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Re-Defining Life Science's Real-Time Cold Chain Visibility

The best partner for cold chain monitoring
and meaningful insights from real-time data



Only 15% of pharmaceutical companies report having complete end-to-end visibility into their cold chain processes

(Source: Pharmaceutical Commerce)

Lack of visibility in Pharma Cold Chain: From Challenges to Opportunities

Over 25% of pharmaceutical products are sensitive to temperature fluctuations

(Source: Pharmaceutical Commerce)



Temperature excursions and inadequate monitoring can result in a staggering 40% of pharmaceutical losses annually



72% of pharmaceutical shipments experience temperature excursions due to insufficient real-time monitoring.

(Source: World Health Organization)



Real-time monitoring reduces pharmaceutical wastage by 30%, potentially saving the industry more than **\$50 billion** annually.

(Source: The World Bank)



Lack of visibility in Pharma Cold Chain: From challenges to Opportunities

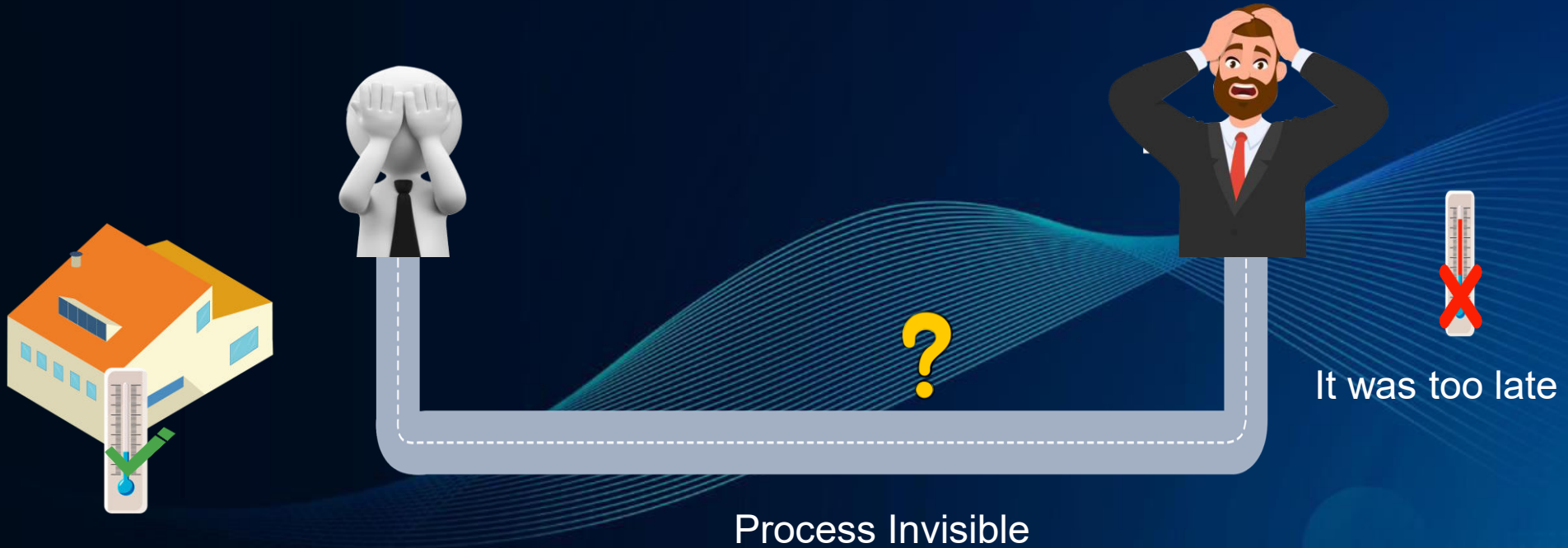
A simple 2°C increase in temperature can lead to a 20% reduction in vaccine efficacy, putting public health at risk. (Source: World Health Organization)

80% of pharmaceutical products are transported internationally, making temperature control critical. (Source: PwC)

Enhanced visibility has been linked to a **50% decrease** in temperature excursion-related incidents, reducing the risk of patients receiving compromised medications. (Source: Journal of Healthcare Management)

82% of patients express greater confidence in the pharmaceutical industry's ability to ensure the safety and efficacy of their medications when real-time monitoring is employed. (Source: Deloitte)

Still No Real-time visibility



What's the main critical criteria while choosing a real-time solution?



Hardware

Data Collection (IoT)



Cloud Based Software

Data Access.



Integration

System data connection

Frigga's Vision



Frigga's Approach

Make the **invisible now visible** in the
Pharma Cold Chain

Who is **Frigga** — Globally Real Time Cold Chain solutions



19+ years focus on electric wireless communication



Global pharmaceutical certification to ensure data security and stability



Real-time monitoring has served customers all over the world



CLOUD PLATFORM

-  Global Monitoring (+200 Countries)
-  Real-Time Alarm
-  GIS Information
-  Data Report
-  Device Management
-  User Management

Humidity: 78%
Temperature: -10°C
Device ID: ATJ6511
Time: 2022/06/11
Power: 40%
Location: SHANGHAI



Pharma Business Case

Customer Pharma Industry

Global, leading thermal shipping with a mission to deliver cell and gene to patients to the last mile.

Challenges

- A need for global cold chain visibility
- Inconsistent performance especially in ultra-low environments
- Minimize product integrity for vital, high-value medicinal shipments

Solutions

Frigga T7 Pro, Frigga app, and Frigga Cloud Platform to provide customized, global cold chain visibility solutions

Benefits and Outcomes

- Customized screen with bar code, easy for users to read and manage data
- Frigga multi-use devices, client can use multiple times, save cost
- Active, in-transit, end-to-end visibility to prevent product integrity issue due to temperature excursion
- Real-time cold chain visibility, ensuring seamless connection with stakeholders at different points
- Data and performance analyses, improving operation performance and efficiency

Frigga Flagship real-time 5G temperature monitor



Reusable

No use time limited



Dual temp. -200



**°C~+ 100°C
Humidity**



Light



Shock



Tilt



Location



Auto Flight



Local PDF

report backup

Single use V5 Series 5G Real-time temperature monitor



- **LCD Screen**
- **Remote starting**
- **Local PDF report backup**
- **Dual temperature**
- **3-points calibration**
- **TI US brand temp. sensor, NIST traceable**

USB data logger with Real-time features

Keep all the USB logger usage habits

NEAR REAL-TIME **Frigga Smart Tag** Officially Released



Near Real-time monitoring
Evolution of USB logger
But cost-effective like USB logger



-30 °C~+ 50°C



Digital **Paper** Temp. Sensor



12 months Shelf life & 1 year use



NFC + RFID



Non - Lithium



Paper battery
Location &



Frigga platform and
mobile Apps



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