

# Texas Instruments, Inc.



## Product Tracking & Traceability “AUTOTRACK”

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# DISCLAIMER



- **The mention of specific suppliers, consultants and integrators is for information sharing only and not an endorsement by TI**

# What Is TI's 2D AUTOTRACK System?



**TI custom module** on SAP Open Business System :

Includes:

- 1D/2D automation enabled applications
  - Product tracking in TI multi-factory supply chain (including subcon manufacturers).
  - TI & Customer AID marking & labeling system
  - 10 year real-time Genealogy Trace system
  - Quality containment (Hold/Release System)
- Pack to Order/Demand
  - WW “Ship From Anywhere-To Anywhere”

## 2D - Compelling Justification for TI (1999)



- **Running out of space on labels (Demand for new data)**
- **Need for Real-Time Access to Genealogy Data**
- **Scan efficiency (need for single scan of multiple data fields)**
- **Need for automated containment (QA Hold/Release system)**
- **Customers asking for more human readable & 2D data on a label (Moisture Data, Lead-free Symbol, etc.)**
- **Customer demand for Automated Part Tracking (2D Direct Marking)**
- **We were installing new Business System (development synergy)**

# Basic TI Multi-Factory Flow



Raw Wafer  
Suppliers



TI & Subcon  
Wafer Fabs \*



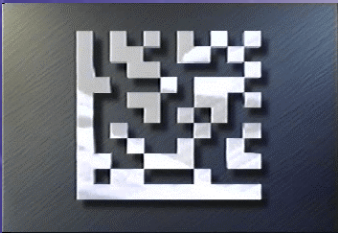
TI & Subcon  
Assy/Test Sites \*



TI WW Distribution  
Centers \*



Customers \*



\* Data Matrix Code  
Provides the Link

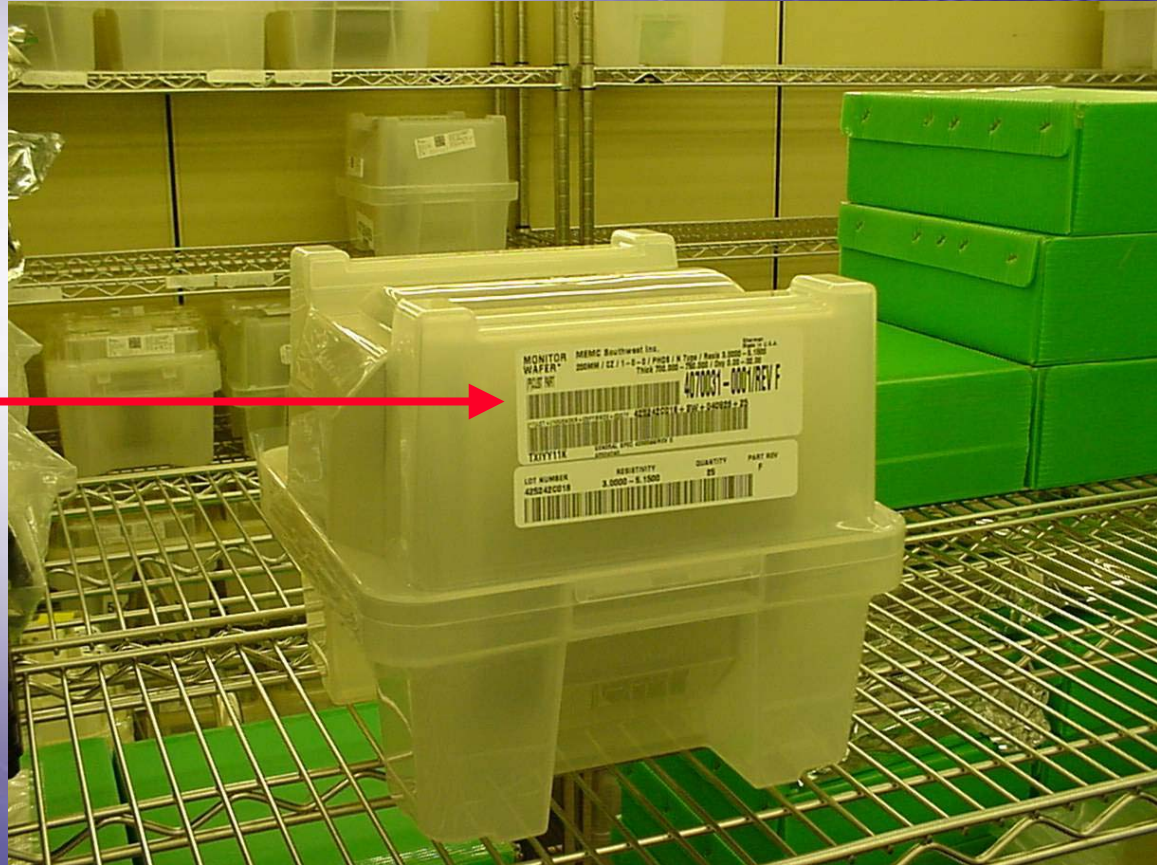
# Basic TI Multi-Factory Flow

TI & Subcon  
Wafer Fabs



## PRIOR PROCESS

1D Barcodes could  
no longer support  
Data/space req'mts



# Basic TI Multi-Factory Flow



TI & Subcon  
Wafer Fabs



1D Barcodes still good for mfg operation when Tracking by lot# only

2D is better for “Product Package Labeling” of all Needed ID Tracking Attributes for outgoing Wafer Lots.



# Basic TI Multi-Factory Flow



TI & Subcon  
Assy/Test Sites



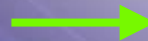
TI Digital Mirror Device  
DLP Technology By  
Texas Instruments™

TI Digital Mirror Device  
Die/Chip Level Trace Code  
(Backside Laser Etch)

120 Pin I/C (Automotive)  
Lot Level Trace Code  
(Topside Laser Etch)



TI is flexible regarding  
trace "Data structure/Syntax"  
But rigid concerning superior  
Performance/Quality of 2D  
Data Matrix and Laser Etch



**YMLLLLSWWXXYY**

- YMLLLLS = Assy/Fab Lot
- WW = Wafer Number
- XXYY = Die Location

**0990-9389,980,YMLLLLS**

- Customer Part Number
- Supplier Cage Code
- YMLLLLS = Assy/Fab Lot

# Basic TI Multi-Factory Flow

TI WW Distribution Centers \*



TI 2D Tracking Stocking/Pick Label

TI 2D Contents Label (Serialized Die Trace Codes)



# TI 2D Tracking Label



- Up to 40 Data fields (approximately 300 characters of data, maximum)
- Genealogy captured/stored automatically from subcon at 1<sup>st</sup> scan process
- Contains customer/industry required moisture/reflow temp and environmental data.
- QA Hold checks done automatically when scanned at order pick
- Every scan process automatically updates genealogy (including ship to customer, ship date, & packlist/delivery number (for 10 year real-time trace/containment system).

# If/When you “Go For It”



- **Get Corporate Sponsors Early**
- **Define project well & bring “2D” full service providers in to help you with the details of qualifying & sourcing the necessary equipment, s/w, & materials.**
- **Justification can be measured but is more obvious when product identification, tracking, traceability, & QA HOLD/RELEASE system can all be integrated as one global system (hence, TI’s Auto-Track System).**
- **Time the 2-D implementation with other system/software changes within IT group**

## **“Measures Of Success”**



- **Users do not want to return to old process**
- **Prior Critics of new technology now take credit for it**
- **If no customer were to embrace 2D, your**
  - **company would still benefit from it**
- **Improved outgoing “logistics” & Quality Operating Systems**
- **Finer granularity of traceability and product tracking data (1-hour forward/backward traceability from Fabrication to “Ship-To” Customer)**
- **Reduced processing time (cycle time improvement)**