

agenttechnology  
+supply.chain.flexibility+

## **Agent Technology Pty Ltd**

**The company:** is a start up software creator and services organisation founded in 2002. It's head office is in Launceston Australia.

**Main Focus:** Business Integration and Adaptive Supply Chain Solutions, including improving communication between large and small business.

**Technology:** Using the strengths of smart and intelligent software agents to add significant value compared with traditional and old technology approaches.

**In 2003 the company received assistance from the Sun Microsystems Asia Pacific Investment Review Panel:** Due to it's innovative use of peer-to-peer & software agent business paradigms.

**Agent Technology selected for DEMO 2004, USA:** The company was selected as having one of the most innovative products in the world by Silicon Valley experts. The DEMO event is focused on the most innovative new products and technologies transforming the industry globally. It was the launch event for E-Trade, palm pilot, Java and other market-disrupting products.

### **Validation of the software agent approach internationally:**

Procter & Gamble Co. saved \$300 million annually on an investment of less than 1% of that amount. P&G's use of agent-based computing helped it transform its supply chain system so fundamentally that the company no longer calls it a supply chain. The Cincinnati-based maker of Tide, Crest, Pringles, Pampers, Clairol and 300 other products now calls its connections to 5 billion consumers in 140 countries a "supply network."

Agent-based computing, while not yet commonplace, is catching on, especially at companies with large, complex supply or transportation networks. In addition to Procter & Gamble, the following companies have tried it and cite benefits that include cost savings, reduced inventories and better customer service:

Merck & Co. used agents to help it find more efficient ways to distribute anti-HIV drugs in Zimbabwe. Ford Motor Co. used agents to simulate buyer preferences, suggesting packages of car options that optimized the trade-offs between production costs and customer demands.

## The Need For Software Agents In Supply Chain Management

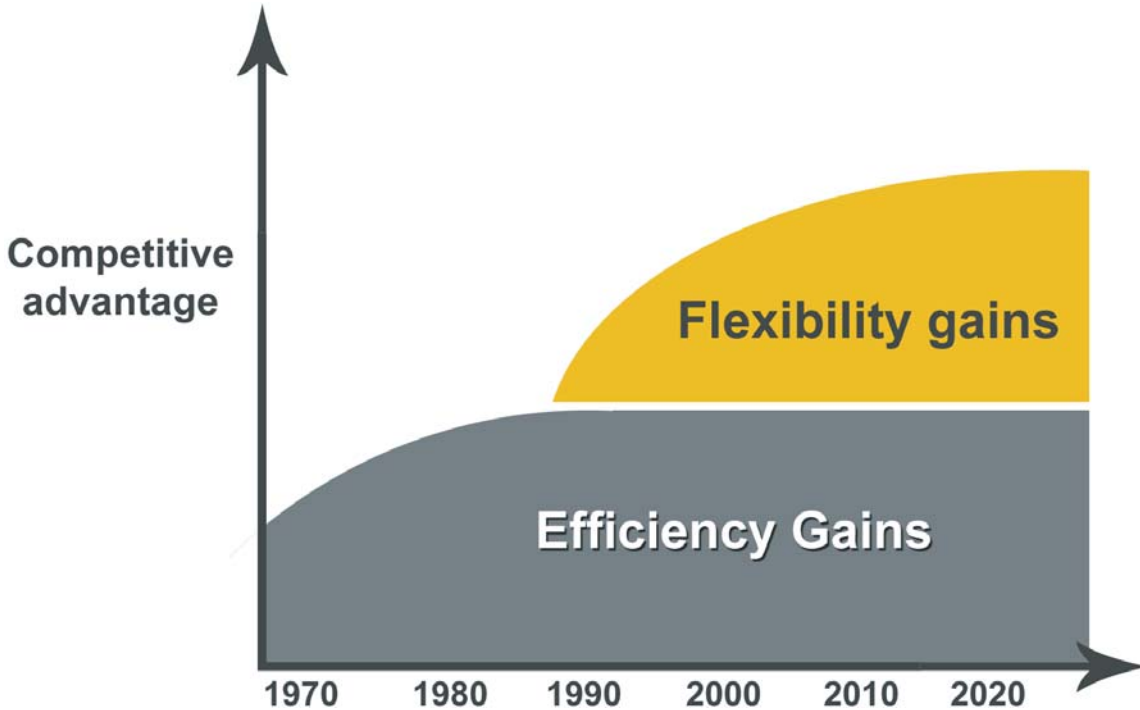


Figure 1: Firms need flexibility to compete in today's highly volatile trading environment  
Source: Forrester Research

Trading networks today are under stress due to the disruptive influence of new business drivers, such as:

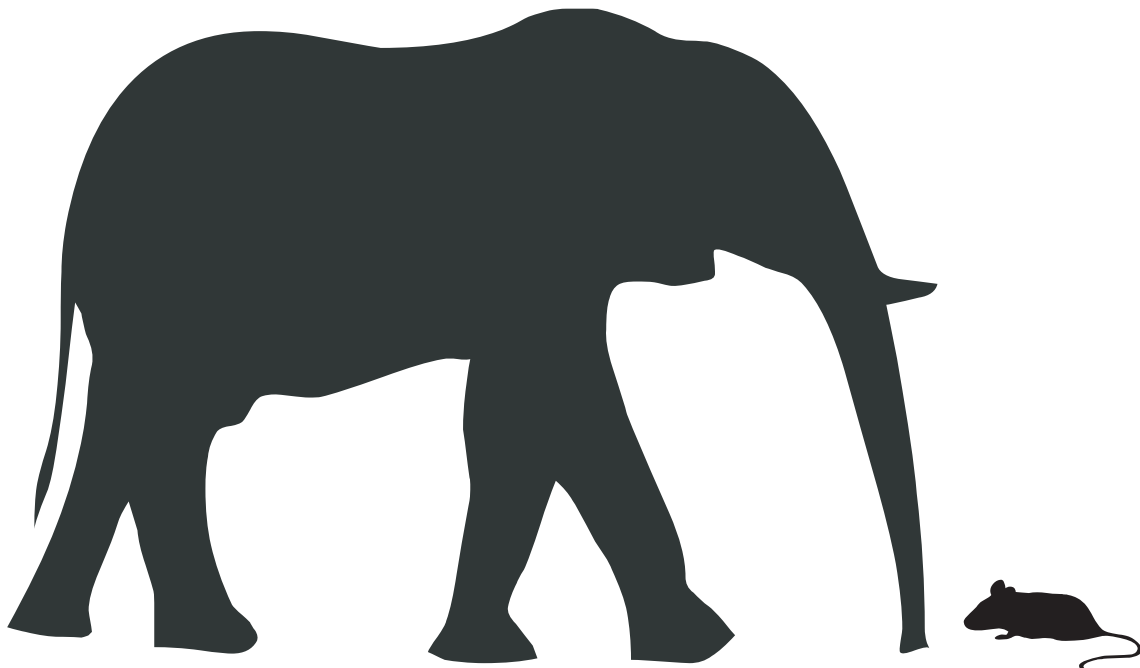
- **Outsourcing:** Outsourcing of business processes is now taking place in industries across the board: Ford outsources more than 50% of their engineering; Nike outsources 80% of its manufacturing to Asia.
- **Shortening product life-cycles:** Did you know that the market life-cycle of a branded drug is less than a year? In other words, if you were a pharmaceutical firm, your new drug may have 17-year patent exclusivity, but that won't prevent your competitor from launching a drug with fewer side effects and steal market share from you.
- **Fickle demand:** This has to do with the growing empowerment of consumers who are using the Internet to choose which products they want, and dictate when and where they want them to be delivered. These three business drivers create such imbalance between supply and demand that they end up generating lots of uncertainty and volatility in our trading environments. As companies face more variability and uncertainty in their trading environments, they have come to realize that being efficient - or productive - is not enough anymore. They need to start worrying about flexibility as well.

## Linking big guys to small guys & small guys to one another

Agent Technology Pty Ltd has developed a technology solution with the ability to enable traditional static supply chains to be transformed into adaptive supply networks. This will revolutionize some areas of supply chain communication. Current supply chains are inflexible and do not cope well with many problems including supply and demand mismatches.

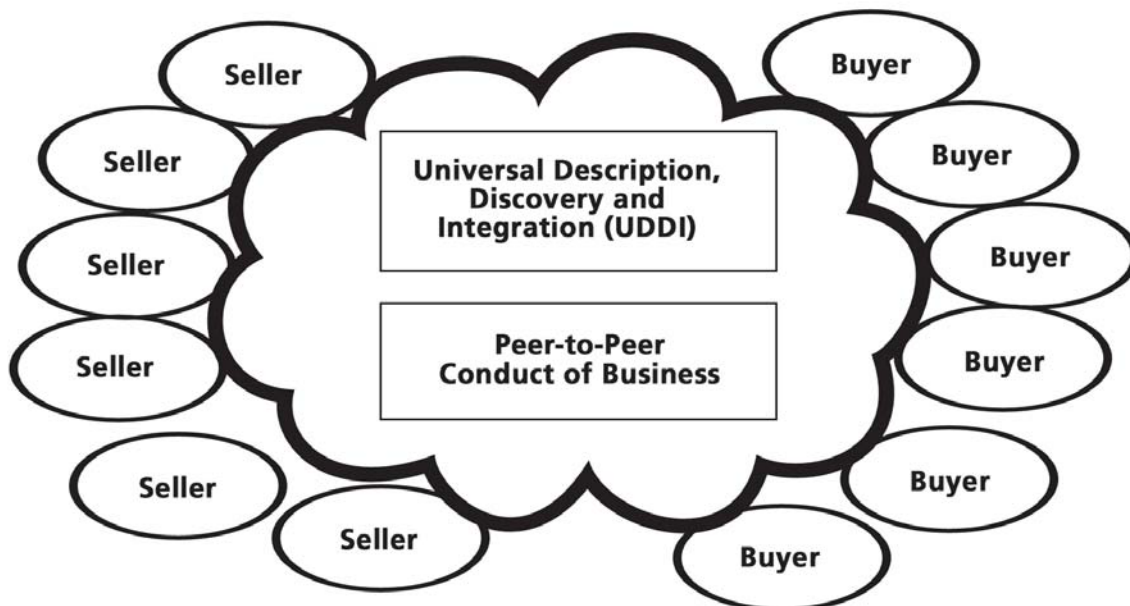
Agent Technology's initial supply chain focus is addressing problems that are primarily in the category of product sourcing (covering areas from procurement to better communication for credit and collections). This segment - covering product sourcing - is not currently well served by any technology vendor. For small and independent businesses in particular this segment is not well served at all. It is difficult to find any reasonable technology solution for small business. Clearly, for professional level sourcing and supply chain needs, there is no reliable or standard product equivalent to MYOB or Quicken in the accounting domain, Word, Excel or Internet Explorer for desktop and office functions, or Google for general web searching.

Agent Technology particularly addresses market segments that have relatively low budgets, potentially numerous small players and a supply chain with factors that may include price volatility, high search costs, and perishable products.



## Turbo charged searching of real time product information on a secure network

The Agent Technology solution is a combination of two key technology elements. A software application that works on behalf of each business in the supply chain and a secure network that connects them all together. The network enables very powerful product searching and can guarantee the information searched is always up to date and relevant (unlike search engines such as Google). The network also enables any buyer to directly connect with its suppliers, without any intermediaries or servers in between. Importantly, each supplier can be totally in control of their information on their own computer if they wish. They don't need to have their catalogue hosted elsewhere if they are uncomfortable with this for reasons of security, privacy or cost.



## Using Agent Technology to Support Supply Chain Management

The focus of supply chain management has shifted from production efficiency to customer-driven and partnership synchronization approaches. To implement this strategic shift requires high-level collaboration between supply chain partners. Software agent technology will have great potential in supporting collaboration in supply chain management. Agent technology can be applied to support collaboration in information sharing, operation cooperation, and dynamic chain configuration.

*"Today, business competition is often no longer company vs. company but supply chain vs. supply chain."*

Member enterprises in the chain need to cooperate with their business partners in order to meet customers' needs and to maximize their profit. Managing multiparty collaboration in a supply chain, however, is a very difficult task because there are so many parties involved in the supply chain operation, each with its own resources and objectives. There is no single authority over all the chain members. Cooperation is through negotiation rather than central management and control. The interdependence of multistage processes also requires real-time cooperation in operation and decision-making across different tasks, functional areas, and organizational boundaries in order to deal with problems and uncertainties. The strategic shift of focus for mass customization, quick response, and high quality service cannot be achieved without more sophisticated cooperation and dynamic formation of supply chains.

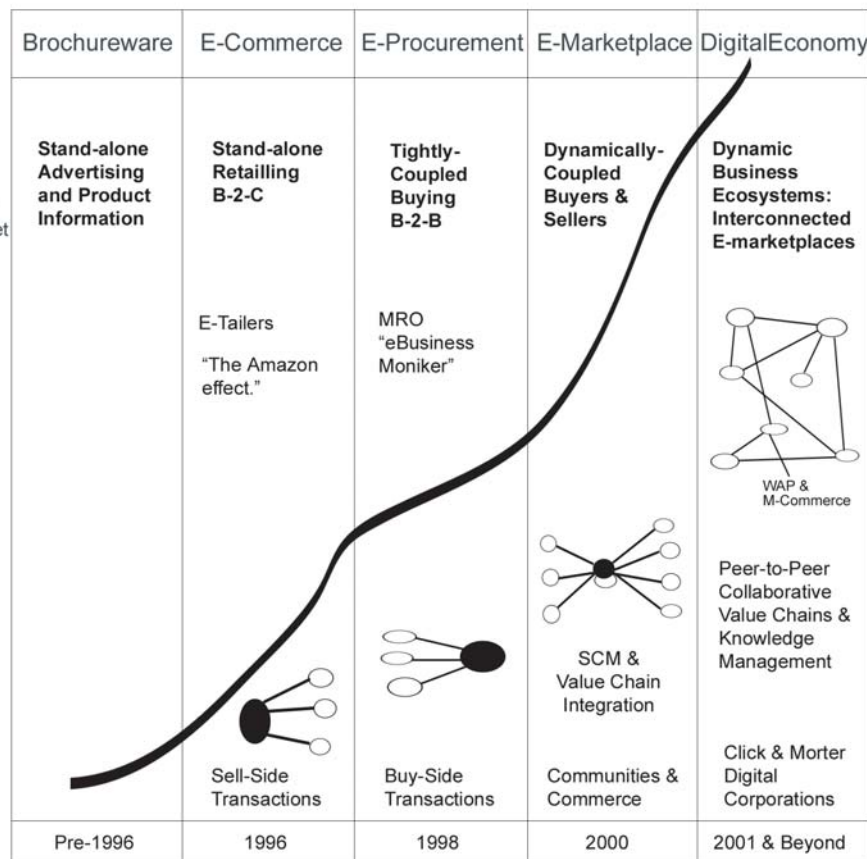
Many information systems have been developed for supply chain management (SCM) from Electronic Data Interchange (EDI) and Enterprise Resource Planning (ERP), to newly developed SCM systems and e-Business solutions including Business-to-Business exchanges or portals. Agent technology is the preferable technology for enabling a flexible and dynamic coordination of supply chains. This technology changes the metaphor for human-computer interaction from direct manipulation by the user to indirect management of background agent processes because intelligent agents can autonomously perform a lot of coordination and everyday tasks on behalf of their users.

## Customers are now in charge: Converting Supply Chains into Demand Chains

It is important to recognize that supply chain power has shifted from manufacturer to retailer, and finally to consumer. In the 1980s and 1990s, the focus of many companies was to reengineer the supply chain for cost saving. Today, customers have become increasingly demanding. They expect greater customization, higher quality not just in the product itself, but also in delivery and packaged services. The most pressing issue facing modern business is delivering value to the customer - what they want, when and where they want it, and at the lowest possible price.

Consumers will be in charge of supply chains and will dictate how business is done in the future. The name "demand chain" is used to emphasize the customer-driven nature of supply chains. A demand chain represents a process that flows from the mind of the consumer to the market. It goes beyond the physical distribution boundaries of supply chain management.

Demand chains seek to unite channel members with the common goal of "delighting" customers and solving consumer problems by: 1. Gathering & analyzing knowledge about consumers, their problems, and their unmet needs. 2. Sharing with the other chain members knowledge of customers, available technology, and logistics challenges and opportunities.



## The evolution of information technology for supply chain management

Information is the key to the success of a supply chain because it enables management to make decisions over a broad scope that crosses both functions and companies. There are different information systems to support SCM from early less-sophisticated legacy systems to more advanced SCM systems (see Table 1 below for a summary).

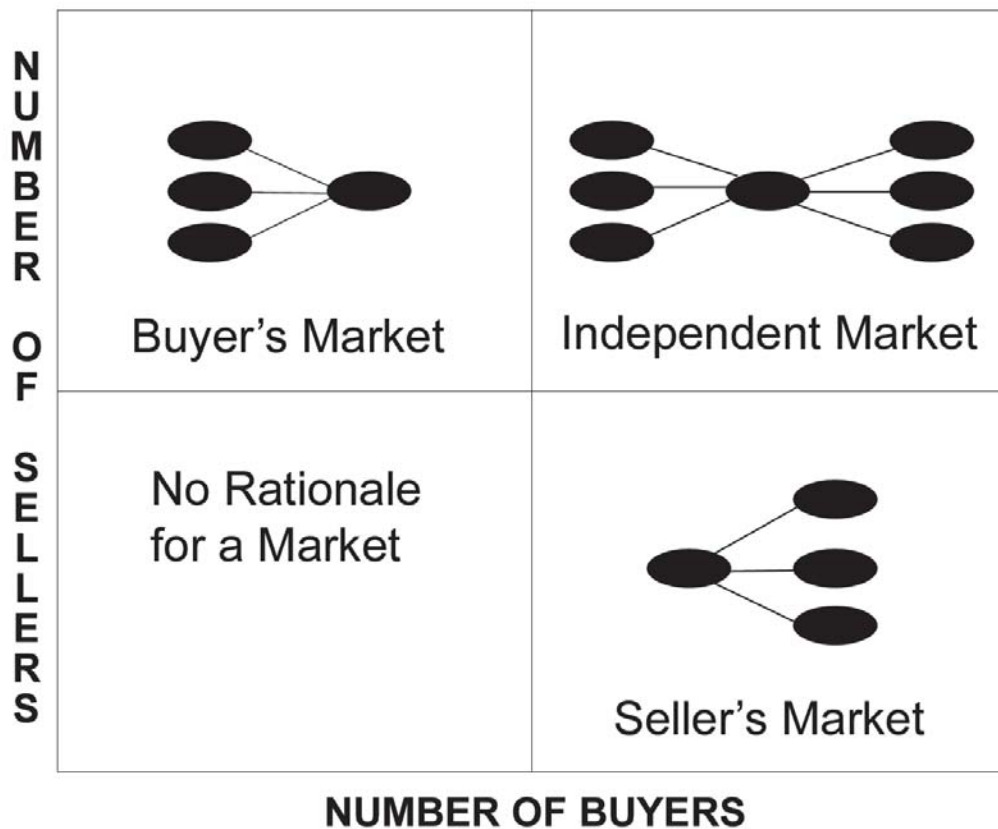
Table 1: Summary of Information Systems for SCM

<b>Systems</b>	<b>Objectives and functions</b>	<b>Limitations</b>
Legacy systems	Transaction process for isolated functions such as order entry, inventory control, or accounting	Lack of integration between functional areas
Electronic Data Interchange (EDI)	Electronic data interchange between trading partners	Only exchange transaction data with pre-arranged partners; and costly for small business
Enterprise Resource Planning (ERP)	Integrate functional areas within enterprise at the operational level	Intra-enterprise focus, weak analytical capabilities; this also has a "smart hub" and "dumb spokes" approach
Supply Chain Management (SCM) systems	Analytical tools for advanced planning and strategic decisions in SCM	Lack of integration with ERP systems; many systems also have a centralized "smart hub" and "dumb spokes" approach
Business-to-Business (B2B) and Business-to-Consumer (B2C) electronic commerce	Electronic marketplace that enables business transaction with customers and suppliers through Internet	Lack of intelligent support for business collaboration through Internet
Multi-Agent System	Support and automate collaboration in SCM	Commercial applications offer exciting opportunities, providing companies crawl and walk before they run.

**For one group of customers Agent Technology Pty Ltd is addressing a significant friction point:**

The ability to engage small business partners in electronic trading systems. The ability to enable big guys to talk to little guys (and ensuring big guys feel happy doing this); and the ability to empower little guys to talk to other little guys (at the right price for the technology).

One essential foundation is the creation of a supply network that, from a technology perspective, provides a level playing field for all buyers and suppliers, large and small. This is an independent online market.



85% of all businesses have fewer than 20 employees.

98% of all businesses have fewer than 100 employees.

95% of all stores in the USA are single owner stores.

agenttechnology

Level 3  
63-65 Cameron Street  
Launceston Tasmania  
Australia 7250

ph 03 6334 5274  
fax 03 6334 5710  
Int'l +61 3 6334 5274

[info@agent-technology.com.au](mailto:info@agent-technology.com.au)  
[www.agent-technology.com.au](http://www.agent-technology.com.au)

PO Box 1699  
Launceston 7250

ABN: 94 101 527 164

adaptive supply chain network

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