



## Logistics Association of Australia Ltd

### TECHNOLOGY SOLUTIONS: MAKING IT SIMPLE

The Logistics Development Award is sponsored by CHEP Australia and supported by TMP Worldwide.

Following is the last in a series of articles from Paul Walton, winner of the Logistics Development Award 2001, sponsored by CHEP Australia and supported by TMP Worldwide.

Each and every business manages planning challenges within its supply chain. These challenges can be driven by forecast uncertainty, lead times, BOM complexity, capacity, product lifecycle, cost, SKU range, network complexity, volume, demand seasonality, routing complexity, or supply performance, to name just a few.

En-route to the Council of Logistics Management I visited Texas Instruments (TI) and its partner Accenture, who have both been world leaders in the development of advanced supply chain planning. This case study illustrates the commonsense approach of choosing and integrating best fit applications for planning and execution, ignoring the common wisdom that a single complete solution will deliver best results.

#### **COMPANY BACKGROUND**

Texas Instruments, based in Dallas, was established in 1930 as an oil exploration business. Group turnover is close to US\$12billion; 87% derived from the semiconductor market.

TI has a long history of innovation in supply chain planning & Accenture has been a longstanding consulting partner, to the extent of permanently occupying three floors on the Dallas site.

#### **MANUFACTURING AND NETWORK**

The semiconductor manufacturing process can be broken into three main components:

- Wafer fabrication
- Distribution
- Assembly/test

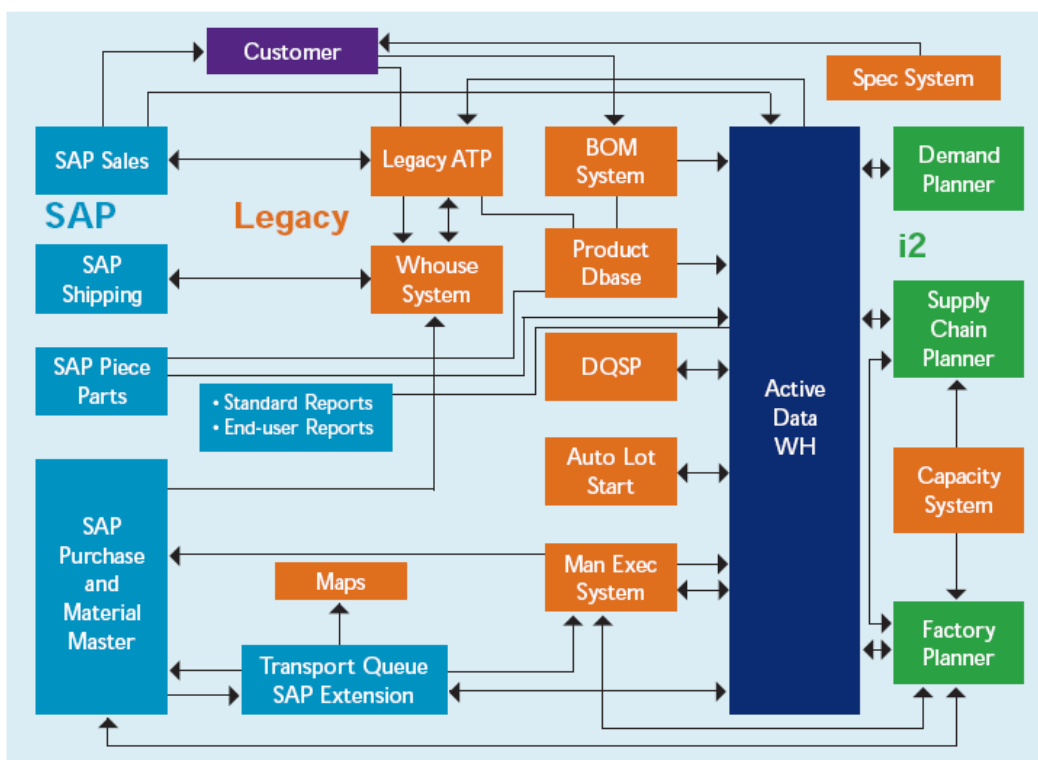
Although the process appears simple, at a detailed level plant routing and bills of materials are complex. The supply chain is truly international. While for quality reasons wafer fabrication is justifiable in the US, Europe and Japan, it

is more economical to perform assembly and testing in the lower labour cost economies of Asia and South America. The manufacturing network consists of 7 interchangeable wafer fabrication plants in US, Europe & Japan; and 5 interchangeable assembly/test plants in Asia/South America. Most stock returns to the bigger economies for distribution.

Interchangeable plant capacities must be maximised. Product lifecycles are extremely short.

What results is wafer fabrication, assembly and testing, and 22 separate transport handoffs during a trip around the world – all within a 14 cycle time.

Figure 1: TI System Architecture



### SUPPLY CHAIN CHALLENGES

In designing an appropriate planning system, Texas Instruments faced some real challenges:

- Vast physical network
- Short lifecycle market
- Complicated BOM and assembly
- Upgrade capability is mandatory
- Interchangeable plants
- 14 day cycle time with a 6 day customer lead time

TI also has some strengths that played an important part in the design of the planning solution:

- Effective legacy systems in key executional areas (plant capacity, order management, BOM, manufacturing execution)
- Budget, priority and internal technical capability for a world class solution

## **PLANNING SOLUTION**

TI has implemented in essence a hybrid approach.

- The executional legacy systems that were delivering, were maintained
- SAP was implemented as the transactional system
- I2 was implemented for planning demand, supply network and plant schedules

The real implementation effort has focused on the area that most often contributes to failure in integrated planning: program integration and data management. Accordingly, the corner stone of the system was an Active Data Warehouse, around which the remainder of the system is designed. This relegates the remaining systems to being simply data processing systems, greatly increasing the upgrade capability.

## **CONTRIBUTION OF THE CASE STUDY**

The Texas Instruments' approach provides a valuable lesson. TI has the resources and expertise to implement a world class supply chain planning solution. Instead of being forced into a single "best fit" solution, it has maximised both planning and transactional capability by choosing process optimal systems.

The use of a Central Data Warehouse has simplified both the design and integration task of the solution. It has also provided a central store of information which enables the data processing systems including SAP, i2 and the legacy systems to be most simply replaced or upgraded.

## **A FINAL WORD: STUDY TOUR KEY INSIGHTS**

Being the last paper in a series on the international study tour, this is a great opportunity to crystallise my key insights in a brief summary:

*Companies with great supply chains develop process ahead of technology*  
 Companies such as Texas Instruments, Grainger and Tyco Mallinkrodt have built their logistics initiatives around solid processes that were later supported, not enabled, by technology.

*Supply chain competitive advantage is enabled by drive for innovation and a commitment to pushing the envelope*  
 All the companies visited had deliberately done something different from their competitors. More importantly, each one had further plans to continue stretching the gap.

*Successful companies have found innovative ways to manage their extended supply chains*

Lion Breweries, Micron PC, Tyco Mallinkrodt, Grainger and CHEP have all developed ways of extending their management influence beyond their internal boundaries. The importance of this capability will grow even more as supply chain cycles continue to compress.

*World class firms focus on value instead of cutting edge solutions*

Texas Instruments and Tyco Mallinkrodt initiated and developed their successful supply chain projects in response to business imperatives. In some ways their methods could be considered old-fashioned, but the outcomes were still rewarding.

*Winning logistics initiatives never forget people*

When asked the most important factor of success, without exception, every firm cited the commitment and buy-in of staff and suppliers. The supply chain is about communication, and people are the heart of communication.

*Size has nothing to do with world class supply chains*

The supply chains visited had turnovers from very small to US\$12 billion, but every one had an outstanding logistics initiative. Australian supply chain practitioners can take heart that no insight above prevents us from the drive to world class.