Next-Generation ERP

Charles Møller
Aarhus School of Business, Denmark

INTRODUCTION

"ERP is dead - long live ERP II" is the title of a path breaking research note from Gartner Group (Bond et al., 2000). In this research note Gartner Group envision how the ERP vendors respond to market challenges and how ERP and ERP strategies evolve by 2005. Gartner Group defined ERP II as a transformation of ERP (Enterprise Resource Planning) and today the major vendors have adopted this concept in their contemporary ERP packages.

ERP (Enterprise Resource Planning) is an important concept to industry. Enterprises are increasingly implementing packaged ERP systems. A recent study confirmed that over 90% of the 500 largest Danish enterprises have adopted one or more ERP system. Further, the study found the systems to be of an average age of 2.8 years and decreasing (Møller, Kræmmergaard & Rotbøl, 2003).

ERP is a standardized software packaged designed to integrate the internal value chain of an enterprise (Klaus, Rosemann & Gable, 2000). The five major ERP vendors: (i) SAP; (ii) Oracle; (iii) Peoplesoft; (iv) SAGE; and (v) Microsoft Business Solutions control almost 50% of the ERP market (c.f. table 1) and consequently the corporate infrastructure is dominated by the design of these systems and the vendors.

According to Nah (2002) the American Production and Inventory Control Society (APICS) defines ERP as: "a method for the effective planning and controlling of all the resources needed to take, make, ship and account for customer orders in a manufacturing, distribution or service company". This definition expresses ERP as a tool but ERP is also a management vision and an agency of change and ERP has been attributed almost any good or bad that IT may bring about in business.

In the late 1990's the ERP hype was primarily motivated by companies rushing to prepare for Y2K (Calloway, 2000). Then after a short recession the adoption of ERP has continued. Davenport's sequel on enterprise systems (Davenport, 1998; Davenport, 2000; Davenport & Brooks, 2004) illustrates the changing business perspective on ERP and the ERP hype.

Davenport (1998) sums up the first wave of experiences from implementing ERP systems in a much cited paper on "putting the enterprise system into the enterprise", and points to the new potential business impact of the ERP systems. The discussion evolved over the first enthusiastic expectations, continued over a growing number of horror stories about failed or out-of-control projects, towards a renewed hype of expectations on e-business and SCM.

The ERP II concept is the software industry's perception of the new business challenges and the vision addresses the issues of e-business integration in the supply chain. ERP II is the next-generation ERP concept and in a few years from now the ERP II vision is going to be institutionalized into the infrastructure of most enterprises. This paper will portray the conceptual framework of ERP II.

BACKGROUND: EMERGENCE OF THE ERP CONCEPT

The ERP II concept may be understood by taking a closer look at the development of the ERP concept. Enterprise systems have often been explained through the historical evolution of ERP (Wortmann, 1998; Klaus, Rosemann & Gable, 2000; Chen, 2001). The concept of Enterprise Systems (ES) has evolved over almost fifty years, driven by:

Table 1. Top 5 worldwide ERP software application new license revenue market share estimates for 2002 (Source: Gartner Dataquest, June 2003)

Vendor	*2002 Market Share (%)*	*2001 Market Share (%)*
SAP AG	25.1	24.7
Oracle	7.0	7.9
PeopleSoft	6.5	7.6
SAGE	5.4	4.6
Microsoft Business Solutions	4.9	4.6
Others	51.1	50.3
Total Market Share	100.0	100.0

Table 2. Enterprise systems in retrospective

Decade	Concept	Function
50	Inventory Control Systems (ICS)	Forecast and inventory management
60	Material Requirement Planning (MRP)	Requirement calculations based on Bill-of-Material (BoM)
70	Manufacturing Resource Planning (MRP/II)	Closed-loop planning and capacity constraints
80	Computer Integrated Manufacturing (CIM)	Automation, Enterprise models
90	Enterprise Resource Planning (ERP)	Integrated processes

the changing business requirements, the new information technologies, and by the software vendor's ability to provide standardized solutions.

The fundamental structure of ERP has its origin in the fifties and in the sixties with the introduction of computers into business. The first applications were automating manual tasks such as book-keeping, invoicing and reordering. The early Inventory Control (ICS) systems and Bill of Material (BOM) processors gradually turned into the standardized Material Requirements Planning (MRP). The legacy of the IBM's early COPICS specifications can be found in the structure of the systems even today.

The development continued in the seventies and in the eighties with the MRP II and the CIM concept. During the 1970's MRP caught on like wildfire, and was fueled by the "MRP Crusade" of the American Production and Inventory Control Society (APICS). But gradually industry came to the understanding that neither of these concepts was able to meet the expectations. Even though the CIM ideas failed in many aspects the, the research, e.g. on IS development (ISD) and enterprise models provided the background for gradually integrating more areas into the scope and of the information systems (Wortmann, 2000). This development peaked in early nineties with the advent of the Enterprise Resource Planning (ERP) systems – often embodied in SAP R/3 (Bancroft, 1997) along with the other major vendors: Oracle, Peoplesoft, JD Edwards and Baan – the so called JBOPS. Although the ERP systems have other legacies like accounting, the prevailing planning and control philosophy is deeply rooted in manufacturing and in MRP.

FUTURE TRENDS: NEXT-GENERATION ERP

The ERP market experienced a hype based on the Y2K problem, but after Y2K the ERP market soured. It was doubted that traditional ERP could meet the e-business challenge (Mabert, Soni & Venkataramanan, 2001). New vendors of the "bolt-on" systems, for example, i2 Technology with SCM and Siebel with CRM emerged on the scene (Calloway, 2000) and Application Integration (EAI) became a critical issue (Evgeniou, 2002). New delivery and pricing methods such as ASP (Application Service Provider) and ERP rentals were conceived (Harell, Higgins & Ludwig, 2001) and the traditional ERP vendors were challenged.

The ERP II concept is a vision original conceived by Gartner Group in 2000. Gartner Group, who also put the name on the ERP concept, defines ERP II as, "a business strategy and a set of industry-domain-specific applications that build customer and shareholder value by enabling and optimizing enterprise and inter-enterprise, collaborative-operational and financial processes" (Bond et al., 2000).

ERP II builds on ERP and thus the concept excludes the "bolt-on" vendors like i2 or Siebel from this vision (Mello, 2001). AMR Research does not restrict their competing vision on Enterprise Commerce Management (ECM) to the ERP vendors and define ECM as, "a blueprint that enables clients to plan, manage, and maximize the critical applications, business processes and technologies they need to support employees, customers, and suppliers" (http://www.amrresearch.com/ECM). GartnerGroup has later resigned on this requirement and today ERP II is a framework which includes enterprise systems based on "Best of Breed" systems and EAI (Light, Holland & Willis, 2001) as well as "Single Vendor" solutions.

ERP II includes six elements that touch business, application and technology strategy: (i) the role of ERP II, (ii) its business domain, (iii) the functions addressed within that domain, (iv) the kinds of processes required by those functions, (v) the system architectures that can support those processes, and (vi) the way in which data is handled within those architectures. With the exception of architecture, these ERP II elements represent an expansion of traditional ERP. ERP II is essentially componentized ERP, e-business and collaboration in the supply chain (Bond et al., 2001).

Throughout the ERP industry the new philosophies of