

The logo for AGROKOR, consisting of the word "AGROKOR" in white, uppercase, sans-serif font, centered within a solid red rectangular background.

AGROKOR

A decorative border of blue, six-pointed snowflakes arranged in a circular pattern around the central text.

Deep frozen stockroom project

Tomislav Marenic, Agrokor ICT

Director of Manufacturing Companies Applications Department

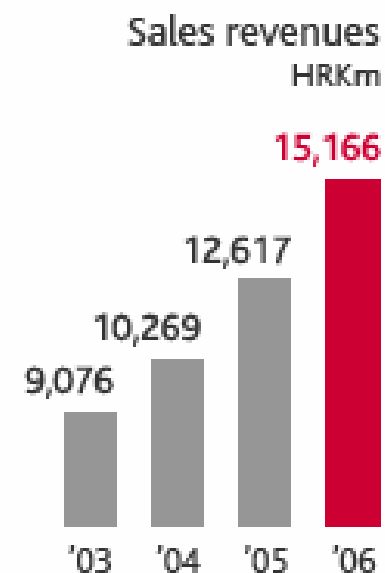
- Who are we? – Basic info about Agrokor
- Deep frozen stockroom – why and how?
 - Requirements
 - Technology used
 - Warehouse layout
- Process description – seamless integration
 - Goods in
 - Goods out
 - Moving staff around
- Conclusion - benefits

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- Largest privately owned company in Croatia
- 31000+ employees
- Subsidiaries in Croatia, Hungary, Slovenia, Serbia, Bosnia and Hercegovina, Montenegro, Macedonia (FYRM)
- 2.1 billion € revenue in 2006
- 3 billion € revenue in 2007 (estimate)
- <http://www.agrokor.hr>

Sales revenues
HRK m

'05	'06	'06/'05
12,617	15,166	20.21%



Biggest companies

AGROKOR

Our Companies

Edible oils
and Margarines



Ice-cream
and Frozen
Food



Water and
Beverages



Meat
Production and
Processing



Retailing



Other
companies



Brands

AGROKOR

Retailing



Water and Beverages



Ice-Cream and Frozen Food



Edible Oils, Margarines and Mayonnaise



Meat Production and Processing



Vines



Other



- Two main business groups – Retail & Food
- Aurora 2.1 currently used in 5 major production companies + 2 distribution companies in Montenegro and Macedonia
 - Jamnica - drinks
 - Ledo - ice-cream and frozen food
 - PI K Vrbovec – meat production and processing
 - Zvijezda – edible oils and margarines
 - Frikom (Serbia) - ice-cream and frozen food
- **Revenue of companies running Aurora 2.1 in 2007 ≈ 650 million €**
- Older versions of S21/B400 in some smaller companies

Jamnica - drinks

- Market shares - 79% mineral waters, 55% spring waters



Ledo - ice-cream and frozen food

- Market shares - 77% ice-cream, 72% frozen pastry



PIK Vrbovec - meat production and processing

- Market shares - 15-20% meat and meat products



Zvijezda - edible oils and margarines

- Market shares - 61% edible oils, 83% margarine, 63% mayonnaise



Frikom (Serbia) - ice-cream and frozen food

- Market shares - 77% frozen fruits and vegetables, 62% ice-cream, 57% frozen pastry

- Each company has its own ICT department, but Agrokor ICT is responsible for all ERP implementations and maintenance
- Manufacturing companies applications department – responsible for Aurora installations in all companies

- **WARNING!** Some very dangerous people in the conference room!
- Please check if they are seated next to you!
- Feel free to ask them any questions about Agrokor you might have during or after this session



Nenad Znidar – IT Assistant Manager at PI K Vrbovec
(Bizerba guy)



Marko Pevec – ERP consultant for CSL area at Agrokor ICT
(Indyon guy)



Emin Subasic – ERP consultant for MAN area at Agrokor ICT
("I didn't work at this project" guy)

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- PI K – aquired by Agrokor at 2005.
 - Before that PI K was government property

- **VISION STATEMENT - To become the leading meat processing industry in South Eastern Europe!**

- Production, storage and distribution capacities have been increasing constantly since Agrokor took over

- The old deep frozen stockroom was old, rugged and inedaquate for planned capacity, so it was decided to build a new one

- Storage density is more important than turnover
 - **In meat market it is sometimes smart to buy a lot when it is cheap, and then keep it on stock until price rises**

- All pallet locations must be absolutely accurate
 - **Old stockroom had serious problems with stock control, PIK had no idea what was in there until somebody went in and checked it.**
 - **It is much more difficult to control stock at $-25\text{ }^{\circ}\text{C}$ manually or visually. Technology must play the key role here.**

- Rotation date, traceability info and country of origin must be known for each pallet in the stockroom

- **Movable rackings** – only one aisle is open at one chamber at any given time
- Decreased turnover but higher storage density
- **Schaefer** – <http://www.schaefer.co.uk>
- PICTURE???

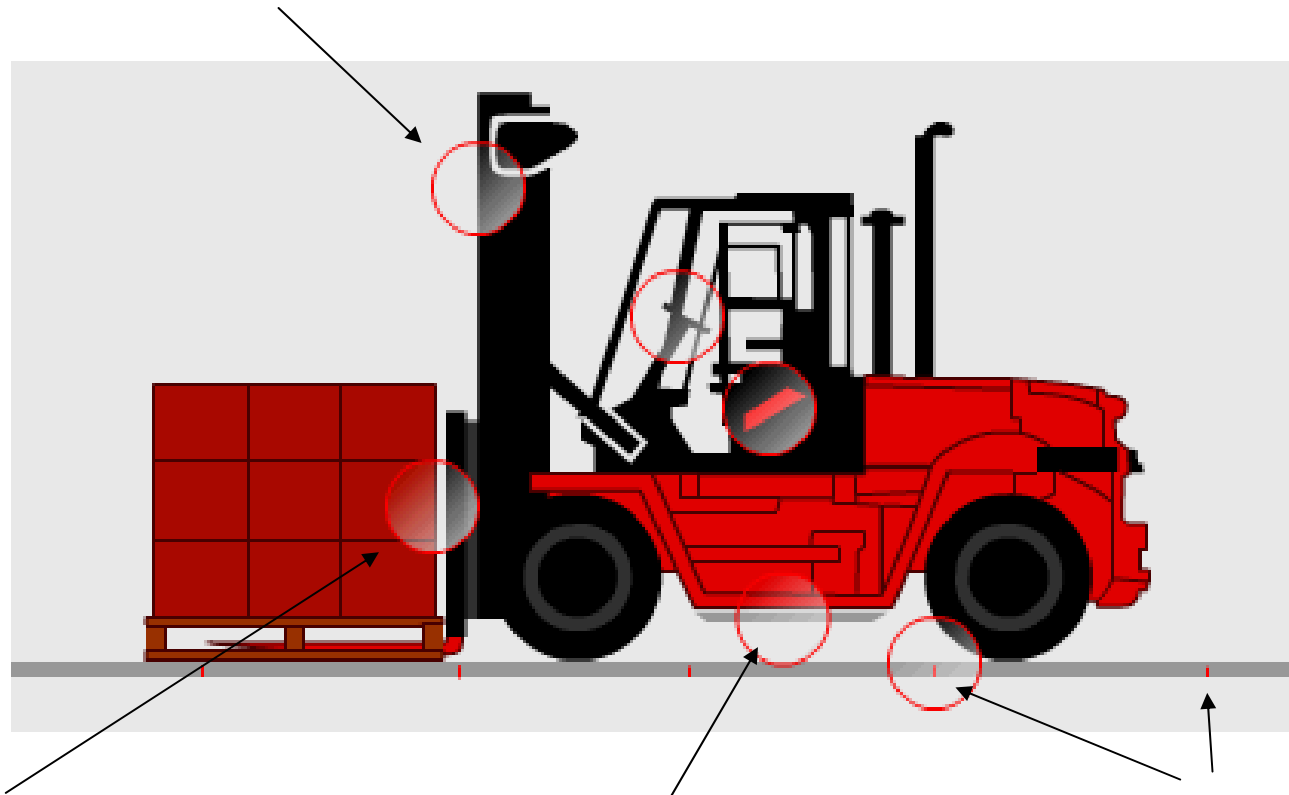
- **Indyon Track+Race system** - <http://www.indyon.de>
- **Forklifts by Still, additionally equipped by Indyon**
 - Forklifts use WLAN connectivity to be online at all times
- **Two main system components**
 - RFID transponders in the floor
 - Smart forklifts
- **Each floor location (position in front of the pallet) has a RFID chip drilled into the floor, with a unique identifier**

- **Special forklifts have RFID antennas, fork height sensors and pallet sensors**
 - Pallet sensor – gives info when a pallet is loaded/unloaded from the forks
 - RFID antenna – reads transponder in the floor
 - Fork height sensor – reads the current height, range of fork heights is mapped to a storage level in the warehouse racking
- **Exact pallet position = RFID location + fork height**
 - When forklift is on some location, it reads the transponder in the floor, reads the current forks height and maps it to a WH location
 - When a pallet is putaway, pallet sensor records the moment when it was unloaded, and reads the current location.
 - Result is that the exact location is recorded without user intervention!!!

“Smart” forklift

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Height sensor



Pallet sensor

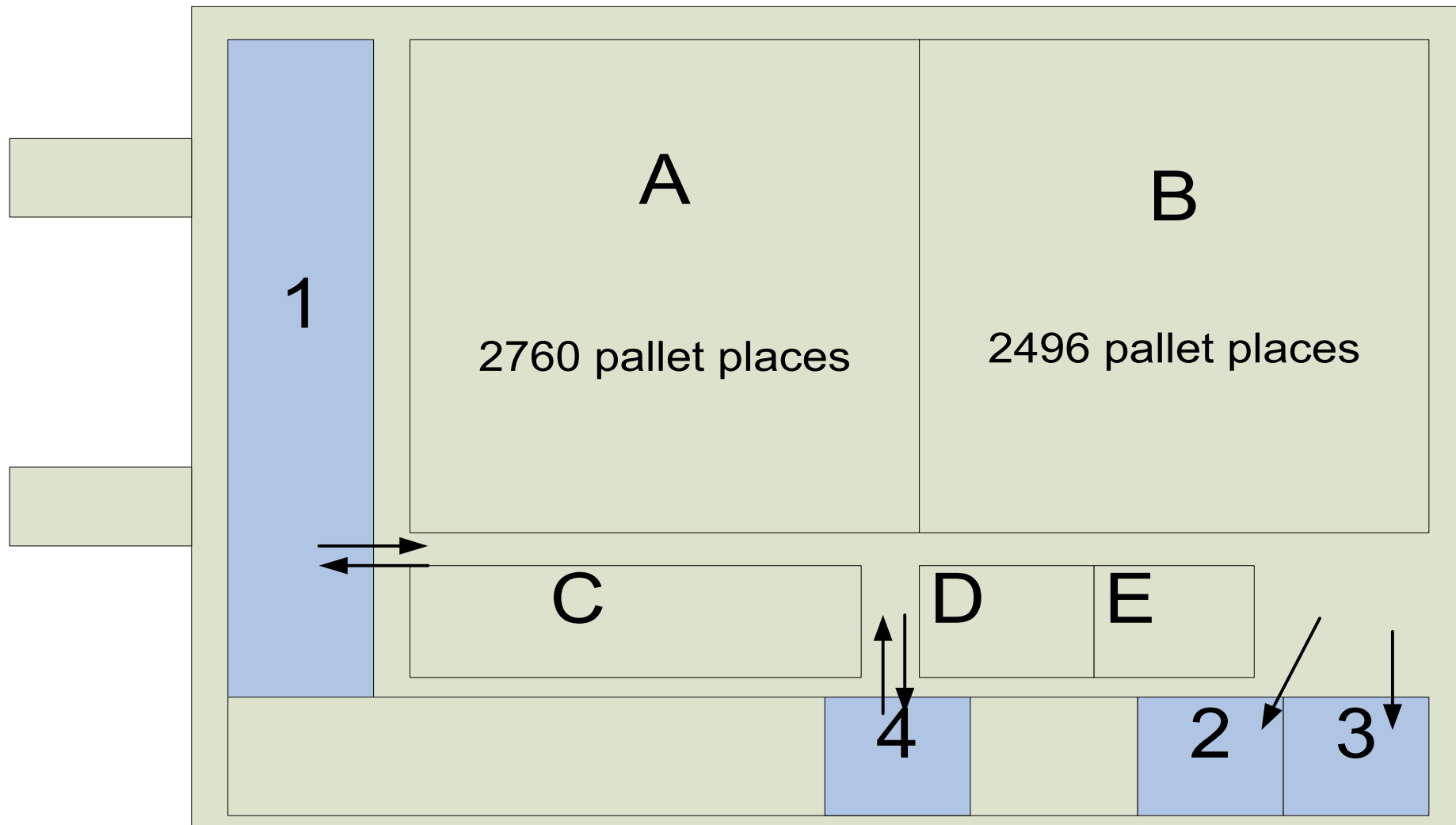
RFID antenna

RFID transponders
in the floor

■ Requirements

- ❑ Meat comes in packages, but it must be weighed – it must be possible to enter tare weight
- ❑ Label design must be independent of data on the label, it must be possible to change the design easily

■ Bizerba - <http://www.bizerba.com/en>



■ **5856** pallet places in total

Truck gate

1

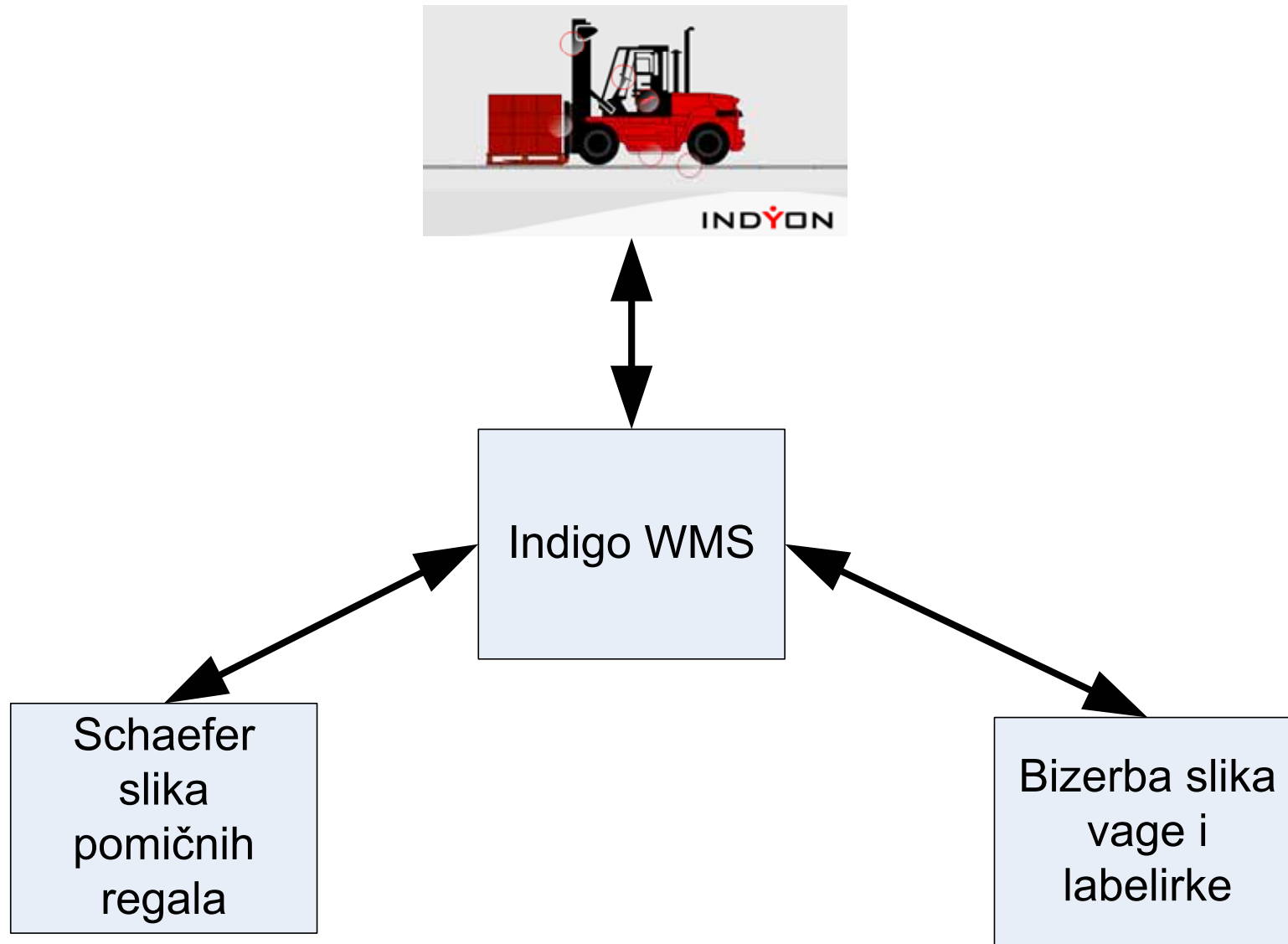
What do we do with all this stuff?

AGROKOR



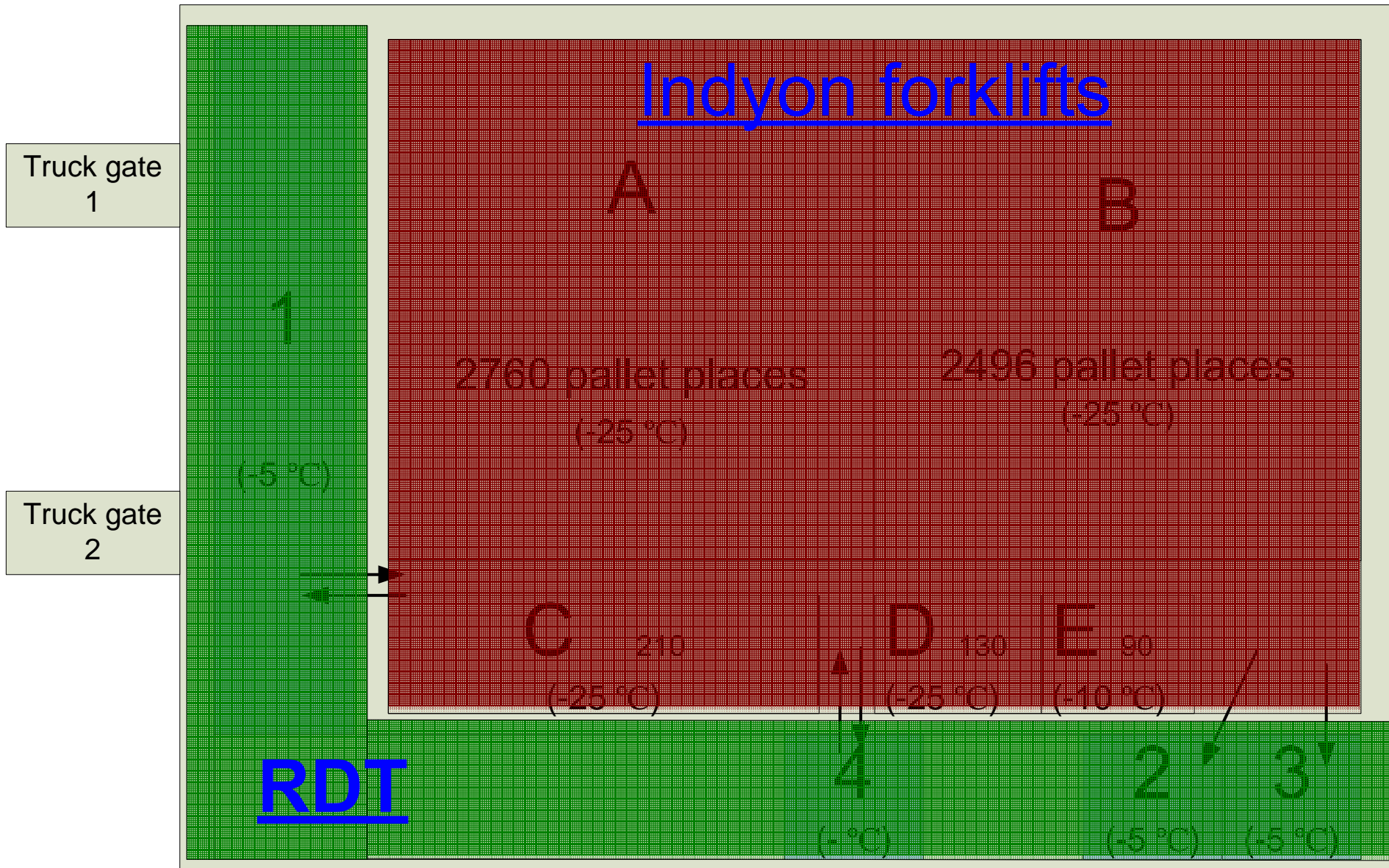
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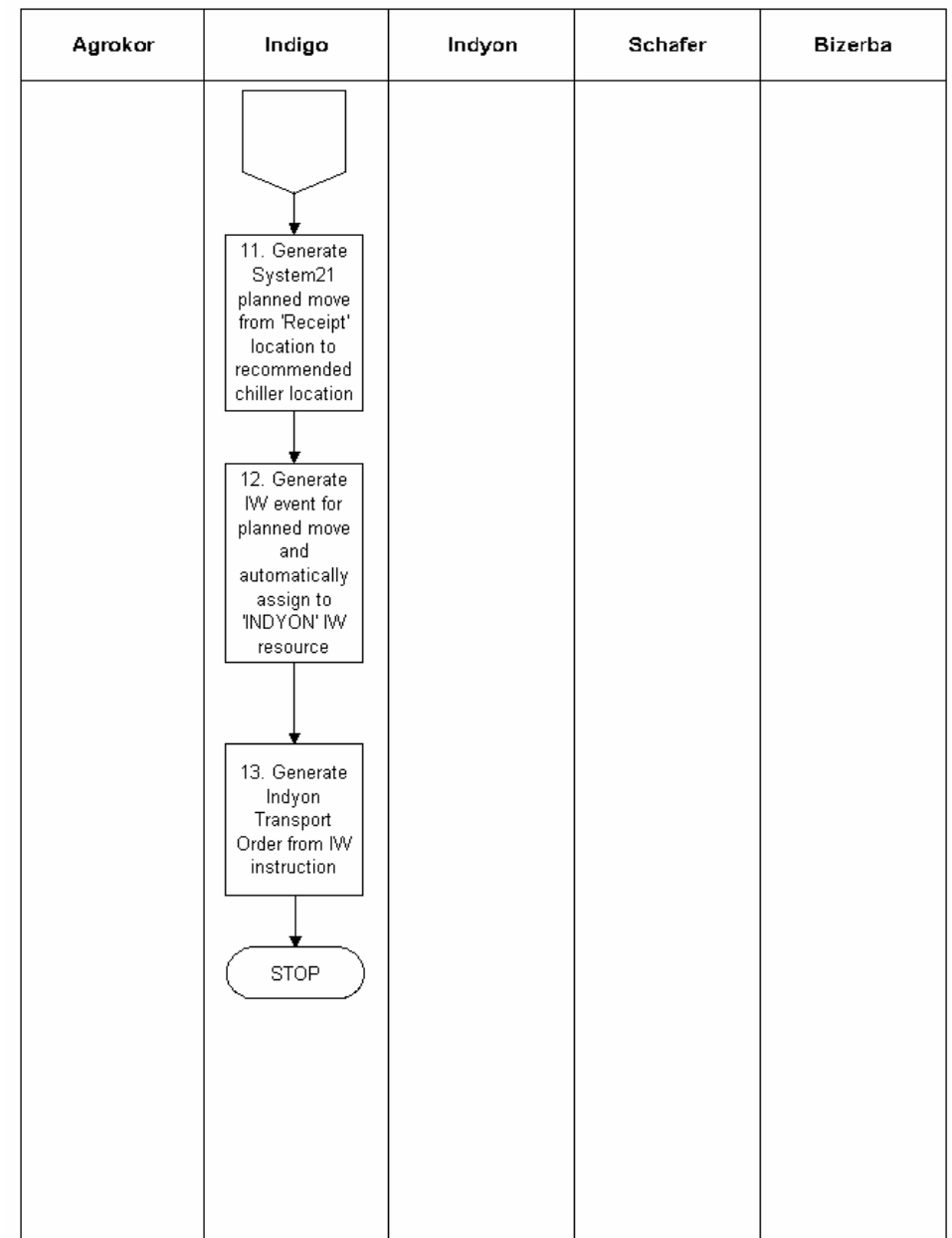
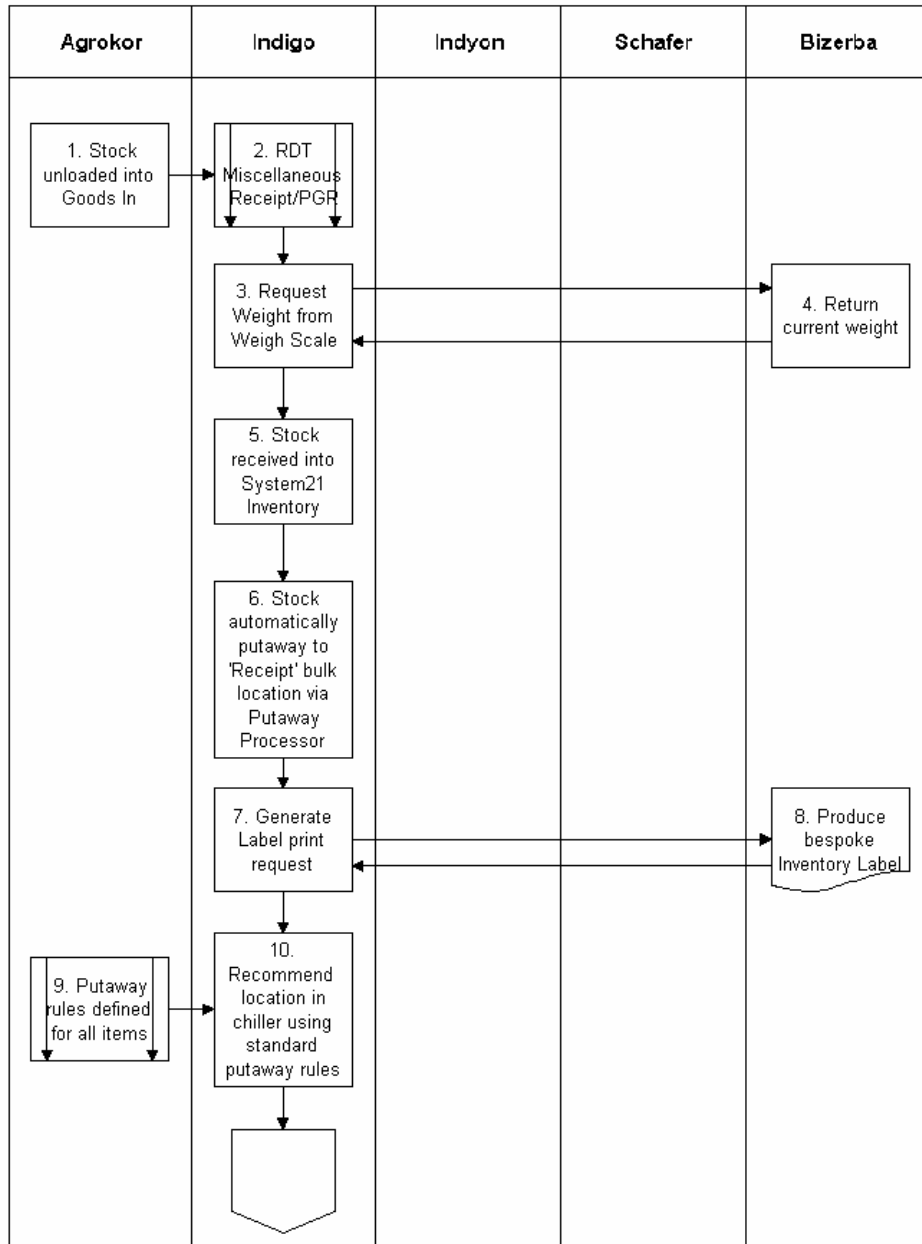


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- There is no direct interaction between Schaefer, Indyon and Bizerba, Indigo is the concentration hub used for all interactions
- Indigo is the “brain” of all operations, it tells other components what to do and when to do it
- Solution is incorporated into standard WH and IW as much as possible
- **Forklift should behave just like an RDT - it is bigger, has a more sophisticated GUI and it uses sensors instead of scanning, but the principle of operation is identical!!!**
- No RDTs are used in -25 °C area, only heated forklifts are used in that area. Each instruction is carried out in two steps - forklift takes the goods out of -25 °C and RDT user works with them in -5 °C area
- It is similar at goods entry - RDT user prepares the goods in -5 °C area and then the forklift takes it to the -25 °C area

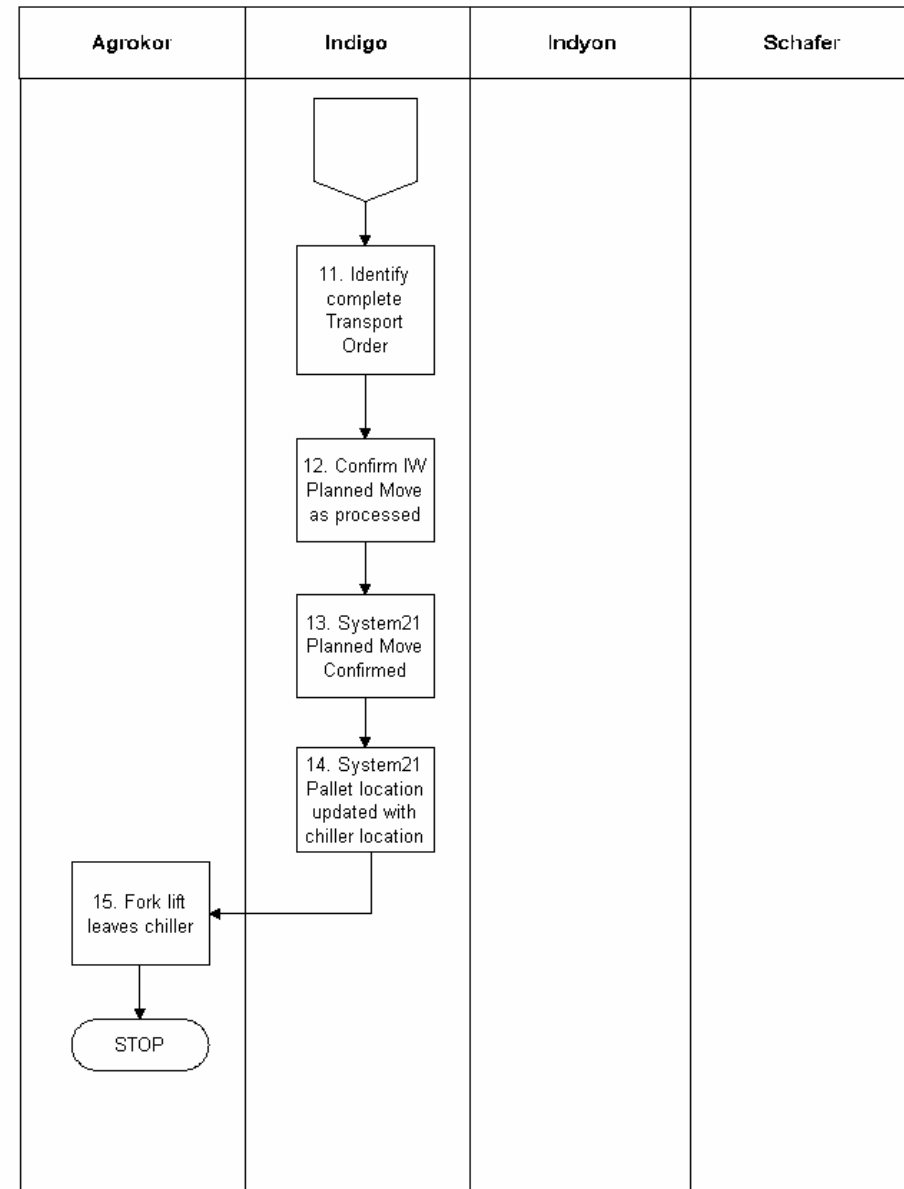
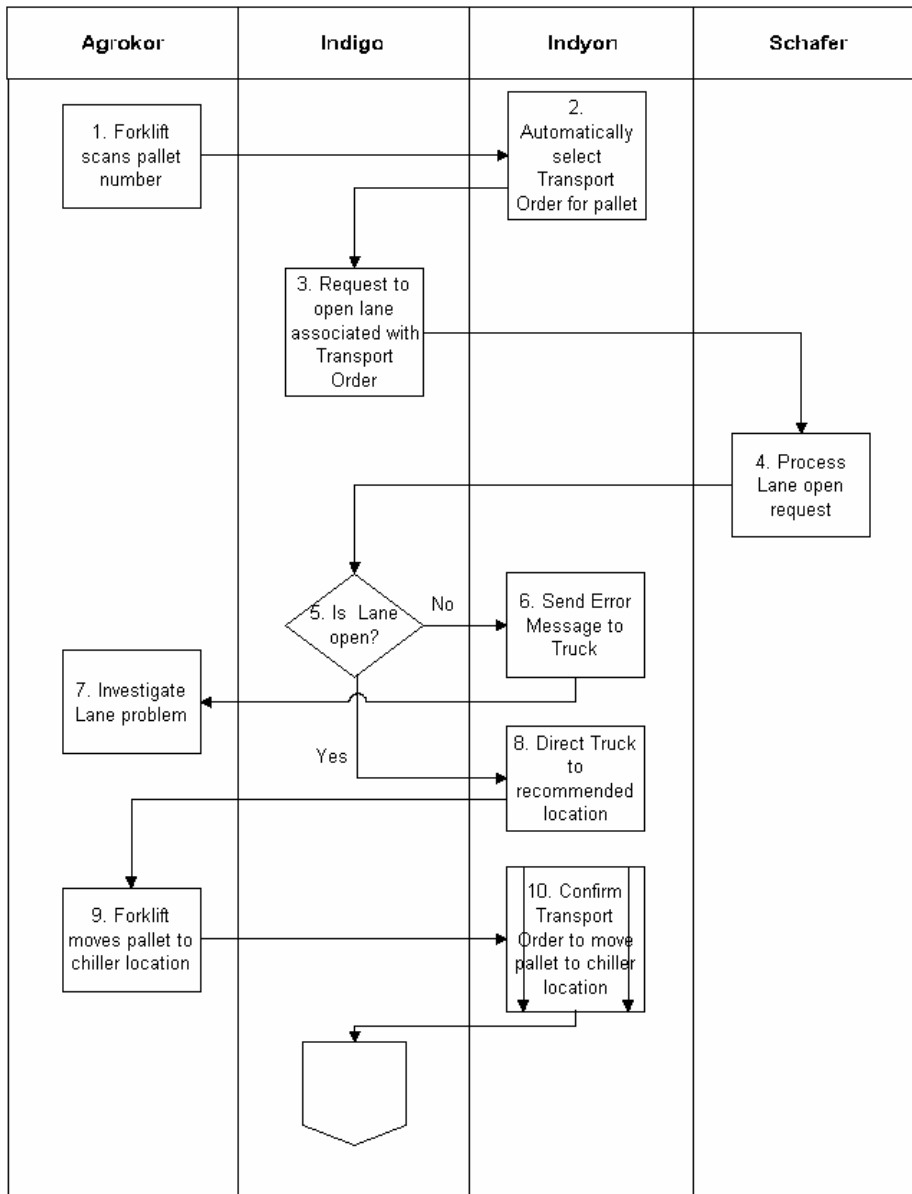


Putaway generation



Putaway confirmation

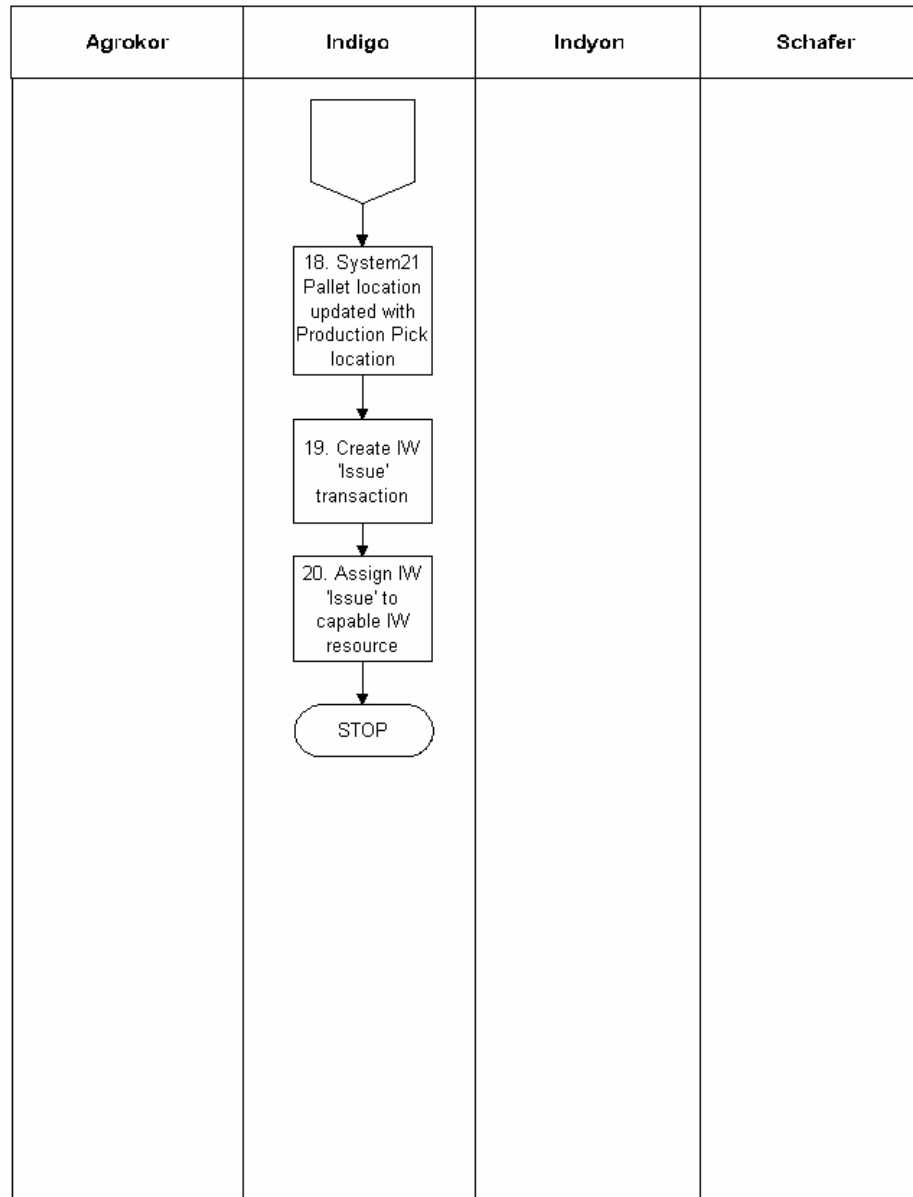
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And now, something completely different....

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- Pictures and movies of the process, to make things more graphical



Again, something completely different....

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- Pictures and movies of the production pick process, to make things more graphical

- Integration into standard action panel
- User can manually pick pallets for sales from action panel – this was a requirement from PI K
- After that selection, process is identical to production pick, only the end result is different (delivery note instead of production pick issue)
- Seamless integration with standard sales pick process!

- No problem!!
- If forklift driver moves pallets around without instructions, he is warned every time, but all movements are recorded!

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- Indigo's role was integration and process definition
 - They took the best from every available technology and incorporated that into their standard product
 - Again, a fascinating fact - Forklift behaves like a big, more sophisticated RDT!

- Project was realized in a very tight timescale
 - Initial integration meeting took place middle of June 2007
 - Software was ready by middle of October 2007
 - From initial meetings to complete solution in only 4 months!

- Completely seamless integration
 - ▣ **4 different technologies - Indigo, Indyon, Schaefer, Bizerba**
 - ▣ **Users have no idea of this - this is all a unified system for them!**
- Completely unified process definition
 - ▣ **User doesn't care if it's PGR or misc. receipts, sales pick, DRP pick or production pick**
 - ▣ **Only two processes - goods in and goods out, system takes care of details**
- Complete stock control
 - ▣ **Planning department has complete visibility of rotation dates, country of origin and details about meat quality for each pallet**
 - ▣ **Detailed evidence of pallet locations**
- Warehouse staff practically doesn't have to think at all – system always tells them what to do, if they do it wrong, the actual state always gets recorded

Thank you for your time and attention!

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