LDB ANALYTICS : JNPT April'18 Report

Logistics Redefined

EXECUTIVE SUMMARY

Analytics Report- April 2018

- Trend of logistic container operators i.e. Port terminals, CFS and ICDs
- Performance Analysis
- Congestion Analysis
- Container traffic movement at Port terminals

High Points

- **Improvement in JNPT Port dwell time performance for Export cycle by 9.4% in Apr'18 in comparison to previous month**
- **Improvement in ICD dwell time performance by 5.1% in April'18 in comparison to the previous month**
- **Reduction in carbon emission between two toll plaza route due to reduction in transit time**
  - **Khaniwade to Charoti- 7%**
  - **Bharthan to Vasad – 6%**
- **The forecasted value of container volume at JNPCT terminal is projected to increase in next month by 0.7% as compare to last month**
- **Year on Year trend for JNPCT and NSIGT port dwell time depicts the increase in performance by 7% and 16% respectively.**

Low Points

- **Decline in the Average delivery time of 13.1 % between JNPT and nearby CFS in Apr'18 as compared to Mar'18**
- **The transit time between Charoti toll plaza and Boriach toll plaza decreased by 18%.**
- **NSICT port terminal has seen an decline in its Import cycle Port dwell time performance by around 33% in April 18.**
- **Year on Year trend for GTI and NSICT Port Dwell Time depicts the decrease in performance by 7% and 21% respectively**

Container Movement around JNPT region

DLDS Logistics Redefined
DMICDC LOGISTICS DATA SERVICES LTD

Container Lifecycle (Import Cycle)

IMPORT

Port

Mode	(Import Cycle) Dwell Time
Overall	33.8 hrs.
Truck	30.7 hrs.
Train	72.1 hrs.

Transit

Toward ICD

Station

Transit Cycle	Transit Time
Port to ICD	70.9 hrs.
Port to CFS	2.39 hrs.

Toward CFS

CFS/ICD

ICD

CFS

Logistics Container Operator (LCO)	Dwell time
CFS	83.8 hrs.
ICD	130.9 hrs.

EXPORT

Mode	(Export Cycle) Dwell Time
Overall	70.4 hrs.
Truck	67.4 hrs.
Train	112.8 hrs.

From ICD

Station

Transit Cycle	Transit Time
ICD to Port	70.2 hrs.
CFS to Port	5.36 hrs.

From CFS

Container Lifecycle (Export Cycle)

Export/Import Cycle Container Movement Dwell Time at JNPT- April 2018

DLDS Logistics Redefined
DMICDC LOGISTICS DATA SERVICES LTD

IMPORT CYCLE DWELL TIME		
PORT DWELL TIME	*PORT DWELL TIME FOR TRUCK BOUND CONTAINER*	30.7 Hrs
	PORT DWELL TIME FOR TRAIN BOUND CONTAINER	72.1 Hrs
	TOTAL DWELL TIME FOR TRAIN & TRUCK BOUND CONTAINERS	33.8 Hrs
TRANSIT TIME	*PORT TO ICD*	70.9 Hrs
	PORT TO CFS	2.39 Hrs
LCO DWELL TIME	*CFS DWELL TIME*	83.8 Hrs
	ICD DWELL TIME	130.9 Hrs

EXPORT CYCLE DWELL TIME		
PORT DWELL TIME	*PORT DWELL TIME FOR TRUCK BOUND CONTAINER*	67.4 hrs.
	PORT DWELL TIME FOR TRAIN BOUND CONTAINER	112.8 hrs.
	TOTAL DWELL TIME FOR TRAIN & TRUCK BOUND CONTAINERS	70.4 hrs.
TRANSIT TIME	*ICD TO PORT*	70.2 hrs.
	CFS TO PORT	5.36 hrs.
LCO DWELL TIME	*CFS DWELL TIME*	83.8 Hrs
	ICD DWELL TIME	130.9 Hrs

JNPT region PORT Terminals : Benchmarking and Performance Index

Performance Benchmarking - Port Terminals

Performance benchmarking for JNPT Region for Apr'18

Top Performing Terminal	
GTI	Dwell Time : **44.7** hrs.

Low Performing Terminal	
NSICT	Dwell Time : 61.8 hrs.

Performance Index – Port Terminals

In order to assess the relative performance Port, Container Freight Station and Inland Container Depot ,the relative dwell time as well as the volume of containers handled by them are depicted graphically in the form of an index to portray the performance of a particular organisation on the basis of these two combined factors.

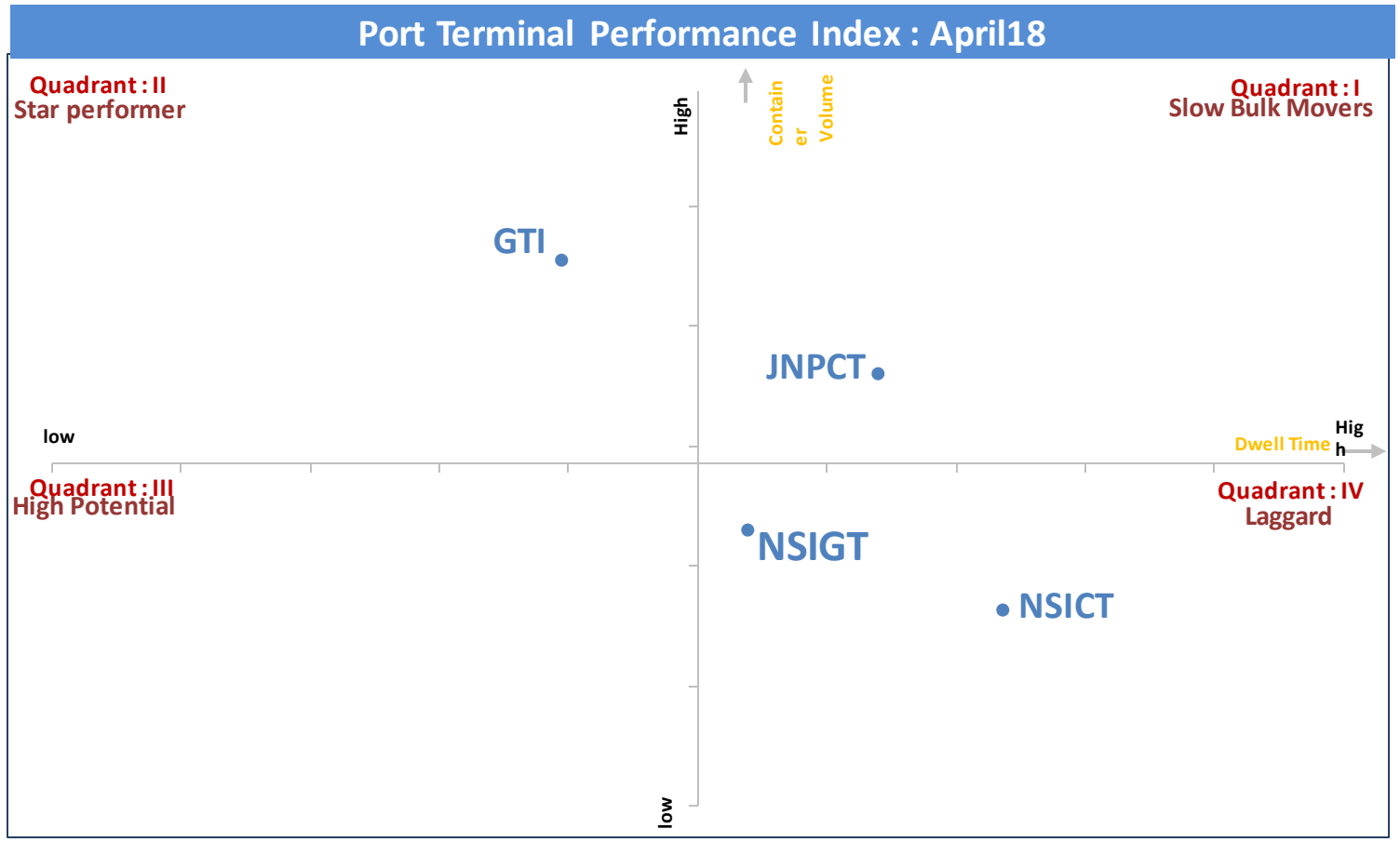
The figure depicts the Frequency Index i.e. volume by dwell time performance for Port terminals covered under LDB for Apr'18. The Quadrant II represents the high performing ports with high frequency Index i.e. high container volume at lower dwell time

Slow Bulk Movers : consist of Ports which have catered higher container volume at higher dwell time

Star Performer: consist of Ports which have catered relatively high container volume in lower dwell time

High Potential : consist of Ports which have catered relatively lower container volume in lower dwell time

Laggard : consist of Ports which have catered relatively lower container volume at higher dwell time



Import Cycle Analysis

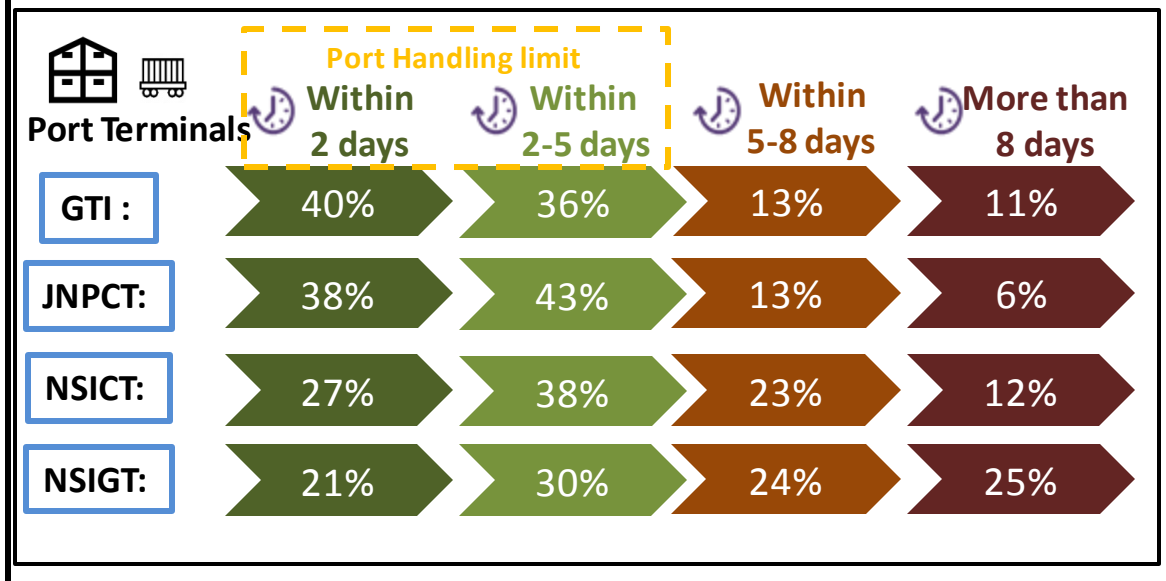
IMPORT CYCLE

Port performance Import Cycle : JNPT region

PORT IMPORT via TRAIN

The Port Dwell time data for train movement in import cycle is depicted below. Port dwell time is the time duration between the entry of the container in Port terminal to the time it moves out of the Port terminal

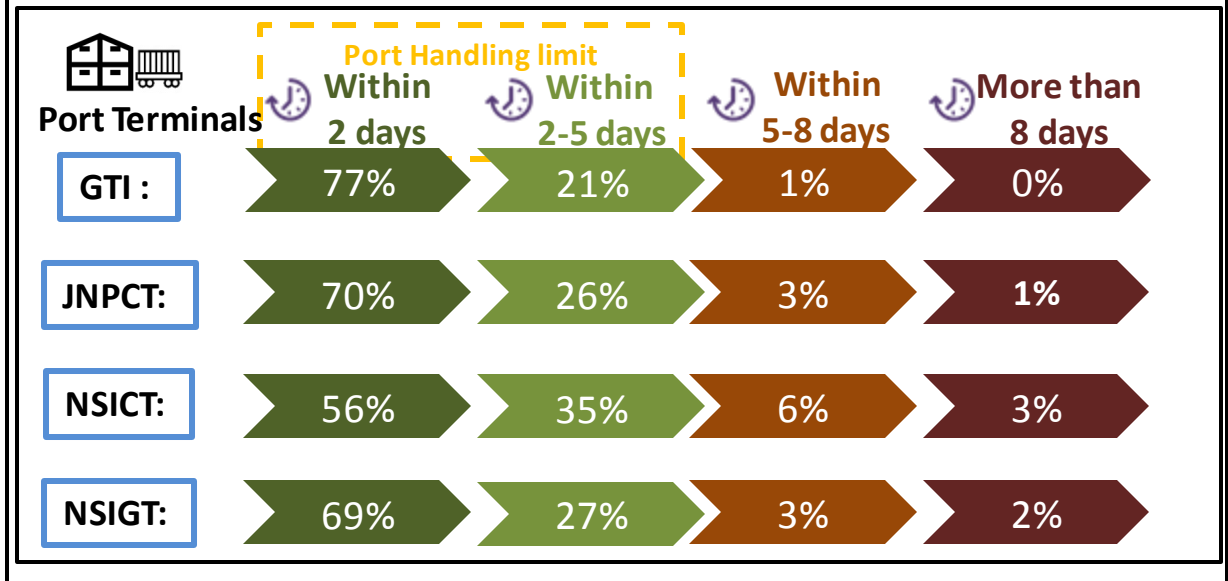
Port	Mar'18 (in Hrs)	Apr'18 (in Hrs)
GTI	65.07	62.05
JNPCT	66.37	62.68
NSICT	69.95	86.49
NSIGT	100.61	115.22



PORT IMPORT via TRUCK

The Port Dwell time data for Truck movement in import cycle is depicted below. Port dwell time is the time duration between the entry of the container in Port terminal to the time it moves out of the Port terminal

Port	Mar'18 (in Hrs)	Apr'18 (in Hrs)
GTI	20.0	26.4
JNPCT	23.6	30.7
NSICT	33.2	42.5
NSIGT	32.3	32.2



JNPT TRANSIT TIME: CONGESTION ANALYSIS

The below figure shows the congestion around JNPT port in both Import and Export cycle

Cluster 1	Cluster 2
JNPT Area	Bhendkhal area,
Cluster 3	**Cluster 4**
Sonari area,JNPT	Chirle area , JNPT road
Cluster 5	**Cluster 6**
Plaspa area, Coachi kanyakumari Highway	Salva apta rd area, Bangalore highway
Cluster 7	**Cluster 8**
Patilpada area, Khopate JNPT road	Taloja, Navi Mumbai
Cluster 9	
Padhegar area	

Note : Please find the respective CFS in each cluster in annexure section

Legends

- High Congestion
- Medium Congestion
- Low Congestion
- Cluster with bottleneck
- Cluster without bottleneck

GTI Terminal	JNPCT Terminal	NSICT Terminal	NSIGT Terminal
Congestion Level	**Congestion Level**	**Congestion Level**	**Congestion Level**
Import Cycle :-	Import Cycle :-	Import Cycle :-	Import Cycle :-

Note : Congestion is measured w.r.t actual time taken to cover the respective distance between clusters and terminals

IMPORT CYCLE

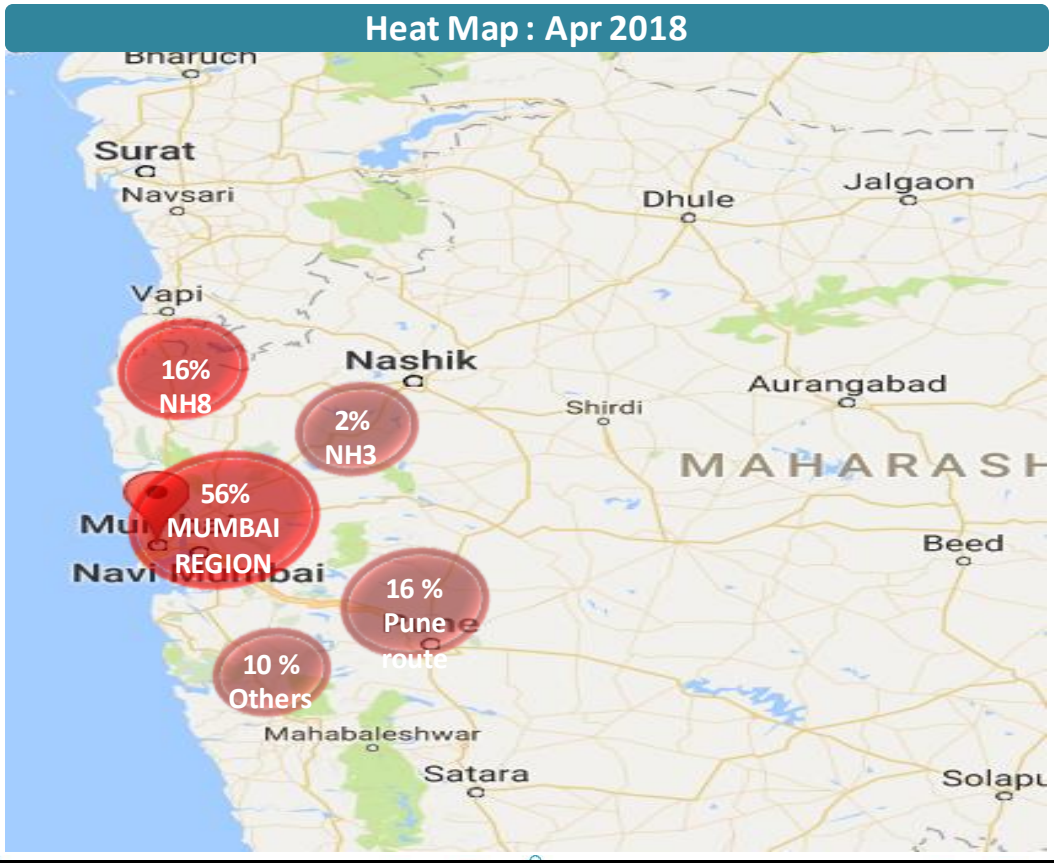
JNPT TRANSIT TIME: Container Movement

Via Truck

HEAT MAP : OVERALL MUMBAI REGION

Region	Transit Time- Apr'18
Mumbai Region	56%
NH1	16%
NH3	2%
Pune Route	16%
Others	10%

The figure depicts the movement of containers via truck in and around Mumbai region.

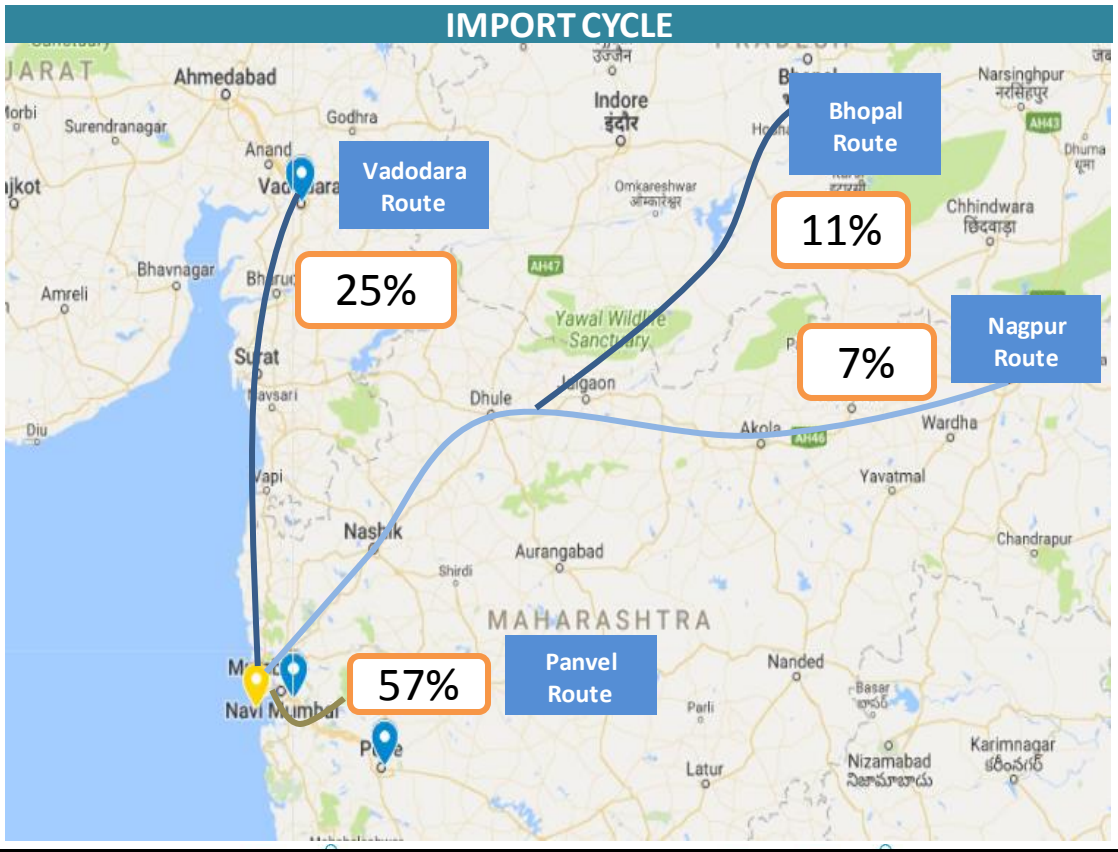


via Train

VOLUME WISE CONTAINER MOVEMENT

Region	Transit Time- Apr'18
Vadadora Route	25%
Bhopal Route	11%
Nagpur Route	7%
Panvel Route	57%

The map shows the volume wise container movement through different railway routes in import cycle for April'18

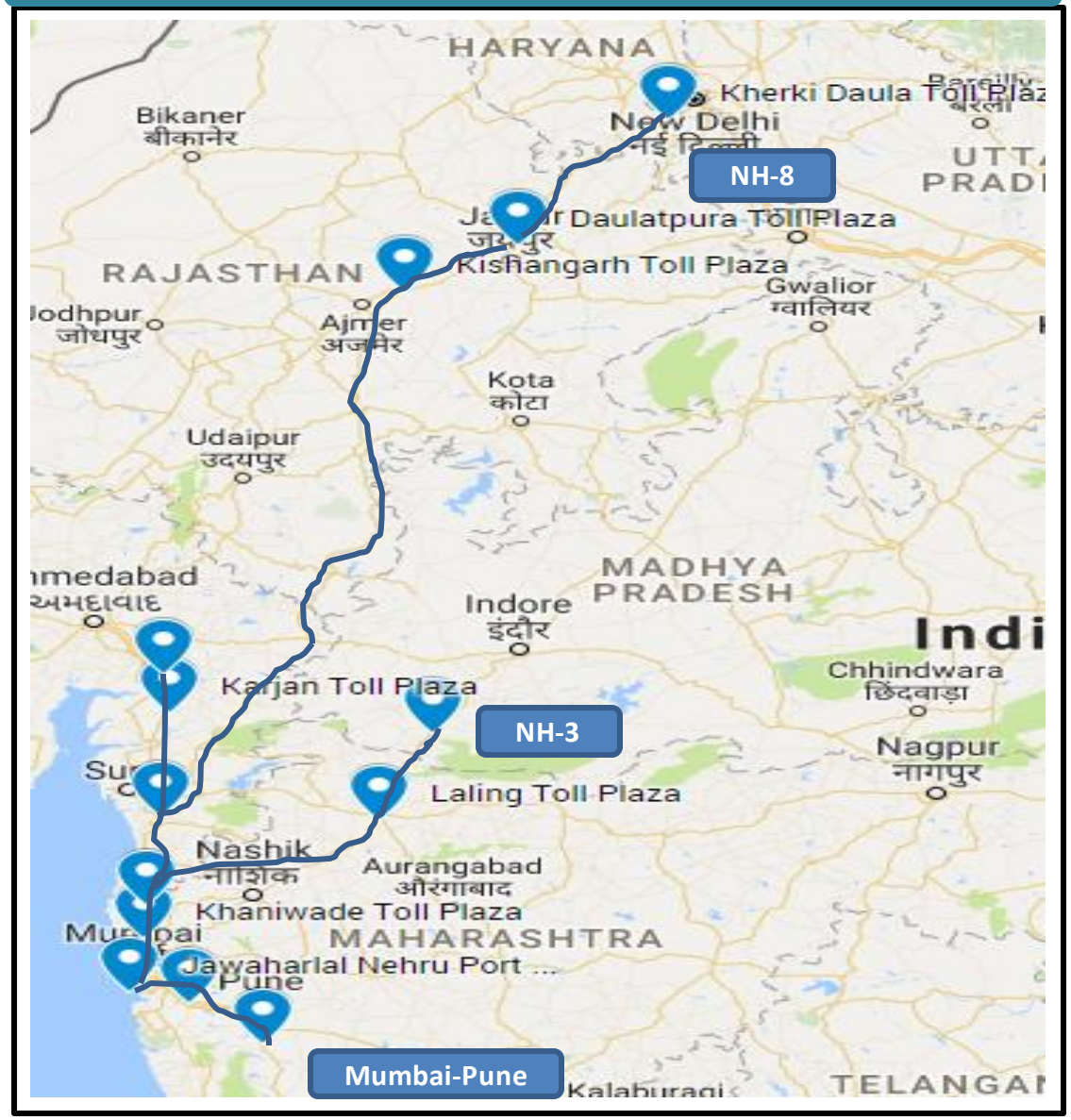


JNPT TRANSIT TIME: Toll Plaza Congestion Analysis

The below table shows all the toll plazas covered under DLDS connected with JNPT

Avg. Travel Time & Speed between Toll Plazas (Apr'18)					
Source	Destination Toll Plaza	Inter Distance (Km)	Avg. Travel Time (Hr)	Apr'18 Avg. Speed (Km/Hr.)	Mar'18 Avg. Speed (Km/Hr)
JNPT	Khaniwade	94	7.3	12.7	13.1
JNPT	Khalapur	60	4.1	13.6	13.8
Khaniwade	Charoti	50	1.30	35.6	37.3
Charoti	Boriach	126	4.60	23.7	28
Boriach	Bharthan	142	4.30	31.8	33.3
Bharthan	Vasad	60	1.53	38.2	39.2
Kishangarh	Daulatpura	128	3.10	36.7	40.1
Khalapur	Khedshivpur	105	3.7	28.5	-
Daulatpura	Kherki	199	8.8	22.7	-

Map



DLDS Logistics Redefined
DMICDC LOGISTICS DATA SERVICES LTD

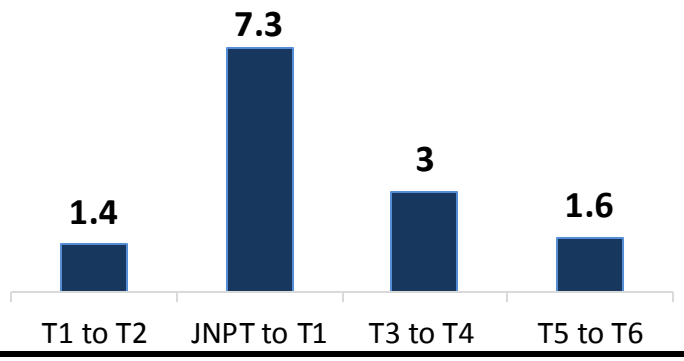
Carbon Emission trend on National Highways for Jan'18 to April'18

The following displays the change in carbon emission from Jan'18 to April'18.The carbon emission is calculated on the basis of transit time calculated from LDB data for toll plazas on national highways. It is seen that 2 routes namely Khaniwade to Charoti and Bharthan to Vasad have shown reduction in transit time and in turn carbon emission reduction of 7% and 6% respectively

Jan'18

Transit Time between Toll plazas(Jan'18)

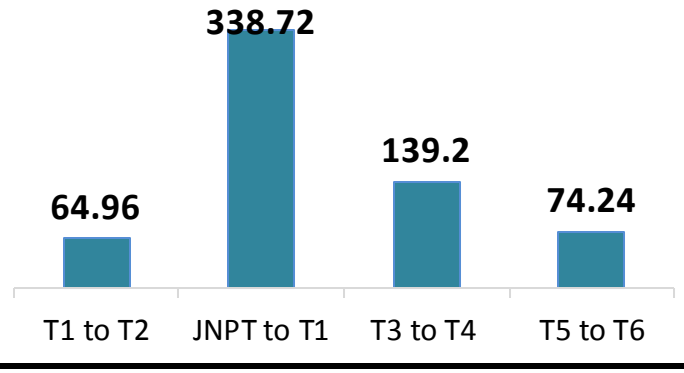
Average Transit Time (in hrs)



Results in

CO2 emission (Jan'18)

CO2 emission per litre per truck (in kg CO2/litre.)



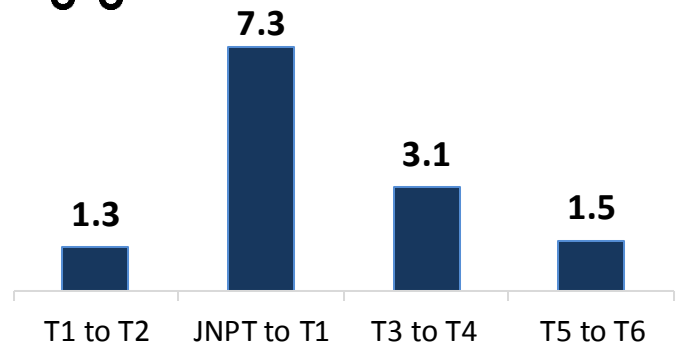
Change in transit time between toll plaza from Jan'18 to April'18

- 7% reduction in CO2 emission (T1 to T2)
- 3% increase in CO2 emission (T4 to T5)
- 6% reduction in CO2 emission (T6 to T7)

April'18

Transit Time between Toll plazas (Apr'18)

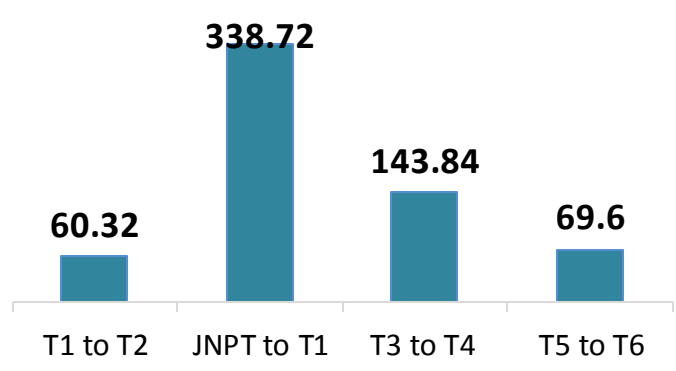
Average Transit Time (in hrs)



Results in

CO2 emission (Apr'18)

CO2 emission per litre per truck (in kg CO2/litre.)



JNPT- Jawaharlal Nehru Port, T – Toll plaza, names of the Toll plazas are given in annexure slide 48

Export Cycle Analysis

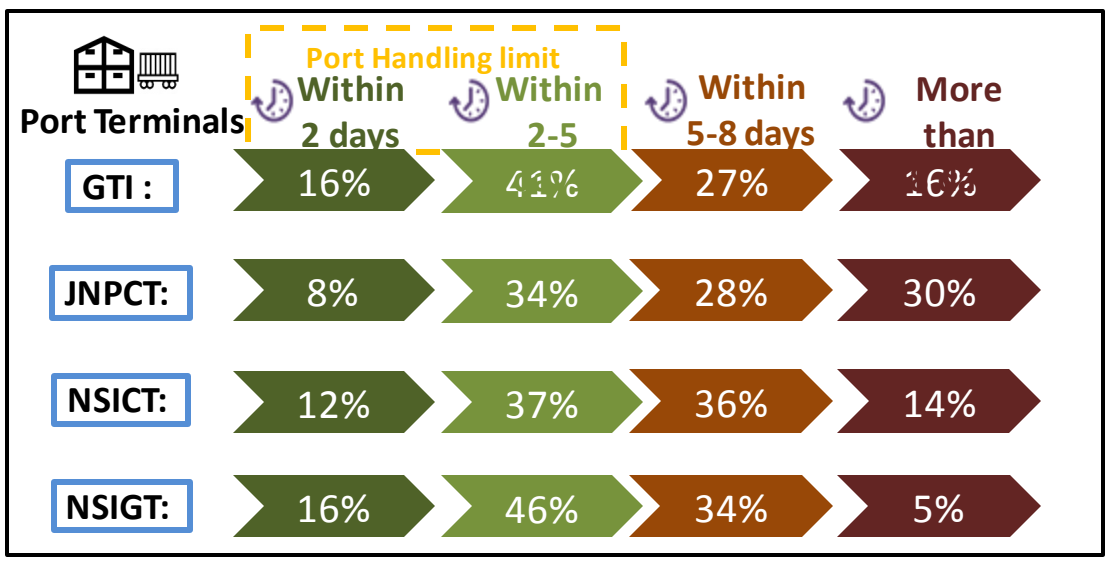
JNPT PORT DWELL TIME ANALYSIS : EXPORT CYCLE

PORT EXPORT via TRAIN

The Port Dwell time data for train movement in Export cycle is depicted below. Port dwell time is the time duration between the entry of the container in Port terminal to the time it moves out of the Port terminal

Port	Mar'18 (in Hrs)	Apr'18 (in Hrs)
GTI	113.7	108.79
JNPCT	152.1	136.35
NSICT	117.8	120.68
NSIGT	106.5	99.81

PORT EXPORT via TRAIN

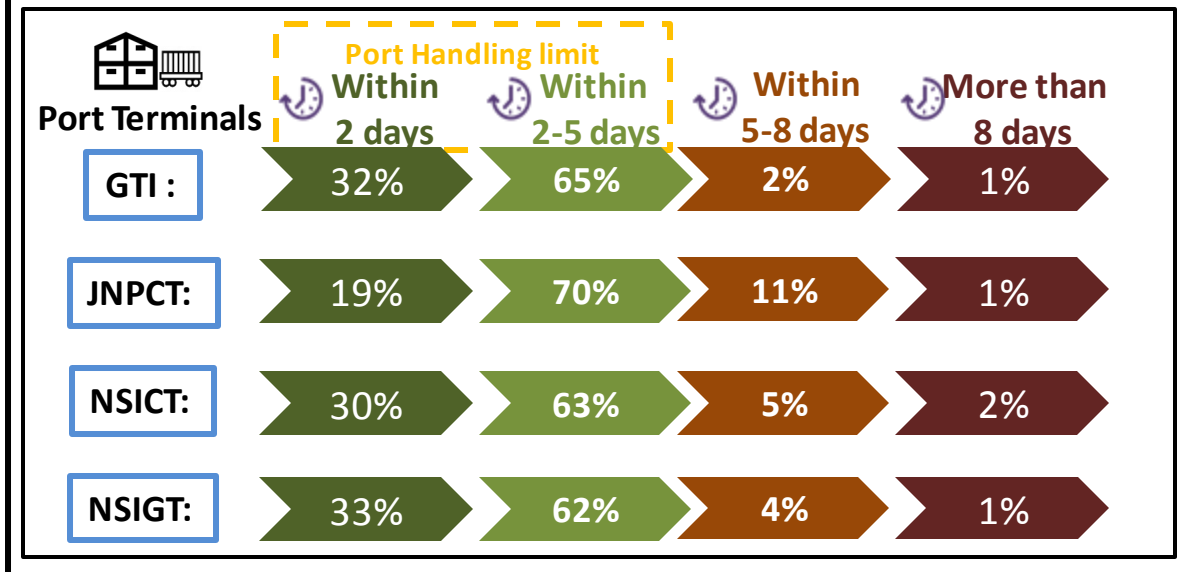


PORT EXPORT via TRUCK

The Port Dwell time data for Truck movement in Export cycle is depicted below. Port dwell time is the time duration between the entry of the container in Port terminal to the time it moves out of the Port terminal

Port	Mar'18 (in Hrs)	Apr'18 (in Hrs)
GTI	62.3	61.70
JNPCT	105.6	76.61
NSICT	66.5	67.87
NSIGT	62.1	63.52

PORT EXPORT via TRUCK



JNPT REGION : CONGESTION ANALYSIS

Congestion Analysis around Mumbai Region

Cluster 1

JNPT Area

Cluster 2

Bhendkhal area, Khopate road

Cluster 3

Sonari area,JNPT road

Cluster 4

Chirle area , JNPT road

Cluster 5

Plaspa area, Coachi kanyakumari Highway

Cluster 6

Salva apta rd area, Bangalore highway

Cluster 7

Patilpada area, Khopate JNPT road

Cluster 8

Taloja, Navi Mumbai

Cluster 9

Padhegar area

Note : Please find the respective CFS in each cluster in annexure section

GTI Terminal	JNPCT Terminal	NSICT Terminal	NSIGT Terminal
Congestion Level	Congestion Level	Congestion Level	Congestion Level
Export Cycle :-	Export Cycle :-	Export Cycle :-	Export Cycle :-

Legends

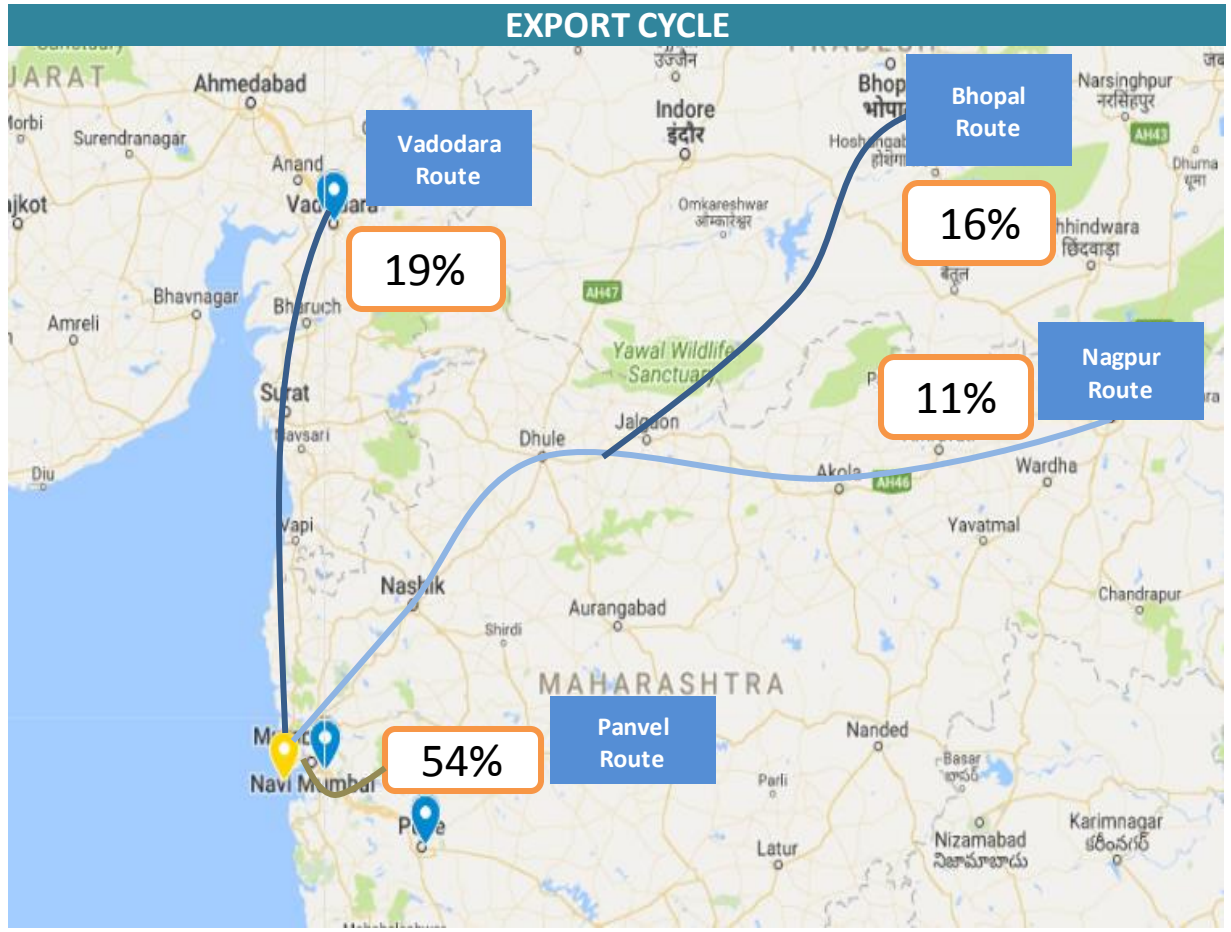
- High Congestion
- Medium Congestion
- Low Congestion
- Cluster with bottleneck
- Cluster without bottleneck

Note : Congestion is measured w.r.t actual time taken to cover the respective distance between clusters and terminals

Container movement around JNPT Port terminal region via Train

Mumbai Port Towards	
ROUTE	**PERCENTAGE OF CONTAINER MOVEMENT**
Vadodara Route	19%
Bhopal Route	16%
Nagpur Route	11%
Panvel Route	54%

The map shows the volume wise container movement through different railway routes in export and import cycle for April'18



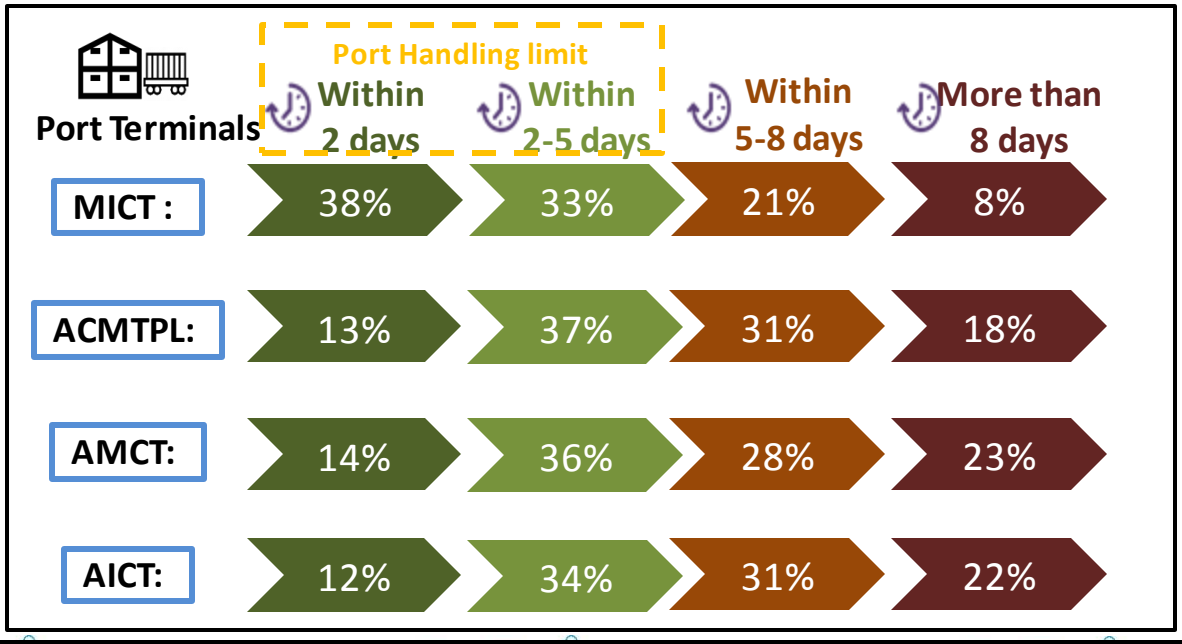
APSEZ PORT DWELL TIME ANALYSIS : EXPORT CYCLE

PORT EXPORT via TRAIN

The Port Dwell time data for train movement in Export cycle is depicted below. Port dwell time is the time duration between the entry of the container in Port terminal to the time it moves out of the Port terminal

Port	Mar'18 (in Hrs)	Apr'18 (in Hrs)
MICT	52.2	73.5
ACMTPL	122.5	118.1
AMCT	130.4	121.3
AICT	114.1	128.1

PORT EXPORT via TRAIN

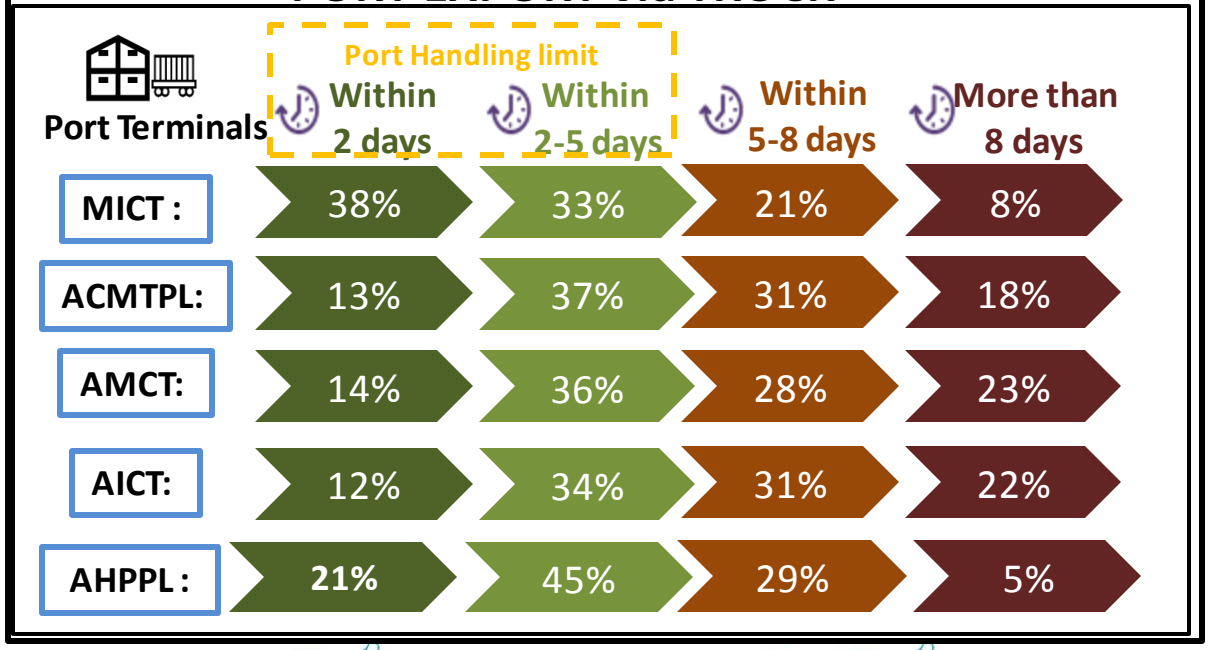


PORT EXPORT via TRUCK

The Port Dwell time data for Truck movement in Export cycle is depicted below. Port dwell time is the time duration between the entry of the container in Port terminal to the time it moves out of the Port terminal

Port	Mar'18 (in Hrs)	Apr'18 (in Hrs)
MICT	95.23	94.73
ACMTPL	109.63	118.28
AMCT	105.47	93.15
AICT	105.40	117.19
AHPPL	96.39	91.8

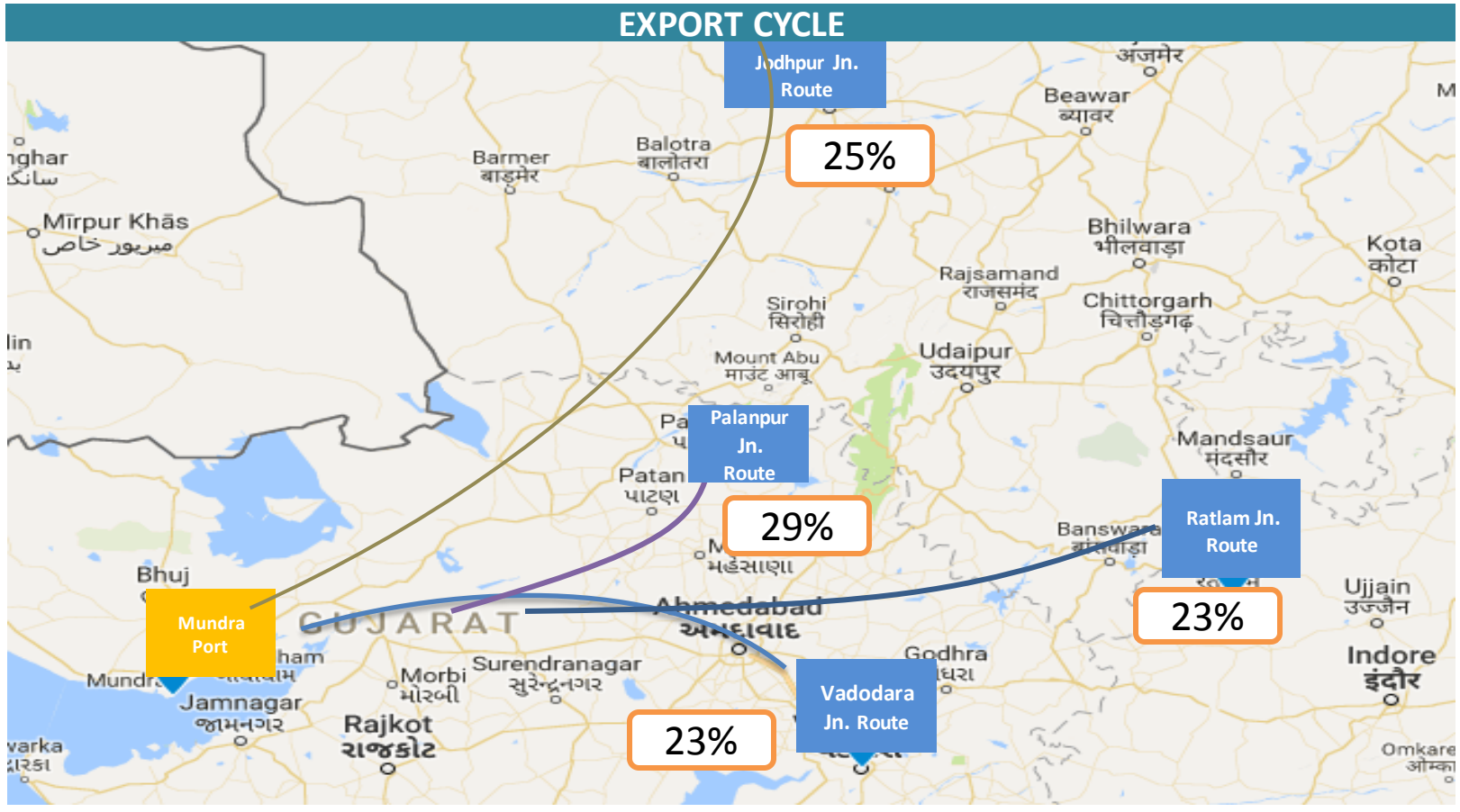
PORT EXPORT via TRUCK



Container movement around APSEZ Port terminal region via Train

MUNDRA PORT TOWARDS	
ROUTE	**PERCENTAGE OF CONTAINER MOVEMENT**
Jalandhar Junction	25%
Palanpur Junction	29%
Ratlam Junction	23%
Vadodara Junction	23%

The map shows the volume wise container movement through different railway routes in export cycle for the month of April'18



DLDS
Logistics Redefined
DMICDC LOGISTICS DATA SERVICES LTD

CFS and ICD Performance

CFS and ICD Performance

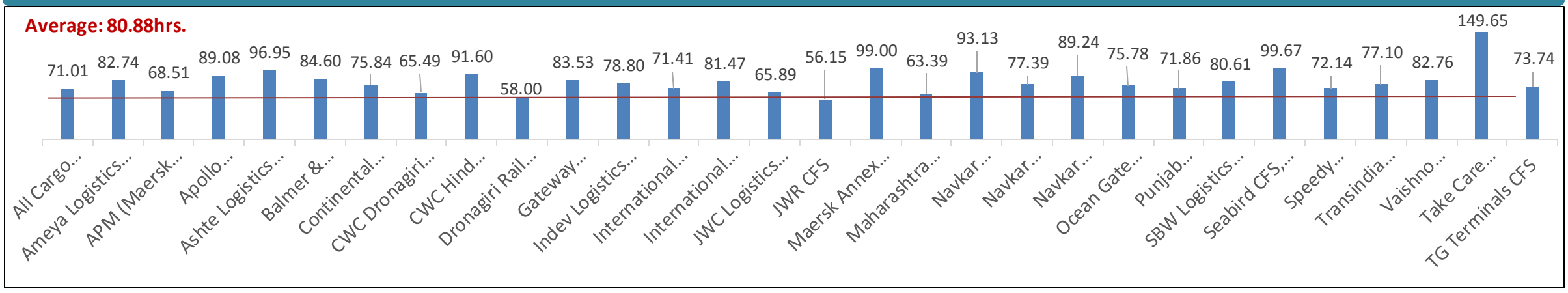
JNPT region CFS : CFS DWELL TIME ANALYSIS

CFS Dwell Time (in hrs)

CFS	Mar'18	Apr'18
All Cargo Logistics CFS, Navi Mumbai	75.96	71.01
Ameya Logistics CFS, Navi Mumbai	80.02	82.74
APM (Maersk India) CFS, Navi Mumbai	55.06	68.51
Apollo Logisolutions CFS, Panvel	73.87	89.08
Ashte Logistics CFS, Panvel	100.19	96.95
Balmer & Lawrie CFS, Navi Mumbai	76.05	84.60
Continental Warehousing CFS, Navi Mumbai	70.24	75.84
CWC Dronagiri CFS, Navi Mumbai	56.26	65.49
CWC Hind Terminal CFS, Navi Mumbai	85.68	91.60
Dronagiri Rail Terminal CFS, Navi Mumbai	46.8	58.00
Gateway Distriparks CFS, Navi Mumbai	88.8	83.53
Indev Logistics CFS, Panvel	75.22	78.80
International Cargo Terminal CFS	76.6	71.41
International Cargo Terminals (ULA) CFS, Navi Mumbai	77.62	81.47
JWC Logistics Park CFS	50.71	65.89

CFS	Mar'18	Apr'18
JWR CFS	60.39	56.15361
Maersk Annex (APM)CFS, Navi Mumbai	90.47	99.00028
Maharashtra State Corp CFS	56.21	63.39105
Navkar Corporation Yard 1 CFS, Panvel	91.75	93.131
Navkar Corporation Yard 2 CFS, Panvel	68.6	77.38926
Navkar Corporation Yard 3 CFS, Panvel	83.22	89.23667
Ocean Gate CFS, Panvel	82.83	75.77583
Punjab Conware CFS, Navi Mumbai	70.84	71.85986
SBW Logistics CFS, Navi Mumbai	77.08	80.61495
Seabird CFS, Navi Mumbai	83.12	99.67167
Speedy Multimode CFS, JNPT	64.21	72.1366
Transindia Logistics Park, Navi Mumbai	73.52	77.10194
Vaishno Logistics CFS, Navi Mumbai	60.3	82.76306
Take Care Logistics CFS	126.51	149.6537
TG Terminals CFS	78.92	73.745

CFS – DWELL OVERVIEW (IN HRS)

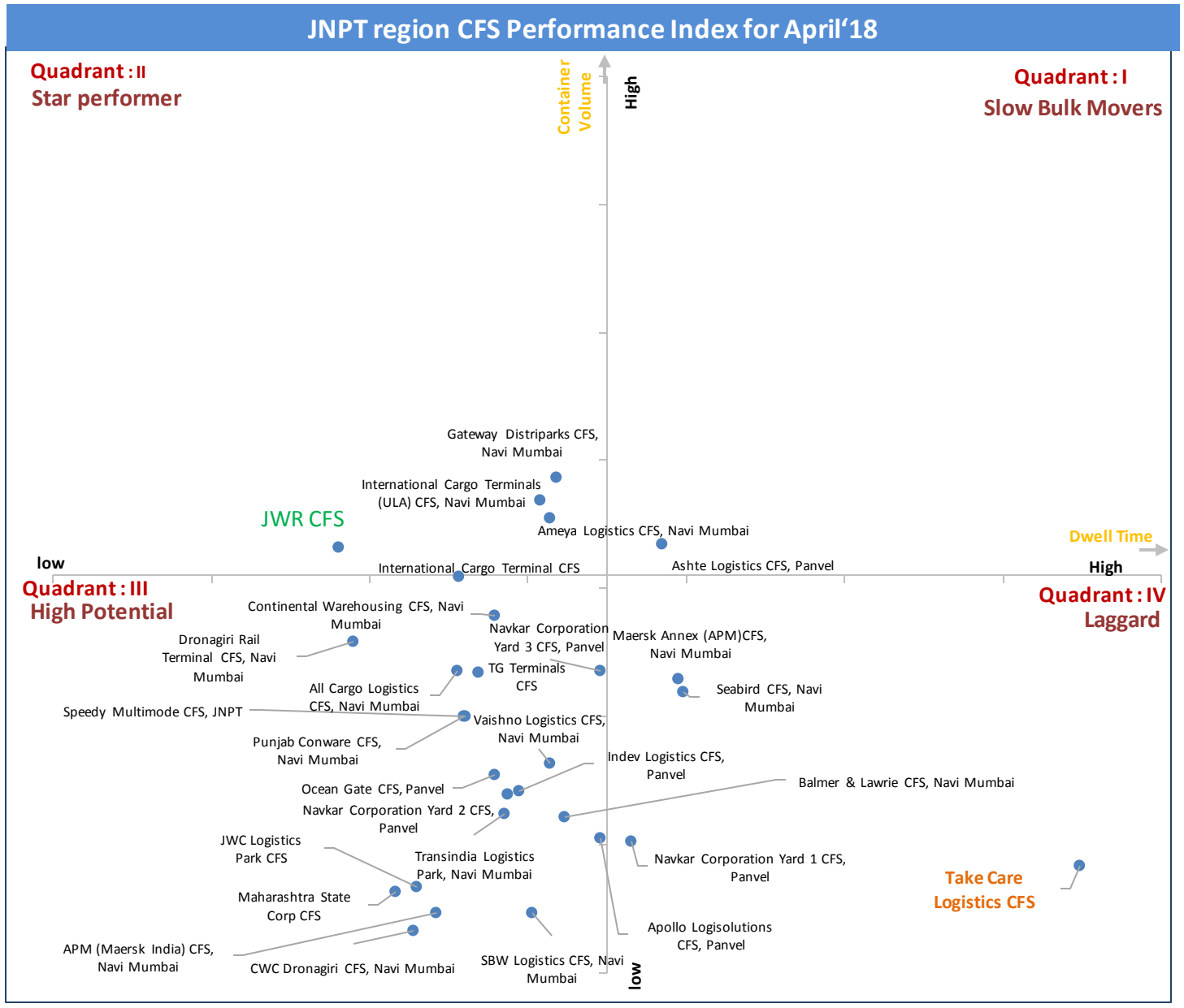


Top Performing CFS	
JWR CFS	**Dwell Time : 56.15 Hrs**

Low Performing ICD	
Take Care Logistics CFS	**Dwell Time : 149.69 Hrs**

JNPT region CFS : Performance Index

The below graph depicts the Performance Index for all CFS for Apr'18 quarter. The Quadrant II represent the best CFS with high frequency Index i.e. high container volume at lower dwell time



Legends

Top in category

- **Star performer**
- **Slow bulk mover**
- **High potential**
- **Laggard**

DLDS Logistics Redefined
DMICDC LOGISTICS DATA SERVICES LTD

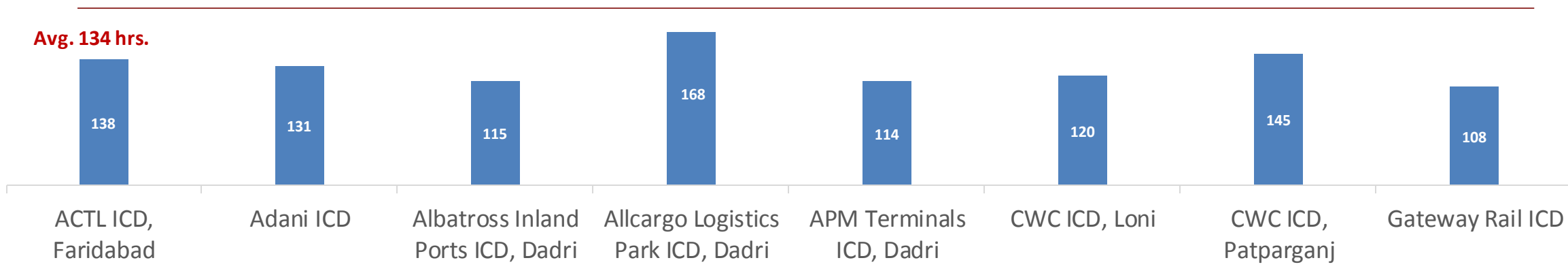
ICD DWELL TIME ANALYSIS

The table below depicts the dwell of all ICDs for month Mar'18 and Apr'18.

Dwell Time (in Hrs)		
ICD	Mar'18	Apr'18
ACTL ICD, Faridabad	136	138
Adani ICD	80	131
Albatross Inland Ports ICD, Dadri	89	115
Allcargo Logistics Park ICD, Dadri	104	168
APM Terminals ICD, Dadri	100	114
CMA CGM Agencies ICD, Dadri	94	153
CWC ICD, Loni	191	120
CWC ICD, Patparganj	124	145
Gateway Rail ICD	156	108

Top Performing ICD	
Gateway Rail ICD	108 hrs.

ICD – DWELL OVERVIEW (APR'18) (IN HRS)

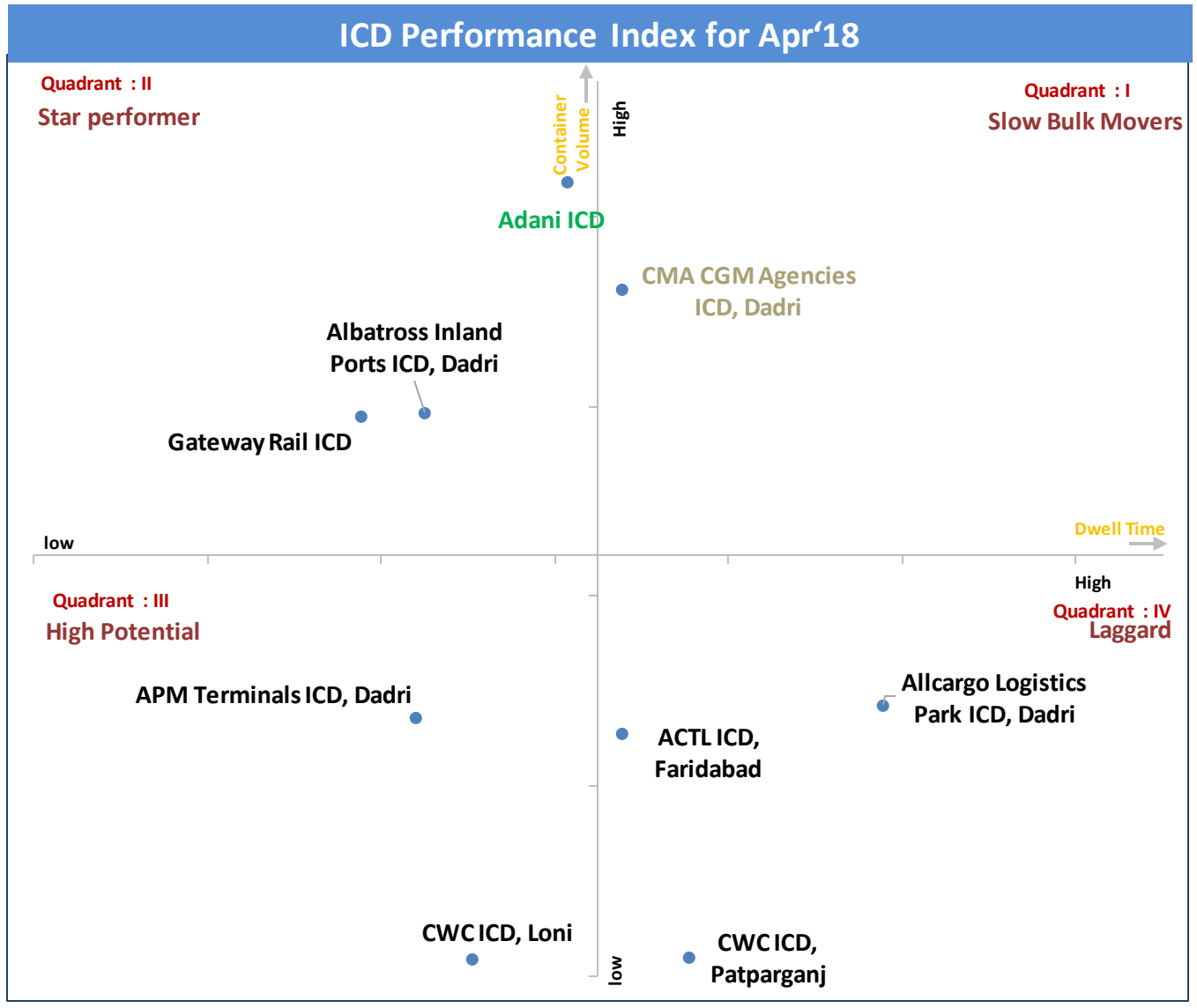


Note: LDB system has been deployed at some ICDs April'18 onwards

* Disclaimer: CONCOR Data is not been considered in this report.

ICD : Performance Index

The below graph depicts the Performance Index for all ICDs for Apr'18. The Quadrant II represent the best ICD with high frequency Index i.e. high container volume at lower dwell time



Legends

Top in category

- **Star performer**
- **Slow bulk mover**
- **High potential**
- **Laggard**

ICD ANALYSIS : Transit Time Analysis

Transit Time Analysis

Below table shows the average delivery time of ICD in import cycle i.e. Port out to ICD in via rail transportation

ICD- AVG DELIVERY TIME PORT OUT TO ICD IN (TRAIN)	
Region	**Apr'18**
NCR region	3.07 days

Below table shows the average delivery time of ICD in export cycle i.e. ICD out to port in via rail transportation

ICD- AVG DELIVERY TIME ICD OUT TO PORT IN (TRAIN)	
Region	**Apr'18**
NCR region	2.99 days

LEAD TIME ANALYSIS

Below table shows the average lead time of ICD in import cycle i.e. Port in to ICD out via train. The ICD's in NCR region have low dwell time as compare to Aurangabad region, thus making the lead time for the Aurangabad region higher as compare to NCR region

ICD- AVG LEAD TIME (TRAIN)	
Region	**Apr'18**
NCR region	9.85 days

Calculation :

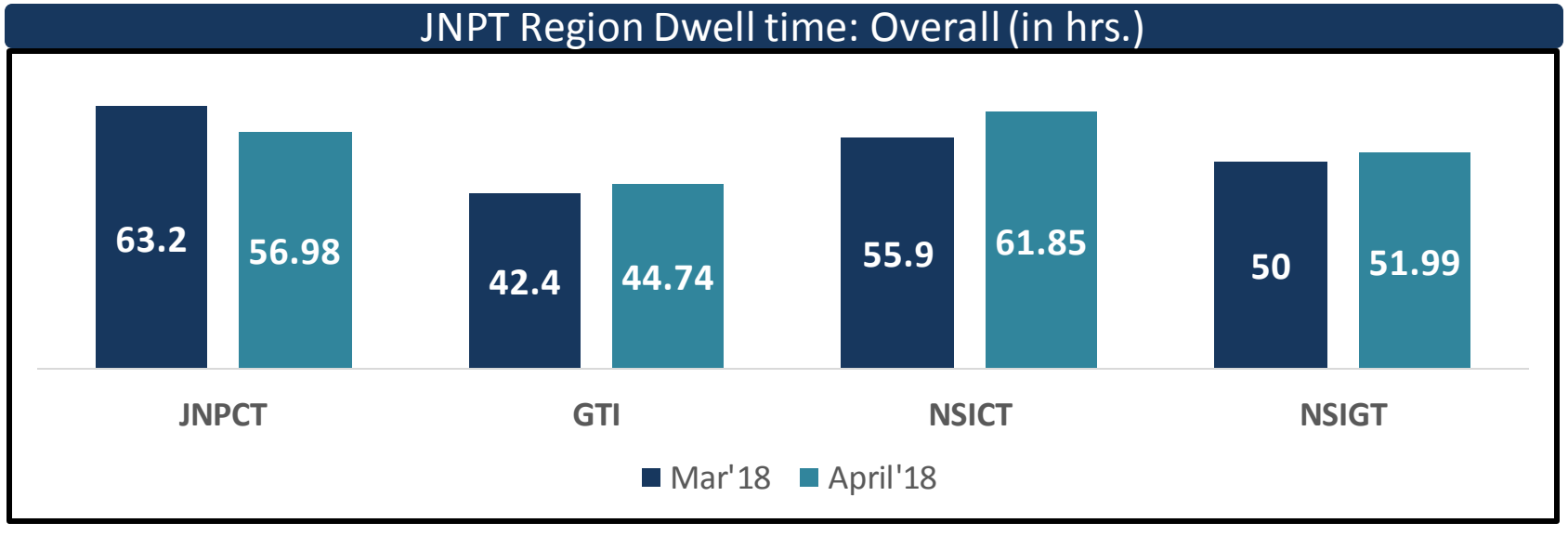
Port Dwell Time + Port to ICD Delivery Time + ICD Dwell Time = Avg. Lead Time from Port to ICD

Trend Analysis

JNPT PORT DWELL TIME TREND: Month on Month

JNPT port dwell time trend :

The below table shows the overall port dwell time (i.e. import and export cycle combine) trend of all the JNPT Port terminals for Apr'18. Port dwell time is the time duration between the entry of the container in Port terminal to the time it moves out of the Port terminal

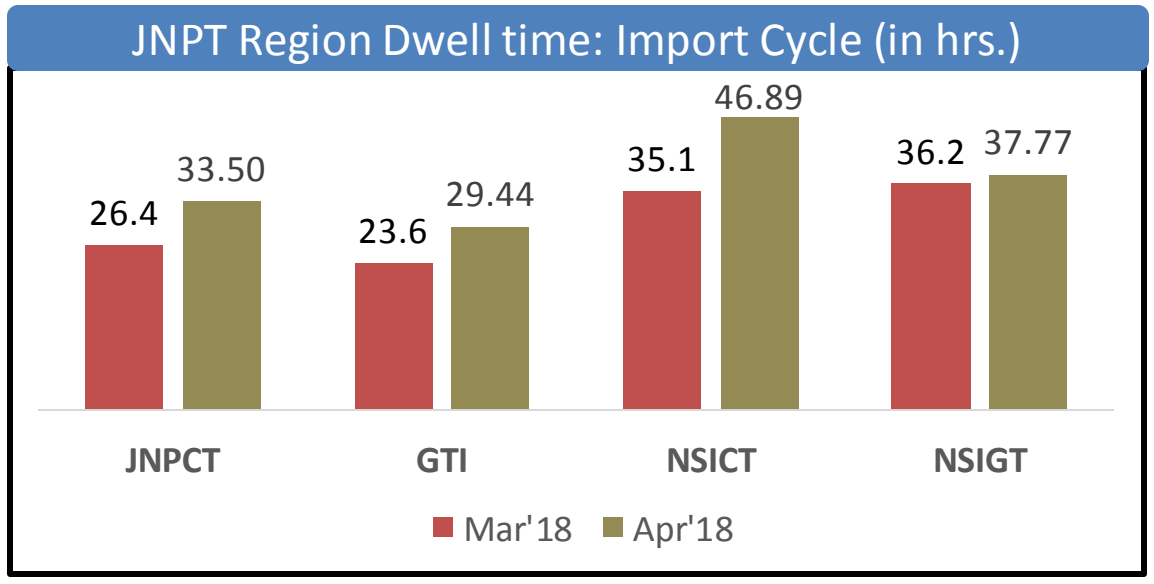


The overall JNPT region average dwell time for Apr'18 is 52 hrs as compared to 51 hrs. in March'18

The below tables showcase the Import and Export cycle dwell time for both rail and truck bound containers for month of Feb'18 ,March'18 and Apr'18

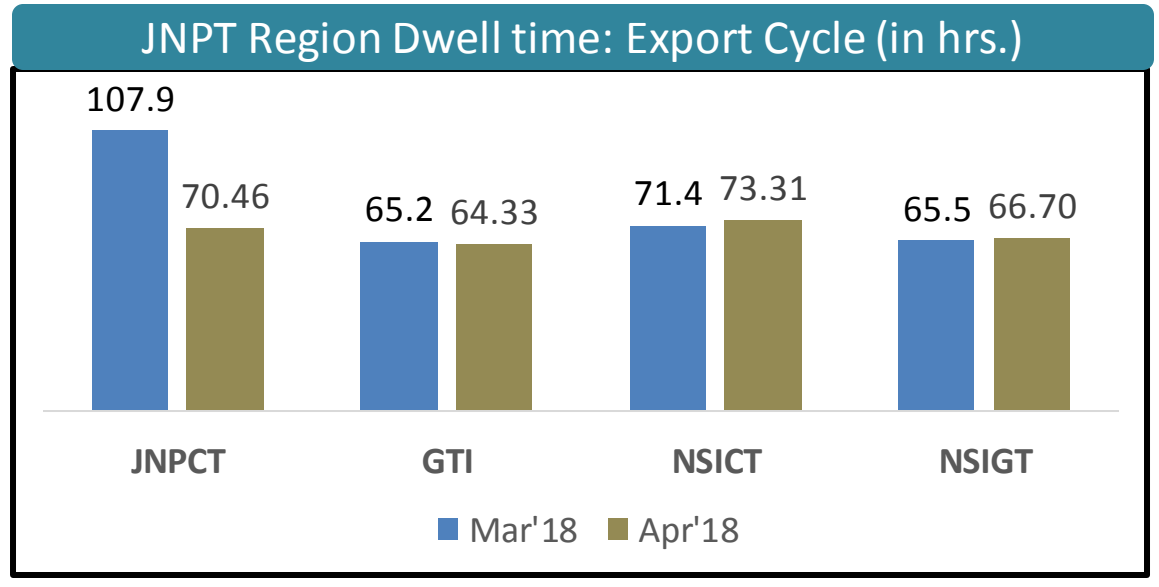
JNPT Import cycle Trend

The average import cycle dwell time of JNPT region port terminals for Apr'18 is 33.85 hrs.



JNPT Export cycle Trend

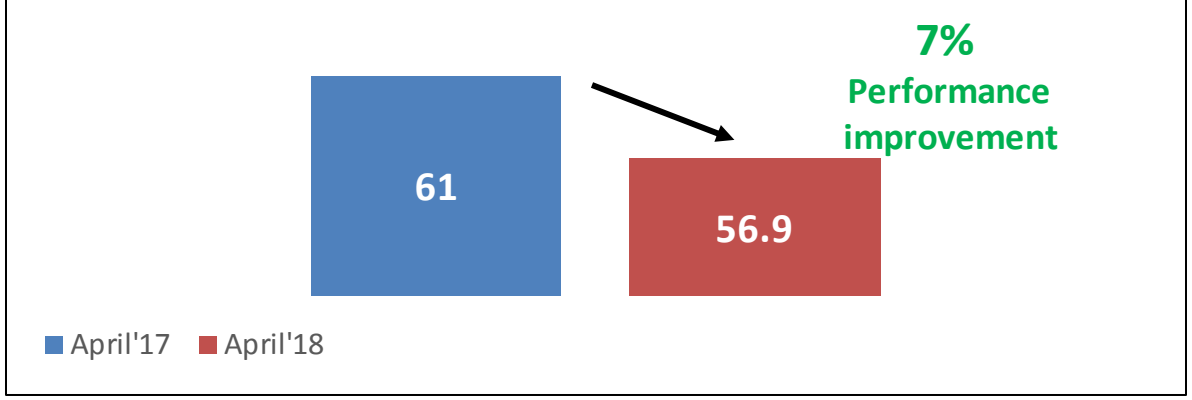
The average export cycle dwell time of JNPT region port terminals for Apr'18 is 70.46 hrs.



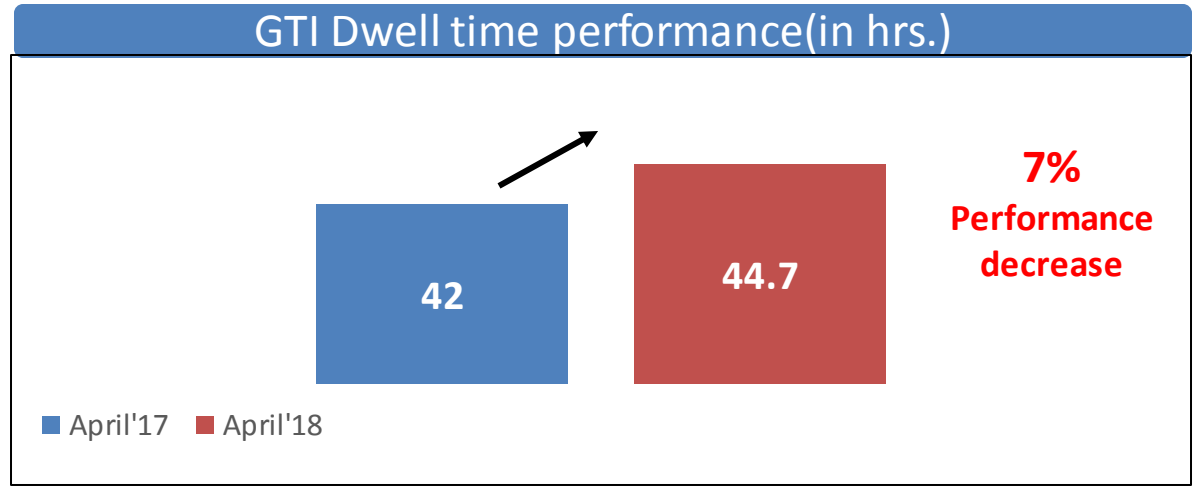
JNPT Port terminals overall Dwell time performance(Year-on-Year)

The below graphs display the Year-on-Year overall dwell time performance across the JNPT Port terminals for April'17 and April'18.

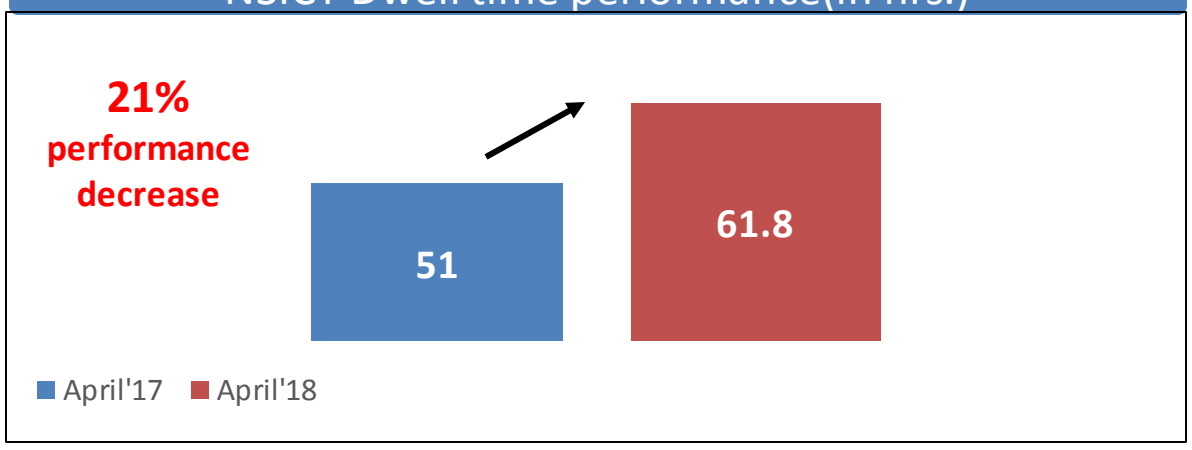
JNPCT Dwell time performance(in hrs.)



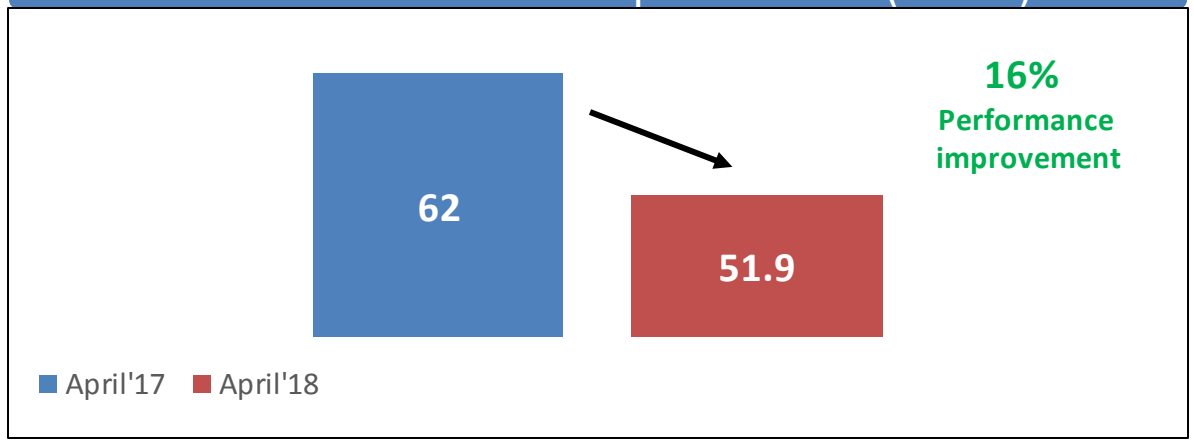
GTI Dwell time performance(in hrs.)



NSICT Dwell time performance(in hrs.)



NSIGT Dwell time trend performance(in hrs.)

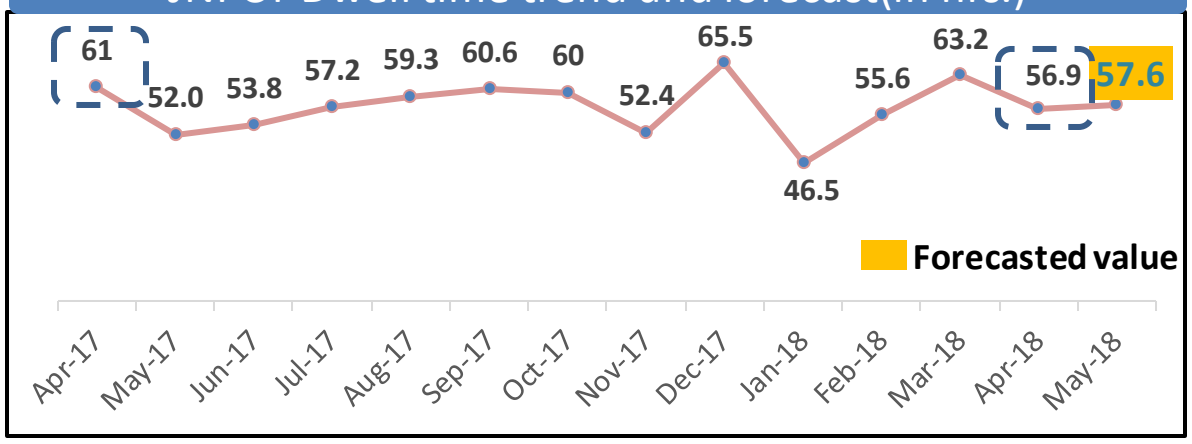


It is observed that NSIGT has improved its dwell time performance by **16%** in April'18 as compared to April'17 whereas dwell time performance of NSICT has decreased in April'18 by **21%** as compared to the previous year i.e. April'17

JNPT Port terminals Dwell time trend and forecast

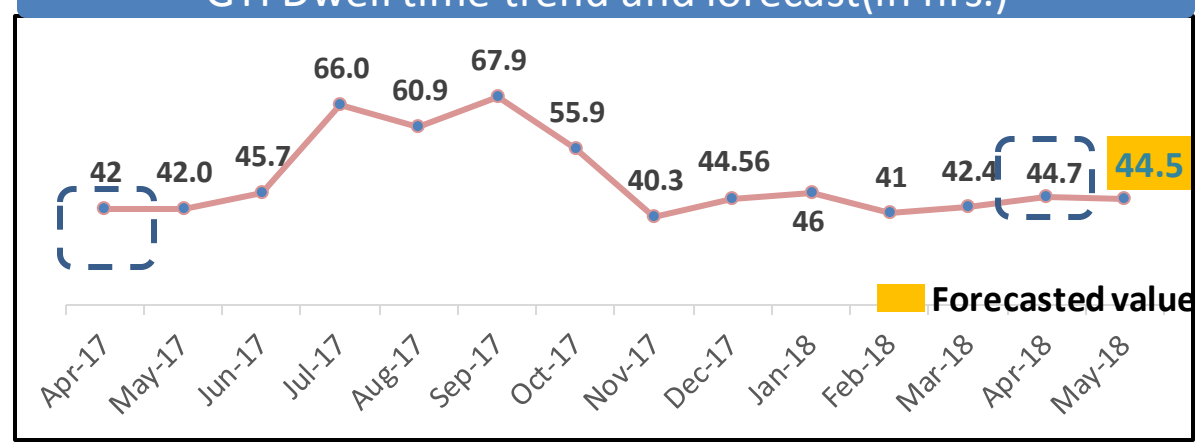
The below graphs display the dwell time trend across the year of JNPT Port terminals from April'17 to April'18. The forecasted dwell time value based on the historical data is also presented in the graphs

JNPCT Dwell time trend and forecast(in hrs.)



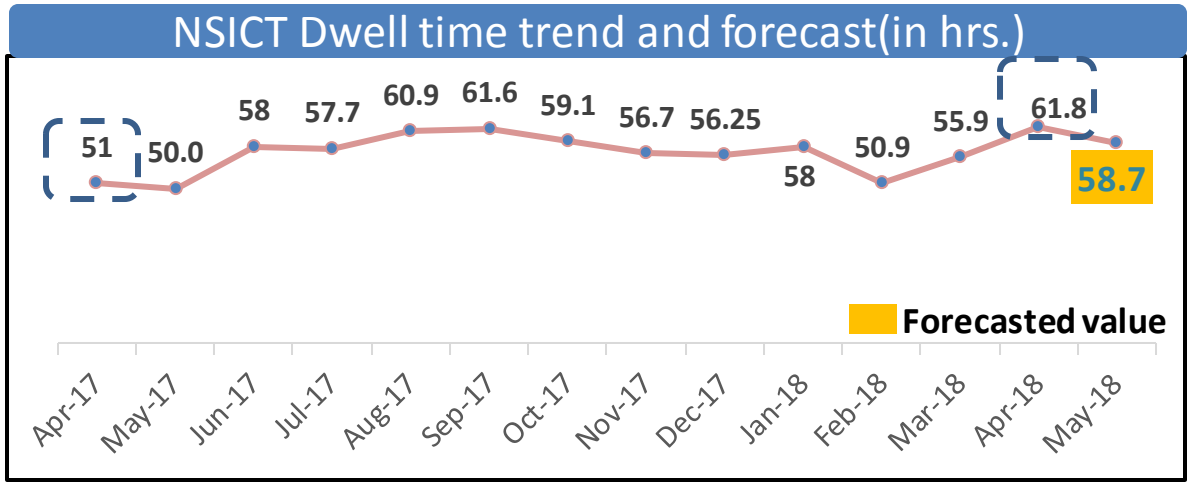
7% decrease in dwell time (Y-o-Y)

GTI Dwell time trend and forecast(in hrs.)



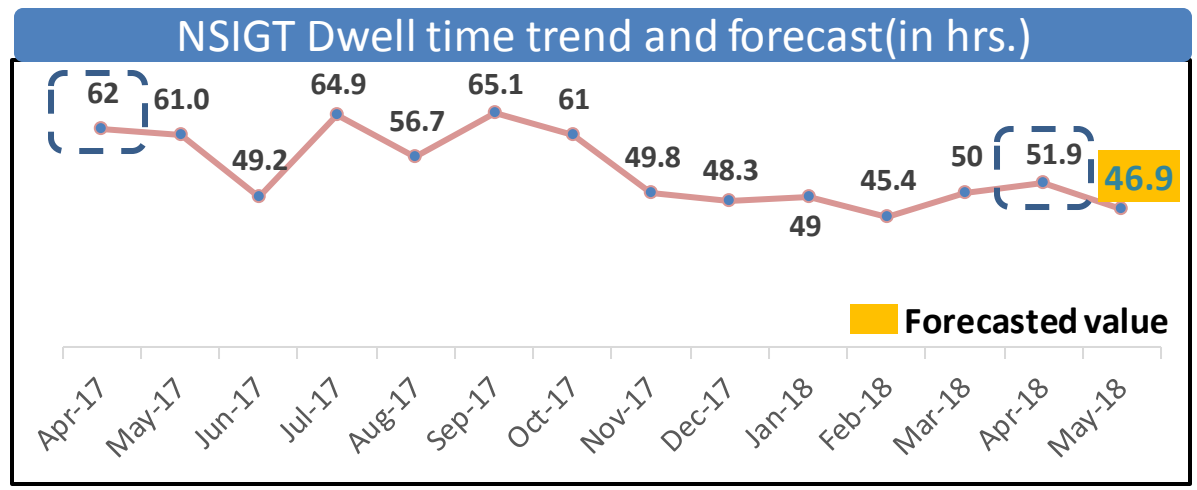
7% increase in dwell time (Y-o-Y)

NSICT Dwell time trend and forecast(in hrs.)



21% increase in dwell time (Y-o-Y)

NSIGT Dwell time trend and forecast(in hrs.)



16% decrease in dwell time (Y-o-Y)

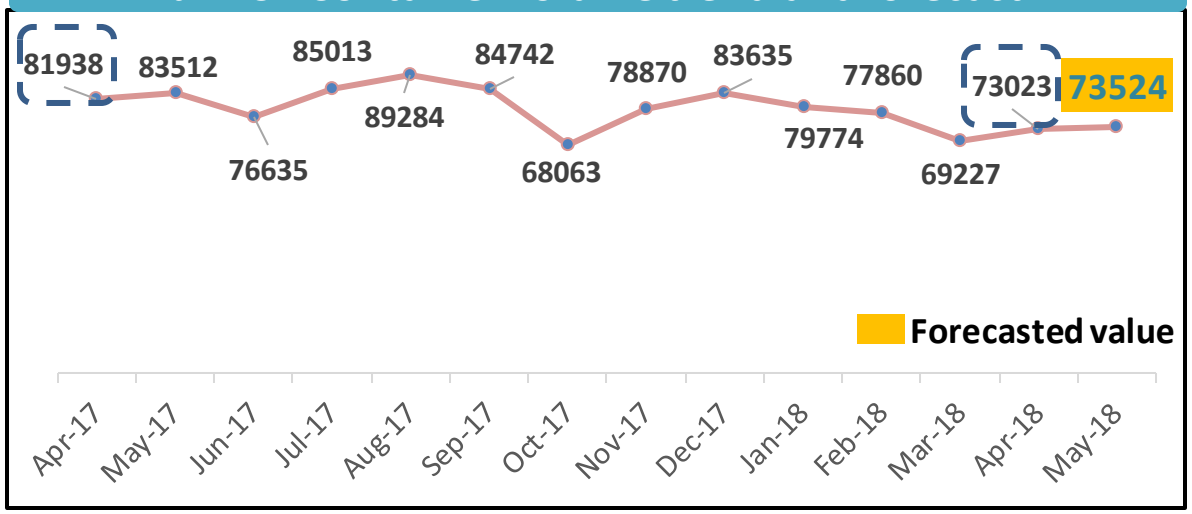
It is observed that NSIGT has improved its dwell time performance by **16%** in April'18 as compared to April'17 whereas dwell time performance of NSICT has decreased in April'18 by **21%** as compared to the previous year i.e. April'17

The above forecast has been done with the error rate of 2 to 15%

JNPT Port terminals Container volume trend and forecast

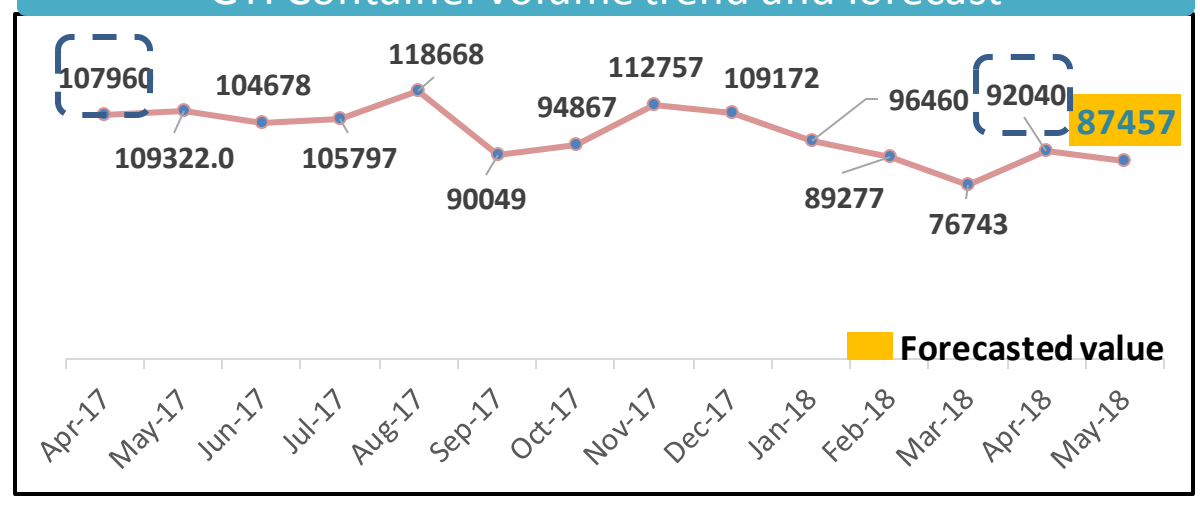
The below graphs display the container volume trend across the year of JNPT Port terminals from April'17 to April'18. The forecasted container volume value based on the historical data is also presented in the graphs below

JNPCT Container volume trend and forecast



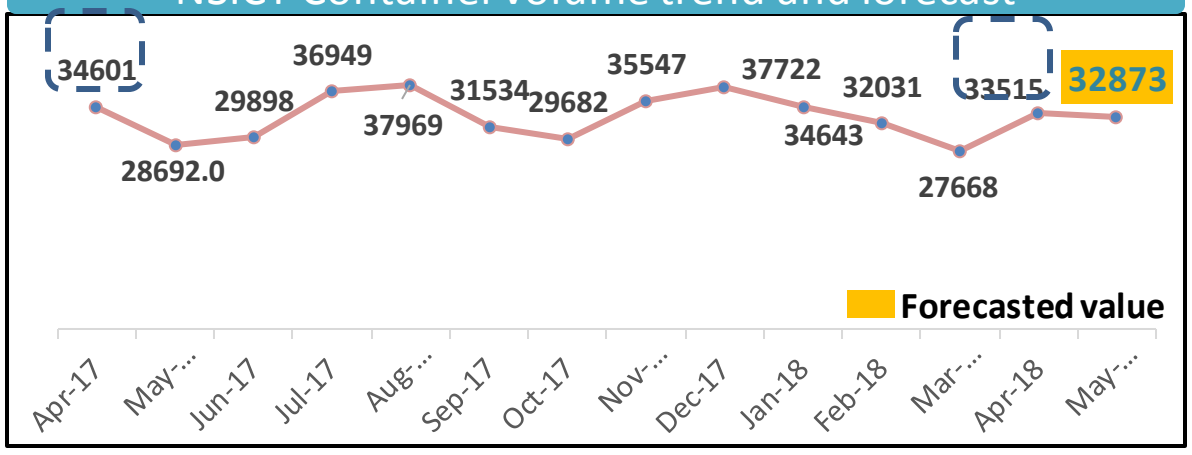
11% decrease in container volume (Y-o-Y)

GTI Container volume trend and forecast



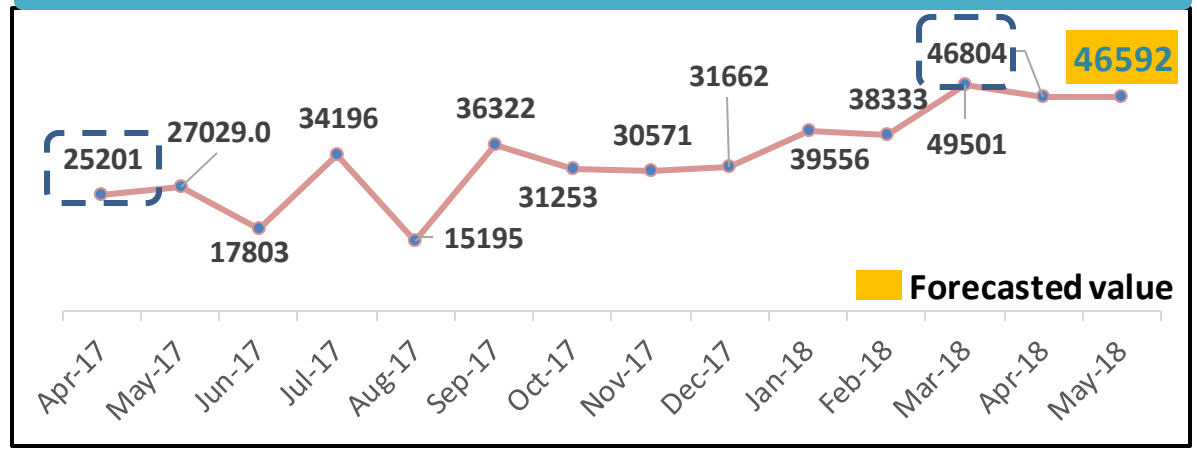
15% decrease in container volume (Y-o-Y)

NSICT Container volume trend and forecast



2% decrease in container volume (Y-o-Y)

NSIGT Container volume trend and forecast



86% increase in container volume (Y-o-Y)

It is observed that NSIGT has increased its container volume by 86% in April'18 as compared to April'17 whereas container volume of GTI has decreased in April'18 by 15% as compared to the previous year i.e. April'17

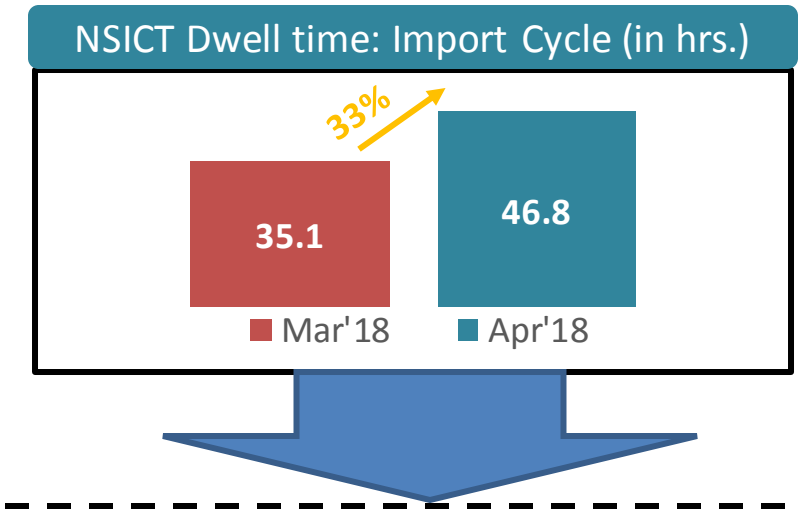
The above forecast has been done with the error rate of 2 to 10%

KEY FINDINGS

1 **NSICT port terminals has seen increase in its Import cycle port dwell time by around 33% in April 18**

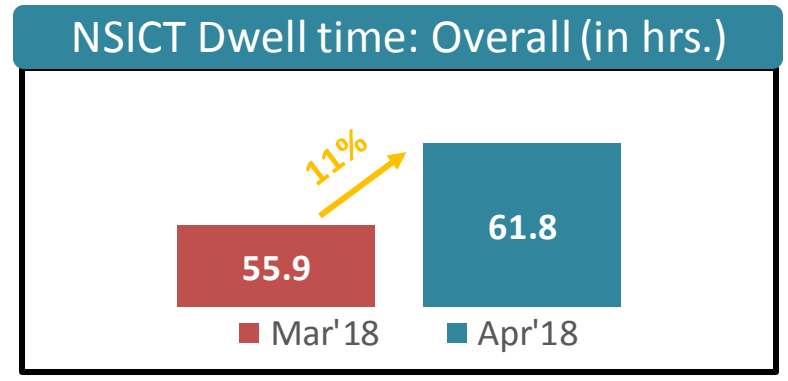
NSICT port terminal has seen increase in its overall dwell time by 11% in April'18 as compared to March'18. This is primarily due increase in export cycle dwell time of both train and truck containers.

- **NSICT has seen rise in its import dwell time by 33 %**

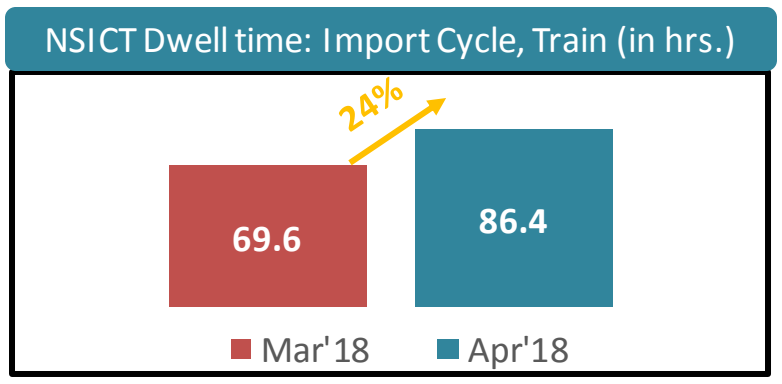


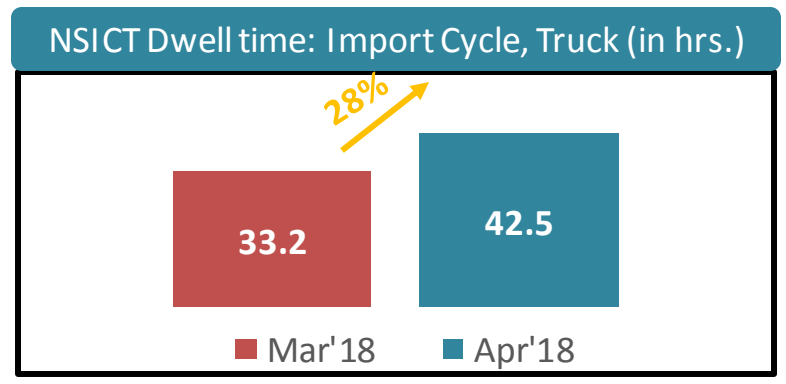
Impact

- **NSICT has increased its overall dwell time by 11%**



Further Analysis





	Within 5 days	More than 5 days
NSICT : Import Train	65%	35%
NSICT : Import Truck	91%	09%

SECTION III:

ANNEXURE

DLDS
Logistics Redefined
DMICDC LOGISTICS DATA SERVICES LTD

JNPT

CO 2 Emission : Calculations

- **Carbon emission has been calculated for N3 tractor trailer (most commonly used in India) along with the support of white paper published by INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION and ECTA**
- **Fuel consumption per litre depicts the figure the truck will consumes while its ignition is turn on (truck in motion + truck waiting in queue with engine turned on)**
- **Please find the calculations in below excel sheet**

Vehicle	Gross vehicle weight (tonnes)	Axle cong	Speed	Fuel consuptio upper limit (l/100km)
N3 Tractor Trailers	40.2-49.0	6x2	40 km/hr	37.4
	40.2-49.0	6x4		43

Average fuel consumption (l/100km)
40

CFS

Import Cycle		
Average distance covered by truck around JNPT	Feb'17	Dec'17
19	3.84	2.4
Fuel consumed	**61.44**	**38.4**

Average distance covered by truck around J
19
Fuel consumed

Carbon Emission in Import cycle				
Formula	For Dieseal (Kg CO2/ltr)	Feb'17	Dec'17	**Improvement**
Carbon Emissio	2.9	178.176	111.36	**38%**

Formula
Carbon Emission = fuel consumed * Fu

Toll Plaza

Toll plazas	Toll Plaza		
	erage distance covered btw toll pl	July'17	Nov'17
Khaniwade to Charoti	50	1.6	1.3
	Fuel consumed	**25.6**	**20.8**
JNPT to Khaniwade	94	7.2	6.6
	Fuel consumed	**115.2**	**105.6**
Kishangarh to Daulatpura	128	3.6	3.2
	Fuel consumed	**57.6**	**51.2**
Bharthan to Vasad	60	1.7	1.6
	Fuel consumed	**27.2**	**25.6**

Formula
Carbon Emission = fuel consumed * Fu
Khaniwade to Charoti
JNPT to Khaniwade
Kishangarh to Daulatpura
Bharthan to Vasad

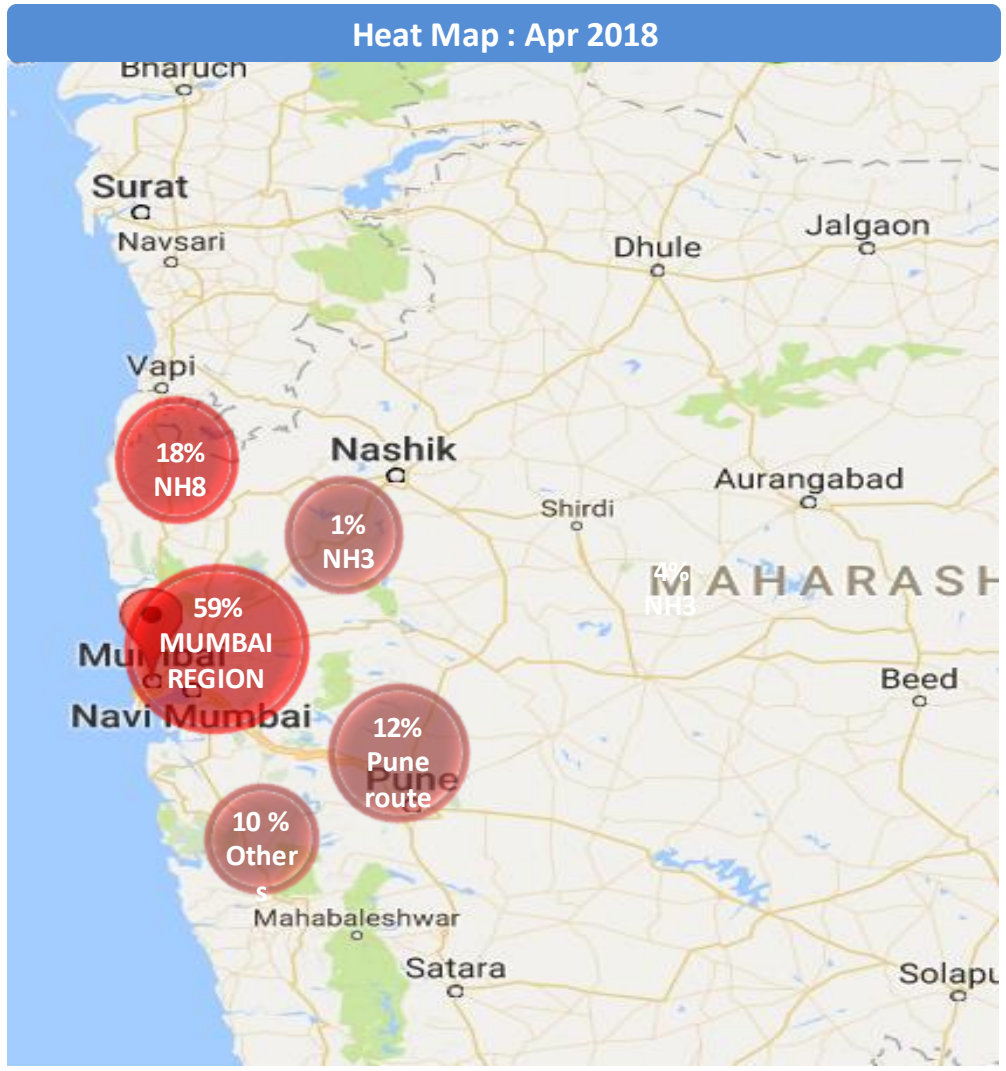
Source	
INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION	https://www.ecta.com/resources/Documents/Best%20Practices%20Guidelines/guideline_for_measuring_and_managing_co2.pdf
ECTA	https://www.theicct.org/sites/default/files/publications/ICCT_India-HDV-fuel-consumption_policy-update_20171207.pdf
NECTI analysis	

- **Please find toll plaza details below**

Toll plaza	Name	Toll plaza	Name
T1	**Khaniwade**	T3	**Kishangarh**
T2	**Charoti**	T4	**Daulatpura**
		T5	**Bharthan**
		T6	**Vasad**

Container movement around JNPT Port terminal region via Truck

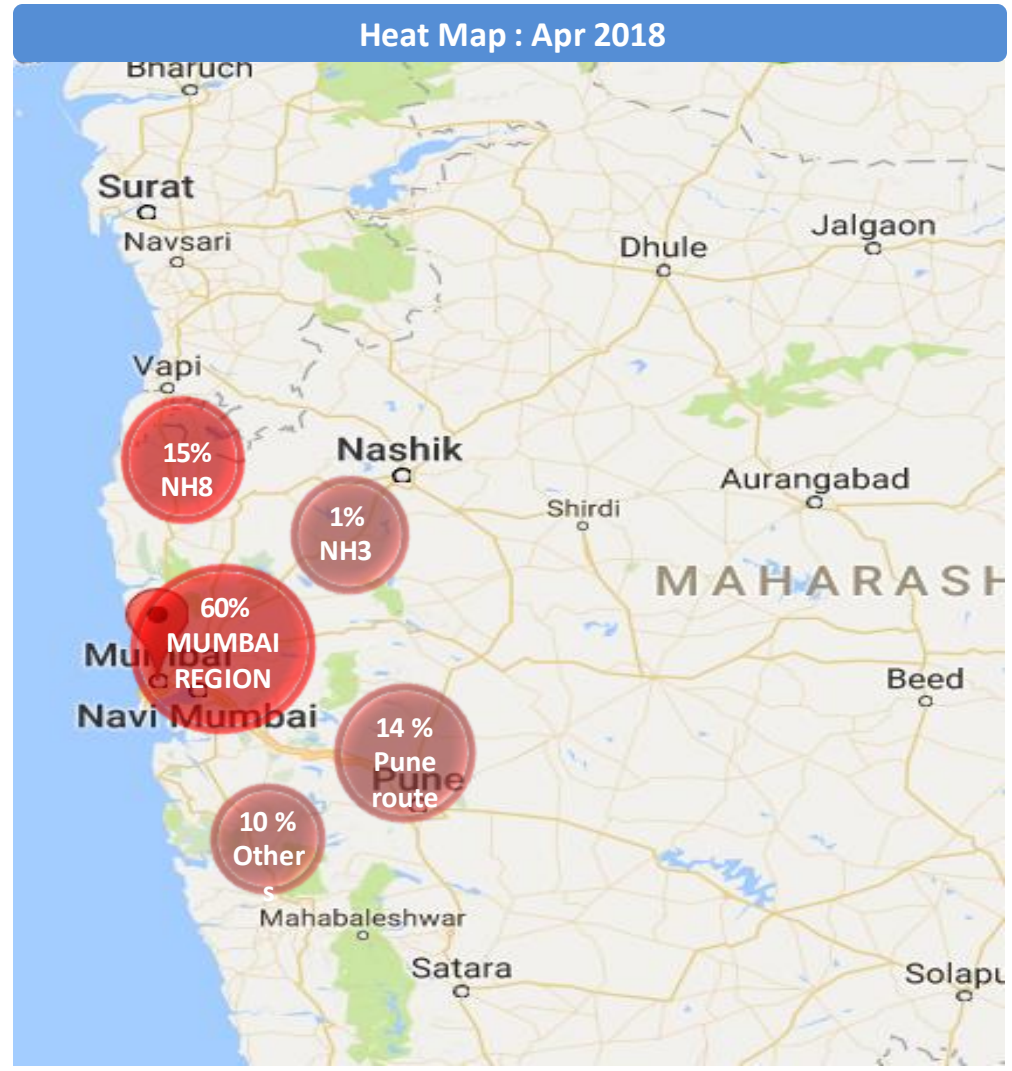
HEAT MAP : JNPCT Port Terminal



Region	Mar'18	Apr'18
Mumbai region	47%	59%
NH3	2%	1%
Pune	19%	12%
NH8	22%	18%
others	10%	10%

The heat map above depicts the movement of containers in and around the Mumbai region.

HEAT MAP : GTI Port Terminal

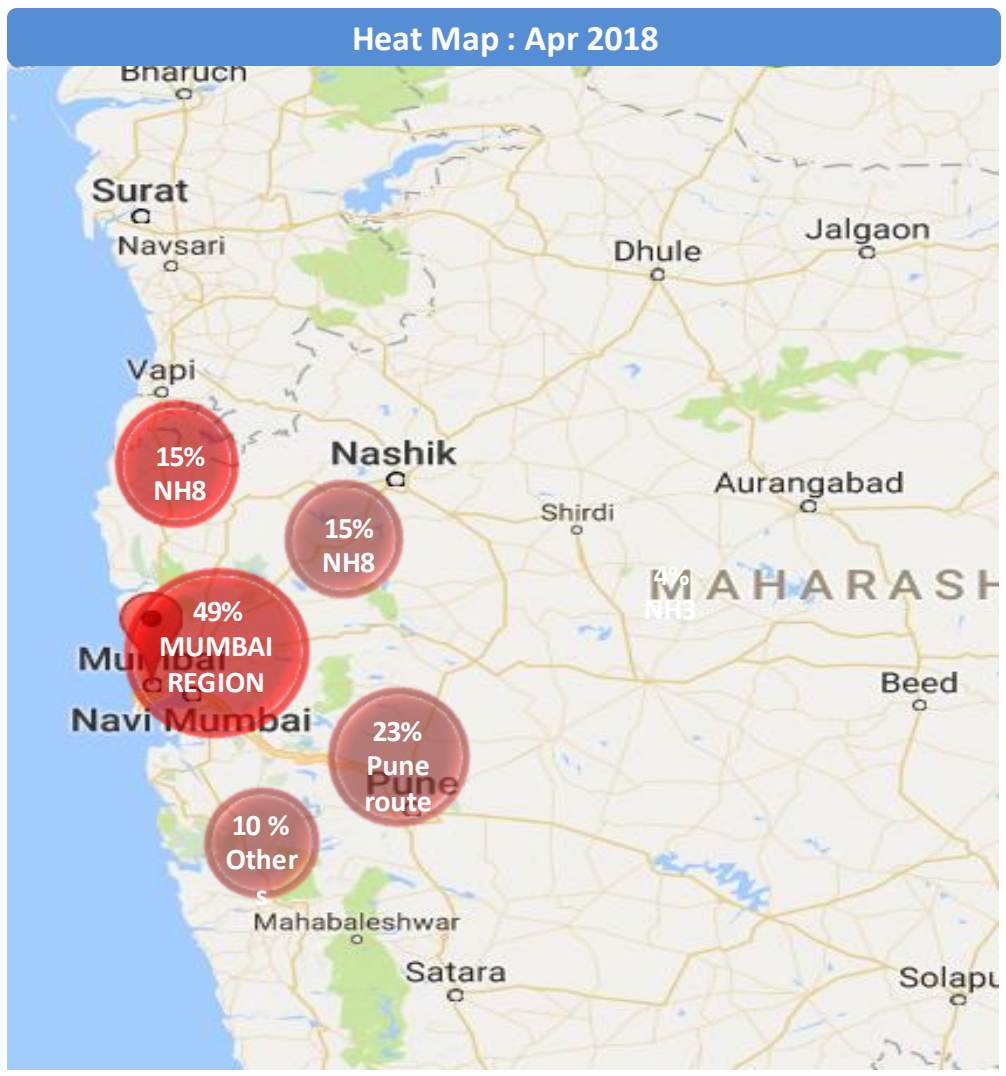


Region	Mar'18	Apr'18
Mumbai region	46%	60%
NH3	2%	1%
Pune	22%	14%
NH8	21%	15%
others	10%	10%

The heat map above depicts the movement of containers in and around the Mumbai region.

Container movement around JNPT Port terminal region via Truck

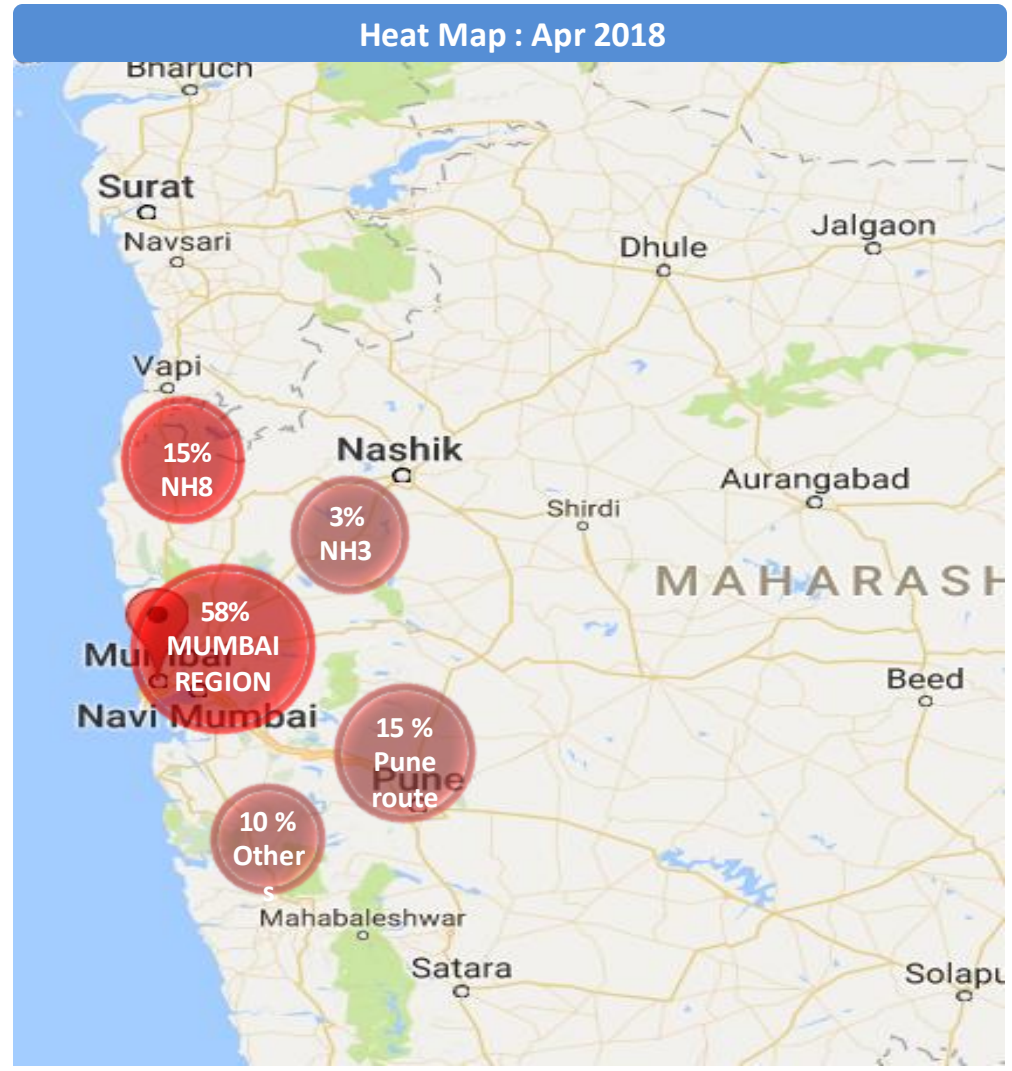
HEAT MAP : NSIGT Port Terminal



Region	Mar'18	Apr'18
Mumbai region	47%	49%
NH3	2%	2%
Pune	23%	23%
NH8	18%	15%
others	10%	10%

The heat map above depicts the movement of containers in and around the Mumbai region.

HEAT MAP : NSICT Port Terminal



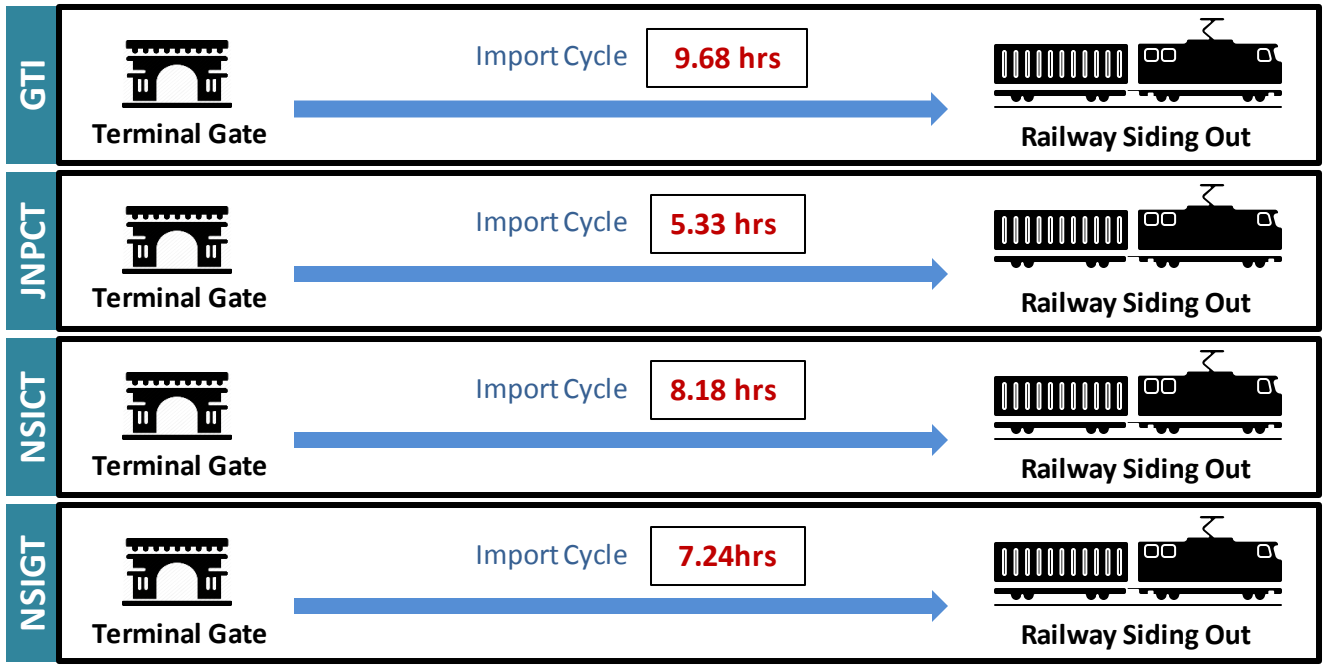
Region	Mar'18	Apr'18
Mumbai region	54%	58%
NH3	2%	3%
Pune	18%	15%
NH8	17%	15%
others	10%	10%

The heat map above depicts the movement of containers in and around the Mumbai region.

Container movement : JNPT region via Train

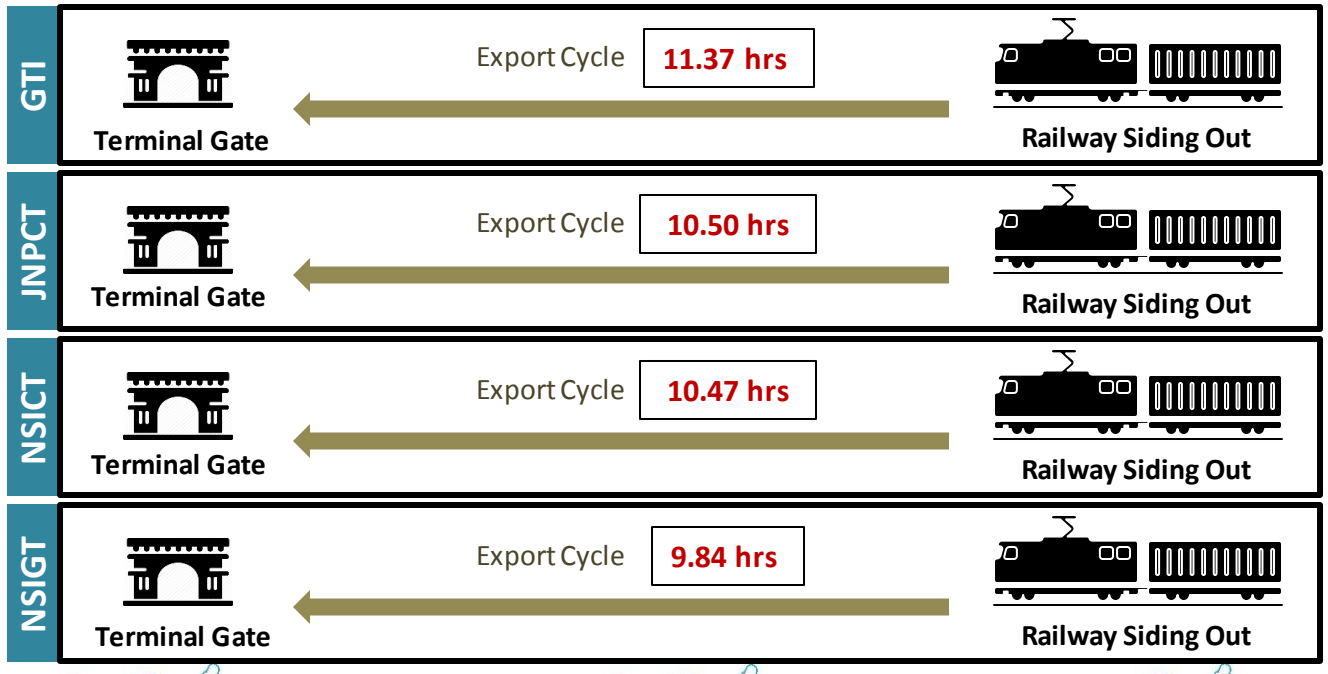
Container Handling time : Import Cycle

Container handling time in import cycle refers to the time taken by container to reach 1st railway station (i.e. JNPT railway station) from the moment they have been cleared from Port (i.e. Port Out). The below data is for month of Apr'18



Container Handling time : Export Cycle

Container handling time in export cycle refers to the time taken by container to reach Port terminal (i.e. Port In) from last railway station (i.e. JNPT railway station). The below data is for month of Apr'18



CFS - AVERAGE DELIVERY TIME – all CFS in Mumbai TO JNPT Port

DLDS Logistics Redefined
DMICDC LOGISTICS DATA SERVICES LTD

Below table shows the delivery time in export cycle from the CFS's to PORT terminals

For Apr'18				
CFS Out Port in (Export Cycle in Hrs)				
CFS	JNPCT	GTI	NSICT	NSIGT
CWC LOGISTIC PARK - Opr.Hind Trmnl.	2.5	5.4	5.6	5.8
CWC Dronagiri CFS	2.8	6.5	3.6	4.6
Jawaharlal Nehru Port CFS (Speedy Multimode Ltd CFS)	2.2	4.0	3.9	6.1
Indev Logistics Pvt. Ltd.CFS	4.2	6.4		7.0
PUNJAB CONWARE (PW)	1.9	5.0	4.6	5.2
Transindia Logistics Park Pvt, Ltd CFS	2.6	5.9	5.6	12.7
Apollo Logisolutions Ltd.	5.5	9.7	12.5	9.4
JWR CFS	3.5	6.2	5.3	6.0
NAVKAR CORPORATION LTD.YARD-III CFS	5.5	9.6	9.8	10.9
Ameya Logistics Pvt. Ltd.	3.5	5.7	5.8	10.1
Ashte Logistics Pvt. Ltd.	3.7	7.4	14.5	15.3
DRONAGIRI RAIL TERMINAL	2.1	5.7	5.5	7.4
TG Terminals CFS	2.1	5.1	6.8	3.9
Vaishno Logistics Yard CFS	2.2	7.5		9.4
NAVKAR CORPORATION LTD.,YARD-II CFS	6.3	9.6	6.8	12.5
Gateway Distriparks Ltd	2.2	5.1	5.9	8.0
All Cargo Logistics Ltd., CFS	3.8	5.7	4.2	4.9
International Cargo Terminal CFS	2.8	3.6	3.9	-
Balmer & Lawrie & Co. Ltd.,CFS	2.4	7.0	10.2	9.9
Continental Warehousing (Nhava Sheva) Ltd.	1.5	5.5	5.5	5.0
Seabird Marine Services Pvt Ltd.	1.8	7.9	4.3	10.8
Ocean Gate Container Terminals Pvt. Ltd.CFS	3.1	6.4	4.4	8.5
MAHARASHTRA STATE WARE. CORP. CFS	2.4	7.1	5.0	5.4
International Cargo Terminals & Infrastructure Private Limited-CFS	2.7	6.0	3.1	17.3
APM (Maersk India Pvt. Ltd)CFS	1.5	3.9	4.4	5.8

CFS DELIVERY TIME ANALYSIS

CFS - AVERAGE DELIVERY TIME - GTI TO ALL CFS's IN MUMBAI

Below table shows the average delivery time in import cycle from GTI to all the CFS's

AVERAGE DELIVERY TIME (In Hrs)- GTI TO ALL CFS IN MUMBAI	
CFS	Apr'18
Jawaharlal Nehru Port CFS (Speedy Multimode Ltd CFS)	1.3
Balmer & Lawrie & Co. Ltd.,CFS	2.4
Gateway Distriparks Ltd	3.1
APM (Maersk India Pvt. Ltd)CFS	1.8
Continental Warehousing (Nhava Sheva) Ltd.	1.8
Seabird Marine Services Pvt Ltd.	1.4
JWC Logistics Park Ltd CFS	3.0
Ameya Logistics Pvt. Ltd.	2.8
Ashte Logistics Pvt. Ltd.	3.5
NAVAKAR CORPORATION LTD.,YARD-1 CFS	3.2
Apollo Logisolutions Ltd.	5.9
Ocean Gate Container Terminals Pvt. Ltd.CFS	2.8
Indev Logistics Pvt. Ltd.CFS	4.2
Transindia Logistics Park Pvt, Ltd CFS	2.7
All Cargo Logistics Ltd., CFS	2.0
Vaishno Logistics Yard CFS	2.2
NAVKAR CORPORATION LTD.,YARD-II CFS	3.5
PUNJAB CONWARE (PW)	2.6
DRONAGIRI RAIL TERMINAL	2.1
CWC LOGISTIC PARK - Opr.Hind Trmnl.	1.9
NAVKAR CORPORATION LTD.YARD-III CFS	3.3
International Cargo Terminals & Infrastructure Private Limited-CFS	3.2
Maersk Annex (APM)CFS	2.9
International Cargo Terminal CFS	2.4
SBW Logistics CFS , Navi Mumbai	5.2
JWR CFS	2.7

CFS - AVERAGE DELIVERY TIME - JNPCT TO ALL CFS's IN MUMBAI

Below table shows the average delivery time in import cycle from JNPCT to all the CFS's

AVERAGE DELIVERY TIME (In Hrs)- JNPCT TO ALL CFS IN MUMBAI	
CFS	Apr'18
Jawaharlal Nehru Port CFS (Speedy Multimode Ltd CFS)	0.8
Balmer & Lawrie & Co. Ltd.,CFS	1.8
Gateway Distriparks Ltd	2.8
APM (Maersk India Pvt. Ltd)CFS	2.2
Continental Warehousing (Nhava Sheva) Ltd.	1.5
Seabird Marine Services Pvt Ltd.	1.2
JWC Logistics Park Ltd CFS	2.5
Ameya Logistics Pvt. Ltd.	2.3
Ashte Logistics Pvt. Ltd.	2.6
NAVAKAR CORPORATION LTD.,YARD-1 CFS	2.3
Apollo Logisolutions Ltd.	3.5
Ocean Gate Container Terminals Pvt. Ltd.CFS	2.7
Indev Logistics Pvt. Ltd.CFS	3.6
Transindia Logistics Park Pvt, Ltd CFS	2.5
All Cargo Logistics Ltd., CFS	1.9
Vaishno Logistics Yard CFS	1.0
NAVKAR CORPORATION LTD.,YARD-II CFS	2.6
PUNJAB CONWARE (PW)	2.2
MAHARASHTRA STATE WARE. CORP. CFS	1.5
CWC LOGISTIC PARK - Opr.Hind Trmnl.	1.8
NAVKAR CORPORATION LTD.YARD-III CFS	2.7
International Cargo Terminals & Infrastructure Private Limited-CFS	2.7
Maersk Annex (APM)CFS	2.6
International Cargo Terminal CFS	2.0
SBW Logistics CFS , Navi Mumbai	4.1
JWR CFS	3.0

CFS DELIVERY TIME ANALYSIS

CFS - AVERAGE DELIVERY TIME - NSICT TO ALL CFS's IN MUMBAI

Below table shows the average delivery time in import cycle from NSICT to all the CFS's

AVERAGE DELIVERY TIME (In Hrs)- NSICT TO ALL CFS IN MUMBAI	
CFS	Apr'18
Jawaharlal Nehru Port CFS (Speedy Multimode Ltd CFS)	1.2
Balmer & Lawrie & Co. Ltd.,CFS	1.7
Gateway Distriparks Ltd	2.7
APM (Maersk India Pvt. Ltd)CFS	3.1
Continental Warehousing (Nhava Sheva) Ltd.	1.5
Seabird Marine Services Pvt Ltd.	1.2
JWC Logistics Park Ltd CFS	2.3
Ameya Logistics Pvt. Ltd.	2.6
Ashte Logistics Pvt. Ltd.	3.0
NAVAKAR CORPORATION LTD.,YARD-1 CFS	2.7
Apollo Logisolutions Ltd.	5.4
Ocean Gate Container Terminals Pvt. Ltd.CFS	2.9
Indev Logistics Pvt. Ltd.CFS	4.1
Transindia Logistics Park Pvt, Ltd CFS	2.4
All Cargo Logistics Ltd., CFS	1.9
NAVKAR CORPORATION LTD.,YARD-II CFS	6.3
PUNJAB CONWARE (PW)	2.8
DRONAGIRI RAIL TERMINAL	1.4
CWC LOGISTIC PARK - Opr.Hind Trmnl.	1.8
NAVKAR CORPORATION LTD.YARD-III CFS	2.9
International Cargo Terminals & Infrastructure Private Limited-CFS	2.9
Maersk Annex (APM)CFS	2.7
International Cargo Terminal CFS	2.1
SBW Logistics CFS , Navi Mumbai	4.0
JWR CFS	19.0

CFS - AVERAGE DELIVERY TIME - NSIGT TO ALL CFS's IN MUMBAI

Below table shows the average delivery time in import cycle from NSIGT to all the CFS's

AVERAGE DELIVERY TIME (In Hrs)- NSIGT TO ALL CFS IN MUMBAI	
CFS	Apr'18
Jawaharlal Nehru Port CFS (Speedy Multimode Ltd CFS)	0.9
Balmer & Lawrie & Co. Ltd.,CFS	1.6
Gateway Distriparks Ltd	2.8
APM (Maersk India Pvt. Ltd)CFS	1.4
Continental Warehousing (Nhava Sheva) Ltd.	1.6
Seabird Marine Services Pvt Ltd.	1.3
JWC Logistics Park Ltd CFS	2.4
Ameya Logistics Pvt. Ltd.	2.3
Ashte Logistics Pvt. Ltd.	3.3
NAVAKAR CORPORATION LTD.,YARD-1 CFS	2.9
Apollo Logisolutions Ltd.	3.9
Ocean Gate Container Terminals Pvt. Ltd.CFS	2.9
Indev Logistics Pvt. Ltd.CFS	4.4
Transindia Logistics Park Pvt, Ltd CFS	2.3
All Cargo Logistics Ltd., CFS	1.8
Vaishno Logistics Yard CFS	1.2
NAVKAR CORPORATION LTD.,YARD-II CFS	4.3
PUNJAB CONWARE (PW)	2.2
DRONAGIRI RAIL TERMINAL	4.6
MAHARASHTRA STATE WARE. CORP. CFS	1.2
CWC LOGISTIC PARK - Opr.Hind Trmnl.	1.8
NAVKAR CORPORATION LTD.YARD-III CFS	3.3
International Cargo Terminals & Infrastructure Private Limited-CFS	2.7
Maersk Annex (APM)CFS	2.3
International Cargo Terminal CFS	2.2
SBW Logistics CFS , Navi Mumbai	3.6
JWR CFS	22.1

JNPT Region : Cluster Analysis

Base on container movement from port to CFS in Mumbai region, 29 CFS's have been grouped into 9 Clusters on the basis of their vicinity. Below table shows all the clusters and the relevant data for NSICT and NSIGT terminal

CFS Cluster : NSICT Terminal

- In export cycle the NSICT terminal is having congestion for traffic from cluster 3 and cluster 6
- In import cycle the movement of traffic towards cluster 9 is facing congestion

NSICT terminal for month of Apr18				
Clusters	No. of CFS's in Cluster	Distance from Port (Km)	Import cycle time (in Hrs)	Export cycle time (in Hrs)
Cluster 1	1	8	1.2	3.9
Cluster 2	6	13	2.7	5.0
Cluster 3	6	11	0.6	4.6
Cluster 4	1	13	-	5.5
Cluster 5	2	25	2.6	2.2
Cluster 6	6	25	3.6	9.8
Cluster 7	4	12	2.1	5.5
Cluster 8	1	34	4.0	-
Cluster 9	1	20	19.0	5.3

CFS Cluster : NSIGT Terminal

- In export cycle the NSIGT terminal is having traffic congestion from cluster 1 and Cluster 7
- In import cycle the NSIGT terminal is having traffic congestion from cluster 9

NSIGT terminal for month of Apr'18				
Clusters	No. of CFS's in Cluster	Distance from Port (Km)	Import cycle time (in Hrs)	Export cycle time (in Hrs)
Cluster 1	1	8	0.9	6.1
Cluster 2	6	13	2.2	6.9
Cluster 3	6	11	1.3	5.4
Cluster 4	1	13	1.2	9.4
Cluster 5	2	25	2.6	4.3
Cluster 6	6	25	3.6	10.2
Cluster 7	4	12	2.1	7.5
Cluster 8	1	34	3.6	-
Cluster 9	1	20	22.1	6.0

Export container usually aren't allowed in the port before the arrival of their respective vessel so this unplanned transportation of the export containers from the CFS's to Port can cause **bottlenecks**

JNPT Region : Cluster Analysis

Base on container movement from port to CFS in Mumbai region, 29 CFS's have been grouped into 9 Clusters on the basis of their vicinity. Below table shows all the clusters and the relevant data for GTI and JNPCT terminal

CFS Cluster : GTI Terminal

GTI terminal for month of Apr18				
Clusters	No. of CFS's in Cluster	Distance from Port (Km)	Import cycle time (in Hrs)	Export cycle time (in Hrs)
Cluster 1	1	8	1.3	4.0
Cluster 2	6	13	2.4	5.1
Cluster 3	6	11	1.4	6.5
Cluster 4	1	13	2.2	7.5
Cluster 5	2	25	2.9	3.2
Cluster 6	6	25	3.5	8.5
Cluster 7	4	12	2.4	5.7
Cluster 8	1	34	5.2	9.0
Cluster 9	1	20	2.7	6.2

CFS Cluster : JNPCT Terminal

JNPCT terminal for month of Apr'18				
Clusters	No. of CFS's in Cluster	Distance from Port (Km)	Import cycle time (in Hrs)	Export cycle time (in Hrs)
Cluster 1	1	8	0.8	2.2
Cluster 2	6	13	2.2	2.4
Cluster 3	6	11	0.0	2.1
Cluster 4	1	13	1.0	2.2
Cluster 5	2	25	2.6	1.6
Cluster 6	6	25	2.6	5.5
Cluster 7	4	12	2.1	3.0
Cluster 8	1	34	4.1	6.1
Cluster 9	1	20	3.0	3.5

Export container usually aren't allowed in the port before the arrival of their respective vessel so this unplanned transportation of the export containers from the CFS's to Port can cause **bottlenecks**


DLDS
DMICDC LOGISTICS DATA SERVICES LTD
Logistics Redefined

Thank You !!