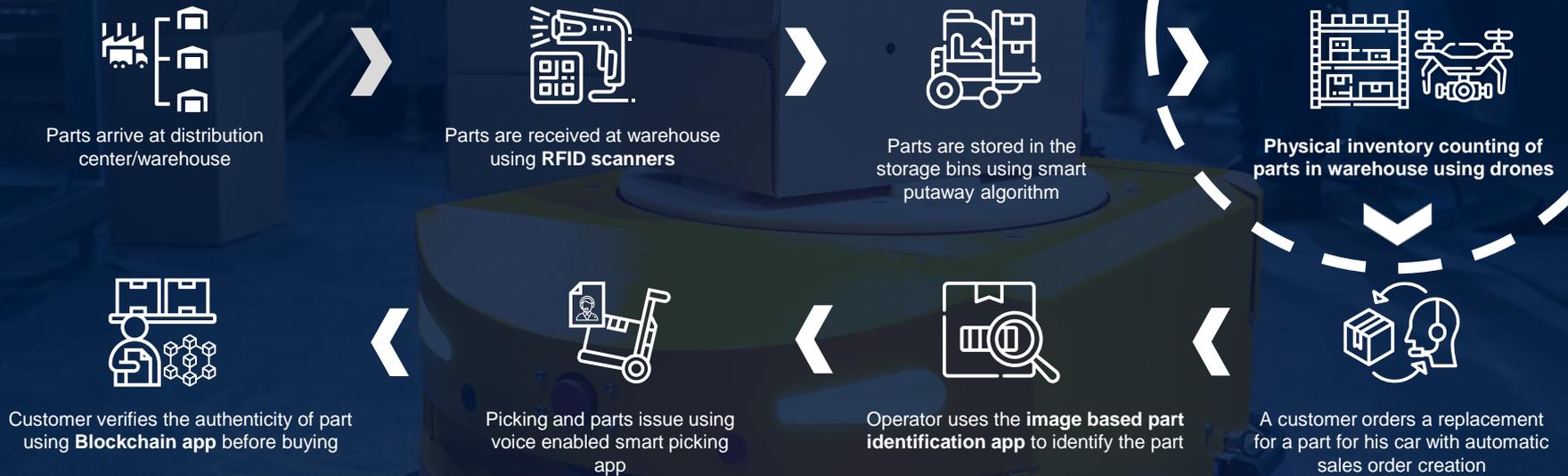
Not possible to check each and every corner with one pair of eyes

**Tedious and inefficient**

Slow and tiring and time consuming



# Infosys Vision of a Smart Warehouse Operations Management



Infosys Smart Warehouse Solutions



Image-based part identification



Voice-based goods issue / picking



RFID-based goods receipt / issue



Blockchain for parts traceability



Drones-based physical inventory

# Smart Warehouse Management Operations

## Business challenges

- Difficult to update system inventory in large warehouses
- High human effort in physical counting
- Missing items due to human access difficulties
- Lack of automated and accurate inventory count solutions

## Solution overview

- Camera mounted drone-based physical inventory counting
- Drone and storage bins
- Machine learning algorithms extract the stock information from the incoming feed from drone
- Actual inventory count automatically updated in SAP
- Rich persona-based user interface built on SAP Cloud Platform for WH managers

### Accelerated

Faster count and update to enterprise system

### More accurate

Video capture provides all around view even of narrow corners

### Low risk

Personnel do not have to climb high racks or reach far corners

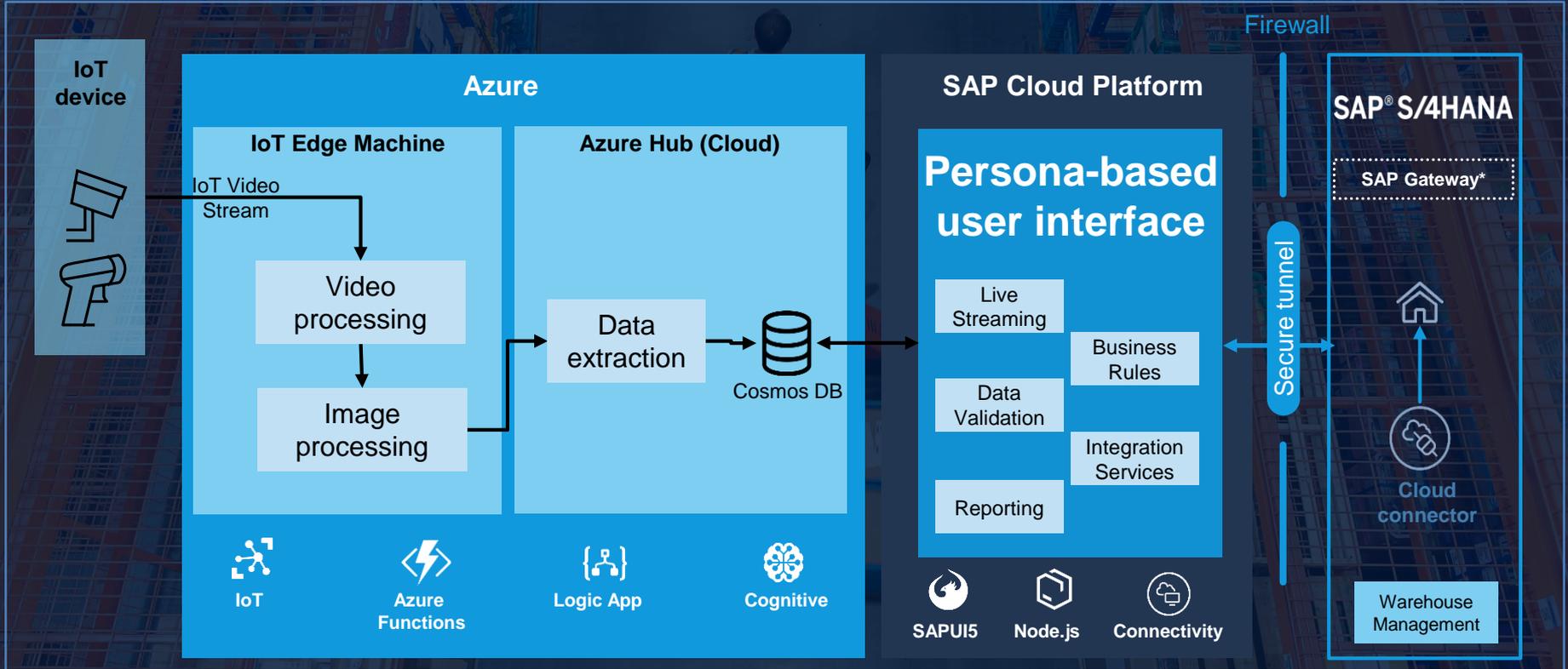
### Higher up time

Cloud-based solution ensures higher availability and can be done on a Friday evening

### Real-time

System updates within seconds

# Physical Inventory Counting with Drones – High-level Architecture



# Solution Components Specifications



## Hardware

- IoT camera mounted on a drone
- IoT Edge compute machine



## Local Compute on IoT Edge

- Windows services (.bat executable – Python package)
- Python 2.7 +
- Azure Custom Vision Model



## Cloud Infrastructure

- Cosmos DB
- Blob storage



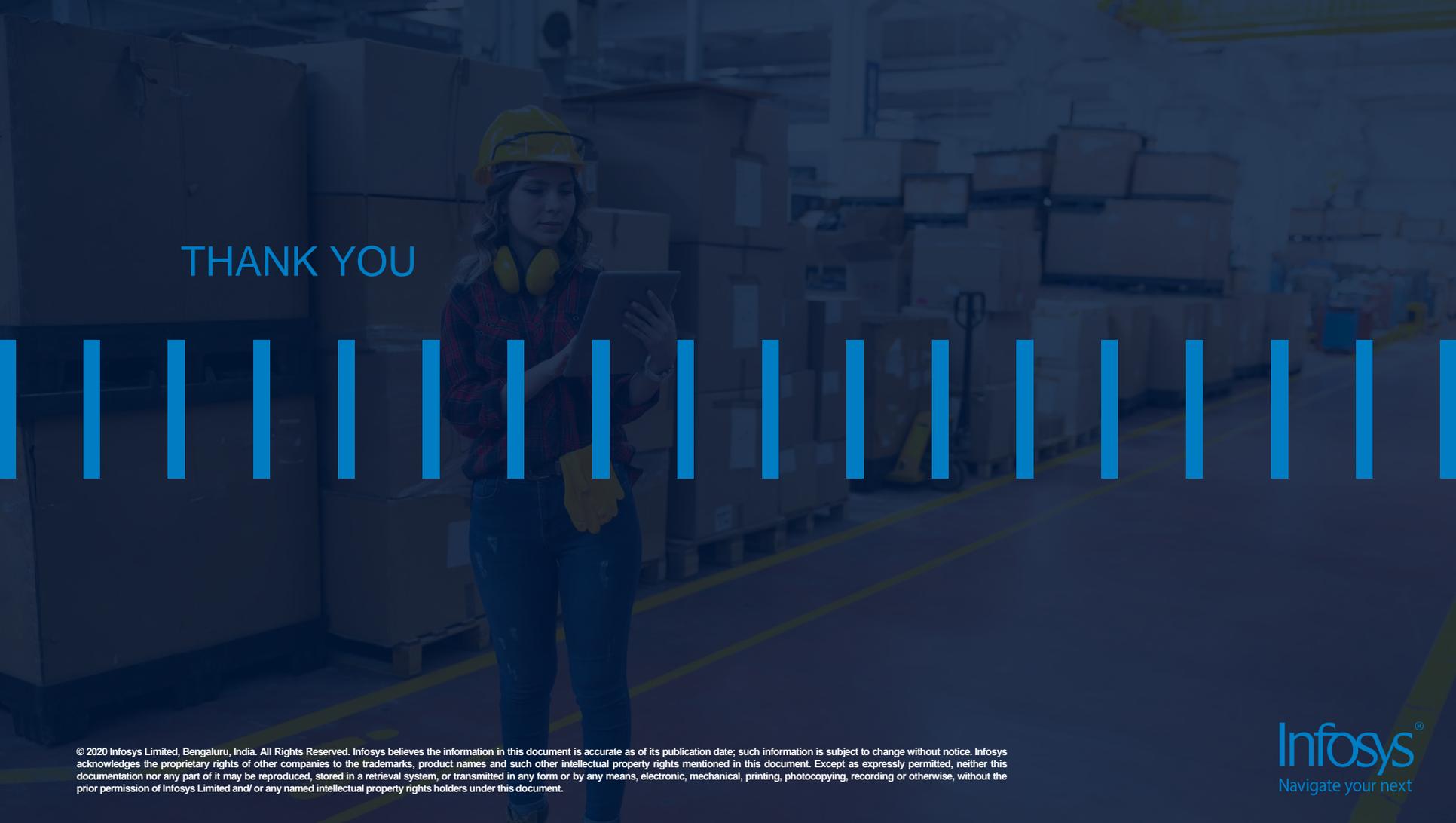
## Cloud Business Services

- Azure functions
- Logic app
- Node API call(SAP Cloud Foundry)
- Dynamics Barcode reader(non MSFT)



## SAP Components and Integrations

- SAP Cloud Foundry
- UI5
- oData
- Node.js
- SAP Cloud Platform
- SAP S/4HANA
- SAP CC



THANK YOU

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