Pushing the boundaries of Inventory Management through innovation

Judith Bezuidenhout – Mariano Perna
Who are we?

Judith Bezuidenhout
National inventory manager

Mariano Perna
Client success manager
Would you like to know what is going to happen tonight when all the staff has gone home, and lights go off at DSV Plumbago?
Outline

• Introduction
• Story: Why inventory accuracy matters
• Current state of inventory management
• Video - Innovation in inventory management
• Inventory management using autonomous drones
• The Zero-error warehouse journey
• Inventory Impacts
• The installation journey
• Conclusion
• Q & A
Global Market position

DSV

3rd Air freight

3rd Sea freight

3rd Road freight (Europe)

10th Logistics solutions

DSV Solutions South Africa was the 4th DSV DC that implemented Autonomous Drone Inventory Management
Verity is the world-leader in automated inventory tracking systems, powered by self-flying autonomous drones. Some of the world's most innovative supply chain leaders benefit from our system's capabilities.

- **16.8 MILLION** fully autonomous inventory checks (and counting!)
- **500 THOUSAND** discrepancies found – and corrected
- **35** permanent commercial installs in 13 countries

**Fully autonomous, no human intervention required**
**Designed as systems, not as individual robots**
**Built from the ground up for maximum robustness**
**System learns over time**
**Enabling zero error warehouse**
Story: Imagine this…

What’s the best wedding gift?
... Perhaps a purse with matching shoes...

You Jump to the Online store and purchase the items

After a couple of days, you get the package delivered to your doorstep, very excited about what she is going to think of your brilliance, you give her the present.
“REALLY? Is this my wedding gift?”

How dare you!?
This is clearly a gift for "you"!!

... And they lived “happily” ever after... Or did they?...
Current state of Inventory management

• Traditional inventory management is labor intensive and error prone.

• With a turnover of 8 times a year and 2 wall-to-wall inventories per year, only roughly 25% of pallets flowing through the warehouse are being checked.

• Errors propagate through the warehouse without being noticed.

We need to explore innovative approaches in inventory management
So how did we tackle innovation?
Inventory Management using innovation: Autonomous Drones

Why is it important? What benefits do they bring?

Other DSV drone use cases

The use cases are many. DSV has Drones for:

1. Verifying Stock in the Warehouses using autonomous drones
2. Delivering spare parts to off-shore wind farms in Denmark
3. Delivering urgent medical supplies to hospitals in Canada
Inventory Management using Verity’s Autonomous Drones

1. The inventory team creates the cycle count requests
2. System plans missions for the drones based on the requests
3. Drones collect data, dock to charging station and download the data
4. System analyzes collected imagery and 3D data
5. Actionable insights are provided to the inventory team through the cloud-based dashboard
6. Inventory team act on results reported
The zero-error warehouse journey

DSV’s actions!
Culture and processes improvement to work optimally with the Verity system

DSV’s actions!
Culture and processes improvement to work optimally with the Verity system

Empty location issues

Pallets or objects without a barcode

Misplaced pallets

Warehouse status report
Reduce labor overtime costs

Automated lost pallet finding

Root cause analyses, process improvements

Increased stock alignment with clients

Increased forecasting and replenishment accuracy

Happier customers

Increased brand reputation

Increasing inventory resource sales

Reduced write-offs

Automated inventory tasks

Fewer worker injuries

Increased forklift driver productivity

Reduce labor challenges (hiring, training, retaining)

Reduce CO₂ emissions

Higher data accuracy at higher frequency

Reduced write-offs

Reduce outbound order delays

Reduce lost sales

Release valuable resources
The system installation journey

Business case
Sizing and scope
Implementation and testing
Go live
Operations culture adaptation

CLIENT DRIVEN (WEEKS TO MONTHS)
LESS THAN 2 MONTHS
2 TO 3 WEEKS
CLIENT DRIVEN (WEEKS TO MONTHS)
Drone unboxing and preparation

Unboxing our first Drone

Hardware setup

Calibrate the system all around the warehouse
Drone installation and calibration

Drones take off and land on their own

Drone calibration and testing
Drone installation - System training

18 November | The human factor
Training and upskilling
Drone installation - Demos and handover
Drone Go-Live

Left Photo: From left: Johan Dekker MD; Judith Bezuidenhout National Inventory Manager; Stanley Macmillan BCM Director

Right Photo: From left: Florian Dizier Verity; Judith Bezuidenhout National Inventory Manager; Mariano Perna Verity; Stanley Macmillan BCM Director
Sustaining Drone best practices
Root cause and Trend analysis – Closing the Gap

<table>
<thead>
<tr>
<th>Issue Instances / Frequency</th>
<th>Frequency</th>
</tr>
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<tbody>
<tr>
<td>Non readable tag</td>
<td>11%</td>
</tr>
<tr>
<td>Empty (Systematically) with Stock</td>
<td>16%</td>
</tr>
<tr>
<td>(wrong pallet re-plenished to pick)</td>
<td></td>
</tr>
<tr>
<td>Incorrect Put away - Corrected</td>
<td>44%</td>
</tr>
<tr>
<td>Order allocating to No Stock - (with Systematic stock)</td>
<td>9%</td>
</tr>
<tr>
<td>Pallet calling correct location</td>
<td>0%</td>
</tr>
<tr>
<td>Pallets still calling receiving</td>
<td>1%</td>
</tr>
<tr>
<td>Quarantine</td>
<td>9%</td>
</tr>
<tr>
<td>Shipdocks</td>
<td>9%</td>
</tr>
<tr>
<td>Tag was cancelled and counted into new Tag due to condition</td>
<td>1%</td>
</tr>
</tbody>
</table>

Top 3 issues tracker

- Non readable tag
- Empty (Systematically) with Stock (wrong pallet re-plenished to pick face)
- Incorrect Put away - Corrected
Conclusions - Key takeaways

**People**
- Focusing our employees energy and time on higher value added tasks.
- Improved Investigation turn-around time.

**Financial impact**
- Creating a competitive edge through digital transformation & innovation.
- ROI.
- Customer satisfaction.

**Operational excellence**
- Achieving and maintaining Inventory accuracy through innovation.
- Proactively.
- Mutually beneficial relationships.

Our strategies are centred around meeting our customers’ needs.
Be innovative, be sustainable, contact **DSV** for your warehouse and logistic solutions: www.dsv.com

Enjoy the benefits of having a zero-error warehouse using autonomous drones, contact **verity** at: mperna@verity.net