

The SYSPRO Extended Enterprise and Industry Domains

Introduction

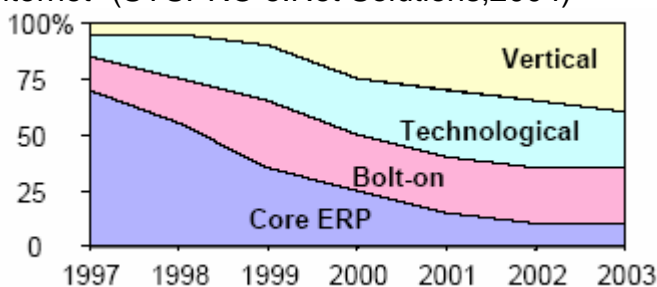
In its efforts to understand customer requirements better, SYSPRO has been working to identify the different categories of organisations that use its products. Using a model from analyst group Gartner Research, we have categorised organisation types into five domains.

- Discrete manufacturing
- Process manufacturing
- Asset-intensive
- Distribution-intensive *
- Services-intensive

These domains comprise the SYSPRO Extended Enterprise. But why be concerned about identifying domains? Using domains is a way of segmenting the market into groups which have common characteristics. We do this for several reasons.

- To understand the business issues and challenges of particular types of customer so specific messages and programs can be addressed to those groups.
- To get a better grasp of an organisation's technology buying criteria – purchase decisions are based more on industry-related benefits than on software features.
- To identify solution gaps and opportunities for product innovation and development.
- To identify opportunities for growth.
- For competitive comparison with other vendors which play in those domains.

In the years since ERP applications have become common-place, users and organisations have been challenged by a new set of issues – including globalisation, increased vertical application requirements, the extension of business processes into the supply chain, and changes in application architectures. These issues led to Gartner coining the term ERP II, and SYSPRO developing the Extended Enterprise model, based on e.Net Solutions. This is a model in which “the functionality of enterprise applications becomes deeper and more specific to industry requirements, while the technologies employed are focused on leveraging the power of the Internet” (SYSPRO e.Net Solutions,2004)



What ERP vendors must deliver (Gartner Research, 2001)

*Gartner's ERP II model excludes the distribution-intensive domain

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For example, at the business level, administrative changes require finance and human capital management to provide better integration to all parts of the enterprise. But the application software on which these functions depend are often unable to provide added value at a reduced cost of ownership. In the operational area, functions such as order management, manufacturing, procurement and asset management have been facing dramatic changes including the development of global linkages, outsourcing, changing regulatory requirements and the move away from many traditional manufacturing practices.

When reviewing the attributes and issues of each domain, be aware that these are not exclusive. There are business sectors which can be found in more than one domain, e.g. a transport business can be in the asset- and distribution-intensive domains. Some companies can combine more than one domain, e.g. food and beverage manufacturing could comprise process industry issues in production and discrete manufacturing issues in bottling or canning, and then may also have distribution issues in delivery. A business function can also be a requirement in more than one domain, e.g. planned maintenance is required in manufacturing, distribution- and asset-intensive industries.

Using the Extended Enterprise model implies that business processes must move away from just focusing on internal considerations, as they have in the past, to a broader range of possibilities that include process integration and collaboration with external parties.

Gartner's six process areas for ERP II

- Prospect to Cash and Care: covers the standard order-to-cash process, plus marketing and sales opportunity management (i.e., prospect) and post-sales service (i.e., care).
- Requisition to Payment: encompasses procurement-related processes
- Planning and Execution: includes processes for planning resources (e.g., materials, cash, labour, transportation, personnel and maintenance), executing plans and controlling the resources used in execution.
- Plan to Performance: involves the broad range of financial processes from basic payables and receivables, to consolidation, budgeting and financial reporting.
- Design to Retirement: relates to processes associated with the product and service life cycle, from conception to retirement.
- Human Capital Management: processes that support workforce-related issues for both human resources (HR) and non-HR business processes.

Additional process areas for the Extended Enterprise (Unlimited Consulting, 2004)

- Demand to Production and Consumption: covers the extended production process from identifying customer requirements, handling the order, manufacturing and assembly, despatch and delivery, to final point-of-sale.
- Acquire, Maintain and Retire: this process describes all the aspects of the asset management life cycle.
- Forecast, Stock-up, Re-order: this process includes managing suppliers, and forecasting and managing inventory.

The SYSPRO Extended Enterprise model enables organisations to break out of the traditional ERP environment and become more agile, both from a business process and application perspective, by streamlining manufacturing, and other key business processes, to be more efficient and nimble. The Extended Enterprise model allows greater flexibility in deploying domain-specific applications.

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Extended Enterprise Domains

Discrete manufacturing

Discrete manufacturing involves the manufacturing or assembly of parts and components to produce a finished product. Representative discrete manufacturing industries are:

- automotive,
- consumer durables,
- electronics,
- industrial assembly, including engineer-to-order job shops and make-to-stock assembly facilities.

Many ERP applications have focused heavily on the discrete manufacturing domain, so one could assume that the market for ERP applications in this sector is maturing. However, manufacturing practices have not stood still in the last decade. A significant change has been the movement towards lean manufacturing which focuses on demand-driven production and planned reduction of inventory. Lean manufacturing is the most common manufacturing improvement methodology in the US, with nearly half of plants using it. Unfortunately, most techniques and tools of lean manufacturing are grounded in the 1980s when the concept came out of Japan. Information technology that enables integration of plant management systems with the rest of the organisation offers new opportunities for lean manufacturing as plant information can link to other management applications for improved visibility and faster availability of information.

Other improvements that extended enterprise software can offer discrete manufacturers are:

- Flexible production scheduling – This allows companies to plan and set up production runs based demand, and to manage the movement through production using techniques such as kanban.
- Inventory management – By integrating information on customer demands with production plans and schedules, inventory can be more effectively controlled leading to a Just-In-Time approach to inventory management.
- Product management – Many companies have to deal with the challenge of maintaining different versions of products for specific customer requirements or for different markets. The capability to manage different production procedures, with component requirements from suppliers, and ensuring sufficient inventory, requires a high degree of communication and information sharing, both internally and externally.
- Customer delivery – To ensure promised delivery dates or Just-In-Sequence delivery performance, companies must be able to synchronise information from suppliers regarding lead and delivery times, with their own production schedules. In an extended enterprise setting, this information can be shared electronically through standard protocols such as XML.

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Process manufacturing

In this domain, products are made using chemical reactions, mixing, forming, separating and cooking. A characteristic of process manufacturing is that once made, a product cannot be reduced back to its constituent parts (whereas in discrete manufacturing, disassembly is possible). Representative process manufacturing industries are:

- food and beverage,
- chemicals, plastics,
- pharmaceuticals,
- oil and gas,
- paper.

According to Gartner, process manufacturing will become the third-largest vertical market for new software licenses.

Process manufacturers face a set of challenges not common to the other domains – increasing regulatory pressures and stringent quality requirements. The production process contains more complexity as it has to deal with raw material inconsistency, complex Bills of Material, and multiple units of measure. For the consumer-related companies, the customer environment is highly dynamic and demanding. Consequently, no company can plan on long production runs, and products and schedules can change very quickly. Globalisation has had its impact as well, in areas such as sourcing (e.g. food products and pharmaceuticals) and planning (transportation of sourced products and fulfilment).

Typical areas of process improvement for this industry include:

- Tracking and traceability – Information about the composition and quality of inputs into process manufacturing is critical for the production process; a tracking system that is able to keep information on many different attributes of materials as they change is important for production and scheduling decisions. Safety regulations and quality controls require increasingly sophisticated traceability of incoming goods and outgoing products at different levels (lots, sub-lots) and out into the extended supply chain.
- Production and scheduling – Dealing with scheduling and production processes which are highly dynamic and flexible is a big challenge for process manufacturers. Variability is the norm in this domain because the consistency, and even quantity, of input materials cannot be guaranteed in advance. Consequently there is no equivalent to the standard, fixed Bill of Materials in discrete manufacturing. Furthermore, scheduling does not just depend on availability of materials or customer demand, but also on what objectives are required (e.g. amount of end product, quality, cost).

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- Compliance management – Process manufacturers are increasingly feeling the burden of regulatory compliance, whether for safety, health or environmental reasons. Compliance requires stringent record keeping of many aspects of business, such as processes, information, input materials, inventory conditions and outgoing products. Compliance management that cannot be integrated with other systems in the business will add to the administrative load that is becoming a normal part of business.

Asset-intensive

Asset-intensive industries are those with highly capital-intensive operations or which use large amounts of equipment, such as:

- refineries,
- mines,
- utilities,
- infrastructure (telecommunications, pipelines, roads, ports),
- defence.

For companies in this domain, a key business requirement is to keep plant, equipment and facilities available, with minimum downtime, at minimum cost, since lost production can mean loss of revenue or future business. As plant maintenance can comprise up to 10 percent of operational expenditures in manufacturing environments and more than 50 percent in mining and utility environments, better management in this area can produce a significant return on investment.

Process improvements that can be made include the following areas.

- Equipment – The capability to monitor performance and reliability through analysis of equipment use, combined with information on future planned use of the equipment, allows maintenance to be scheduled ahead of time. More effective maintenance leads to improved reliability which in turn leads to extended equipment life.
- Procurement – Using information on equipment life and reliability, procurement can be improved in terms of new equipment reliability and overall cost of ownership.
- Labour – By scheduling work in advance, based on forecast maintenance requirements, better use can be made of labour by matching skills and availability to work requirements in the field. Field service management can range from the highly complex (e.g. managing many technicians over different geographical areas to fix unplanned problems) to relatively simple (e.g. scheduling routine maintenance).

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- Inventory – With information on planned work activities, parts inventory can be matched to jobs, thus reducing levels and carrying costs of inventory. From the analysis of equipment activity and reliability, companies can reduce the level of inventory for parts that are not going to be needed immediately, ensuring that parts are at levels that cater for planned work, as well as allowing for unplanned work (such as breakdowns and predictable damage).
- Materials – Planned and properly allocated maintenance reduces the chance that incorrect job assignments are made which can result in re-work later. Warranty tracking to detailed levels allows companies to be more effectively in claiming back costs from equipment suppliers.

Distribution-intensive

Companies in this domain focus on the distribution of products from a supplier (e.g. the factory gate) to the retail warehouse/distribution centre. Typical companies are:

- freight and transport,
- couriers.

Distribution and logistics management have become a major business focus. Critical success factors for companies in this domain are the ability to manage shipping, delivery scheduling, load optimisation, and route allocation. This allows the companies to maximise asset utilisation and ensure good customer service.

To operate effectively, companies in this domain need to be highly proficient in:

- Planning – Because excellent customer service is what keeps these businesses running, they need to be able to handle complex routing schedules and combinations of shipments so that costs and use of resources are optimised without compromising customer service.
- Monitoring and tracking – Companies whose business is distribution rely on their ability to track and value inventories in different locations as well as in transit. This requires tracking mechanisms to ensure loading and delivery are done according to pre-determined customer requirements.

Services-intensive

In services-intensive organisations, the use of any kind of enterprise software application to increase productivity and efficiency has been limited. Unlike the other domains, in service-intensive companies it is the number and quality of employees that is more important than the amount and condition of capital equipment. Examples of organisations are:

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- banking and insurance,
- professional, business and technical services,
- government,
- real estate.

In general, companies in the services-intensive domain are looking to streamline the services supply chain – the processes from point of services conception to point of delivery. Some service companies have a far higher proportion of project work than industries which have repetitive procedures and transactions, so their focus is on prioritising projects, allocating scarce resources, and careful planning and tracking. For services-intensive enterprises, cost management is maintained by deployment and management of human resources and opportunities, and revenue growth is achieved through differentiation, quality, and customer management and service.

Areas for process improvement are:

- Customer service – Whether the organisation is a services company or a government entity, customer service is a critical aspect to manage. This can involve having full information on an existing customer (or citizen) so that the appropriate service can be delivered; alternatively, it can be the process of registering, managing and tracking potential new customers.
- Managing information – In services organisations, one of the few real assets is proprietary information. This requires that there is a secure and reliable information management environment.
- Financial management – Especially in government-related organisations, a reliable financial management system, providing reporting and performance measurement, is imperative. This system should also provide for appropriate processes for procurement and billing.
- Human capital management (HCM) – People are another key asset in services organisations, therefore HCM should be viewed as strategic. This covers all aspects of staff management, not just payroll and administration, to include resource allocation, recognition of knowledge and experience, and skills development.
- Project management – For project-oriented business, project management needs to be sophisticated in order to handle complex project requirements, project accounting and budgeting.

Conclusion

Many businesses are transforming from the traditional vertical silos into more flexible, process-focused organisations centred around core competencies. In addition, they are beginning to exploit the capability via the Internet to improve communication and collaboration both within an enterprise and outside to partners and customers. This combination of factors has a significant impact on the way enterprise applications are used and implemented; no longer can these

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applications be limited to processes within the organisation. Therefore, SYSPRO has identified the Extended Enterprise model as an application template for companies to adopt.

This model has required a review of the way organisations are categorised and processes are defined. Instead of being classified by industry sector, organisations are classified by process domains. Processes also have to be re-defined, from internal optimisation to external integration with business partners or a community of partners. By adopting this new approach, SYSPRO is able to re-define its competencies, set development goals and make the transition to an application architecture that supports a simplified development environment and an infrastructure that helps users integrate with best-of-breed applications.