

## Problem: To Predict the Optimum Vessel Turnaround Time

1. At present, Adani operates more than 45 Berths PAN India and approximately 4000 Vessels calling at our Port.
2. The vessel agents share the ETA by which Port Authorities manage the resource and estimates the TAT.
3. Vessel TAT are dependent on various Factors like the productivity, resource allocated, Tide etc.
4. The solution should be such that the Port Authorities are able to effectively predict the Optimum TAT which yields maximum revenue by clearly optimizing the resources used.

Sample Data Required: Yes

### Relooking at the problem:

1. Can our Current Terminal Operating system (TOS) predict using the available data points?
2. Do we require an analytical engine to run algorithms?
3. Will Live Dashboard help to control & monitor the Vessel Operation?
4. Say our current prediction is 70% accurate we would definitely want to increase the prediction accuracy by 10%.
5. Can ML be implemented such that the same vessel calling at our port month after month the prediction is actually very accurate?
6. All vessel related information, resources & Tariff for maximum revenue will be provided. Connections to our DB and Data warehouse access are possible.

### If we look at the entire process:

1. Vessel agent submits the ETA
2. Port Authority does the berth and resource planning.
3. Operations are undertaken.
4. Changes in Planned TAT.
5. Revision in TAT
6. Other Vessels incoming are affected by such changes in TAT.
7. New TAT Prediction for other incoming vessels.

### 1. Can we relook the accuracy of ETA provided by the vessel Agent?

- Can we have more data points be captured so that the ETA is 90+% accurate.

### 2. How to allocate the Right Berth?

- Based on resource allocation, future vessel incomings & availability of the Berths.

### 3. Optimum Resource Allocated

- No. of Crane to be deployed for evacuation.
- No of Trailers/Dumpers to be allocated for movement of cargo from Berth to yard.
- Simultaneous Vessels being operated in adjacent berths resulting in sharing of resource.

#### 4. Notification system

- Live Updates of vessel arrival
- Resource Allocated for each vessel
- KPIs monitoring
- Dashboard

#### 5. Should there be a loop for exceptions are created?

- TAT should be such that the Berth Hire the Port gets should be Maximum. Exception handling in case a waiting vessel incurs demurrage the existing vessel working on berth should accommodate for the same.