

Customising and controlling

CLIENT SOLUTIONS

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Bespoke solutions provide a level of customisation which provides added value to customers.

How do customer-tailored Information and Communications Technology (ICT) solutions differ from standard product offerings? What do these differences mean to both the customer and the provider? Here, Ed Smith, presents three case studies to show how – and why – solutions can be adapted to client requirements, and why the approach needs to be bespoke rather than ‘off the peg’.

In offering bespoke solutions, service providers aim to generate reasonable margin by assuming responsibility and control of the service risk of a customer solution, at a lower cost than the client could achieve using internal resources.

Here, we’ll provide insights into how an ICT solution can be adapted to a client’s requirements and why the approach needs to be different to product development. It will describe how such solutions are created and examine examples which show the level of customisation available and its value to the customer. This will be achieved by considering: the characteristics of products and solutions, the sales process, the stakeholders in the procurement and how design aspects of the solution are handled.

We will examine three case studies and analyse their means of adding value, as well as showing how a customer-tailored solution takes risk away from the alternative approach - the customer adding the value himself.

CHARACTERISTICS OF PRODUCTS AND SOLUTIONS

Dames [1] describes three approaches for the provision of ICT solutions

by a third party systems or services integrator:

- Products which address the volume market, where repeatability and efficiency drive profitability.
- Managed services and outsourced models that have a longer pay back period and require strong operational capability and commercial management.
- Professional services driven by the utilisation and capability of the supplier's people. Examples are: process design, strategy and provision of the design and implementation skills to complement a product sale.

A product is normally specified to address a given market segment, meeting the broad desires of a wide variety of customers by aggregating needs across the market place and developing a capability to address a manageable, common subset of the most important customer requirements. This impacts not only the technical and service designs, but also the general commercial and economic approach and timescales for developing the business case.

Customised ICT solutions focus on meeting the explicit needs of a given customer, driven by the client's size, purchasing power and his level of commercial and technical understanding. Very large customers tend to have a strong IT and communications capability that drives one of two behaviours; either the customer wishes to implement the solution himself using extensive in-house skills and basic products or he asks a solutions provider to build a solution for him around bespoke requirements both in the form of technical features and service levels. Such customers have considerable purchasing power and push hard for maximum function at a very keen price.

Smaller customers tend to have smaller IT budgets and less purchasing power than their larger counterparts and therefore have less capability for specifying sophisticated solutions. They are therefore more likely to be satisfied with a product-based or packaged solution.

It can be argued that products and managed solutions need to be supplied by different support organisations.

The organisational model described by Handy [2] is useful in understanding this. Products tend to be delivered by functionally organised role-based organisations (Apollo), heavily driven by processes, procedures and standardisation. Major customers will not tolerate being straight-jacketed in this way and demand solutions that are tailored around their business and operational needs. These are best supported by inserting a contract support team between the customer and the role-based organisations that support the products which underpin the solution. Such a team needs to have an "Athena" type culture - that is a team of experts focussed on a single problem turning the mix of standard product and bespoke technologies into a coherent solution that meets the customer's needs.

Many major customers require innovation to be a key component of their "relationship" with their technology provider whilst at the same time requiring high levels of service at low cost. Oates [3] argues that cost and innovation are closely related and a supplier, who is too heavily pressured on costs, will have insufficient profit margins to 'offer added value in the form of innovation or anything else'. Handy [4] presents a similar argument based on comparing the different approaches to efficiency of Joseph Schumpeter and Adam Smith, illustrating how lack of spare cash and time can be an impediment to introducing new ideas. Moreover, the concepts of innovation and service stability can also be considered to be in conflict; typically innovation involves risk [5] although

this can be minimised through design discipline and adequate testing [6].

Moore [7] classifies customers by their approach to technology adoption, noting that innovators and early adopters have very different needs from the rest of the market resulting in very different sales approaches to the two groups. However, experience shows that compelling factors, such as significant cost advantage or fit with their existing architecture, can turn the most ardent laggard into an optimistic innovator.

The final differentiation is that a bespoke solution demands more stringent service levels, with associated penalties for non-attainment, than can be achieved using a standard product offering. This exposes the supplier to significant commercial risk. The risk associated with the client's proposed service level agreement can be modelled identifying the service credit exposure and assessing this against the operational investment required to deliver the desired service levels. Burrington [8] describes the link between operation risk management and commercial risk management.

STAKEHOLDERS IN THE BID PROCESS? WHO ARE THEY?

Tendering for a new network is a non-trivial process involving a wide variety of "actors" both within and outside of the client organisation. Inside the customer environment there are three major camps, the business that is looking to gain operational benefits from the new technology, the IT function that will have to work with the successful vendor to implement

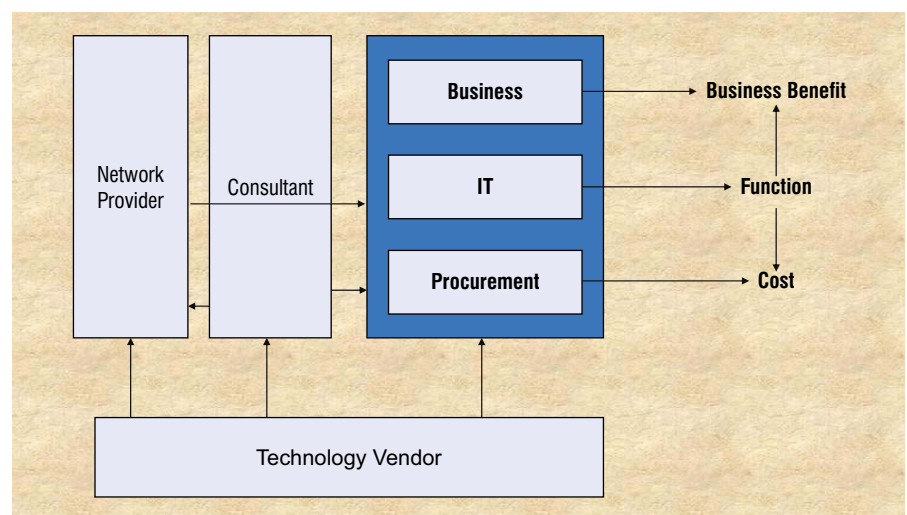


Figure 1: The stakeholders in a bespoke ICT procurement



Often technology vendors employ highly skilled “High Touch” teams whose role it is to ensure that their technology is chosen as the basis of any solution.

and develop the solution and the procurement organisation, whose role is to ensure that the customer gets best value for money.

Often a consultant is engaged to ensure that network providers competing for the same piece of business provide clear offers, that can be directly and meaningfully compared with each other, to enable the best solution to be selected as cheaply and as quickly as possible. Key tools to achieve this are a very prescriptive response format and the rigorous control of access to the customer.

Technology vendors will detect that the procurement is in progress through their normal day-to-day contact with the client and will understandably look to gain favour for their technology options which would underpin an ICT provider’s solution. Often technology vendors employ highly skilled “High Touch” teams whose role it is to ensure that their technology is chosen as the basis of any solution. They achieve this by taking their case to the other major stake holders, influencing the network vendor, the consultant and the customer as much as possible. A key target is to be named as favoured equipment provider in the Request for Pricing (RFP).

Finally it should be noted that the sales process is competitive and the impact that each competitor has on the other actor’s thinking and behaviour must not be ignored.

THE SALES PROCESS

A customer-tailored solution is normally defined during the sales process which often places the provider under considerable timescale pressures to understand the requirement, develop and design a solution and assemble a commercial framework for the deal. Given the complexity of the task in hand, the compressed timescales bring risk to both buyer and seller, which needs to be carefully managed through succeeding contract negotiation, implementation and the in-life phases of the bid.

Key to a successful outcome is: understanding the customer’s requirements and identifying how elements of bespoke design coupled with standard product offerings can meet them. This frequently means designing to ensure that prescribed requirements for functionality, delivery, service levels and performance can be met.

When the customer engages a consultant to oversee the production of the RFP or to run the procurement process, the consultant often adheres to his own proprietary methodology. Common traits of such a methodology are:

- A highly structured RFP, covering all major technical, commercial and service issues.
- A standard service model, based around what is considered to be “industry best” service level figures.

- A rigorous set of measures and tools for judging value.
- A standard format for the response, often aimed at obtaining a factual description of the network provider’s proposed solution, that is not clouded with complex sales and marketing messages and aspirations.
- Direct evaluation of the solution/network provider’s performance during the procurement process.

HOW DESIGN ASPECTS ARE HANDLED

Theoretically a key driver for success would be for the process to demonstrate value at the business level through direct linkage of business benefits to the purchase of the new network. Although the majority of consultants and consultancies pride themselves on the ability to operate at the business level, few RFPs (if any) manage to make this link, instead judging the supplier on functionality, implementation timescales, price and service. The latter is often judged against a willingness to sign up to service levels which are often defined in pure technical terms and not related to either business benefit or the performance of particular applications. It is arguable that the process drives suppliers to measure what they can, not necessarily what is meaningful.

Typically the design effort will be focussed on:

- The technical solution that addresses the client’s business needs;

“ When the customer engages a consultant to oversee the production of the RFP or to run the procurement process, the consultant often adheres to his own proprietary methodology. ”

- The service design which examines how entities such as: the service desk, support structures and service level management will be implemented.
- The management systems design, which covers the tool-set that allows orders to be tracked, service levels to be monitored, statistics to be gathered and service levels to be supported.

In general the technical solution design will cover the client's requirement, his current solution, the target solution, any technical assumptions made and any supporting evaluation of key quantitative aspects of the design such as availability or capacity levels.

A comprehensive guide to the principles behind a bespoke managed network design is given by Atkins and Pretty [9].

The key areas of complexity, which will influence the design of a solution and play a major part in determining its risk profile, are:

- The degree to which both customer and vendor understand the requirements.
- The complexity of the solution including the number and range of components.
- The maturity of the solution components.
- Bid timescale and cost pressures.
- The range of technology vendors deployed on the project.
- The size of the solution and its requirement to scale further.
- The technical skills available within the service provider's organisation and the extent to which the provider is familiar with this type of solution.
- The service levels that the solution has to be able to deliver.

Further complications arise when the take-over of an existing customer network is involved; these are documented in an earlier paper [10].

MANAGED WAN AND LAN INFRASTRUCTURES

Managed Local Area Network (LAN) and Wide Area Network (WAN) solutions have become commonplace as bespoke solutions over the past 10-15 years with the basic structure of an Internet Protocol (IP) network, built upon a Layer 2 or higher transport product, forming the standard mode of delivery. The nature of the supporting transport network has however changed over this period with the technology changing from Frame Relay or Switched Multimegabit Data Service (SMDS), through Asynchronous Transfer Mode (ATM) to Multi Protocol Label Switching (MPLS).

The following changes in technology have driven a level of standardisation in solutions in this area:

- Maturing IP standards.
- The emergence of a dominant router vendor.
- The move from a multi-protocol environment supporting proprietary protocols such as Systems Network Architecture (SNA) or Novell Netware, to a purely IP-based solution.
- The move from Open Shortest Path First (OSPF) routing infrastructures, which required careful design to avoid routing instability issues arising from scale, to smaller OSPF designs built around a Border Gateway Protocol (BGP) core.
- The emergence of more powerful routers with a greater packet processing capability and the ability to offload key functions onto ancillary processors.
- The wider availability of model designs and design standards.
- The growth in engineering skills based around vendor specific training programmes.

This tends to mean the main issues in design arise from issues of scale and the implementation of resilience with the differences in design across different accounts being driven largely by approaches to technology refresh, service support issues and service levels.

The management systems design provides a crucial health check, which covers the tool-set that allows orders to be tracked, service levels to be monitored, statistics to be gathered and service levels to be supported.



Whilst the nature of LAN and WAN designs has changed with time and arguably risk has reduced, there is still a preference across major customers for a managed solution. This is because such solutions still demand high levels of expertise to build and a comprehensive management tool set for monitoring and measuring performance to verify service levels. The necessary investment in systems and skills is easier for a solutions provider to make since, in general, by spreading resource and investment across a number of accounts, they are able to generate a better return on investment than a customer can. A well designed solution, marshalled using achievable service levels, takes implementation and service risk away from the client.



SYSTEMS INTEGRATION AROUND A MANAGED CALL CENTRE SOLUTION

The customer contact centre [11, 12] is one of the key channels to market for many organisations, being in some cases the chief means of interaction between them and their customers. In particular it is gateway for doing additional business with the customer and has a strong influence on customer satisfaction/dissatisfaction.

The basic technology components of an IP-enabled contact centre have been described in [11] and these have evolved from the equivalent services provided for the contact centre in the traditional Private Automatic Branch Exchange (PABX) environment. The design and implementation of such services requires a wide variety of abilities ranging from technical design skills, through systems integration capabilities to business process engineering expertise as shown in Figure 2.

These clearly cover a very wide range of skills, starting with detailed technical implementation and encompassing systems integration and

potentially consultancy skills. These capabilities may be defined in summary as:

- Skill in managing the basic technology such as: understanding how voice is encoded, common protocols for signalling and their inter-conversion, the principles of Automatic Call Distribution (ACD), mechanisms for routing and queuing calls and call-back features.
- System integration through techniques such as Computer Telephony Integration (CTI), which provides interaction between the telephony-based platform and other computer-based applications, including agent’s screens. Interactive Voice Response or self-service, which is the automation of either the whole or part of the customer interaction, is a major area for systems integration. Others are: voice recording, allowing calls to be recorded for future assessment, outbound dialler and the generation of management information (MIS) and workforce management information.
- The third area is process engineering, which includes contact centre

process design and contact centre strategy.

- There are currently three models for implementing a managed or outsourced Call Centre solution as listed above, these are:
- A Customer Premises Equipment-based solution where the equipment is housed on the client’s premises and managed from the supplier’s network operations centre.
- A hosted solution, where the equipment dedicated to a single customer is centrally managed by the network provider and housed on his premises.
- A platform-based solution, based on a shared platform that is embedded within the provider’s network infrastructure.

The choice of solution is largely driven by client requirements, such as his commitment to his current equipment provider, the size and complexity of his existing contact centre estate, his level of trust in shared services and how comfortable he is with an off-premises solution.

The wide variety of vendors and options available to construct a solution from, and the move to, an IP-based technology make the transformation of contact centres a significant challenge to most organisations. This level of challenge and ultimately risk on an area of service, which is considered business critical by most organisations, makes this an attractive area for many organisations to pass onto an expert integrator who has the required levels of skill.

ENHANCED FIREWALL MANAGEMENT SOLUTIONS

The area of IT security is a constantly changing field in IT governance, with the nature of the threat landscape, the available technology and compliance legislation all changing rapidly. To address these issues, a broad range of

TECHNOLOGY	SYSTEMS INTEGRATION	PROCESS ENGINEERING
Voice Encoding Switching Protocols ACD Call back Call Routing	Outbound Dialler Voice Recording CTI MIS Workforce Management Self-service	Contact centre strategy Contact centre Process design

Figure 2: Grouping areas of technical and process expertise.

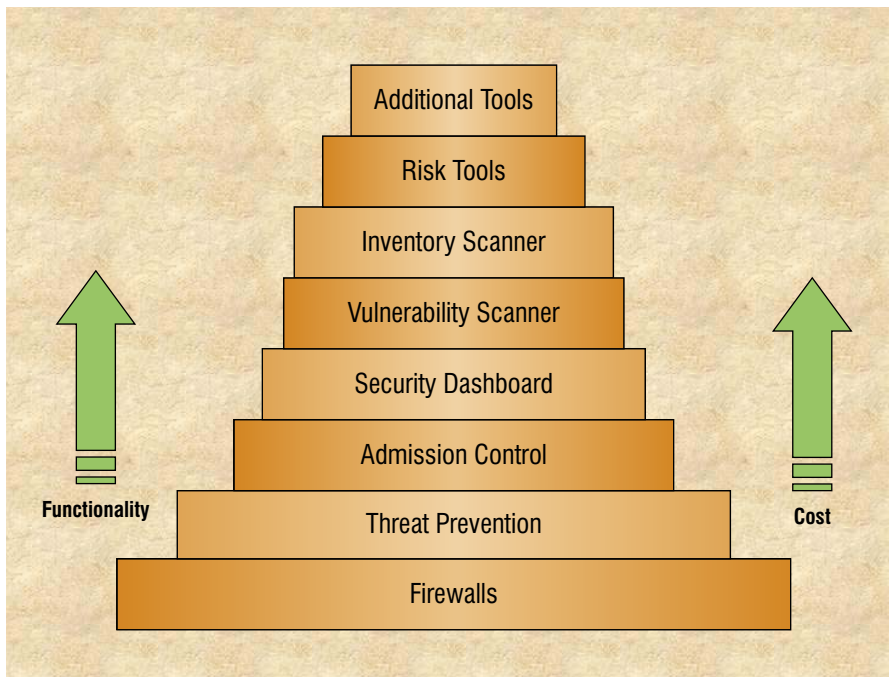


Figure 3: Hierarchy of security needs.

tools and techniques, as shown in the diagram below, need to be deployed.

Increasingly it is important to enforce the right levels of protection, in a manner that adds value to the business, satisfies regulatory bodies and stakeholders and uses a cost effective blend of technology and processes. Not all components will be required and not all will be cost effective; the principle should be to adopt a solution tailored to the customer's business needs. Central to any such solution

will be visibility and control of the security environment.

Adherence to best technical and operational practices, enabled by and verified by sound governance, is vital.

The administration of firewall rule-sets is a major task for most installations, ensuring that all firewall changes are recorded and authorised. A solution can be provided which evaluates firewall rule-sets against standards such as the National Institute of Standards and Technology

(NIST) standard. This shows compliance against declared security policies. It can also compare the rule-sets deployed on firewalls on a daily basis recording any changes made. These can be compared with authorised changes and any unauthorised changes identified.

The same tool supplies automated network modelling and analysis based on identified egress/ingress points. This, in conjunction with vulnerability scans, should identify those devices on the network which are susceptible to attack from external, partner and internal threats. This can provide the customer with a virtual security model of his network which helps him to understand IT network security risks, control dependencies and proposed changes within the context of his implemented firewall policies.

Thus, it is possible to automate the network policy compliance, firewall audit, and change management process. This type of solution allows the end customer to outsource management of his firewall estate, whilst still being capable of demonstrating control over this infrastructure and adherence to his declared security policies. The security field is one where, due to the rapidly changing threat landscape, technology and methods are evolving rapidly. Hence devolving this aspect of the infrastructure to an expert provider is attractive to many customers.

AUTHOR'S CONCLUSIONS

This paper has examined how customer-tailored solutions differ from standard product offerings and what this means for both the supplier and the provider. It has provided insights into how an ICT solution can be adapted to a client's needs and why the approach needs to be different to product development. It has described how such solutions are created and, by examining some examples, shown the level of customisation available and how this impacts the relationship with the customer.

The factors defining the risk involved in developing a custom solution are listed earlier in this paper. Risk is normally managed through a risk register which provides a linear list, often classified by function, of the project risks, their practical and financial impact and their proposed mitigation. Whilst this enables the supplier to manage individual risks professionally, it does not relate holistically to the overall solution design and is difficult to share with customers.

Clearly a more solution-centric means of assessing risk is needed.

The software industry faced similar issues when attempting to assess development timescales, initially basing their view on the number of lines of code. This proved unsatisfactory and the approach known as function point analysis, which considers the impact of the complexity of the solution, offers an improved assessment of the level of development required [13, 14]. A similar approach to the assessment of the development timescales, and hence risk associated with complex solutions and integration projects, would clearly be of benefit.

Such an approach would assist a service provider, who aims to generate reasonable margin through assuming responsibility for, and by controlling the service risk of, a customer solution, at a lower cost than the client can using his own IT skills base.

ABBREVIATIONS

ACD	Automatic Call Distribution	LAN	Local Area Network
CTI	Computer Telephony Integration	MIS	Management Information System
DSP	Digital Signalling Processor	OSPF	Open Shortest Path First – a routing protocol.
ICT	Information and Communications Technology	PSTN	Public Switched Telephone Network
IP	Internet Protocol	RFP	Request for Proposal
IT	Information Technology	WAN	Wide Area Network

References

1. Dames, M.P. Understanding BT's Corporate Network IT Services Strategy. *Journal of the Communications Network*, 2007, 6(2), pp 25-37.
2. Oates, D. *Outsourcing and the Virtual Organisation*. Century – Random House, London, 1998.
3. Handy, C. *Gods of Management*, Random House, London, 2000.
4. Peters, T. *The Circle of Innovation*, Hodder and Stoughton, London, 1998.
5. Handy, C. *The Hungry Spirit*. Hutchinson, London, 1997.
6. Calver, P., Crouch, R., Hodgkinson, I., Linsell, K., Newson D., and Smith, E.A. 10 Years of Project 142DC. *The Journal of The Communications Network*, July 2006, 5(3), pp 15-22.
7. Moore, G.A. *Crossing the Chasm*. Capstone, Oxford, 1998.
8. Burrington, P.R.H. Commercial implications of operational risk for service-based contracts. *BT Technology Journal*, January 2007, 25(1), pp 58-67.
9. Norris, M. and Pretty, S. *Designing the Total Area Network*. John Wiley, Chichester, 2000.
10. Smith, E.A. The technologist's role in outsourced solutions, *Journal of The Institute Of Telecommunications Professionals*, 2009, 3(1), pp 21-30
11. Smith, E.A. The Anatomy of an IP Call Centre. *Communications Engineer*, August/September 2007, pp 20-24.
12. Smith, E.A. Technology and Commerce colliding in the IP enabled Call Centre. *Journal of The Institute Of Telecommunications Professionals*, 2008, 2(2), pp 23-29.
13. Lonstreet, D. Fundamentals of FPA <http://www.softwaremetrics.com/fpafund.htm>
14. Verner, J.M., Tate, G., Jackson, B. and Haywood, R.G. Technology Dependence in Function Point Analysis: A Case Study and Critical Review. *International Conference on Software Engineering archive*, 1989, pp 375 - 382.

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