



**Mr Robert  
F. Byrne**

CEO of Terra Technology

## THE POWER OF



**W**hat is the use of mathematics in supply chain? Well, it is more than just adding up the number of items in your inventory, or calculating your company's yearly revenue. Using better mathematics can actually help you to sense demand, optimise inventory, and predict transportation as well as warehousing requirements.

This is where Terra Technology comes in, a company with a strong focus and specialisation in mathematics to achieve accurate forecasting. Since the company's establishment in 2001, it has provided services to some of the most admired companies in the world, such as Shell, Procter & Gamble, Unilever, Mondelez International, Kimberly-Clark, Kraft Foods, ConAgra Foods, General Mills, Kellogg and Campbell Soup.

Supply Chain Asia is pleased to be in contact with Mr Robert F. Byrne, the founder and CEO of Terra Technology, who shared with us his motivations behind starting the company, and the importance of advanced technology in supply chain.

# DIALOGUES

## SCA: What motivates you to focus on boosting supply chain efficiency and sustainability?

**RFB:** My experiences with forecasting systems at Unilever and James River were very disappointing. Demand Planning error in Consumer Products was (and still is) about 50 per cent, even for next week. I believed there had to be a way to cut that dramatically with better mathematics. Today, multinationals use Terra's solutions to cut planning error by 40 per cent, remove days of inventory and improve supply chain efficiency around the world.

We continue to focus on using better mathematics and more data to solve challenges in supply chain – places where we can make a fundamental difference instead of an incremental change. The same goes for sustainability, where delivering step-changes in performance means thinking beyond factory walls to encompass the entire product lifecycle. Once you accept sustainability not as a trend but as a corporate priority that enables growth and scale to meet the needs of a rapidly expanding world population, you realise that sustainability is no longer just about reducing manufacturing emissions. You must manage the environmental footprint from raw materials to consumer use and disposal. It provides an enormous leverage for efforts to make a real difference around the world, especially in fast-growing Asian countries.

## SCA: What are the unique key challenges in Asia that impact supply chain's level of efficiency and sustainability?

**RFB:** Asia's diverse market requirements and distribution constraints make it a challenging region for supply chain planning and execution. This is compounded by rapid population and economic growth and the resulting changes in customer preferences. Successful planning requires the flexibility to accommodate wide differences in network complexity and the ability to use current supply chain data (from multiple sources, including distributors) to build an accurate view of current demand. By standardising on these practices, multinational companies have realised step-changes in forecast accuracy in Asia and achieved significant financial benefits – meeting revenue growth objectives and freeing cash from unproductive inventory.

From a sustainability perspective, it turns out that improving demand prediction is likely the most important activity a manufacturer can do. Although the focus has typically been to lower emissions by reducing redeployments and rush shipments, more importantly, better predictions let companies permanently cut safety stock. This eliminates the environmental footprint associated not just with building, shipping and warehousing products, but the raw material footprints too. These are especially large for goods that rely on agricultural raw materials.

## SCA: Having a high turnover ratio may mean that a company offers too little inventory to keep up with customer demands. How does Terra Technology balance lowering inventory to increase efficiency without affecting the customers?

**RFB:** The key driver for safety stock is demand uncertainty, so the first step to cut inventory without impacting service comes from reducing forecast error by sensing demand. This lets companies confidently lower safety stock while maintaining or improving service. The second step is to replace rules of thumb for managing stock with optimum levels for each product at each location through the use of multi-enterprise inventory optimisation. Combined, these solutions let companies meet consumer demand with the lowest level of inventory.

## SCA: How important is having advanced technology in the supply chain industry?

**RFB:** It is essential to profitable growth. A company's financial projections, excess or lack of inventory, its ability to capture growth opportunities – in short, its wins and losses – all start with demand predictions. The speed at which today's markets move means that the days of using historical data as the basis of future sales are over. Advanced technology allows companies to extract meaningful information from current supply chain data without armies of statisticians. Accurately predicting demand and optimising inventory positions at the item-warehouse level is a mathematically complex and mind-numbingly repetitive task well suited for software. This frees planners to focus on more strategic activities that require human involvement. The companies that use advanced technology will be those that consistently come out on top.

## SCA: How does Terra Technology's software factor in unpredictable occurrences, such as national disasters, into its algorithm?

**RFB:** While it is virtually impossible to predict when a natural disaster like an earthquake or tsunami will strike, companies had better be prepared to respond in the wake of a disaster. By building a network that can sense changes in demand, manufacturers have the visibility to know when consumer patterns shift back



# DIALOGUES



from emergency supplies to regular purchases. Visibility into consumer sales allows them to adjust manufacturing and distribution plans to make sure the right products are on the shelves in affected areas. Since this is not possible with traditional planning systems, companies that sense demand are better positioned to serve consumers and customers in times of need. These companies have a distinct competitive and financial advantage, with the opportunity to build brand loyalty, capture unexpected sales and avoid many of the costs associated with supply chain disruptions.

### SCA: Is there anything that makes you hopeful or concerned for the future of supply chain and logistics in Asia?

**RFB:** I am very hopeful. We are seeing a trend towards the global standardisation of advanced planning technology and process by leading multinational companies. This will accelerate the adoption of cutting-edge technology and practices in Asia and help to offset the additional network complexity and planning challenges that come from rapid economic growth.

### SCA: What does the future hold for Terra Technology?

**RFB:** We anticipate more growth and innovation. We recently opened our first Asian office in Bangalore and have a presence in China. For the foreseeable future, market volatility will continue to put financial pressure on manufacturers to free cash, improve return on capital and achieve profitable growth. Near-term production, distribution and materials decisions represent significant financial commitments, so the spotlight is focused on proven ways to improve supply chain efficiency, especially in the area of improving demand prediction. We see strong growth in numerous global markets, including consumer packaged goods, food, beverage, oil and gas, chemicals and life sciences. We continue to invest in developing innovative solutions that use better mathematics and more data to fulfill the full potential of demand planning. These are exciting times for Terra and our customers. 📈

