WELCOME TO THE BREAKOUT SESSION

DATA ANALYTICS

UNLOCK THE POWER OF DATA-DRIVEN SUPPLY CHAIN OPTIMIZATION

SCOTT ALLISON
DHL SUPPLY CHAIN

FELIX STEFFNY
DHL SUPPLY CHAIN

NORM MELBARDIS
KLA

What should you expect from this breakout session?

- DHL's experiences in operationalizing Insights
- A Customer Story - KLA
- Further Customer Insights from Supply Chain Orchestration Projects
- Hopefully you can take away a few nuggets back to your organization

Audience participation is key

Scan the QR Code to add your questions during the presentations

Questions can be anonymous or with your name (can't win prizes without names ☺)

You can vote for the question you are most interested in

We will review the questions at the end of the session

10 highest voted questions wins a prize!!

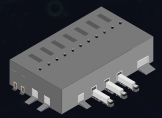
Join at slido.com
#SCoptimization

Using the Power of Data

Unlocking Value in Transportation, Warehousing, Packaging & Inventory across your Supply Chain

	Cost	Flexibility	Speed	Sustainability	Resilience
Digital Supply Chain	Managing inventories for various channels	Managing SC disruptions with predictive analytics	Optimizing with data-driven insights & Digital Twins		
	Real time visibility and advanced analytics	Tracking & eliminating of emissions	Managing returns & recycling flows	...	

Source



I2M

Make

Store & customize

Deliver

Maintain

Return/Recycle

Physical Supply Chain	Enabling robotics and automation	Provide global coverage	Managing same day networks	Running electric vehicles and sustainable WHs	Integrating partner operations along SC	...

Power BI

Which of these value levers are most important for your business?

Holistic Value Creation

Direct Logistics Cost Savings

- Transport cost
- Warehouse cost
- OH redeployment
- Consumables

Indirect Savings

- Inventory savings
- KPI Performance
- KPI Penalties
- Cash Flow

Cost Avoidance

- Liability/ Risk transfer
- Macro-economic risk / Resilience

ESG

- Go-Green
- Quality & Regulatory Assurance

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What are some of the issues customers face when trying to take advantage of opportunities highlighted through insights?

- Organizational Silo’s
- Customer Entitlement
- Hierarchy
- Total cost of Ownership

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Supply chain Orchestration: Driving E2E value in Transportation, Warehousing, & Inventory across your entire supply chain

End-to-End real time visibility & insights – MySupplyChain	Track & trace	Inventory	Operational Performance	KPI Reporting	Business Analytics / Co2 Reporting	Customer Service	Document Control
Industry leading value creation approach leveraging latest data analytics/AI	Inventory allocation & optimization	Digital twin network optimization	Warehouse Process Mining	E2E Process Mining	Logistics forecasting	Insights as a Service	
E2E logistics management leveraging best-in-class processes and systems	LSP strategic management	Quality & Compliance management	WH management & integration	Risk incident monitoring and management	Shipment management	Finance controlling	Sales order Management & Allocation
Industry leading logistics execution in transport and warehouse operations	Make	Store	Deliver	Return			

KLA at a Glance

Founded in
1976

Headquarters in
Milpitas, CA
Ann Arbor, MI

18
Regions

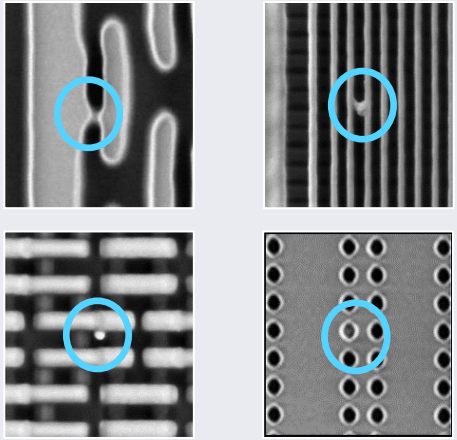
~15,000
Employees

$9.7B
CY2023 Revenue

>65%
PhD/Master's among professional roles

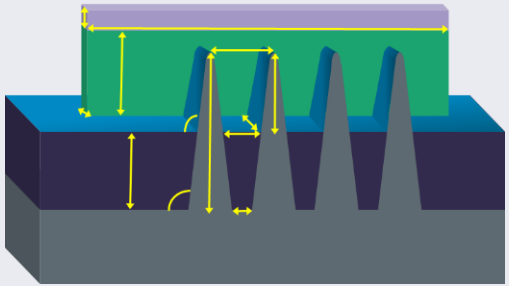
We Create Industry-Critical Process Control and Process Systems

Inspection
Find Critical Defects



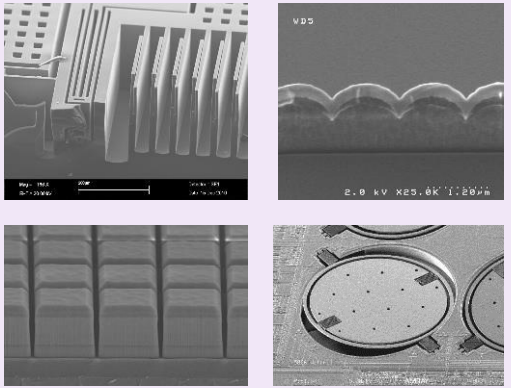
You can't fix
what you can't find

Metrology
Measure Critical Parameters



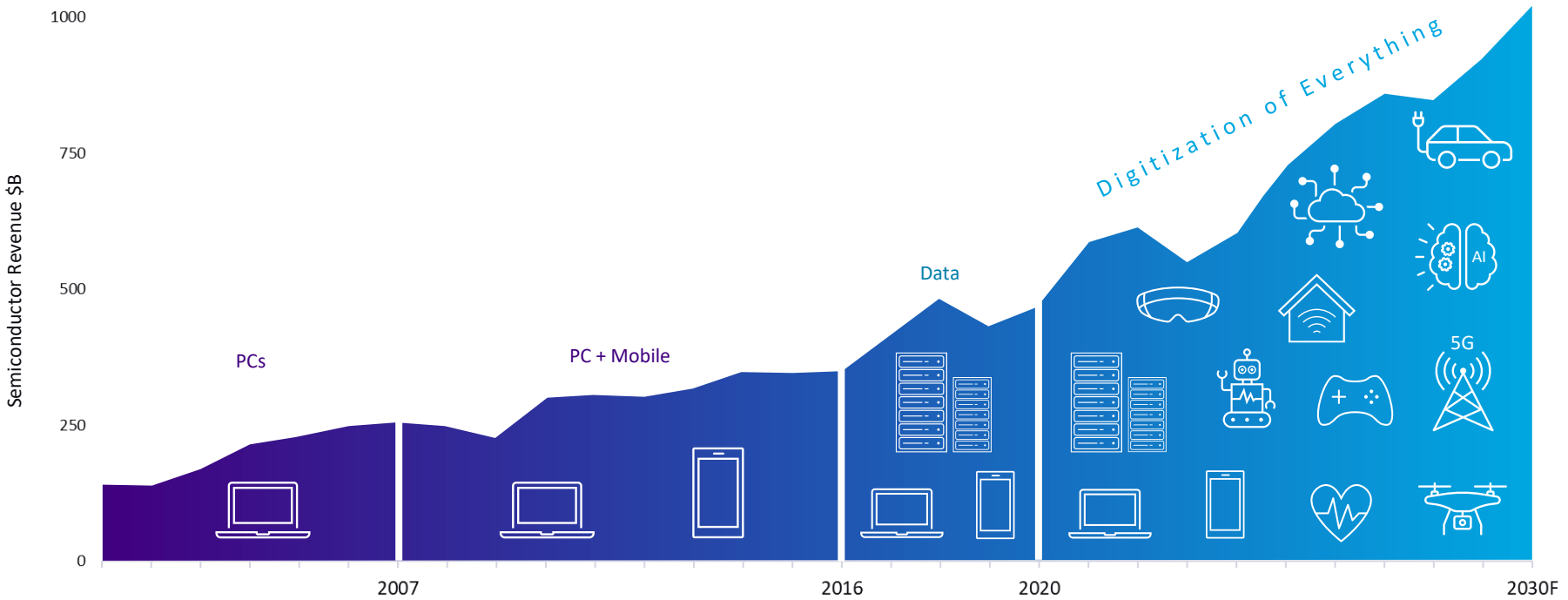
You can't control
what you can't measure

Process
Create Device Structures



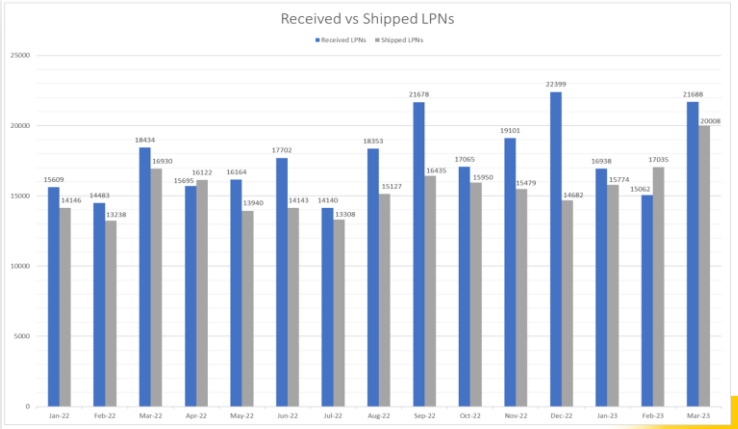
You can't sell
what you can't make

What's Driving Semiconductor Growth?



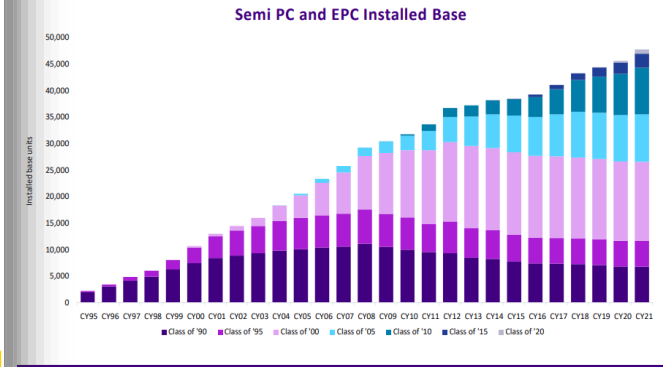
KLA Inventory & Install Base Growth

IB & OB Volumes.



- MARCH. 92% of total IB became OB.
- Site Boxes Bin Occupancy remains high , estimated 90% to 95%.
- Crates Bin Occupancy improved with RK move and additional racking from 100% to 90% occupancy.
- TTL OH LPNs increased from 154,440 last month vs to 156,431 end of March
- March FCST Volume set for:
  - IB 19k LPNs
  - OB 15.5k LPNs
- April FCST.
  - IB 19k LPNs
  - OB 16.5k LPNs

Longevity of Installed Base Enhances Customer Productivity



Highlights

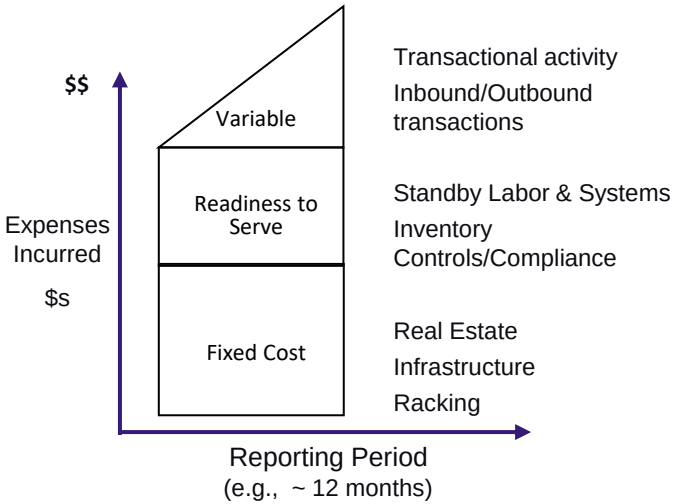
- >50% of our installed base is older than 18 years old
- Average peak installed base per class year is achieved in ~12 years
- >80% of tools shipped in KLA history remain in production
- Customers continue to utilize tools in production long after full depreciation (2-3 times)
- Class represents the year the product was introduced

Over the life of a tool, service revenue exceeds initial tool sale price

Global Service Warehouse Environment

Manage Service Warehousing Spend As % of Service Revenue

Logistics cost to serve model



Look Back

- Growing pains
- Running out of warehouse space
- Space optimization underway at multiple locations
- Inbound LPNs > Outbound LPNs – increasing storage demand
- Inventory stored in some of most expensive real estate locations
- Service warehouse costs are increasing faster than service revenue

KLA Aged Inventory Dashboard

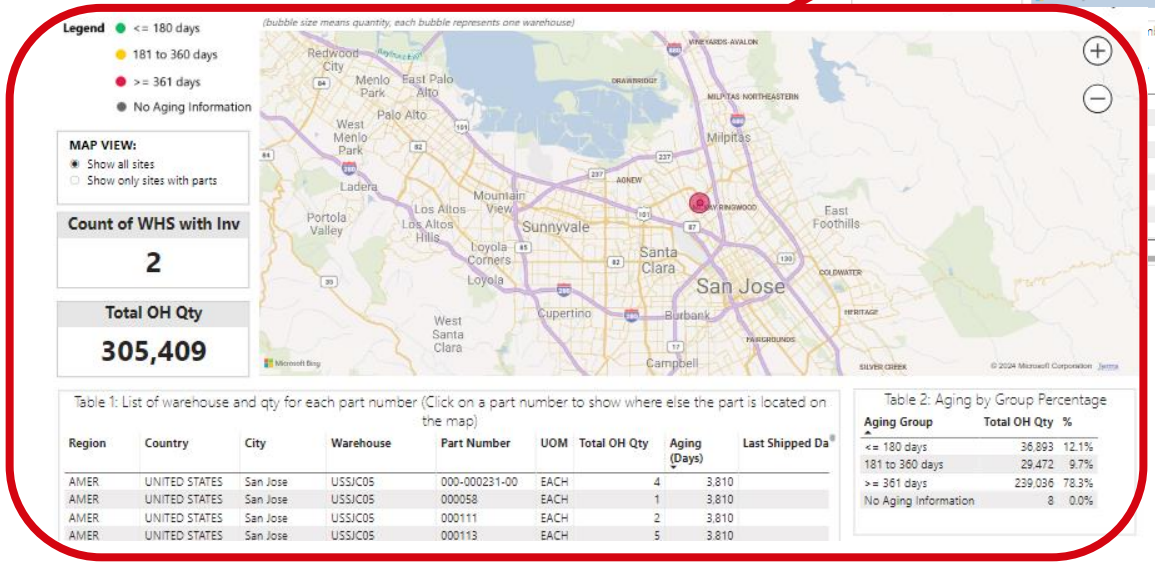
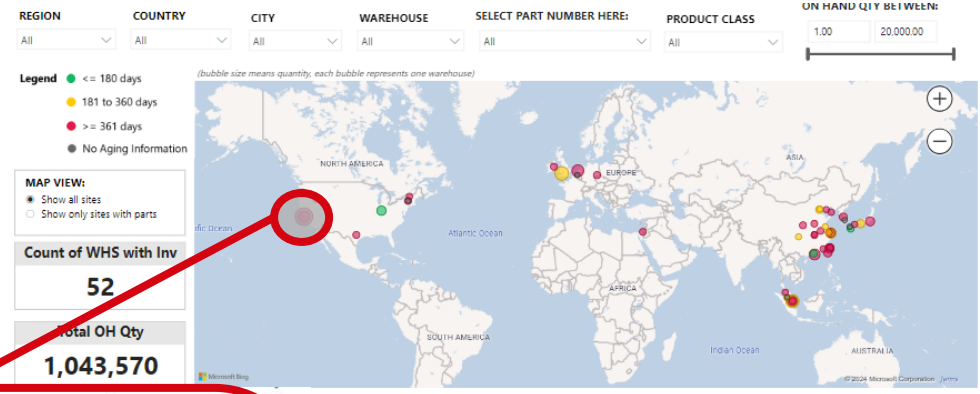


Table 1: List of warehouse and qty for each part number (Click on a part number to show where else the part is located on the map)

Region	Country	City	Warehouse	Part Number	UOM	Total OH Qty	Aging (Days)	Last Shipped Da
AMER	UNITED STATES	San Jose	USSJC05	000-000231-00	EACH	4	3,810	
AMER	UNITED STATES	San Jose	USSJC05	000058	EACH	1	3,810	
AMER	UNITED STATES	San Jose	USSJC05	000111	EACH	2	3,810	
AMER	UNITED STATES	San Jose	USSJC05	000113	EACH	5	3,810	

Table 2: Aging by Group Percentage

Aging Group	Total OH Qty	%
<= 180 days	36,893	12.1%
181 to 360 days	29,472	9.7%
>= 361 days	239,036	78.3%
No Aging Information	8	0.0%



nber (Click on a part number to show where else the part is located on the map)

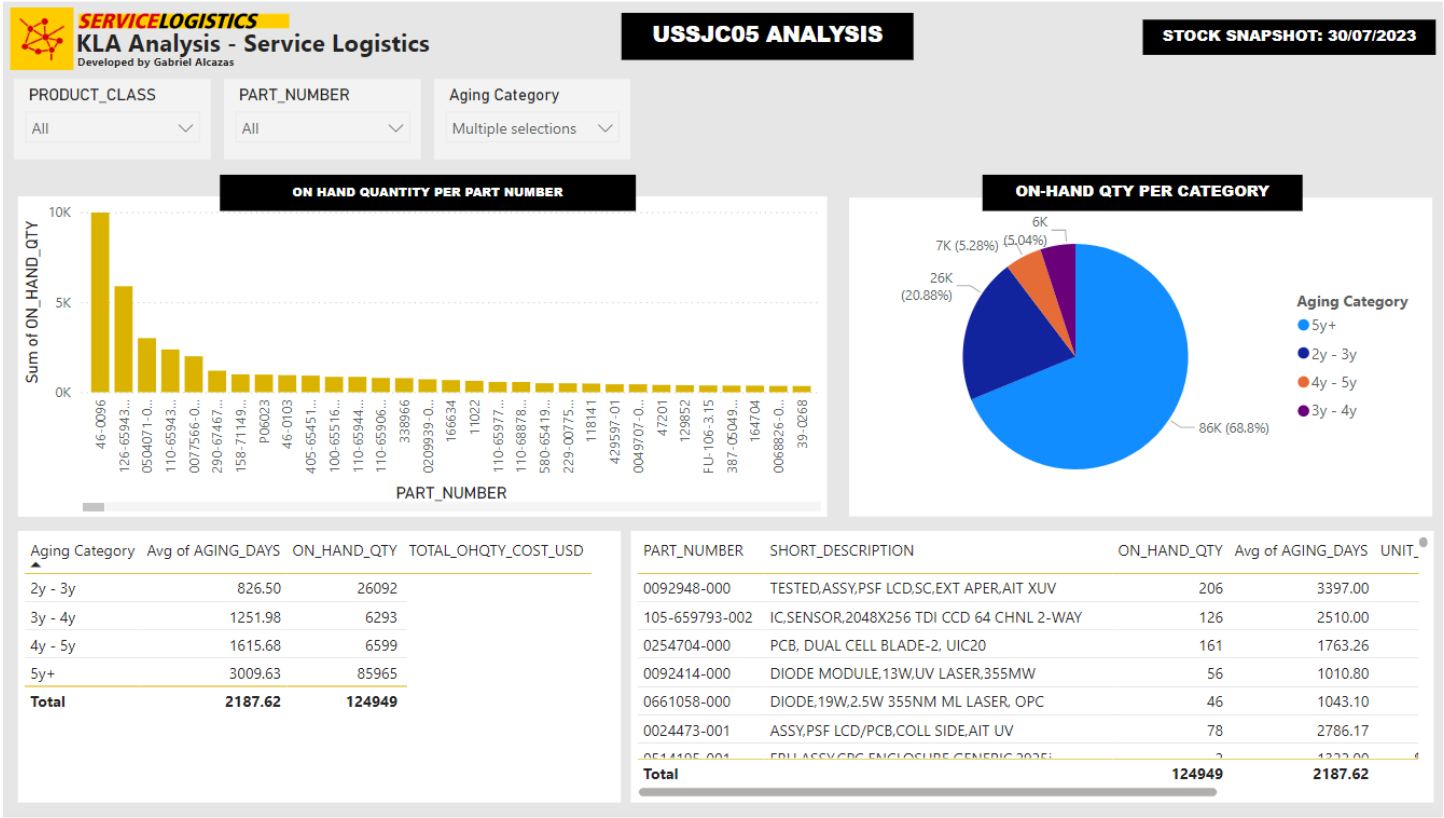
	Part Number	UOM	Total OH Qty	Aging (Days)	Last Shipped Da
	0084900-000	EACH	1	3,810	
	0157033-000	EACH	1	3,810	
	0282856-000	EACH	1	3,810	28-Mar-19
	129852	EACH	3	3,810	
	429206-02	EACH	2	3,810	
	79-003374	EACH	1	3,810	
	79-013103	EACH	1	3,810	
	0016054-000	EACH	1	3,810	
	0016734-000	EACH	1	3,810	
			1,043,570	857	15-Sep-24

Table 2: Aging by Group Percentage

Aging Group	Total OH Qty	%
<= 180 days	279,187	26.8%
181 to 360 days	150,088	14.4%
>= 361 days	565,196	54.2%
No Aging Information	49,099	4.7%

Click here to send your feedback:

Deep Dive Analysis on UDC Inventory



Aging Category	Avg of AGING_DAYS	ON_HAND_QTY	TOTAL_OHQTY_COST_USD
2y - 3y	826.50	26092	
3y - 4y	1251.98	6293	
4y - 5y	1615.68	6599	
5y+	3009.63	85965	
Total	**2187.62**	**124949**	

PART_NUMBER	SHORT_DESCRIPTION	ON_HAND_QTY	Avg of AGING_DAYS	UNIT_
0092948-000	TESTED,ASSY,PSF LCD,SC,EXT APER,AIT XUV	206	3397.00	
105-659793-002	IC,SENSOR,2048X256 TDI CCD 64 CHNL 2-WAY	126	2510.00	
0254704-000	PCB, DUAL CELL BLADE-2, UIC20	161	1763.26	
0092414-000	DIODE MODULE,13W,UV LASER,355MW	56	1010.80	
0661058-000	DIODE,19W,2.5W 355NM ML LASER, OPC	46	1043.10	
0024473-001	ASSY,PSF LCD/PCB,COLL SIDE,AIT UV	78	2786.17	
Total		**124949**	**2187.62**	

Value Stream Mapping Workshop

Summary

- 14,000 LPN
- Volume split as % of each receiving profile
- Before ROF = 12.1
- After ROF = 15.7
- Before hours to process LPNs 1,154
- After hours to process LPNs 889
- Total time saved for total LPN = 265 hrs
- 23% Time saved

Receiving Summary - Before VSM Activities (November '23)

Profile	Cycle time (min)	LPN per hr	Volume % per profile	Volume LPN 14000	Time required to process volume (hrs)
Package Qty = 1	4.03	14.9	32%	4494	302.0
Package Qty > 1	6.71	8.9	17%	2436	272.4
Package Qty >1 (battery repack)	3.24	18.5	12%	1632	88.0
Package Qty > 10	4.55	13.2	29%	4060	307.6
Hot Lamps	7.80	7.7	7%	1022	132.8
Crate	8.23	7.3	3%	378	51.9
Total			100%	14022	**1154.7**

ROF blended **12.1**

Receiving Summary - After VSM Activities (March '24)

Profile	Cycle time (min)	LPN per hr	Volume % per profile	Volume LPN 14000	Time required to process volume (hrs)	Time Savings: Cycle time Saved (KLA) (sec)	Cycle time Saved (DHL) (sec)	Process time saved (KLA) (hrs)	Process time saved (DHL)(hrs)
Package Qty = 1	3.26	18.4	32%	4494	244.1	0.60	0.18	44.82	13.1
Package Qty > 1	5.62	10.7	17%	2436	228.0	0.60	0.50	24.29	20.1
Package Qty >1 (battery repack)	2.62	22.9	12%	1632	71.2	0.60	0.27	16.28	7.3
Package Qty > 10	2.67	22.4	29%	4060	180.9	0.60	1.27	40.49	86.2
Hot Lamps	7.08	8.5	7%	1022	120.5	0.60	0.12	10.19	2.0
Crate	7.10	8.4	3%	378	44.7	0.60	0.53	3.77	3.4
Total			100%	14022	**889.4**			**139.8**	**132.1**

ROF blended **15.7**

DHL % Impact **48.6%**

Percent Time Saved **23.0%**

Solution Development & Benefits

- Reduce inventory at main DC for North America by 22%
- Close down overflow storage location
  - Fast moving to San Jose
  - Slow moving to Indianapolis
- Shared management and overhead
- Leverage existing systems infrastructure of existing site
- Ability to ship directly without shipping back to main site
- Additional Space available for expansion

Benefits

- Cost savings by moving slow moving product to lower cost location
- Regain visibility of inventory
- Eliminate need for stock transfers for shipments To Customers
- Free up capacity in UDC for growth
- Optimize UDC for priority shipments
- Leverage existing instance of WMS
- Reduce costs and gain efficiencies through continuous improvement & innovation culture
- Rolling VSM process out to major locations globally

Global Service Warehouse Environment

Manage Service Warehousing Spend As % of Service Revenue

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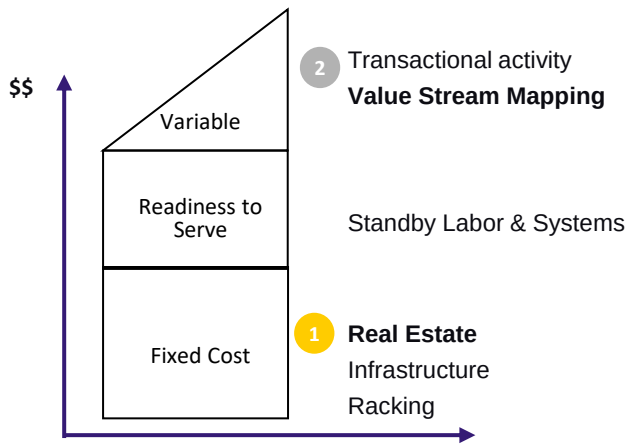

Our Progress

- Addressed Fixed and Variable warehouse expenses
- 1 Added US warehouse space while keeping overall storage costs flat
- Successfully opened a new Aged Inventory Warehouse in Indiana, adding warehouse capacity to the network
- 2 Completed our UDC Value Stream Mapping project identifying a 23% workflow efficiency gain. VSM playbook established, to be rolled out to globally

Service Logistics Internal Challenges & Strategic Questions

KLA

External: Semi @ $1tn by 2030

Internal:

- GOPS: ramp in next 5 years | Factory loading, Inbound Freight, Transportation Mode; Stage vs Store
- Service: *outcome* based solutions | parts delivery, carrier milestones

KLA Logistics

External: upward pressure

Internal:

- Logistics OS
- Freight Forwarders
- Service Providers

How can we future proof our service network in the context of install base growth and greenfield locations?

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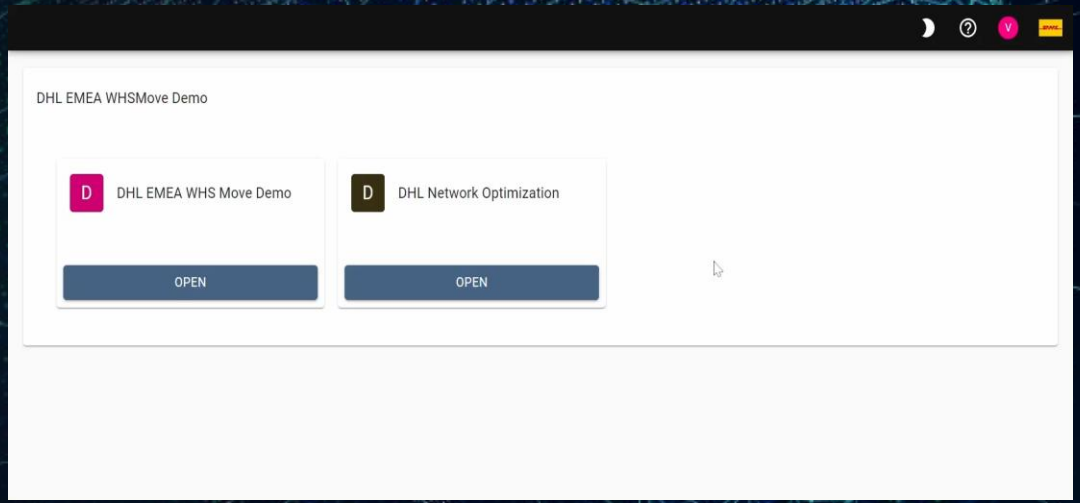
Digital Twin Network Optimization case demo

Customer challenges:

- We have **a large number of warehouses** in the network, what should be the **optimal number of warehouse** serving the markets considering service level requirements, total cost to service and inventory levels?
- What is the impact in **transport cost, CO_2 emission and warehouse cost** if I ship some products from different locations?
- What can I optimize in my network to **reduce cost** and **improve service level**?

Customer benefits:

- **7% total cost savings** with recommended reduction from 9 WHs to 5 in the network, considering total transport cost (+26%), total warehouse cost (-44%), service level penalty cost (+128.6%)
- **Fact based decision making** supported by multi-factor scenarios simulations , and well informed and evaluated **trade offs**



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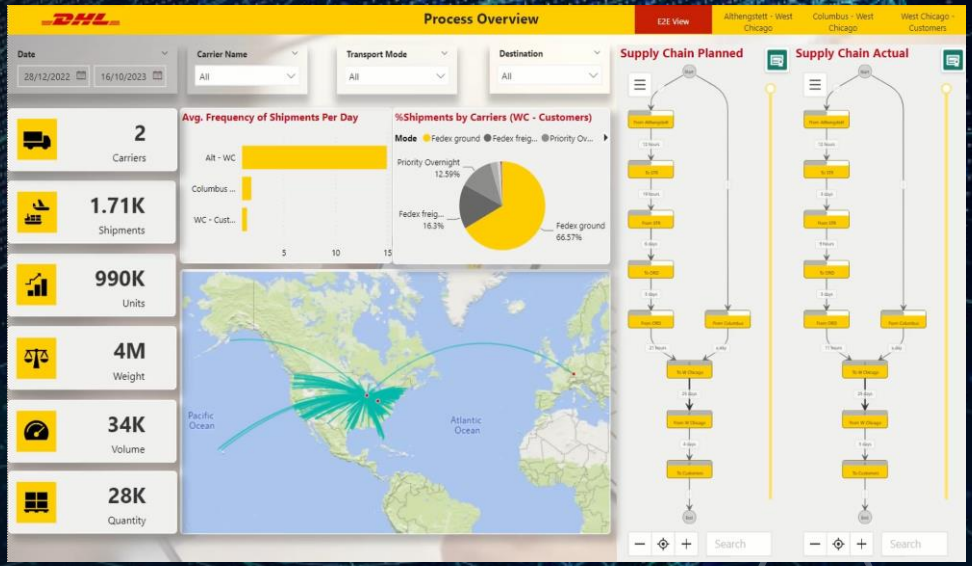
Process Mining in E2E network case

Customer challenges

- We are facing a **high cost to serve** for our high-end technical devices
- We have **high working capital** deployed for this product group
- We operate in make to order environment with high **OTIF** expectations that we are **failing** to meet, despite that we use **urgent airfreights** for almost all orders
- We don't have all the data centrally from different systems and departments to produce **E2E visibility** for our orders and **identify bottlenecks**

Customer benefits

- Observed **insights** on frequent Airfreight shipments (average 15 per day)
- Identified **bottleneck** for long lead time and high working capital being on average ~ 25 days storage in last DC, which represents **2/3 of total supply chain time storage in last DC**
- **Identified optimization opportunities** in transport mode shift (Air/Ocean) , Airfreight consolidation
- Realized the critical importance of global **E2E Order management orchestration** in delivering an efficient supply chain (avoid organizational silos)
- Prepared the foundation for deployment of Digital Twin solution



Discussion and Questions

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THANK YOU

WHAT IS NEXT ON THE AGENDA?	
11.00 – 11.30 am	*Networking Break & Exhibition*
11.30 – 12.30 pm	**AI in Logistics** - Pitching competition