Using Vision Sensors to Prevent Errors in Packing and Labeling

A Keyence Vision Sensor

SPEDE
Technologies

Using Vision Sensors to Prevent Packing Errors

Vision Prevents Errors such as:

- Mixing left- and right-hand parts
- Packing the wrong part
- Packing scrap parts as good parts
- Leaving unfilled slots in layers of dunnage
- Leaving parts out of a Kit
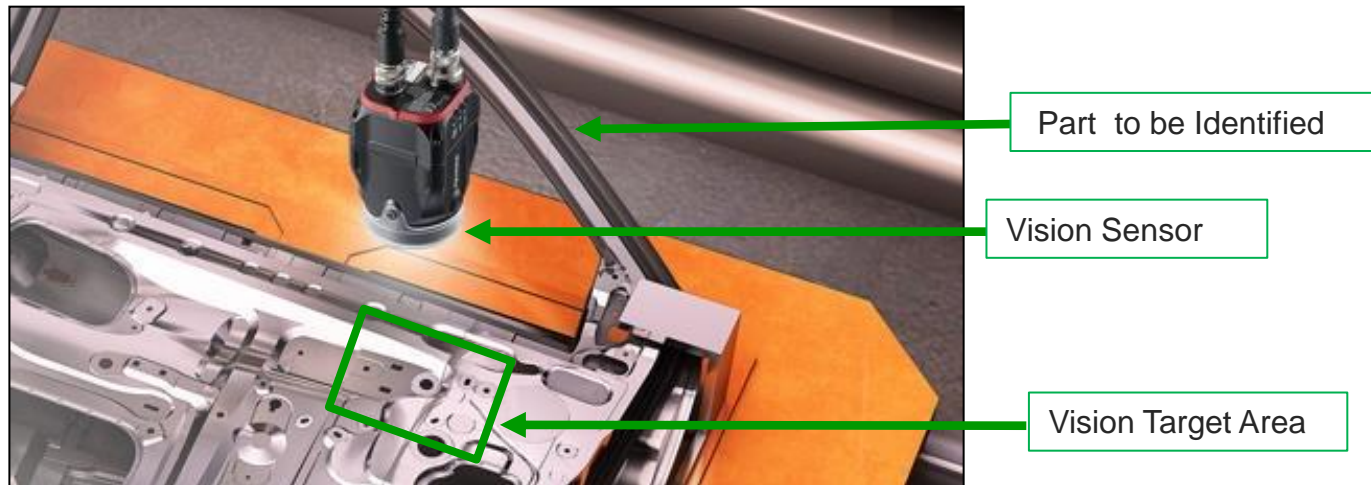- Over-packing dunnage

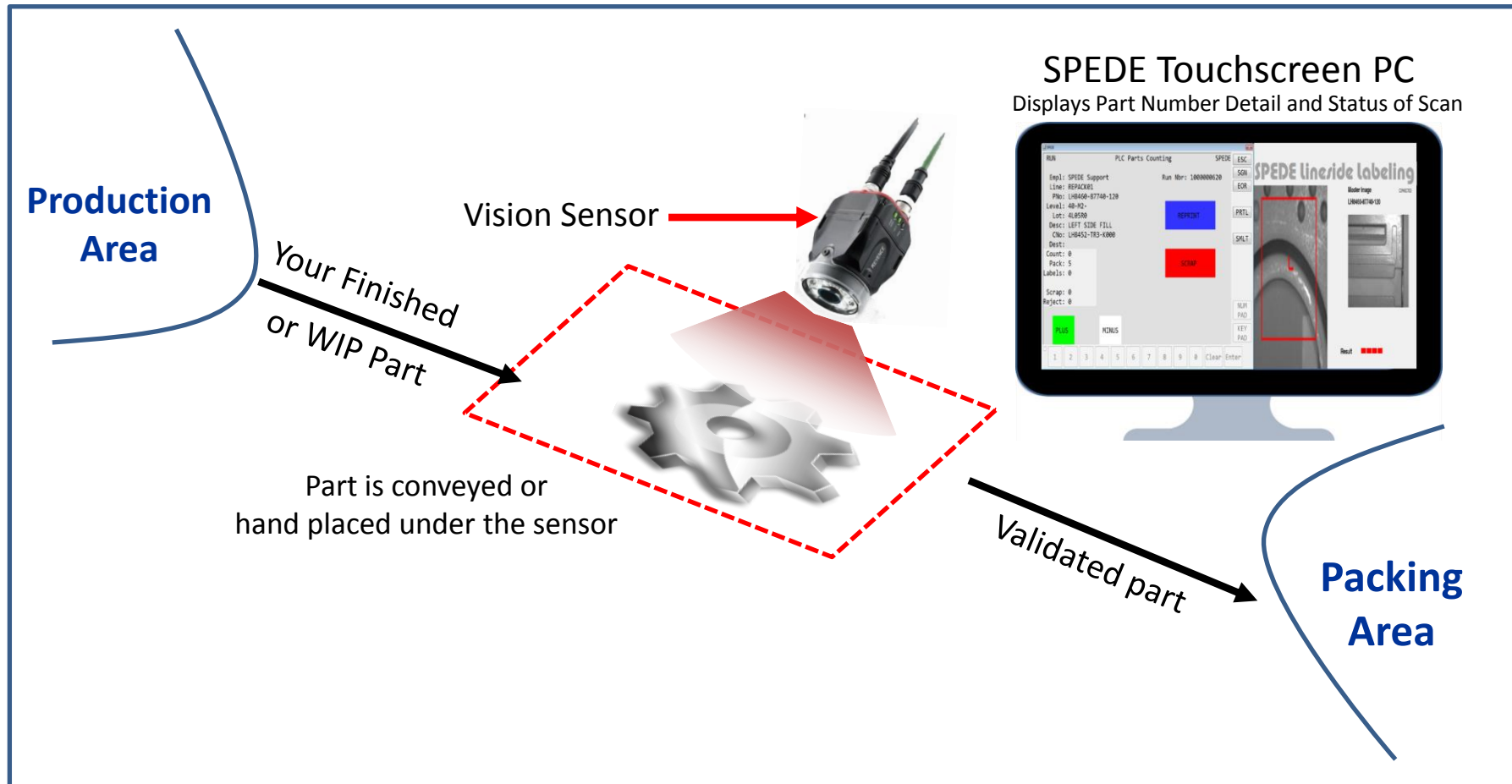Prevents Mix-ups of Similar Parts

Vision Prevents Packing Errors such as
Under-packing containers
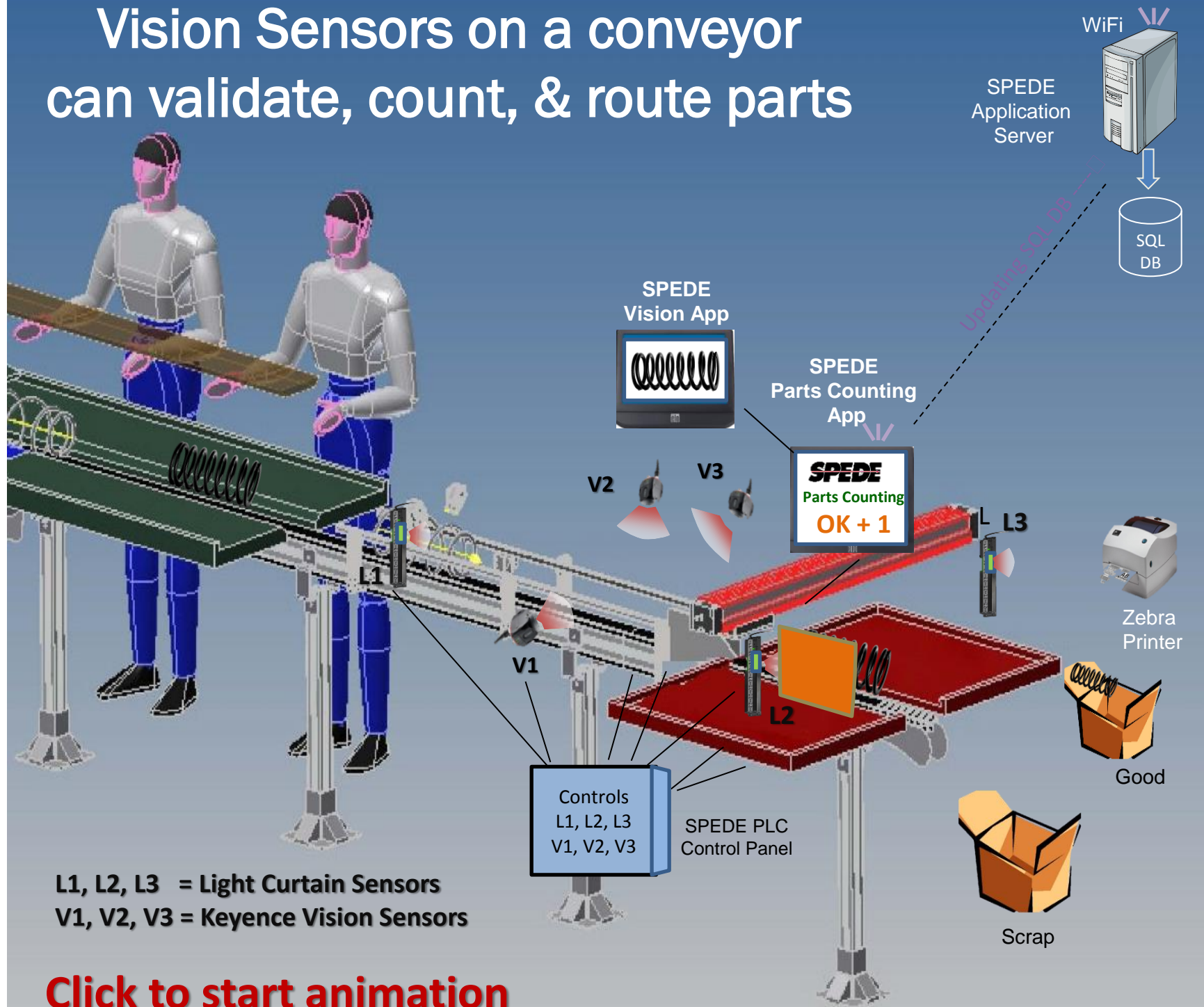
How a SPEDE Vision System Works

- Sensor is "trained" to recognize a Part by its unique attribute
- At Packing, the Part is moved under the Sensor
- Sensor uses Image Capture & Pixel Analysis to identify the Part
- If Part is Correct, the running Part Count is incremented
- If Part is Wrong, an audio/visual signal prevents an error

Part to be Identified

Vision Sensor

Vision Target Area

Simplifying Processes... Standardizing Excellence.®

SPEDE
Technologies

A Typical Pack Station using a Vision Sensor

Production Area

Your Finished or WIP Part

Vision Sensor →

SPEDE Touchscreen PC
Displays Part Number Detail and Status of Scan

Part is conveyed or hand placed under the sensor

Validated part

Packing Area

SPEDE Technologies

Vision Sensors on a conveyor can validate, count, & route parts

WiFi

SPEDE Application Server

SQL DB

SPEDE Vision App

SPEDE Parts Counting App

Updating SQL DB

V3

SPEDE
Parts Counting
OK + 1

V2

L3

Zebra Printer

V1

L1

L2

Good

Controls
L1, L2, L3
V1, V2, V3

SPEDE PLC Control Panel

Scrap

L1, L2, L3 = Light Curtain Sensors
V1, V2, V3 = Keyence Vision Sensors

Click to start animation

3 Scenarios for Vision-based Packing & Labeling

Scenario 1: Using Vision at the Production Machine

- Parts are packed at the production machine

- No PLC is needed to count parts

- Vision Sensor identifies and counts "good" parts

- Operator can press a TouchScreen to record scrap

- SPEDE prints the container label at pack count of good parts
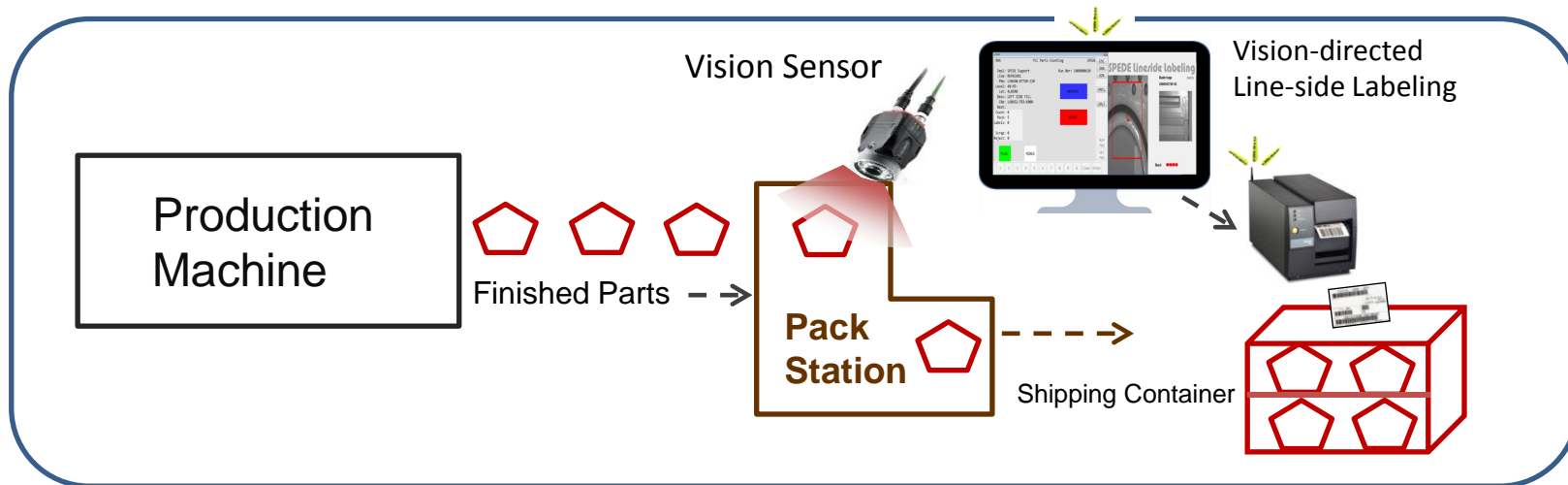
3 Scenarios for Vision-based Packing & Labeling

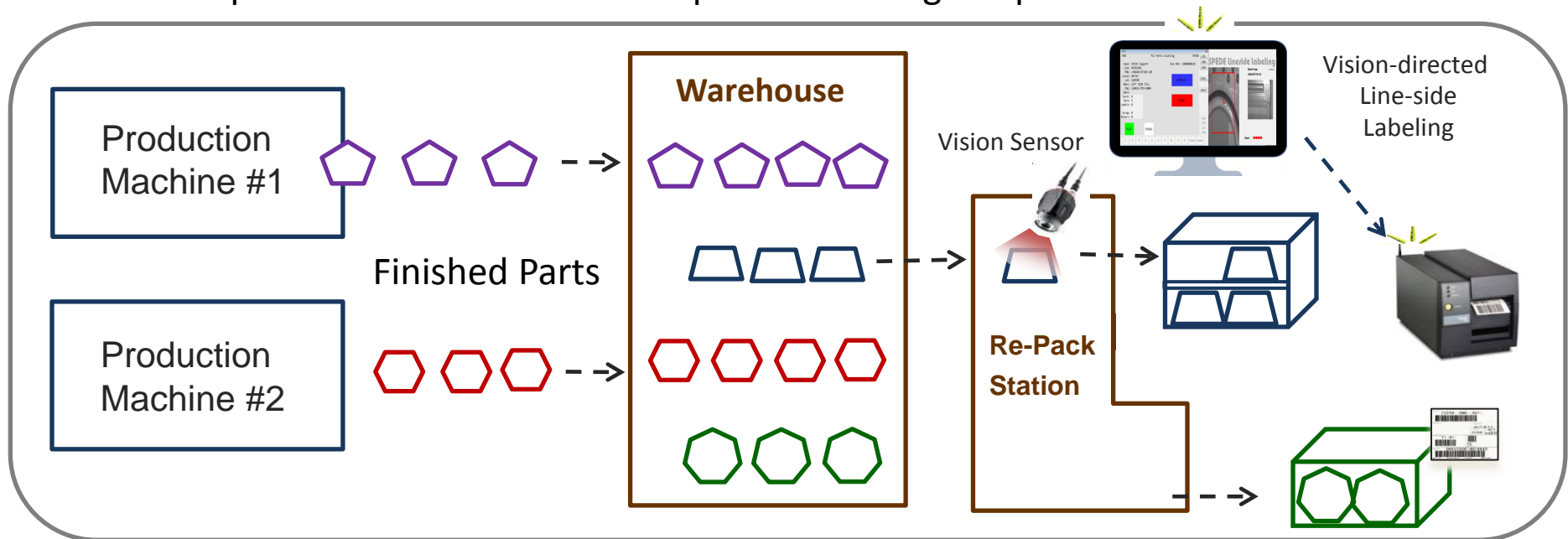## Scenario 2: At a Shared Pack Station

- Parts are conveyed to a shared pack station
- Different part numbers arrive
- Vision sensor identifies part number being packed
- Vision sensor will alert if wrong part is picked for a container
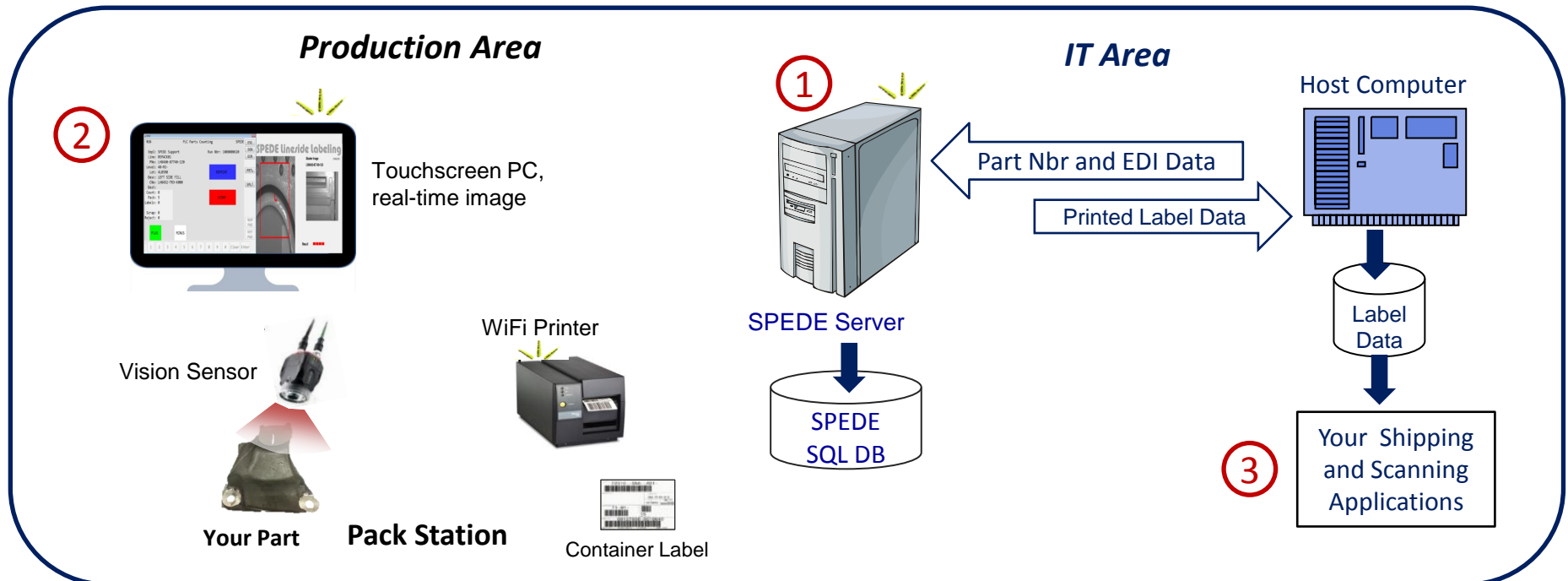- SPEDE prints the container label at pack count of good parts
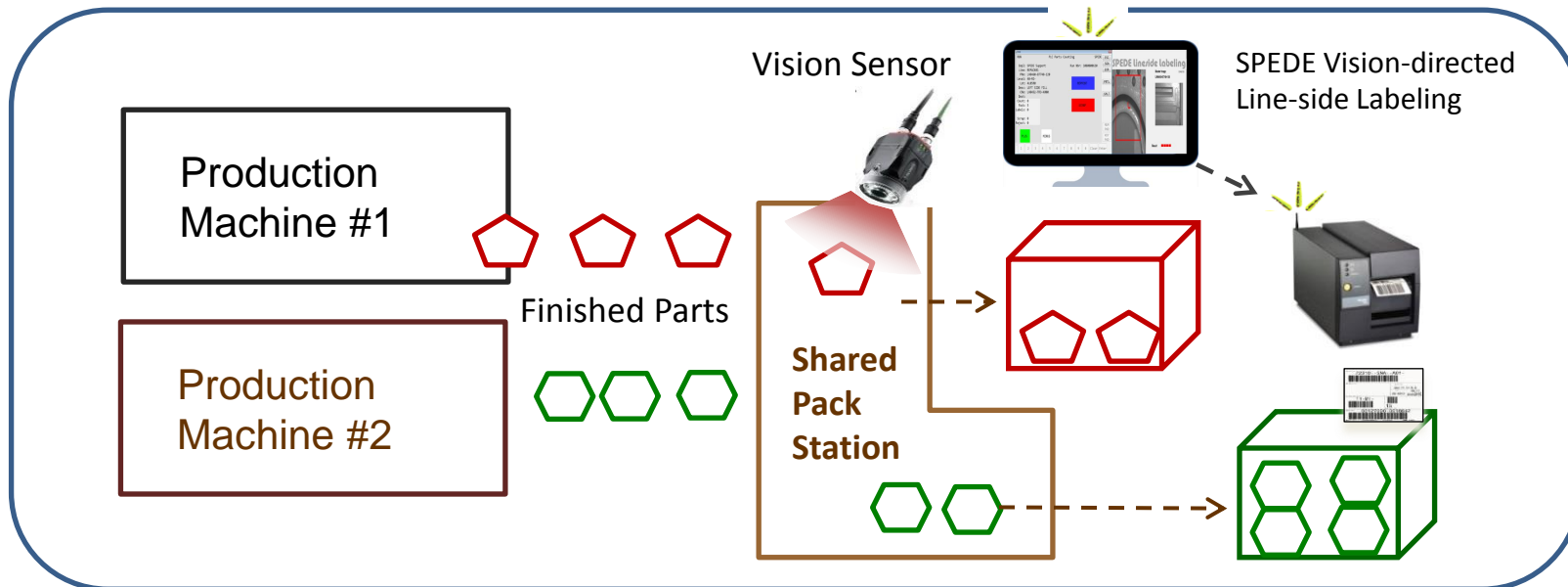
3 Scenarios for Vision-based Packing & Labeling

Scenario 3: At Re-Pack

- Parts are made, put away and packed later
- Re-pack station has no PLC to validate parts
- Vision sensor identifies correct part to be packed in a container
- Vision sensor will alert if wrong part is picked for a container
- SPEDE prints the container label at pack count of good parts

Interfacing to your ERP, EDI and Shipping

Production Area

IT Area

② Touchscreen PC, real-time image

① SPEDE Server

Host Computer

Part Nbr and EDI Data

Printed Label Data

Vision Sensor

WiFi Printer

SPEDE SQL DB

Label Data

Your Part · **Pack Station**

Container Label

③ Your Shipping and Scanning Applications

① **SPEDE Server Gets Container Label Data from Host Systems**
   - Pulls data needed for container label at start of packing operation

② **SPEDE TouchScreen Client PC Software**
   - Controls Vision Sensor
   - Verifies correct part; allows for scrap counts; collects OEE data
   - Prints serialized label; inserts a unique Log Record into SQL DB for the label

③ **SPEDE Server Presents Label Data to Host Shipping System**
   - Inserts data from printed label into Host tables to support later scanning operations

SPEDE Technologies

Using Vision to Meet Honda MPRs

A Few Honda Suppliers that Use Vision for Packing Control

Sonoco

Vision is set up on a mobile cart

Bumper Filler

Jack Kit

Nissin Brake

Vision is set-up on a fixed table

Machined Casting

Nisco

A Laser etches 2D Serial Number

Vision reads the 2D Serial Number

Door Trim

Simplifying Processes... Standardizing Excellence.®

SPEDE Technologies

Bottom Line Benefits …

Vision Enables 100% Accurate Packing

- Each Part is correctly identified
- Good Parts are accurately counted at packing
- Kit components and quantity are verified
- Dunnage layer is Correct

Added Benefit: Serial Traceability

- SPEDE Links each Part's Data to its Serialized Container Label
- Links Serialized Container to Production Run data
- Links Serialized Containers to Master Label
- Enables Forward Traceability from Production to Shipping
- Enables Backward Traceability from Production to Raw
- Enables focused Recalls

Simplifying Processes… Standardizing Excellence.®

SPEDE
Technologies

Bottom Line Benefits …

Traceability by Component / Part / Container

- A serial number is linked to each Part's production data, including:

  o Production Machine, Run Date, Shift, Operator, Lot, Location, etc.
  o Container Serial Number(s) in which the Part was packed
  o All other Serialized Parts in a generalized Container

- Provides Traceability by Part, Lot, Container, Line, Run Date, etc.

- Forward Traceability from Production out to Customer

- Backward Traceability from Production back to Receiving, Raw Components, Supplier

Printed By: Dan Worthington
Report Date: 01/08/2013
Report Time: 08:35:00
Page: 1 of 1

Container Trace: 0319804-05088465

Part Nbr	Description	Run Nbr	Line Nbr	Create Date	Create By	Qty	Item S/N
C729-101-0000	CIVIC M/T RADIATOR	000012001	CLINCH2	11/05/2012	JSMITH	5	AB879762351
							AB879762352
							AB879762353
							AB879762354
							AB879762355

About our Customers...

Tier 1, Tier 2 Automotive Suppliers

- Supply to Honda, Mazda, Mitsubishi, Nissan, Subaru, Toyota, Ford, GM, etc.
- Multi-plant, medium to large companies
- Use various ERP, EDI, Release Accounting systems

Installations typically include some or all:

- PLCs, Vision Sensors, TouchScreen PCs, Conveyor interfaces, Diverters, Scales, Imaging Cameras, Printers
- Serialized Part / Lot Traceability
- Real-time Data Collection; Host system data exchange
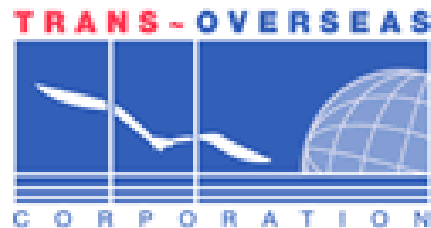
Functionality can be phased-in over time:

- At Production Lines
- At Plant Sites
- With New Technologies

AIAG
Automotive Industry Action Group

SPEDE Technologies

Meet a Few of our Customers...

Simplifying Processes... Standardizing Excellence.®

To Discuss Your Line-side Project...

Call or Email ...

Bob Bunsey

440-808-8888   x22

bbunsey@spede.com

www.spede.com

About Us:

SPEDE Technologies is a software and systems company specializing in technology solutions for automotive suppliers since 1980. Our focus is automating Production Area processes to increase efficiency, eliminate errors and improve profitability.

Our Customers are mid-size to Fortune 500 auto suppliers with multiple plant sites throughout the U.S. and in Mexico. They rely on SPEDE Automated Line-side Solutions to keep their mission-critical processes running smoothly, 24/7.