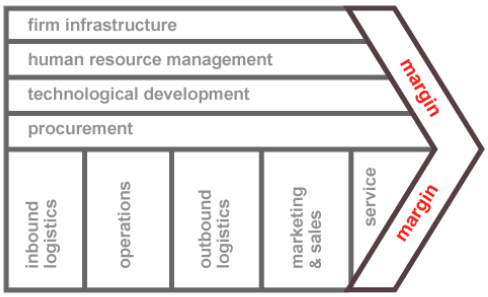
Introduction

This paper provides an overview of the Front Middle Back model of the record keeping value chain model. The paper is for colleagues and clients so that they can understand why we use the model, what it is and how it can help.

The now commonplace idea of the value chain was devised in the early 80s by Michael Porter at Harvard Business School. He published his ideas in (Porter, 1985). This view of the value chain is mainly aimed at manufacturing.



Over the last few years, we have been developing a different view of the value chain based on the flow of information (bits) rather than things (atoms). We find that understanding this view of the business helps make information systems more flexible and can lead to considerable information advantage.

Instead of asking the question 'how do the things move' in a value chain, which is Michael Porter's question, we ask 'how does the information move' in a value chain. The diagram below is one view of how information moves in an enterprise.

Figure 1 Digital Value Chain

For those companies whose product is information, such as financial institutions (famously Walter Wriston said that information about money is more important than the money itself), this value chain perspective is also the value chain of the business itself.

Sources

There are three main sources of inspiration for our view of this value chain. The first of these is the value chain established by capital markets as they moved from a batch accounting model to a real time risk based model.

Figure 2 From http://www.citigroupglobalmarkets.co.jp/english/businesses/global_markets/img/index_g_03.gif

This value chain put in place a middle office to manage risk and then found that concentrating order flow on the middle office conferred an information advantage.

Secondly, the record keeping framework of REA (McCarthy, July 1982) which was created to answer the question 'What record keeping beyond book keeping do we need to do to keep track of a business?'.

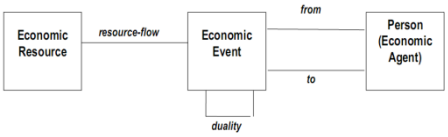


Figure 3 Basic REA Model

There are three kinds of events that REA keeps track of: non-economic events; economic finance events (which we prefer to call risk events); and economic resource events. These map nicely to the front, middle and back.

And lastly, the model evolved by Amazon for their enormously successful eCommerce operation (see later on for more on this). Amazon believes all services should be asynchronous and autonomous:

"Even if fulfillment services are burning down, you want people to be able to place orders." Werner Vogels, CTO Amazon (from http://www.webperformancematters.com/journal/2007/8/21/asynchronous-architectures-4.html). This belief led to Amazon separating the order taking part of its value chain from the order checking part. This created a separate middle office and enabled Amazon marketplace.

These three sources lead to a model that we call, rather obviously, 'Front Middle Back'. This is illustrated in the diagram below.

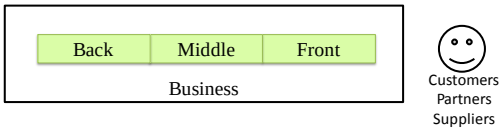


Figure 4 Front Middle Back Value Chain

Front Middle Back

The idea of the model is two fold: that business events will, inevitably, be either for the front, the middle or the back, creating a natural value chain for information systems; and that organising information systems in this way will maximise flexibility. Remember that we are talking about how to optimise the record keeping capabilities of the enterprise here, not how to optimise the business organisation. Enterprises typically organise by line of business, geography or value chain, or some combination of them. However they are organised, the record keeping has to respect 'front middle back' as its natural value chain.

We find many organisations do not have this view of their information systems value chain, and their resulting organisational and operating models suffer as a result. For example, customer experience is made worse as internal operational considerations bleed through to the front office, or assets cannot be used to their full capability to meet customer need.

Another way of thinking of Front Middle Back is that it provides the chain of causation for straight through processing. The result of a customer ordering a product or service starts a chain of events which culminates in the customer receiving the product or service ordered. In many enterprises this sequence of events is not organised properly. An overly monolithic information system implements the whole thing at once. For instance, using online Banks, if I transfer money between accounts on the same branch accounting system, then the transfer happens immediately. However, if I transfer money to my credit card account, and that is on another system, the transaction can take three days. The problem here is to misunderstand cause and effect. As David Hume said (Hume, 1739):

"…if one cause were co-temporary with its effect, and this effect with its effect, and so on, it is plain there would be no such thing as succession, and all objects must be co-existent."

Front Office

The front part does the record keeping for the front office. This includes marketing to prospects, originating business to create customer relationships and servicing the customers' needs. The concepts that are important to the front are: the customer; brand (being the relationship between the enterprise and its customers); and events that do not change the economics of the business (no money or goods change hands).

Many enterprises combine the front and middle offices in their record keeping systems. An example of this is any eCommerce Web site that asks you to wait while they check your credit card. The front office should just take the order and

thank the customer. Amazon used to check the credit card but found that it didn't scale. Also, because people would hit the back button while the card was being checked, they would either lose business or bill the client twice. Neither is good for retaining customers or achieving high straight through processing rates.

The right thing is to separate the front office record keeping from the middle office. The front office acts like an originator and tracker of transactions. The trade blotter used in capital markets is a good model for this approach.

Middle Office

The middle part of the value chain can be the hardest to grasp. We typically talk of front office where customers sign contracts and request services, and back office where office-based workers wearing green eyeshades enter numbers into ledgers and other workers move goods around. But 'middle' office is not a term regularly used.

With the availability of cheap information processors, a new 'middle' office was born. As the process of executing orders became automated, what capital markets called 'straight through processing' (STP), the middle office came into being. To begin with the role of the middle office was to manage risk by managing the financial transactions of the business. Over time it evolved to manage the execution of customers' orders and this, in turn, evolved to managing the order flow.

Order flow gives an enterprise an information advantage which can be turned into money, for example by matching orders to eliminate settlement costs and thereby pocket the spread between buy and sell (capital markets firms that do this are called systematic internalisers). The middle office also defines the product being offered to the front office.

These three concepts then define the middle office: product, order flow and risk. The middle office uses straight through processing to gain an information advantage and so increase profit while minimising risk. The middle office therefore represents the relationship of an enterprise to its stakeholders.

Back Office

The final part, the back, is about fulfilment of the customer's order. For a financial institution this is clearing and settlement. For a retailer, this is shipping the goods. It is also where the accounting (books and records) are kept for the business. It is mainly in the back office, as orders are completed, that the business ensures compliance with local regulatory and industry requirements. The back office therefore represents the relationship of an enterprise to its communities.

Separation of the back office enables third party services to be used for fulfilment (shipping goods for instance) and clearing and settlement (transaction banks do this for retail banks). The aim of the back office is generally to maximise the number of transactions it does and so minimise the cost per transaction. This economy of scale is the main reason for separating the middle from the back.

Corporate Functions

Enterprises have to separate the necessary from the contingent, that is, separate what they have to do to be what they are from what they choose to do. In the UK we think of Shell as an oil company, but, because of the forecourt shops it owns, it is also a very large grocer. If you want to think of the enterprise as a set of business propositions any one of which could be sold, what is left that the enterprise has to do to stay a meaningful entity. This was a

question JPMorgan asked itself in the 90s and came up with three things: Brand; Risk; and Compliance.

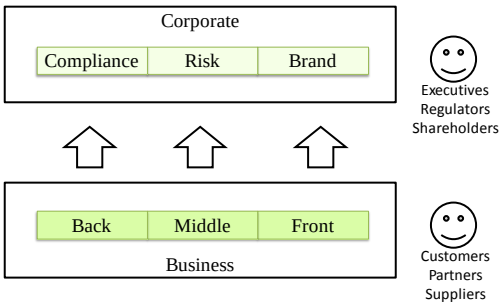


Figure 5 Relation to Corporate Functions

Brand is, in effect, the enterprise view of the front offices across all that the enterprise does. It is the relationship between the enterprise and its customers. Risk is the view across all the middle offices and is the relationship between the enterprise and its stakeholders. Finally, Compliance is the view across all the back offices and is the relationship between the enterprise and the communities in which it operates.

Enterprise Resources

The last section made the point that the front middle back applies to both the lines of business that the enterprise chooses to run and also to the corporate functions it has to run. In addition to these two, the enterprise has to manage three important resources: People; Information; and Money (finance).

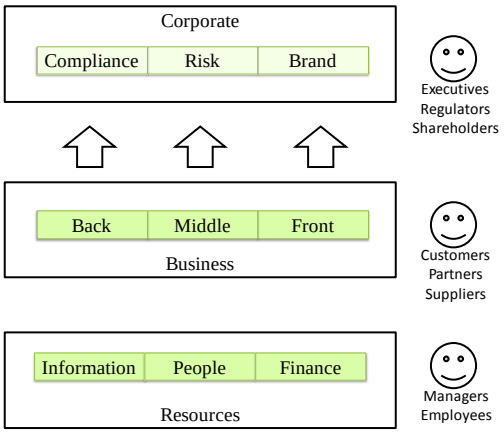


Figure 6 Relation to Enterprise Resources

This paper and its companions are all about the management of information as a resource in the enterprise. Front Middle Back is about the creation of the raw material of information (the business events recorded by the enterprise), the companion papers on one level enterprise () and information value chain () papers describe how to turn that raw material into information products.

It is a choice whether to centralise or distribute the management of these resources. However, money is completely fungible – a pound in London is entirely replaceable with a pound in Edinburgh. Therefore it makes a lot of sense to centralise it. People are mostly non-fungible – you wouldn't normally be able to replace the CEO with a van driver.

Logistics

What could the front, middle and back look like for a logistics firm?

The front is the record keeping and reporting for the purposes of taking orders for shipping goods from businesses to consumers. This can be implicit, when a customer selects a shipping method in a third party eCommerce shopping basket, or explicit when a customer requests a pick up of a parcel. In the former case, the front office is a channel to the middle office, in the latter case, the front office is the Web site offered to the customer where orders are placed. In both cases, the front office has to include services to show the history of the relationship and to show the current state of all orders ('track and trace'). The orders are sent in both cases to the middle office which in turn sends back the state change information for track and trace. The front office bills the user for completed orders and maintains a history of all orders and payments.

The middle office receives all the orders for shipment of goods either directly from consumers or from businesses on behalf of consumers. This communication is asynchronous in that the front office does not wait for the middle office to confirm receipt. The middle office first checks the financing of the order to ensure that the order is allowed (minimising risk). The middle office then chooses a route to its destination for the order (optimising

profit).

The aggregation of this order flow information could give Yodel an information advantage enabling increased profit at lower risk. For instance, it may enable end to end route optimisation.

The middle office then sends a message to the back office so that it can fulfil the order. At the same time it sends a message to the front office changing the status of the order from 'in execution' to 'in fulfilment'. The middle office keeps track of the order to completion to minimise risk of non-payment.

The back office is responsible for picking up and shipping the goods. The back office will send messages to the middle office updating the status of the order as it moves through the system, from 'ready to collect', to 'picked up', to 'scanned out of reception centre', to 'scanned out of hub', to 'scanned out of distribution centre' to 'received at destination'. It will also send any exception messages, for instance if an order is delayed, lost or damaged. The asynchronous communication from the back office to the middle office is likely to be at the level of batches, the middle office will relate the batch to the individual orders so it can keep the front office informed in terms of orders.

These distinctions mean the needs of the customer (front), the business (middle) and the broader community (back) are served to the fullest possible effect, and without sub-optimising each other.

Retail

One of the best case studies to exemplify the model is Amazon. The Front Middle Back value chain model has been a critical success factor for Amazon's customer service, risk and profit optimisation, and leveraging of broadest possible resources for product offering and fulfilment. It has enabled Amazon to turn exception events into customer loyalty events. More fundamentally, it helped unlock the scale potential of the business. Although Amazon originally adopted the model to scale its Web site, it ended up using it to create the Amazon Marketplace.

Manufacturing

To be added

Transport

To be added

Insurance

To be added

Capital Markets

To be added

Retail Banking

To be added

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[1] Information Value Chain

[2] Integration Architecture

[3] Inside Outside

[4] Basic Engineering

About John Schlesinger

John Schlesinger is a Principal at Atos Consulting where he leads its Enterprise Architecture practice. John is an advisor to enterprises specialising in middleware and integration architecture. He has lead integration architecture development in retail banks, investment banks, retailers and manufacturing, both for integrating applications and for integrating information.

John has worked both as a consultant and also as a developer with software companies. He has taken over two dozen program products to market at IBM, Information Builders, One Meaning, SeeBeyond and iWay Software. These products included the world's most successful commercial software (CICS) and the world's most successful data middleware (EDA/SQL). John also led the Architecture department at Dun and Bradstreet when its IT department went global.

A member of the ACM and the IEEE, John has an MA in Physics and Philosophy from Oxford University and a Post Graduate Diploma in Software Engineering from Oxford University.

John has spoken at numerous conferences including the CIO Cruises run out of New York, during one of which he was the first speaker on after the collapse of the World Trade Towers in 2001.

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