

**Supply Chain Event Management:
Business Benefits and ROI
Thursday, September 5, 2002**

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**Supply Chain Event Management:
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- TI Company Overview
- TI leader in collaboration
- Business Objective-SCEM Transportation Tracking
- General Technical Architecture (SAP Standard)
- Key business issues and solutions
- Key business applications
- Summary

Texas Instruments Overview

Texas Instruments Incorporated provides innovative DSP and analog technologies to meet our customers' real world signal processing requirements. In addition to Semiconductor, the company's businesses include Sensors & Controls, and Educational & Productivity Solutions. TI is headquartered in Dallas, Texas, and has manufacturing, design or sales operations in more than 25 countries.

Texas Instruments is traded on the New York Stock Exchange under the symbol TXN. More information is located on the World Wide Web at www.ti.com.

Employment

Approximately 34,700 worldwide
This includes approximately:

- 20,800 in The Americas
12,500 in Texas
11,200 in North Texas
10,000 in Dallas area

- 7,900 in Asia
- 3,300 in Japan
- 2,700 in Europe

Research and Development

\$1.5 billion Pro forma in 2001;
\$1.5 billion Pro forma in 2002 est.

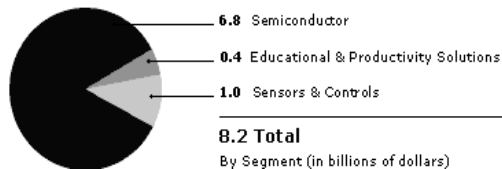
Capital Expenditures

\$1.8 billion in 2001;
\$800 million in 2002 est;

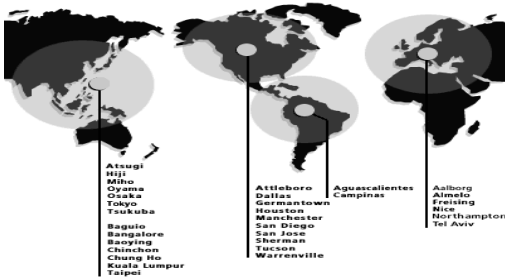
Fortune 500 Ranking

236 (based on 2001 fiscal year)

TI Revenues (2001)



TI Worldwide Operations



REAL WORLD SIGNAL PROCESSING™



Texas Instruments Leads in Collaboration

Making life easier for our
Customers
and
Business Partners
September 5, 2002

REAL WORLD SIGNAL PROCESSING™



Texas Instruments' Collaboration Strategy

- ❖ We drive integration with our customers and business partners to support collaboration throughout the complete product life cycle.

- ❖ Why
 - The complexity of designs is increasing exponentially
 - Time to market is more and more critical for success
 - Collaboration is key to faster, easier, cheaper and more accurate interactions

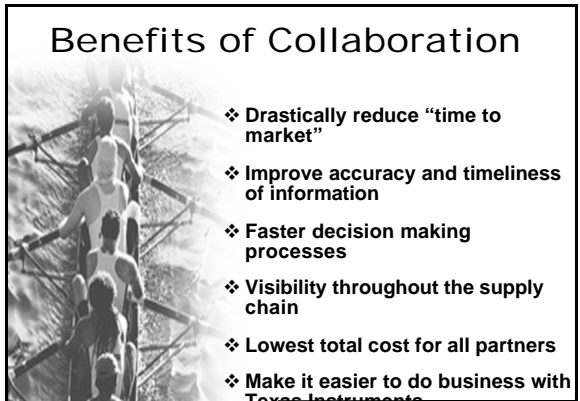


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Benefits of Collaboration

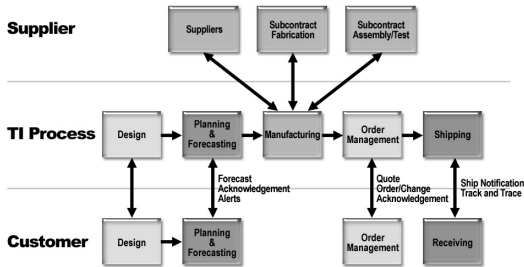
- ❖ Drastically reduce "time to market"
- ❖ Improve accuracy and timeliness of information
- ❖ Faster decision making processes
- ❖ Visibility throughout the supply chain
- ❖ Lowest total cost for all partners
- ❖ Make it easier to do business with Texas Instruments



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Collaboration Process



SCEM Transportation Tracking

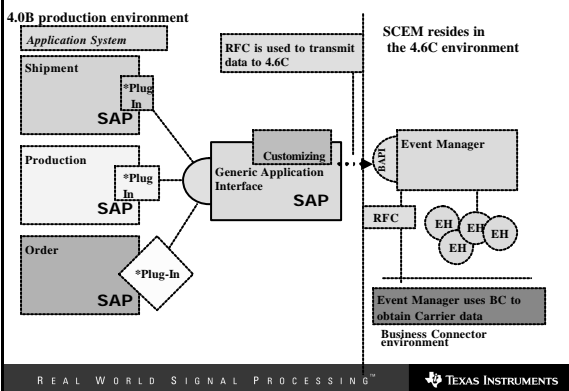
Objective:

- Provide door to door shipping visibility for internal users and customers

Deliverables:

- Full shipping visibility data based on product-level reference numbers (no manual look-up)
- Automatic link between the base SAP system and track/trace data (Event Manager)
- Status, exception, and delivery information available for communication to our customers

SCEM Architecture



SCEM Transportation Tracking

What Are The Capabilities?

- **Door to door tracking** (even if many carriers handle a single shipment)
- **Single number tracking access** (based on the user's typical reference number)
- **Customer web access** to shipment status (from shipping plant to on-dock delivery)
- **Estimated time of arrival** at customer's dock at time of shipment
- **Automatic notification of shipment delays** as they occur (dependent on carrier ability)

SCEM Transportation Tracking

What Are The Key Business Issues and Solutions?

- 1. How do I get tracking/tracing information?
 - SCEM Information Access Capability
- 2. Where is my product/material right now?
 - SCEM Track/Trace Capability
- 3. When will it get there?
 - SCEM Cycle Time Capability
- 4. What if something goes wrong?
 - SCEM Event Notification Capability
- 5. What happened on past shipments?
 - SCEM Proof of Delivery History/Reporting

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SCEM Transportation Tracking

Key Business Issues Solutions:

- 1. How do I get tracking/tracing information?
 - SCEM Information Access Capability

REAL WORLD SIGNAL PROCESSING™



SCEM Transportation Tracking

SCEM Data Access Capability:

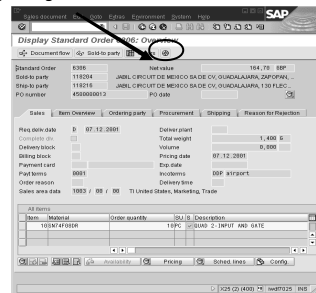
- **Direct worldwide access by internal users from standard SAP processes**
 - From the **Sales order (VA03)**
 - From the **Delivery note (VL03)**
 - From the **Waybill (VT03)**
- **Web access for customers**
 - Can view detailed tracking information

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SCEM Transportation Tracking

- You can access tracking data directly from the **Sales Order (VA03)** by hitting one button



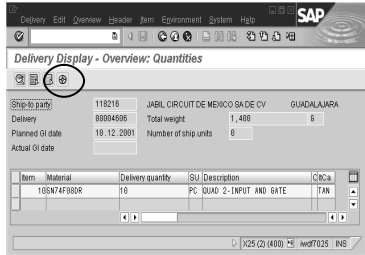
Standard SAP
4.0B System

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SCEM Transportation Tracking

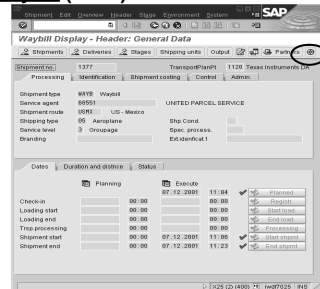
- You can get the same tracking data directly from the **Delivery Note (VL03)**



Standard SAP
4.0B System

SCEM Transportation Tracking

- You can get tracking data directly from the **Waybill (VT03)**



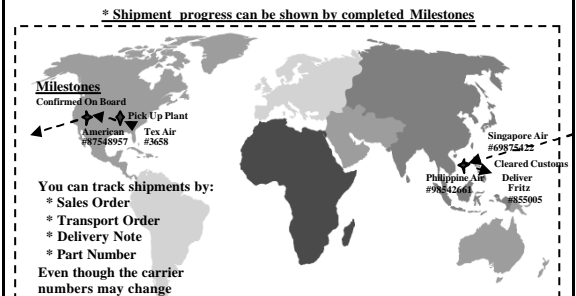
Standard SAP
4.0B System

SCEM Transportation Tracking

Key Business Issues and Solutions:

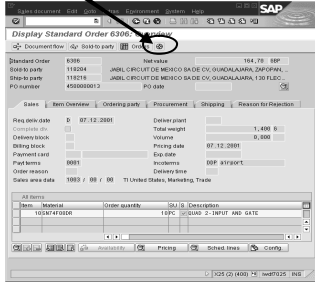
- 2. Where is my product/material right now?
- SCEM Track/Trace Capability

Where is my product right now?



SCEM Transportation Tracking

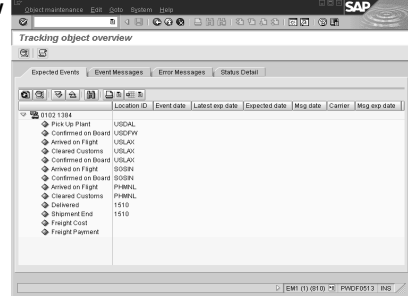
- You can track your shipment directly from the Sales Order (VA03) **by hitting one button** to start the process



Standard SAP
4.0B System

SCEM Transportation Tracking

- The system shows the milestones that the shipment will follow



Event
Manager
SAP 4.6C

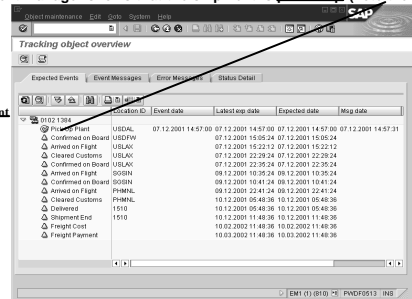
Milestone Tracking-Pick Up At Plant

- Now the shipment is picked up from the plant, so SCEM shows the first milestone



SCEM Transportation Tracking

- The Event Manager shows that the shipment is **picked up** (note the green icon)



Carrier sent
pick up
status
message

Event
Manager
SAP 4.6C

Milestone Tracking-Confirmed on Board

◆ Now the shipment is **confirmed on board** the aircraft, and the aircraft has **arrived** at LAX



SCEM Transportation Tracking

◆ Now the shipment is **confirmed on board** the aircraft, and the aircraft has **arrived** at LAX

Tracking Information Center

Expected Events | Event Messages | Error Messages | Status Detail

Carrier	Location ID	Event date	Latest exp. date	Expected date	Msg date	Ms.
USDAL		07.12.2001 14:57:00	07.12.2001 14:57:00	07.12.2001 14:57:00	07.12.2001 14:57:31	
USDFW		07.12.2001 15:45:00	07.12.2001 15:05:24	07.12.2001 15:05:24	07.12.2001 15:02:57	
USLAX		07.12.2001 16:30:00	07.12.2001 15:22:12	07.12.2001 15:22:12	07.12.2001 15:02:57	
USLAX		07.12.2001 22:28:24	07.12.2001 22:28:24	07.12.2001 22:28:24		
USLAX		07.12.2001 22:35:24	07.12.2001 22:35:24	07.12.2001 22:35:24		
SGSIN		09.12.2001 10:35:24	09.12.2001 10:35:24	09.12.2001 10:41:24	09.12.2001 10:41:24	
SGSIN		09.12.2001 10:41:24	09.12.2001 10:41:24	09.12.2001 10:41:24		
PHMNL		09.12.2001 22:41:24	09.12.2001 22:41:24	09.12.2001 22:41:24		
PHMNL		10.12.2001 05:48:36	10.12.2001 05:48:36	10.12.2001 05:48:36		
1510		10.12.2001 05:48:36	10.12.2001 05:48:36	10.12.2001 05:48:36		
1510		10.12.2001 11:48:36	10.12.2001 11:48:36	10.12.2001 11:48:36		
1510		10.02.2002 11:48:36	10.02.2002 11:48:36	10.02.2002 11:48:36		
1510		10.03.2002 11:48:36	10.03.2002 11:48:36	10.03.2002 11:48:36		

Milestone Tracking-Deliver

◆ The shipment **cleared customs** in Manila and is ready for **delivery**



The shipment **cleared customs** in Manila and is ready for **delivery**.

Note that data is only loaded for milestones that are transmitted by the carrier.

Object maintenance | Edit | Copy | System | SAP

Tracking object overview

Expected Events | Event Messages | Error Messages | Status Detail

Carrier	Location ID	Event date	Latest exp. date	Expected date	Msg date	Ms.
USDAL		07.12.2001 14:57:00	07.12.2001 14:57:00	07.12.2001 14:57:00	07.12.2001 14:57:31	
USDFW		07.12.2001 15:45:00	07.12.2001 15:05:24	07.12.2001 15:05:24	07.12.2001 15:02:57	
USLAX		07.12.2001 16:30:00	07.12.2001 15:22:12	07.12.2001 15:22:12	07.12.2001 15:02:57	
USLAX		07.12.2001 22:28:24	07.12.2001 22:28:24	07.12.2001 22:28:24		
USLAX		07.12.2001 22:35:24	07.12.2001 22:35:24	07.12.2001 22:35:24		
SGSIN		09.12.2001 10:35:24	09.12.2001 10:35:24	09.12.2001 10:41:24	09.12.2001 10:41:24	
SGSIN		09.12.2001 10:41:24	09.12.2001 10:41:24	09.12.2001 10:41:24		
PHMNL		09.12.2001 22:41:24	09.12.2001 22:41:24	09.12.2001 22:41:24		
PHMNL		05.10.2001 23:30:00	10.12.2001 05:48:36	10.12.2001 05:48:36	07.12.2001 15:13:30	
1510		10.12.2001 05:48:36	10.12.2001 05:48:36	10.12.2001 05:48:36		
1510		10.12.2001 11:48:36	10.12.2001 11:48:36	10.12.2001 11:48:36		
1510		10.02.2002 11:48:36	10.02.2002 11:48:36	10.02.2002 11:48:36		
1510		10.03.2002 11:48:36	10.03.2002 11:48:36	10.03.2002 11:48:36		

Event Manager SAP 4.6C

SCEM Transportation Tracking

- After the shipment is delivered, you can **drilldown** to get proof of delivery information (date/time/signed for name)

Details	
Group description	Call content
Globally Unique ID	00N40mg0rMYAFBnM5QHLLB
Ev codeset	OTLU
Ext evt cd	D
Event code	OPOD
Event date	27.11.2001 09:05:00
Event date UTC	27.11.2001 09:05:00
Event date local	27.11.2001 09:05:00
Msg date	07.12.2001 13:00:44
Msg TZ	CET
Msg date UTC	07.12.2001 12:00:44
Msg date local	07.12.2001 13:00:44
Processed date	07.12.2001 12:00:44
Recipient name	JOHNSON
Message Source Type	IS
Trk ID type	OFCN
Trk ID	1Z7XK770311508029

Event
Manager
SAP 4.6C

SCEM Transportation Tracking

Key Business Issues and Solutions:

- 3. When will it get there?
- SCEM Cycle Time Capability

Cycle Time Capability



Capabilities:

- You can see the delivery date at time of shipment
- You can load planning factors and track variances
- You can track cycle time at the milestone level

Cycle Time Capability

You can load the planned cycle time for each milestone (planning factors)

Screenshot of SAP Waybill Change - Header: General Data. The table below shows the planned cycle times for each milestone.

Date	Duration and distance	Status
07.12.2001	14:55	Planned
Check-in	00:00	Planned
Loading start	00:00	Start load
Loading end	00:00	End load
Trip processing	00:00	Processing
Shipment end	00:00	End shipment
Shipment end	00:00	End shipment

Standard SAP 4.0B System

SCEM Transportation Tracking

Key Business Issues and Solutions:

- 4. What if something goes wrong?
- SCEM Event Notification Capability

The system shows the expected date, the latest expected date and the actual event date for each milestone

		Actual	Latest	Expected	Log date
01021384					
Pick Up Plant	USDAL	07.12.2001 14:57:00	07.12.2001 14:57:00	07.12.2001 14:57:00	07.12.2001 14:57:31
Confirmed on Board	USDWF	07.12.2001 15:45:00	07.12.2001 15:05:24	07.12.2001 15:05:24	07.12.2001 15:02:57
Arrived on Flight	USLAK	07.12.2001 16:30:00	07.12.2001 15:22:12	07.12.2001 15:22:12	07.12.2001 15:02:57
Cleared Customs	USLAK		07.12.2001 22:29:24	07.12.2001 22:29:24	
Arrived on Flight	USLAK		07.12.2001 22:35:24	07.12.2001 22:35:24	
Confirmed on Board	USGRN		08.12.2001 10:35:24	08.12.2001 10:35:24	
Arrived on Flight	USGRN		08.12.2001 10:41:24	08.12.2001 10:41:24	
Confirmed on Board	USGRN	05.10.2001 15:45:00	09.12.2001 10:41:24	09.12.2001 10:41:24	07.12.2001 15:13:30
Arrived on Flight	PHMRL		08.12.2001 22:41:24	08.12.2001 22:41:24	
Cleared Customs	PHMRL		10.12.2001 05:48:36	10.12.2001 05:48:36	07.12.2001 15:13:30
Delivered	1510		10.12.2001 00:48:36	10.12.2001 00:48:36	
Shipment End	1510		10.12.2001 11:48:36	10.12.2001 11:48:36	
Freight Cost			10.02.2002 11:48:36	10.02.2002 11:48:36	
Freight Payment			10.03.2002 11:48:36	10.03.2002 11:48:36	

(actual screen layout can change)

Milestone Tracking - Delayed Shipment

Something happens to the shipment while it is enroute

- Weather delay
- Equipment problem
- Customs delay
- Etc.

Shipment Delays (Exception Reporting)

How delays are communicated to and found by the system:

1. The carrier can load the delay and reason code (using this screen)
2. The system can "flag" a late shipment that exceeds the expected milestone window
3. The system can "flag" missing milestone data, that needs to be researched
4. The system can selectively send exception reports, based on customer, part number, etc.

Event	Location	Start/End Time	Reason Code
Pick up Plant	USDAL	07.12.2001 14:57:00	001
Confirmation on Board	USDWF	07.12.2001 15:05:24	001
Arrived on Flight	USLAK	07.12.2001 15:22:12	001
Cleared Customs	USLAK	07.12.2001 22:29:24	001
Arrived on Flight	USLAK	07.12.2001 22:35:24	001
Confirmation on Board	USGRN	08.12.2001 10:35:24	001
Arrived on Flight	USGRN	08.12.2001 10:41:24	001
Cleared Customs	PHMRL	10.12.2001 05:48:36	001
Delivered	1510	10.12.2001 00:48:36	001
Shipment End	1510	10.12.2001 11:48:36	001
Freight Cost		10.02.2002 11:48:36	001
Freight Payment		10.03.2002 11:48:36	001

Delayed Shipments

How the system notifies you of a problem

The system will display a red stoplight on your screen

The screenshot shows the SAP Tracking object overview interface. A red stoplight icon is visible in the top right corner of the window. Below the icon, a message reads: "Express document: '12327008390010412 ES - Delayed' received from author". The main area of the window displays a table with columns for 'Dispatch Date', 'Event Messages', 'Event date', 'Expected date', and 'Msg. class'. The table contains several rows of data, with the first row showing a dispatch date of 03.12.2001 and an expected date of 03.12.2001.

You can drill down to see the reason for the delay

The system will send you an E-mail message or report

SCEM Transportation Tracking

Key Business Issues and Solutions:

- 5. What happened on past shipments?
 - SCEM Proof of Delivery History
 - SCEM Reporting Capability

Proof of Delivery/Reporting

- **Proof of delivery history** is available to support customer invoice payment requests
- There is a **full reporting database** to support customer requests (such as customer shipping history)

Examples of data elements that are available for reporting

The screenshot shows the SAP Tracking object overview interface with a table of data elements. The table has columns for 'Element', 'Parameter Name', 'Parameter Value', 'Index', and 'Length/Category'. The data is as follows:

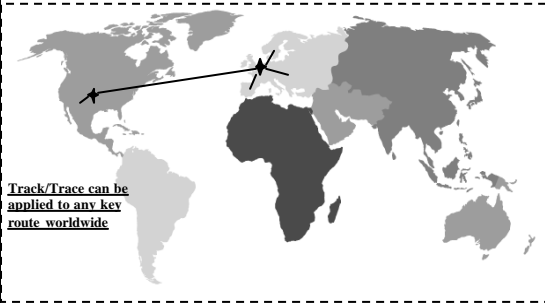
Element	Parameter Name	Parameter Value	Index	Length/Category
1	1000	1000	1	4
2	1000	20012001	2	8
3	1000	1000	3	4
4	1000	1000	4	4
5	1000	1000	5	4
6	1000	1000	6	4
7	1000	1000	7	4
8	1000	1000	8	4
9	1000	1000	9	4
10	1000	1000	10	4
11	1000	1000	11	4
12	1000	1000	12	4
13	1000	1000	13	4
14	1000	1000	14	4
15	1000	1000	15	4
16	1000	1000	16	4
17	1000	1000	17	4
18	1000	1000	18	4
19	1000	1000	19	4
20	1000	1000	20	4

SCEM Transportation Tracking

SUMMARY: SCEM SUPPORTS KEY BUSINESS ISSUES

- 1. How do I get tracking/tracing information?
 - SCEM Information Access Capability
- 2. Where is my product/material right now?
 - SCEM Track/Trace Capability
- 3. When will it get there?
 - SCEM Cycle Time Capability
- 4. What if something goes wrong?
 - SCEM Event Notification Capability
- 5. What happened on past shipments?
 - SCEM Proof of Delivery History/Reporting

Other Transportation Track/Trace Applications



Track/Trace can be applied to any key route worldwide

SCEM Transportation Tracking

Key Business Applications

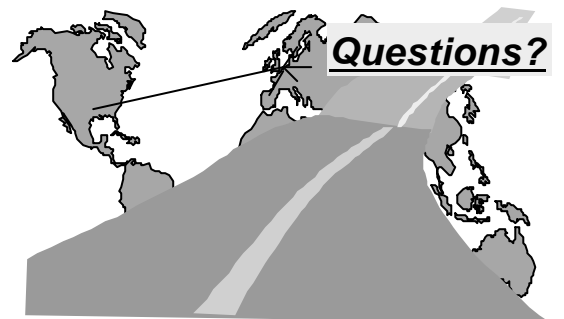
- Transportation tracking (operations)
- Transportation cycle time measurement/improvement
- Proactive exception management
- Proof of delivery (credit and collections)
- Customer service support

SCEM Transportation Tracking

Who are the Key Business Users?

- Customers
- Customer Service
- Planners
- Manufacturing
- Logistics

SCEM Transportation Tracking



Questions?

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