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ENTERPRISE SYSTEMS

AN INTRODUCTION



OVERVIEW AND INTRODUCTION

“Integrating your IT landscape”

E(I)S stands for Enterprise (information) systems. Enterprise information systems are those systems that aim to support your enterprise on a wide scale or across multiple departments in your organization. When it comes to developing software, you mainly have 2 options: make or buy. Make refers to the concept of custom development, where an organization or other party will create the software according to specific needs or requirements. This can be based on an existing platform but the functionality built, will be new and sort of unique. The other option is to buy existing or packaged software, like EIS. Different variants or examples of EIS systems exist: CRM, which stands for Customer Relationship Management. ERP, which stands for Enterprise resource planning and so on.

Advantages of enterprise systems

When it comes to predefined packaged systems, there are some advantages and some disadvantages. The main advantages or benefits are the following.

Specialization. Specialization refers to the idea that when a software development company focuses on one specific type of software, e.g. accounting software, they will specialize within that specific area. Therefore it can be expected that the result of many years of experience within a certain field of expertise will lead to better software for that specific field of expertise. In the case of enterprise systems, the field of expertise is commonly not limited to one small area, but often includes multiple areas of expertise.

Continuous improvement. Continuous improvement refers to the idea that companies continue to improve and upgrade their software, allowing it to grow to a mature and stable solution.

Best Practices. Best Practices of “Industry Leaders” are included, which means that these software development companies will include lessons learned that they encounter at their customers. They will find the best way to do specific parts of specific processes by learning from their customers, allowing to incorporate these best practices into their software.

Early adopters. Next, it can be argued that they are often early adopters of new trends and working methods, as well as new technologies. Because their software is deployed at many customers, they will always try to introduce new functionalities or technologies very fast. They are assured of a wide customer base and will receive a lot of feedback regarding these new improvements. These improvements can be sold to existing customers or new customers.

Stability. Last, they offer a stable platform or solution. Their software has been evolving over many years and tested by many companies,

allowing to continuously improve the software and reaching a stable version.

Disadvantages of enterprise systems.

The disadvantages of packaged solutions are the following.

Standardization or loss of competitive advantage. First of all, it is considered a standard solution, which means by implementing the software, you’re also accepting the way the software works, which will impact the way you work. This is OK, but the main issue is that other companies, who also implement this software, will also start working that way, implying that you might lose to some level your competitive advantage.

Rigid and inflexible. Next to that, packaged software is often rigid to change, because the vendors want to make sure the stability is not at stake. Custom development is possible, but also within a certain frame or playfield.

Expensive? And the most important downside to packaged software is that it is often perceived as expensive. However, this is a very debatable point, because when all costs are taken into account, custom development can be a lot more expensive. Next to the quantitative calculations, there are also the qualitative factors such as risk mitigation, which can make a packaged solution ‘less expensive’.

So what does this mean ‘expensive’? Is a EIS indeed an expensive solution? On one hand, one could argue that EIS is indeed an expensive approach for obtaining software. Prices and licenses are often quite high and often charged per user. Furthermore, there are often too many features you don’t use. And very important:

integration with other software is often difficult, because the data model and interaction methods/integration technology is often limited or structured by the EIS vendor. Counter arguments are that EIS often can be perceived as a proven product. It is often a best of breed solution, which means that the packaged software is the best available solution for a specific market, allowing it to be marketed and sold to many companies. The solution is often proven to be stable and if one would develop all functionality included in a packaged solution through the means of custom development, it would become a lot more expensive.

Well then, is an EIS the answer to your problem? Could be, but many factors need to be considered, not just the price. When an EIS is enrolled in your organization, the impact is quite large. Any information system mainly will take an input and process an output. The big difference with organization wide information systems, is that they will have an impact on and be impacted by many stakeholders and parties, making the selection and evaluation process more complex than just a mere cost analysis.

Different components and examples of EIS"

MRP - the first steps towards integration

Material requirements planning (MRP) and manufacturing resource planning (MRPII) are predecessors of enterprise resource planning (ERP), a business information integration system. The development of these manufacturing coordination and integration methods and tools made today's ERP systems possible. Both MRP and MRPII are still widely used, independently and as modules of more comprehensive ERP systems, but the original vision of integrated information

systems (as we know them today) began with the development of MRP and MRPII in manufacturing.

Material Requirements Planning or MRP was introduced in the 1970s to make a correct estimate of needed resources in a production process. It allowed to keep track of raw materials & semi-finished products. MRP2 or Manufacturing Resource Planning was introduced, because MRP proved to be insufficient. Not only materials, but all resources needed to be planned in order to ensure optimal production. In order to be able to do this, an integrated view on all these resources was needed. New in MRP were the concept of the MPS - Master Production Schedule and CRP - Capacity Requirements planning. The MPS does not only contain the buying and planning of materials, but also the planning of people, machine operation time etc. In the CRP it is analyzed whether or not a planned production can be reached with the current capacity of machines, people etc. If not, 2 options exist: expanding and upstaffing for an increase in capacity or decreasing planned output.

Another concept was brought to the front when MRP2 was introduced: product costing. Because companies now knew into detail what materials, machine time, employee time etc. was used in the production of a specific output of a product, companies could also start making detailed analysis of these costs, answering 1 main important question: how much does producing a certain product cost and why?

In order to be able to plan all of this well, the concept of the BOM was launched. The BOM or Bill Of Material is a list of all parts and quantities of those parts that are needed to produce or manufacture a certain product. A routing will

indicate what machines and actions are needed to manufacture or produce the product, in what order they need to be executed and how long/how much time of each step is needed.

The last step in this evolution, is the introduction of ERP. ERP or Enterprise Resource Planning aimed to offer an integrated system, beyond the boundaries of the production department. It was clear that to plan the production process into detail, one would need to know what was sold or sales would require an estimate time of delivery. The needed integration with Sales & Distribution was therefore clear. HRM/HCM (Human Resource Management or Human Capital Management) was impacted, because employees needed to be found, vacation and illness tracked etc. The impact on controlling (internal accounting) was made clear by the concept of product costing. The impact on the actual financial accounting (external controlling) can be found in the valuation of stock etc. And the impact on purchasing is clear, considered that to be able to provide the materials to produce or manufacture a product, they will need to be purchased.

The key word with ERP is integration. Integration between departments, plants, subsidiaries etc. Integration with external parties, such as customers, vendors... And integration from a technology point of view: one software platform, one software supplier, 'one' technology and one integrated database. A good definition of an ERP system is the following: "An ERP system is a software system that is used to collect & process information across all areas (both internal and external) of the organization, in order to optimize the organization and its processes and its data quality."

Although ERP processes have touch points with external parties such as vendors and customers, its focus remains internal. Expansion of the ERP component with other EIS components is possible and frequently done. Such systems include CRM & SRM systems. Examples of ERP vendors are SAP, Oracle and Microsoft.

CRM – Customer relationship management

CRM is used to capture all aspects of the relationship with the customer. Offering optimal service towards customers, while allowing customer self-service options, is the main focus of the CRM software. Why is it so important to maintain your customers (=customer retention)? Because "it is 6-7 times more expensive to gain a new customer than retain an existing customer." (Harvard Business Review). A CRM system allows you to have a complete, 360° view on the customer at all times. You'll know what interactions have been done, what he or she is interested in, what he/she is most likely to buy etc. In short, you'll have the tools to optimize your relationship with the customer.

The different focus areas of the CRM application, are the following.

Sales

Trying to sell a product to your customer.

♣ Cross-selling: when a customer buys product A, you also want to sell him product B, based on some sort of relationship. For example: sell insurance with a vacation.

- ♣ Profitability: To know which customers are your most profitable and execute what-if analysis to know the impact of a price change.
- ♣ Share of wallet: This helps managers understand the amount of business a company gets from specific customers. Another common definition is the following: Share of Wallet is the percentage ("share") of a customer's expenses ("of wallet") for a product that goes to the firm selling the product. Different firms fight over the share they have of a customer's wallet, all trying to get as much as possible. Typically, these different firms don't sell the same but rather ancillary or complementary product.
- ♣ Propensity to buy: This indicator estimates the probability that a customer is likely to buy again in the future. It could be used to predict future interest in a specific product, or likelihood to buy anything from the company as a whole.
- ♣ Customer lifetime value: This indicator is used to gauge how much a customer is likely to spend throughout their entire period of being a customer of your business. It is a combination of money they have already spent and in more sophisticated cases, the amount they are expected to spend in the future.

Service

Focusing on the quality of your services towards the customer.

- ♣ Customer satisfaction: It is a measure of how products and services supplied by a company meet or surpass customer expectation. Customer satisfaction is defined as "the number of customers, or percentage of total customers,

whose reported experience with a firm, its products, or its services (ratings) exceeds specified satisfaction goals."

- ♣ Relationship length: The length of relationship with its customers is important for a company. The longer the relationship, the more likely the customer will stay and buy more. Depending on the relationship length, other approaches towards the customer might be necessary. On the other hand, is a long relationship interesting, because a customer will buy products, as long as he/she is a customer (depending on the type of products, this can differ).
- ♣ Channel preference: What is the preferred contact channel for a customer? Does he/she prefer mail, an online customer zone, telephone...? Depending on these preferences, other approaches might be necessary.
- ♣ Privacy: Customer privacy is very important these days. A company cannot just use data for any purpose (if you're thinking DIVERGENT, you're right). Therefore, it is important that customers can indicate what their privacy preferences are and that organizations take these preferences into account.

Credit

Should a company allow customers to buy now and pay later? And what risks are implied in that case?

- ♣ Grant or increase credit: Customers can be allowed a 'line of credit', allowing them to pay later. Whether or not this should be allowed, should be based on the outcome of an analysis. CRM systems support predictive models that will tell you

whether or not a customer is most likely to pay back his debts etc.

♣ Portfolio risk management: What is the risk of a current set of customers? These predictions are used in banking and financial sectors to investigate whether or not a specific segment of customers poses a risk for bad debt.

♣ Fraud detection: Make sure credit lines are not allowed by people who should not be doing this (Segregation of duties).

♣ Collections: How will you get your money?

Typically, this is done with dunning procedures, encouraging your customer to pay his/her bills. And if not, charge additional costs. But this can be taken further. Allowing a customer different payment options, allowing him/her to pay in different parts, keeping track of contact moments etc. is supported by a CRM system.

Compliance

Are you as a company in line with regulations and laws, such as the The Sarbanes–Oxley Act* of 2002?

* The Sarbanes–Oxley Act of 2002 (Pub.L. 107-204, 116 Stat. 745, enacted July 30, 2002), also known as the "Public Company Accounting Reform and Investor Protection Act" (in the Senate) and "Corporate and Auditing Accountability and Responsibility Act" (in the House) and more commonly called Sarbanes–Oxley, Sarbox or SOX, is a United States federal law that set new or enhanced standards for all U.S. public company boards, management and public accounting firms.

The bill, which contains eleven sections, was enacted as a reaction to a number of major

corporate and accounting scandals, including Enron, and Worldcom. The sections of the bill cover responsibilities of a public corporation's board of directors, adds criminal penalties for certain misconduct, and required the Securities and Exchange Commission to create regulations to define how public corporations are to comply with the law. Source: Wikipedia.org

♣ Fraud detection: Make sure specific actions are not allowed by people who should not be doing this (Segregation of duties).

♣ Privacy preferences: As stated above, customer privacy is very important these days. A company cannot just use data for any purpose and has laws and rules to follow regarding this matter. (However, information is still sold/exchanged quite often. Example: By using the Facebook – I like button, the party which provides the I like button, will receive personal information from Facebook).

♣ Anti-money laundering: It is possible to keep track of frequent cash payments etc. in order to indicate possible money laundering.

Marketing

If you want to sell, you'll have to market your product and let people know it exists.

♣ Customer acquisition: getting new customers. Acquiring a new customer is more expensive than keeping an existing one.

♣ Customer retention: keeping an existing customer. As stated before, "it is 6-7 times more expensive to gain a new customer than retain an existing customer." (Harvard Business Review).

♣ Segmentation: Market segmentation is a marketing strategy that involves dividing a broad target market into subsets of consumers, businesses, or countries who have common needs and priorities, and then designing and implementing strategies to target them. Market segmentation strategies may be used to identify the target customers, and provide supporting data for positioning to achieve a marketing plan objective. Businesses may develop product differentiation strategies, or an undifferentiated approach, involving specific products or product lines depending on the specific demand and attributes of the target segment.

♣ Market share: "Market share is the percentage of a market (defined in terms of either units or revenue) accounted for by a specific entity. Market share is said to be a key indicator of market competitiveness—that is, how well a firm is doing against its competitors. "This metric, supplemented by changes in sales revenue, helps managers evaluate both primary and selective demand in their market. That is, it enables them to judge not only total market growth or decline but also trends in customers' selections among competitors. Basically, it gives you an idea of how much of the market you 'own'.

and becoming more flexible, they reduce their ownership of raw materials sources and distribution channels. These functions are increasingly being outsourced to other firms that can perform the activities better or more cost effectively. The effect is to increase the number of organizations involved in satisfying customer demand, while reducing managerial control of daily logistics operations. Less control and more supply chain partners led to the creation of the concept of supply chain management. The purpose of supply chain management is to improve trust and collaboration among supply chain partners, thus improving inventory visibility and the velocity of inventory movement.

SRM – Supplier Relationship Management

Just like with CRM, SRM strives to optimize a relationship with an external party. In this case, the focus is on the vendors or suppliers. SRM is an EIS which will allow you to optimize your relationship with suppliers and lower your costs of purchasing.

The different focus areas of the SRM application, are the following.

E-Purchasing

E-purchasing is the business-to-business purchase of supplies and services over the Internet. It is an important part of many B2B applications (such as SRM) and also sometimes referred to by other terms, such as supplier exchange.

♣ E-catalogue: In order to allow employees in a company to purchase products, these products can be made available via an e-catalogue. This is a catalogue of goods for sale that is displayed in the SRM application and from which an employee can

SCM – Supply chain management

SCM is a cross-functional approach that includes managing the movement of raw materials into an organization, certain aspects of the internal processing of materials into finished goods, and the movement of finished goods out of the organization and toward the end consumer. As organizations strive to focus on core competencies

order goods or search for information on a particular subject.

- ♣ E-Invoice: Electronic invoices allow companies to send and track invoices in a digital format. E-invoices can contain metadata or usable data, which can be read into the system of the customer and processed automatically.
- ♣ E-Payment: Electronic payment allows a company to pay via automated or online procedures.

Supplier management

An SRM system will help you to store and maintain all necessary data on suppliers.

- ♣ E-Registration: Suppliers can register online to your supplier zone, where they can view information and data and track interactions.
- ♣ Supplier Self Service: Suppliers can maintain their own data and other information.

Spend & performance analysis/management

Spend management improves the transparency of the procurement volume as well as pricing and quantities of all areas of the company worldwide. It serves the structured analysis of supplier expenditures with the goal of identifying and monitoring cost reduction and optimization as well as taking appropriate steps, e.g. to:

- ♣ Optimize the supplier base,
- ♣ Execute bids for certain potential fields,
- ♣ Introduce pricing negotiations,

- ♣ (Re)negotiate framework agreements or
- ♣ Optimize working capital

Operational procurement

Operational procurement is typically defined as the daily ordering of goods and services, the following up of orders and the contacting of suppliers in connection with such issues as deliveries and complaints. This distinguishes operational procurement from strategic procurement, which includes framework agreements, the development of category strategies and the monitoring of suppliers' performance.

- ♣ Self-service procurement: Self-service procurement enables your employees to create and manage their own request for purchase or purchase orders. This relieves your purchasing department of a huge administrative burden while making the procurement process both faster and more responsive.

- ♣ Service Procurement: Request and compare proposals for purchasing services.

- ♣ Plan driven procurement: Plan Driven Procurement supports the sourcing and procurement of resources, triggered by planning systems such as an MRP system.

Sourcing

- ♣ E-Tendering Definition: an e-Tendering System (or Electronic Tendering System) facilitates the complete tendering process from the advertising of the requirement through to the placing of the contract. This includes the exchange of all relevant documents in electronic format. This

is done to get a quotation from different systems. In Belgium, governmental institutions are obliged to work with tenders. Similar terms:

- o RFQ (request for quotation)
- o RFT (request for tender)
- o RFP (request for proposal)

♣ E-auction/E-bidding: Similar to E-tendering,

but then for less complicated products or services. The price will go down (or quality will go up) as the auction continues. In the end, the best price or quality offered will be picked. This is the opposite from a regular auction, where the price will go up.

Procurement Cards: Procurement cards, also known as P-Cards or purchase cards, are credit cards issued to non-purchasing staff for purchase of low-dollar items and services. Kind of like the concept of the prepaid MasterCard.