

## DPA7 Meshbag Support hours Elimination—07/24/2024

### CI Intern project

Lingyun Zhao

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#### Purpose

This proposal outlines a strategic resource optimization initiative to streamline our handling processes. By eliminating the step of unloading mesh bags from totes into Kube bags, we project significant cost savings of \$107,188.36 in labor expenditures annually. We respectfully request leadership's approval to proceed with the implementation of this cost-effective measure, allowing us to capitalize on the identified efficiencies promptly.

#### Tenets [optional]

1. Optimize Unloader usage
2. Reduce costs associated with UL
3. Decrease injury risks
4. Maximize space utilization
5. Minimize tote usage
6. Implement Kube bag method
7. Reduce WS support workload

#### Background

Our inbound operations have been facing a substantial challenge, necessitating the deployment of 1 or 2 meshbag unloaders every 5 hours to manage the workload effectively. Over the past twelve months, we have accumulated a staggering 23,520.07 labor hours and incurred a significant cost of \$682,066.45 for unloaders, representing a substantial financial burden on our operations.

However, this predicament presents an opportunity for us to critically evaluate and streamline our processes, with the goal of reducing the number of unloaders required. [Picture](#)

#### History of process:

##### Purchase specialized containers [Picture](#)

Global Industrial™ Folding Bulk Shipping Container, 32"Lx30"Wx25"H, 1800 Lb. Capacity, Black

##### [Purchase link](#)

By purchasing specialized containers, we can enable one unloader to directly transfer the mesh bags from the trailer into the containers. This approach eliminates the need for the initial step of placing the mesh bags onto pallets and the subsequent step of opening the bags and transferring the packages to totes.

#### Pros:

- Convenient access and security with hinged drop-down doors
- Mobility with slots for pallet jacks

#### Cons:

- Additional Cost: Additional cost for each container (\$169.96), especially if a large number of containers are required.
- Space Constraints: Unable to meet the space requirements of each due to the warehouse's smaller size.
- Training Requirements: Training requirements for safe handling as a third-party tool.
- Integration Challenges: there is a possibility of undiscovered safety hazards as these containers have not been extensively tested or utilized within other Amazon warehouses.
- Utilization of pallet jacks for each container

Summary: The specialized containers offer potential time-saving benefits and improved accessibility, but they come with significant costs, space constraints, safety concerns, training requirements, and integration challenges. A careful analysis of the cost-benefit ratio and potential risks is necessary before implementing this solution.

**Reorganizing:** Implementing a strategy where unloaders organize packages from Mesh bags by size (big and small) inside the trailers can streamline the unloading process and optimize workflow efficiency. By placing smaller packages against the inside sleeves of the WIPs and larger packages on the outside, creating a block formation, the risk of smaller packages falling off is minimized. Additionally, installing hangers on the trailer walls can serve as designated areas to collect empty Mesh bags, further contributing to an organized workspace.

[Picture](#)

Pros:

- No additional costs or tools required
- Easier for unloaders compared to using totes
- Increased productivity for water spiders

Cons:

- Lack of consistency in implementation
- Insufficient stability for securing packages
- Time investment for unloaders

Summary: The reorganization strategy presented a promising approach to streamline the unloading process and optimize workflow efficiency. However, the lack of consistency in implementing the new method and the insufficient stability of the packages within the WIPs ultimately led to the abandonment of this strategy due to potential safety hazards and inefficiencies.

**Go Cart:** Go Cart is a large metal wheeled container with four operable doors, designed for transporting and storing packages. The primary purpose of a go cart is to serve as a mobile storage unit, allowing unloaders to consolidate and transport packages from Mesh bags or other temporary holding areas to their designated locations within the facility. [Picture](#)

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Pros:

- Mobility with wheels
- Package security with operable doors
- Amazon internal tool

Cons:

- Height accessibility challenges for shorter associates
- Oversized dimensions and maneuverability issues
- Potential tipping hazards; boxes fall off after open door
- Limited visibility while handling
- High procurement and maintenance costs

Summary: While go carts offer advantages in terms of mobility, internal system and security storage, they also present challenges related to height accessibility, oversized dimensions, potential tipping hazards, limited visibility, and high costs. A comprehensive evaluation of these pros and cons, as well as the specific operational requirements and constraints, is necessary to determine the suitability of implementing go carts in the facility.

After careful consideration, we recognized the need for a more comprehensive solution that addresses both safety and productivity concerns.

**Problem / Opportunity**

Root cause: We **cannot** deliver mesh bag works directly to stations, as empty Mesh bags could be slippery and cause Associates to fall on the ground, which poses a safety hazard.

See [process picture](#): When unloaders unload the "Mesh bags" (mixed shipment bags) from the trailers, they must first place all the Mesh bags into WIPs and Cardboard Boxes. This step is currently necessary for safety reasons. Subsequently, another unloader is tasked with opening the Mesh bags and placing the individual packages into different totes. This dual labor usage is inefficient and can be optimized.

To fully understand the problem and details of the process, I personally experienced unloading Mesh bags into totes. During this process, I noticed a couple of issues.

First, the varying sizes of packages within the Mesh bags present a significant challenge in **filling** the totes efficiently. Finding a suitable package to fill gaps is often difficult, leading to incomplete totes. Additionally, the ULs tend not to prioritize organizing the packages properly within the totes. This disorganization results in insufficient work for the AAs responsible for processing the items, causing them to wait for the Water Spiders to bring new work. This waiting time decreases overall productivity and workflow efficiency.

Furthermore, it is impractical to rely solely on **totes**. To manage the workflow, we often need to take half totes off the pallet and mix them with other works. This extra step consumes additional time and effort, reducing overall efficiency. Additionally, this procedure necessitates the utilization of a substantial number of totes.

Another critical issue is the requirement for ULs to fill up four **levels** of totes. For shorter AAs, placing Mesh bags on the top level (the fourth level) is challenging and potentially hazardous, as it is outside their power zone. For

the bottom level, it requires ULs to bend over for prolonged periods while processing and organizing items. These requirement increases the risk of injury, as it demands excessive reach, strain, and bending.

### **Recommendation - Kube bag [Picture](#)**

150 bags for 1 pallet cost 1,882.50 USD [Kube bag purchase link](#)

Kube bags are square-shaped, woven transport bags specifically designed as an internal tool for Amazon's delivery stations. These durable bags come in various colors and feature sturdy zippers and handles. The unloaders can directly transfer packages from the Mesh bags into the Kube bags. Then, they can place two Kube bags on the front side of the WIPs. Since the covers of the Kube bags are thin, we cannot stack them on top of each other. Instead, we can place mid-to-large sized packages inside the WIPs alongside the Kube bags. Our goal is to maximize the usage of the Kube bags as they facilitate efficient handling. Through our practice, we concluded that each Kube bag can take at least 3 mesh bag packages, and each Kube bag takes UL 2.5 -3 minutes to process.

#### **Pros:**

- Reliable quality with successful examples as an internal tool.
- Cost-effectiveness as \$12.55 each Kube
- Compact size suitable for environments with limited real estate.
- Ample storage capacity
- Low security risks
- Internal storage integration: use itself as a container for other units

#### **Cons:**

- Physical vulnerability
- Limited stacking capability

Kube bags offer numerous positive effects, and for the two weaknesses we have identified so far, there are mitigating factors. Regarding the physical vulnerability, while it's true that these bags are woven and the bottom part can be easily damaged, the design of the interior includes an additional padded lining [Picture](#) that can be pulled up to elevate items during use and dropped down to provide extra protection when storing items. As for the limited stacking capability, although the Kube bag already offers ample storage space, this potential drawback can be offset by other advantages it possesses.

### **Next steps**

Training plan: Collaborate with the Safety and Learning departments to create a comprehensive training program. **Keep everyone in the same page!**

Explore potential solutions for the Heat Problem inside the Trailer

Implement another 5S Area for Kube Bag by dock doors.

Conduct risk assessments to identify potential problems or challenges that may arise.

Gather further data

What can we do if damage, lost, spill happened to Kube bags, what is the reliable resource for replacement?

For minor damage or spills:

- Have on-site personal attempt to repair or clean up if possible.
- Continue using the bag if it's still serviceable.

For major damage or spills that render the bag unusable: Dispose of the bag properly

In case of lost or misplaced Kube bags:

- Maintain a backup stock of replacement bags for emergency use.
  - Assign a manager of supply department to place orders for new Kube bags.
- Amazon supply link [Kube bag purchase link](#)

Emergency plan

In the event of not having access to Kube, our contingency plan is to instruct the UL to utilize totes, a method we have employed for an extended period. Most ULs are already familiar with this approach, eliminating the need for additional training or the acquisition of specialized tools. Furthermore, this method mitigates the risk of undiscovered injuries due to prior experience. Therefore, it would be an appropriate temporary solution.

### Summary [optional]

Compared to other methods, the Kube bag might be the most suitable way to handle the mesh bag problem, as it offers several advantages such as low cost, low weight, low safety threats, an internal tool, a small area requirement, and able to stack. However, there are a few issues, as stated, that need further discussion and improvement. Since this project is a continuous improvement (CI) project, these concerns are reasonable to exist. For now, we have received more positive feedback than negative, and it has maintained our concept of stop using totes to store mesh bags, allowing the same UL to complete the entire process. Therefore, the Kube bag project can be considered a success.

### Frequently Asked Questions (FAQs) [optional]

What is the Hour and Cost of saving? [Math](#)

What is the Impact? By implementing this project, we aim to achieve cost savings through reduced labor expenses, decreased tote usage, lower injury risks, and optimized space utilization, among other benefits. These improvements will contribute to overall operational efficiency and cost-effectiveness.

Why Choosing this Project? This problem has been a persistent challenge within our organization, and we have struggled to find a suitable solution. However, this project presents an excellent opportunity to review and apply the knowledge and skills acquired during my 10-week internship. While tackling this challenge will demand diligence and effort, it also offers a valuable learning experience and the potential for significant improvements within our operations.

What are Feedbacks from AAs?

**Positive:** On the positive side, they appreciate not having to pick up totes, reduced waiting periods as Kube bag provided more work to process, and less physical strain from bending. Additionally, the ease of folding and increased comfort levels has been welcomed.

**Negative:** Constantly bending over to pick up works, an overwhelming volume of medium-sized boxes, and a perceived increase in workload.

According to the night shift learning trainer, two Associates who typically average a processing rate of 38/39 units per hour were assigned to process WIPs with Kube bags. During this task, their rates increased to the 40s, indicating improved productivity. The feedback received from the AAs was that the abundance of bubble mailers in the Kube bags helped them maintain a higher processing rate.

However, one potential issue was noticed: one of the AAs attempted to place the entire Kube bag directly on their workstation, which could pose a significant safety hazard. To mitigate this risk, the AAs were encouraged to

either transfer the contents of the bags onto their workstation or place the contents into a tote before positioning it on their workstation.

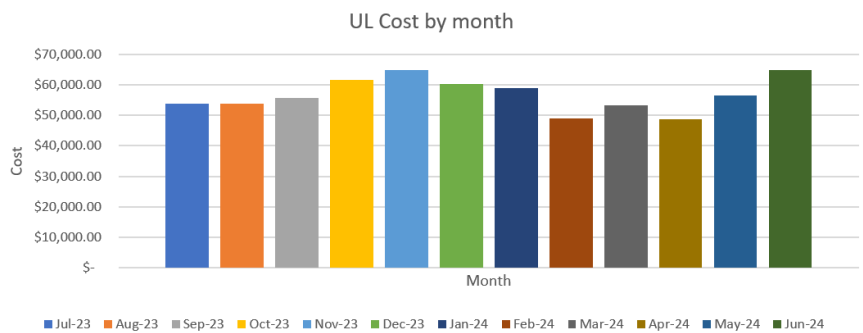
Is there any Safety concern? Based on feedback from ULs processing directly inside trailers can be uncomfortably hot. If AAs are not properly trained, they may attempt to lift and move the entire heavy Kube onto their workstation.

## Challenges

## Appendices

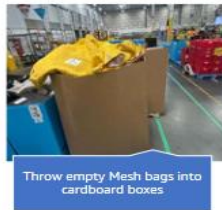
### A. Appendix: Cost of UL by month

Month	Hours	Cost per person	Total cost per mon
Jul-23	1921.56	\$ 28.06	\$ 53,918.97
Aug-23	1958.02	\$ 27.46	\$ 53,767.23
Sep-23	1982.64	\$ 28.18	\$ 55,870.80
Oct-23	2218.43	\$ 27.86	\$ 61,805.46
Nov-23	2227.88	\$ 29.14	\$ 64,920.42
Dec-23	2169.13	\$ 27.79	\$ 60,280.12
Jan-24	1915.12	\$ 30.86	\$ 59,100.60
Feb-24	1697.36	\$ 28.83	\$ 48,934.89
Mar-24	1709.75	\$ 31.13	\$ 53,224.52
Apr-24	1671.53	\$ 29.11	\$ 48,658.24
May-24	1804.76	\$ 31.40	\$ 56,669.46
Jun-24	2243.89	\$ 28.93	\$ 64,915.74
Total	23520.07		\$ 682,066.45



### B. Appendix: Process map

Please read from left to right

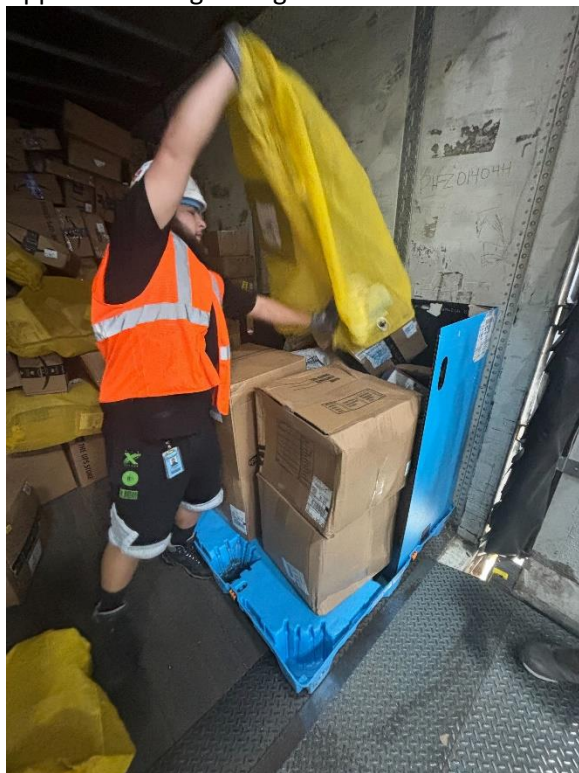




213 C. Appendix: Purchase new containers



214 D. Appendix: Reorganizing  
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216 E. Appendix: Go Cart  
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F. Appendix: Kube bags and ideal layout



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221 G. Appendix: pad inside of Kube



222 H. Appendix: Complains and Issues we have received from AAs  
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Most complained issues from AA - Bending over

1. Filling up yellow totes is time-consuming.
2. Some Kube bags are missing ropes for grab handles.
3. Three blue totes under Kube bags could cause slipping.
4. Coach squatting to reach packages at lower levels, but not all AAs may have the physical ability to do so.

UL

Some AAs showed negative emotion when they see so much boxes inside of Kubes, should we ask UL to organize packages to make it look "nicer" for AAs?

**Decision Question:** Should we process the mesh bags inside or outside the trailer? If we choose to process them inside, please refer to the next slide.

- Outside Option: Build up WIPs with partially filled boxes, then let UL remove the mesh bags from the trailer and dump contents into Kubes.

Problem: The night shift UL dislikes this approach, Their feedback is too much walking. They had a very good partner as one person do boxes another one do bags inside of trailer. Possibly also because the temperature at night is lower compared to the daytime.

224 I. Appendix: Trailer issues with Kube bag  
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INSIDE ISSUES

When there are no works in the flow area, UL will have to remove all the WIPs with Kube bags from the trailer. So they can deliver the works already made.

However, they cannot pause processing mesh bags as they can easily detach from the top when unloading other packages. If mesh bags fall from the top, they would have to be processed immediately due to the lack of temporary storage space. This necessitates immediate processing as there is no temporary storage space available, which can lead to an increase in time and effort.

How to handle empty mesh bags?

Where should be the second 5S area be?

Additionally, the high temperature inside the trailer can create an uncomfortable working environment for the UL personnel during the unloading process.



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J. Appendix: Project Charter  
**Charter: DPA7 Meshbag Support hours Elimination**



Defect Definition: Excessive utilization of unloaders due to the mesh bag process.

**Opportunity or Problem Statement:** Our site is experiencing an excessive utilization of unloaders due to the mesh bag process. This has led to a substantial increase in labor costs, tote usage, injury rates, and space requirements. Additionally, this step has had a detrimental impact on the well-being and productivity of both unloaders and associates.

**Goal:** Streamline our unloading processes and reduce the number of unloaders required.

**Project Scope:**  
**In Scope:** DPA7, Return process center  
**Out of Scope:** Departments outside of Unloading process.

**Sponsor:** Darrel Williams DPA7 Site Leader  
Kaizen Facilitator – Lingyun Zhao DPA7 Intern  
PE Kaizen Sponsor – Justin Lamphere  
Kaizen Sensei – June Seals  
Finance Partner – DPA7 Finance Partner Tracy Mattu,  
**Core Team:** Amazon supply department, Learning, Operations, and Safety.

**Primary Impact:**

☒ Business (\$)
 ☐ Customer
 ☒ Employee

**Business Impact (value of doing this event):** Space saved: see "Bags" area  
**First Year Annualized Benefits:**  
*Estimated 2 unloaders are required every 5 hours*  
*Hours saved: 12 months = 8766 Hours/5= 1753\*2= 3506 Hours*  
*Cost saved:*  
*(\$28.06+\$27.46+\$28.18+\$27.86+\$29.14+\$27.79+\$30.86+\$28.83+\$31.13+*  
*\$29.11+\$31.4+\$28.93)/12= \$29.06*  
*3506 \* \$29.06 estimated cost/Year = \$101884.36*  
*Number of Totes saved: 4Levels \*6 = 24or12 Totes per pallet*  
*24\*63 station= 864 Totes per shift*  
*The estimated potential injury rate saved: 10-15%*

**Primary Metric:**

Month	Hours	Cost per person	Total cost per month
Jul-23	1852.50	29.06	53,828.97
Aug-23	1558.00	29.06	45,263.20
Sep-23	1882.00	29.06	54,680.70
Oct-23	1224.00	29.06	35,581.44
Nov-23	2227.00	29.06	64,807.42
Dec-23	1590.00	29.06	46,299.00
Jan-24	1915.00	30.86	59,088.90
Feb-24	1887.00	28.83	54,400.61
Mar-24	1790.00	31.13	55,821.22
Apr-24	1871.00	29.11	54,483.81
May-24	1824.00	31.40	57,489.60
Jun-24	1518.00	28.93	43,910.74
Total	23520.07		602,980.45

Metric Type	Metric	Baseline	Current Performance	Goal
Primary	Unloaders Hours	Last 12 months	23520.07	Save 3506
Secondary	Mesh bags unloading injury rates	Last one year	1.76%	Save 10-15%

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K. Appendix: SIPOC

SIPOC: **DPA7 Meshbag Support hours Elimination**



Defect Definition: Streamline the mesh bag unloading process by reducing the number of unloaders required. Meet the goal of using a single unloader to complete the entire unloading process

