Managing change within BT’s operational support systems

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BT has around 1300 applications covering all aspects of its operations. The need to keep pace with an increasing rate of change in the telecommunications industry is being impacted by the ability to design and manage changes to such a large integrated applications portfolio. Computing technology and design methods are also advancing, and both old and new technologies have to work together. Achieving a balance between replacement and enhancement of applications within the constraints of money, time, and skills availability has to be carefully managed. New ways of looking at the portfolio have been developed so that a set of coherent strategies for the design and management of change can be implemented.

1. Introduction

BT’s operational support systems (OSS) consist of the total systems capability that supports the sales, service, network and business operations of BT. They touch every aspect of BT’s operations and are used, either directly or indirectly, by every member of the company. By the year 2000, the leaders in the telecommunications industry will include those companies who have successfully exploited their OSS to create and meet new market opportunities. Hence, leading-edge systems capability is critical to BT’s long-term success.

BT’s OSS capabilities are world class; the reliability and cost-effectiveness of the service, billing and network management applications are second to none. BT’s customer service system (CSS) remains one of the most highly integrated customer service applications deployed by any PTT and has been successfully adapted to serve new products and support several new BT organisational structures. The deployment in 1995 of elapsed time charging within the billing architecture provides the BT group with a highly flexible infrastructure with which to face a rapidly changing competitive scene. The operations management centre (OMC) system provides comprehensive switch management capabilities, and its links to CSS provide automated service configurations for the public switched telephone network (PSTN).

The OSS portfolio has been developed over the last 20 years, growing from applications which were sponsored by functional and organisational groups. Today those systems have been progressively interlinked in order to meet ever-rising service standards. This integration has in itself brought its own issues that need to be addressed. The family of systems contains too much diversity of data and infrastructure. Additionally their original organisation, product and customer segment focus have in many cases been affected by rapid change in those dimensions. System development capabilities are struggling to keep pace with the commercial drivers and in parts of the company are perceived to be a barrier to the fast introduction of new products and services, delivery of service excellence, or support of global ambitions. The data is locked into those systems preventing exploitation of the information needed to maintain and retain BT’s market share.

In numerical terms the systems portfolio over the last five years has doubled the number of applications to around 1300, and tripled the number of interfaces between applications to around 3000, with each interface typically being hand-crafted to meet a specific business need (see Fig 1). It is estimated that the portfolio contains in excess of 80 million lines of code with an annual increase of 8 million new lines of code written and 4 million lines of code replaced.

A recent review has identified about 30 major systems that are critical to the operations of the company and account for the majority of system operating costs. These are called hub systems (see Fig 2). Surrounding these hubs are a much larger set of systems manipulating and feeding data into these hubs. The remaining systems tend to be stand-alone, with manual, rather than automated, links to other systems. This categorisation of systems has started the debate on where the limited amount of development
resource should be allocated, and where the priorities for re-engineering lie.

The remainder of this paper reviews the drivers causing change to systems, the management and technical vision for systems, and the approach being taken to ensure that systems continue to meet the ever-increasing demands.

2. Drivers on OSS

The telecommunications industry is rapidly changing with the emphasis very much on reducing the time to market, lower whole-life costs, and a shift of focus towards customers and service, while moving away from network technology and technology-related identifiers, e.g. telephone numbers. Systems must therefore be capable of supporting change without having to go through a lengthy design, develop, test and release life cycle, and be deployed on standard rather than bespoke infrastructure. This must be achieved at a price that is appropriate to the product and service being delivered or the internal process being supported.

Regulation is having an impact upon OSS either as new requirements, such as number portability (which requires specific telephone numbers to be treated as a resource that can be passed between licensed operators), or increasing the interaction between BT and other operators with equal access and OLO interconnect. System designs for the future must therefore ensure that systems can be linked to other systems outside BT while protecting commercial interests and meeting the legal obligations of protecting data relating to customers or their installations.

Partnerships, joint ventures and strategic alliances are being formed to extend or open up markets. These are often based on the linking of computer systems, sharing systems between partners, or using common software as a means to reduce or stabilise costs, share risk, and improve time to market. The OSS of the future will need to cater for all of these needs and will require clear business decision making to provide direction and priorities.

Network technology changes, with the introduction of higher bandwidth and intelligent components into the network, will enable new products and services to be created and configured much more rapidly than at present. These new technologies, together with the services they promise, will require changes to the present OSS base if their features are to be exploited and mass customisation (i.e. services packaged and tailored to an individual’s needs) is to be delivered.

Information technology is changing rapidly with year-on-year price/performance improvements and increasing commoditisation. A mixed technology infrastructure where different suppliers’ products, both hardware and software, have to coexist and work together is rapidly becoming the norm. Personal computers are being increasingly deployed as ‘front-ends’ to existing systems to provide additional intelligence, work-flow features, data and linkages between

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Fig 1 System and interface growth.

Fig 2 Hub systems.