LUCA....

Pick-by-LIGHT

Pick-by-POINT®

Pick-by-SCAN

Pick-by-PICTURE®

Pick-RADAR®

Pick-by-VOICE

Pick-by-FRAME®

Pick-by-WEIGHT

Pick-by-VISION

Pick-by-ePaper®

Pick-by-WATCH

Pick-REMOTE-KEY

eKANBAN

eLOCATION®

LUCA
Logistic Solutions

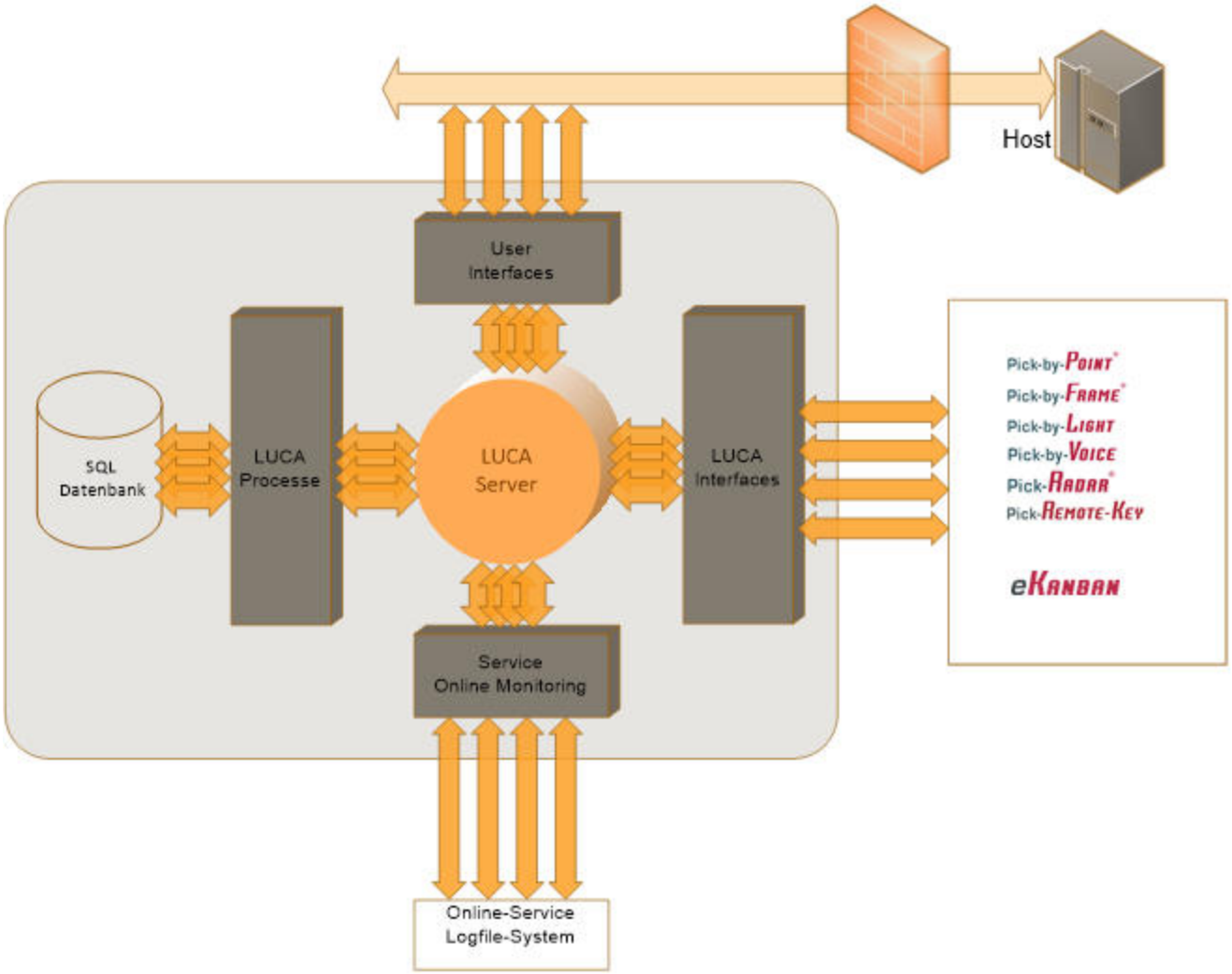
- LUCA GmbH Logistic Solutions since 1995 roku (Halle Westfalen, Germany)

- LUCA Logistic Solutions sp. z o.o. since 2009
- (Opole, Poland)

LUCA's implementations

LUCA's implementations
Automotive

Strukture of LUCA system



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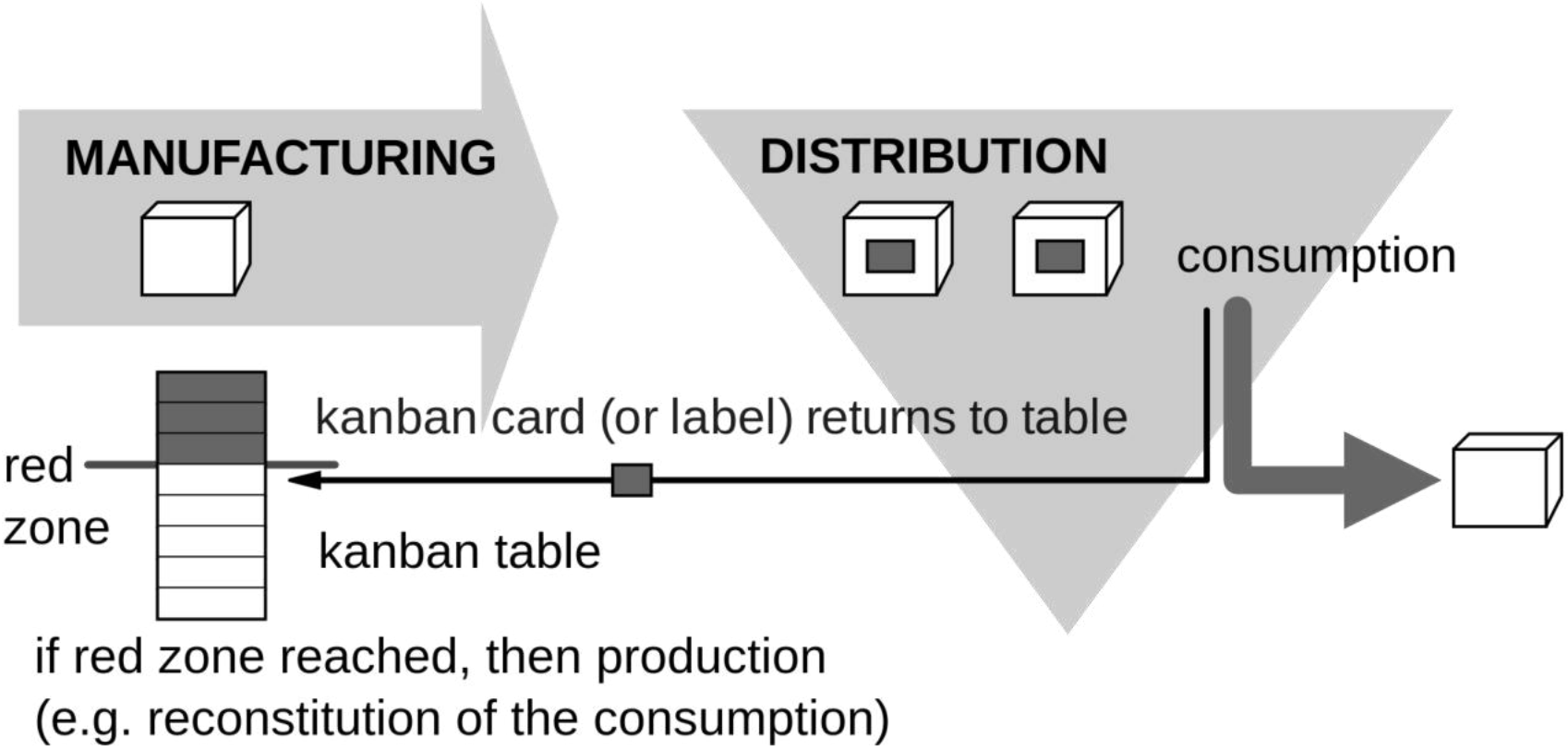
Kanban system (cards)



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Rules of Kanban system (cards)

- Kanban cards are a key component of kanban and they signal the need to move materials within a production facility or to move materials from an outside supplier into the production facility.
- The kanban card is, in effect, a message that signals a depletion of product, parts, or inventory.
- When received, the kanban triggers replenishment of that product, part, or inventory.
- Consumption, therefore, drives demand for more production, and the kanban card signals demand for more product—so kanban cards help create a demand-driven system.

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Kanban system (cards) Idea

"7 x none":

- no shortcomings,
- no delays,
- no stocks,
- no lines - anywhere and for anything,
- no inactivity,
- no unnecessary technological and control operations,
- no displacement.

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Kanban system (cards)

but

- The manual effort for controlling the material flow has to be done by the workers.
- own boards for the Kanban routing cards has to be installed and checked.
- the runtime of this information back to the warehouse is very slow and therefore the time optimization is lost

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Kanban system (cards)

but

- increase in transport costs,
- requires greater availability of suppliers - it often happens that raw materials have to be delivered several times a day,
- the method assumes the production in batches of a fixed size, corresponding to the capacity of the standard transport container of the item,
- not resistant to large fluctuations in demand,
- it does not take into account safety stocks of finished products, but assumes defect-free production, requiring total commitment from all employees, which creates significant problems in non-Japanese cultures.

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SOLUTION

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- eKanban is a signaling system that uses a mix of technology to trigger the movement of materials within a manufacturing or production facility.
- eKanban differs from traditional kanban in using technology to replace traditional elements like kanban cards with barcodes and electronic data interchange.
- ekanban often uses the Internet as a method of routing messages to external suppliers and as a means to allow a real-time view of inventory, via a portal, throughout the supply chain.

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- helps to eliminate common problems such as manual entry errors and lost Kanban cards
- Enabling real-time demand signaling across the supply chain
- optimize inventory levels by better tracking supplier lead and replenishment times

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Advantages:

- Reduction of the stock
- High material availability
- High material turnover
- Less storage space
- Fixed lot size specification
- No overproduction
- Short delivery times
- Faster throughput times

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Types of kanban communication methods

Cable

- Ethernet
- Pick-by-Light protocol

Wirelessly

- RFID (for identify and track tags attached to objects)
- WiFi
- Bluetooth
- LoRa protocol (low-power wide-area network)

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Types of kanban triggers*

Type **MANUAL / AUTOMATIC**

- manual (scanner, button)
- semi-automatic (RFID reader)
- automatic (optical, laser or mechanical sensors, scales)

Type **INDIVIDUAL / CENTRAL**

- many individual trigers - one for each location / channel
- one central triger - for all empty containers

*signal about the demand for the material, starting the delivery

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Types of kanban triggers

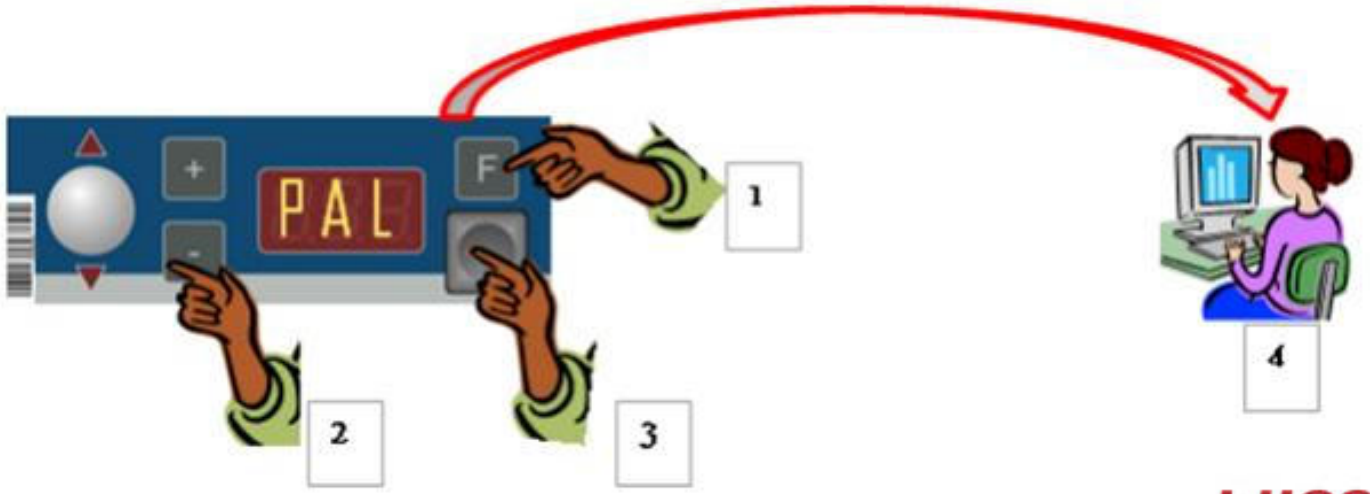
Barcode scanner - manual, central

- A typical electronic kanban system marks inventory with barcodes, which workers scan at various stages of the manufacturing process to signal usage.
- The scans relay messages to internal/external stores to ensure the restocking of products.

Types of kanban triggers

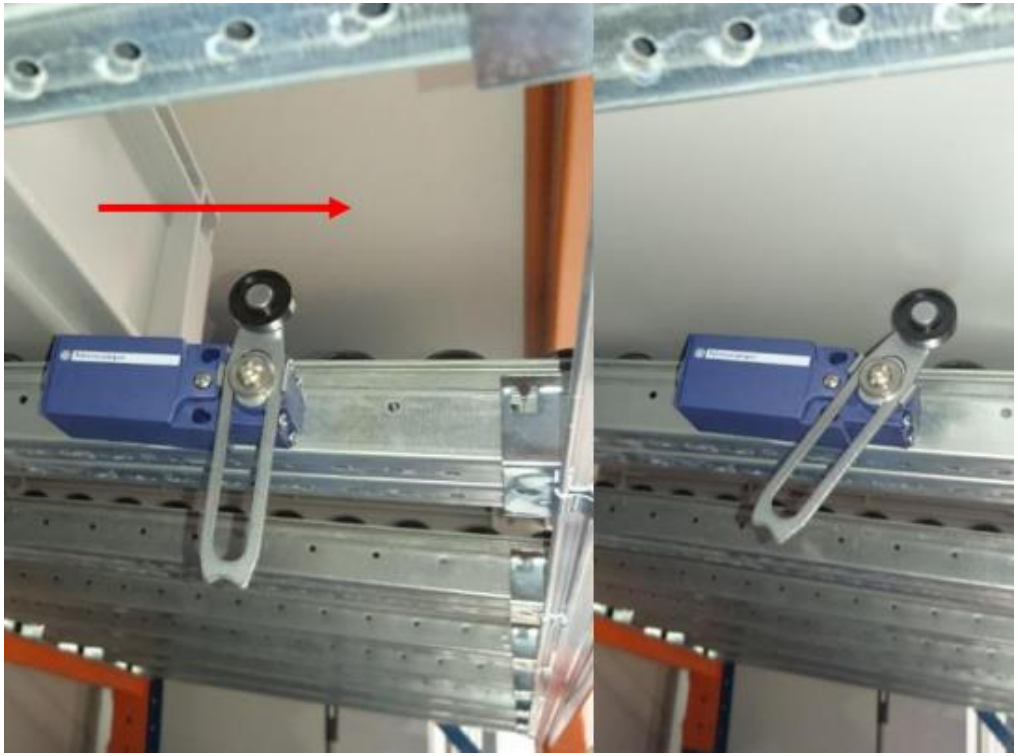
Button in Pick-by-Light system module – manual, individual

- In the case of the Pick-by-Light system, pressing the function button on the PbL module transmits messages to internal / external stores to ensure product replenishment



Types of kanban triggers

Mechanical sensor placed in each channel – automatic, individual



Types of Kanban triggers

Optical sensor placed in each channel – automatic, individual

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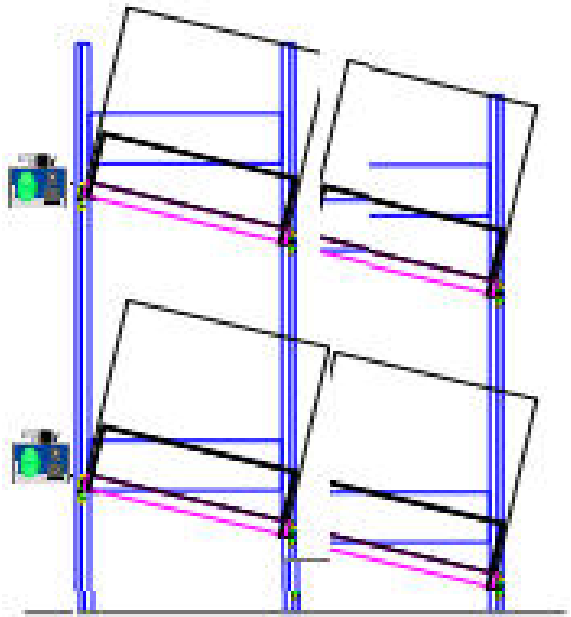
Types of kanban triggers

Optical sensor placed in each channel – automatic, individual

Types of kanban triggers

Laser Sensor is placed in each channel – automatic, individual

- Optical measuring device measures the distance to the last bin in the flow rack channel



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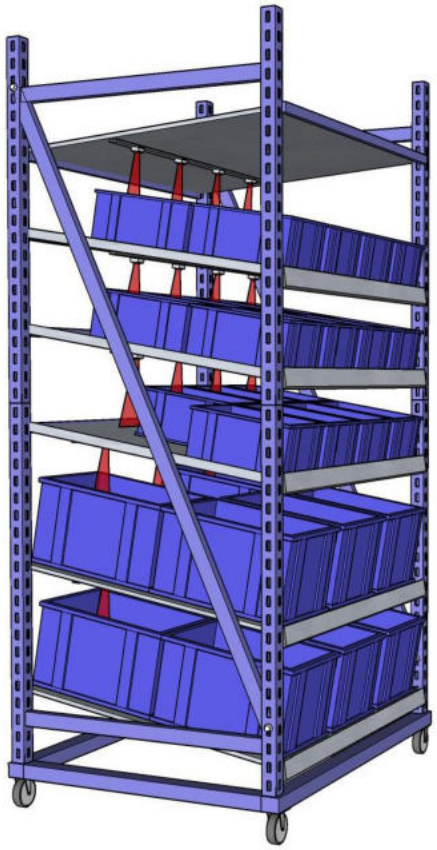
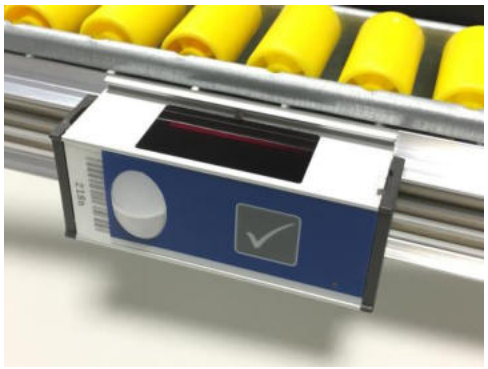
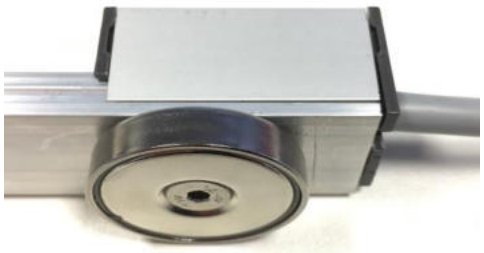
Types of kanban triggers

Smart Sensor (optical presence sensor) placed in each channel – automatic, individual

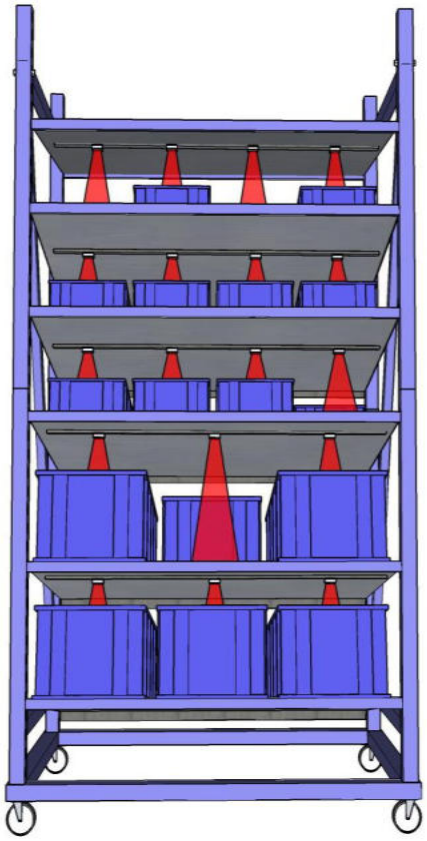




SmartSensor



magnetic connector



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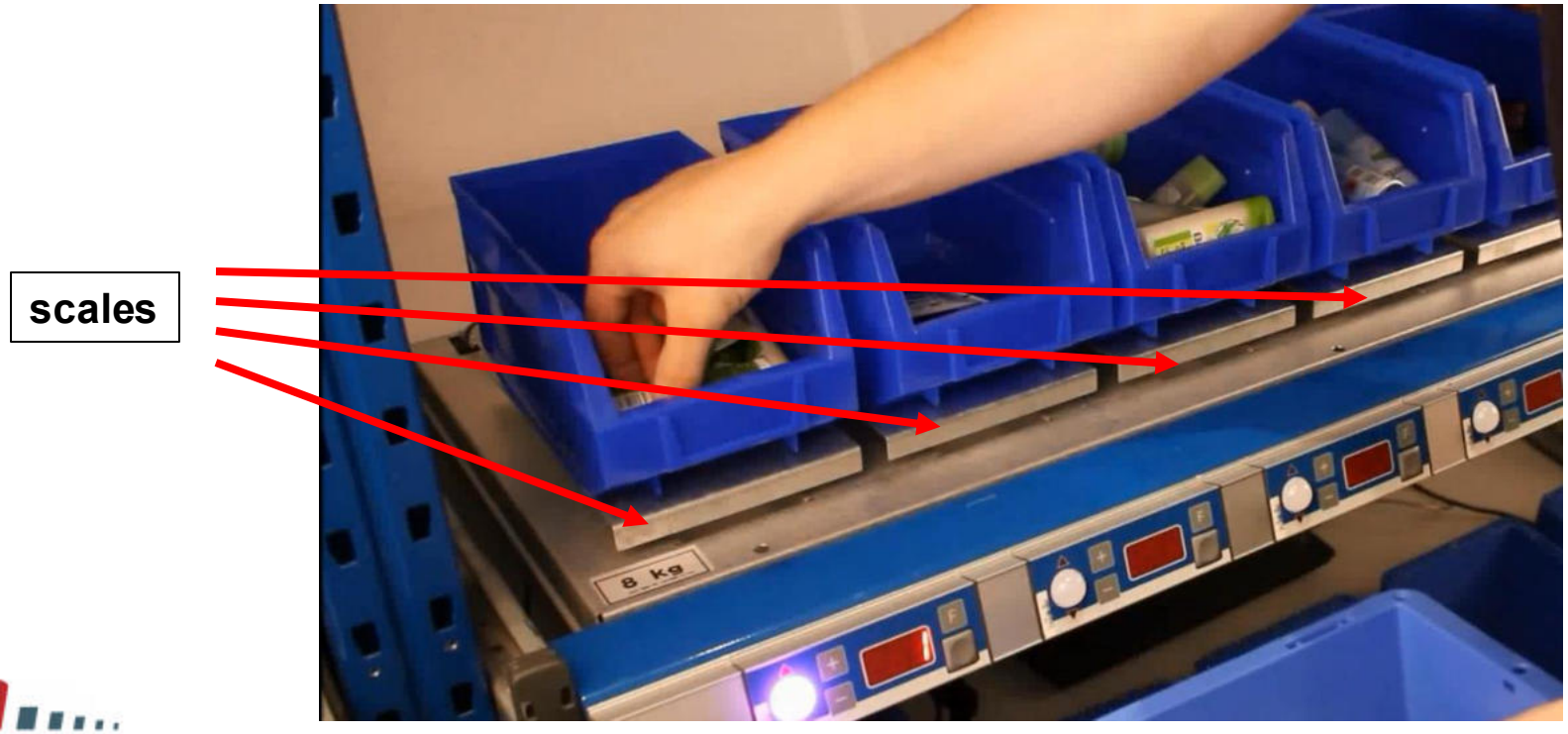
Types of kanban triggers

Smart Sensor (Optical presence sensor) placed in each channel – automatic, individual

Types of kanban triggers

Scales placed in each channel – automatic, individual

- Scale under each container



Types of kanban triggers

Scales placed in each channel – automatic, individual

- Scale at the bottom of container

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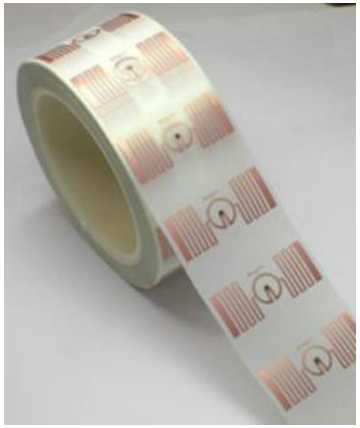
Types of kanban triggers

RFID reader (antenna) over central storage space for empty containers – semi-automatic, central



RFID tag on each box

detected by reader (antenna)

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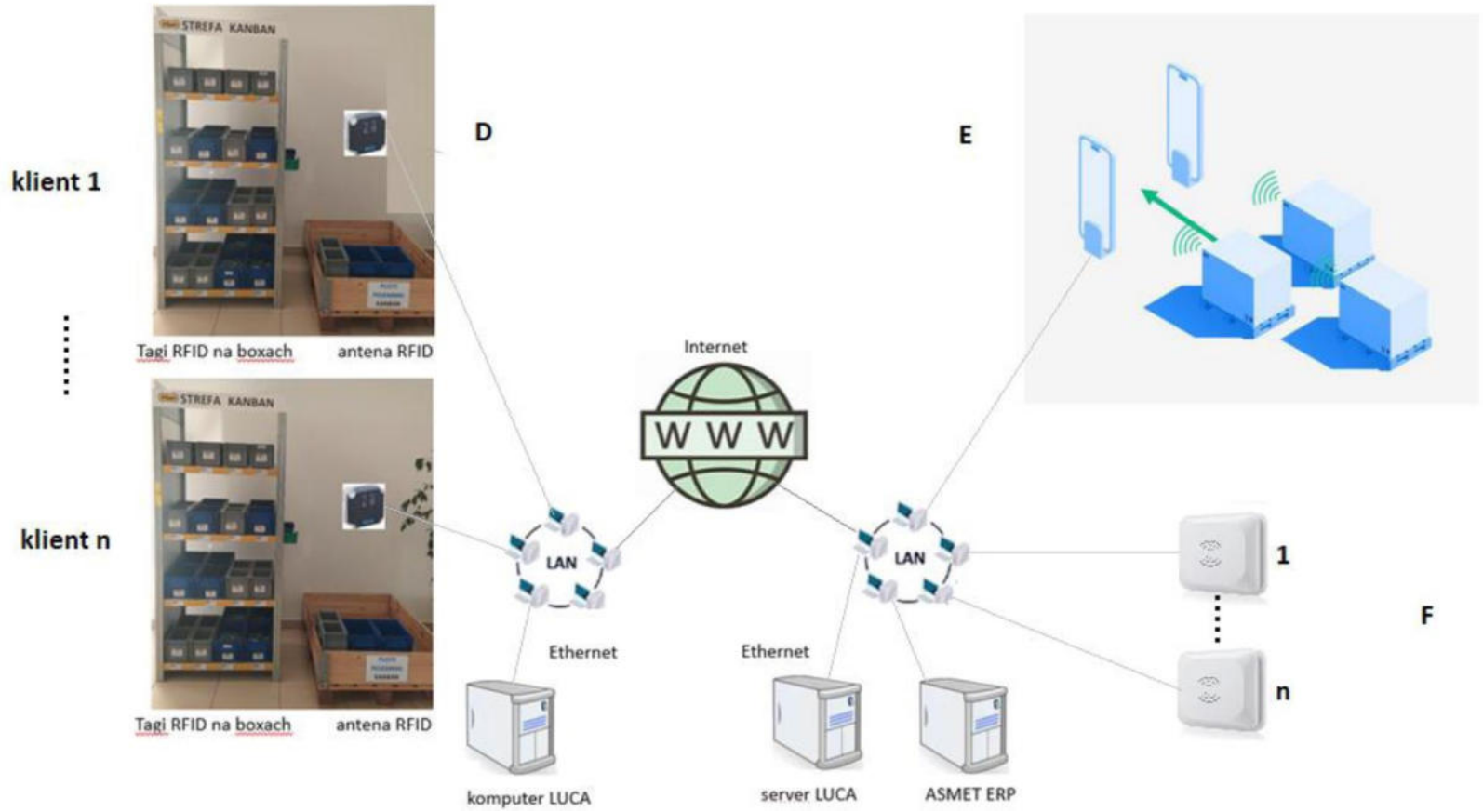
Types of kanban triggers

RFID reader (antenna) over central storage space for empty containers – semi-automatic, central



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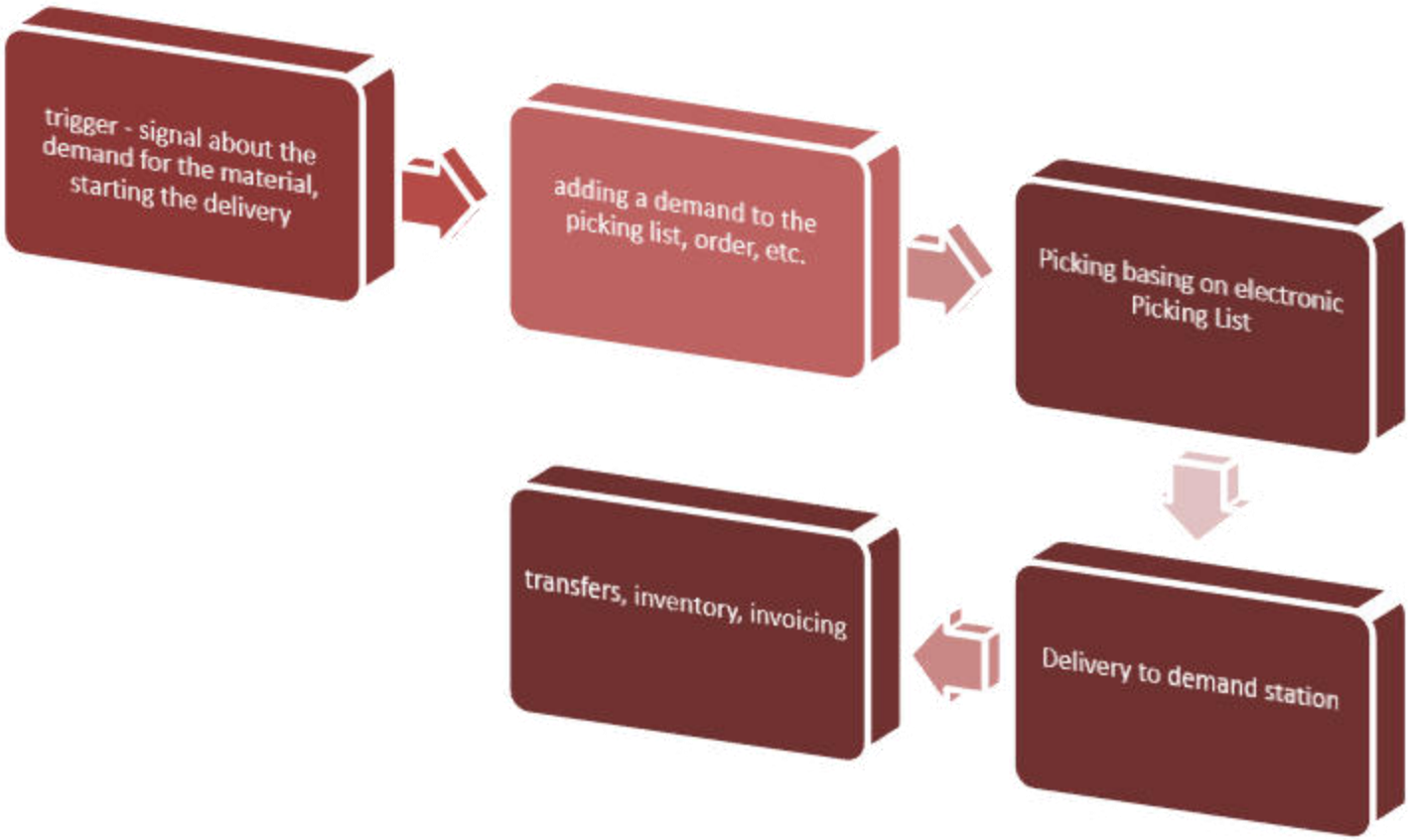
System stages – operation steps



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Pick-by-Watch

Picking and delivery to demand station basing on electronic List - option

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