Enterprise Services Architecture

SAP DEVELOPER NETWORK

Introduction

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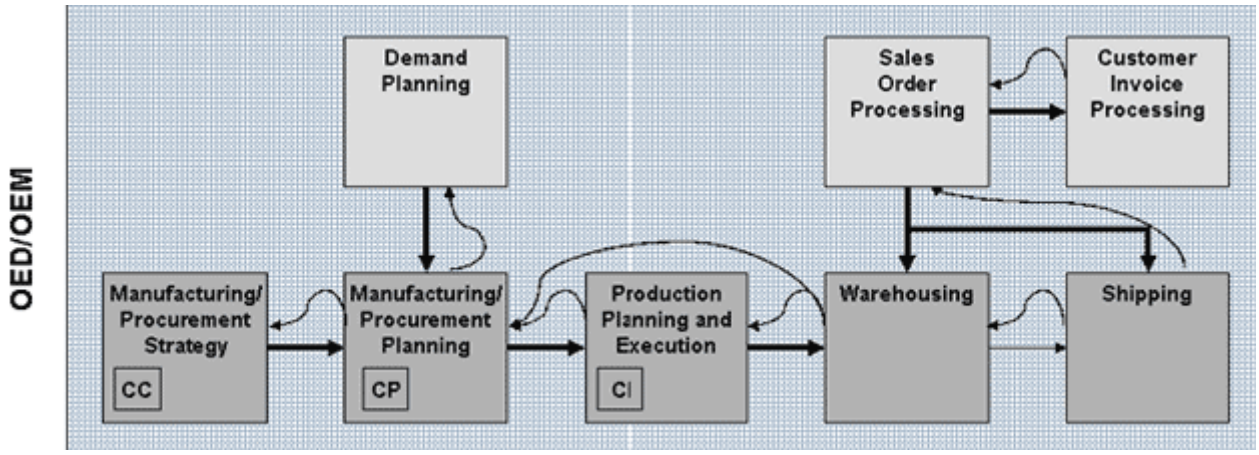
Flexibility and Efficiency

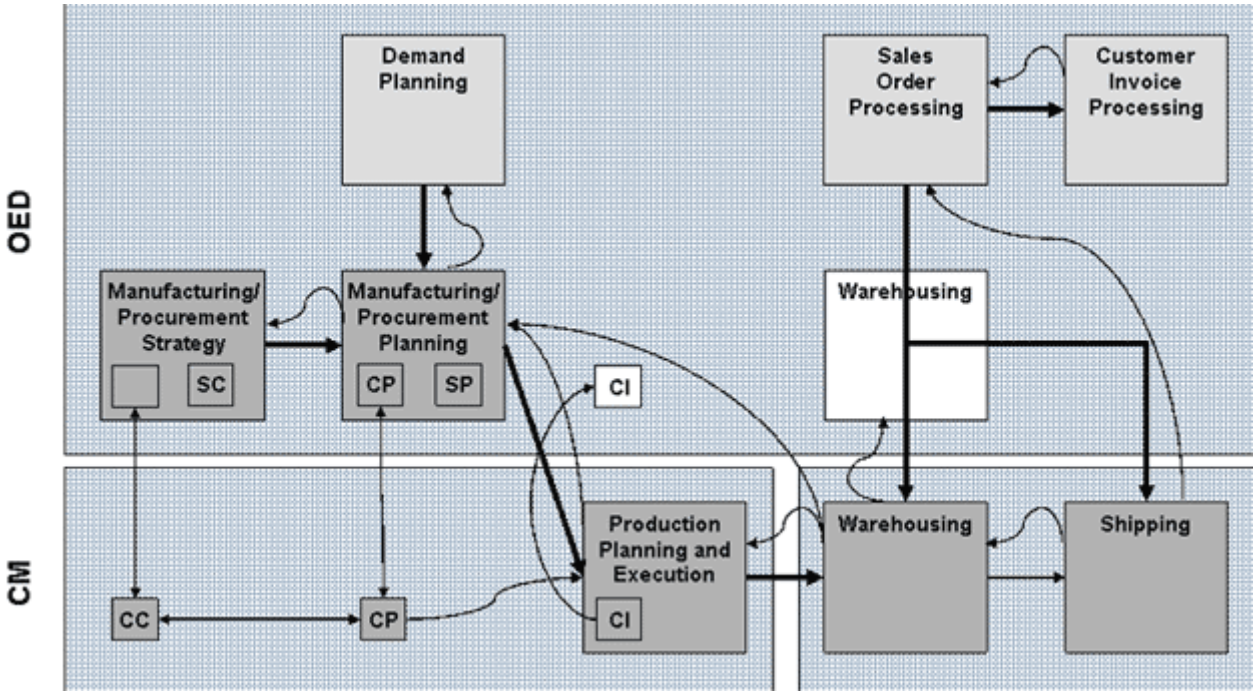
Business is constantly changing, driven by a host of factors such as technology, competition, and regulation. While business is changing, companies must keep their processes running efficiently; they cannot stop their business in order to change it. Information technology (IT) today is critical in running the business efficiently, but we can get better at supporting change. In order for IT to support change in business, we need to add flexibility our design goals. This is what Enterprise Services Architecture does.

To be able run your business efficiently while it is changing, you basically need to have empowered users connected to end-to-end processes. Let us start by looking at the end-to-end processes. Tightly integrated large mainframe and client/server applications are supporting process efficiency within their specific organizational and functional scope, i.e. they can be said to optimize efficiency locally as opposed to globally. By expanding the organizational and functional scope, we can increase global efficiency, but it should be obvious that we cannot put the whole world on one system - there will always be processes that cross system boundaries, and we must be able to deal with this without losing efficiency in order to support end-to-end processes.

As business is changing, the notion of what part of a process can be supported by an integrated application changes with it. An integrated product company that designs, sells, manufactures, and transports its products can in theory use an integrated application to support this, but if the company for example decides to outsource its manufacturing and logistics operations in order to gain efficiency, organizational boundaries now make this impossible. The basic end-to-end processes to a large extent remain the same, but they now cross company boundaries, and some new processes are added, such as the procurement and monitoring of manufacturing and logistics services.



Information and control flow in an integrated company.



Information and control flow after outsourcing of manufacturing and logistics.

Another example may be a financial institution like a bank or insurance company that initially had its own sales force, then went to a system of independent agents selling its services, which in turn consolidated into large retail financial services brokers. The basic process of selling the services remains the same, but we have three different relationship models between the company and its sales channel.

To further complicate things, a company typically has a mix of models active at any particular time; a product company may manufacture some products in-house and outsource the manufacturing of others while a financial institution may have its own sales force for one customer segment and use agents and resellers for others. No matter what the business model is, the processes should run interrupted end-to-end. How the Enterprise Services Architecture

supports this we will see in the next chapter.

Now let us look at empowering users. To really be flexible, we need users to have access to all the information they need to make decisions - and the tools to translate their decisions into action. The information is provided by analytical services that create the context for an event or task, and composite applications, often tailor made for a user's role or task allow him to take action right there.

In our example with the outsourcing of manufacturing, the material planner at the product company becomes something of an operative supply chain manager, securing manufacturing capacity and component supply depending on current and ever changing demand. Changes in plans need to be communicated to contract manufacturers and component suppliers and confirmed by them. Any exceptions at a contract manufacturer or component supplier need to be brought to the attention of the material planner. Think of a delayed delivery of some components. The material planner is alerted to the situation, gets the context in the form of availability reports from various warehouses and vendors, lists and priorities of orders that need this component, market prices, and so on. Based on this information he decides what to do: Get the component from another source, delay manufacturing of some orders, or take some other action. From his composite application he can trigger these actions, and through the link to the end-to-end processes they should trigger all subsequent process steps internally and externally.

Here we have seen some examples where we need to combine flexibility with efficiency - How the Enterprise Services Architecture supports this will be our next topic.

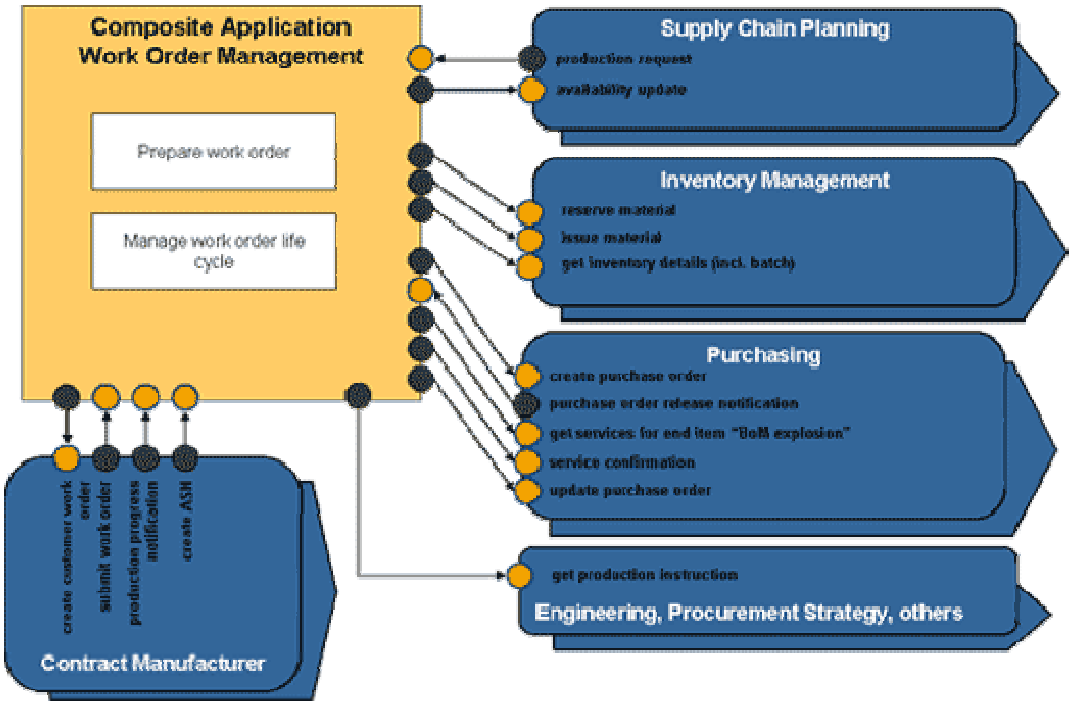
Enterprise Services Architecture

Enterprise Services Architecture (ESA) is SAP's blueprint for services-based enterprise-scale business solutions. In ESA, we look at applications and components as service providers and consumers. Service providers typically are business applications whose functionality and data can be used also by other applications. Service consumers can also be business applications that use functionality and data of other applications instead of implementing or replicating it, but it can also be for example a user interface or a business process.

Because the same service can be used in different contexts and one consumer can use services from multiple sources, this gives us flexibility to adapt to changing needs. If a new business process is introduced, we can for example create a composite application to support it, and use existing services in new combinations. Similarly, we can support for example different user groups with different skill sets by giving each one an appropriate user interface, although the underlying services may essentially be the same.

In our example above, we need a set of services to keep the end-to-end processes running smoothly even after the manufacturing has been outsourced: The product company electronically submits work orders to the contract manufacturer by calling services exposed from the contract manufacturers systems and status updates and exceptions are sent the other way. Procurement of components is handled by the contract manufacturer but needs to be approved by the product company. These processes can run across systems and even companies because the corresponding touch points are exposed as services in the Enterprise Services Architecture. In a similar manner, role specific work centers and composite application can be built on top of heterogeneous

systems if these are service enabled.

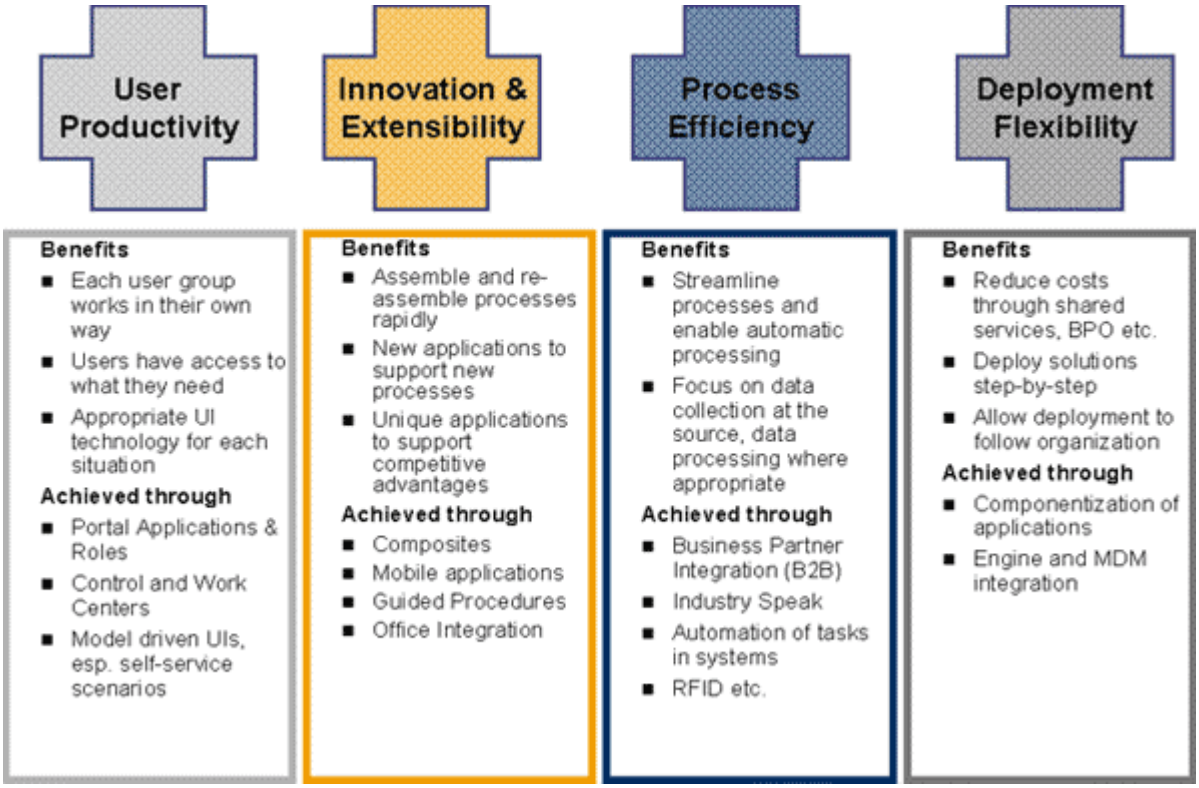


Service needed for a composite application supporting work order management.

So how does the Enterprise Services Architecture relate to Web services? Web services are a set of standards that ensures interoperability between platforms. SAP is fully behind these standardization efforts. We are actively driving some standards where we have relevant expertise and we implement all standards that are relevant to us in SAP NetWeaver, our technology platform. All services in the Enterprise Services Architecture can be accessed as Web services, and in some cases additional protocols may be available or even preferable, for example for performance reasons - But Web services is always an option.

Tangible Benefits

The Enterprise Services Architecture delivers direct, tangible benefits that all lead to greater flexibility and efficiency. These benefits are illustrated in the drawing below.



Tangible benefits of the Enterprise Services Architecture and how they are achieved

An Enterprise Services Architecture cannot be implemented in a "big bang". Every company will rather take its own approach, moving towards the new architecture with every project.

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