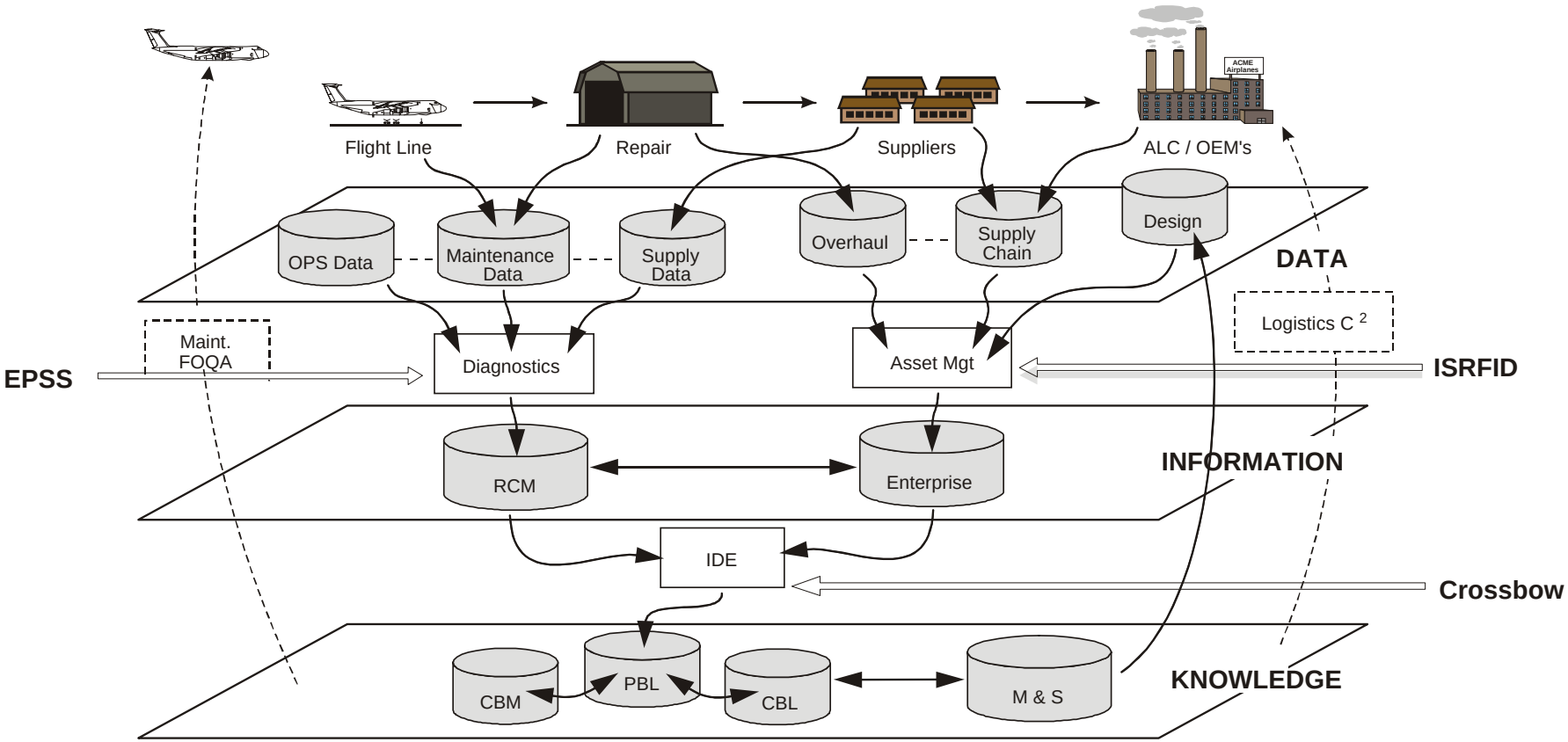
Presents

Condition Based Logistics

Condition Based Logistics Technology

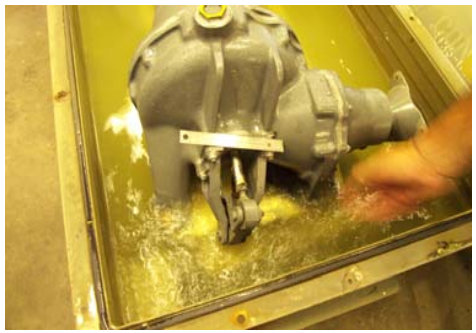


IMPROVE PERFORMANCE, ELIMINATE WASTE, REDUCE RESOURCES

Navy Aircraft Engine Container Situation

Water / Moisture Intrusion

H-46 Gear Box



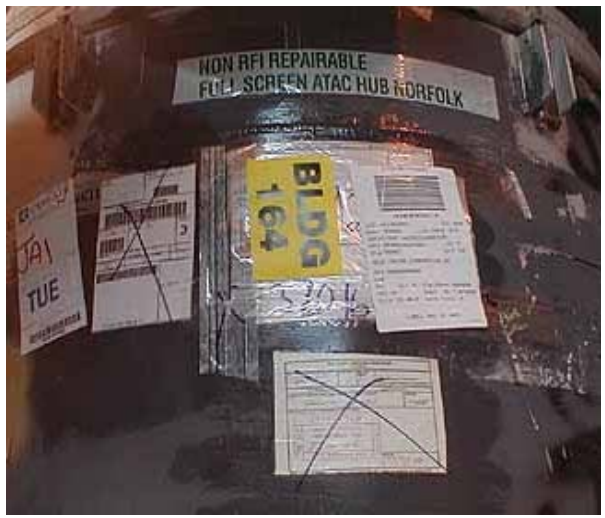
H-3 Tail Rotor Gearbox

Corrosion Inside TF-34 Engine (S-3)

H-46 Transmission

Misidentified / Mislabeled Inventory

Rotor Container



Lost Engine Visibility

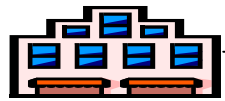
Aircraft Engine Management System database – overdue status report

- 47 RFI Engines as of 7/29/03 (over 40 days)
- 15 Non-RFI Engines as of 7/29/03 (over 80 days)

Supply Chain Situation

Supplier

Materials

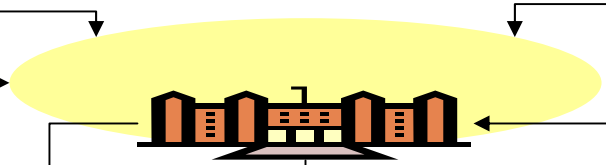


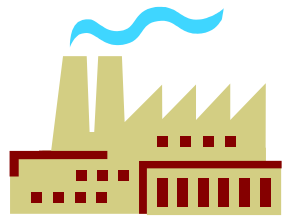
3 PL's

Materials

Materials Kits

Third-Party Process

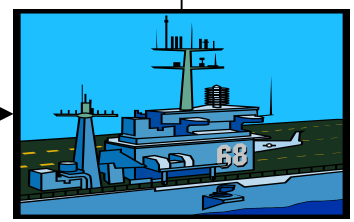




Products

MRO

Distributor



Systems Integrator

Systems

Customer

Expeditionary Logistics Situation

Situation Summary

- High Value Asset Condition Monitoring

  Problem: Loss of high value assets in transit / in-storage
  Damage in-transit / in-storage
  Implication: Excess inventory
  Higher cost of rework / management

- Supply Chain – End-to-End Supply Chain Visibility

  Problem: Inability to manage schedule
  Implication: Excess inventory / hoarding / expedites

- Expeditionary Logistics – Pre-positioned Material / Condition Visibility

  Problem: Inability to react to changes in priority
  Implication: Excess pipeline material / unnecessary re-orders

Solution = **Condition Based Logistics Technology**

Integrated Sensor / Radio Frequency Identification Devices (*ISRFID™*)

in totes, pallets, containers, & equipment

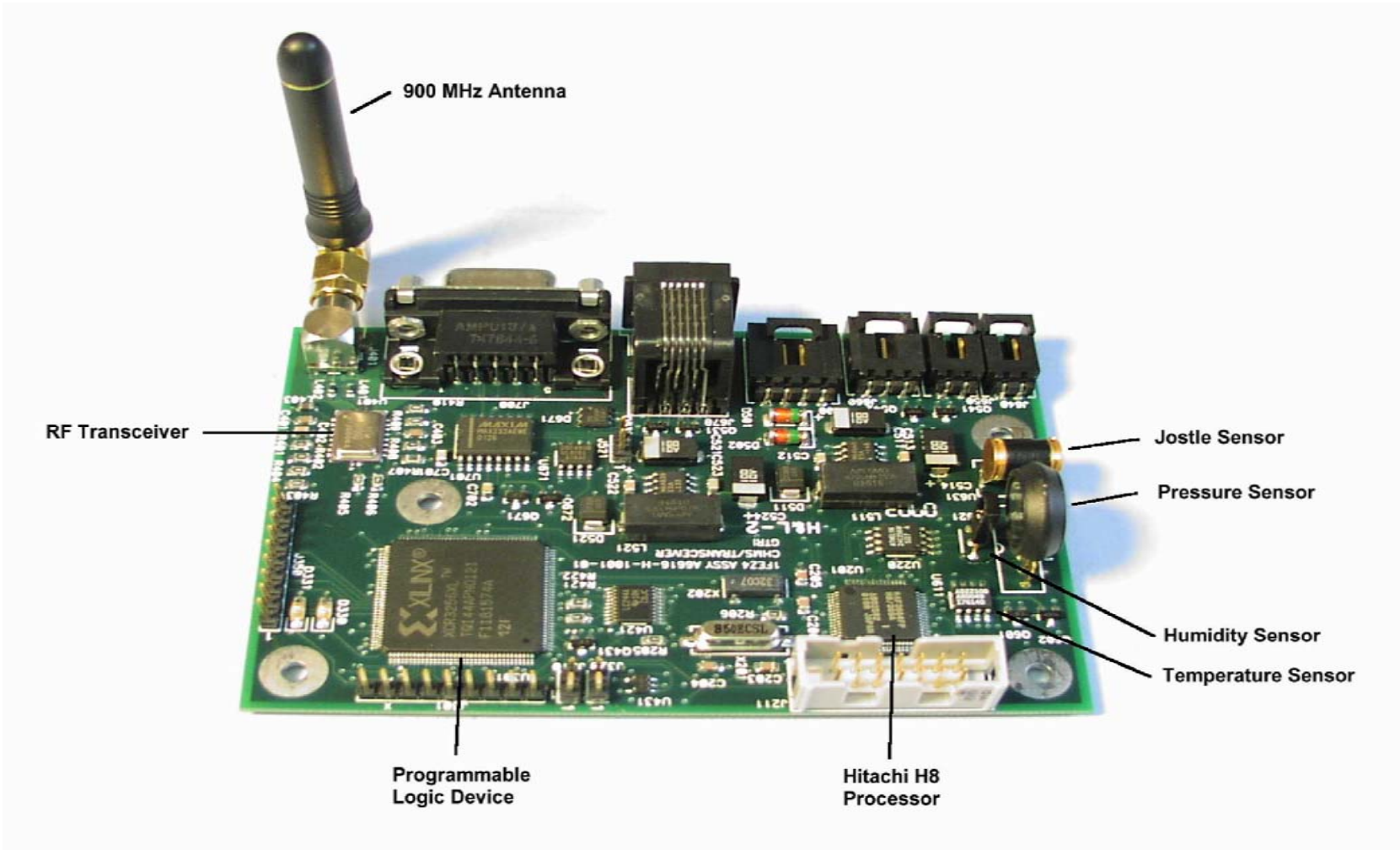
using patent-pending Low Power Sensor Network (*LPSN™*),

to provide

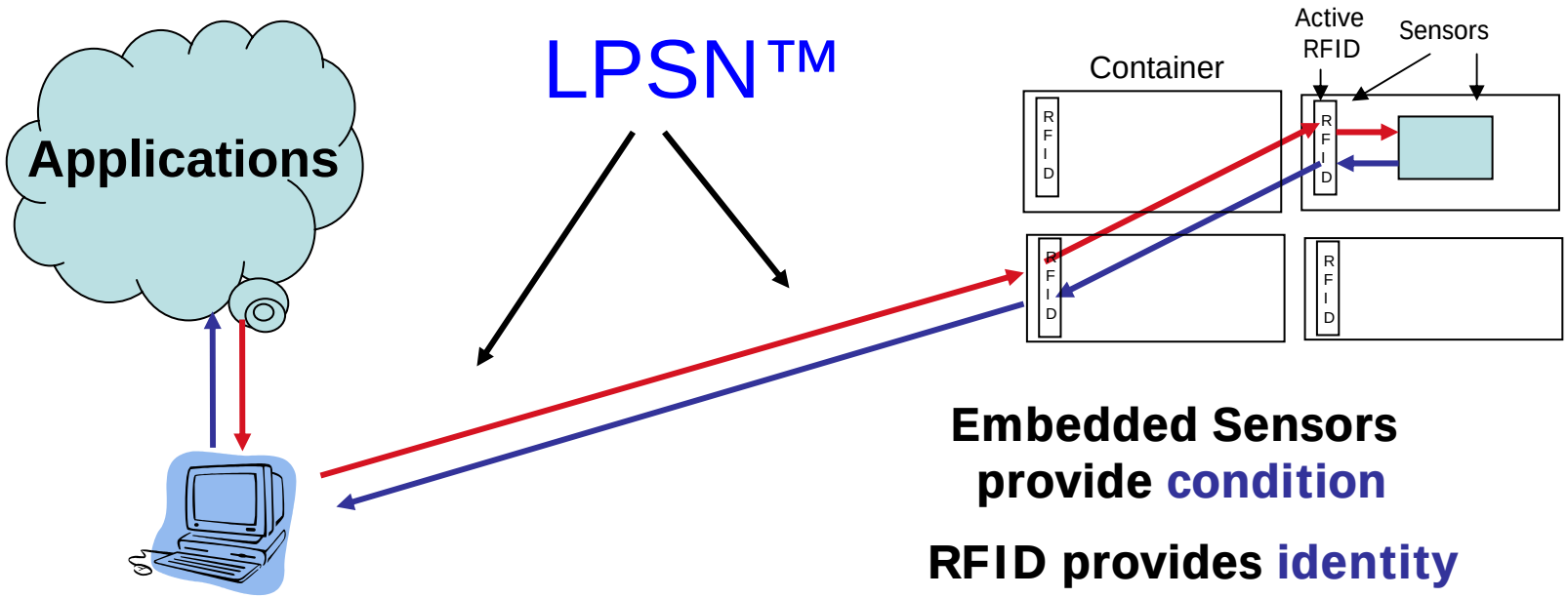
Integrity / Condition / Identity

at the lowest total cost to the user

The ISRFID


900 MHz Antenna
RF Transceiver
Jostle Sensor
Pressure Sensor
Humidity Sensor
Temperature Sensor
Programmable
Logic Device
Hitachi H8
Processor

How It Works



Embedded Sensors provide condition

RFID provides identity

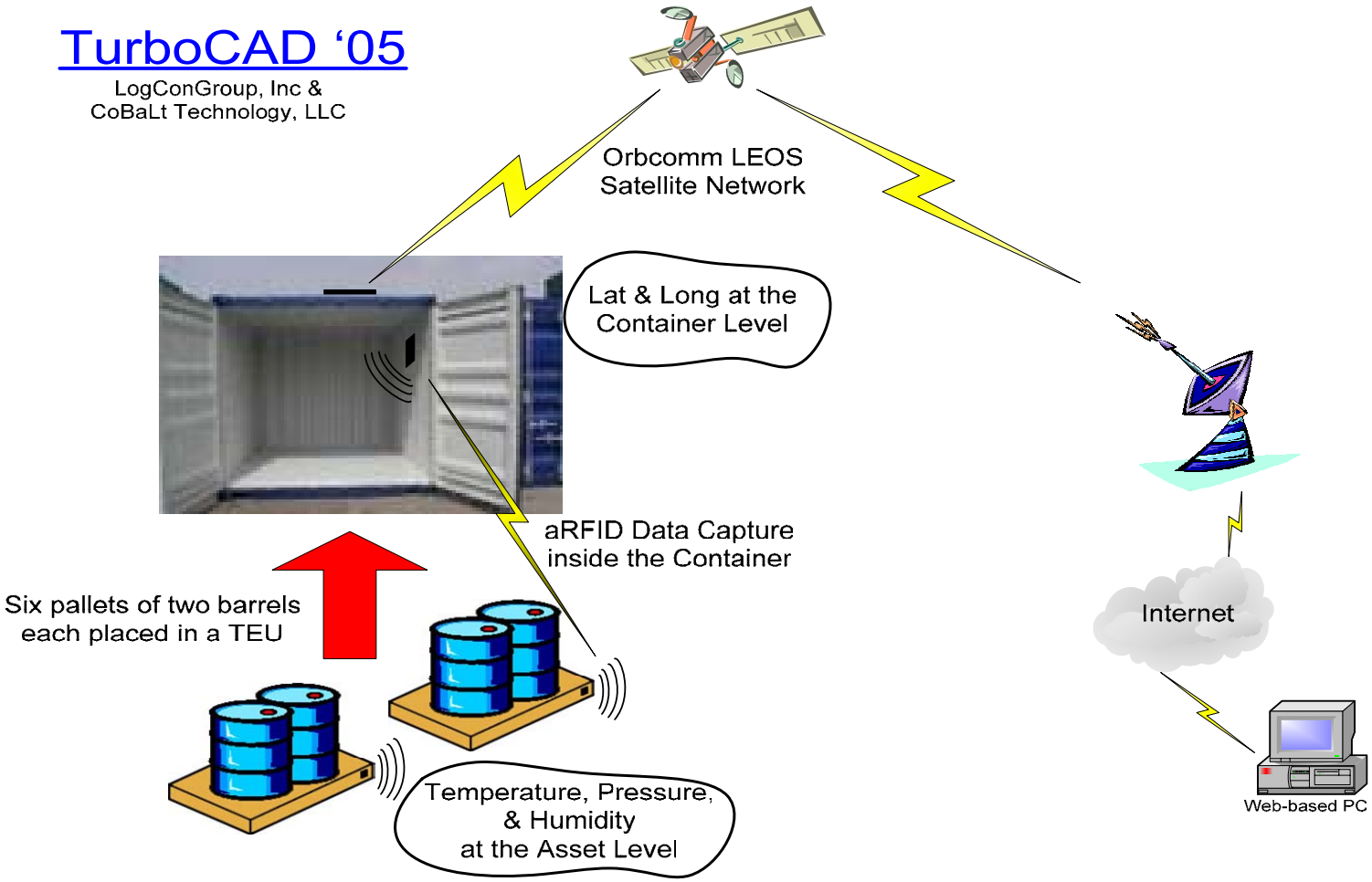
LPSN monitors integrity

isrfid™ & LPSN™

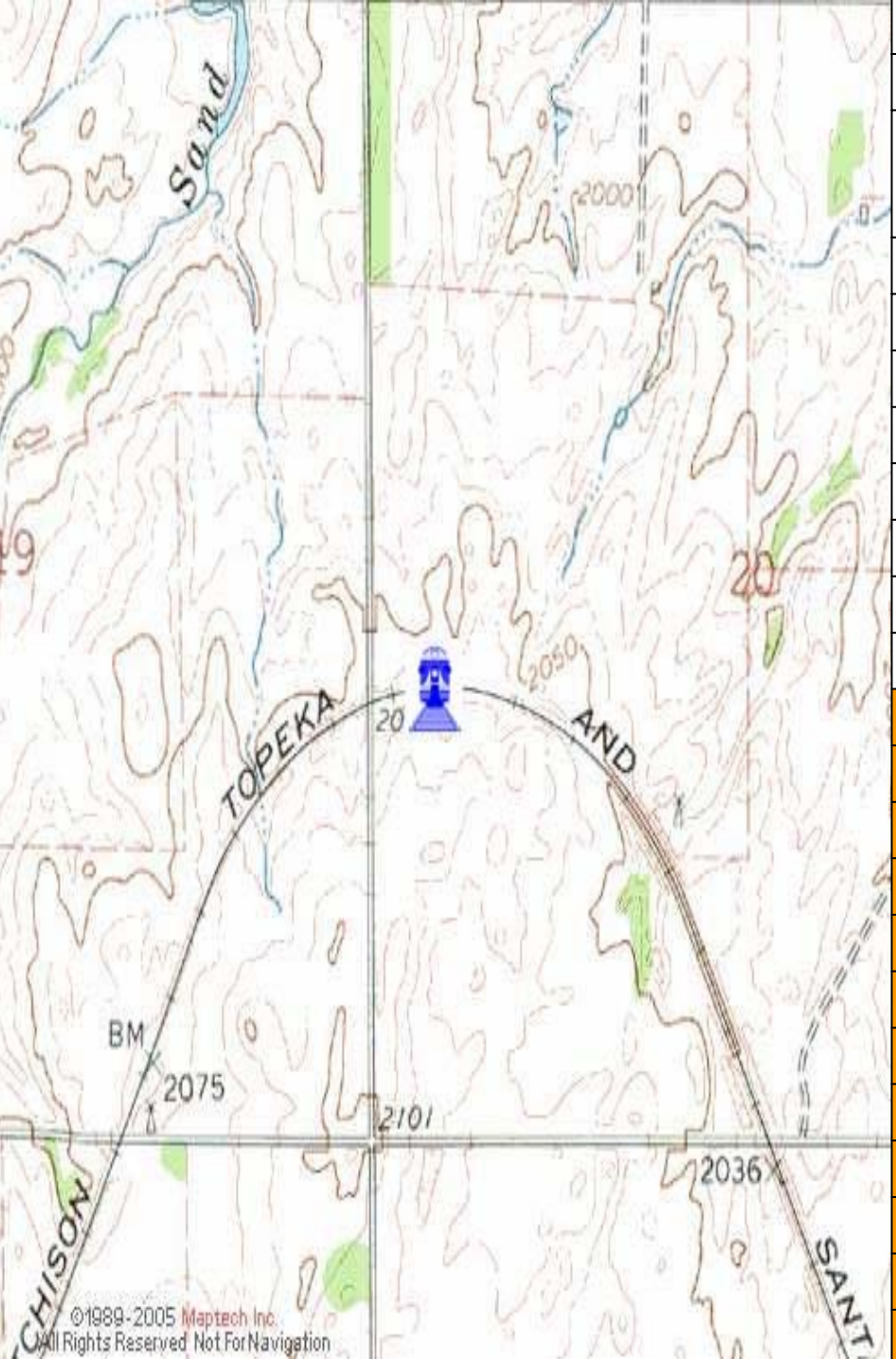
uniquely enable

Condition based logistics

Turbocads Exercise 2005




Position on
25 Apr 05
08:13 UTC
Position on
24 Apr 05
12:13 UTC
Position on
23 Apr 05
14:13 UTC
Position on
22 Apr 05
14:13 UTC
Position on
21 Apr 05
15:55 UTC
Position on
20 Apr 05
21:56 UTC
Position on
19 Apr 05
16:13 UTC
Position on
18 Apr 05
15:30 UTC
CANADA
MEXICO
GULF OF MEXICO
Compiled by U.S. Geological Survey
2001



Container ID: TGHU 202581-2	**Date/Time (UTC): 21Apr05 18:30**
Ship to: N61755 Pri:12	**Ship from: W53XMD**

STATUS

4/18/05 Shipped via rail from Crane, IN

Container Temp: 75.0F History	**Pressure: 14.7 PSI**

1325014936405

AIRFOIL, MXU-667A/B,W/COMPUTER CONTROL GROUP GUIDANCE

EA68

N61755 5066 TC06 XGX

853

2005102

6 pallets, 2 canisters per pallet

09516 Temp: 77.2 Condition Code:A

09470 Temp: 77.2 Condition Code:A

09474 Temp: 76.0 Condition Code:A

09514 Temp: 76.0 Condition Code:A

09492 Temp: 79.9 Condition Code:A

09475 Temp: 79.9 Condition Code:A

09496 Temp: 77.1 Condition Code:A

09502 Temp: 77.1 Condition Code:A

09483 Temp: 77.1 Condition Code:A

09506 Temp: 77.1 Condition Code:A

09507 Temp: 77.3 Condition Code:A

09489 Temp: 77.3 Condition Code:A

Container ID: TGHU 202581-2	**Date/Time (UTC): 05May05 19:36**
Ship to: N61755 Pri:12	**Ship from: W53XMD**

STATUS

4/18/05 Shipped via rail from Crane, IN
4/24/05 Arrived at Concord. Awaiting xfer to ship

Container Temp: 75.0F History	**Pressure: 14.7 PSI**

1325014936405

AIRFOIL, MXU-667A/B,W/COMPUTER CONTROL GROUP GUIDANCE

EA68

N61755 5066 TC06 XGX

853

2005102

6 pallets, 2 canisters per pallet

09511 Temp: 77.2 Condition Code:A

09505 Temp: 77.2 Condition Code:A

09463 Temp: 76.0 Condition Code:A

09514 Temp: 76.0 Condition Code:A

09508 Temp: 79.9 Condition Code:A

09493 Temp: 79.9 Condition Code:A

09513 Temp: 77.1 Condition Code:A

09512 Temp: 77.1 Condition Code:A

09399 Temp: 77.1 Condition Code:A

09517 Temp: 77.1 Condition Code:A

09515 Temp: 77.3 Condition Code:A

09503 Temp: 77.3 Condition Code:A

Container ID: TGHU 202581-2	**Date/Time (UTC): 17May05 16:00**
Ship to: N61755 Pri:12	**Ship from: W53XMD**

STATUS

4/18/05 Shipped via rail from Crane, IN
4/24/05 Arrived at Concord. Awaiting xfer to ship
5/16/05 Container loaded on SS Cape Flattery for transport to Guam
5/17/05 Ship departed MOTCO

Container Temp: 75.0F History	**Pressure: 14.7 PSI**

1325014936405

AIRFOIL, MXU-667A/B,W/COMPUTER CONTROL GROUP GUIDANCE

EA68

N61755 5066 TC06 XGX

853

2005102

6 pallets, 2 canisters per pallet

09511 Temp: 77.2 Condition Code: J

09505 Temp: 77.2 Condition Code: A

09463 Temp: 76.0 Condition Code: A

09514 Temp: 76.0 Condition Code: A

09508 Temp: 79.9 Condition Code: A

09493 Temp: 79.9 Condition Code: J

09513 Temp: 77.1 Condition Code: A

09512 Temp: 77.1 Condition Code: A

09399 Temp: 77.1 Condition Code: A

09517 Temp: 77.1 Condition Code: J

09515 Temp: 77.3 Condition Code: A

09503 Temp: 77.3 Condition Code: A

Turbo Cads 2005


Direct Satellite
Communications GTN

Results

Parameter	Competitor 1	Competitor 2	CoBaLt
Reduce Infrastructure	Cannot Network	Cannot Network	Yes Networked
Record data sent & received	No	Yes to container level	Yes to tag / pallet level
Store multiple ID's at tag / pallet level	No – not a pallet level tag	No	Yes
Integrate location with ITV systems (JTAV, GTN, IRRIS)	Partial visibility	Partial visibility	Yes
Response on demand	No	Only at container level	Yes
Re-tasking pallet level tag data	0%	0%	100%

Integrity Monitoring

USMC TRICON with prototype Integrated Sensor / RFID

Electronic Shelf Paper

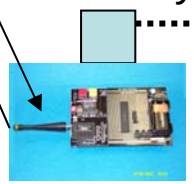
IMI smartShelf™ Project

IMI smartShelf™

IMI smartController™

LED CTL | sS Micro | RF LINK

Battery



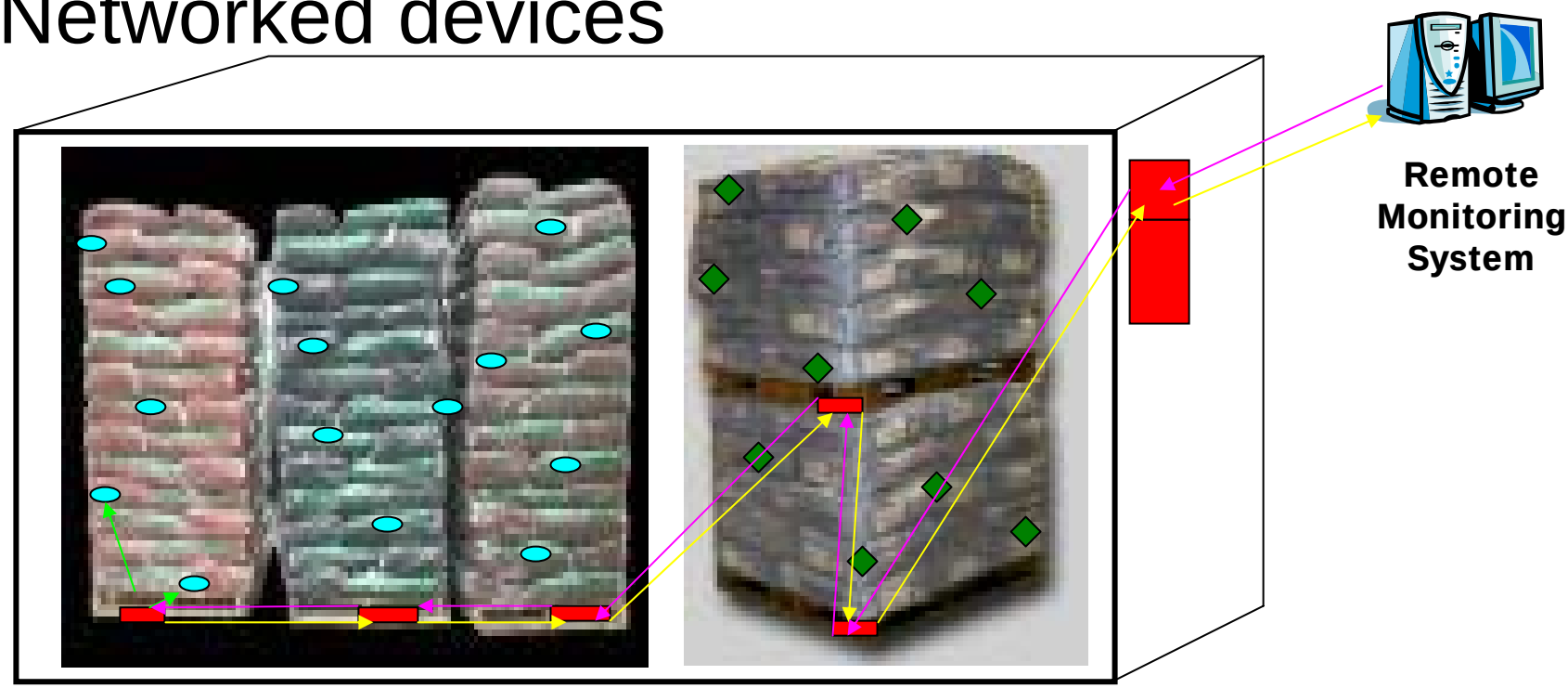
IMI smartShelf™

A B C D E F G H

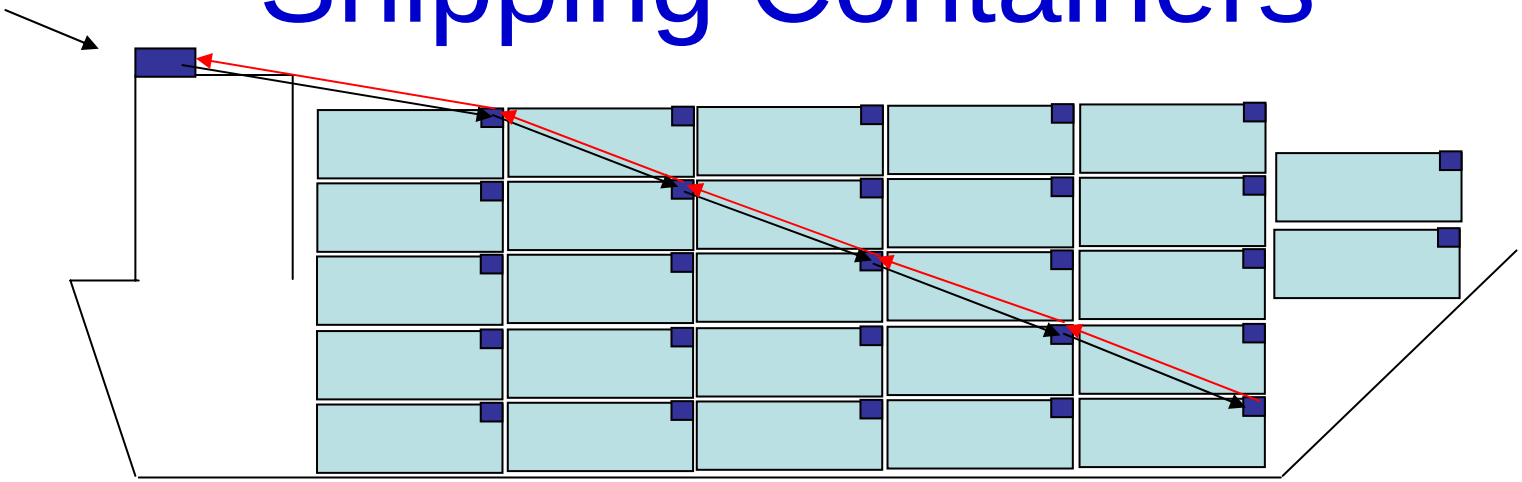
Bin Monitoring with Pick LEDs

Integrated Applications

- Integrated Totes/Pallets/Containers & RFID
- Embedded RFID Sensors in pallets / totes
- Networked devices



Unique Solutions
Shipping Containers



CoBaLt is the only solution!

Integrity / Condition / Identity

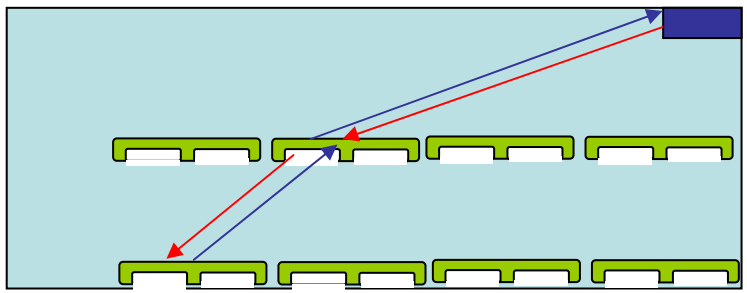
At an acceptable cost per trip

CoBaLt = $XX per trip

Competition = $XXX per trip*

* Source = CHCP Study

Unique Solutions
Specialty Containers



Readers /
Data Collector

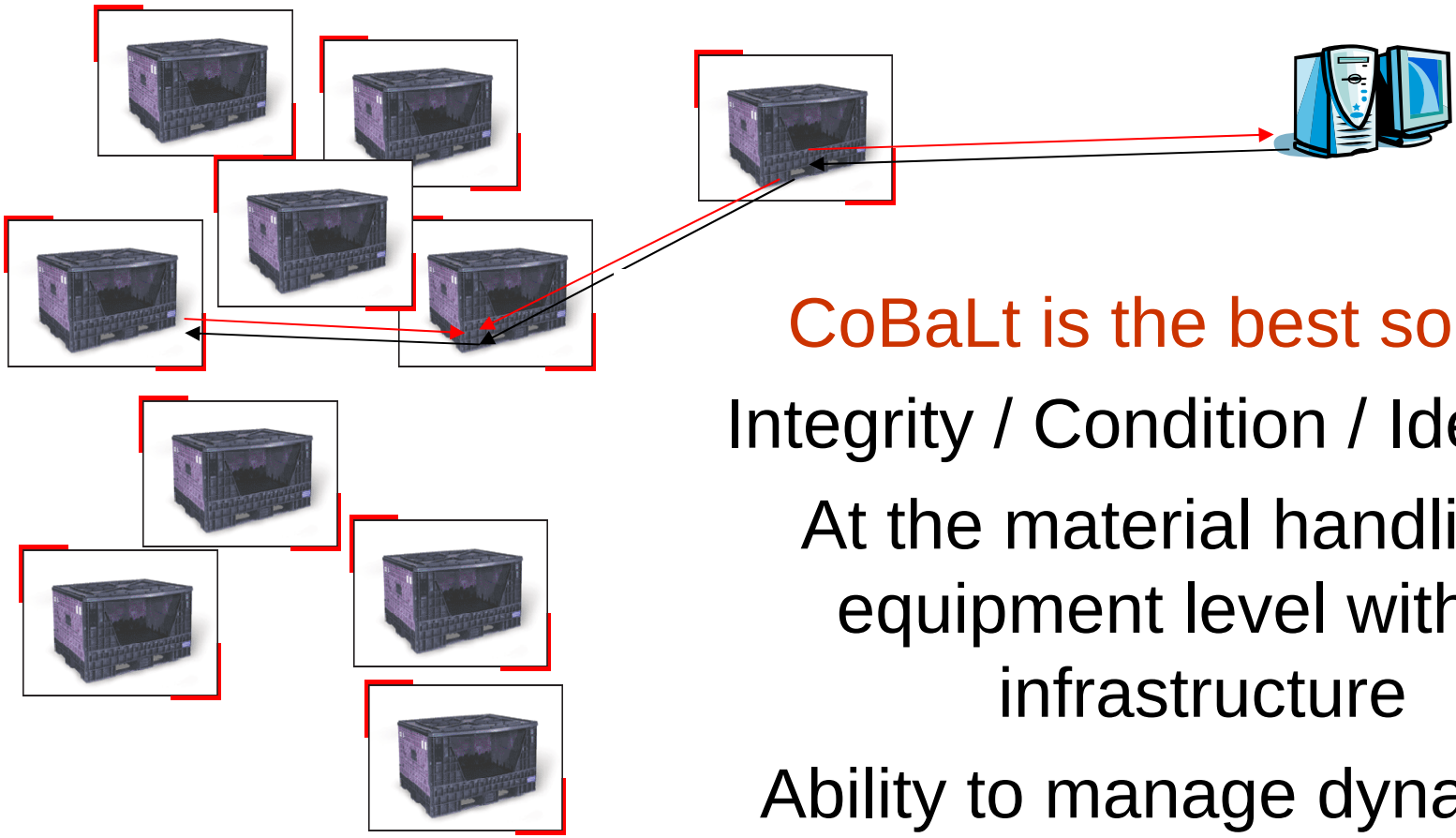
CoBaLt is the only solution!

Integrity / Condition / Identity

At the pallet level without infrastructure

Ability to dynamically retask

Unique Solutions
Unit Load Devices



CoBaLt is the best solution!

Integrity / Condition / Identity

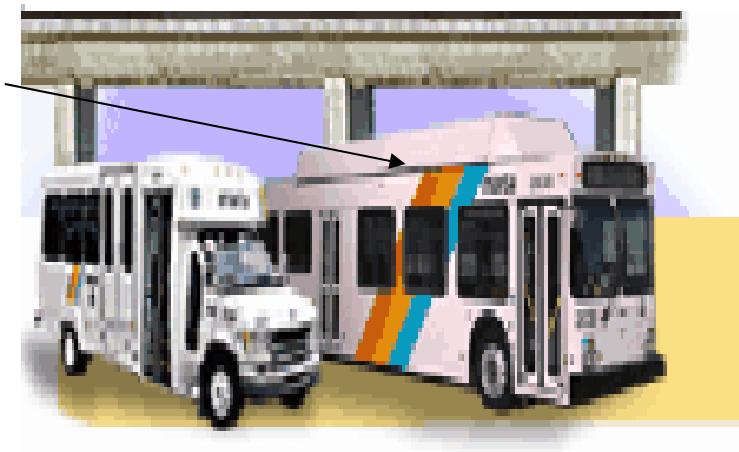
At the material handling equipment level without infrastructure

Ability to manage dynamic warehouse inventory

Unique Solutions
Equipment Prognostics

Integrated Sensor
RFID Data Collector

Handheld
RF Interrogator



CoBaLt is a unique solution!

Integrity / Condition / Identity

At the equipment level without infrastructure

Ability to manage dynamic inventory

Uniqueness

- With **Condition Based Logistics** Technology:

  Enterprises can **know**:
  - Location of their entire supply chain – Total Asset Visibility
  - Condition of their assets in-transit, in-storage, in-use
  - Real time exceedance monitoring of critical parameters
    - Temperature / Humidity / Pressure / Battery / Motion

  Enterprises can **optimize**
  - Transportation
  - Distribution

  Enterprises can **minimize**
  - Labor
  - Time

- Result: Improved Performance: **Velocity & Cost**
  - Shorter customer wait times
  - Leaner supply chain

Technical Discriminators

Integrated Sensors
Addt'l Sensor Interface
Low Power
Controlled Network
Minimum Infrastructure
HERO Certified
Flexible Architecture