Cummins Meritor

Analytics for effective warehouse operations using Qlik Sense

Khuzema Tikiwala &
Elizabeth Cornelison

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Agenda

- Introduction
- Background
- Operations Overview & Project Process
- Use Case – Operation Qlik Apps
  - Picks – COPS Operations
  - On Time Shipping
  - Lines Tagged Putaways & Dunnage Receiving
  - Value Added Services: Packing Work Order Status
- Q & A

Khuzema Tikiwala

Qlik Luminary 2023

Qlik Luminary for 2020, 2021, 2022 & 2023

SHRI G.S. INST. OF TECH. & SCIENCE
INDORE
आचारः प्रथमो धर्मः

Graduated from Indore University as Mechanical Engineer in 1991

Diploma in Marketing Management in 1994

MBA

in Finance in 1996

Diploma in Advance Computing

Passionate about music/singing! Hosted a radio program on AM 1460 for 2 years

L&T Infotech

Ford

EAGLE OTTAWA

Cummins Meritor

LEAR CORPORATION

Favorite Places Mountain/Beach

OAKLAND Family Services

Habitat for Humanity®

Elizabeth Cornelison

- Profession:
  - Sr. Business Analyst at Cummins-Meritor in the Aftermarket Division
    - NA Aftermarket Warehouse Operations Qlik Project
- Education:
  - M.S. in Economics, University of Utah, Salt Lake City, UT
  - B.A. in Economics & Management, Wells College, Aurora, NY
- Fast Facts:
  - I'm a working mom.
  - I am currently training for the Flying Pig Marathon in Cincinnati on May 7th.
  - My hobbies include reading, going to festivals, running, weight training, hiking, and taking my kids on adventures.

Introduction

About Cummins-Meritor

In 2022, Cummins acquired Meritor, Inc. Now a business unit within Cummins' Components segment, **Cummins-Meritor** is a global supplier of axles, brakes, suspensions, drivelines and aftermarket parts for the commercial vehicle and industrial markets.

Introduction

Cummins-Meritor Product Portfolio

Truck

- Axles
- Drivelines, universal joints and yokes
- Cam, air and hydraulic brakes
- Automatic slack adjusters

Trailer

- Axles
- Air ride suspensions
- Meritor Tire Inflation System™ (MTIS)
- Brakes

Defense

- Full portfolio of axle and brake technology
- All-wheel drive systems
- Independent suspension axle systems (ISAS)
- Military-grade drive axles
- Transfer cases

Off-Highway

- Heavy-duty front and rear axles
- All-wheel drive systems
- Transfer cases
- RT crane axles

Specialty

- Front and rear axles
- All-wheel drive systems
- Transfer cases
- Gearboxes
- PTOs

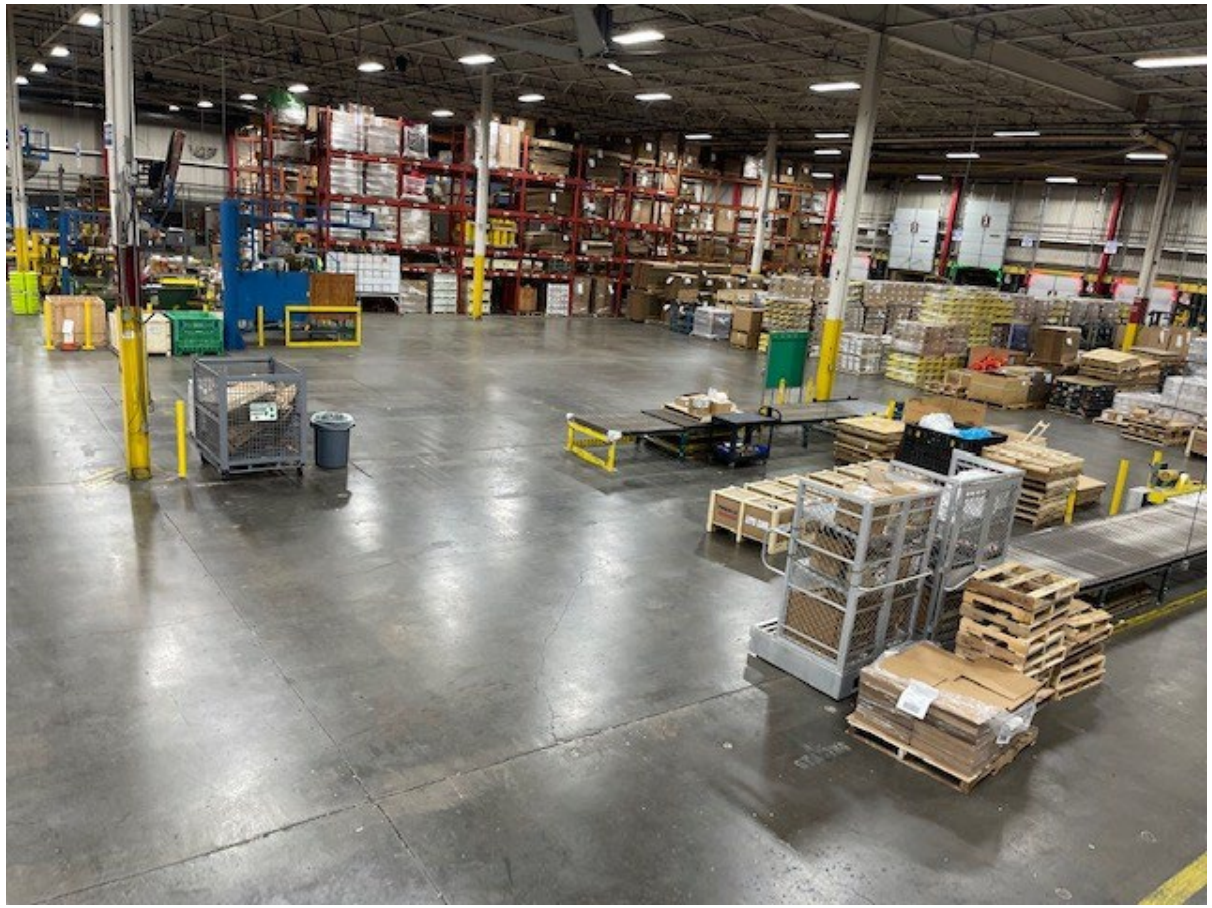
Aftermarket

- Original equipment service parts
- All-makes programs
- Remanufactured parts

Background

- Centralized self-service *Data & Analytics* using Qlik Sense.
  - More than 650 users
  - 120 dashboards created by 40 plus developers
- Cummins-Meritor Aftermarket Operations Warehouse – Qlik Analytics Project
  - Prior to Qlik:
    - Data was difficult to access
    - Used legacy reporting software
    - Extracting data & metrics took hours
    - Some metrics were not possible to calculate (dock to stock)
  - With Qlik:
    - Easily accessible
    - Updated bi-hourly
    - Increased efficiency in reporting
    - Increased efficiency for labor management
    - Insight into where to prioritize efficiency projects

Receiving (REC)



Functional Areas

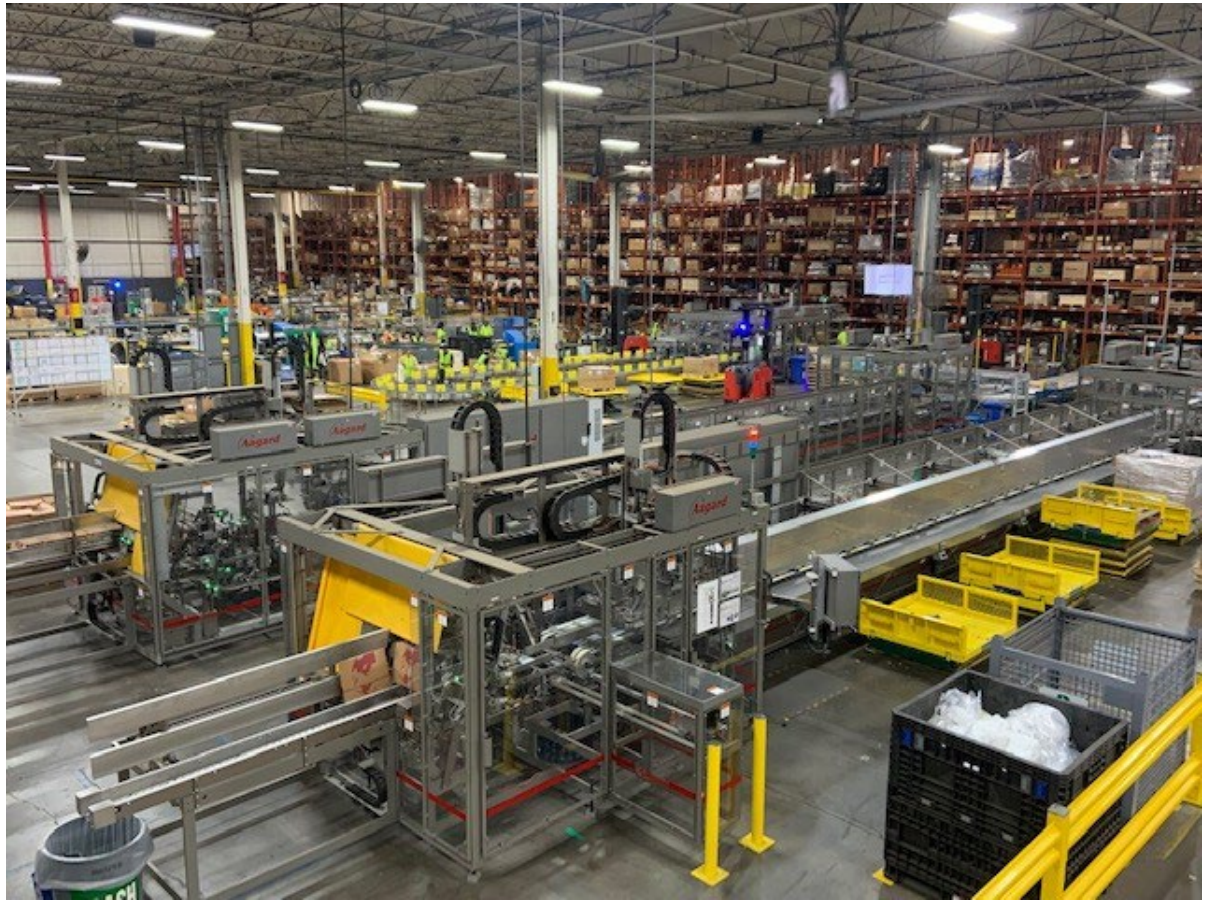
- Receiving Product
- Returns (RGNs)
- Initial Quality Inspections
- Space Utilization

Work Areas

- Operate two docks (Front & Back)
  - Total of 12 doors
- Quality Inspection Area
- Return Inspection Area

Employees	Shifts	Daily Lines Processed	Annual Lines Processed	Annual Shipments Received
22	2	638	157K	8,645

Value Added Services (VAS)



Work Centers

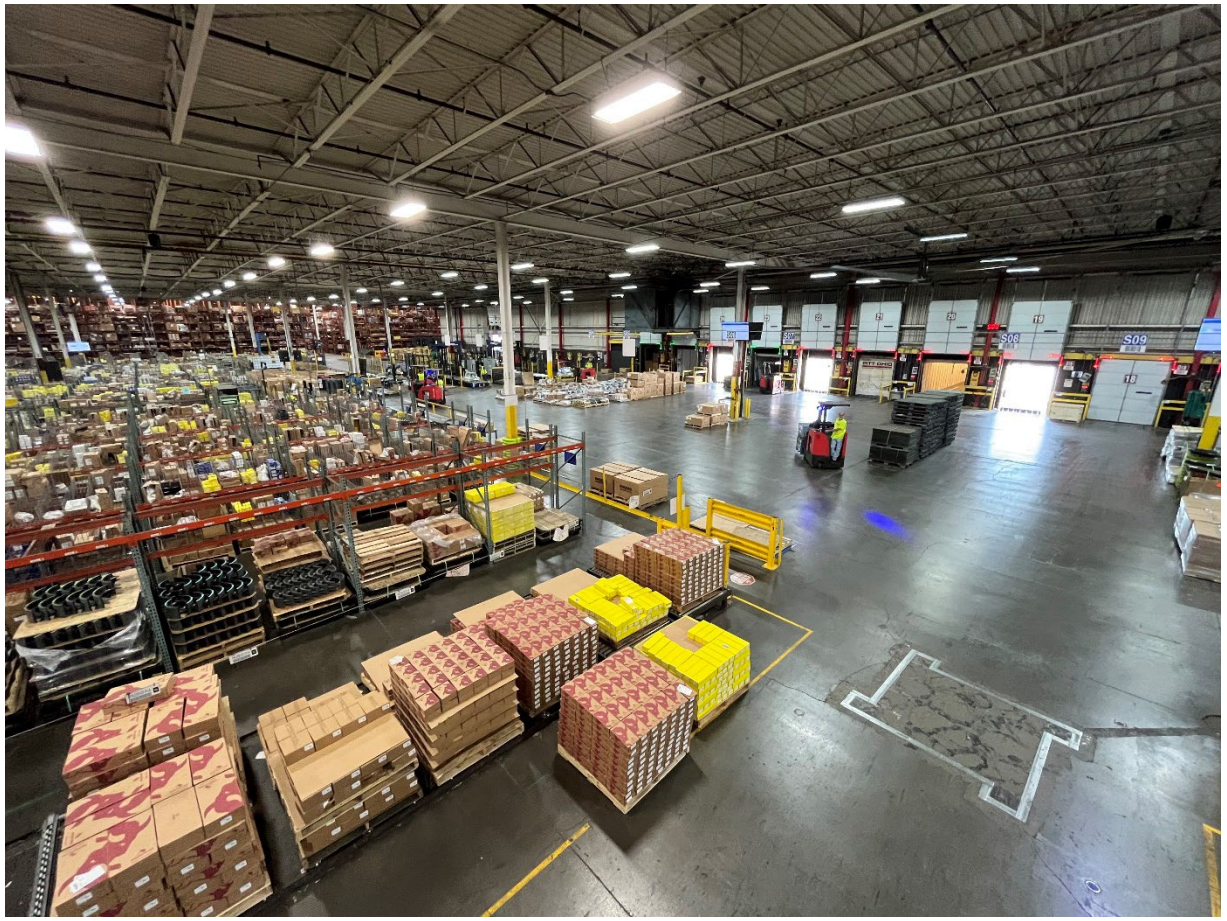
- Automated Packaging Lines
- Conveyors
- Bagging
- Hand Pack
- Heavy Pack
- Specialty (Tubes & Carriers)

Products

- Bearings, Brake Pads, Brake Kits, Camshafts, ASAs, Center Bearings, U-Joints, Sub-Kits
- VAS packs/labels 82% of sold parts

Work Centers	Employees	Shifts	Daily Cartons Packed	Annual Cartons Packed	PCS Packed
20	94	2	28,000	7M	17M

Customer Operations (COPS)



Pick Areas

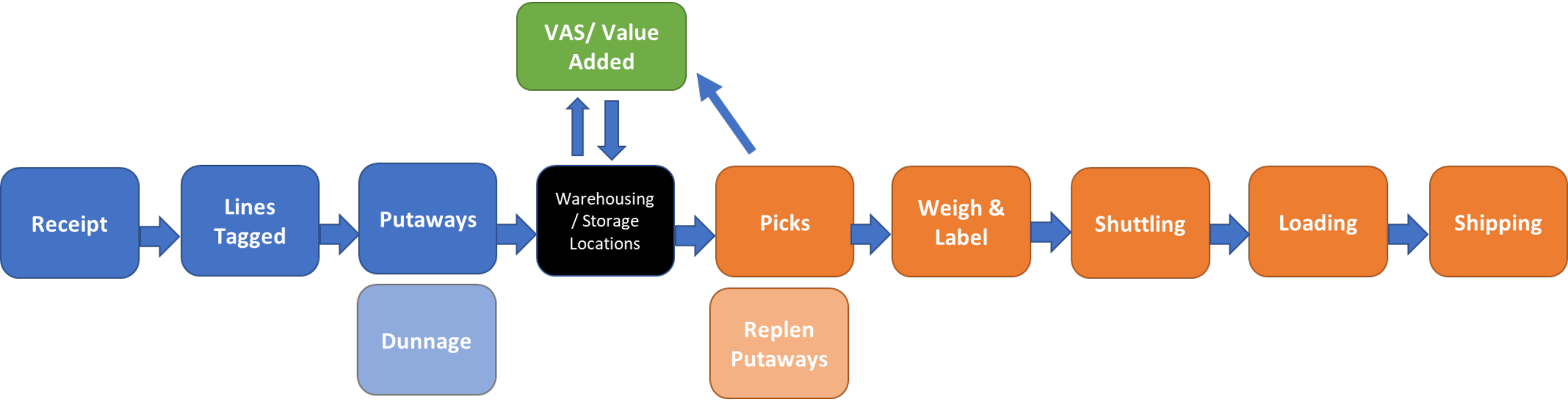
- Pick on Foot (POF)
- Reach Picks
- OP Picks

Products

- Axles, Air Systems, Brakes, Ride Control, Suspensions, Trailer Axles, Clutches, Drivelines, Electronic Products, Steering Gears

Employees	Shifts	Daily Lines Picked	Annual Lines Picked	Annual Shipments
89	2	4833	1.2M	271k

Meritor NA Aftermarket Operations Overview



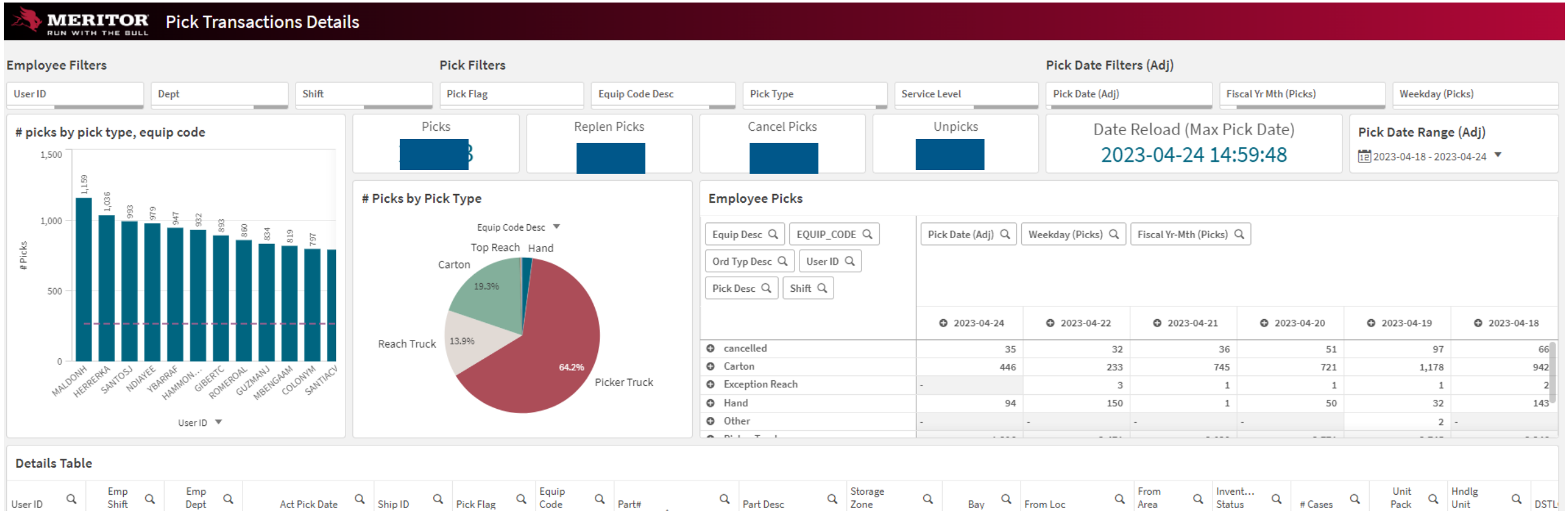
Project Process

- Project kickoff
  - identifying contacts/internal customers
  - research & interviewing to understand current process, business needs, metrics, and identify/prioritize projects
- Work with internal resources including IT, Data & analytics, Kronos
- Testing & User Acceptance
  - Validating data
  - Testing impact on production servers of hourly & bi-hourly data loads
- Build Qlik Apps using data load editor
- Training for managers, operational leads, & team leads
- Agile Sprints
  - Iterative updates of Qlik apps for continuous improvement using User Stories (as a..., I want…, so that…)
- Future Projects

Picks – COPS Operations NA Aftermarket

- Provides picking transactional data for the Customer Operations (COPS) department
  - Operation leads use the picks app for metrics and labor management including:
    - # of picks transaction, pick types, location, equipment type
    - Overtime needs, how shifts are doing current, weekly, monthly, manage employees, lead employee reviews
- Qlik significantly reduced time to pull data & metrics for the Operation Leads & managers
- Quality manager uses the app to determine # of picks per user compared to the errors report
- 15 unique users with over 350 sessions in the past month and steady growth in usage

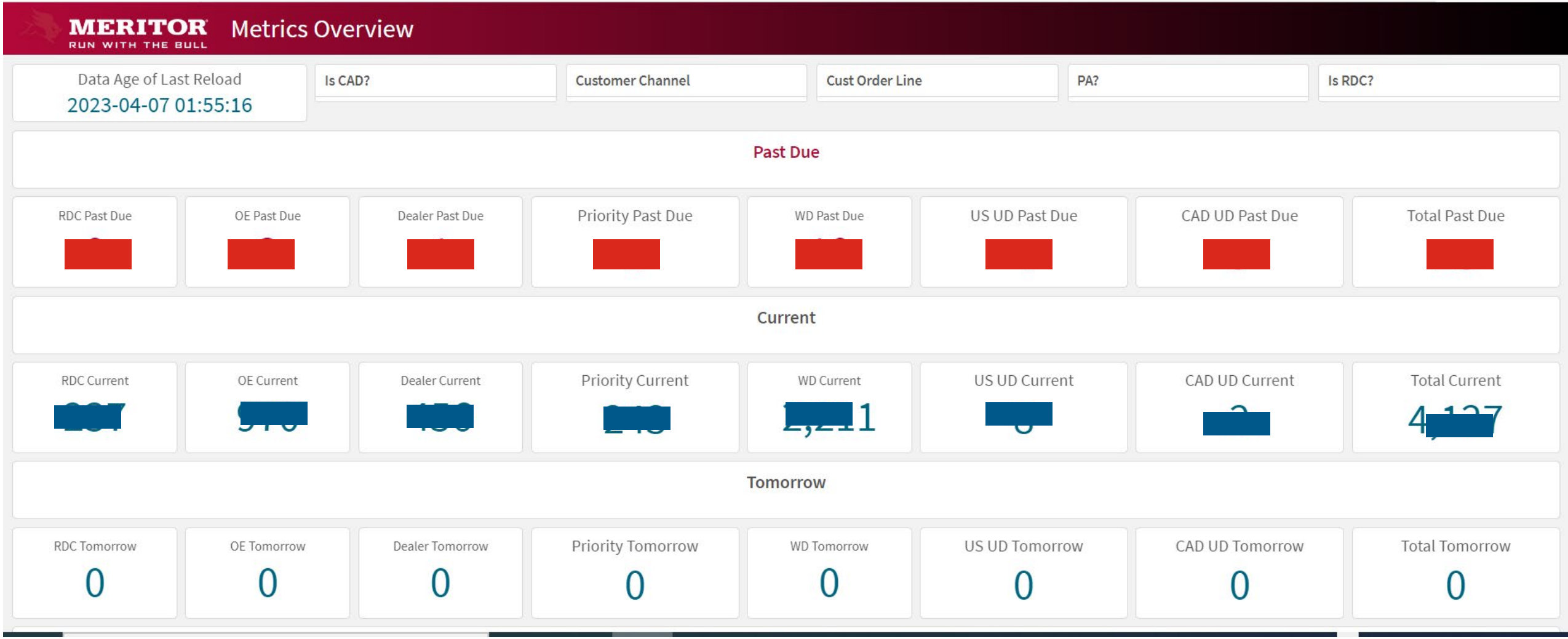
Picks – COPS Operations NA Aftermarket



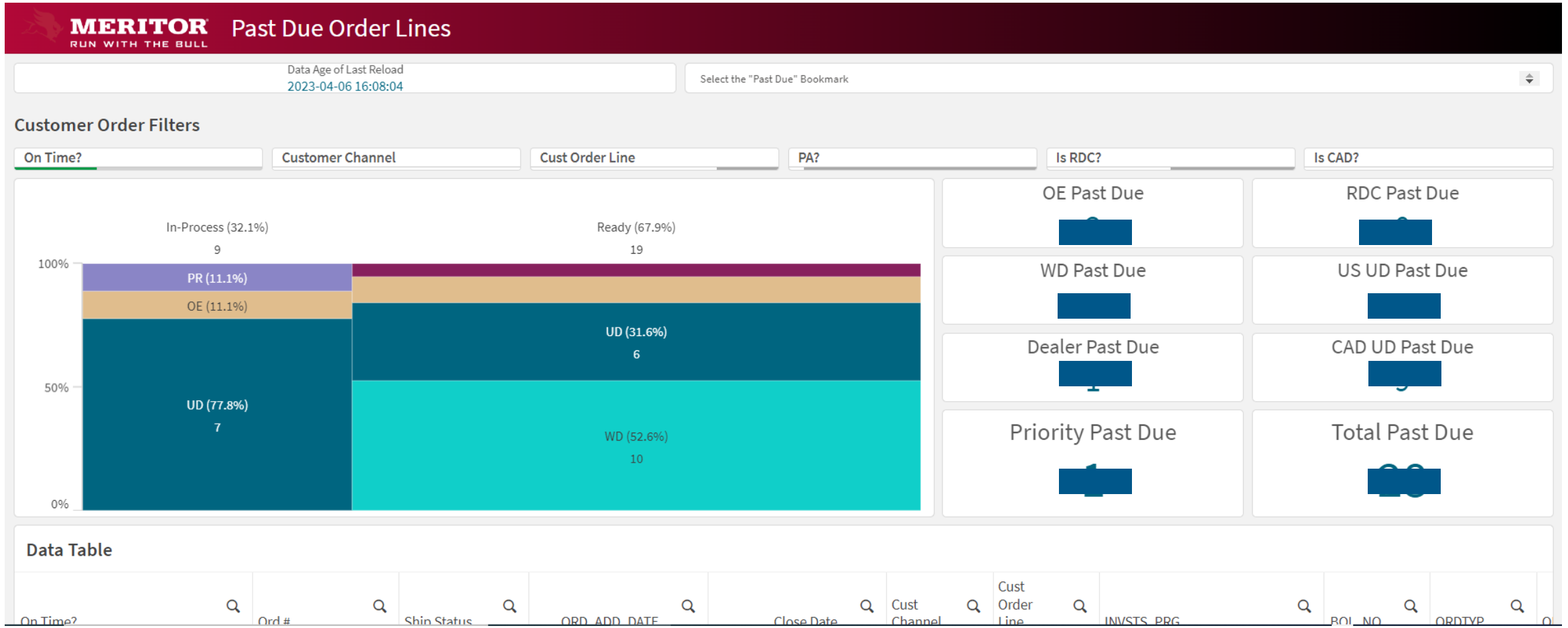
On Time Shipping

- Able to check customer order lines and prioritize work based on hourly data where as prior manual update of report took time/effort
- Increased quality of shipping customer orders on time / reduced past due shipments
- Prioritization of work for shipping customer orders
- Easy tool to open & see visibly what needs to get out the door each day
- Positively impacts customer order misses & fill rate
- Based on shift, use case is different:
  - 1st shift: prioritize picking and prepping shipments
  - 2nd shift: prioritize orders to ship
- 12 unique users & 157 sessions after being published in the past month

On Time Shipping – Metrics Overview



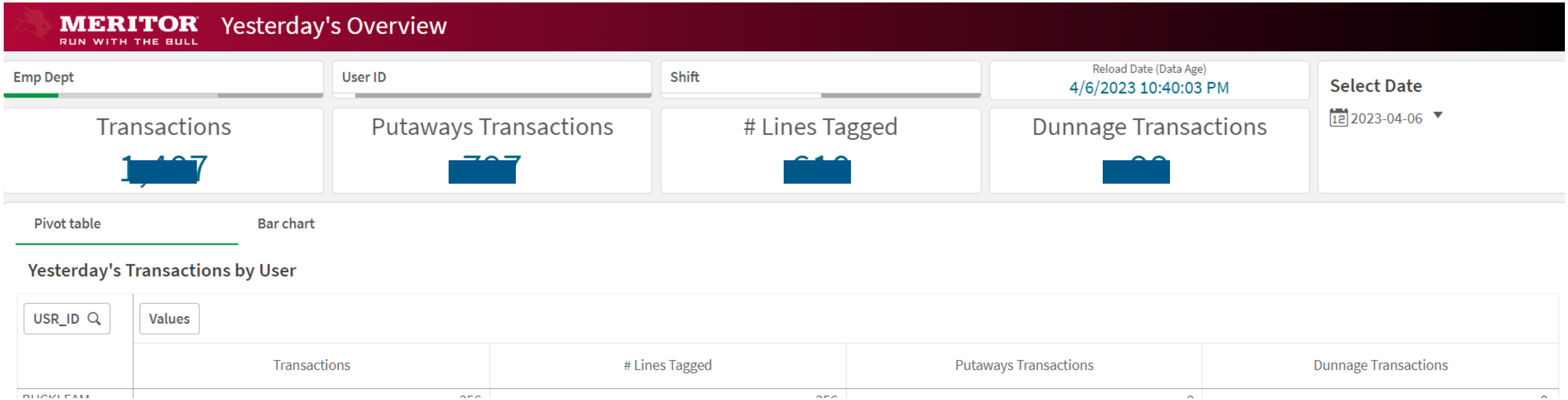
On Time Shipping – Past Due Orders



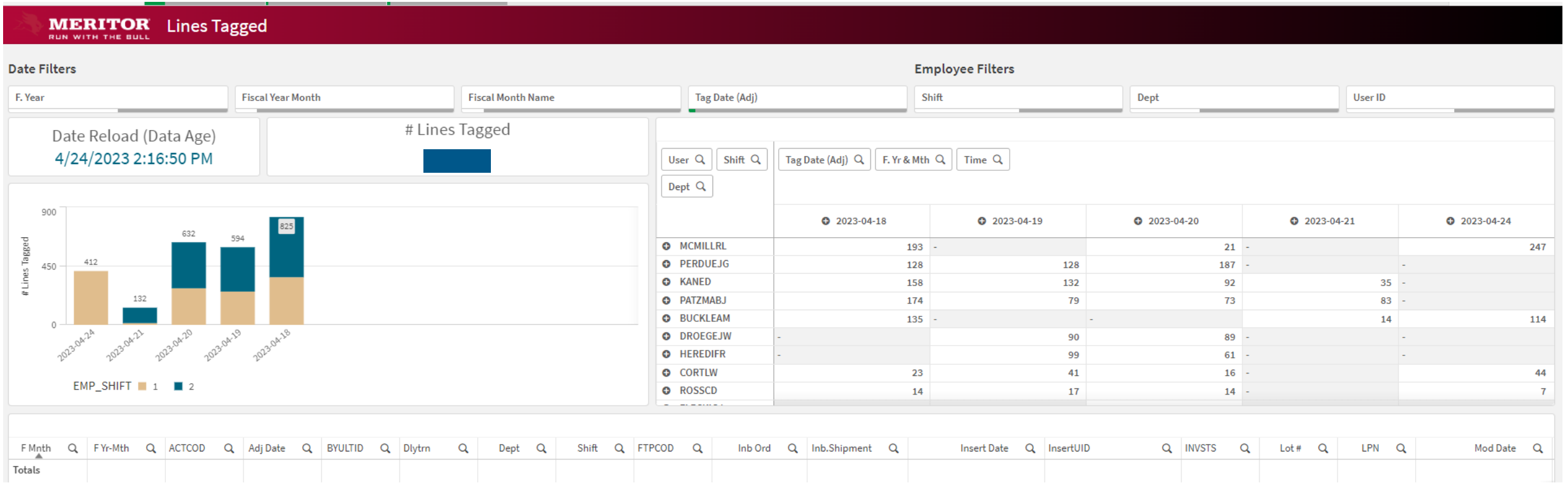
Lines Tagged Putaways & Dunnage Receiving NA AFM

- KPIs for Receiving department including # of picks, putaways, & dunnage transactions completed
- Monitor employee transactions to understand labor productivity as well as provide employee feedback during reviews
- Operation Leads & team leads able to quickly provide planners information when they need specific part# expedited
- Determine whether need to shift labor from tagging to putaways or vice versa
- Saves 20+ mins daily for Operation Leads and leads to pull transactional data & prep team meeting slides
- 9 unique users with 228 sessions over the past month

Lines Tagged Putaways & Dunnage Receiving NA AFM



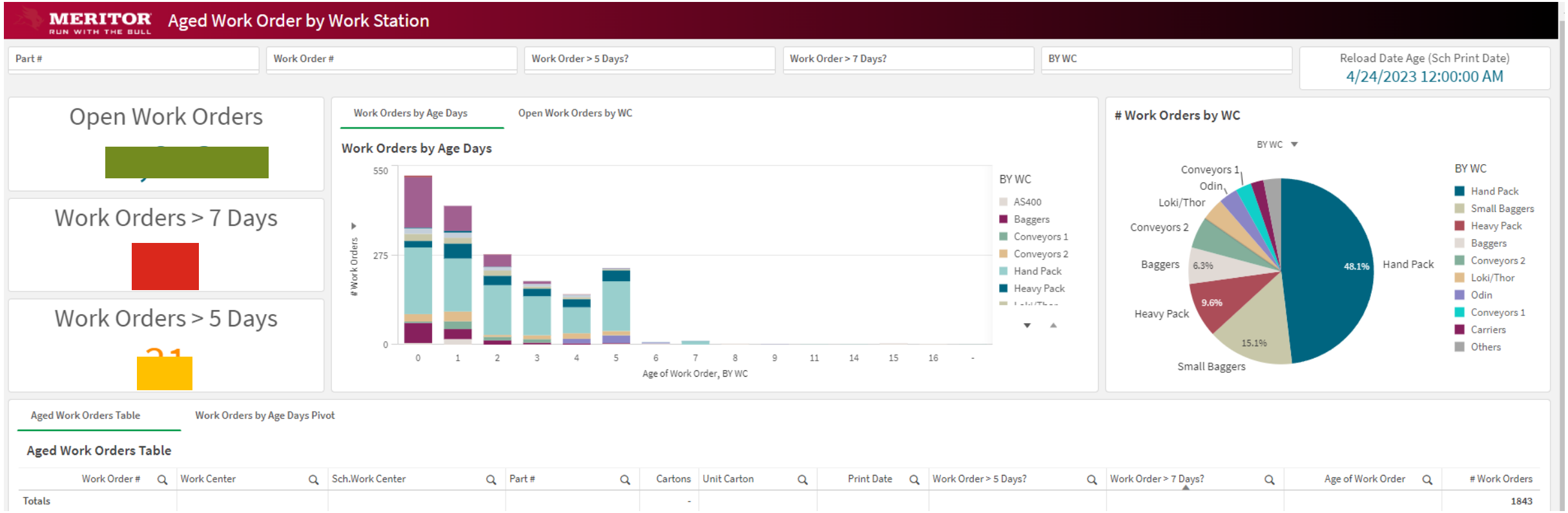
Lines Tagged Putaways & Dunnage Receiving NA AFM



VAS: Aftermarket NA Packing Work Order Status

- Prioritization of open work orders within VAS department
  - Breaks down by workstation, carton type, carton description, age of work orders, part#
- Reduces the number of work orders aged over 5 days
- Updated hourly
- Used by manager, Operation Leads, and team leads

VAS: Aftermarket NA Packing Work Order Status



All operations dashboards

- COPS Operations NA Aftermarket
  - Loading
  - On Time Shipping
  - Order Lines Shipped
  - Picks
  - Shuttling
  - Weigh & Label
- Receiving
  - Lines Tagged, Putaways, & Dunnage
  - Dock to Stock
- VAS
  - Packing Work Order Status
  - Production Inbound & Outbound

Q+A

Appendix / Backup Slides

Order Lines Shipped

- Breaks down what COPs shipped out the previous day which correlates with on time shipping & fill rate metrics
- Used to look at past due & track down and understand shipping misses trends
  - KPIs broken down by customer, order type, carrier type highlights areas that COPs struggles with the most
  - allows Operation Leads & managers to devise corrective actions to fix future customer orders & decreases misses in the future
- 9 unique users (2 Operation Leads who use the app daily) with 57 sessions averaging 1:26 mins session length