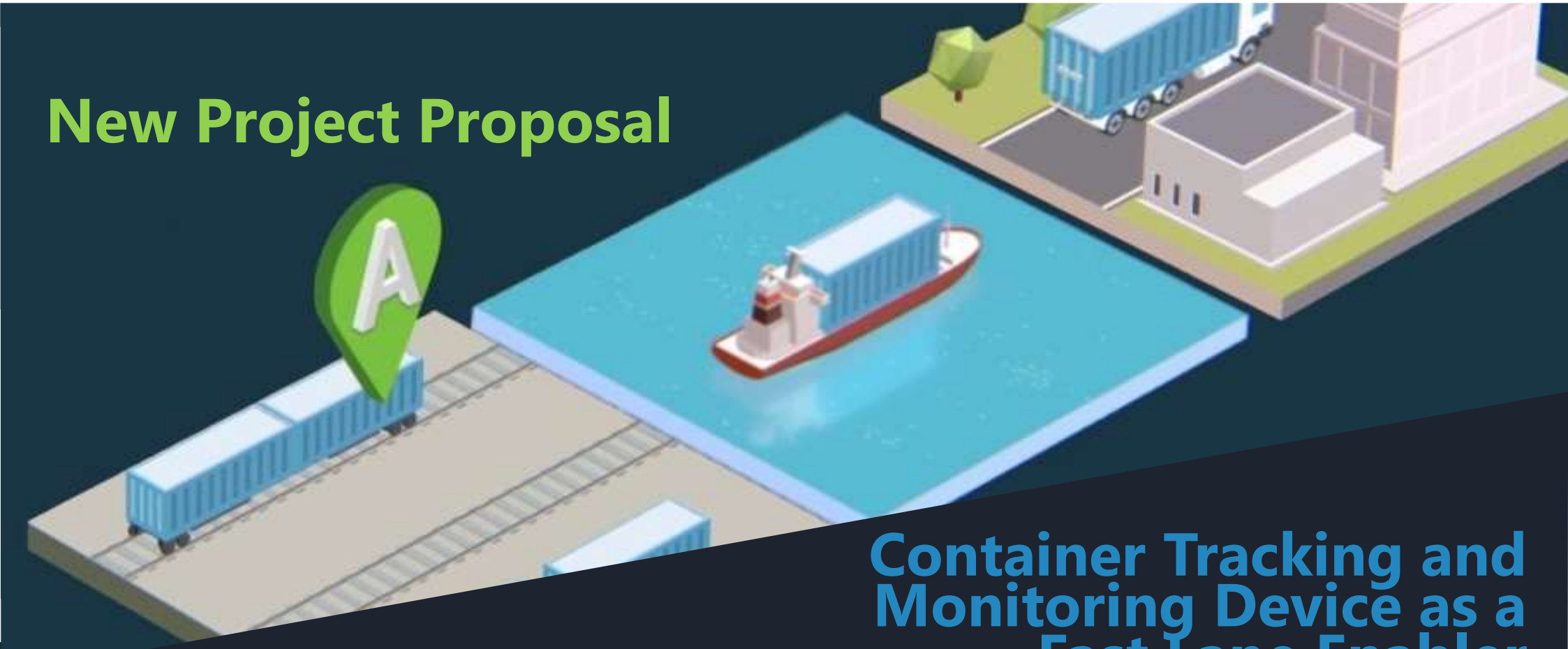
New Project Proposal



Container Tracking and Monitoring Device as a Fast Lane Enabler

Hanane BECHA, Ph.D.

UN CEFACT Transport & Logistic Domain

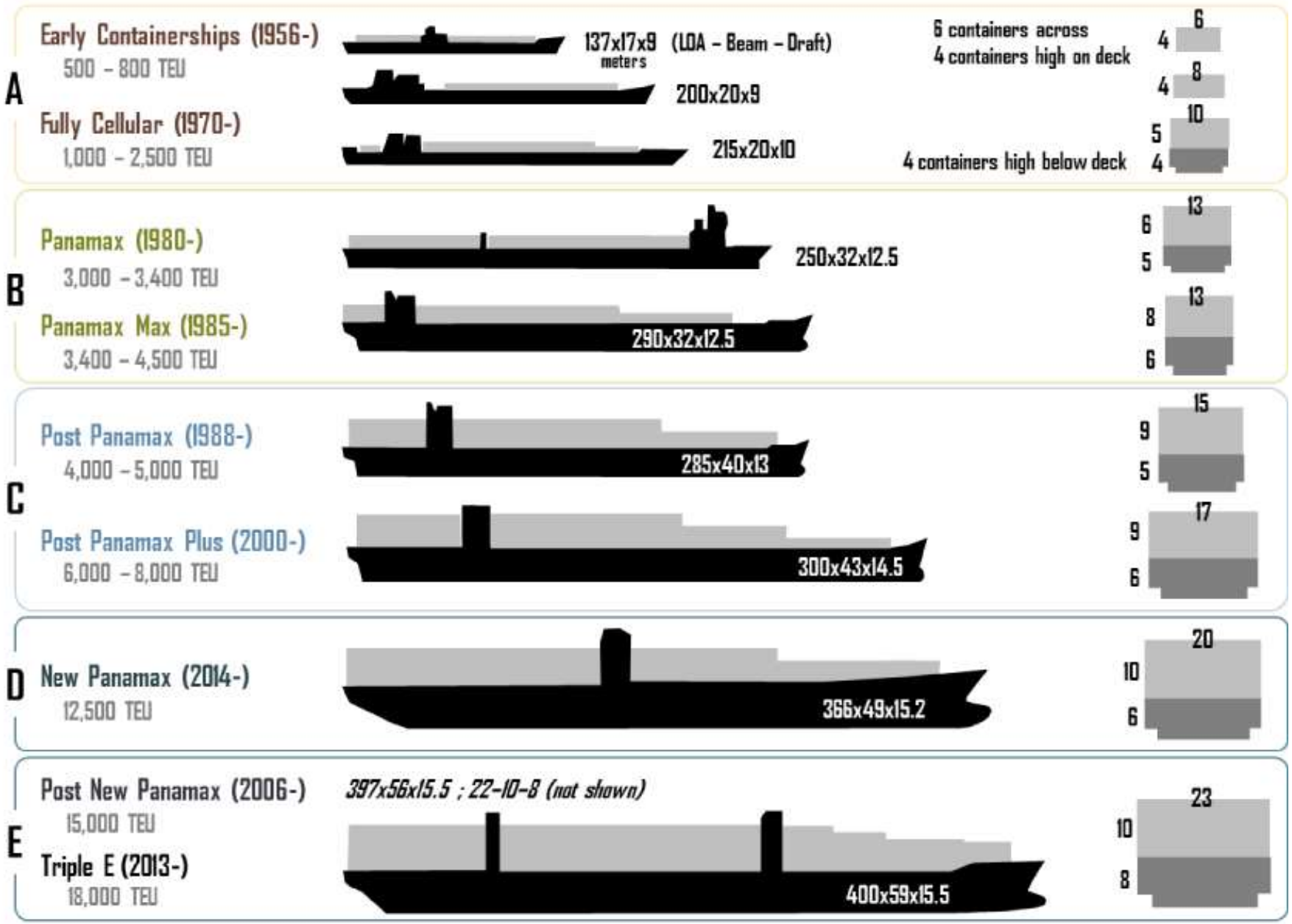
The Coming of Age of Smart Containers

- What exactly are they?
- Why now?
- What for?
- How are they used?
- How do they work?
- How will they change the way we do Business?

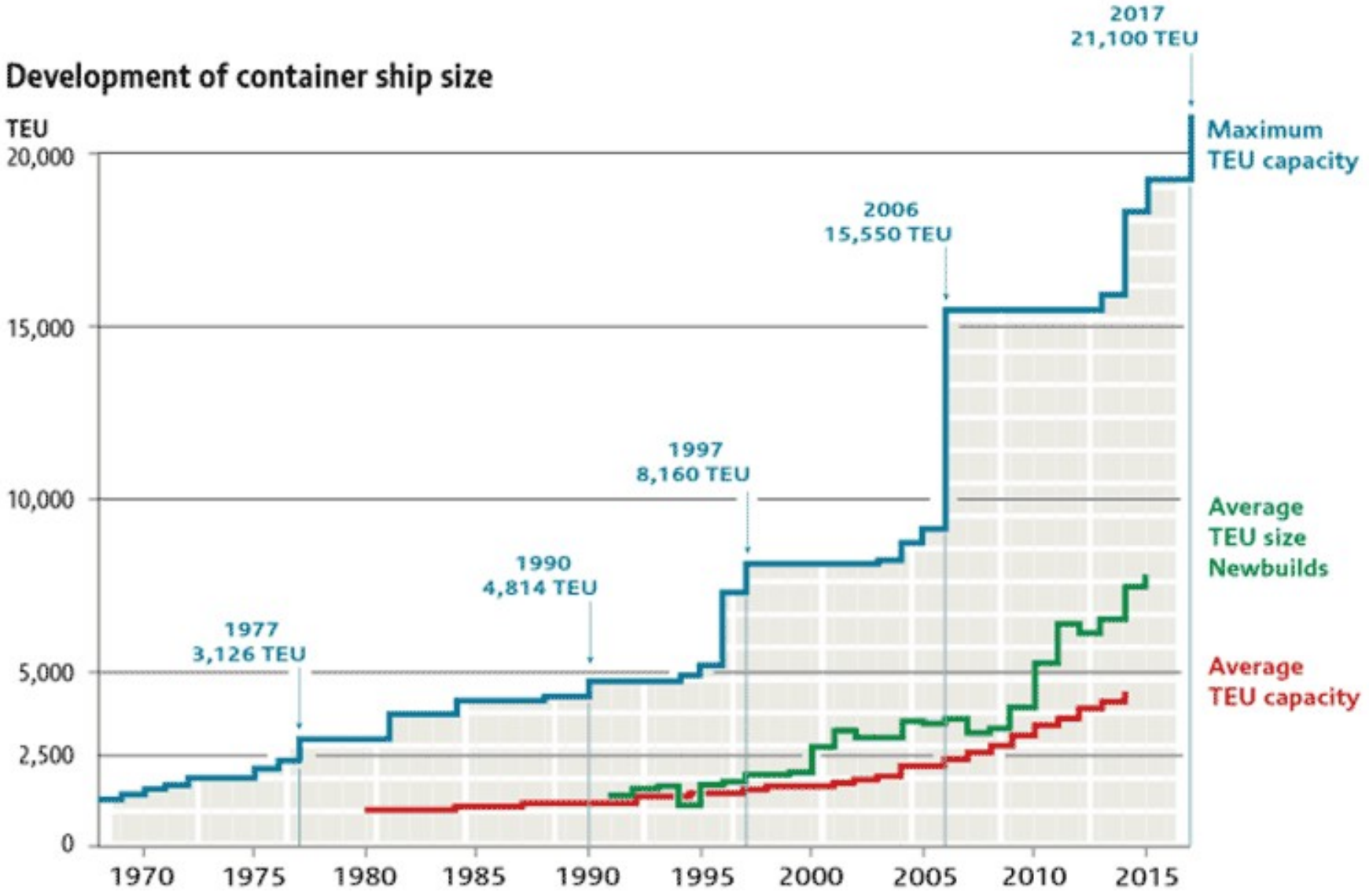
Smart Container

- Automatically generate data
  - Position
  - Door Open/Close status
  - Temperature
  - Movement
  - Impact
  - + extensions
- Communicate near real-time
  - From (nearly) anywhere
  - Economically
- Permanently attached
- Built-in or back-fitted

Why Now?


A
Early Containerships (1956-)
500 – 800 TEU
Fully Cellular (1970-)
1,000 – 2,500 TEU
137x17x9 (LOA – Beam – Draft)
meters
200x20x9
215x20x10
6 containers across
4 containers high on deck
4 containers high below deck
6
4
8
4
10
5
4
B
Panamax (1980-)
3,000 – 3,400 TEU
Panamax Max (1985-)
3,400 – 4,500 TEU
250x32x12.5
290x32x12.5
13
6
5
13
8
6
C
Post Panamax (1988-)
4,000 – 5,000 TEU
Post Panamax Plus (2000-)
6,000 – 8,000 TEU
285x40x13
300x43x14.5
15
9
5
17
9
6
D
New Panamax (2014-)
12,500 TEU
366x49x15.2
20
10
6
E
Post New Panamax (2006-)
15,000 TEU
Triple E (2013-)
18,000 TEU
397x56x15.5 ; 22-10-8 (not shown)
400x59x15.5
23
10
8

Development of container ship size



Source: The International Transport Forum

Will the Mega ship model "give way"?

Mega-ships come under fire for hiking supply chain costs

Bruce Barnard, Special Correspondent | Mar 07, 2016 11:41AM EST

Has the Mega-Ship had its Day?

09 Mar 2016 Cargo Volumes and Throughput, Container Handling, Containers, Global Economy/Trade, Port Planning, Ports, Shipping

Has the Industry Made a Mega-Ship Error?

22 Mar 2016 Cargo Volumes and Throughput, Container Handling, Containers, Port Planning, Shipping

George Youroukos, CEO of Athens-based containership owner Poseidon Containers has said cost savings are not being offered by the mega-ships that are being ordered and deployed and that economies of scale are not being realised, according to the Journal of Commerce.

The Top Shipping Lines

THE TOP 100 LEAGUE

> The percentage shown on the left of each bar represents the operator's share of the world liner fleet in TEU terms.
> The light coloured bar on the right represents the current orderbook (firm orders).

Rnk	Operator	Teu	Share	Existing fleet / Orderbook
1	APM-Maersk	3,278,316	15.9%	
2	Mediterranean Shg Co	2,984,373	14.4%	
3	CMA CGM Group	2,142,042	10.4%	
4	COSCO Shipping Co Ltd	1,677,543	8.1%	
5	Hapag-Lloyd	986,877	4.8%	
6	Evergreen Line	986,059	4.8%	
7	Yang Ming Marine Transport Corp.	582,811	2.8%	
8	OOCL	573,052	2.8%	
9	Hamburg Süd Group	568,012	2.7%	
10	NYK Line	515,215	2.5%	
11	MOL	514,590	2.5%	
12	UASC	510,878	2.5%	
13	Hyundai M.M.	477,001	2.3%	
14	K Line	370,764	1.8%	
15	PIL (Pacific Int. Line)	360,135	1.7%	
16	Zim	298,905	1.4%	
17	Wan Hai Lines	226,980	1.1%	
18	X-Press Feeders Group	133,125	0.6%	
19	KMTC	118,765	0.6%	
20	SITC	98,950	0.5%	

CMA CGM

MSC joins CMA CGM in backing TRAXENS

Monday, July 25, 2016

Cargo Monitoring Innovation Gets Strong Endorsement from Leading Shipping Lines and Set to Become an Industry Standard

Geneva and Marseilles, 25th July - MSC Mediterranean Shipping Company, a world leader in global container shipping, has joined CMA CGM, in backing French start-up, TRAXENS.

msc

Digitalization:
Examples along the container supply chain

Hapag-Lloyd

Smart containers listen and talk

By outfitting its fleet of reefer containers with "smart" technology, Maersk Line is reducing risk in customer supply chains and saving itself millions of dollars in costs while representing the cutting edge technology and innovation in shipping

Reefer, Dry, Tank, ...

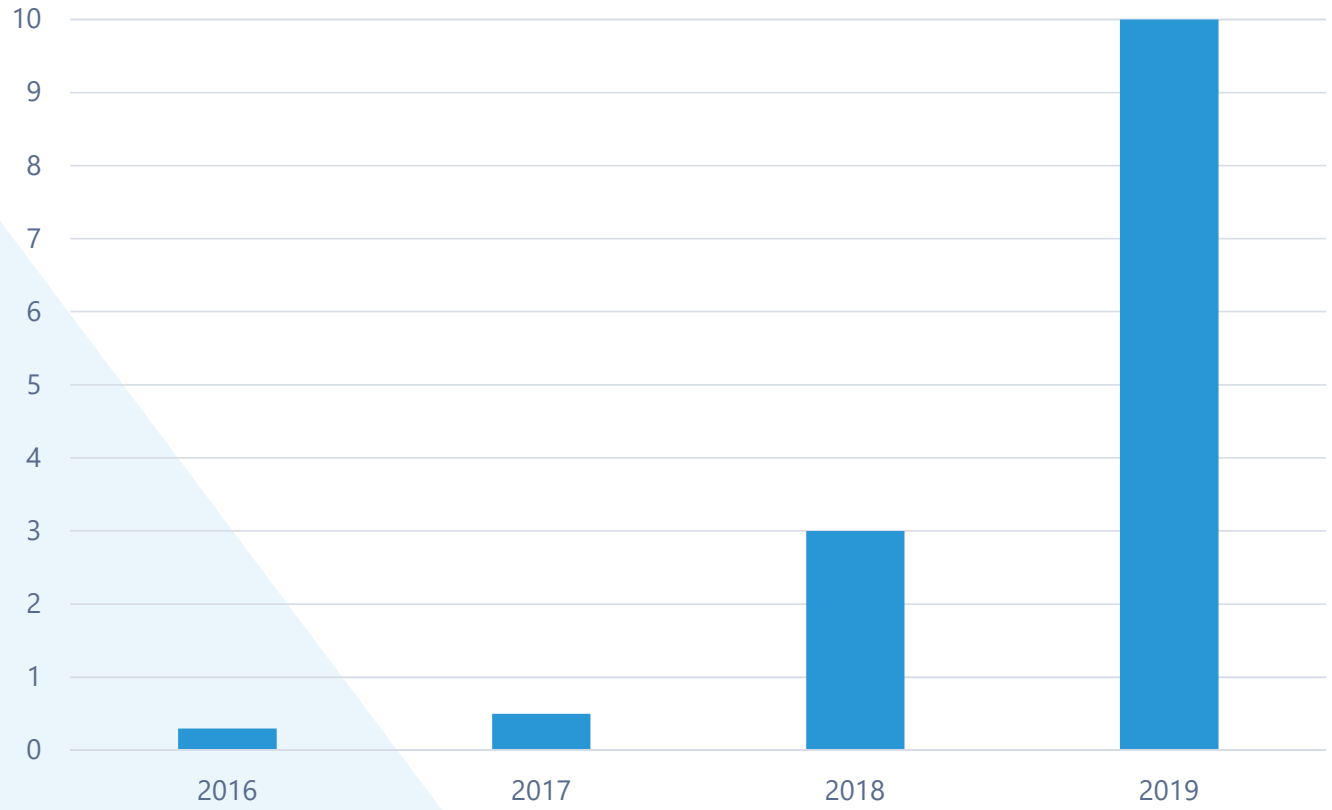
The Missing Link in the Digitalization of the Supply Chain

Digitalized Supply Chain

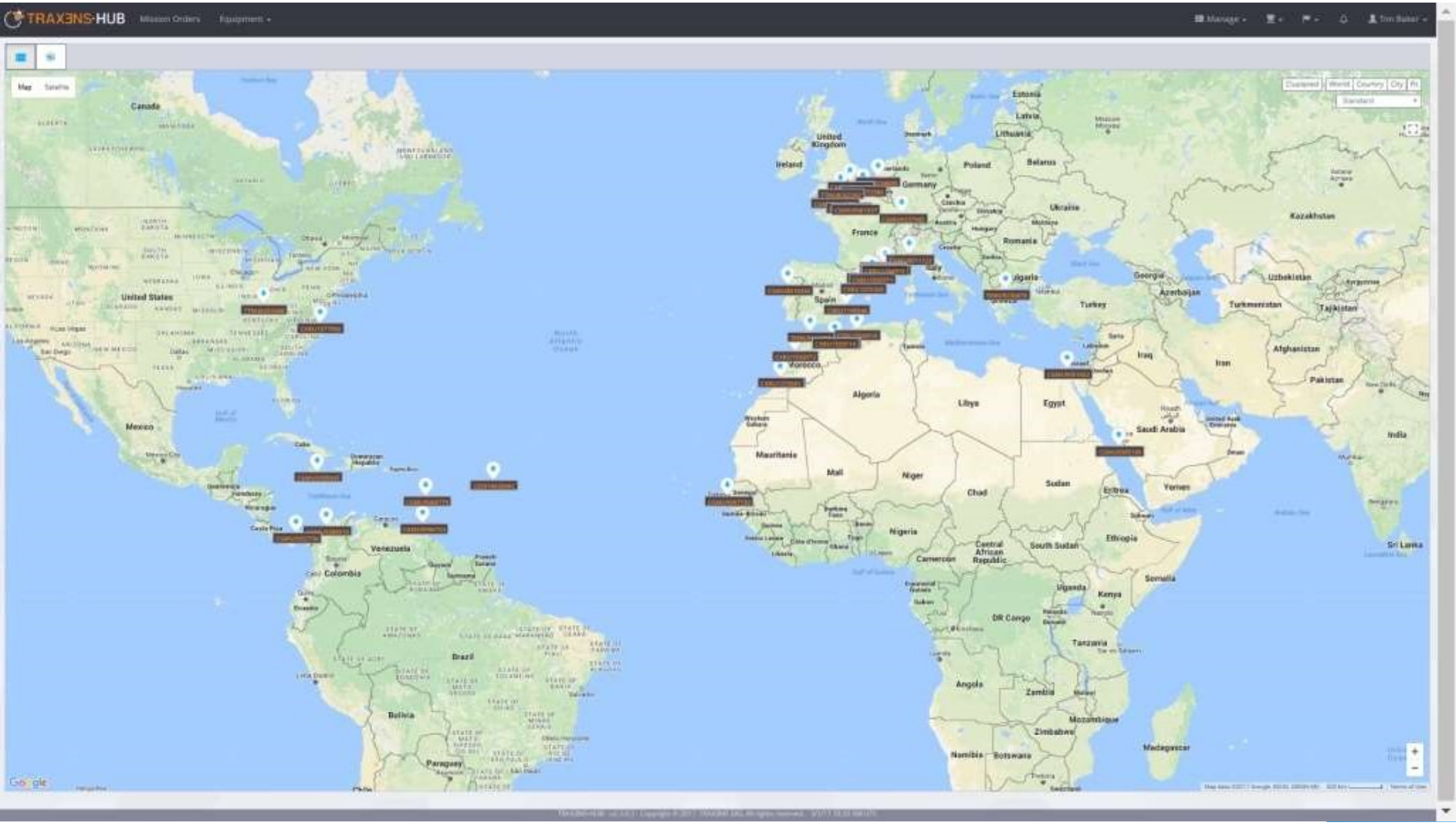
Digitalized Supply Chain

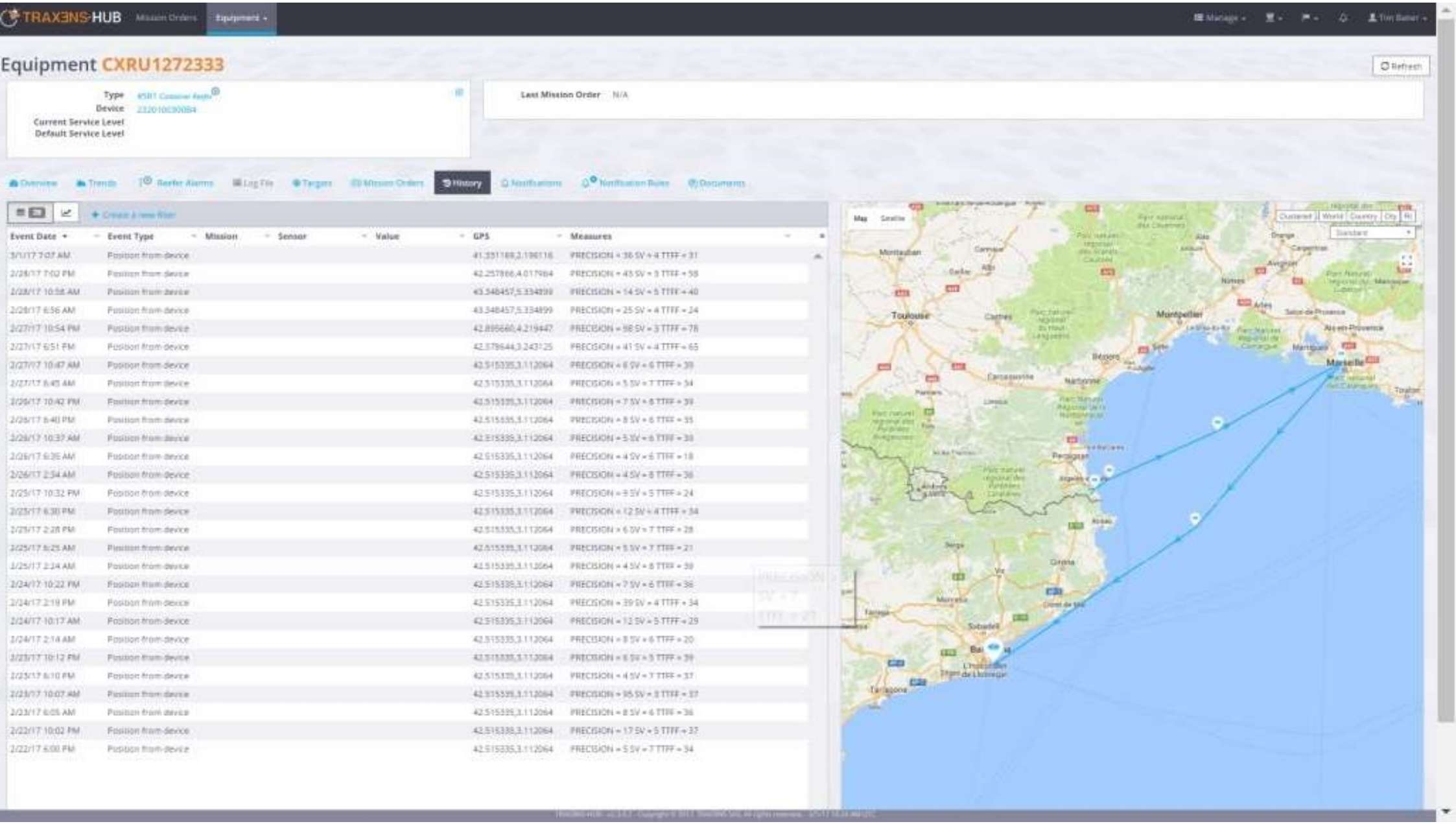
Awareness of the value of digital in logistics/SC/Transport

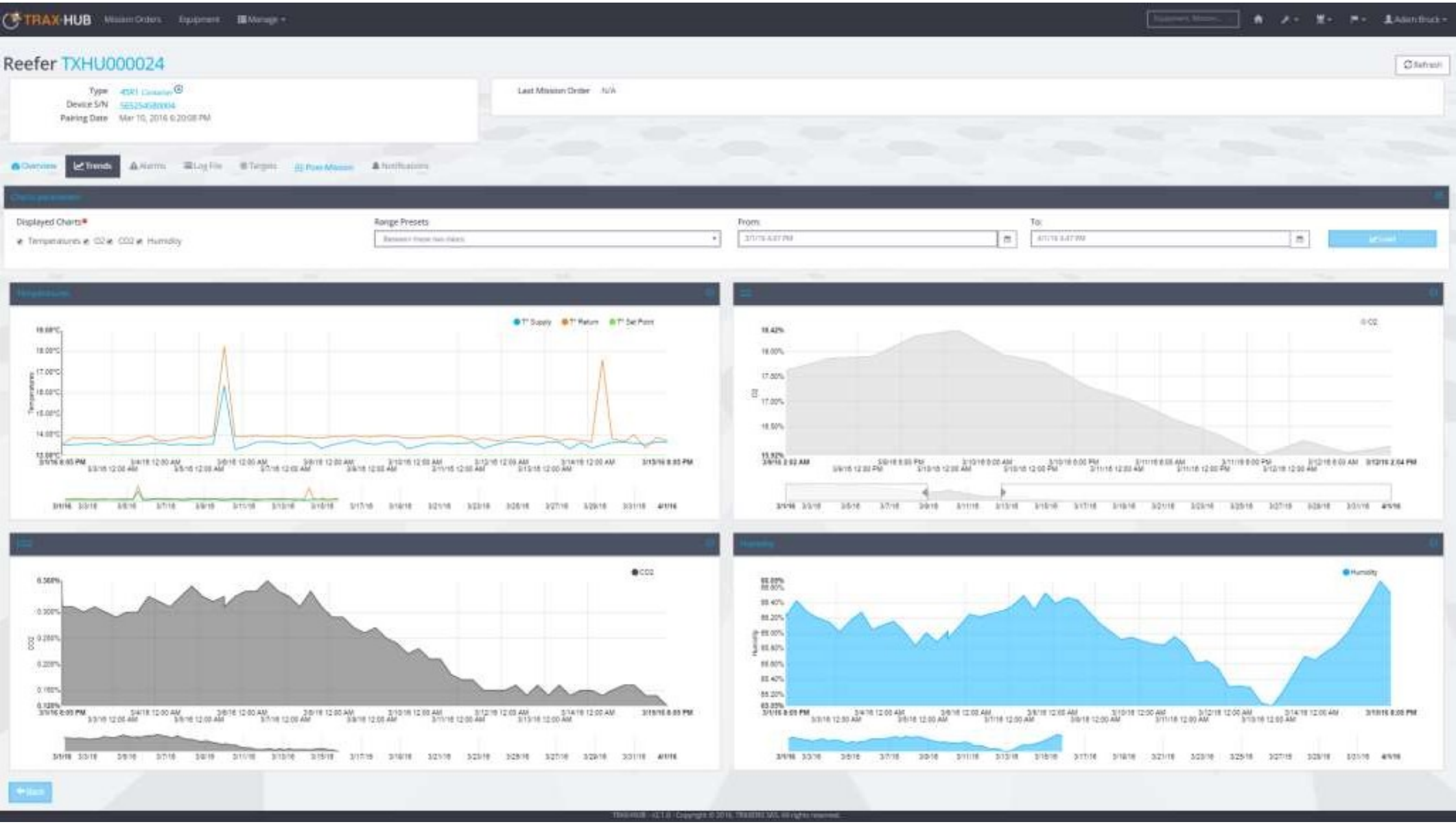
Smart Container Deployment Forecast (Millions)



What for?

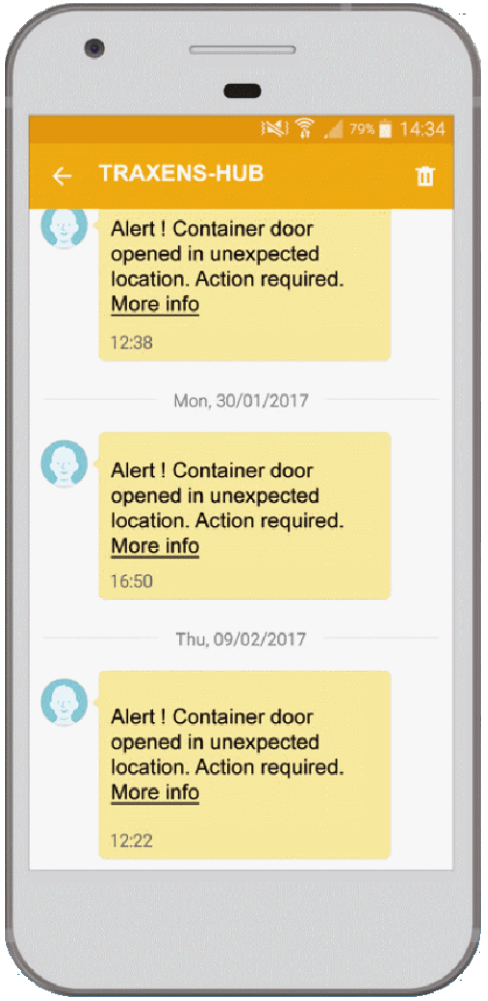

TRAX3NS-HUB
Mission Orders
Equipment
Manage
Tim Baker
Map
Satellite
Clustered
World
Country
City
Fit
Standard
Canada
United States
Mexico
Venezuela
Colombia
Brazil
Bolivia
Paraguay
Ireland
United Kingdom
Germany
France
Spain
Morocco
Algeria
Libya
Egypt
Mauritania
Mali
Niger
Chad
Sudan
Nigeria
Central African Republic
South Sudan
Cameroon
Ethiopia
Eritrea
Yemen
Saudi Arabia
Somalia
Kenya
Uganda
DR Congo
Tanzania
Angola
Zambia
Zimbabwe
Mozambique
Namibia
Botswana
Madagascar
Estonia
Latvia
Lithuania
Poland
Belarus
Ukraine
Romania
Hungary
Austria
Czechia
Slovakia
Italy
Algeria
Turkey
Georgia
Azerbaijan
Kazakhstan
Uzbekistan
Turkmenistan
Tajikistan
Afghanistan
Iran
Iraq
Pakistan
India
Sri Lanka
Google


TRAXENS-HUB
Mission Orders
Equipment
Manage
Tim Baker
Equipment CXRU1272333
Refresh
Type
Device
Current Service Level
Default Service Level
Last Mission Order N/A
Overview
Trends
Reefer Alarms
Log File
Targets
Mission Orders
History
Notifications
Notification Rules
Documents
Create a new filter
Event Date
Event Type
Mission
Sensor
Value
GPS
Measures
Position from device
Map
Satellite
Toulouse
Montpellier
Marseille
Nîmes
Avignon
Carcassonne
Narbonne
Béziers
Perpignan
Tarragona
Barcelona

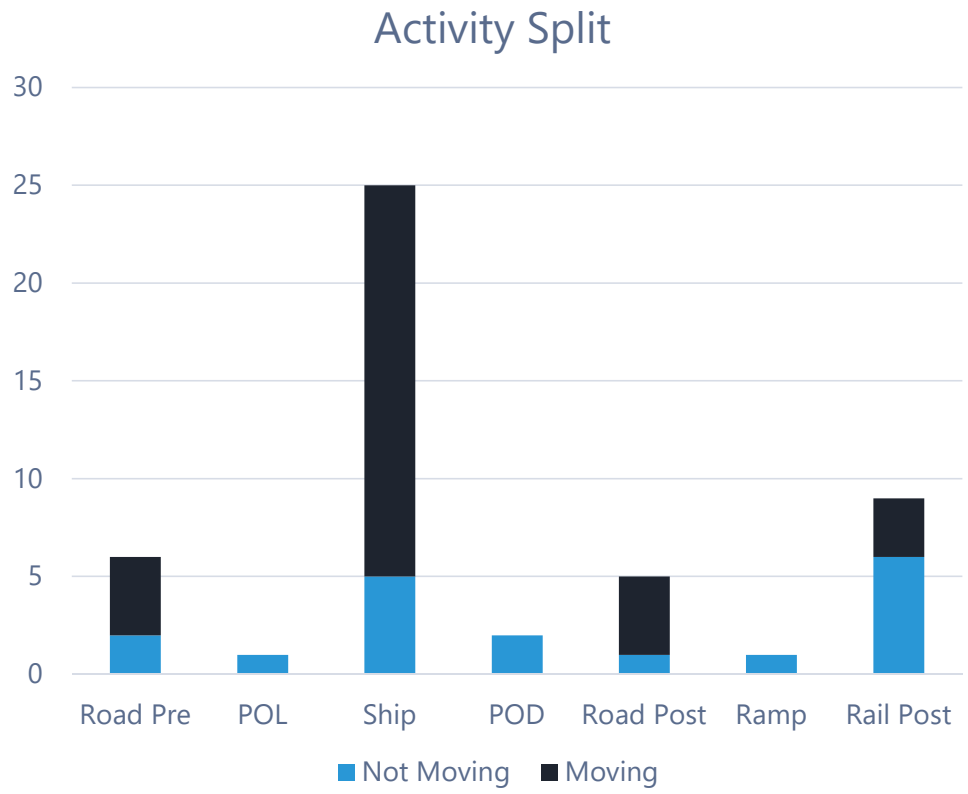

TRAX-HUB
Mission Orders
Equipment
Manage
Reefer TXHU000024
Refresh
Type
Device S/N
Pairing Date
Mar 10, 2016 6:20:08 PM
Last Mission Order
N/A
Overview
Trends
Alarms
Log File
Targets
Past Mission
Notifications
Displayed Charts*
Temperatures
CO2
CO2
Humidity
Range Presets
From:
To:
T° Supply
T° Return
T° Set Point
CO2
Humidity
Back

Alerts & Notifications

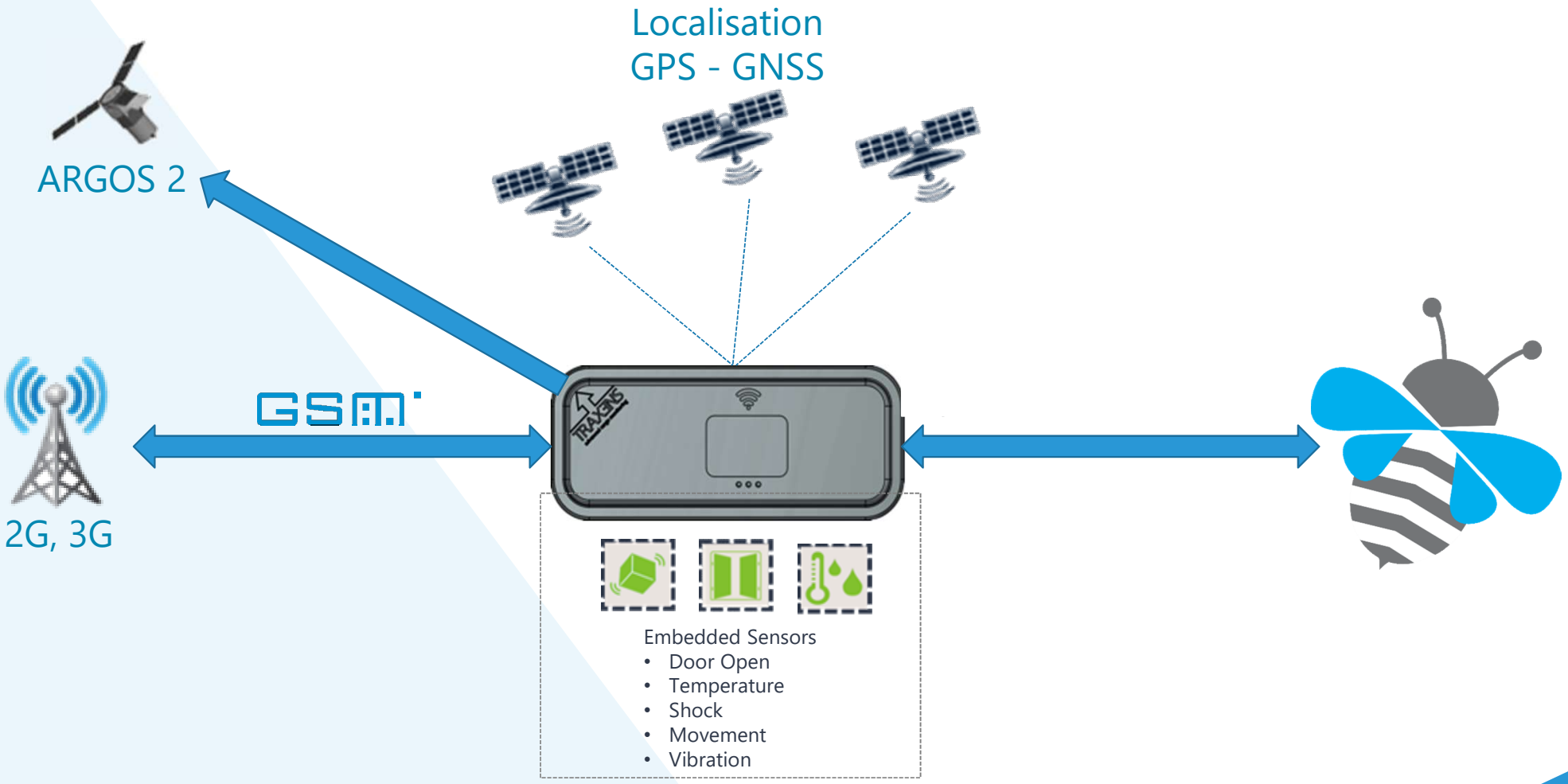
- Significant events
  - Arrival at warehouse
  - >1 hour stop on truck
  - Door open
  - >8°C
  - Running late
  - Etc.
- Delivered to the right person at the right time
  - Web interface
  - Email
  - SMS



Dashboard (Per trip + All trips)

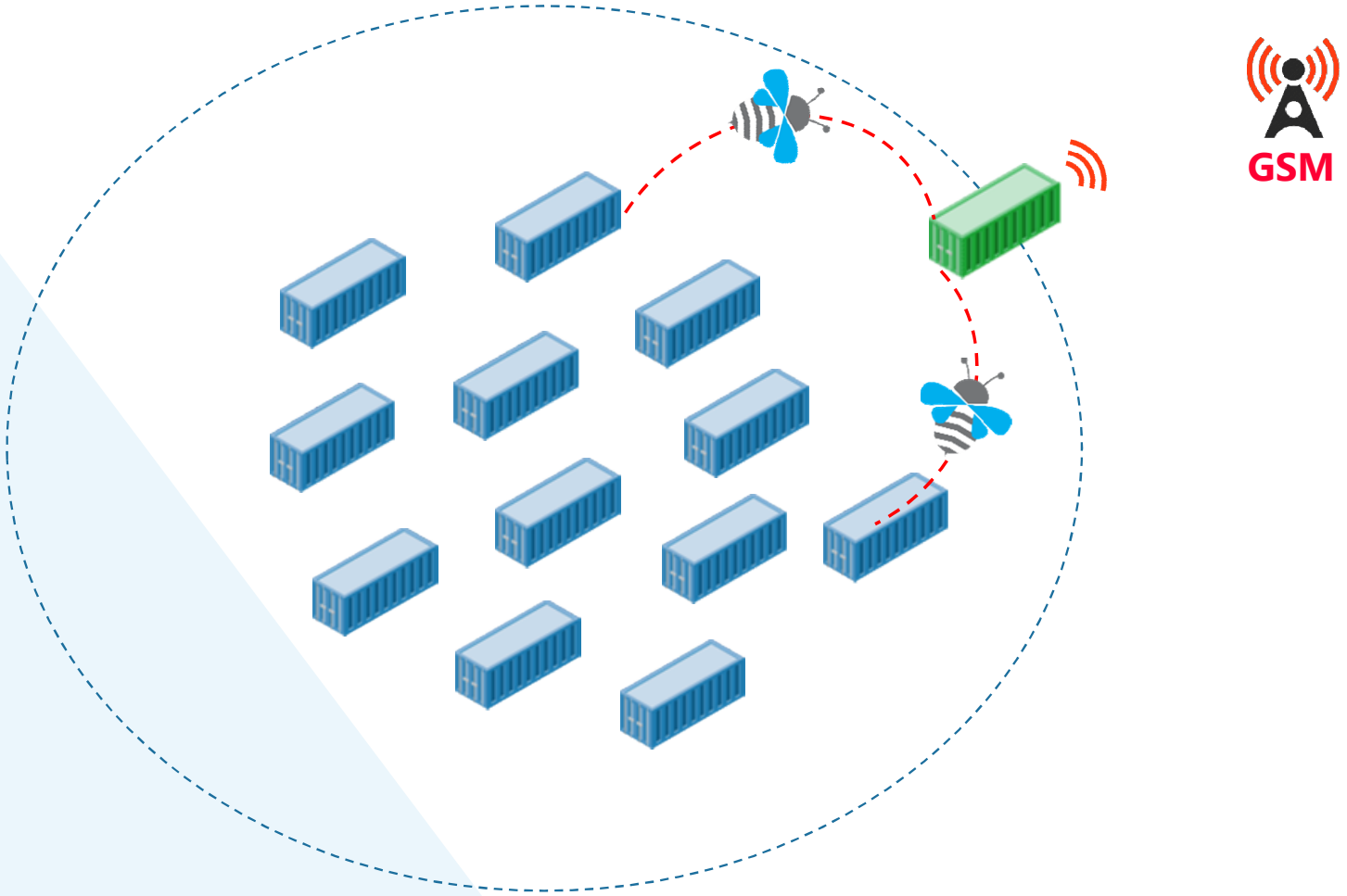


How do they work?

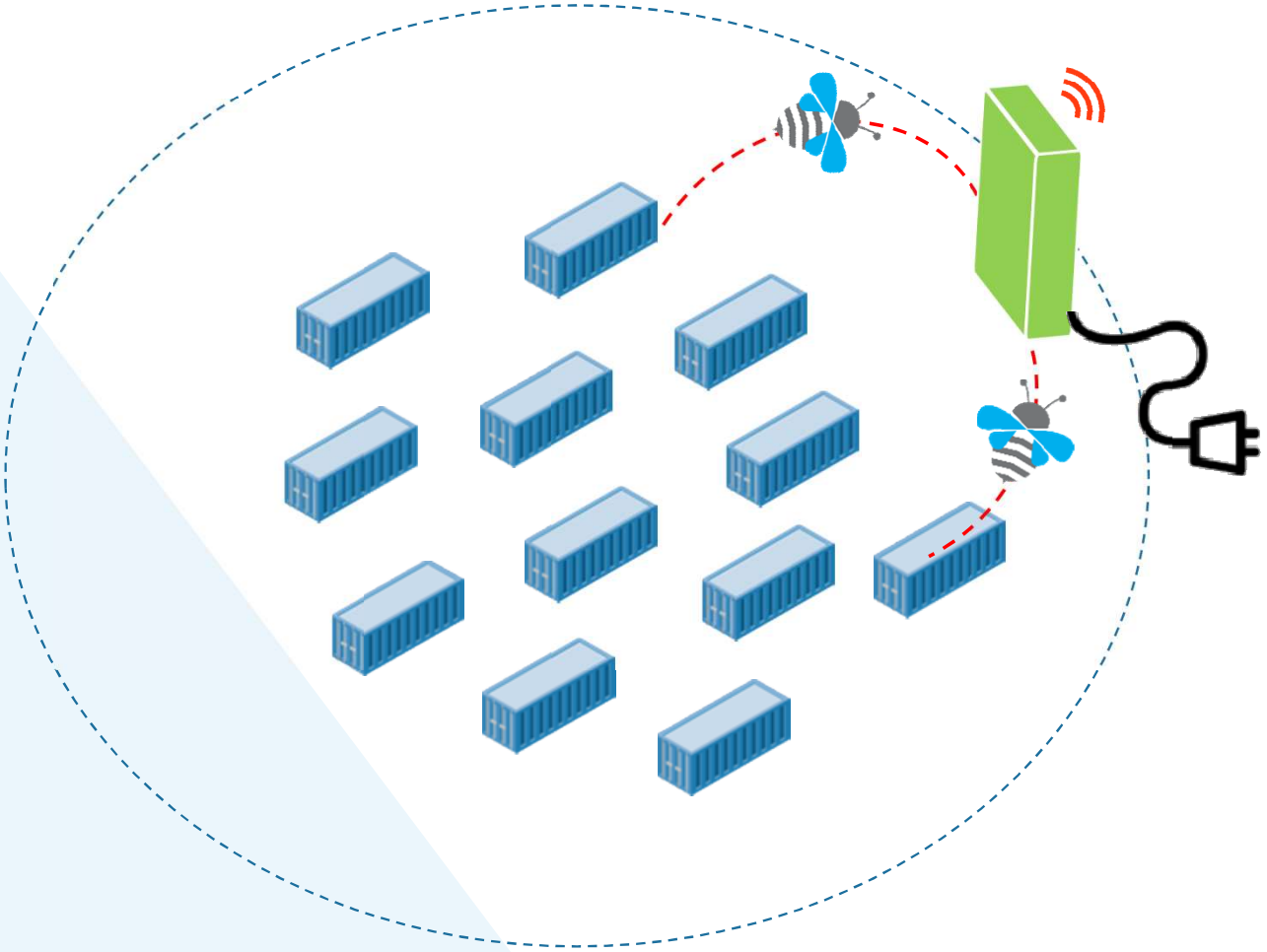

Localisation
GPS - GNSS
ARGOS 2
GSM
2G, 3G
Embedded Sensors
• Door Open
• Temperature
• Shock
• Movement
• Vibration

Dry and Refrigerated (Reefer) Containers

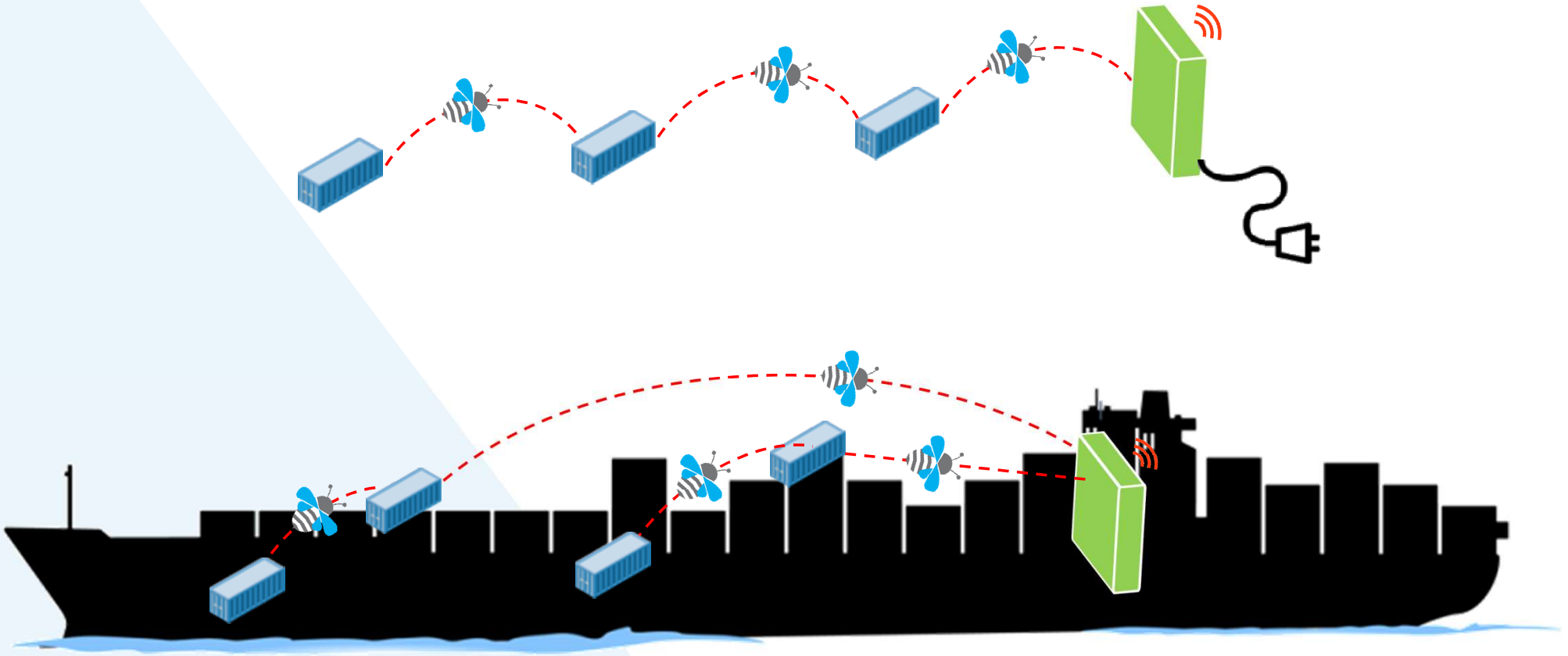
Local Radio Mesh Network: Power Sharing



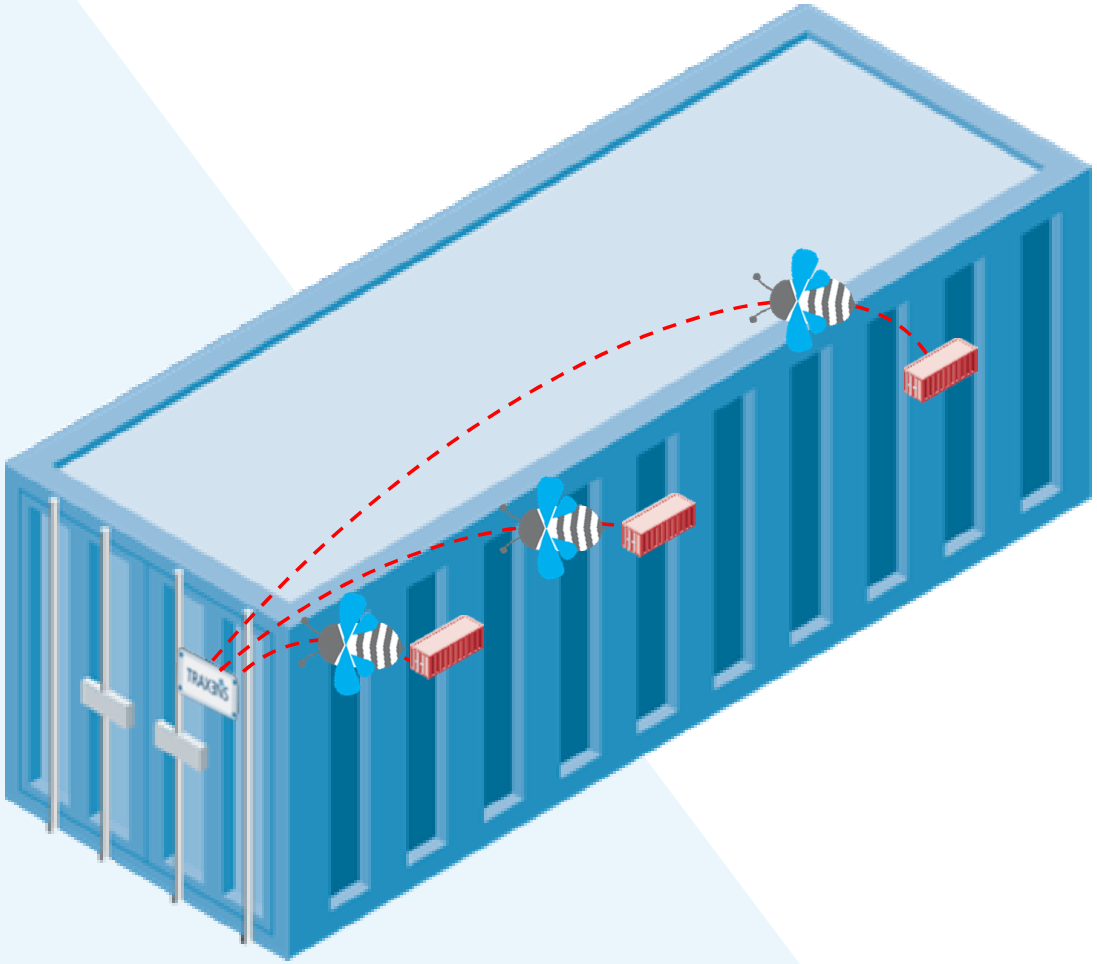
Local Radio Mesh Network: : Power Sharing



Local Radio Mesh Network : Reach



Local Radio Mesh Network: Sensor Extension



- Cargo Temperature
- Humidity
- Pressure
- Gas detection
- Human presence detection
- Specialized Sensors


How will they transform the way we do business?

Smart Container as a Data Sharing Enabler

- Smart containers offer an **end-to-end visibility of shipment execution**

Stakeholders: shipping lines, freight forwarders, Beneficial Cargo Owners, cross-border agencies and port authorities, etc.

- Smart containers are capable of sensing and communicating real time information for multimodal transport and logistics improvement.

- What could containers tell us about their **planned trip** versus their **real journey**, their surrounding **physical parameters** and all their related **declarations and certificates**, and what could the benefits be?

Cross-Border Agencies

- Cross-border agencies include:
  - Plant and veterinary agencies,
  - Hazardous, pharmaceutical and illegal goods control,
  - Customs and regulatory authorities

- Cross-border agencies face increased pressure to make decisions in short period of time, continually growing volumes of traffic and with increasingly limited resources.

- Cross-border agencies could gain advantage from, and harness the power of real-time smart container data, to assist **border clearance processes Fast Lane implementations** etc.

The aim of the project

What Data to be shared:

→ Define the information that can support the decision making process of the cross-border agencies: open door detection, physical parameters monitoring and documents sharing (secure element)

How can data support the cross border agencies processes :

→"reality" versus "declarations" matching (Provenance traceability), transport quality and integrity, transit time, security breach, cold chain (Reefer alerts), dangerous goods management, etc.

What is the Role of the UN/CEFACT T&L Domain?

- Capture the Business Requirements Specification (BRS) of the exchanges between smart containers and cross-border agencies.

- Develop a Requirements Message Specification (RSM) and standardized message(s) structures based on the MMT Reference Data Model.

The project deliverables are:

- Business Requirements Specifications (BRS) as defined during the business requirements gathering
- Requirements Message Specification (RSM)
- EDIFACT messages (to be defined or updated)
- XML schema of the required messages

Initial Contributions

- T&L's Multi-Modal Transport Reference Data Model (project p1023)
- BRS IFTM International Forwarding and Transport
- UN/CEFACT Modelling Methodology (CEFACT/TMG/N093)
- UN/CEFACT ebXML Core Components Technical Specification Version 2.01
- UN/EDIFACT Data element directory D.16A
- Recommendations from ITIGG ((International Transport Implementation Guidelines Group)
- Guide to the UN/EDIFACT containers messages (SMDG/TBG3/ITIGG)
- UN EDIFACT messages: IFTSTA and IFTSTQ
- BRS and RSM Cargo Tracing and Tracking

Thank You

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