White Paper

# Manufacturing ERP is different now: a guide for your review process

**From a paper presented at eWorld Manufacturing and Supply Chain Conference.**

***The 10 areas of change:***

- ***Timescales***
- ***Cost management***
- ***Customers and competition***
- ***Globalisation***
- ***Collaboration***
- ***Consolidation***
- ***Working practices***
- ***Technology***
- ***Business Culture***
- ***Legislation***

## Introduction

An ERP system is fundamental to support business operations, and the more efficient the organisation, the more mission-critical that system has become. The business environment has changed significantly in recent years, and will continue to change. Some industries, particularly the process manufacturers, and others manufacturing for the retail supply chain have experienced dramatic changes to business structure, practices and relationships. An ERP system that is being considered for replacement or major upgrade now is likely to have been selected ten or more years ago, when technology, suppliers and features available were very different to that of today.

In this paper we have taken ten key areas of influence in the evolution of business practices, we look at the changes that have taken place in those areas, and then look at the way ERP systems have to support those areas. Every company's requirements will be different, but the following ten areas highlight the areas of business change which have implications for the ERP system choice, from which a specific and detailed requirements checklist can be drawn up. At the end of the paper there is a functional checklist that can be referred to with each of the following sections.

## 1. Time

Almost every aspect of business is under time pressure. Customers are more demanding, and time is money. Efficiency is measured in time, and manufacturing operations have to operate faster and cheaper than ever before. If a business is to meet its customer requirements, stay competitive and be efficient, then the ERP system structure has to be determined by the business processes and not the other way around. There are a number of areas where the time factor is critical in ensuring an ERP system will provide positive benefits to the organisation.

**New Product Development (NPD)** – as time to market is under pressure and product life cycles are shortening, NPD is becoming increasingly important. NPD is more than just about creating new Bills of Materials – NPD is very industry-specific and needs to provide project management support to reduce the development cycle time and provide better visibility of development costs.

**Order to Delivery time** - manufacturers have to work within ever shortening order lead times, often to shorter times than the manufacturing cycle. This means an ERP system has to support de-coupled manufacturing, "manufacture to forecast: finish to order", with demand management and forecasting thrown in.

**SSI.** Chelford House, Hampshire International Business Park, Crockford Lane Basingstoke Hampshire RG24 8WH
Tel: +44 (0)1256 685200 Fax: +44 (0)1256 685201 **Web: www.ssi-world.com**
A member of Chelford Group plc **www.chelfordgroup.com**

**Manufacturing cycle times** – internal lead time compression is all about streamlining and planning efficiencies. Much can be achieved by planning backwards from required despatch times, and optimising the process routes and plant accordingly. This can mean a radical re-think of the way production is planned. Old fashioned MRP-based "push" systems have no place in modern demand-driven plants. They need a system with production planning based on timed events, with material planning on a time based process model, rather than using works orders. This has significant implications for time granularity in production and materials planning – think in terms of hours and minutes, not daily or weekly lead time "buckets".

**Distribution Channels –** lead time compression has led to changes in distribution, with drop shipments, direct deliveries, web-based logistics tracking and third party logistics operations all becoming the norm. An ERP system now has to support these additional complexities, and also offer easy, low-cost and seamless integration with other systems.

## 2. Costs

Costs are always under pressure, always were, always will be. The difference between profit and loss, survival and failure, can be based on the management of tiny margins. The early cost efficiency drives made easy wins by cutting out the obvious waste. Most companies are now faced with the more difficult task of achieving more with the same or less, and that will involve rethinking the way things are done. An ERP system must never be a constraint, it must provide positive support to process optimisation and cost management.

**Personal Productivity** – people need to use systems that work the way they do, so an ERP system must be configurable to support business processes and individual roles. Ease of use is more than user-friendly screens, it is about minimising the cost of doing a job, through automation of data collection, minimising keystrokes and providing the information where it is needed and when it is needed.

**Cost Management** – what is used in production is probably already being costed, but what about the output costs, cost of waste disposal, use of by- and co-products, costs of compliance and utilities costs? A full cost model must be supported by an ERP system to provide the comprehensive visibility of all costs in the business. This information can be channelled into business KPIs and key metrics in the Executive Information Systems.

**Alternative Sources** – more companies are outsourcing services, production processes or even the entire manufacturing operations. Companies are manufacturing under license, offering contract manufacturing services and moving operations offshore. An ERP system has to have the features to support these activities, and the flexibility to change as quickly as these operations are likely to change.

## 3. Customer Choice and Competition

Did competition create the choice or did the consumer demand it? Whatever the cause, the demand for variety, choice and personalisation has meant that manufacturing operations have to operate more efficiently yet without the economies of large batches. Added to this, the time constraints and restricted product life means that manufacturers have to find ways of anticipating demand or speeding up the response to orders, because it is no longer viable to manufacture large quantities of standard products and hold them in stock. Early ERP systems were designed for just that, and many will have difficulty in supporting the new requirements of configure to order, planning at the generic level in a BoM, production sequencing and plant optimisation.

**Attributes –** many product features and variations can be described with attributes applicable to a standard product, and this is often the way products are described and managed by people in business. It is only the limitations of early ERP systems that forced companies to create cumbersome part numbers for every unique combination. ERP systems that support product attributes and link processes, costs and materials to attributes can significantly streamline operations.

**Beating the competition** – with more competition from the UK and overseas, many manufacturers can only survive by offering something other that the best product or price. That could be added value services, customisation and faster delivery – all of which will require an ERP system designed to support these critical business success factors.

## 4. Globalisation

The world appears to have shrunk, and we now have what is called "porous borders". Add to that the 24 hour news phenomenon, the influence of international legislation, economics and events, and the business environment has a whole new list of pressures. Many UK operations are now part of an international operation, or will have international partners or channels. ERP systems can no longer be insular.

**Responsiveness –** a business needs to be in a position to respond to new requirements, and the ERP system needs to be ready for it. This has two

significant implications for ERP systems: the first is flexibility, in that changes to the ERP must be easy to apply as the business adapts to new requirements; the second is that the ERP supplier must be in a position to promptly provide the ERP enhancements that may be necessary to support local rule changes. It won't be much help if your ERP supplier's development centre is based in the USA and is busy implementing Californian sales tax rules, while Brussels is introducing new rules and regulations for European businesses.

**International Operations –** many international operations are consolidating their businesses for operational efficiency, which means an order taken in one country may be fulfilled from another. As globalisation affects your internal operations, so an ERP system now has to support that seamlessly.

## 5. Collaboration

We have seen a major shift in the way companies interact with each other. Where once a purchasing department was comparing quotes for every requirement, now there are long term contracts between supplier and customer, a higher level of interdependence throughout the manufacturing supply chain, and also an increasing number of joint ventures. This is obviously a good thing for supply chain efficiency, as long term relationships means that operational relationships can be established with efficiency gains – as long as those processes can be automated.

**Supply Chain** – an ERP system must support easy communication between customer and supplier, and that means software tools and standards, not hand-crafted, hard coded interfaces. ERP features must include support for the new way of purchasing, with supplier agreements, vendor managed inventory, contract call-offs according to production requirements and as much automation as possible.

**Outsourcing –** businesses are better off concentrating on what they do best or their specialist areas, and leaving other services to the experts. This brings cost savings and performance gains, but it also means that the ERP system has to support that service collaboration. Many manufacturers now outsource outbound logistics, and more are moving to outsourcing inbound logistics as well. This means the ERP system must support visibility throughout the supply chain regardless of service provider, which has implications for technical integration and product features.

## 6. Consolidation

Few industries have escaped market consolidation and ERP suppliers are no exception. Companies have merged and grown, and the thriving smaller companies have strengthened by becoming niche specialists. Some industries have been exceptionally active in this area, with mergers and acquisitions becoming daily news. Some businesses are intended to be transient, either grown with an intentional exit strategy, or perhaps set up just to exploit a short term market opportunity.

**Specialists –** if you regard your business as a specialist business, then you will require specialist features in your ERP system to support your industry requirements. Fortunately there are suppliers who can offer industry vertical systems and related industry expertise, and there is no longer a need to compromise on business features. If you are a food manufacturer, buy a system from a food industry specialist, not from a supplier of systems to engineering companies! That may sound obvious, but there are plenty of ERP systems still in use that just don't suit the business they are in.

**Flexibility and Integration –** this subject seems to be coming up a lot. Again, if the structure of the business changes, your ERP system must change also. If your company changes ownership, does that mean a re-implementation of a new system, or could it just mean a different link to a corporate system? If your ERP salesman promises that his system is as flexible as putty, make sure it doesn't set like concrete.

## 7. Working Practices

In the office, we have seen a lot more home working, hot-desking and job sharing. In the factory, there is contract labour and immigrant labour, all of which has implications for ERP solutions. Fortunately the technology exists at a realistic price to support a wide variety of working practices, but it is wise to check that an ERP system can work the way you want it to, and deliver acceptable price/performance as well.

**Browser deployment** – having the choice of client technology means you also have choices in deployment. Browser-based applications are assumed to provide low-footprint clients with centralised support, but it is worth checking the technology behind the proposition. Some ERP systems have had just a facelift, others have taken into account the performance limitations of running transactional systems in a web environment.

**Intuitive Systems –** the new ERP environment means more data capture at source and wider direct use of systems to improve operational efficiency. We should no longer expect all our system users to be IT experts, particularly if they may not be with us for long, may not be our direct employees or may

not even speak the local language. An ERP system must be intuitive to use in the context of the job to be done, as every company, every job and every individual has differences. That means the perfect solution will never come in a box, but at least it should be very easy to configure screens and portals to suit the role, whether it is for an interim manager or a foreign national working in the production line. Screens, whether for office PC use or in industrial terminal "kiosks" need to be there to support the job in hand.

## 8. Technology

The good news is that technology has got better, cheaper and more standardised. We are not completely there yet, as there are still islands of proprietary platforms such as IBM iSeries, and RFID standards are still settling down. But compared to ten years ago, there is a lot more choice, users are more IT aware, and Microsoft have created a standard that spans all computer users. What does that mean for the ERP selection process?

**Hardware Platform** – make sure you always have a choice. Competition reduces prices and improves performance, so make sure you can continue to take advantage of that.

**Microsoft –** admittedly this is proprietary, but with most of the world using Microsoft on the desktop, for operating system, browser, Office applications and services it is worth checking the degree of ERP integration offered. Is spreadsheet integration just a .csv file export, or can you view data in your ERP system in a spreadsheet, update the data in the spreadsheet and reflect the changes in the database, all under complete security and integrity control? There is a big difference.

## 9. Business Culture

The erosion of departmental barriers and the encouragement of joined-up, process thinking started many years ago but in recent years this has accelerated as organisations identify and eliminate operational inefficiencies. People are at the heart and soul of a business, and many companies, such as Dell, have put a huge emphasis on business sustainability through its people. This includes organising for effectiveness, creating multi-disciplinary cells and teams, internal and external collaboration, and providing the best tools for the job. This is clearly out of alignment with the traditional ERP structure of modules, menus and transactions. Something different is needed.

**Workflow** – just as businesses are thinking along process lines, so must the supporting systems. Workflow is not a bolt-on, to be truly effective an ERP system must be able to reduce user effort by being proactive in managing sequential actions, alerting to discrepancies and automating the flow of information, including integration with email, external systems and machine operations.

**Role-based portals** – where once an individual did one repetitive clerical task, a menu-driven ERP system was fine. Now, an individual's role can span several multi-disciplinary tasks, making a rigid ERP menu a very cumbersome tool. A good ERP system allows tasks, transactions and supporting applications, whether internal or external, to be readily accessible from a single portal with minimum keystrokes and also be highly configurable. As jobs change, so must the system. Flexibility and speed of response to changes must go right through the organisation, including the ERP system.

## 10. Legislation

As the pace of life, competitive pressures and globalisation trends continues to increase, control and regulation become more important to ensure this is well managed for the benefit of all. The downside to this is the perceived additional burden on the company through legislation, reporting and audits. This need only be a burden if compliance is not an integral part of business operations, which is why it is important to ensure that everything that is required to support today's business operations is an integral part of an ERP system, and not reliant on stand-alone, bolt-on - or worse - manual systems.

**Traceability –** essential now for food, medical, aerospace and automotive supply chains but it is likely that all industries will come under scrutiny in this area, particularly if the individual consumer has contact with the end product. Ethical governance will have an increasing impact on the visibility of the source of goods and services, and the environmental and social impact of activities throughout the supply chain.

**Regulations and Compliance Management –** there are two aspects of this that have relevance in the ERP selection process. The first is the demonstrable commitment of a supplier to local or industry requirements. A combined example is the EU legislation for the food industry where EU 178/2002 came into effect in 2005. The British Retail Consortium will expect all food manufacturers to have computer-based traceability systems in 2006. The second aspect is how well the ERP system supports the compliance, through alerts, data recording and reporting. If evidence of compliance is collected with the normal business transactions, and reporting is on demand or automatic, then the overhead of compliance can be minimal – or nil.

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# White Paper: Manufacturing ERP is different now

Companies embarking on a business systems review today will find that the ERP industry has been no stranger to change in the last ten years. Some of the former top names have been acquired, merged or are concentrating on existing customers. There has been considerable consolidation among the cross-industry ERP suppliers, and many have not come through the last few difficult years unscathed. The smaller companies have been focussing on key vertical markets, and it not uncommon now for a relatively small specialist ERP supplier to be competing head to head with the likes of SAP and Oracle.

The choice of ERP system has to include an assessment of the relevant functionality, and a consequence of the maturity of this market is that most systems are extremely rich. There may be only a few, perhaps industry specific, features separating one from another. A much bigger differentiator will the suppliers approach to configuration and customer self-sufficiency. You may not mind being dependant on the supplier for program changes and ongoing upgrade support, but an option of tools based customisation and integration at least gives you the choice of full or partial self-sufficiency.

The technology behind a system can be well disguised, and should be looked at in detail. Similarly, software claims should be validated, preferably with evidence of a customer actually using the system. And industry expertise should not be assumed. It will soon be very clear if your supplier, whose team you will be very reliant on, actually understands your business and the issues you are seeking to address.

Attached to this document is a list of topics that will be to some degree significant to a modern ERP system, and may not have been relevant to the selection process ten years ago. It is not an exhaustive list, nor will every item necessarily be relevant to your business, but the pointers may help to find the best system to suit your business now, and for the next ten years.

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## About SSI

SSI specialises in manufacturing and supply chain solutions for the process industries and 'lean' manufacturers. SSI is the developer of the class-leading TROPOS ERP solution, selected by many companies in the food and drink, chemicals, pharmaceuticals and mill based manufacturing sectors. 'Lean' discrete manufacturers also benefit from reduced lead times by using the TROPOS demand-pull model.

SSI provides all the services required for lifecycle support with a single point of responsibility: project management, application implementation support, hosted application services, remote managed services, bespoke systems development, systems integration, web development and technical consultancy.

Since 1982, SSI has been providing competitive advantage to a client base operating in the mid market, from independent companies to subsidiaries of multinationals: Adams Pork Products, Axminster Carpets, Brintons Carpets, Kettle Produce and Fox's Confectionery  CWV (formerly Vymura), Gala Coffee & Tea, G&J Greenall, Morganite, Oxley Threads, angemaster, Roxel, Saxbys, Shell, Sony, Tullis Russell, Turtle Wax and Uniq. Recent contracts include Almac Sciences and Glisten Confectionery.

Now part of Chelford Group (AIM-CHR), SSI complements the TROPOS solution with supply chain demand management, advanced planning, data collection systems and business intelligence solutions. RFID and supply chain integration solutions are available from Group companies Agility and RFID Solutions Centre Limited. Chelford SAP Solutions Ltd offer specialist SAP solutions for wholesalers and distributors including mail order houses.

Contact: Neville Merritt, Sales and Marketing Director
Telephone: 01256 685296
Email: neville.merritt@ssi-world.com
Web site: www.ssi-world.com

| **ERP Checklist**<br>(Sections refer to the text of this paper) | |
|---|---|
| **1. Features to support time based management** | |
| - New Product Development features | |
| - Demand-Pull planning | |
| - Time granularity in hours, minutes, seconds | |
| - Schedule to actual time not buckets | |
| - Sequencing/plant optimisation | |
| - Process based planning as well as MRP | |
| **2. Features to support cost reduction** | |
| - Automate data collection | |
| - User productivity - portals | |
| - Output cost management | |
| - Auctions, tendering | |
| - Sub-contract process management | |
| - Multi-plant order management | |
| **3. Features to support product variation and competitiveness** | |
| - Product attributes | |
| - Make to forecast, finish to order | |
| - Speed of response – real time available/capacity to promise | |
| - Customer service management integrated with SOP | |
| - Configure to order | |
| - Batches of one | |
| **4. Features to support globalisation trends** | |
| - International trading features | |
| - Flexibility and change to accommodate regional changes | |
| - Multi-business/multi national planning and reporting | |
| **5. Features to support collaboration** | |
| - B2B systems integration | |
| - Standards and communication (XML) | |
| - Flexibility of system configuration | |
| - Cost management of outsourced operations | |
| - Reporting model for licensed operations | |
| **6. Features to support the effects of market consolidation** | |
| - Vertical market features to support your industry | |
| - Vertical market expertise | |
| - Rapid reconfiguration as businesses change | |
| - Ease of integration with other ERP systems | |
| **7. Features to support new working environments** | |
| - Remote working (browser client) | |
| - Ease of training | |
| - Industrial touch screen terminals in the factory | |
| - Portals suitable for contract/immigrant workers | |
| - Mobile applications | |
| **8. Aspects of new technology** | |
| - Ease of use expected | |
| - Familiar interface - Microsoft/browser | |
| - MS Office integration | |
| - Systems integration expected (no re-keying) | |
| - More system users likely | |

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|---|---|
| - Integration with an Intranet | |
| **9. Features supporting new business cultures** | |
| - Business process flows (Workflow) | |
| - Flexible role configuration | |
| - Automated events | |
| - Integration with company/HR information | |
| - User oriented applications | |
| **10. Features to support new regulations** | |
| - Support for specific requirements in your industry, e.g. Electronic signatures CFR 21/11 | |
| - UK/EU localisation requirements e.g. food (Traceability EU178/2002) | |
| **General** | |
| - Platform choice: avoid proprietary hardware | |
| - No need for functional compromise | |
| - ERP must fit the business model | |
| - Standard system with tools-based customisation and integration | |
| - Self-sufficiency option, with no reliance on supplier | |
| - Ownership options: lease, rent, buy | |
| - Support options : software, solution, managed services, hosted | |