

Recent Trends in Enterprise Computing

Research Paper No: TLI-AP/02/03

*Appeared in the
Industrial Automation Asia Journal
Dec 2001*

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We currently live in a world where change is the only constant. In this scenario info-communication technologies have emerged as the primary drivers of business transformation. They are the basis of sustained competitive advantage in today's rapidly changing corporate environment faced with issues of increased competition, stringent customer demands and globalisation.

To fully harness the potential of the emerging info-communication technologies, it would be useful to assimilate the lessons that we have learnt so far from our experiences in employing information technologies within the business world. Hence, in this article we attempt to map out the increasing prominence of information technologies within companies over the past couple of decades and try to foresee some of the technological developments that will shape future businesses.

1. THE ERA OF COMPUTERISATION & ERP

For the last four decades, virtually all information technology efforts have focused on automating and improving the efficiency of individuals and operating units within the four walls of a company. The majority of early day computing applications in business were epitomized by centralised mainframe systems dedicated to specific number-crunching tasks for accounting and other labour-intensive processes within the organisation. Subsequently, the advent of the personal computer distributed some of this computing power amongst the various departments and the employees and resulted in significant gains in employee productivity. However, large inefficiencies existed as applications were distributed across the various departments of the enterprise and it required a significant amount of time and effort to search and share information across departments

This set the stage for the emergence of Enterprise Resource Planning (ERP) applications. ERP applications took business computing to the next logical stage in business automation, centered on sharing information among multiple individuals and functional areas of the business enterprise. ERP applications were supported by developments in client/server architecture and relational database management systems. As a result of these advances in computing technologies multiple users from different functional areas across the enterprise were provided real-time access to applications developed during the preceding waves of computerisation. These users were also provided new applications that focused on areas such as customer relationship management (CRM) and buyer/seller transactional analysis.

While these advancements allowed individual employees within a company to gain an integrated view of the enterprise's core business processes, information was still inwardly focused, essentially backward-looking and remained off limits to a company's customers and

suppliers. They would have to access this information by exchanging a volley of phone calls and faxes (and sometimes electronic data interchange (EDI)) with multiple human contacts within the enterprise.

2. BUILDING BRIDGES BETWEEN BUSINESSES

Like the change that preceded it, the current cycle in business computing – automating around customers and suppliers – is evolutionary and iterative in nature. Just like ERP enabled collaboration between departments, the Internet has opened up never-before possibilities for widespread, real-time sharing of information among multiple trading partners.

For years, very large companies have relied on a range of methods to try to build more tightly integrated business processes with trading partners. The most significant method has been EDI – a standard for transmitting business documents over private or value-added networks in order to share product information, invoices and purchase orders among business partners. Building proprietary or value-added networks requires very high expenditures making them too expensive for a majority of businesses. Moreover, since EDI distributes information asynchronously by way of batch transmissions, it is not suitable as a medium for real-time pricing and product information.

The change ushered in by the Internet is that for the first time, market activity of multiple participants and their information systems can be tied together in a real-time, shared environment. The Internet is thus a commerce channel as well as a decision-making platform. This shift opens up manifold possibilities for supply chain collaboration ranging from customer-driven ordering, to collaborative design and manufacturing, to real-time pricing on the demand curve.

B2B supply chains in all industries have become increasingly complex across three dimensions. These are visibility: the ability to access inventory levels and supplier capacity to make informed available-to-promise commitments, velocity: the ability to quickly collaborate and communicate throughout the supply chain and quickly replenish directly to the store shelf, and integration: the ability to leverage diversion, postponement, and optimisation techniques across the supply chain.

The many-to-many, multi-tiered nature of the supply chain, as well as the vast number of technology point-solution providers, have made this problem too complex and costly for any single company to tackle. The B2B business opportunity then, is to web-enable your inter-enterprise supply chains, from raw material to retailer, through the creation of e-Marketplaces. A B2B e-Marketplace (also referred to as a trading exchange or trading community) is a trusted, web-based intermediary that facilitates trading between commercial buyers and sellers:

- Facilitates the replacement of paper, catalogue, phone, fax and e-mail transactions in the supply chain by electronic transactions over the Internet.
- Provides new, collaborative mechanisms for forming and growing supply chain relationships on the Internet.
- Leads to “raw material to retailer” supply chain optimisation in specific vertical or horizontal markets, for both indirect and direct materials.

For B2B software companies and marketplace operators alike, it is one thing to serve as a venue for matching buyers and sellers – it is quite another value proposition to facilitate the transaction from end to end, including strategic sourcing, financing, insurance, warehousing and settlement. And ultimately, a far more reaching value proposition is provided by the solution provider that has the ability to monitor, integrate and disseminate data across the supply chain to improve buying practices, optimise channel management, and improve the capacity utilisation of multiple participants in the supply chain

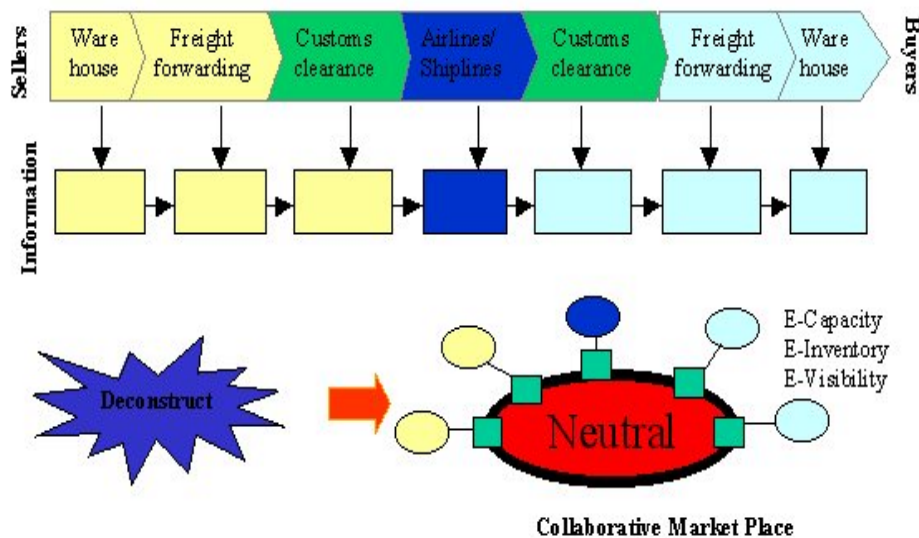


Fig 1: Deconstruction of linear information flow systems to form web-based collaborative exchanges

3. SUPPLY CHAIN PLANNING

End-to-end connectivity in a supply chain affords companies global visibility and allows them to share information instantaneously. These capabilities are precipitating a fundamental change in supply chain management, as static supply chains are quickly giving way to more flexible value chains composed of partners that can be assembled in real time to meet unique requirements. The enterprises and supply chains that today's e-business systems need to manage are dynamic and heterogeneous

The Internet has lowered the barriers to effective collaboration, allowing companies to easily share demand-forecast information, production-capacity requirements, manufacturing schedules, and new product designs. Transaction flows among trading partners have also been greatly facilitated, so companies can remit quote requests, purchase orders, shipment notifications, and online payments in a highly efficient and cost-effective manner.

In more and more industries, it is becoming apparent that the competitive field is no longer limited to company A versus company B. The game is now supply chain network versus supply chain network, with an increasing reliance on collaborative relationships to create links of value. The processes of buying, making, moving and selling products and services

comprise supply chain planning. For these set of processes, companies need superior decision flows and workflows that can leverage the available data, and in real-time, maximise performance. These processes need to support among other things collaborative forecasting and planning, supply and distribution planning, procurement workflows, transportation planning and demand-supply matching.

The building of bridges across companies and inter-enterprise supply chain planning, commonly referred to as B2B, requires a major infrastructure build out that includes: broadband connectivity, databases, hosting security tools, commerce servers, application integration tools, web-enabled ERP applications, application integration modules, supply chain management, content management, dynamic pricing suites, payment and settlement, among others.

4. THE FUTURE

The future depends on the availability of IT and logistics infrastructure and the confidence the stakeholders have in its reliability and security. Also the trust between partners plays a big role in sharing the information. Eventually, there will be issues beyond technology that need to be addressed in order for progress to take place.