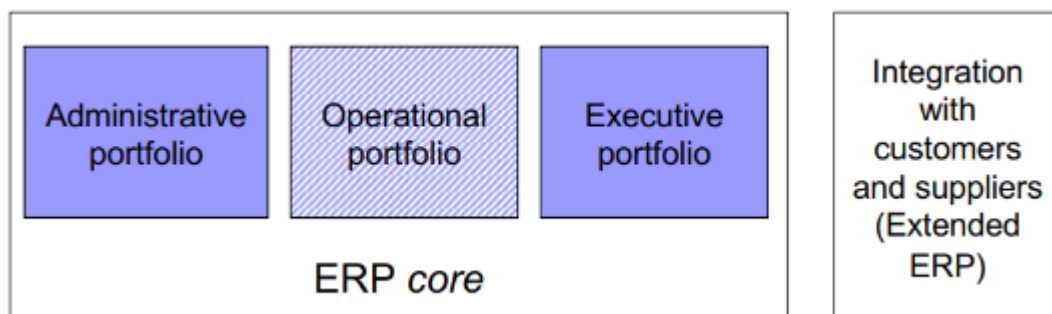


05.ERP Architecture

Enterprise Resource Planning (together with Customer Relationship Management) has involved a major change in the IT industry (starting from the mid '90s), since:

- It has represented a global phenomenon
- It has transformed the approach to computerization from coding to purchasing a package +. Consulting services
- It has integrated all three portfolios:
 - Operational
 - Administrative
 - Executive

Planning and control are the main concern of manager. ERP helps them to elaborate plans and control everything. With the ERP the market and IT people started to recognize that companies in the same industry have a lot in common (Administrative and Executional) so it can be build a software that helps them all. So the idea is to build a SW in a way that it has parameter representing a company and we do parametrization instead of recoding for every company. If the ERP is generalized it is easier to use and don't need a IT person always working on it. Need of low coding architecture.



A company well managed, competent in technologies and cooperative doesn't really need an ERP but a company which is the opposite can really take advantage of an ERP. If you are really good develop ad hoc, if not buy.

The Administrative portfolio is an example where everyone use an ERP.

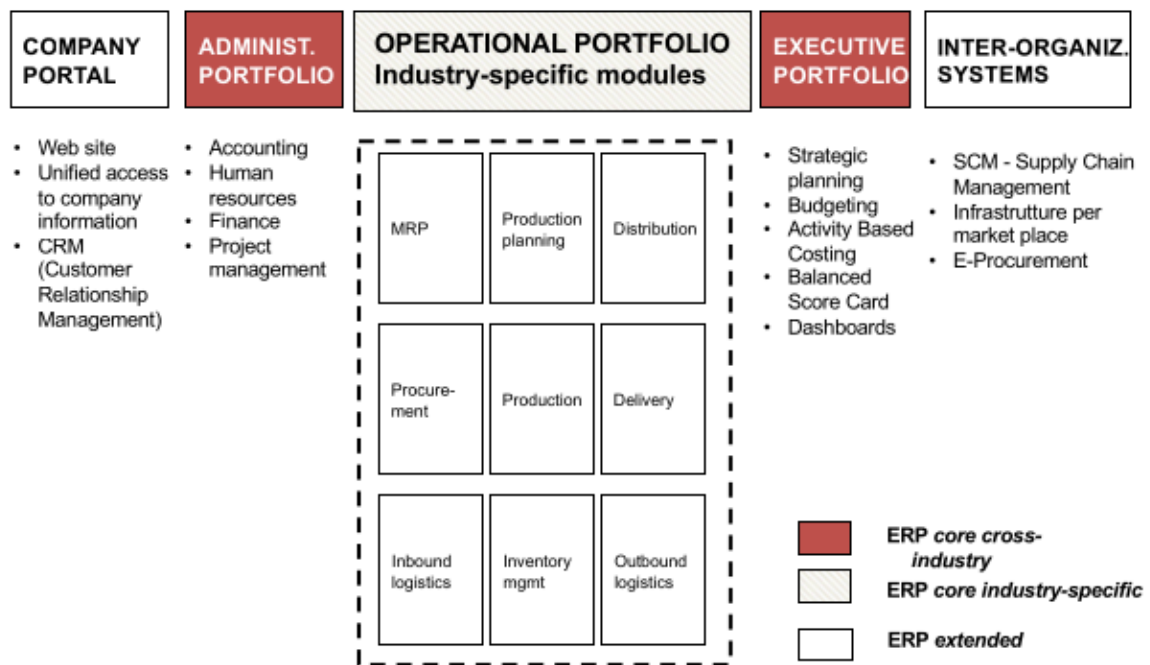
There is an important distinction between the modules in an ERP:

- ERP modules supporting internal processes, called core ERP.
- ERP modules supporting the interaction with external parties, such as customers and suppliers, called Extended ERP.

Core ERP modules include: Administrative portfolio, Operational portfolio (industry dependent, vertical solutions), Executive portfolio

Extended ERP modules include: CRM (Customer Relationship Management), SCM (Supply Chain Management), E-Procurement and Market Place.

Functional architecture of ERP systems: overview



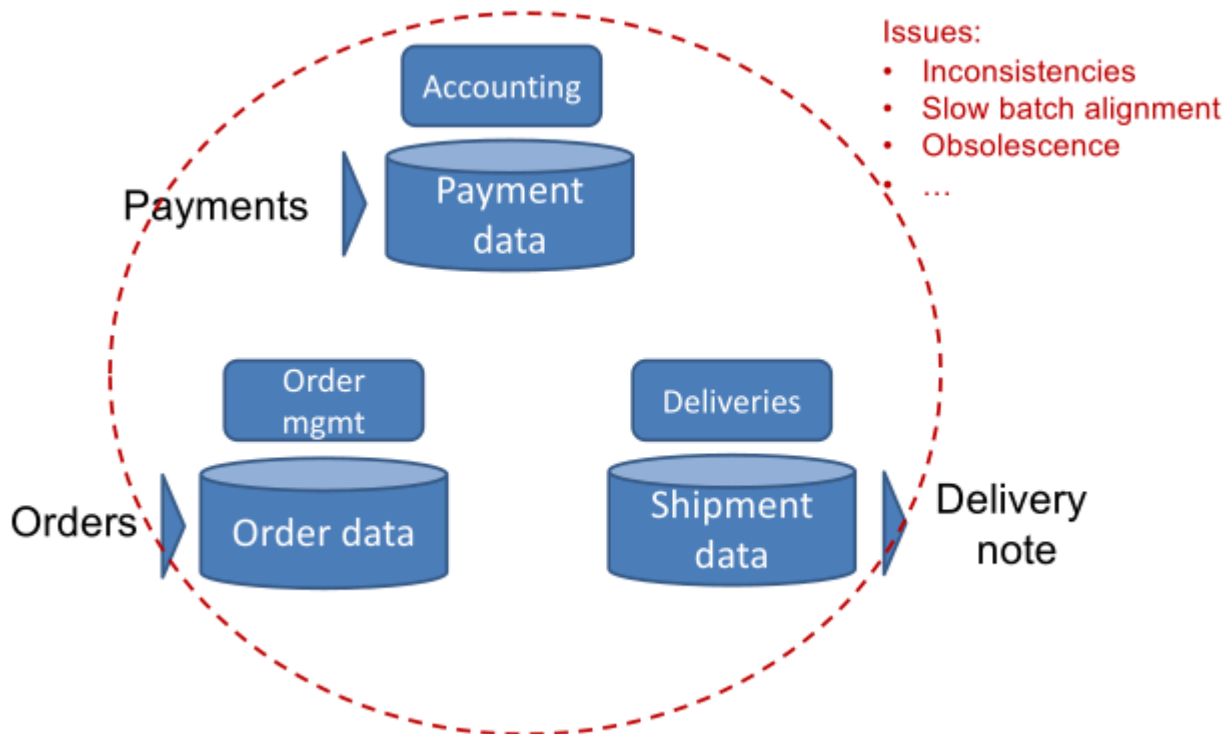
Vertical Solution

Depends on the history of the ERP, solution that responds to a specific requirements of the company. Helps to not having develop an ad hoc software, not integrating a new machine in the system (Clients are happy).

The ERP Paradigm

1. Information integration
2. Extension and modularity: company customise the ERP to their liking, it may also be necessary to buy an already customised ERP. This method can be expensive as it could require a lot of modification.
3. Process prescriptiveness: the market leading will have some best practices and the ERP mimic them so it will help other company to be competitive faster even though they are going to adapt to the ERP. ERP will provide prescription and force everyone to use the software. If works are fully automated there will be a more streamline and automatic behaviour.

Information Integration



17

Decision-making applications, functionalities, user interfaces



Operations support applications, functionalities, user interfaces

Horizontal data consistency (information sharing)

Vertical data consistency (from operations to executive dashboards)

Conceptual consistency: one, common, integrated data model

All part in the company should share information, they don't have to have private repositories. It can also help on modularity as it reduce the need of modules to integrate the information reducing the costs and leading a pay per use paradigm.

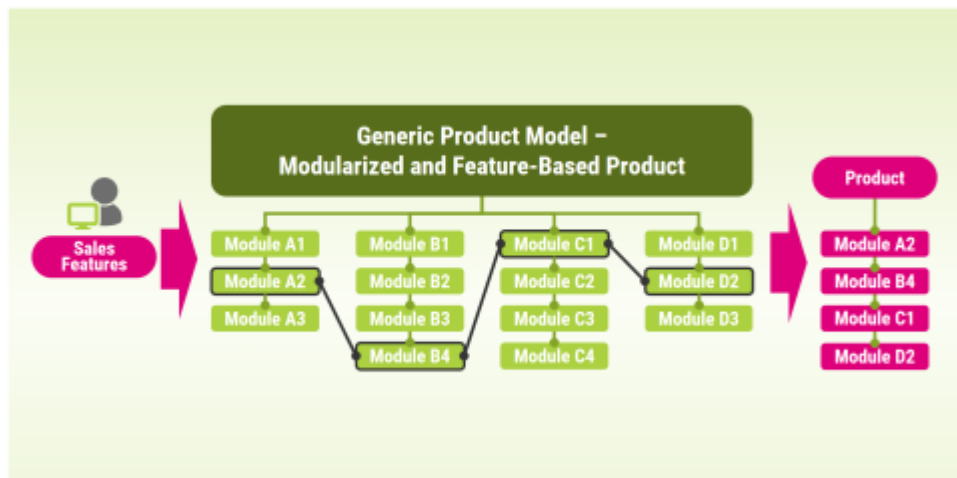
Extension and Modularity

Functional completeness

Modularity:

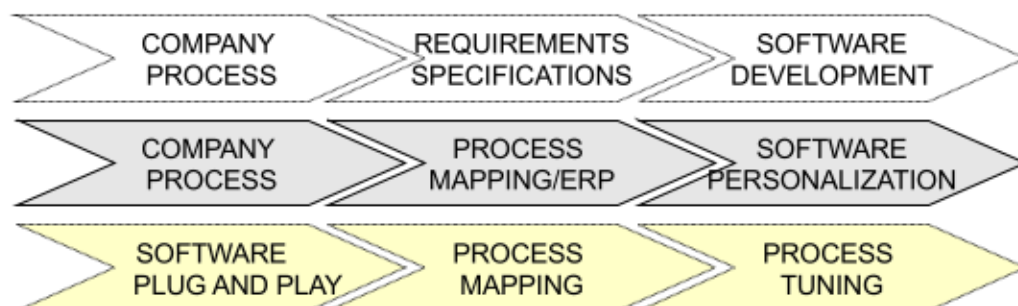
- One Stop Shopping (one supplier)

- Best of The Breed (multiple suppliers)



Tries to replace the legacies and only use ERP(One Stop Shopping). You don't want to use different ERP but you can use different modules in respond to the company needing(Best of The Breed).

Process Prescriptiveness



ERP packages embed a process logic, e.g.:

- “materials cannot be accepted without corresponding orders”

Custom applications are developed ad hoc based on process requirements

ERPs bring in a process and organizations have to change and conform to the logic embedded in the ERP

There are advantages (speed and costs) and disadvantages (diversification/competitiveness)

Observations

- No single ERP provider can offer all functionalities for all industries
- There exist niche players focused on industry-specific functionalities (e.g. cashier systems for the retail industry or machine-to-machine and machine-to-ERP integration in manufacturing)
- There's room for system integration to integrate software from different suppliers (or with legacy systems)
- Small and medium size companies typically adopt:
 - Simplified ERP packages (ERP light)

- Software as a service (SaaS) / Cloud-based solutions (e.g. Zoho, Magento, ...)

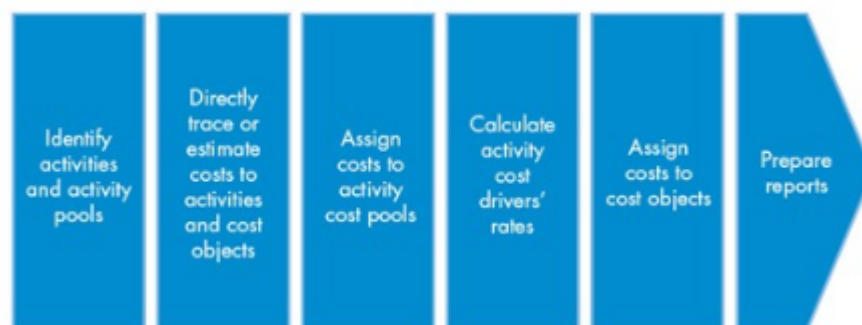
ERP alternatives

- Large enterprise, revenues > 50 million euro
- Classic ERP
 - BPR
 - Industry-specific (vertical)
 - System integration
 - High costs
 - Relatively long time frame (>6 months)
- SMEs
 - Light ERPs “plug & play”
 - No BPR
 - Simple administrative functionalities
 - Simple analytics
 - Limited scalability, need to change ERP as company grows

The ERP complete integration enables a real-time reconciliation of budgets, resource consumption, progress of operations and cashflows. Activity-based costing (ABC) represents a fundamental component of this integration.

Activity based costing (ABC)

- Operations are associated with costs
- Operations can be associated with an internal pricing system
- Progress can be assessed from both a project management (time, quality) and financial (cost) perspective
- Progress can be reconciled with administrative cash flows



Helps to give the cash flow at every given time based on administrative and operational information. It tells us that in a company we consume resources over time also when I am not doing nothing/I don't think I am using them. It helps making estimates of the impact cost of activities. You centralise purchases to save money and reduce costs(Purchases environment). At the end of the year you make projection on the expenses. These estimates are different from the real bills because there could be some fluctuation in prices or costs.