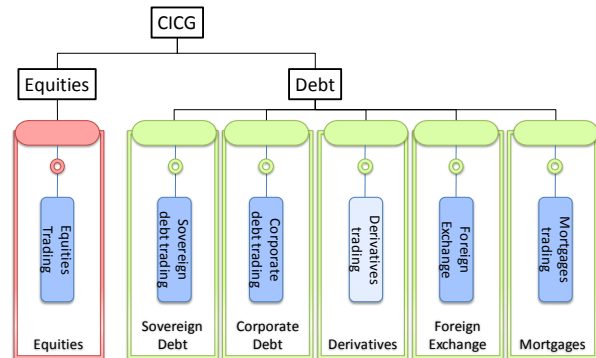


## Introduction

When I started work, it was for an IBM sales branch where I was a systems engineer (now what would be called a pre-sales support person). We started off being sector aligned (in Manchester we had Manufacturing and Government branch and Finance and Distribution branch). After 15 months there was a reorganisation and we moved to being geographically aligned. I was now in South Manchester branch. Shortly after the reorganisation the regional manager sent us a note telling us that, after all the major changes, we were in for a period of relative stability. Having read the note I turned to a colleague and pointed out that we had the same desks, the same managers, the same jobs and even the same customer (we both worked on Shell). “What has really changed?” I asked. “Nothing” was the reply, “but the managers have shuffled the chairs and they think that is a major change”.

Twenty years later, in 2000, I was working as an Enterprise Architecture consultant at Merrill Lynch Corporate and Institutional Client Group which had two divisions: Equities; and Debt. My job was to advise Debt on its architecture. Equities had a single broker for all instruments, but Debt had separate brokers for Sovereign Debt, Corporate Debt, Foreign Exchange, Derivatives and Mortgages (yes, the famous securitisation of mortgages desks). My first thought was that there should be another broker between Debt and Equities as a large number of Debt transactions implied underlying Equities transactions. It took me a while to realise that there was no organisation to own such a broker. The five Debt brokers were owned and managed by each of the Debt trading groups, but there was no group as such at the Debt level of the organisation. This

organisation is shown in the diagram below.



**Figure 1 CICG Organisation**

In fact, Debt was just a management structure – the intersection of the five instrument groups. Finally, the truth struck me, there was no work done in the organisation except at the leaves. The hierarchical part of the organisation above the leaves was just ‘the shuffling of the chairs’ that I had experienced twenty years before at IBM.

This became even clearer six months later when a new division of Debt was created, Securities Services. This took the back offices out of Debt and Equities and created a single clearing and settlement service for CICG. The existing groups doing this work were moved into the new organisation. They still did the same work for the same managers, but had a new label. That part of the change was simple, fast and cheap. Unfortunately, separating out the clearing and settlement services from Debt and Equities took a long time, cost a lot and got in the way of making the change (see the paper on Application Integration for our view on how to fix this).

## Work is done at a single Level

What we learned from this was that, in a certain sense, work is only done at a single level in the enterprise. You can see how this works from a VPECT point of view. The only reason Debt

# One Level Enterprise

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had five brokers was because of the values of the managers running the division. The way the values are expressed in terms of spending money (what the managers do not what they say) was by the ownership of capability. There were separate managing directors for each instrument group. Each of them owned their capability. There were, of course, managers below them owning particular systems (such as the options pricing system) but they were not profit centres. The managing directors were profit centres. So were their bosses, but they didn't own any capability. There was only one level in the hierarchy that was both a profit centre and also owned capability. Which these are is determined by organisational values expressed as ownership (goals in action if you like). The same is true for cost centres. It is impossible to imagine an organisation that behaves differently. If the managing director of Debt had decided to run a broker to mediate between his instrument groups he would have created a new cost centre with its own director below him, he would not have hired a bunch of workers directly reporting to himself. This is what the managing director of CICG had done when he created Securities Services. Instead of moving all the clearing and settlement people into his department working directly for him, he created a new profit centre division with its own managing director and moved them to work for him.

This is what we mean by one level enterprise, that there is one level in the enterprise that both owns capability and is a profit centre. The implications of this are massive for information systems organisation in an enterprise. Firstly, the information systems need to reflect the fact that each capability is in a single domain of ownership. For historical reasons, many organisations find this a difficult concept to grasp. Many organisations started with all

information systems owned by the finance director and have never moved to a more nuanced view of how information systems are owned. In addition, many organisations do not clearly distinguish between technology infrastructure (computers, storage, networks – that is the boxes and wires) and information systems (the accounting system, the HR system, the manufacturing system and so on). The technology infrastructure is increasingly likely to be owned by a third party (either through outsourcing or infrastructure as a service). However, the information system has to be owned by the enterprise. One level enterprise is an information systems concept, not a technology infrastructure concept.

## Simplification

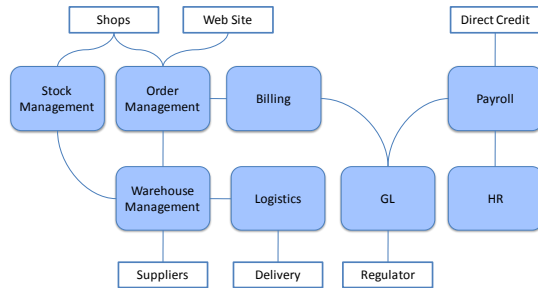
Once one level enterprise has been accepted, it offers an opportunity for great simplification. For example, at Merrill Lynch Debt we were able to organise a common architecture for all five instrument groups. This worked so well, that the same common architecture was adopted by Securities Services and eventually also by Equities. Our view is that each domain of ownership can be implemented using a common set of domain level capabilities. You can think of these capabilities as the skeleton on which the muscle of business capability is layered. Because each domain looks the same at this level, changes to the enterprise become independent of the way the information service is implemented. This is the biggest single gain of one level enterprise. Another way of thinking of this, is that simplicity is obtained by having an approach that is common for all possible groupings of capability.

## An Example

To show how one level enterprise works, here is an example. A typical

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arrangement of information systems for a small retailer with some shops, warehouses and a Web site, is shown below.

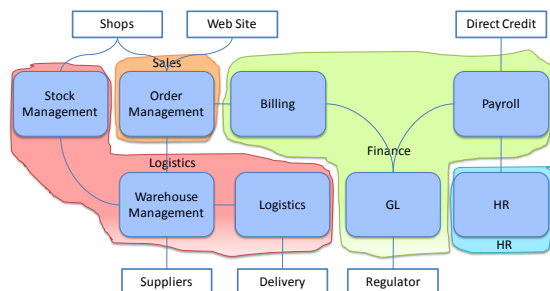


**Figure 2 Typical Information Systems for a Small Retailer**

In the diagram the rounded rectangles are information systems, the smaller rectangles are external connections and the lines represent integration flows.

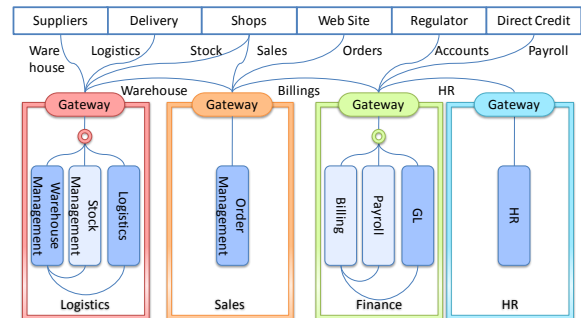
So goods can be ordered on the Web site or bought in a shop. The orders are sent for fulfilment to warehouse management by order management. Items sold in the shop are recorded in stock management. Items entering or leaving the warehouse are sent to stock management as are items entering the shops. Orders are sent to billing for financial fulfilment. Warehouse management sends bulk movements to logistics which optimises orders from logistics suppliers.

To apply one level enterprise, we have to know the organisation of the retailer and which information systems are owned by which part of the enterprise. The owning relations are shown on the diagram below.



**Figure 3 Information Systems Showing Ownership**

The shading shows how the organisation owns the information systems. In this case we have sales, logistics, finance and HR as the major organisations in the retailer. We can now redraw the diagram showing the domains and their relationships.



**Figure 4 Information Systems in Domains**

There is no distinction now between an 'internal' interface between domains and an 'external' relationship. As far as each domain is concerned, it has a set of relationships to manage and it does not matter whether they are to another part of the organisation or to an external party.

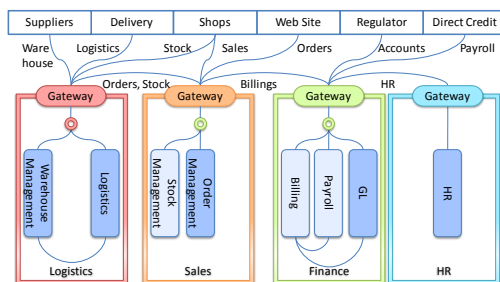
We are now showing more dimensions of information on the diagram than before. The ownership relationships are now clear. We have also started to add common elements that all domains must have. The gateway shown acts as the 'face' of the domain. It is there to separate the capabilities of the domain from the ways they are used. For instance, warehouse management has external interfaces to both order management and to suppliers. We can now change either of these interfaces without changing warehouse management. This achieves our operational definition of integration – that any service is available on any channel.

Two of the domains have three capabilities (logistics and finance). These capabilities have integration amongst themselves as well as with external parties. In these two domains

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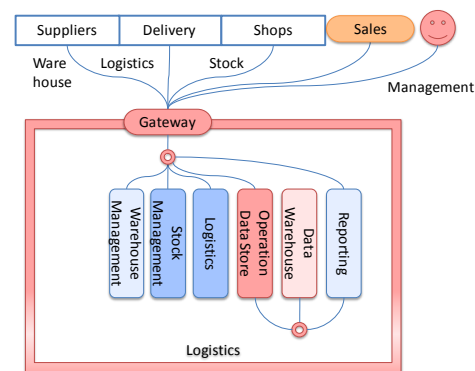
we can start to build a semantic hub<sup>1</sup> that integrates between the information systems in the domain. It also routes messages to and from the gateway.

Let us now change the organisation of the retailer. We now want to move management of the stock in the shops from logistics to sales. This is now seen to be more of a channel management capability than a fulfilment capability by the CEO. The new organisation is easily implemented by moving the stock management information system to the sales domain. That means configuring stock management to the sales hub and externalising the warehouse management interface. This is shown below.



**Figure 5 Reorg of Sales and Logistics**

Once you take a one level view of the enterprise you can start to ask questions about the completeness of the view. In this case, we can see how the value chain of the enterprise is being implemented, but there is no view of the reporting (the information value chain). The diagram below shows the logistics domain including reporting.



**Figure 6 Logistics Domain including Reporting**

In our view, reporting is implemented within the domain by three extra pieces of domain level capability (in addition to the hub and gateway). These are the operational data store which models the business events coming from the operational systems, the data warehouse which models the demand from reporting and a data hub (usually Extract, Transform and Load capability). The operational data store manages both master data and transaction data. We have also shown a reporting capability as an extra information system and a new party that uses that information, the domain management.

## VPECT

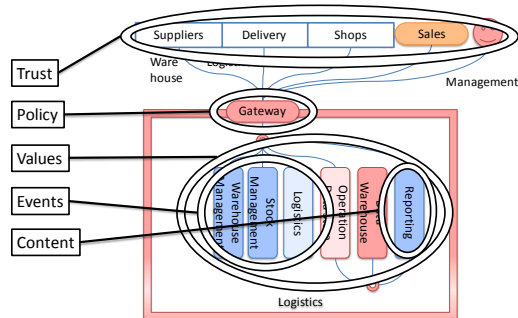
Finally, we like to take a VPECT view of the domain concept. The values of the enterprise determine which domains the enterprise has. There is no way to determine the domains just by looking at the information systems. A domain can accept or emit events. The domain does this the same way for internal and external parties. The domain can also offer content through reporting information systems (note that the domain cannot accept content, this is an important constraint). The content can only be for data that has come from events the domain has accepted (according to this view a domain is an entity that turns events into content). That covers VEC but what about P and T? Policy is the set

<sup>1</sup> We prefer the term 'semantic hub' to the term 'broker' as the role of the hub is to transform (and route) messages.

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of events and content the domain offers or accepts and the ways in which it can do it (over HTTP, FTP etc). Trust is represented by the actual interfaces to parties from the domain gateway. These trust relationships are represented by trading partner agreements managed at the domain level and implemented in the gateway. This VPECT view is shown below.



**Figure 7 VPECT View of Domains**

As you can see, VPECT fits one level enterprise like a glove. If you are wondering how the two hubs fit into VPECT, they represent the trust the owners of the information systems have to the domain. This is discussed in more detail in the paper on application and information integration.

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## *About John Schlesinger*

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*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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