

# AUTOMOTIVE LOGISTICS



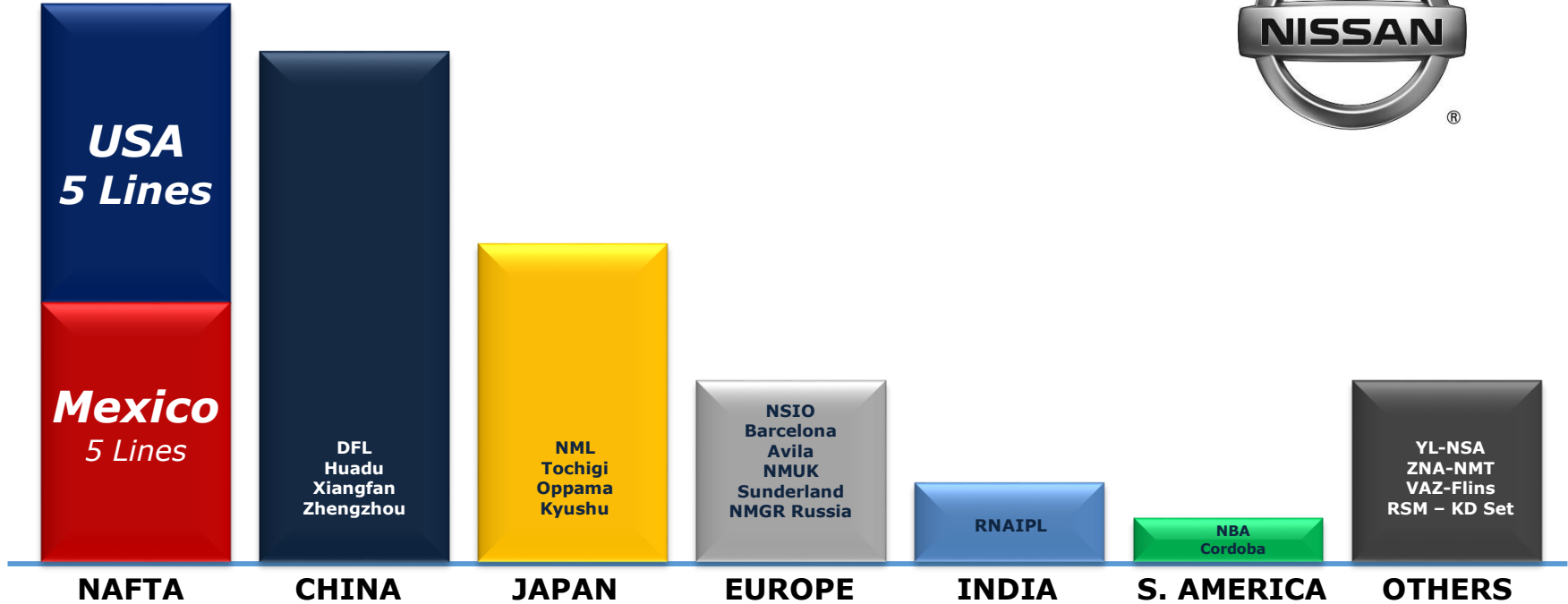
RENAULT NISSAN MITSUBISHI







NMEX



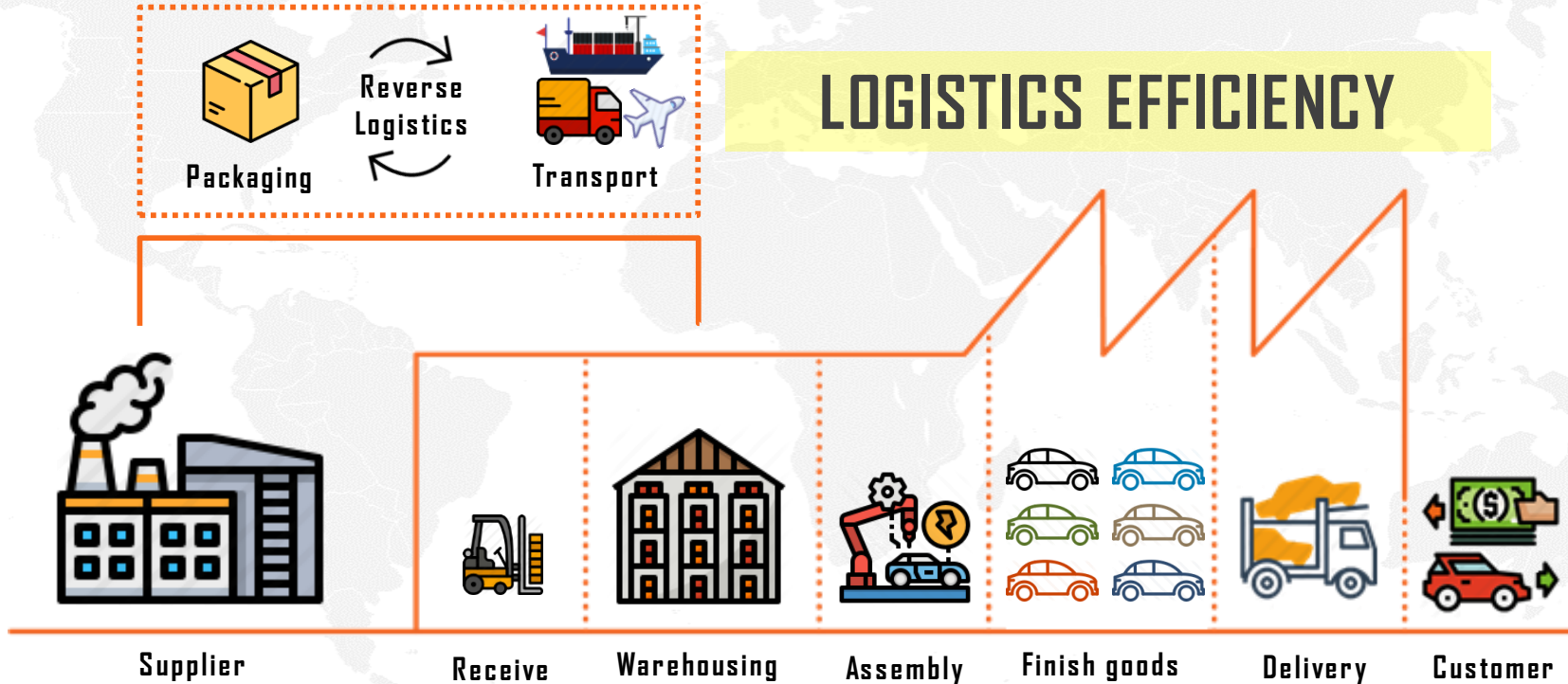
# NISSAN Production Share



# NMEX MODELS Outline – Vehicles

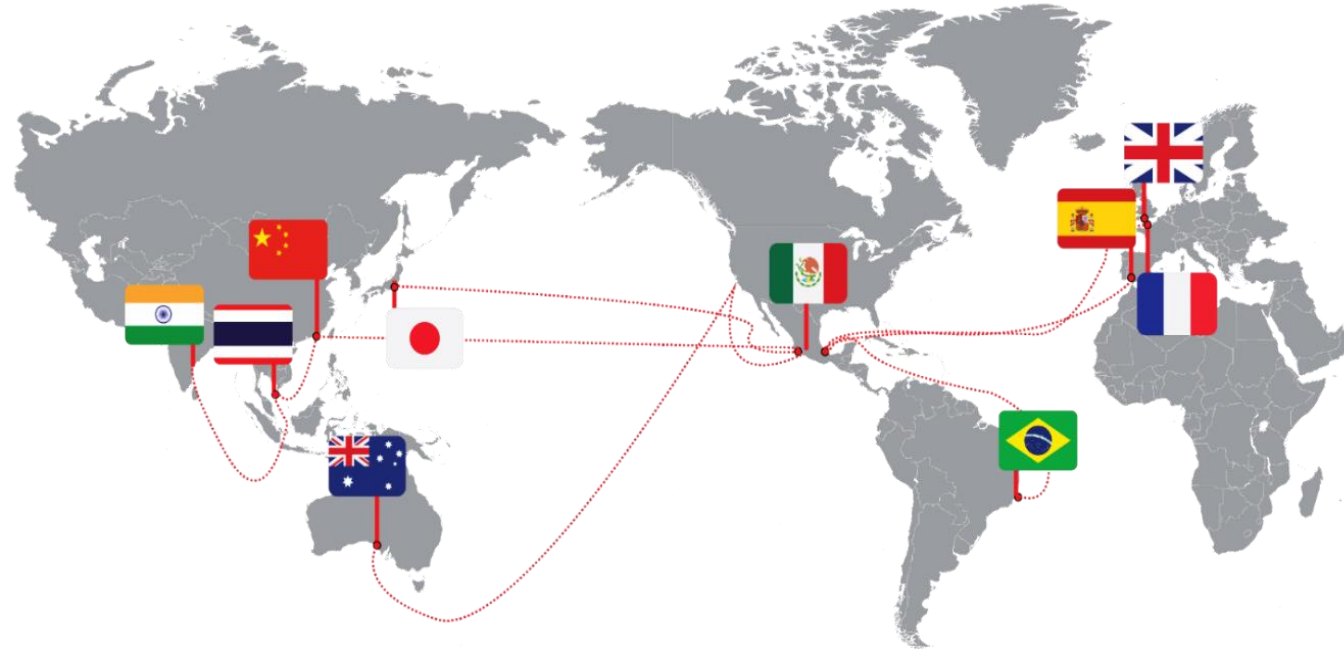
<b>A1</b> 1,220 Vehicles / Day	<b>A2</b> 523 Vehicles / Day	<b>C1</b> 250 Vehicles / Day	<b>C2</b> 324 Vehicles / Day
<b>Kicks</b> 	<b>New Sentra</b> SOP USA Nov'19 SOP MEX Feb'20 	<b>NV200</b> 	<b>NP300 Frontier</b> 
<b>March</b> 	<b>No. 1</b> Sales in Mexico	<b>Versa</b> 	<b>NP300</b> 
<b>New Versa</b>  SOP Jun'19		<b>New Versa</b>  SOP Oct'19	<b>Alaskan Renault</b> 

# FULL SUPPLY CHAIN



# INBOUND SCM

Parts suppliers origins



## Logistics Share

Mexico

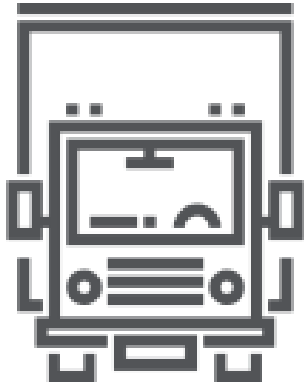
83 %

International

17 %

# INBOUND SCM

## Transport Modes



**Inland**

13 Carriers



**Maritime**

5 Companies

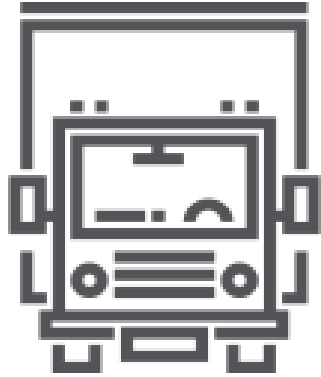


**Air**

8 Forwarders

# INBOUND SCM

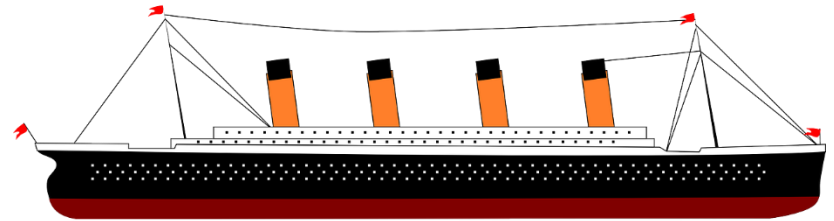
Operation Volume



**DELIVERIES PER YEAR**

**77k = 46**

**Titanics Ships  
per Year**

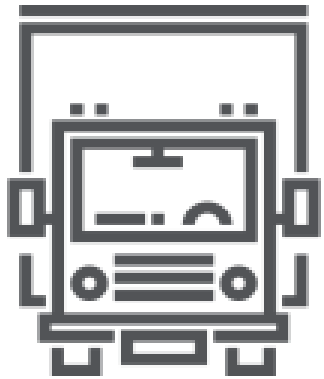


**5.7 Millions M<sup>3</sup>**  
**Volume Transported Per Year**

# INBOUND SCM

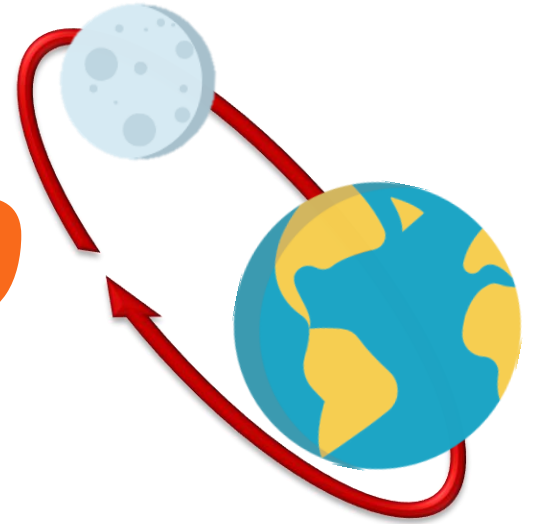
Operation Distance

**223 Millions KM**  
Distance Per Year



**77k = 290**  
ROUND TRIPS

**DELIVERIES PER YEAR**



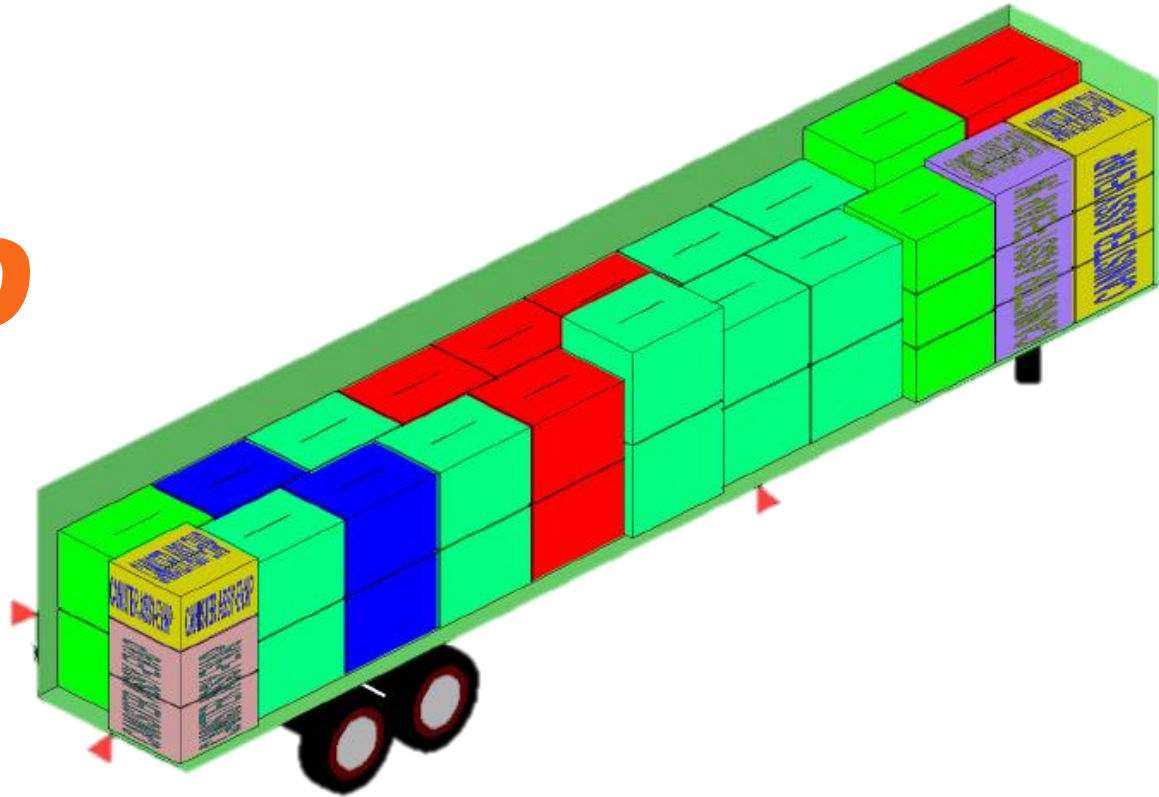


# INBOUND SCM

Efficiency Transport

# 80.4%

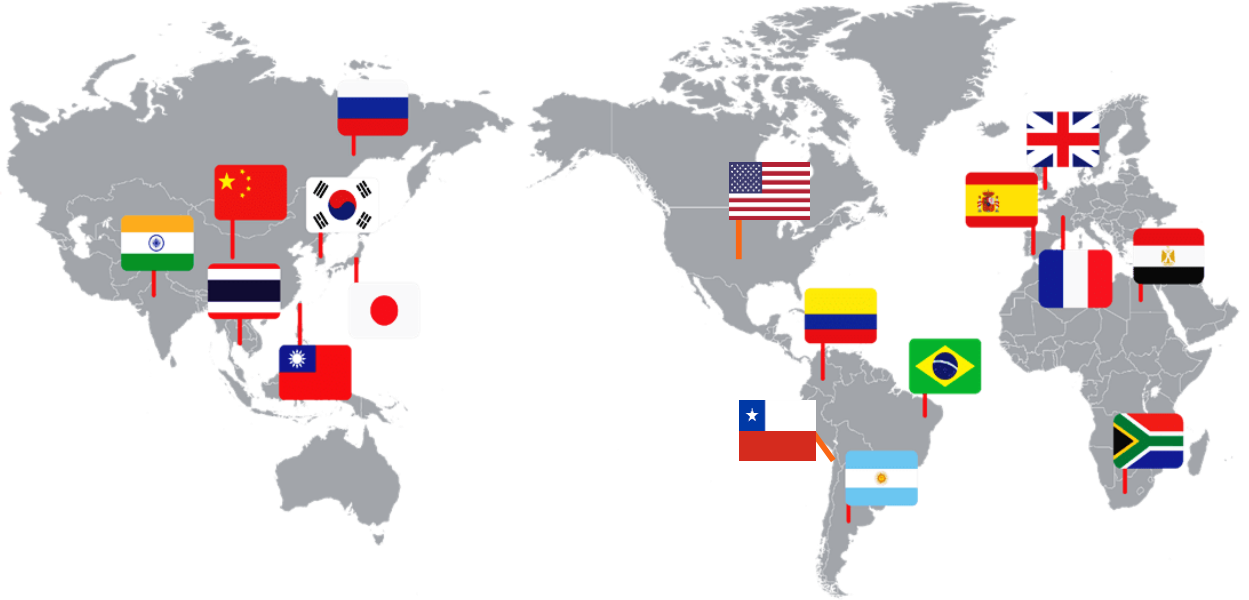
## ALLIANCE BENCHMARK



# REVERSE LOGISTICS LOCAL & CKD

**17**

Countries



**1**

Export Consolidation Center



**3**

Mass production plants in Mexico



# REVERSE LOGISTICS LOCAL & CKD



California, US  
Population

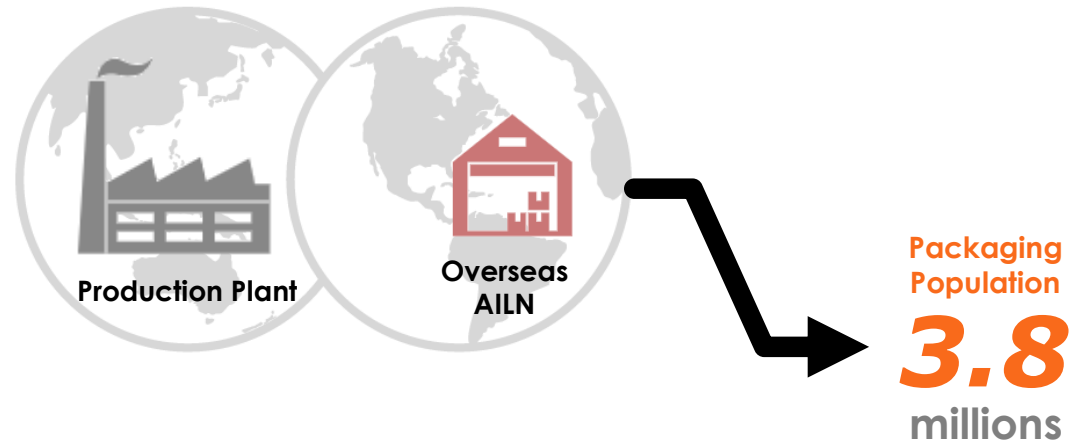


Area:

**52**

Soccer Fields

# PACKAGING OPERATION



## Distributed by:

Countries  
**15**



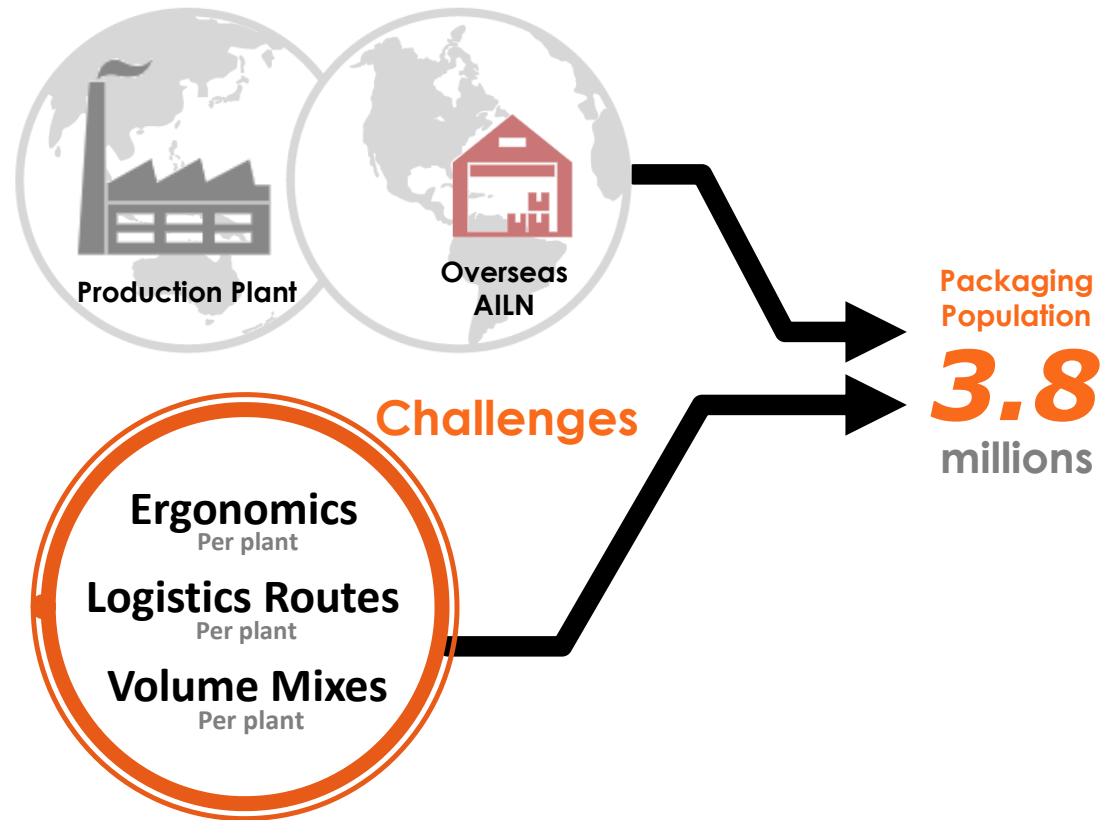
Plants  
**35**



# PACKAGING OPERATION

**NMEX**  
Package Engineering

GLOBAL  
LEADERSHIP



## Distributed by:

**30**  
Vehicle Models  
Packaging Design



**387**  
Suppliers

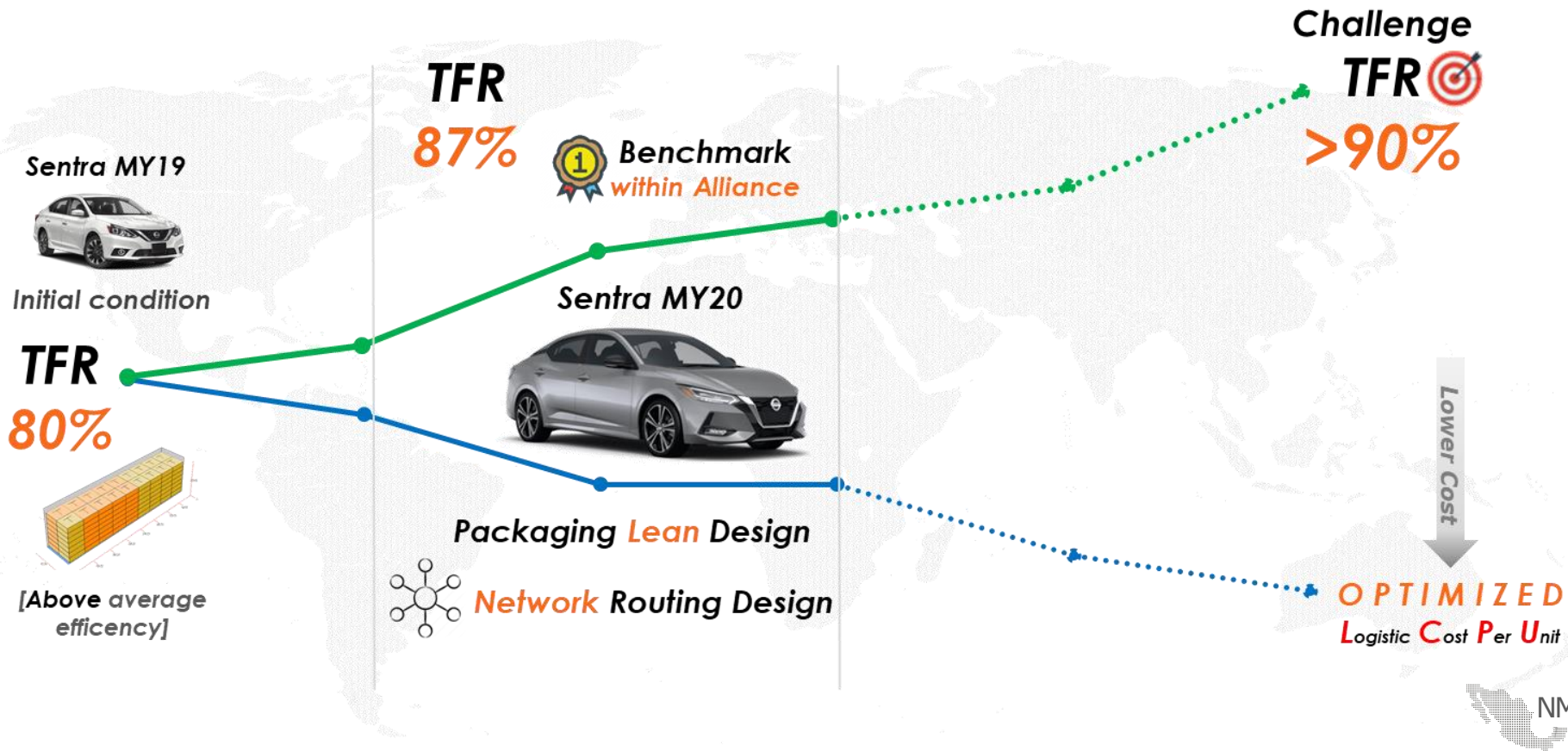


**CHALLENGE**

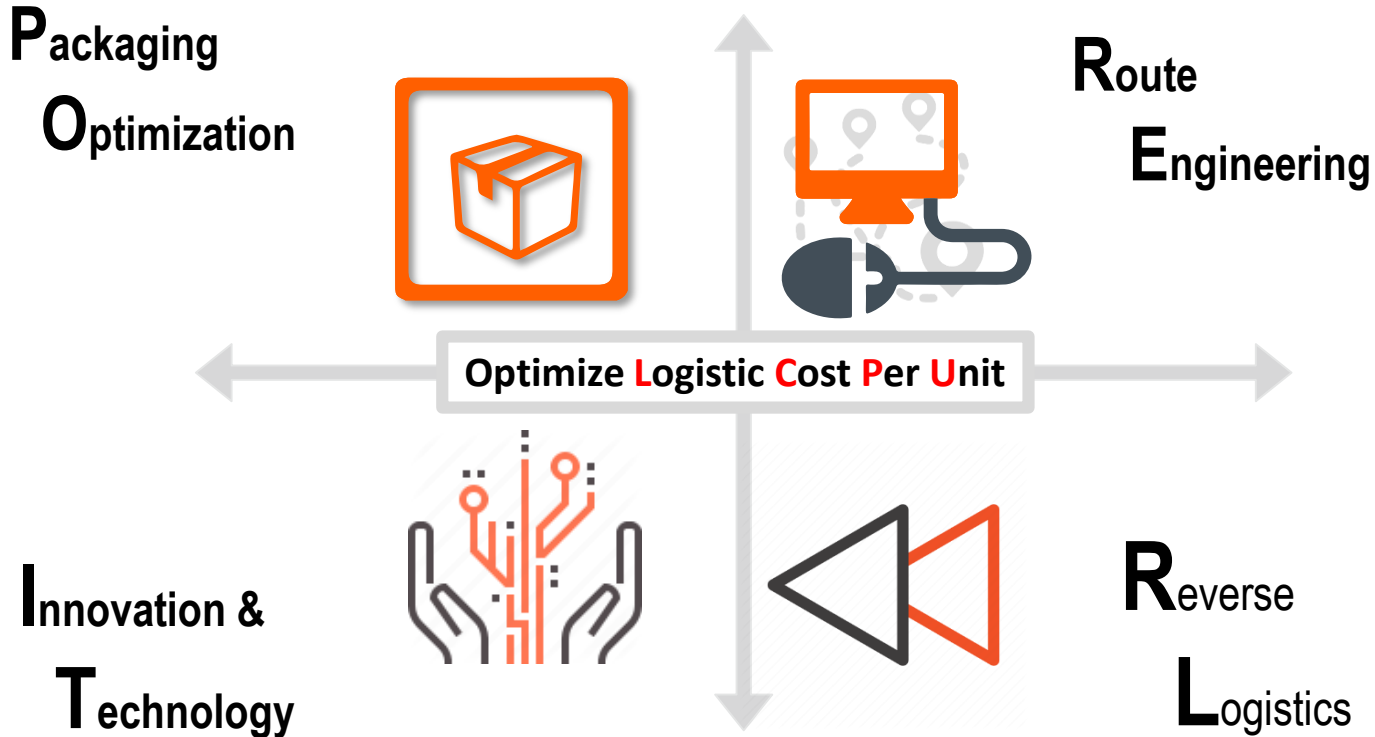


# SENTRA SMC IMPROVEMENT

## Logistic Cost Per Unit / Truck Filling Ratio



# Cost Optimization





# DRIVERS

## PACKAGING



Supported by

# PKG

3



Standard Packaging

Special Packaging

2



# No Change Design Methodology *Process advantage*

# 1

## Optimum Package Cost

Aggressive cost improvement @ early phase

17% to 20% Cost Reduction

# 2

## Best of Pack

Best Package Design [ Warehouse, Ergonomics, Assy line]

No feedback by plant

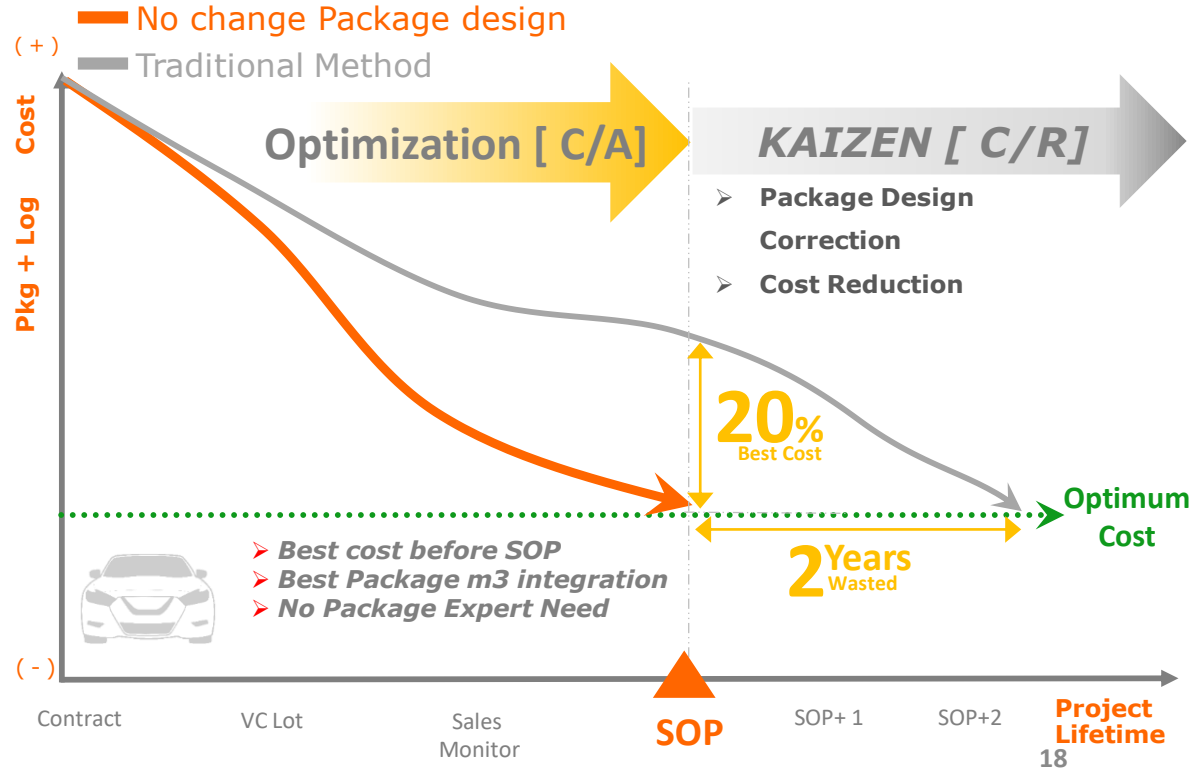
# 3

## Design Time Slot

Time reduction from zero to full design

6 to 3 week per design

## New Model Package Cost Efficiency



# FORMER CONDITION SENTRA PACKAGING



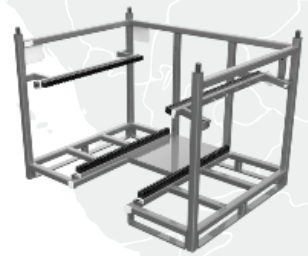
## Improvement Opportunity Metal Rack **Design**



**6** Standard Packaging



**20** Special Packaging



**Benefit Opportunities**



**Low**  
Transportation  
Fill Ratio

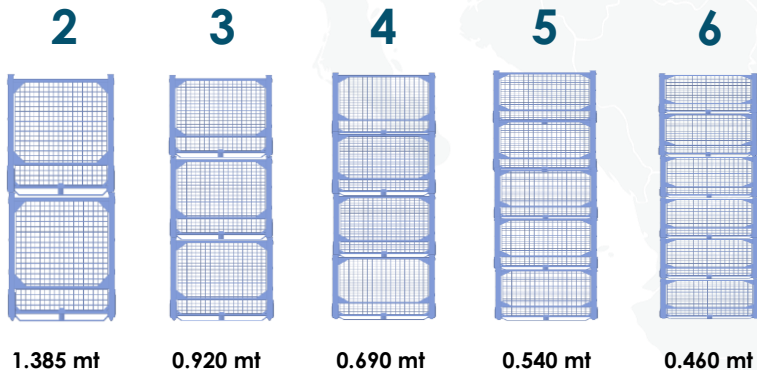
**High**  
Truck  
definition

# PACKAGING STANDARD

## DIMMENSIONS

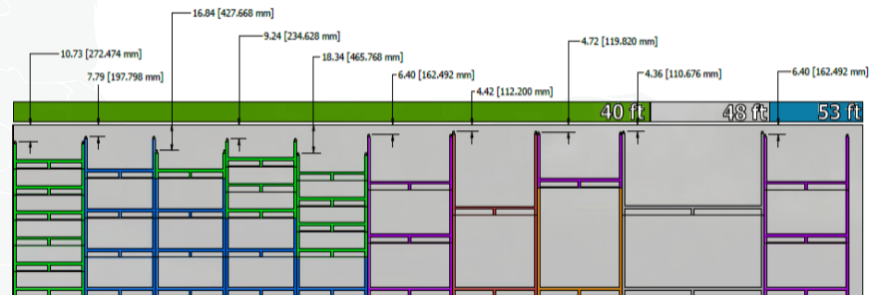
### Standard Height Range

Stacks over 2.770 mt (9") as truck height



### Standard Length Range

Foot prints over over 40", 48" & 53" truck length

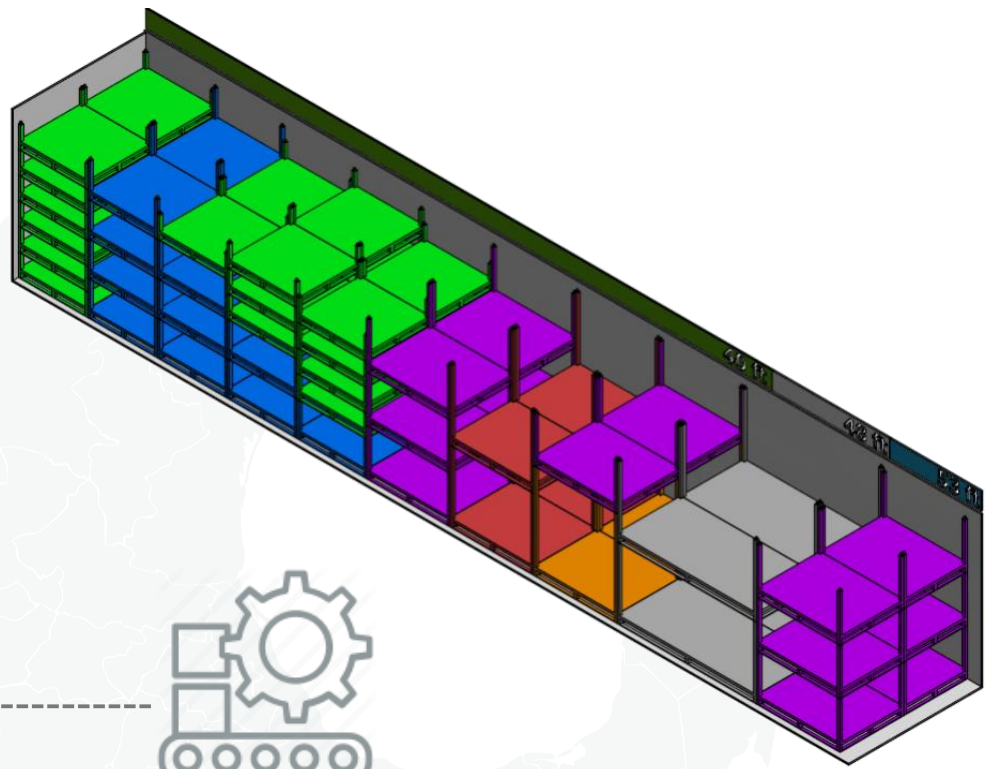


# METAL RACK REDESIGN

## SENTRA PACKAGING

**2** Foot Prints Over 45"

**6** Heights for Packaging MIX



**Metal Racks**  
**Catalogue**  
**Standardization**



**Strategy to stack**  
**Standard** racks vs  
**Special** Racks



**Part Quality**  
**Inventory Level**  
**Friendly** Operation

# DRIVERS

IB



Supported by

3



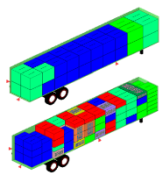
Standard Packaging

Special Packaging

2



Routing Method



Improved Design

PKG

IB

# Inbound FLOW

FORMER CONDITION

## Planning

- Efficiency Opportunity

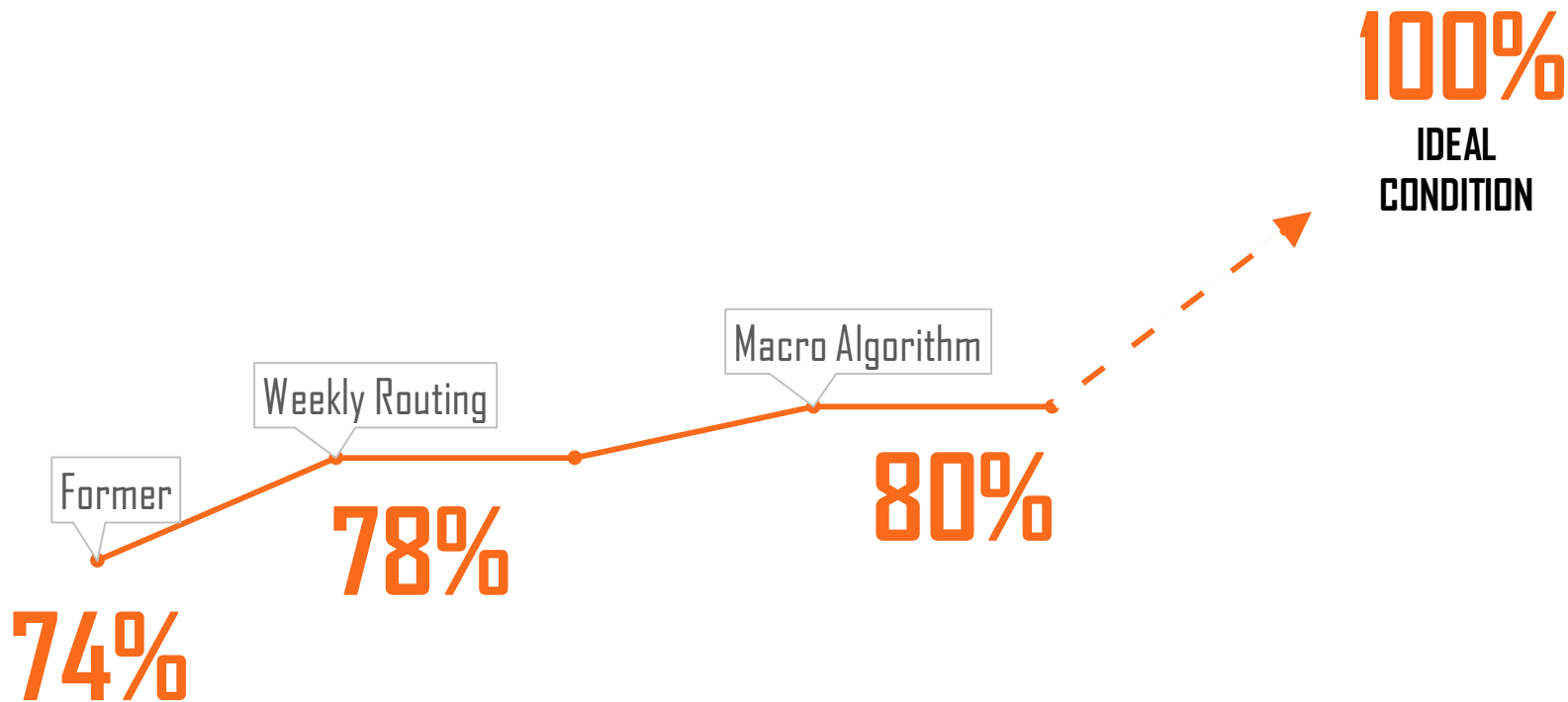
## Track & Trace

- Visibility Opportunity



# Inbound FLOW

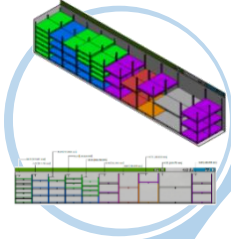
# EFFICIENCY RECORD



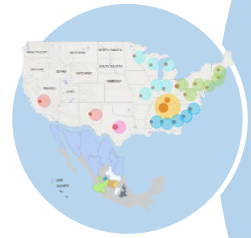


# NEW ROUTING CONCEPT

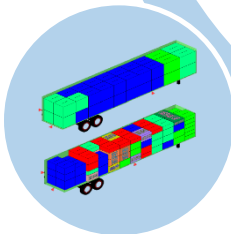
**Packaging Design**



**Routing Design**



**Transport Calculation**



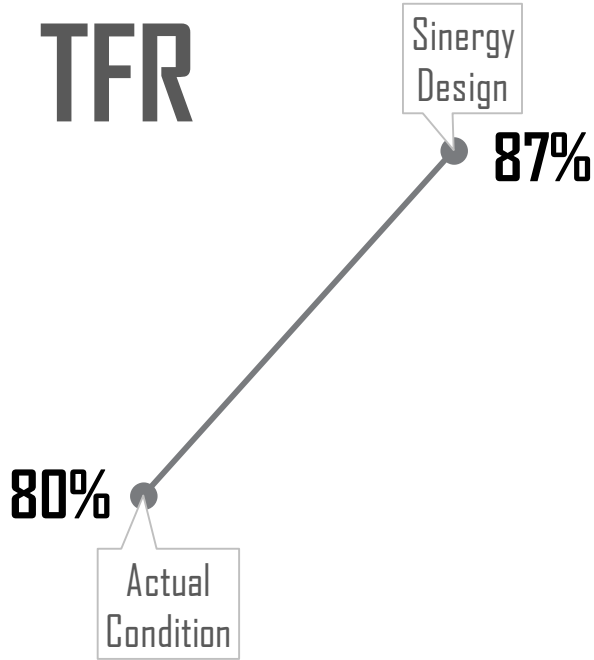
**Optimal Condition**



**Algorithm**

# Current Condition

TFR

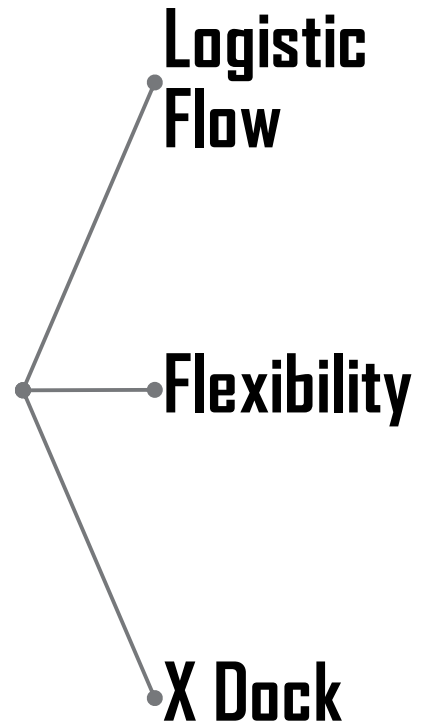


**New** Packaging Design

**New** Routing Design

**New** Transport Calculation

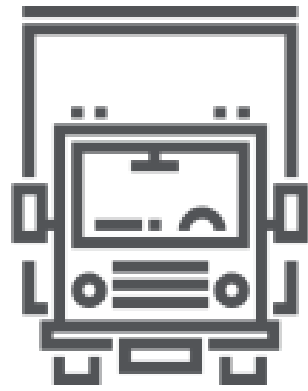
Network Design



# INBOUND SCM

X Dock

USA  
&  
MEXICO



MARITIME



Dinamic  
Flow



X Dock  
100 m2



4 Plants &  
1 Export Center

# TRANSPORT MANAGEMENT

SYSTEM

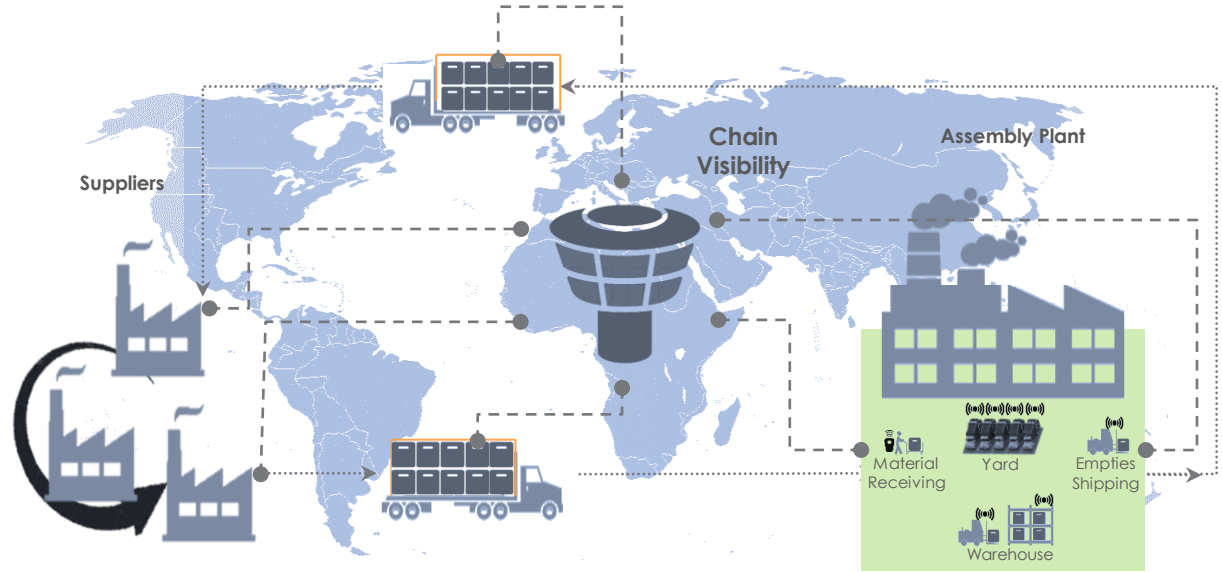
## INTEGRATION

Strategy

- Network Design

Planning

- Dynamic Routing
- Balance Capacity



Track & Trace



Customer Service



# DRIVERS & STRATEGY


Supported by

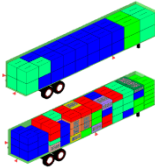
**3**  **Standard Packaging**

**Special Packaging** **2** 

**Routing Method** 

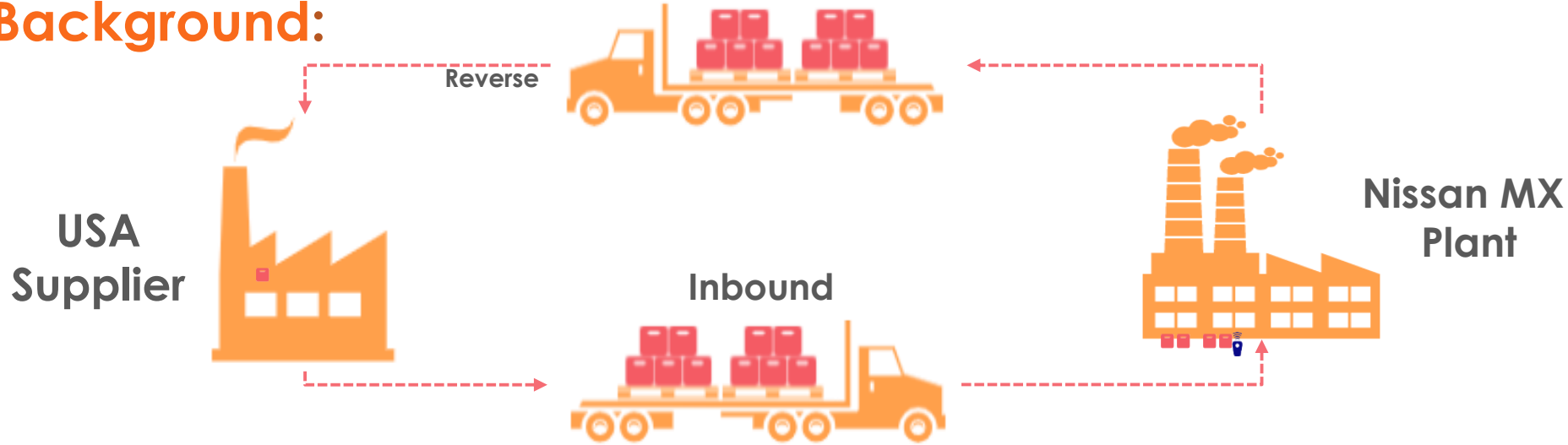
**Improved Design** 

**Visibility End2End** 

**Efficiency Increase** 

# REVERSE LOGISTICS RETURNABLE PACKAGE

## Background:



Return TFR

**64%**



Return Ratio 1:5

Fixed Routes

**16 Routes**

8 consolidation centers

Transit Time

**14 Days**

NMEX - Supplier



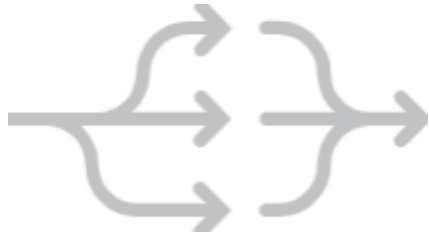
132 Package  
Types

**12 Foot Prints**

# REVERSE LOGISTICS RETURNABLE PACKAGE

## GOALS:

**INCREASE DELIVERY  
FLEXIBILITY**



**MAXIMIZE RETURN  
TRUCK FILL RATE**



**REDUCE RETURN  
LEAD TIME**



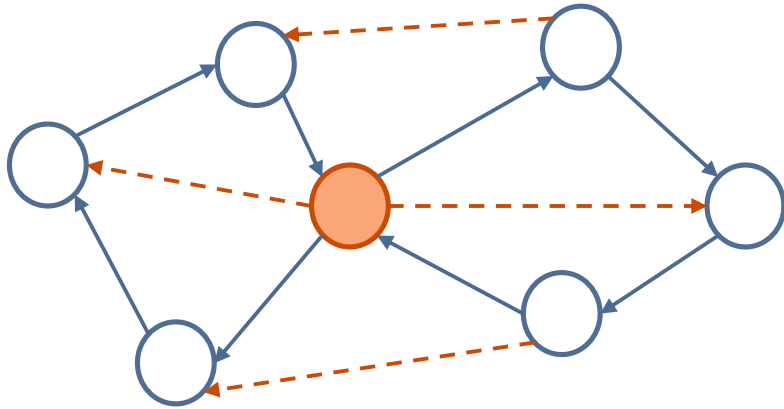
***LOGISTICS COST  
OPTIMIZATION***





# REVERSE LOGISTICS RETURNABLE PACKAGE

## New Routing Concept:



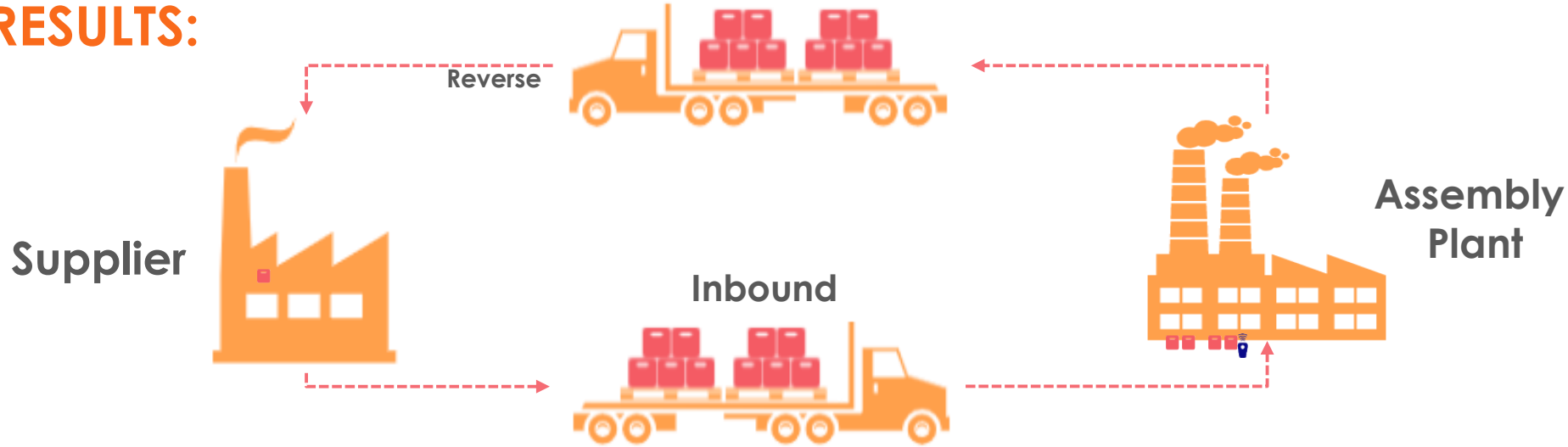
1. New Routing Scheme

2. Advanced Shipping Planning

3. Dispatch Sequence by shortest Lead Time

# REVERSE LOGISTICS RETURNABLE PACKAGE

## RESULTS:



Return TFR

**78%** 

Return Ratio 1:7  
+14% TFR

Fixed Routes

**10 Routes**

6 consolidation centers  
-6 routes

Transit Time

**10 Days**

NMEX - Supplier   
-4 Days

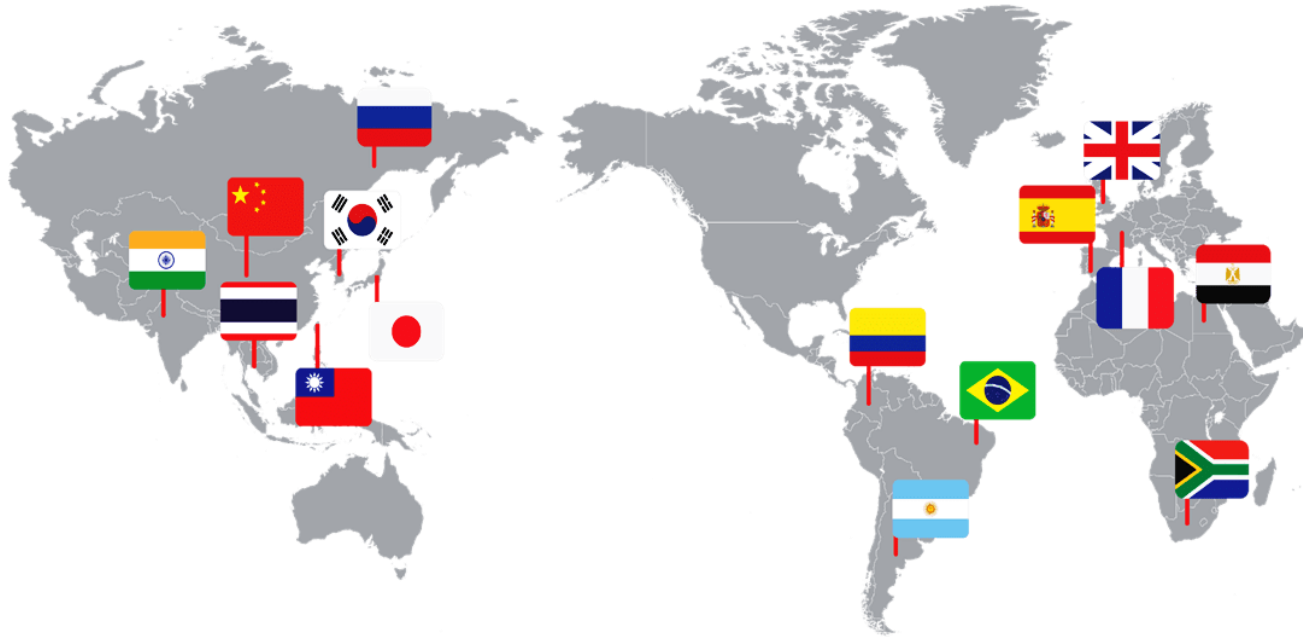
132 Package  
Types

12 Foot Prints



# REVERSE LOGISTICS RETURNABLE PACKAGE

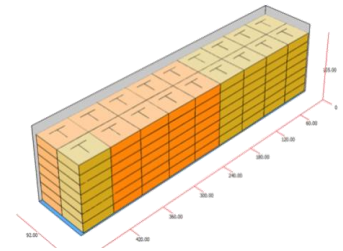
## ON GOING PROJECT:



**Increase Return CFR Maritime Transportation  
Overseas Scheme**



**Vanning  
planning  
Software**



**+10% TFR  
(-146 FEU/year)**

**New Return  
Standard Operation**

# DRIVERS & STRATEGY

## RACK CONTROL



**Best**  
Cost Per Unit



**Best**  
Packaging & Reverse Logistics



**Best**  
Truck Reduction


Supported by

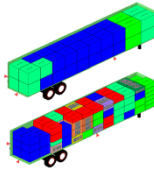
3  Standard Packaging

Special Packaging 2 

Routing Method 

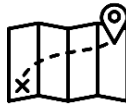
Improved Design 

Visibility End2End 

Efficiency Increase 



**Best**  
Friendly Stack



**Best**  
Network Design



**Best**  
Cube out

## BENEFITS



**High**  
Transportation Fill Ratio

**Challenging**  
Logistic Cost Per Unit

# Trends & Applications

FY21



Augmented Reality



IoT  
[Within supply chain]



Artificial Intelligence

FY20



Package Fleet Management



TMS / WMS / YMS

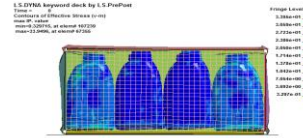
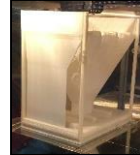


Network Design



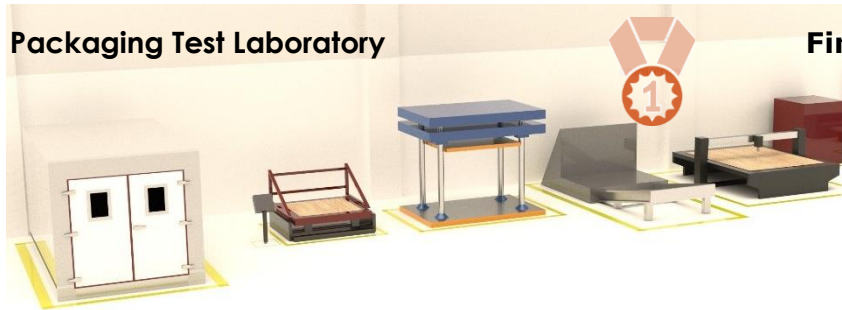
FY19

Part Simulation by  
Virtual Reality &  
3D printer  
prototyping



FY18

Packaging Test Laboratory



First Alliance Full Packaging Laboratory

[Nissan – Renault – Mitsubishi]



- Humidity Chamber
- Compression Tester
- Vibration Tester
- Impact Tester
- 3D Printer
- Data Records

FY17

ALLIANCE CONFIDENTIAL C



# KEY LEARNINGS



THANK  
YOU

