

SOLVING LOGISTICS CHALLENGES

Introducing the Intel® Connected Logistics Platform

Current Track and Trace Offerings

Lack Critical Capabilities for the Modern Enterprise Supply Chain

NOT SCALABLE

- Lack of a cost-effective way to track from container/trailer to item level
- Lack of interoperability and standards

HIGH COST

- Expensive devices ~\$50-\$150/package
- Lack of options to ease Reverse Logistics
- Custom

LACKS INTELLIGENCE

- Store and forward data loggers not real-time or near real-time
- Lack of edge intelligence and granularity of data

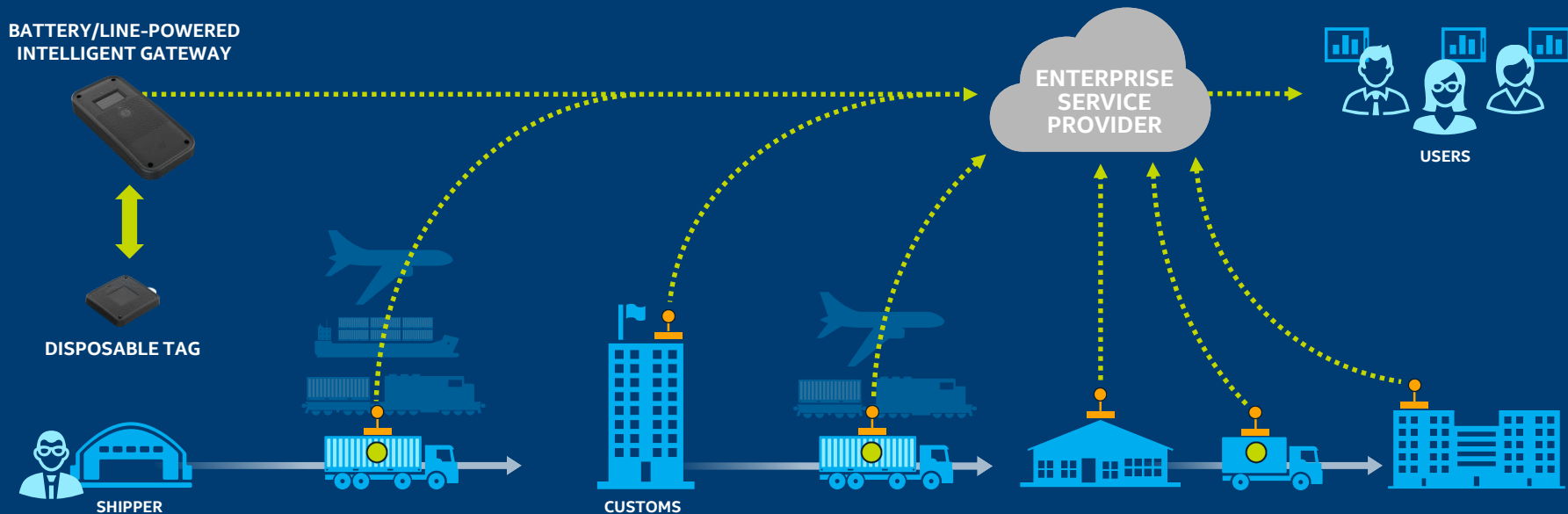
LIMITED DATA PROTECTION

- Limited end-2-end hardware-enabled security

IoT solution must be scalable, secure, cost-effective, and intelligent

Intel® Connected Logistics Platform

Scalable, Secure, Cost-Effective, Intelligent



● **TAGS** AT ANY SHIPMENT GRANULARITY

📍 **GATEWAYS** RESIDE ALONG THE SUPPLY CHAIN



WIN-WIN FOR SERVICE PROVIDERS AND CUSTOMERS

Value Propositions

SI/OEM, Telcos

- New Business Services
 - Data Aggregation
 - Device Management
 - Data Delivery
 - Predictive/Trend Analytics
- Improve Customer Satisfaction
- Generate Operational Efficiencies
- Biz Automation

Logistics Provider

- Increase Visibility
- Reduce Theft, Loss
- Reduce Wastage
- Accelerate Customs Clearances
- Better Forecasting
- Proactive Mitigation
- Real-Time Insight
- Adapts to Business Model

WHAT IS THE ICLP?

Components, Architecture, and Ecosystem Enablement

Components

Quick-Turn Enablement Platform for Accelerated System Build-Out

GATEWAY

Local Intelligence/
Global Connectivity



DISPOSABLE SMART SENSOR TAG

Drop Into Any
Shipment Level

Enables:

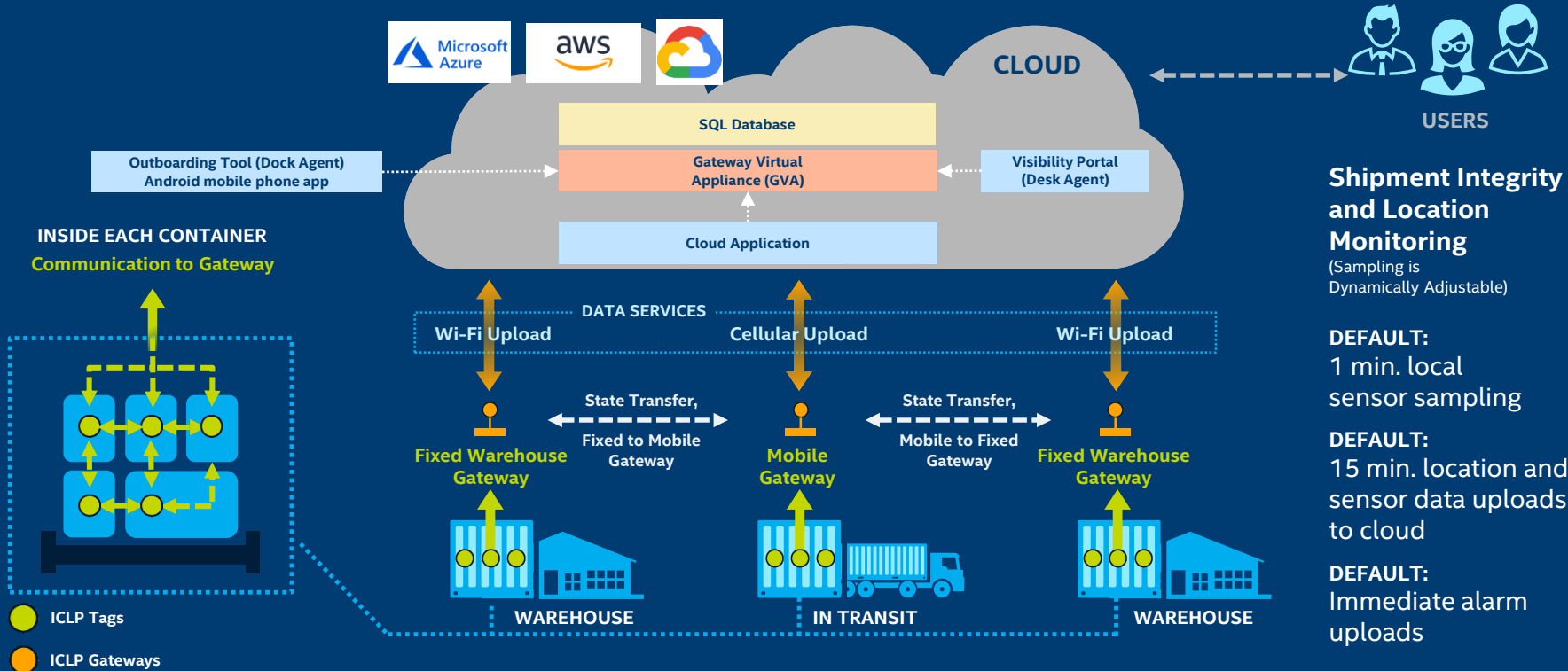
- Secure Cloud Connectivity
- Customer Provisioning
- Sensor Data Aggregation, Retention, and Reporting
- Edge Analytics
- Settable Alarm Thresholds
- Cell/Wi-Fi Communications
- Line/Battery Power

Monitors:

- Temperature
- Humidity
- Shock
- Tilt
- Light
- Location
- Barometric Pressure

Sample Enterprise Solution

Based on Intel® Connected Logistics Platform



Shipment Integrity and Location Monitoring

(Sampling is Dynamically Adjustable)

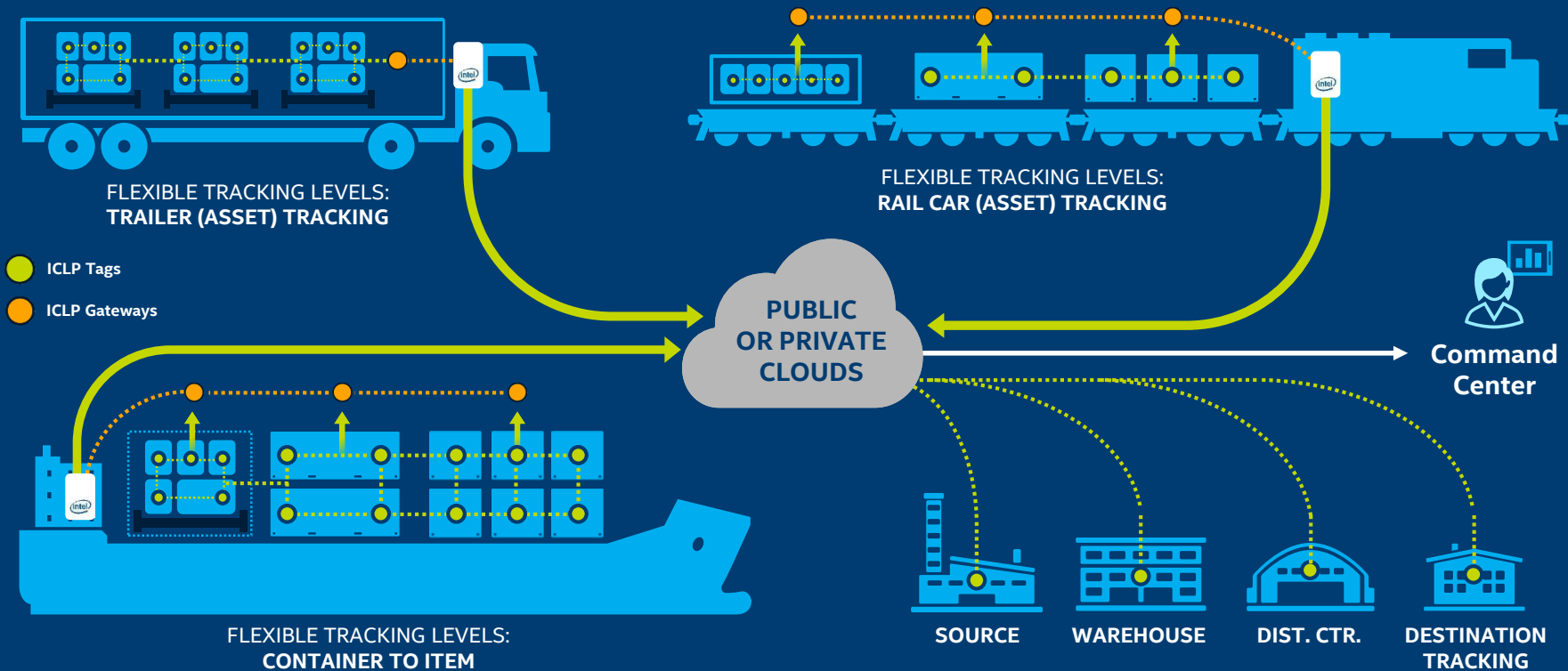
DEFAULT:
1 min. local sensor sampling

DEFAULT:
15 min. location and sensor data uploads to cloud

DEFAULT:
Immediate alarm uploads

One Flexible Architecture for Multiple Use Cases

Multi-modal. Adapts to Many Business Models



**BEST-IN-CLASS
SECURITY**

**ARCHITECTURAL
FLEXIBILITY**

**BROAD
ECOSYSTEM**

**LONG-TERM
ROADMAP**

STANDARDIZATION

KEY DESIGN FEATURES

Intel Innovation from Silicon to Architecture

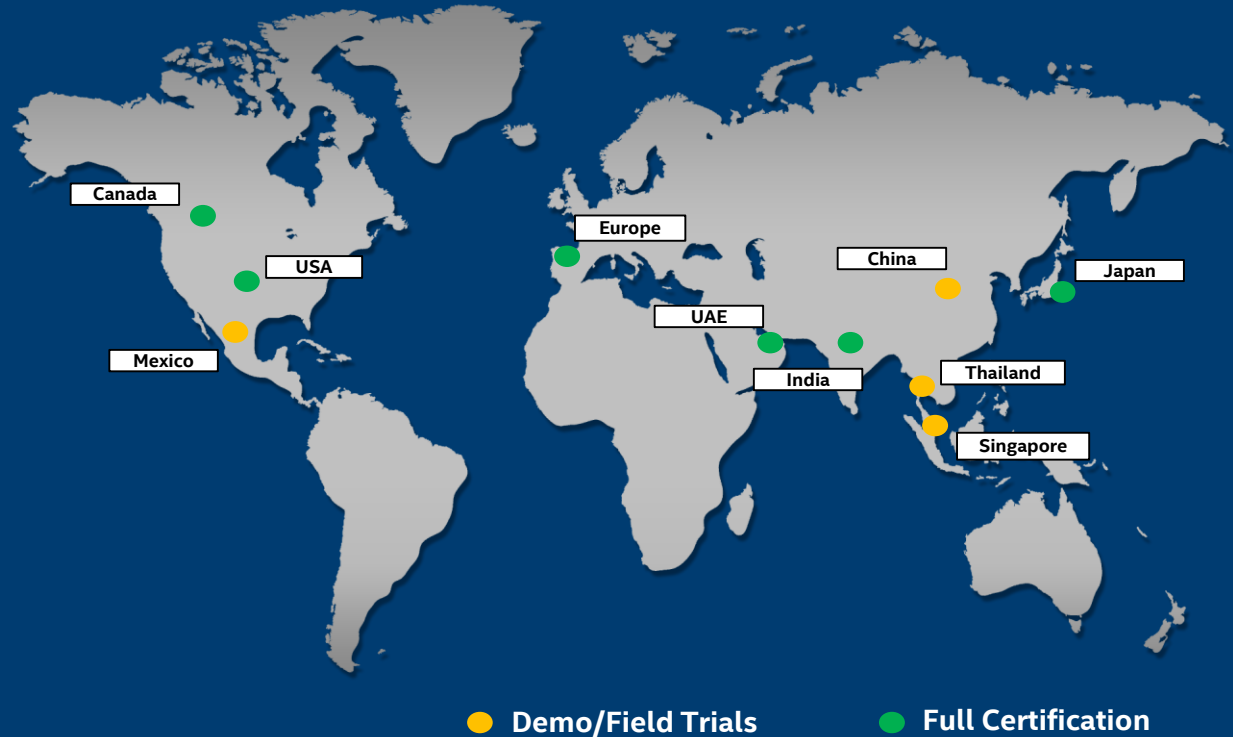
ICLP – Product Certifications

Fully Certified:

- USA
- Canada
- Europe
- Japan
- UAE
- India

Demos/Field Trials only:

- China
- Mexico
- Singapore
- Thailand

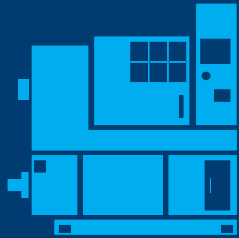


WHO NEEDS SOLUTIONS BASED ON ICLP?

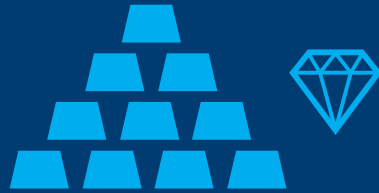
Demand Drivers

Key Early Target Markets

High Value and Time-/Environment-Sensitive Products



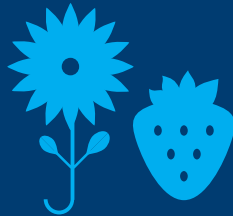
Capital Equipment



High-Value Goods



Pharmaceuticals



Perishables

ALERTING AND NOTIFICATIONS FOR:

Proactive alerting for:

- Tilt (single or multiple)
- Shock (single or multiple)
- Time to delivery (location)
- Theft
- Temperature violation
- Humidity violation

Notifications for:

- Temperature violation
- Package separation
- Time in transit

Visibility into:

- Location
- Theft

USE SCENARIOS

Proactive Mitigation

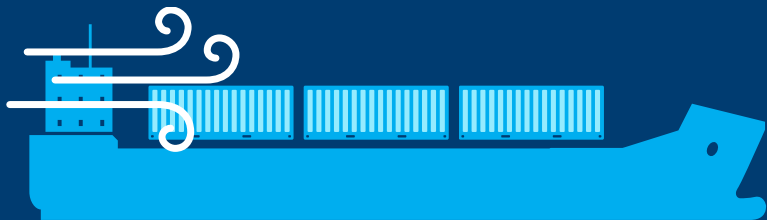
Predictive Edge Analytics

Proactive Mitigation

Ships encounter storms. If fab equipment rolls beyond the safe tilt threshold, it must be recalibrated before going into service, costing Intel \$1m/day due to fab delays.

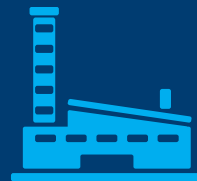
Without ICLP

awareness of tilt violation would not happen until the equipment was unpacked at the fab, creating a delay; it would not be known how many times or how much tilt violation occurred.



1. Tilt Happens.

2. 20 days later, ship reaches port.



3. 5 days after that, equipment arrives at fab.



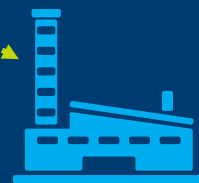
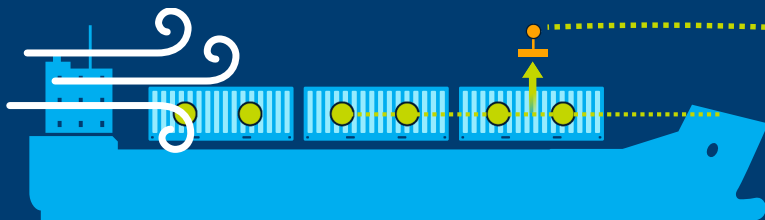
4. Equipment is unpacked, tilt violation is detected, Diagnostics and recalibration **begins**.

Proactive Mitigation

Ships encounter storms. If fab equipment rolls beyond the safe tilt threshold, it must be recalibrated before going into service, costing Intel \$1m/day due to fab delays.

**With
ICLP**

tilt violation is sensed and communicated within minutes, allowing Intel to proactively respond, and reducing costly delays.



1. Tilt Happens.

2. Sensors communicate tilt to gateway.

3. Gateway communicates tilt information to Intel (via satellite and service provider).

4. Equipment tech is onsite and ready to recalibrate when equipment arrives, putting it into service immediately.

Predictive Analytics

Trucks encounter varied temperatures. If a truck carrying critical vaccines is exposed to temperatures beyond safe thresholds, the vaccines can become non-effective, putting lives at risk.

Without ICLP



1. Temperatures reach non-safe levels during travel.

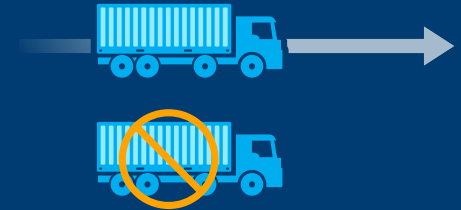
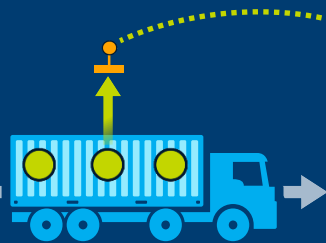
2. Truck arrives at delivery, and temperatures appear safe, so spoilage goes undetected.

3. Bad vaccines are only identified when they don't work.

Predictive Analytics

Trucks encounter varied temperatures. If a truck carrying critical vaccines is exposed to temperatures beyond safe thresholds, the vaccines can become non-effective, putting lives at risk.

With ICLP



1. Temperatures reach non-safe levels during travel.

2. Sensors report temperature information.

3. Information is cross-referenced with distance and other factors.

4. If vaccine spoilage is expected, a new shipment can be dispatched in time.

Intrusion Detection

Shipments with high-value electronics generally go from a manufacturer to a retailer's hub or distribution center. These shipments can be valued in the millions and are subject to theft.

Without ICLP



1. Truck departs manufacturer.

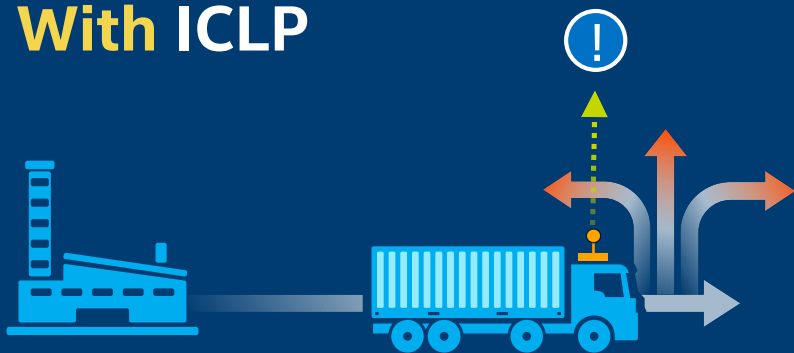


2. If theft or loss occurs, it is discovered on arrival at destination.

Intrusion Detection

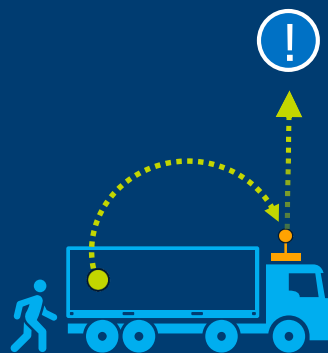
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With ICLP

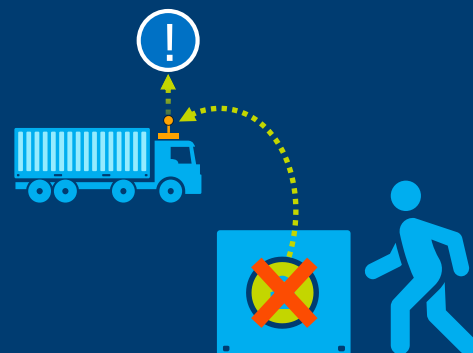


Truck departs manufacturer.

Option 1.
If the truck deviates from its route, an alert is generated (from GPS).



Option 2.
If someone opens the truck, an alert is generated (from light sensor).

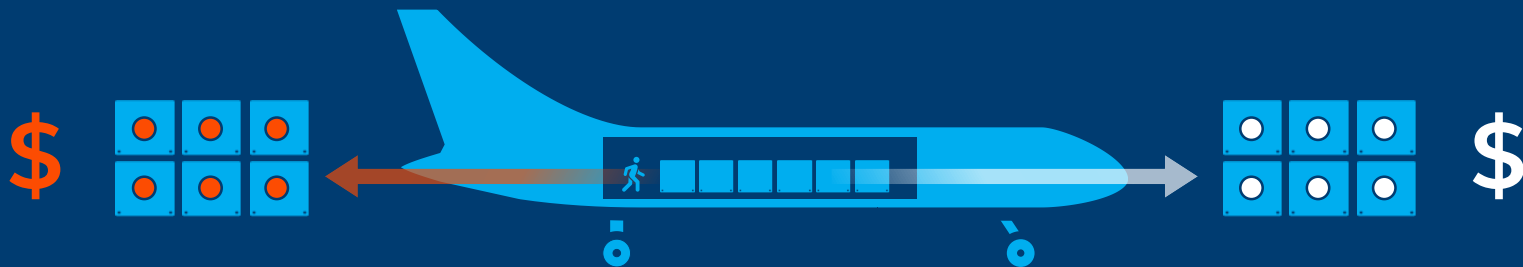


Option 3.
ICLP gateway could connect to Bluetooth or USB peripheral—like a lock—and generate an alert if this is broken.

Eliminating Device Reverse Logistics

Existing tracking devices which provide real-time monitoring are too expensive to be used “one way.” Analog devices priced more affordably don’t provide the necessary granularity of data.

Without ICLP



Option 1.

Analog tracking tags which provide insufficient information, resulting in loss.

Option 2.

Expensive tracking tags provide sufficient information, but must be returned to shipper, with related logistics, increasing overall cost.

Eliminating Device Reverse Logistics

Existing tracking devices which provide real-time monitoring are too expensive to be used “one way.” Analog devices priced more affordably don’t provide the necessary granularity of data.

With ICLP



1. Smart tags are applied at the package level before shipping. Source gateway disassociates tags.

2. Smart tags upload data with time stamps at key points with a gateway throughout journey.

3. Destination gateway associates tags. Packages are safely delivered, or breach info is already known, and smart tags can be affordably discarded.