



# Enhancing Port and Hub to Hinterland Connectivity with HiTech Innovation

Mar 30<sup>th</sup>, 2023

# Symptoms of Congestion in Ports



Trucks are on one side, and cargo is on the other. Yet waiting times for trucks prevail!

# This is Long Beach, CA, USA



Ports, of all sizes, face congestion daily or seasonally ... unless hinterland connectivity is established and digitalized

# Hinterland Cycles



Dry Port / Free Zone

Hinterland



Cargo Port

# Hinterland/Yard/Berth Cycles



# Hinterland Cycle



- Basics

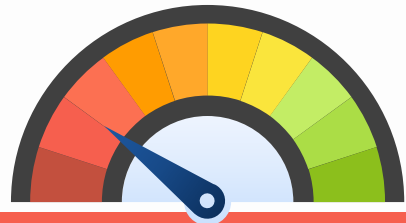
- Assume “No Friction”:
- Info before arrival of trucks
- Booking/appointment system
- Digitalize pre-gate and out-gate processes
- Install eGates, auto-Weighing
- **Capacity management of everything – MAXIMIZE**
- Operate at max efficiency ... all the time

- **Friction** is

- Teamsters
- Labor Unions
- Trucking unions
- Equipment shifting
- Equipment maintenance
- **Traffic outside the port**
- **Capacity Management at adjacent ports**

# Hinterland Cycle Efficiency by Mode

Maximize Port/Hub Capacity



**+25%**

## Standard Booking

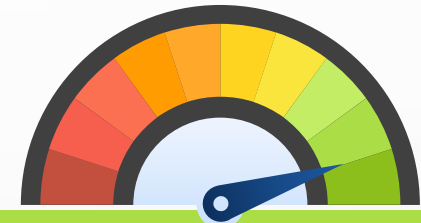
- Operate at your own risk of congestion
- Deal with truck waiting times, outside the port
- High truck dwell times
- More delay at the gate
- Slow port gates
- Negative environmental effect
- Higher hinterland transport costs



**+70%**

## Truck Appointment

- Digitalizes a wide part of the Hinterland cycle
- Very small Infrastructure investment
- Prone to port Friction
- Pre-determined capacity = max capacity
- Open slots are lost capacity
- Data analytics yield negligible enhancement
- Port specific, negative optimization of Logistics for multiple ports in one zone



**++90%**

## Scheduling System

- Step up from the Appointment System
- Mutes Friction effects
- Operate at max capacity, or even higher
- Apply Data analytics (**Tinàmica**) to reach extreme optimization
- Close coupling with Yard and Berth cycles
- Requires minor infrastructure investment
- Can be a Port Authority project to add an extra layer of logistics optimization

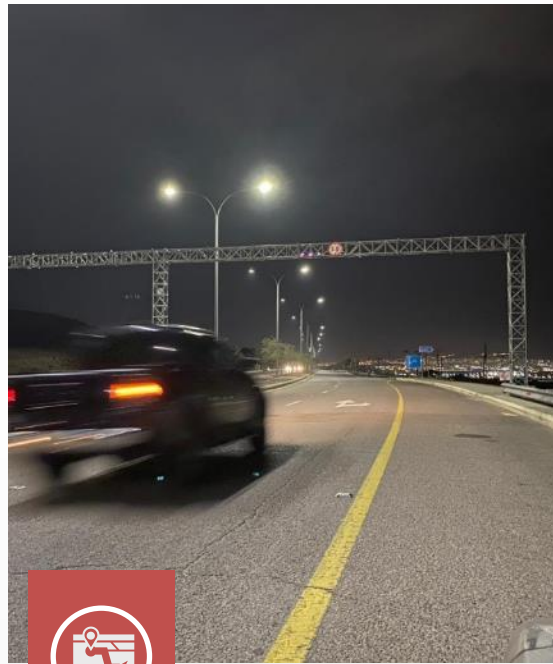
# Tools & Technology



## iGates

Centrally controlled

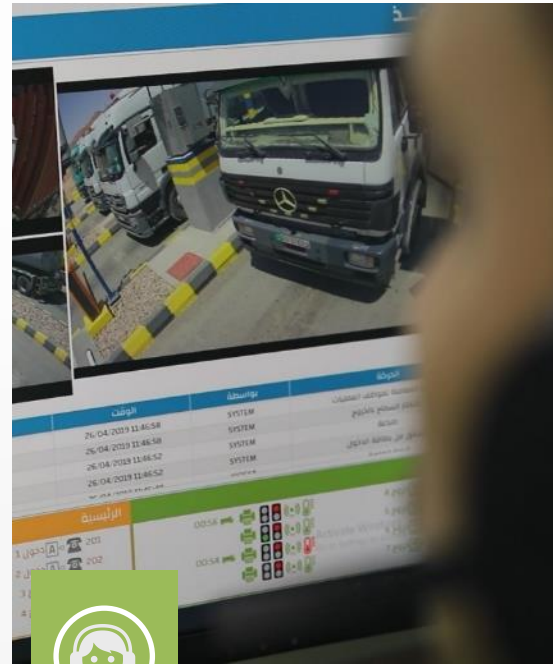
iGates are manufactured and delivered by NFIDENT, a wholly owned factory/subsidiary of Nafith



## iPortals

Sense everything

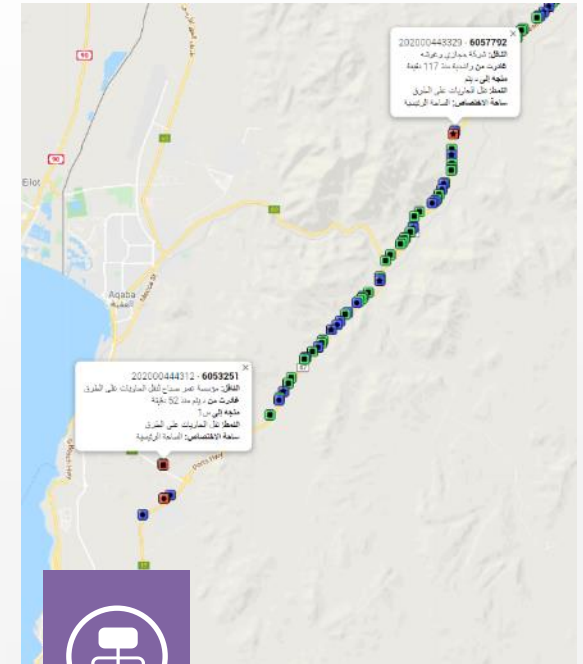
iPortals Categorize vehicles, streamlined monitoring, using Deep Learning/Vision



## CC Centers

Control & Monitor

Command and Controls Center that covers all logistics events and interventions



## Logistics Systems

NFlow, NCheck, NStar

Platforms are web, mobile, GIS, Data Analytics, Dashboards, accessible within a centralized entry point



# Tools & Technology

IoT, D/L, Edge Tech



## eSeals

Secure Cargo on the Move



## eID Cards

Long Range For Truck drivers and Access Mgmt



## Truck eID

Secure RFID tags, Trailer/Chassis eSeals



## Deep Vision

Deep Learning Edge Technology for Traffic Sensing



## Weigh In Motion

Axle Load Mgmt, Advanced Vehicle Sensing



## Internet of Things

Continuous Development into the Future

# What's on the Horizon

## One-Step Weighing (patent pending)

- Weigh cargo while it is on the truck
- Reduce weighing operations by up to 90%
- Decrease Hub/Port truck turn-around-time by as much as 15%
- RoI is very large
- Currently under live testing

## Truck and Cargo 2D Imaging using DL

- Scan Truck and container using 2D LiDAR at the gate
- Detect anomalies in the container with up to mm's in accuracy
- Create layered mesh on top of the 2D Hi Res Image
- Extract all texts and integrate with TOS or Zone OS
- Currently under piloting



# Thank You

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