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Management & ICT

Enterprise Systems, the integration issue

Enterprise Ressources Planning.

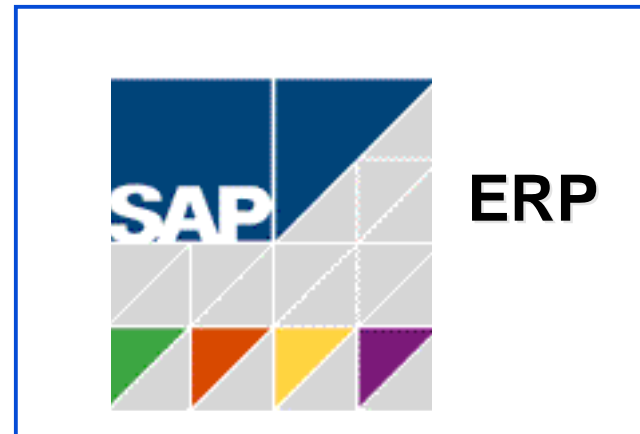
- 1 Definition and role of an ERP.
- 2 ERP implementation.
- 3 Limits and challenges of ERP.

PeopleSoft



Introduction.

Datawarehouse



Intranet

Extranet

Internet



Enterprise Ressources Planning

Definition

Sub-system from the global information system that can be characterised by :

- ❑ execution of several operational process by integrated modules insuring collaboration of process.
- ❑ Single data reference.
- ❑ Unicity of the sub-system administration.
- ❑ Human Computer Interface (HCI) Uniformization.

**Potentially, a complete ERP
can run the enterprise as a whole.**



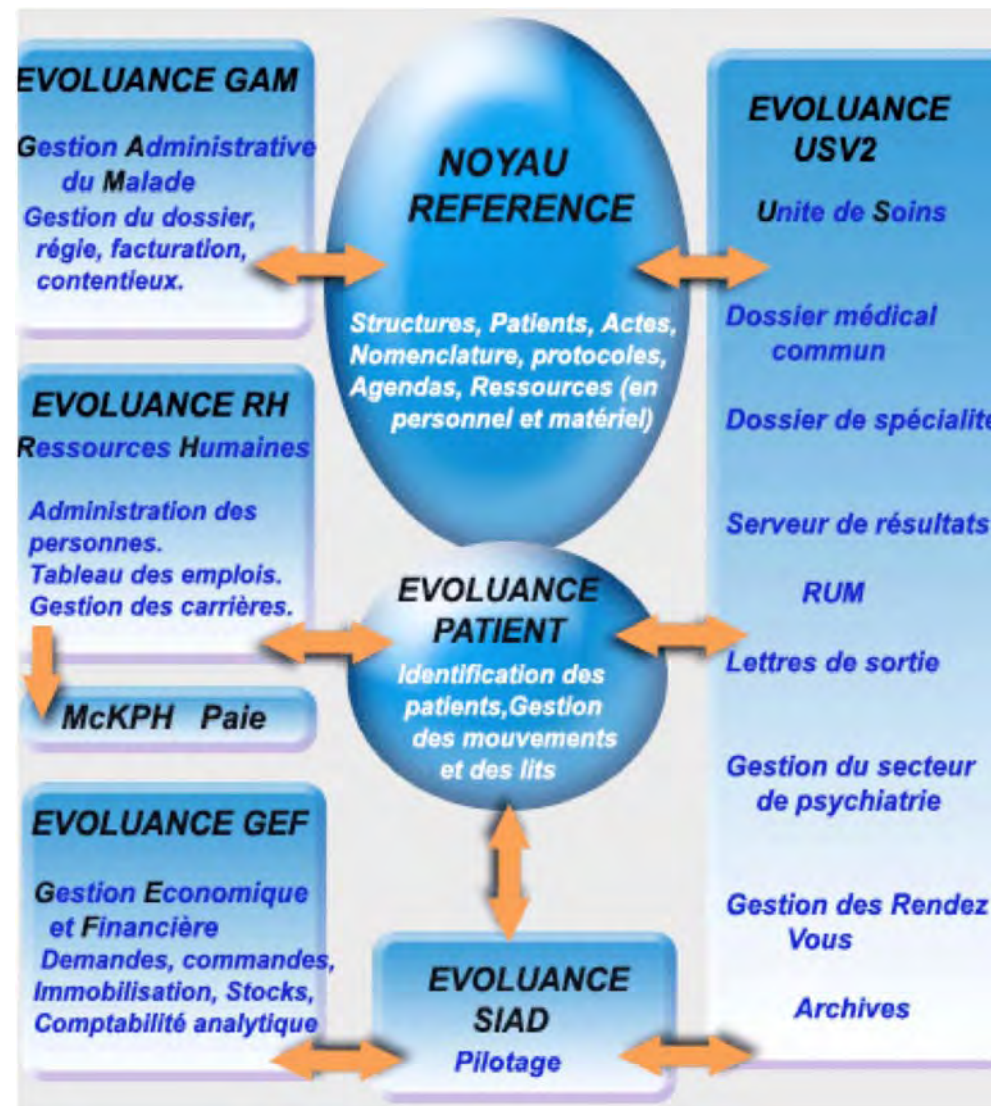
Other definitions

ERP Systems :

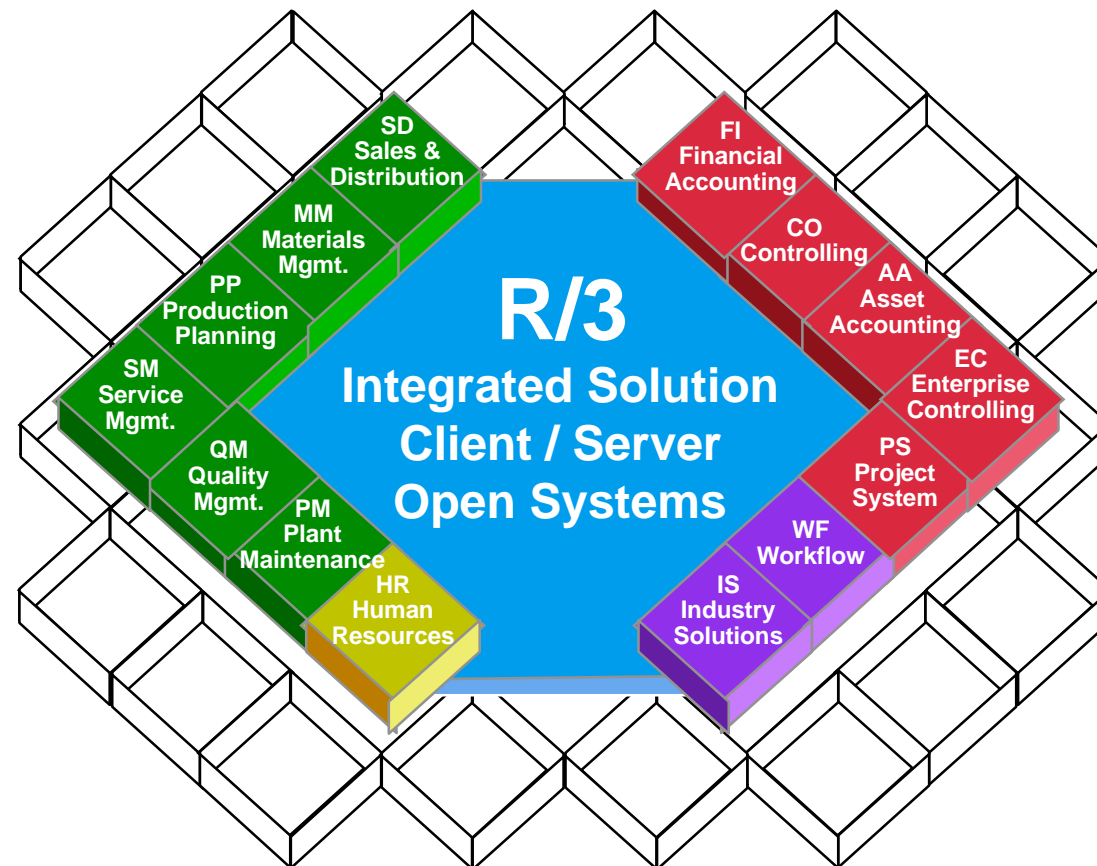
- “a software package which makes possible the sharing of business information stored on a common database among targeted business units in the entire organisation”. *Markus et al. (2000)*
- “ERP is a way of making internal processes in an organisation to work in harmony. In an ERP software all components of an organisation functions are supported therefore data or information is shared across the entire organisation”.
- “The purpose served by an ERP system is of organising, codifying and standardisation of the business processes and information or data. Furthermore ERP systems provide an enterprise with a common language and a common pool of data” *Norris et al. (2000); Adam & O’Doherty, (2000)*



An example : an ERP for an hospital



Some modules from R/3 (SAP)



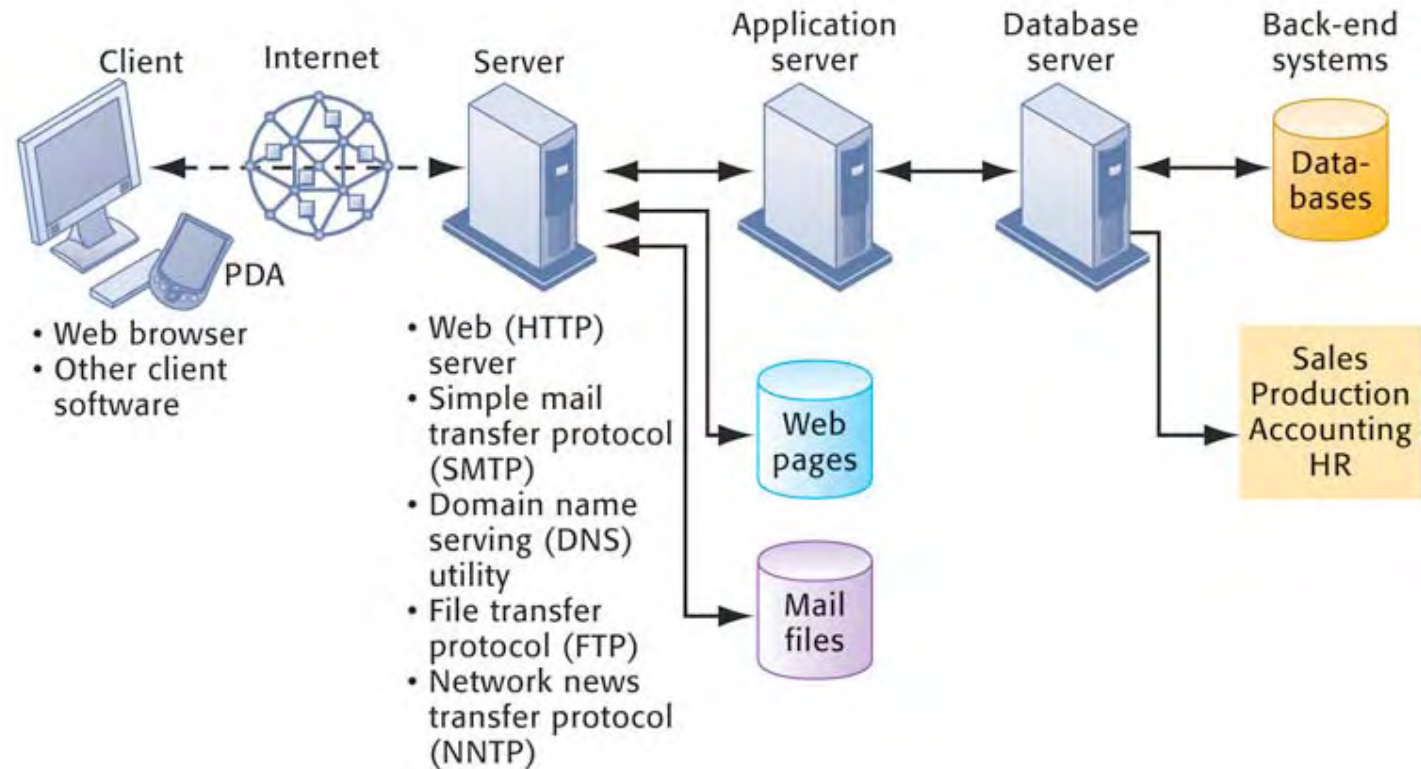
Characteristics from R/3 (SAP).

Contents and architecture R/3.

- multi-currencies, euro, accounting in different currencies.
- 100 business process management.
- 1000 operational process.
- Best business practices.
- Business Workflow.
- Application Linking Enabling (ALE).
- Languages : ABAP, C, C++, Java, HTML.
- Server UNIX, NT, DIGITAL, IBM AS/400, IBM S/090.
- Three-tiers client/server architecture.



n-tiers architecture



Expected benefits from ERP

Reduction in the costs of operations

Reduction of production life cycle

Operational

Productivity increase

Better resource allocation

Managerial

Better decision

Support of growing activities

Competitive advantage basis

Strategic

Links with clients and suppliers

Ease the change in organizations

Organizational learning

Organizational

Common Culture



Enterprise Ressource Planning

Why implement an ERP ?

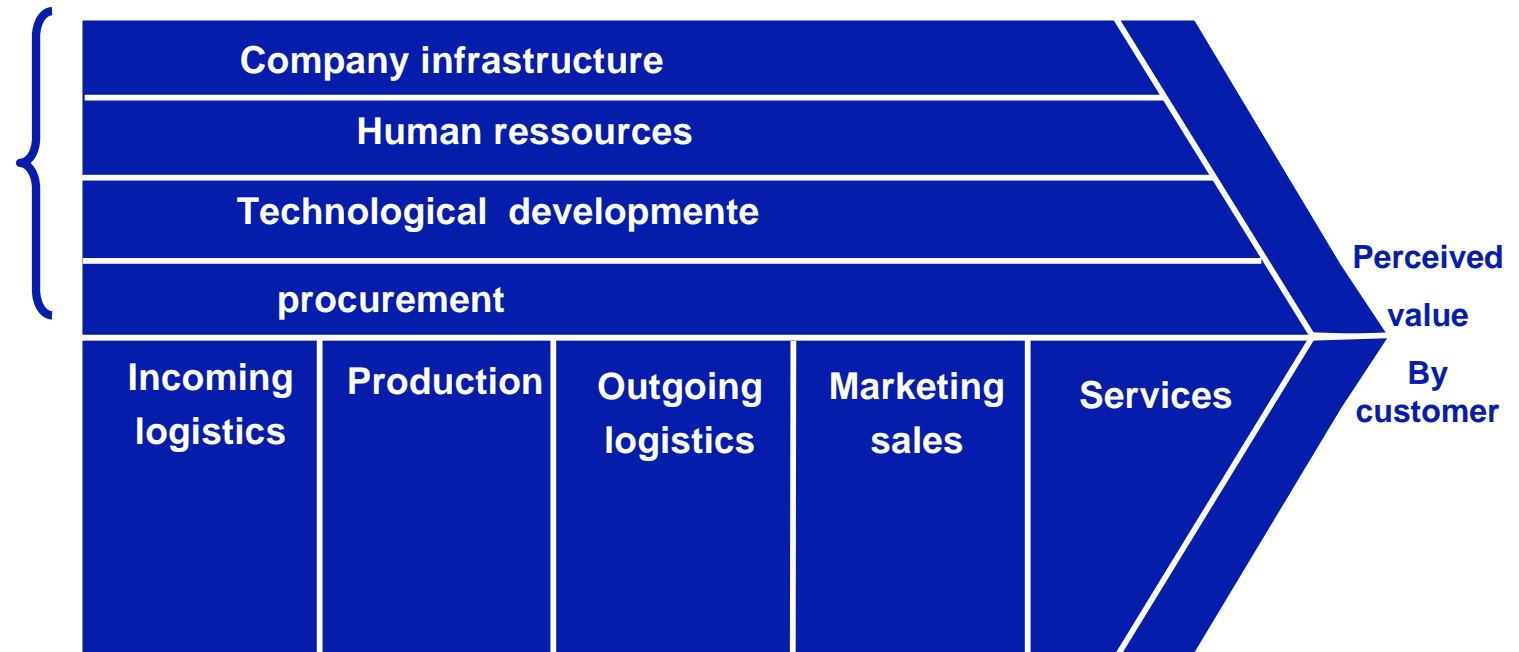
- Operations optimization and strategic reasons.
- Organizational benefits.
- Information systems benefits.



Enterprise Resource Planning

The concept of value chain (M. Porter)

Back office activities



Primary activities



Enterprise Ressource Planning

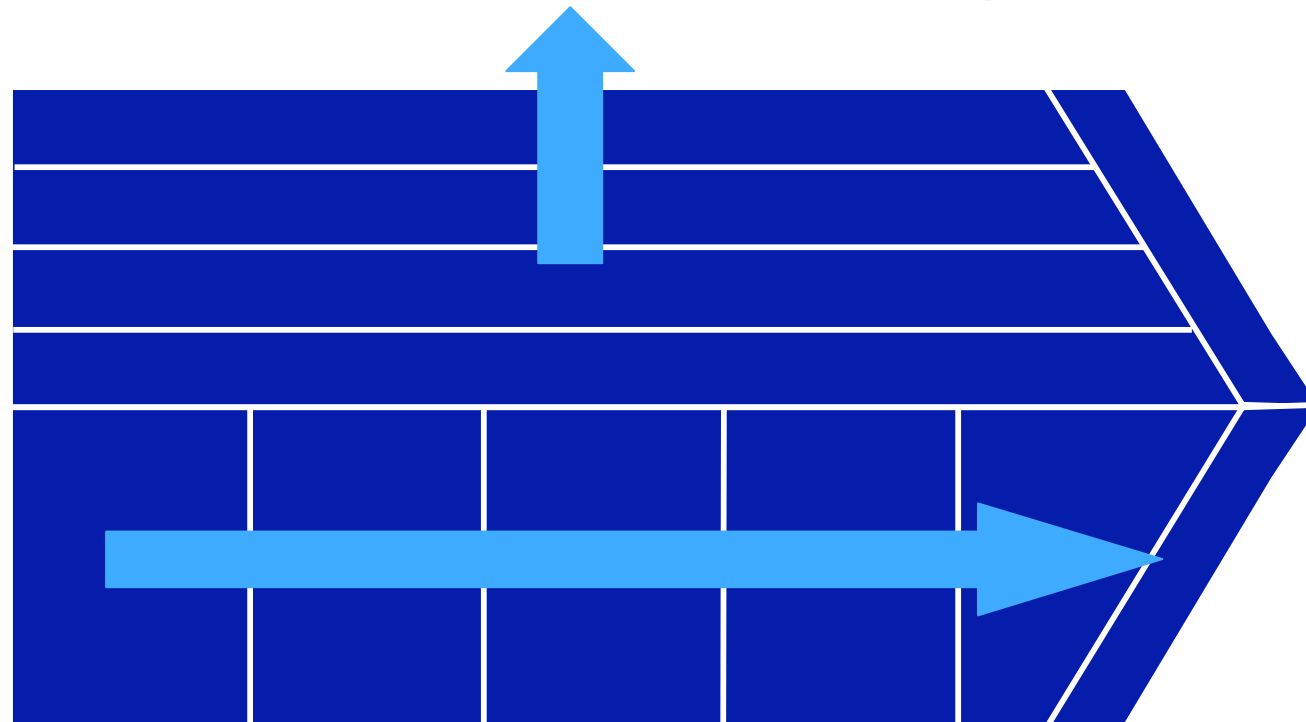
Competitive advantage can comes from :

- Optimization of a function in the value chain.
 - example : outgoing Logistics« 24h Chrono »
- Coordination beetween functions .
 - conception/retail -> Zara.
- external coordination (interconnected value chains).
 - building a global offer by connecting different value chains.



Enterprise Ressource Planning

Back office functions : in what extend do they contribute to the competitive advantage. ?



Primary activities : how to optimize them ?



Enterprise Ressource Planning

Thanks to the ERP, company can :

- reduce the costs of back office activities.
- streamline operational process.

Optimization and rationalization of process need:

- a strategic reflexion,
- an organizational reflexion.
- a business process reengineering (BPR).



Enterprise Ressource Planning & organization

ERP is all about process, not functions

It introduces tranverse thinking in organization...

...Which is not common among enterprise

- the same information is shared by different departments
- it doesn't not belong any longer to one derpartment.
- information is a basis of power in organization.
- retention of information is a common politic behavior
- the automation of the flow of information should bring more reactivity to the company
- sharing of information through the ERP is a first step to knowledge management.
- ERP has a strong impact on organization



Enterprise Ressource Planning & IT infrastructure

ERP and the IT infrastructure :

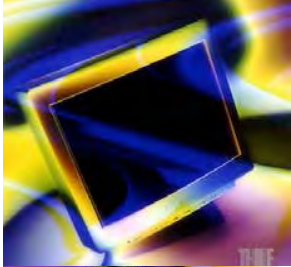
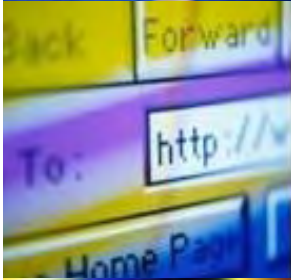
- IT development and history :
 - multiplication of applications.
 - multiplication of home made applications.
 - multiplication of databases and data formats
 - interconnection of applications is difficult and costs a lot.
 - ERP is an interesting solution for the CIO:
 - in term of power (recentralization)
 - in term of architecture

ERP enables :

- IT rationalization.
- the reduction of applications.

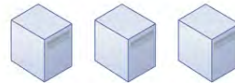


Evolution of architecture

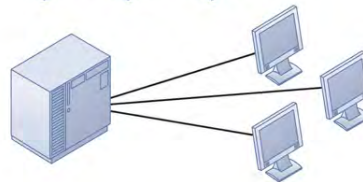


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Electronic Accounting Machine (1930-1950)



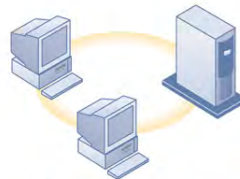
Mainframe/Minicomputer (1959-present)



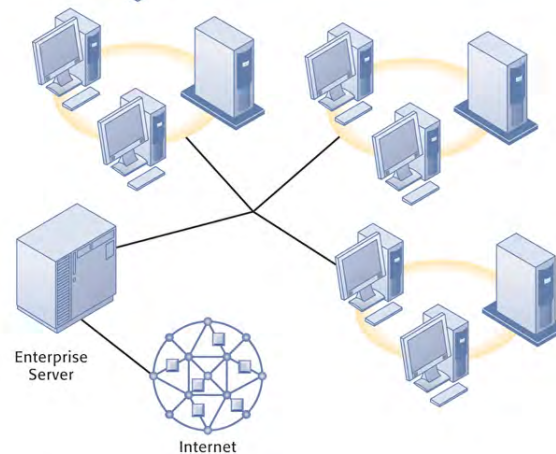
Personal Computer (1981-present)



Client Server (1983-present)



Enterprise Internet (1992-present)





ERP implementation.

Implementation, architecture.

ERP Implementation.

- Organizational and managerial perspective.
- Technical perspective.



ERP implementation.

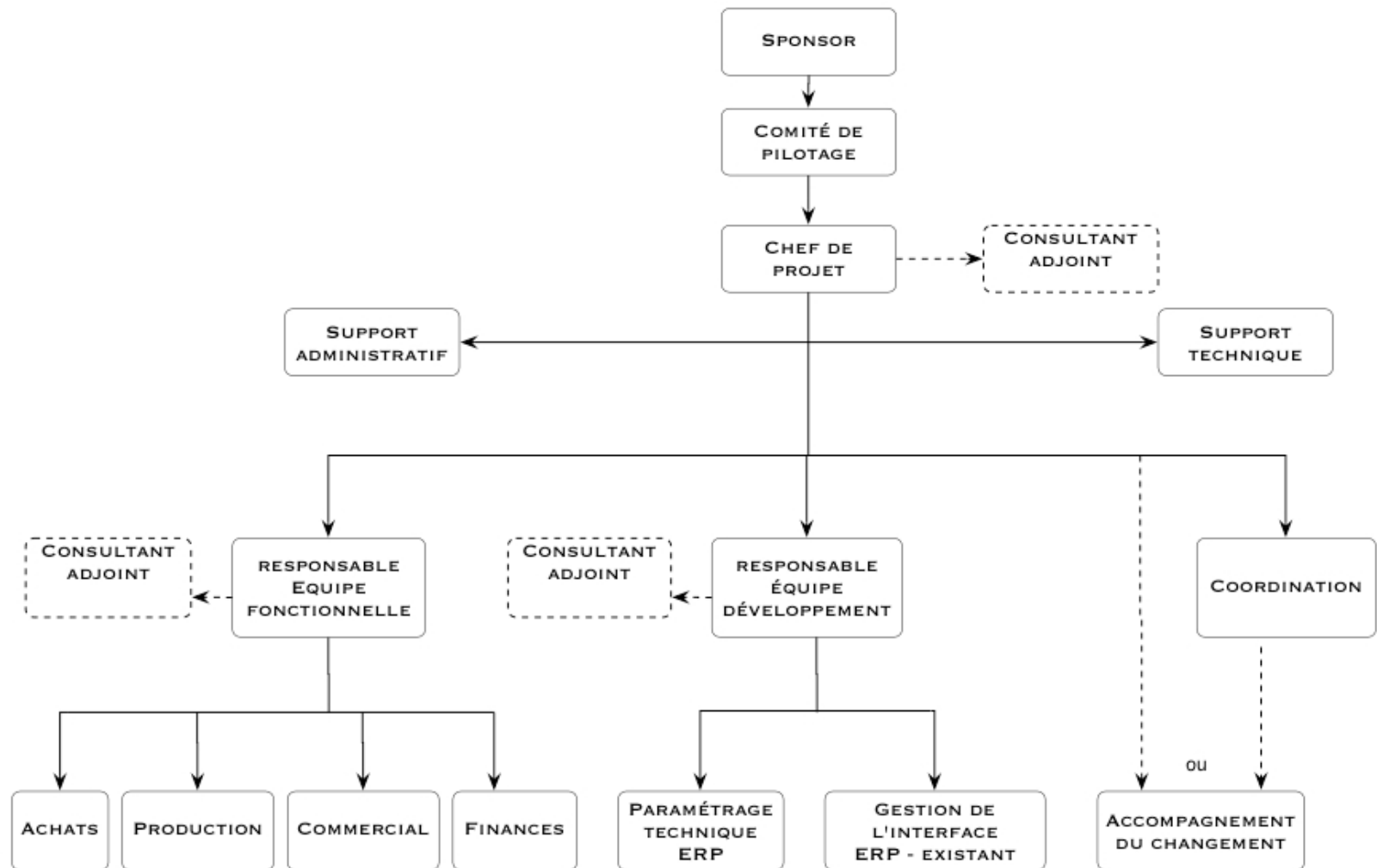
Implementation, architecture.

Organizational and managerial perspectives.

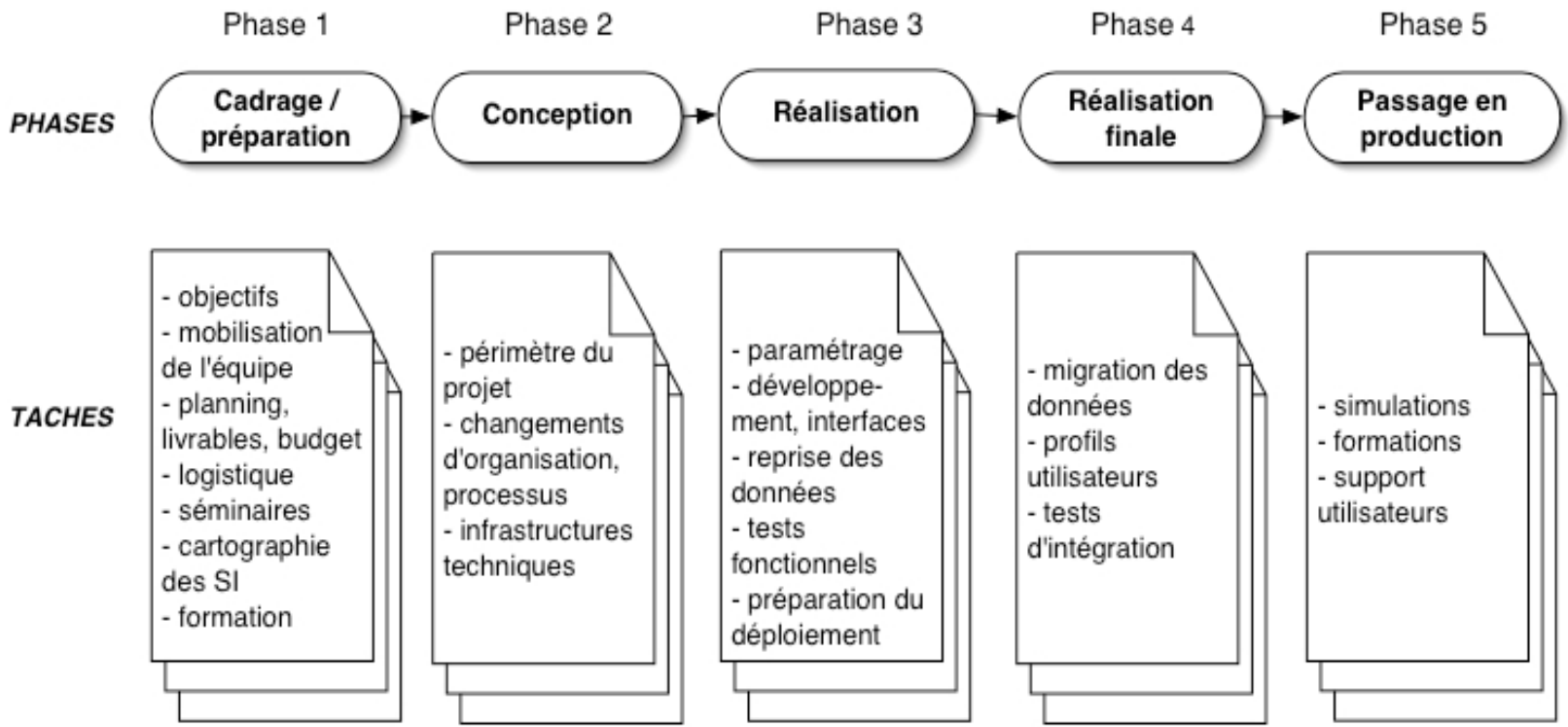
- Strategic analysis.
- organizational diagnosis.
- Process mapping and Business Process Reengineering.
- Building a team project.
- Integrator choice.
- ERP choice.
- Planning.
- Implementation



Typical team project of an ERP project



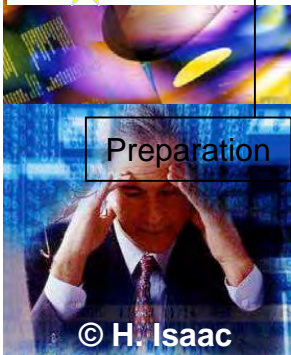
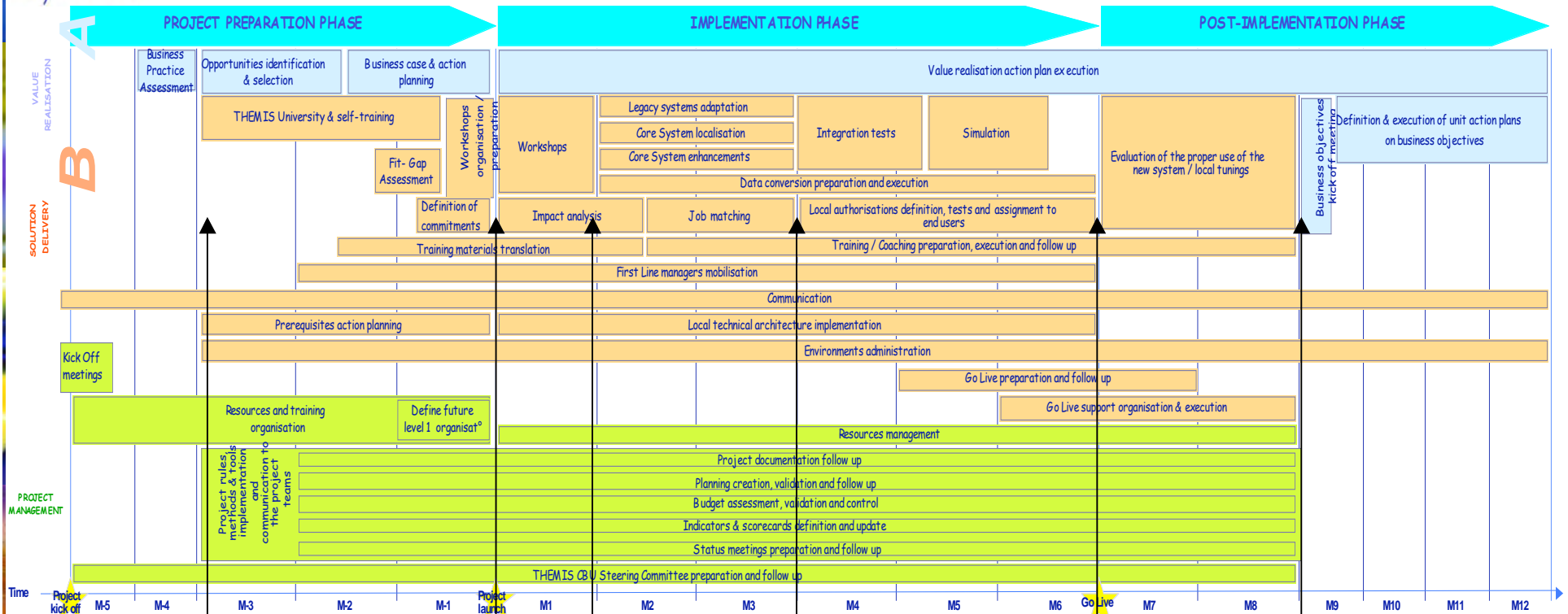
Implementation process



An example of Danone implementation process



THEMIS PLANNING FOR A CBU



Preparation
+
Workshop Préparation
+
Gap Killing Session

Start of integration
and simulation
tests

Go Live support

Hand Over

The Limits of ERP.

Too homogeneous : company process must fit the ERP.

- loss of flexibility.
- creation of informational dependances.
- data are entered only once, loss of attention,
- modification of informations flow and control.
- strict rules: setting paramaters is very complex.
 - example: payroll is often too complex to be put in an ERP.
- ERP is a critical system : failure is prohibited.
- Delays of implementation
- skill transfert.
- Budget.
- costs of maintenance ?

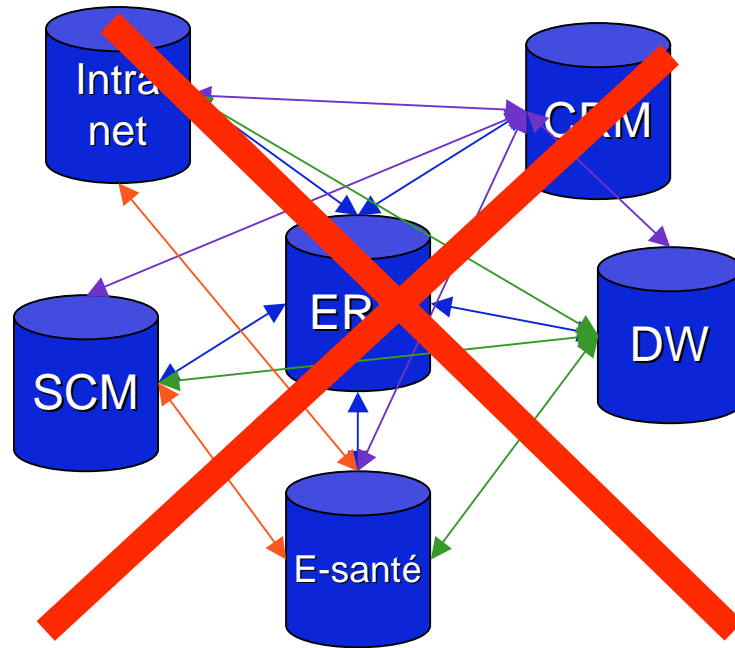


Integration by other means : EAI

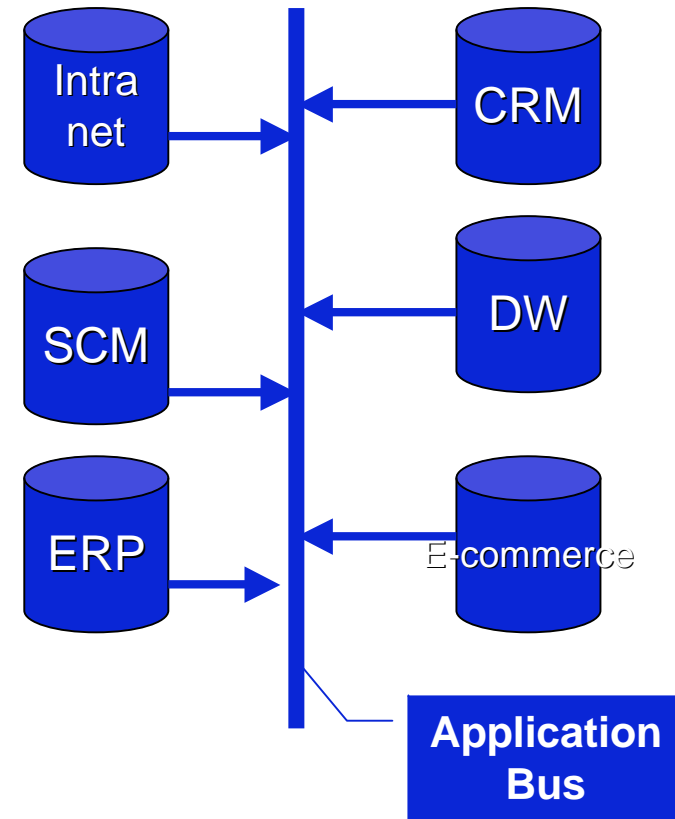
- Information system Architecture :
 - a bus of applications.
 - Communications between applications by objects.
 - Normalization of objects by standards (SOAP)



Enterprise Application Integration



Architecture without EAI



Architecture with EAI



Web services and EAI

Web Services:

- An alternative to enterprise systems is to use new Web-based standards to create a communication platform allowing older applications to communicate with newer applications.
- Web services refers to a set of **loosely coupled** software components that exchange information with each other using Web **communication standards** and languages.



Web services & EAI

- **Web services permit computer programs to communicate with one another and share information without rewriting applications, or disturbing older legacy systems.**
- **Web services are based on XML, and standards like SOAP, WSDL, and UDDI to create this communication environment.**



Service Oriented Architecture

- **SOA refers to the use of Web services in a firm to achieve integration among disparate applications and platforms.**
- **A firm might have applications (payroll) running on older AS400 IBM machines, IBM mainframes (customer data and inventory) and newer applications running on client/server networks.**

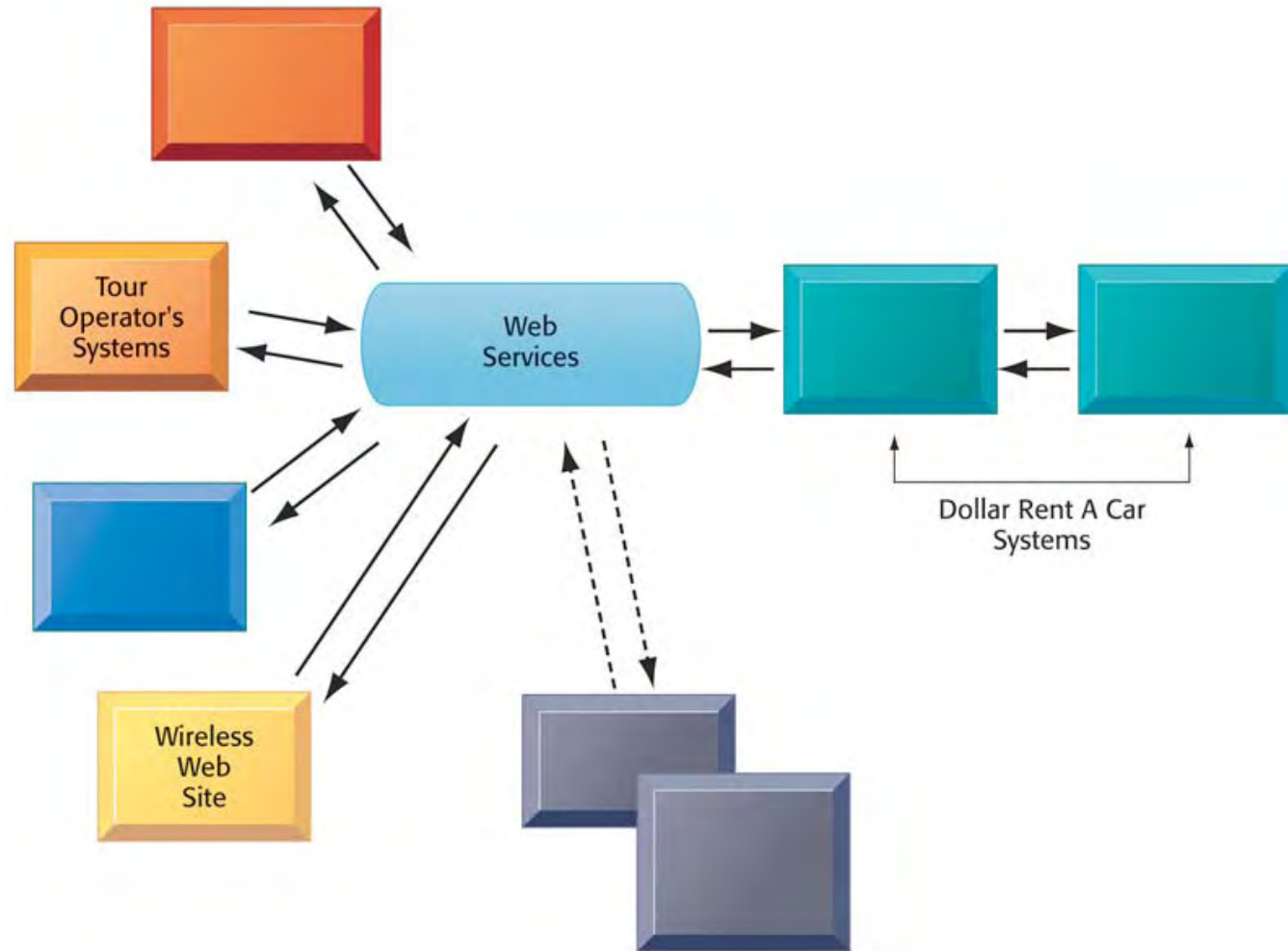


Service Oriented Architecture

- In SOA, these applications are integrated so that information stored on various systems can be brought together and fed into newer applications running on more contemporary equipment.
- SOA is generally less expensive than rebuilding all the older applications and adopting a new enterprise wide system.



Example of Rent a car web services



Actual researchs on ERP

- **Organisational impacts**

- « Special Issue Part II: understanding the contextual influences on enterprise system design, implementation, use and evaluation », *The Journal of Strategic Information Systems*, Volume 14, Issue 2, June 2005, Pages 91-95, Erica Wagner, Debra Howcroft and Sue Newell
- « Sticking to standards; technical and other isomorphic pressures in deploying ERP-systems », *Information & Management*, August 2005, Jos Benders, Ronald Batenburg and Heico van der Blonk

- **Integration:**

- « Enterprise resource planning systems, management control and the quest for integration », *Accounting, Organizations and Society*, Volume 30, Issues 7-8, October-November 2005, Pages 691-733, Niels Dechow and Jan Mouritsen

- **Team management:**

- « Effects of internal support and consultant quality on the consulting process and ERP system quality », *Decision Support Systems*, September 2005, Eric T.G. Wang and Jessica H.F. Chen



Actual researchs

- Change management
- Implementation results
- Key success factors
- Web services & Agility
 - « Web services and flexible business processes: towards the adaptive enterprise », *Information & Management*, Volume 42, Issue 7, October 2005, Pages 921-933, Deependra Moitra and Jai Ganesh



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