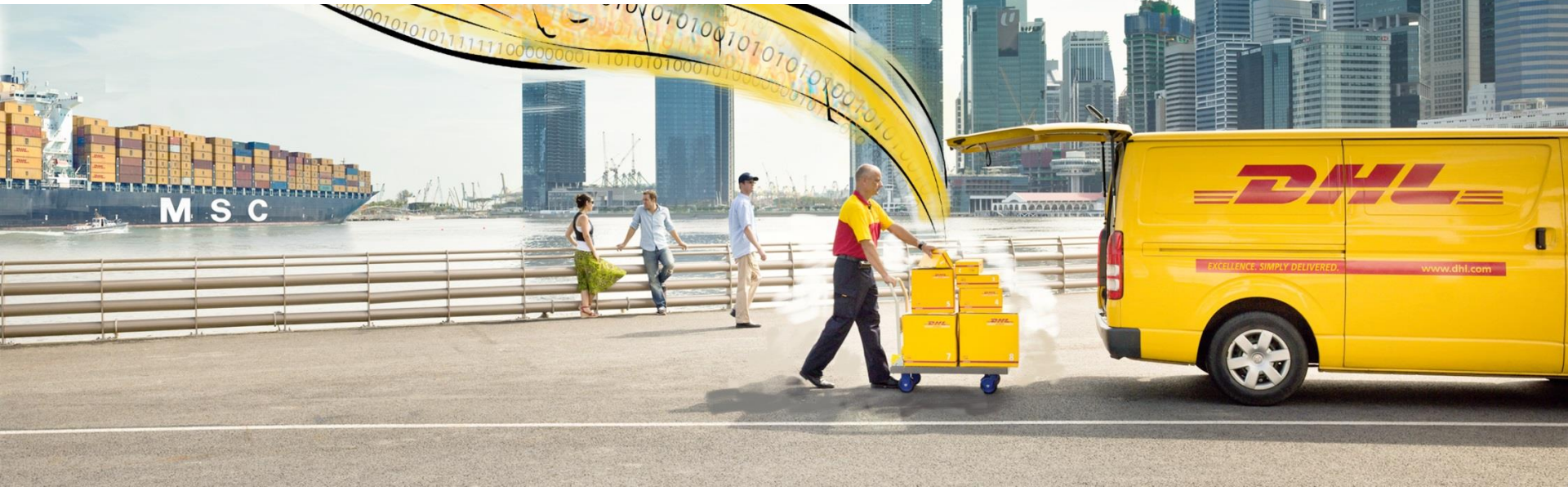
BREAKOUT SESSION:
CONNECTED SUPPLY CHAIN

Gina Chung, Joe Derajtys

DHL Global Energy Conference 2018 | Houston



Agenda

1. **Understanding** the connected supply chain and journey ahead (10min)
   - Challenges and opportunities
   - Developments in the IoT ecosystem

2. **Applications** of IoT in Logistics: Use Cases (10min)
   - Overview on logistics use cases
   - Case study on smart pallet tracking

3. **Open discussion** and exchange of ideas on connected energy supply chains (35min)

Why is it so hard to achieve end-to-end, real-time visibility today?

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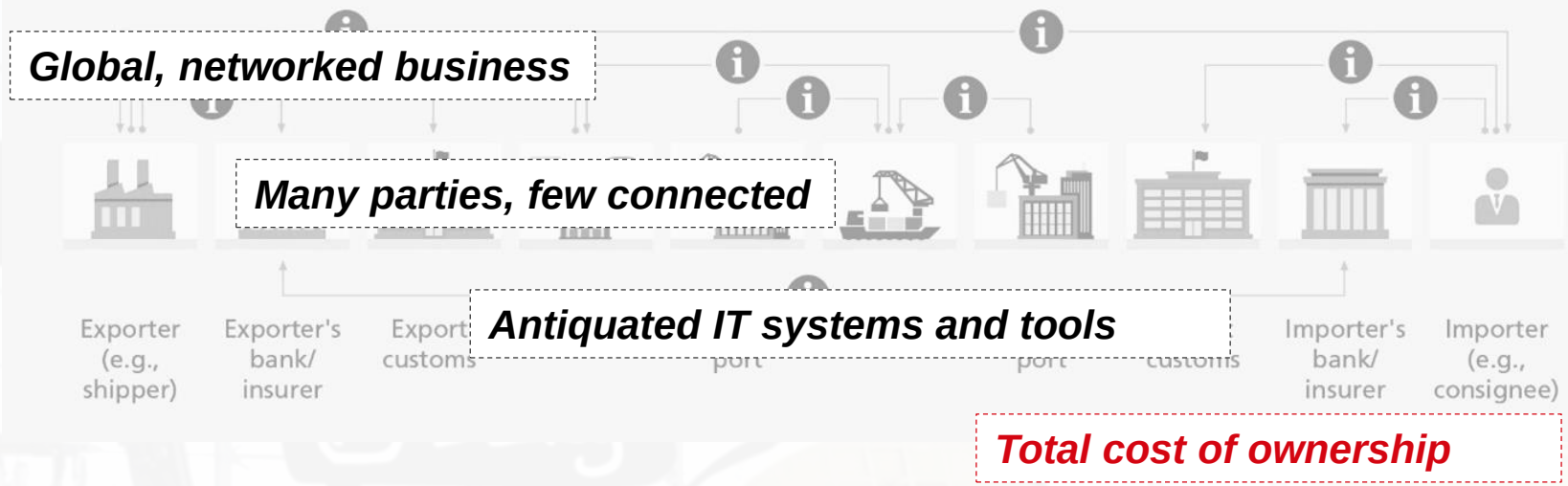


Total cost of ownership

IoT Ecosystem: Breakthrough Innovations Geared Towards Industrial IoT Applications will Enable Mass Deployment in Logistics

1. Data **Collection**

Sensors & Devices

Shipments

Assets

2. Data **Connection**

Communication Technology

Internet Connection

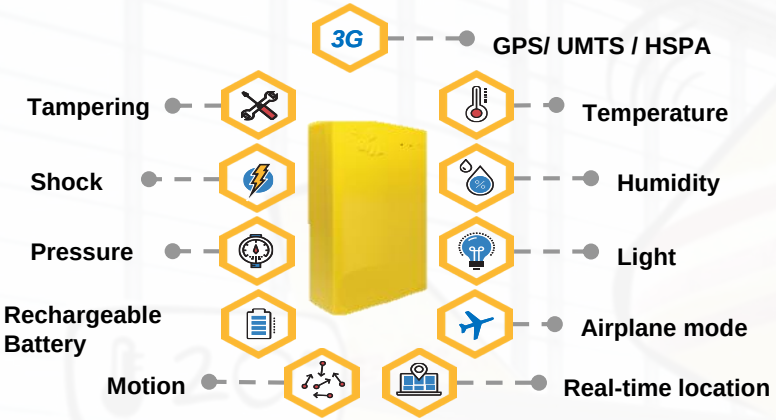
3. Data **Intelligence**

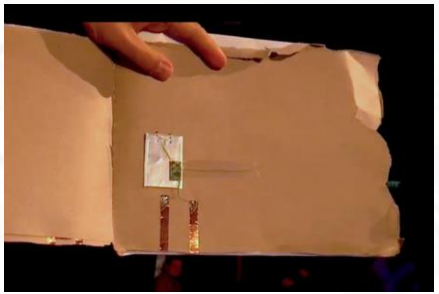
Visibility & Control

Data Storage & Analytics

1. Data Collection:

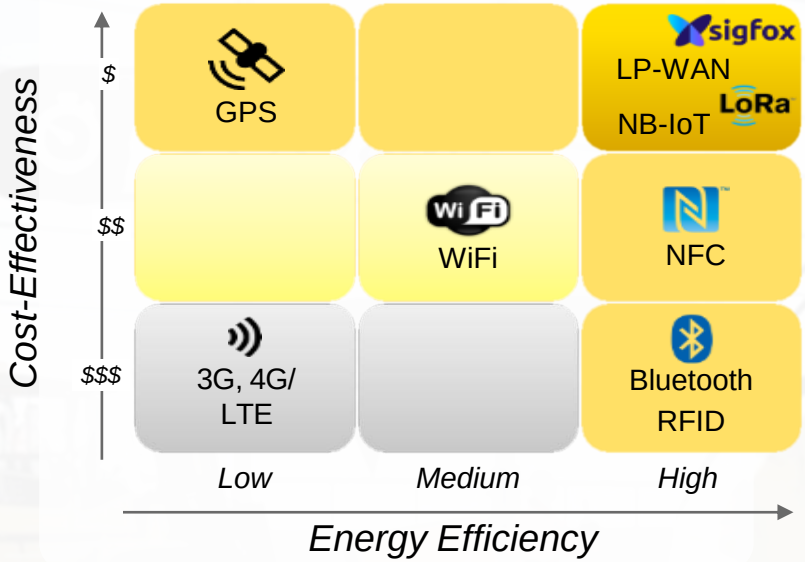
- Ultra low-cost
- Smaller and embedded form factors
- More intelligent
- Interoperable with various networks
- Longer battery life or built to be disposed



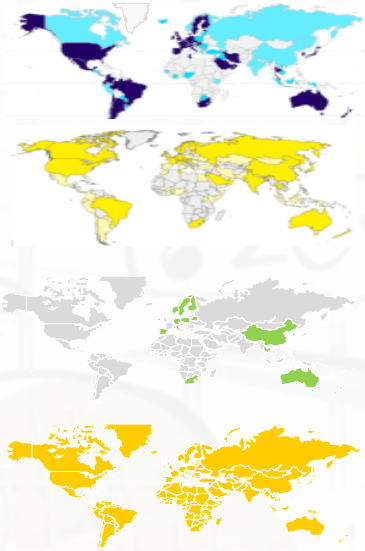


2. Data Connection: New „Low Power Wide Area“ Networks for IoT

Properties



Availability



Sigfox
Industrialized nations and (Air)Ports

LORA
Industrialized and emerging markets

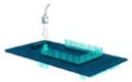
NB-IoT
Europe, China and South Africa

2G / 3G / LTE/4G
Global

2. Data Connection: Soon – Low Power Global Area Networks

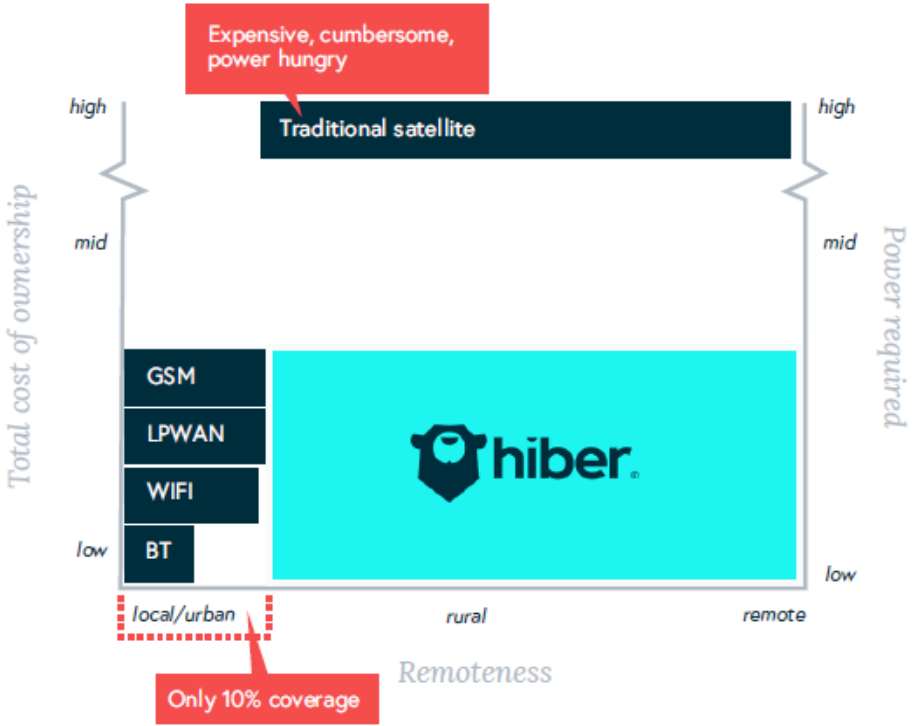
2. Data Connection: Soon – Low Power Global Area Networks

Buy a LPGAN certified satellite modem & antenna via a dealer.



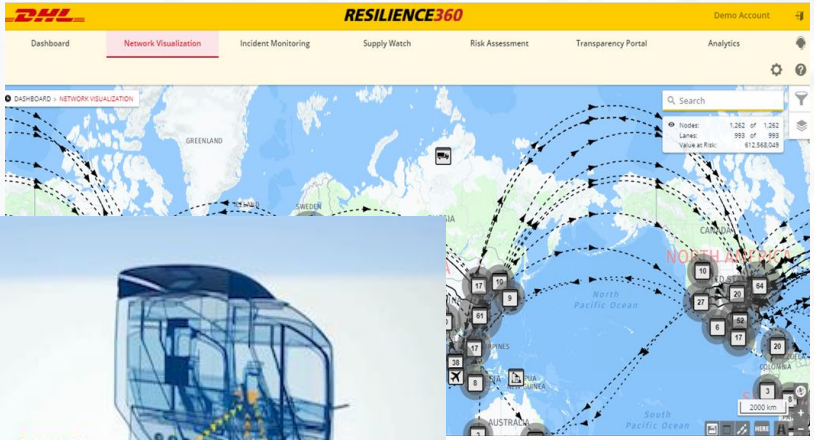
Embed or integrate the LPGAN hardware into your IoT device.

Activate a LPGAN annual service plan via our online platform.

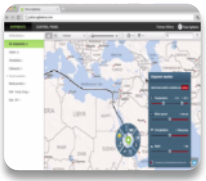


3. Data Intelligence: Analyzing IoT Data and Transforming it into Business Value

- Automated decision making
- Predictive and proactive
- Self-steering processes
- ….



IoT Use Cases

Warehousing		Transportation		Last Mile Delivery	
Inventory Management	Asset Utilization	**Condition Monitoring**	Fleet / Asset Management	Mail / Parcel Collection	Automatic Replenishment
					
Connected Warehouse	Energy Management	Predictive Maintanance	End-to-end SC Risk Mgmt.	Flexible Deliver / Pick-Up	Next-Generation Visibility

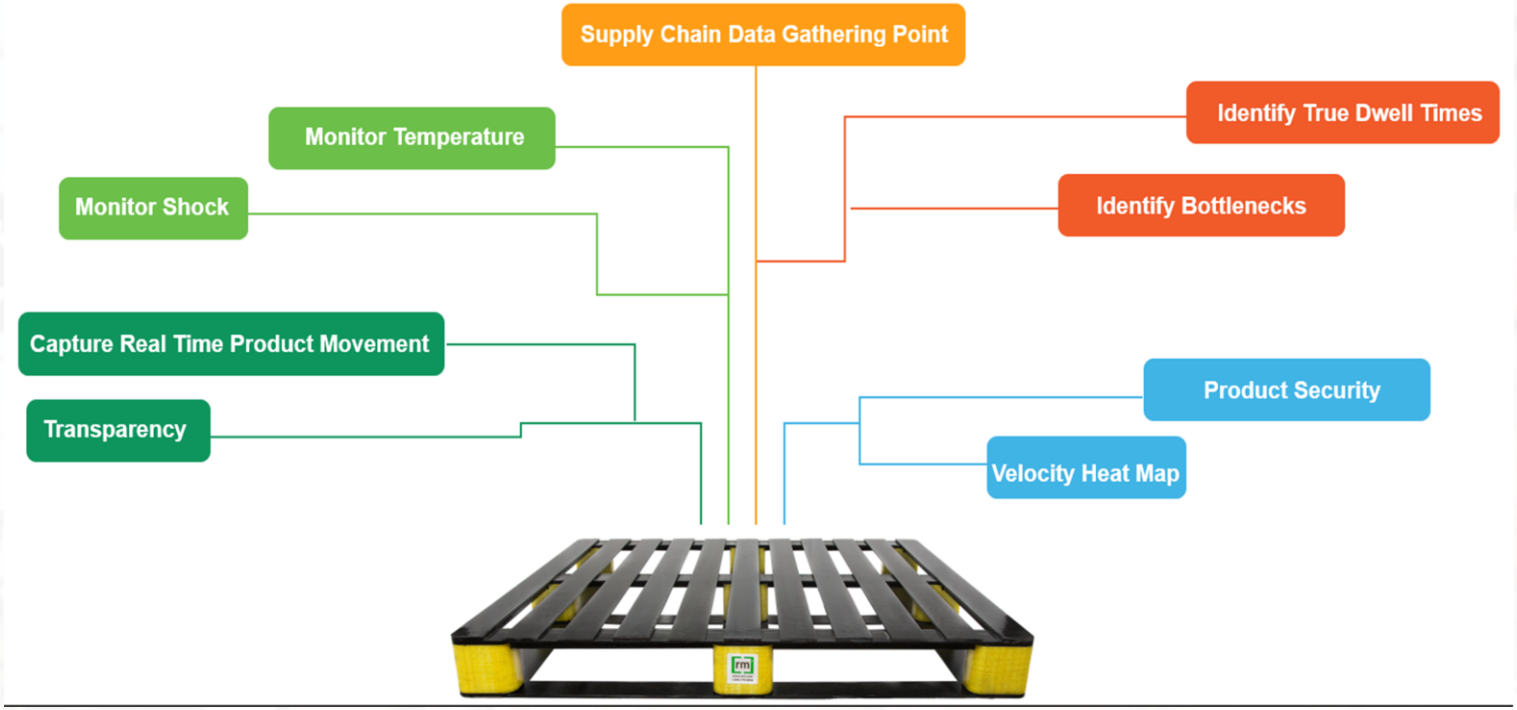
Case Study: Shipment Monitoring Via Smart Pallets

Why Smart Pallets?

Pallets are ubiquitous in the supply chain

- Common means of storing/moving case quantities and larger
- Often contain multiple Purchase Order Lines worth of material
- Present significant added weight / reuse / recycling challenges

Solution: lightweight, durable, smart pallet with IOT Sensors to provide real-time monitoring



Smart Pallet Technology: Solution can enable fast and seamless IT integration and meets key business requirements

Pallet Technology

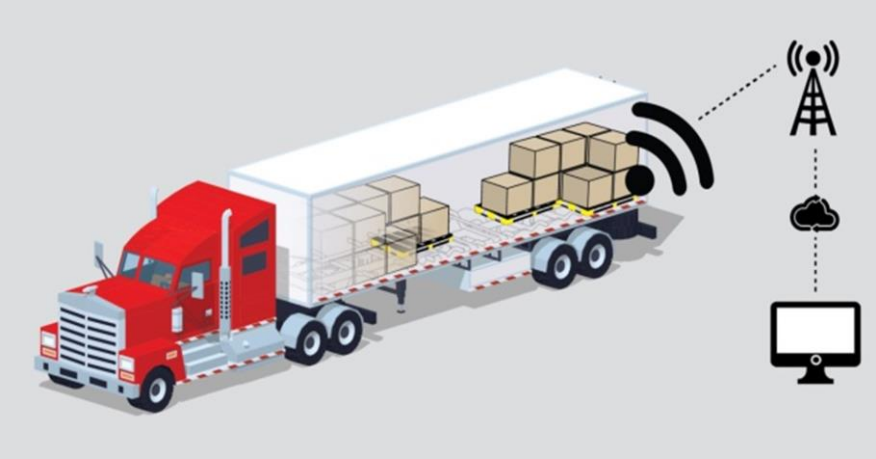
- Sensor-driven detection of geo location, movement, delay, shock and temperature
- Low power wide area network cellular connectivity

Information System Integration

- Cloud based platform using Pallet-ID# only
- Detailed reporting and analytics
- Integrated passive RFID (Pallet ID#)

Lifecycle

- Turn key maintenance free with estimated lifespan of 5 – 10 years (dependent upon use case)
- Pallet can be cleaned during lifecycle
- Geo coverage: Americas, Europe, APAC



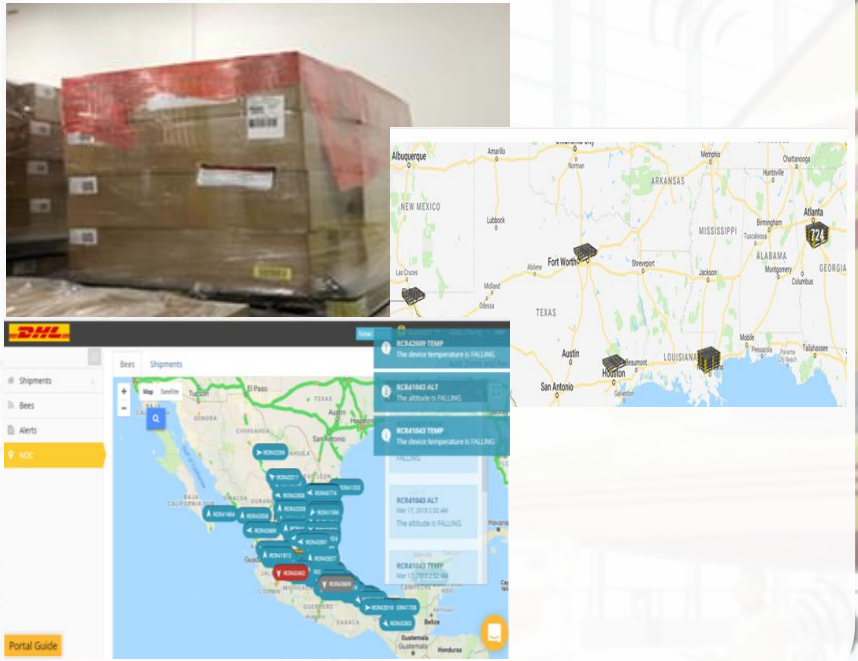
DHL Project Example: Smart Pallets for Real-time Shipment Monitoring for a Global Life Sciences Customer

Customer Case Study

- Global Life Science company with significant regulatory, product value and handling considerations
- 644 pallets with embedded sensors to detect geo location, movement, delay, shock & temperature
- Cloud based platform using pallet ID with remote programmable profile
- US operations as initial test

Interim Results

- Pallets reporting reliability near 100%
- Data capture along all criteria deemed a success
- Lifecycle costs projected at a 6-7% reduction versus current



Key learnings from the deployment…

- Clear problem definition (probably not cheapest way to solve some needs)
- Ability to get pallets/sensors back (need low cost point if only one-way use)
- Generate tangible value out of the data (probably greater value where multiple service providers are involved)

Agenda

1. **Understanding** the connected supply chain and journey ahead (10min)
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3. **Open discussion** and exchange of ideas on connected energy supply chains (30min)

THANK YOU!