

# 13

## **Strategic Approach to Information Technology at the Hong Kong Jockey Club<sup>1</sup>**

Claudia Loebbecke<sup>2</sup> & Robert W. Blanning

The Hong Kong Jockey Club is recognized as one of the most innovative users of information technology in Hong Kong. It has developed and implemented a very secure and reliable system for placing bets at its own racing tracks, at remote betting centres, and at any location with telephone access. We describe the club, its role in Hong Kong, and its IT Division. Then we outline its new strategic IT framework which provides the basis for the club's transition towards open systems. Finally, we discuss the impact that the framework may have on the club's ability to adapt to a technologically and politically uncertain future.

### **The Hong Kong Jockey Club**

#### **History**

Racing was introduced in Hong Kong by the early British settlers during the first half of the 19th century. The first track was located at Happy Valley on Hong Kong Island. This site was originally a swamp where the first settlers lived, since it provided the only flat land on the island. In the 1840s,

after malaria and other diseases had forced the settlers to leave the area, the marshland was drained and a racecourse was built. At first the course was used for race meetings only once a year, traditionally during Lunar New Year. Then in 1884, the Hong Kong Jockey Club was founded.<sup>3</sup> During its early years of operation the club organized all racing activities, and betting was managed by other organizations, with the club receiving a commission. Eventually, the club became the only place at which bets could legally be placed.

Since its foundation, the club has been experiencing a steady expansion at the Happy Valley site and at Sha Tin in the New Territories, where it opened a second racecourse in 1978. The total capacity of both sites is 110,000 seats — 70,000 at Sha Tin and 40,000 at Happy Valley. In 1971 the club replaced amateur riders with professional jockeys. These developments prepared the stage for international jockeys to ride in Hong Kong. In 1973, the club received the permission to conduct night races. In the same year, the Hong Kong government authorized the club to establish off-course betting centres to combat illegal bookmaking. One year later, the first telephone-based betting system was installed.

## Organizational Structure

The club is a company limited by guarantee with no shareholders. It obtains its net earnings from racing and betting. The amount remaining after deducting the prize money, taxes, operating costs, and investments to maintain and improve the racing and betting facilities is donated to charitable and community projects. Twelve stewards, who offer their services free of charge, direct the club. These stewards are physically present each race day, thus demonstrating a significantly higher level of involvement than is found among board members in many other companies. Under the board there are three independent companies: The Hong Kong Jockey Club, The Hong Kong Jockey Club Charities Trust, and Jockey Club Membership Services Ltd. (see Figure 13.1).

Daily business is run by professional executives, headed by a Chief Executive. In 1994, the club employed approximately 4,500 full-time staff and more than 10,600 part-time employees. The majority of the part-time employees work only during race days, both on course and in the off-course betting centres. They sell up to 5 million betting tickets per race meeting and work in the catering outlets and the kitchens at the racecourses (see Table 13.1).

The club has always been a non-profit organization, donating its surplus funds to charitable and community projects. In 1993, The Hong Kong

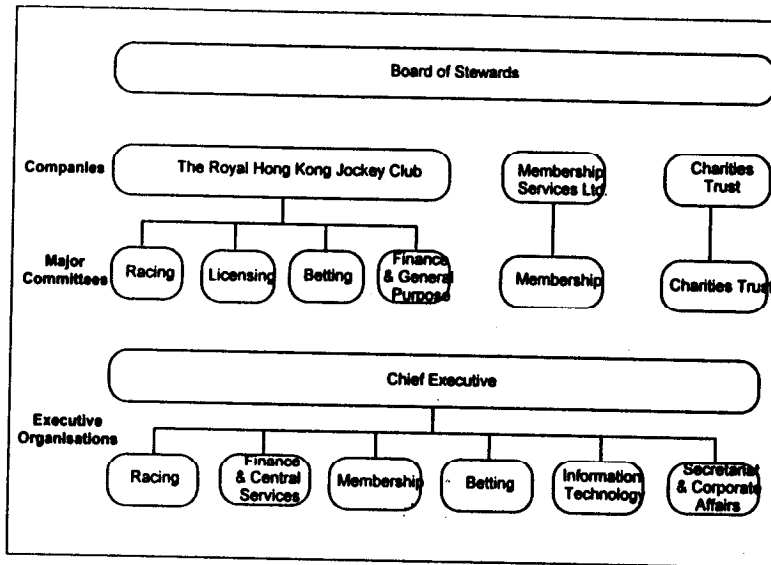


Figure 13.1 HKJC Organizational Structure

Table 13.1  
HKJC Employees (1990-1994)

Employees	1990	1991	1992	1993	1994
<i>Full-time:</i>					
Racing	939	939	1,000	1,093	1,090
Betting	676	677	682	686	686
Information Technology	366	383	376	391	393
Membership Services	974	967	978	1,173	1,242
Finance and Central Services	1,201	1,235	1,216	1,225	1,214
<i>Subtotal</i>	<i>4,156</i>	<i>4,201</i>	<i>4,252</i>	<i>4,568</i>	<i>4,625</i>
<i>Part-time:</i>					
Cash Betting	6,497	6,331	5,885	5,753	5,757
Telephone Betting	2,509	2,983	2,660	2,753	3,046
Others	1,289	1,386	1,273	1,541	1,870
<i>Subtotal</i>	<i>10,295</i>	<i>10,700</i>	<i>9,818</i>	<i>10,047</i>	<i>10,670</i>
<b>TOTAL</b>	<b>14,451</b>	<b>14,901</b>	<b>14,070</b>	<b>14,615</b>	<b>15,295</b>

Jockey Club Charities Trust was established, replacing The Hong Kong Jockey Club (Charities) Limited, in order to allocate all funds to a wide range of organizations such as hospitals and medical services, educational and cultural facilities, services for the elderly, parks, playgrounds, youth and recreational services.<sup>1</sup> Altogether, the club donated a total of HK\$7,934

million<sup>4</sup> over the past 10 years and HK\$1,058 million during the year 1993/94 (1.6% of betting turnover).<sup>5</sup> This amount equals 10% of government revenues or 40% of Hong Kong's personal income taxes.

All membership-related facilities are organized under a subsidiary, the Jockey Club Membership Services Ltd. It is fully funded by members' subscriptions, receiving no money from racing or betting activities. In 1994, the club had more than 14,000 members (95% of whom are Chinese), including 200 with voting rights responsible for electing the club's 12 stewards. During race meetings, members and their guests have access to special racing, catering and betting facilities in Happy Valley as well as in Sha Tin. Furthermore, all year round, full members can take advantage of a wide range of sports and leisure amenities.

### Racing and Betting Activities

Incorporated under Hong Kong legislation, the club controls and operates all racing and betting in Hong Kong. Racing takes place twice a week, on Wednesdays and Saturdays, during the racing season lasting from mid-September to mid-June. Altogether, almost 70 race meetings were scheduled for the 1994-95 season.

Each race meeting is strictly controlled. A panel of Race Meeting Stewards, consisting of a Club Steward, an honorary official, and five Stipendiary Stewards who are professional executives of the club, monitors the meeting. The panel is supported by a fully integrated video camera system providing an instant colour replay of every part of every race, filming the races from seven different positions. Except for some panel members, all race officials are full-time club executives, assisted by a small number of honorary officials. Finally, the club's own state-of-the-art racing laboratory conducts pre- and post-race examinations of blood and urine samples. All horses are tested before they compete on a race day, and selected ones are tested after the race.

In addition to the races conducted at the club's sites, a small number of overseas races including the Melbourne Cup, the Epsom Derby, the Grand National and the Arc de Triomphe are broadcast to Hong Kong, with betting taking place at the Hong Kong site.

The club is the only organization that can legally take bets in Hong Kong. It operates pari-mutuel betting at race meetings and off-course betting centres, as well as through a telephone betting service. During races at Happy Valley, the Sha Tin race stands are also open and vice versa, thus allowing customers to watch live coverage on a large colour screen and to 'cross-bet' at the other track.

Customers can place cash bets at the racecourses or at the club's off-course betting centres, or they can take advantage of the telebetting facilities offered by the club (see below). In the latter case they are required to open a telephone betting account with the club and to deposit sufficient funds. No credit betting facilities are provided by the club.

The average attendance per race meeting in the 1993-4 season was 46,300, including 11,600 at the cross-betting course. About one million people, more than one sixth of Hong Kong's population, bet each race day at the club's 125 off-course betting centres throughout Hong Kong, Kowloon, and the New Territories.<sup>6</sup> Roughly 570,000 telephone betting account holders use the telebet system. Altogether, the club's fully computerized betting systems process more than 6,800,000 bets per race meeting.

Betting turnover<sup>7</sup> has increased from HK\$2,931 million from 25 race meetings during the 1976-97 season to HK\$66.4 billion from 69 race meetings during 1993-94, a 10% increase over the previous year. From the turnover, the club subtracts a government duty of 13% and its own commission of 6% and returns the remainder to the winning punters. The commission covers the club's expenses, with the remainder donated to charitable institutions in Hong Kong. The club also manages a semi-weekly lottery on behalf of the Hong Kong government. It is compensated only for its expenses.

Prior to 1973, illegal betting was becoming a serious problem in Hong Kong. At that time off-course betting at club facilities was legalized. The government would prefer that gambling not take place, but the public obviously enjoys gambling and the club provides a means to control this activity. Horse racing would not be nearly as popular if betting could not take place, and the money for the community projects supported by the club would not be available without the income from betting operations.

The current extent of illegal betting is difficult to estimate. However, the club has stated that 'though the number of race meetings has increased, a considerable proportion of the increase in turnover is attributable to the redirection of moneys previously bet with illegal bookmakers' (RHKJC 1994-95, Information Brochure, p. 19). According to the Club's Stewards, the increase in betting duty and the difficulties in licensing additional off-course betting centres, especially in new residential areas without legal betting outlets, encourages illegal bookmaking (RHKJC, Annual Report 1994).

## **IT Management at the Hong Kong Jockey Club**

The club is heavily dependent on IT for its operations. Consequently, the

club has made substantial investments in its IT systems, making it one of the largest and most innovative IT users in Hong Kong and one of the most intensive IT users in the entertainment industry.

### Organizational Structure of the IT Division

The IT Division is organized as follows (see Figure 13.2). The Research and Planning department, consisting of five people, conducts IT research to assess the business impact of emerging technologies, prepares strategic plans in support of the club's business, and disseminates knowledge within the club through seminars and presentations. This includes an appraisal of IT trends for the forthcoming two to 10 years. The department also establishes the club's links with several specialized user and vendor organizations around the world.<sup>8</sup> As a result of these links, the department sometimes receives as many as 3,000 electronic-mail messages in one morning, requiring various automated filter mechanisms to manage the traffic. Finally, the department is responsible for the implementation of strategic planning tools and change management.

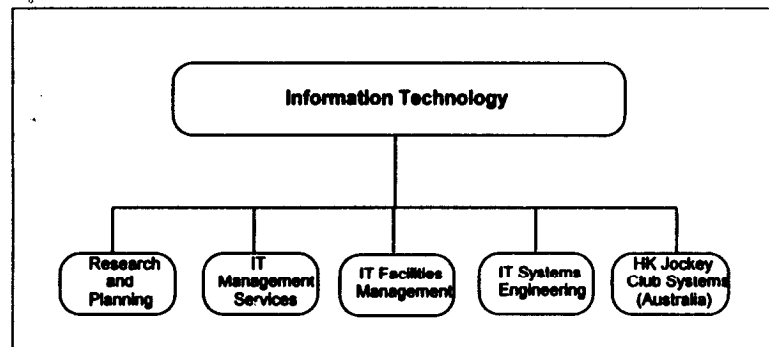


Figure 13.2 HKJC — Structure of the IT Division

The IT Management Services department supports the delivery of IT products and services. Its three main areas of activity are the establishment of a project management methodology for IT, the training of the club's IT personnel, the establishment of divisional quality standards (including the development of appropriate quality metrics), and IT administration. The latter includes the preparation and consolidation of divisional operating

and capital budgets, statistical analyses and management reports, and the management of software licences and royalty income for its IT products used at racecourses in other sites.

The IT Facilities Management group is concerned with operating computers, maintaining networks, installing equipment and providing technical services regarding business system operations, betting facilities, and network and systems operations.

The IT Systems Engineering department is responsible for development of new systems as well as major enhancements to existing ones. It designs and develops application software for various systems running in the club; furthermore, it is in charge of enhancing and maintaining software for the club.

The IT Systems Engineering department works closely with Hong Kong Jockey Club Systems, a wholly owned subsidiary located in Australia. Its primary responsibility is the development and support of betting information systems, especially real-time transaction processing, data security, and telecommunication systems. The subsidiary also acts as an application vendor; it attempts to identify business opportunities and arrange certain marketing and sales efforts.

### Advanced Betting Front-End Systems

There are two ways in which a customer can place a bet: cash betting and telebetting. Cash betting includes on-course betting, off-course betting, and the use of self-vending terminals. Telebetting, which accounts for about a third of the total betting turnover (see Table 13.2), includes telephone-based betting through 2,000 operators at the club's sites and the use of Customer Input Terminals (CIT).

Customer Input Terminals were introduced in 1988 as an innovative way to satisfy an increasing demand. CITs allow customers to place bets directly by keying the bets into a small handset and then connecting it to a telephone socket. The bets are transmitted to the club's Telebet system at

**Table 13.2**  
**HKJC Turnover (1990-1994)**

Betting Turnover	1990	1991	1992	1993	1994
On-course	10,026	10,437	11,663	12,001	12,597
Off course	25,352	26,203	28,664	30,761	32,943
Telebet	7,960	10,620	15,293	17,381	20,848
Total	43,338	47,260	55,620	60,143	66,388

the push of a button. Furthermore, the CIT can display starter lists, odds, and results, and can be used to transfer funds to and from a bank account. Customers rent the CIT terminals from the club and pay a refundable deposit and an annual fee. Prior to 1994 more than 50,000 CITs were distributed with another 10,000 orders waitlisted. In 1994, they accounted for about a third of the telebetting turnover (i.e., about one ninth of the total betting turnover).

The club's self-vending terminals were introduced in 1989 and account for almost 10% of total betting turnover. The customer completes betting tickets similar to those used in traditional cash betting and inserts them together with a cash voucher into the terminal. Once validated, the betting tickets are returned to the customer with another cash voucher showing any funds remaining in the voucher after the bets have been subtracted. Since these terminals provide a fast and efficient betting service, their number has been increased to 1,550 at the racecourses and the off-course betting centres. Some of these terminals, recently introduced, have Electronic Funds Transfer (EFT) functionality that allow customers to produce cash vouchers from their bank accounts, which are then used to place a bet. Additional information about the club's telebetting facilities and their use is provided in Table 13.3.

**Table 13.3**  
**HKJC Betting Facilities and Their Usage (1990-1994)**

	1990	1991	1992	1993	1994
<i>On-course betting:</i>					
Operator terminals					
Happy Valley	1,246	1,245	1,258	1,260	1,240
Sha Tin	1,525	1,525	1,582	1,503	1,448
Self-vending terminals	304	315	358	471	653
Tickets sold per meeting	874	852	859	824	818
<i>Off course:</i>					
OCB centres	129	127	126	125	125
Operator terminals	2,385	2,361	2,356	2,232	2,116
Self-vending terminals	152	186	321	772	897
Tickets sold per meeting	5,103	4,828	4,732	4,704	4,704
<i>Telephone betting:</i>					
Accounts (000s)	448	481	509	536	570
CIT (000s)	17	25	34	43	51
Calls per meeting (000s)	406	458	440	438	460
Bet lines per meeting (000s)	802	991	1,092	1,150	1,256

Another advanced front-end IT application concerning betting activities supports the user-friendly display of various betting related information. Betting odds are regularly updated on indicator boards, closed-circuit tel-



evisions and LED boards every 12 seconds. Furthermore, starter lists, up-to-date odds, results and dividends are fed directly into the information systems of commercial information disseminators who then make them available to their subscribers through pager messages or computer displays. In addition, up-to-date betting information is shown on television sets in several off-course betting centres.

### The Strategic IT Road Map

The club's IT Strategic Road Map, developed during 1992 and officially introduced in September 1992, provides a reference point for all technical policies (see Figures 13.3a and 13.3b).

It has been endorsed by the stewards as the club's top-level policy for decision making. As a first level of interpretation, the Strategic Roadmap is a rationale for a technical strategy document called the IT Technical Framework. The main focus of the framework is to present direction on how to achieve the planned transition to an open systems environment; it is therefore centred on a model of distributed and open systems.<sup>9</sup> The Technical Framework is interpreted to a further level of detail by each of the club's projects which produce the final interpretation into products and systems of the directives in the Technical Framework.

Three major assumptions underlie that framework: (1) in the future information systems will change the way in which people will work and in which organizations will be structured, (2) the club must have a coherent IT

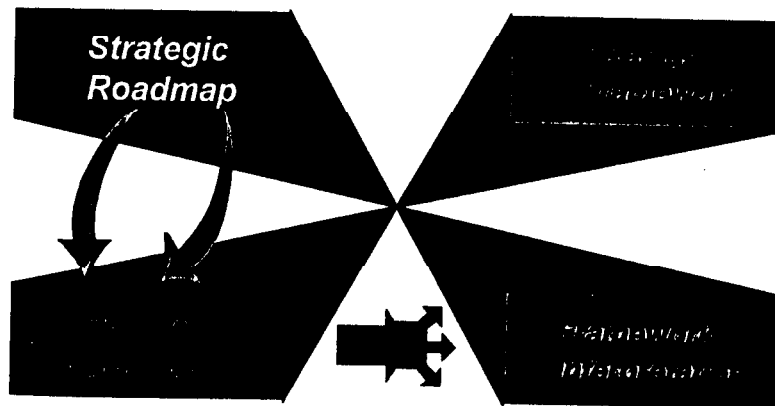


Figure 13.3a Overview of the Club's Different IT-related Frameworks

## IT Strategic Road Map

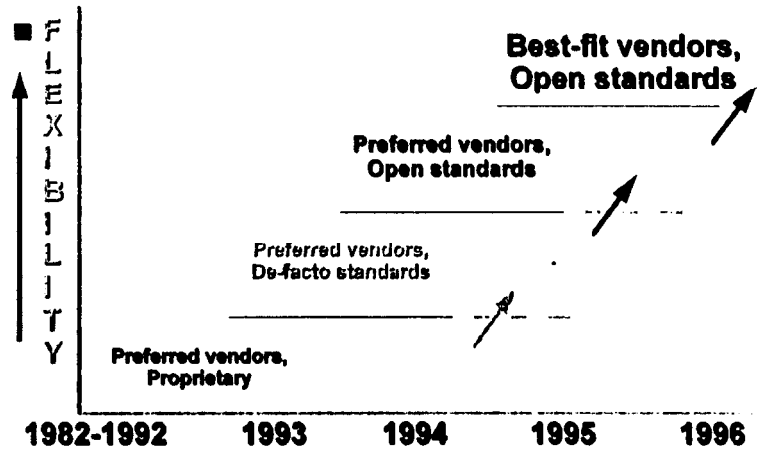


Figure 13.3b HKJC — IT Strategic Roadmap

infrastructure capable of supporting collaborative work, organizational design, and business re-engineering, and (3) distributed and open systems will be core concepts in any coherent infrastructure providing the required flexibility.

Based on these assumptions the Technical Framework is intended to provide guidance by considering technological trends and product availability and to develop a flexible distributed computing environment<sup>11</sup> that will enable the IT Division to respond rapidly to the changing business and information needs of the club. A distributed computing environment is considered as an interconnection of open systems that function as a seamless system. The IT infrastructure targeted with the framework is diverse, manageable, and extensible, and also transparent so that the complexity is hidden from the user. It requires open systems based on standards.

The framework includes the adoption of de facto standards<sup>11</sup> (except where specific backwards compatibility with a proprietary system standard is needed to support an existing investment) specifying interfaces in a broad range of areas including operating systems, user interfaces, transport interfaces, and data management. De jure standards<sup>12</sup> are used only if they are widely supported. For each technological component in the club's IT infrastructure there is a defined and maintained standard.

Another aspect of the framework is a phased approach regarding the migration towards open systems. Such a gradual, incremental shift aims at

minimizing risk while fostering greater flexibility. Above the level of the Technical Framework there are many other issues at the intersection of business strategy and technical strategy. These issues are covered in a Research and Planning document called the IT Strategic Framework. Among many topics it covers the re-education and reorientation of staff and users in the context of human resource planning and the change management implications of any re-engineering initiatives. Because of its sensitivity the Strategic Framework is not made public.

All applications will be designed for a client server architecture. Furthermore, they will conform to a consistent user interface style and be supported by on-line and help functions and a consistent set of data attributes. For existing systems, the club is replacing the current inconsistent variety of styles, functions, and attributes to conform to the new standards.

The club has installed a directory service to support distributed applications and message handling facilities. Standardized networking protocols (TCP/IP and UDP/IP) are used to interconnect different types of networks and subnetworks. The club has a data security policy which defines in broad terms the general responsibilities for the protection of data held in the club's computers, focusing on confidentiality, integrity and availability.<sup>13</sup> Because of the sensitivity of betting transactions, the club has developed a core competence in implementing and maintaining cryptographic data security features. The security measures used by the club have been adopted from Australian standards, which incorporate selected features of other international standards. In the future the club will be using the security architecture prescribed by the Technical Framework. This encompasses a much broader range of security issues in distributed systems of the kind being implemented in the redevelopment projects.

As a long-term goal the club wants to achieve reusable software with applications built from integrating modular, extensible software components. In particular, software is to be designed for integration<sup>14</sup> and extension.<sup>15</sup> As a minimum, software is implemented as encapsulated modules with extensible interfaces. The encapsulation policy<sup>16</sup> allows the club to benefit from object-oriented technology, although object-oriented analysis and design is still in its adoption cycle. Object-oriented programming is used for software development, since 'software should be made up of encapsulated modules that have well-defined boundaries with no unnecessary dependencies' (RHKJC, Technical Framework, point 3.5.4.).

The club develops software internally only when there are no suitable packages available from other sources or where it is in the club's business interest to have the full rights to the software. An example is the telebet system described in the following section. The club even follows a policy in which its business processes are altered to match purchased packages instead of modifying the packages.

The club's strategy in the area of data management is consistent with its business strategy of multiple vendor procurement on the basis of industry standards and will be guided by the work of several leading consortia (e.g., X/Open, SQL Access Group, and the Object Database Management Group). The broader range of vendors and computing platforms requires a strong emphasis on portability across platforms and relational database management systems.

Vendors are required to ensure and maintain an acceptable level of interoperability between their offerings and the software being used by the club. Software packages have to be easily and quickly transferable from machine to machine at little or no additional cost. With growing sales quantities, the club expects to receive more favourable maintenance, training, electronic and technical support, and enhanced vendor service such as consulting time or development work. Furthermore, the club insists that maintenance subscriptions for follow-on years be priced separately. Neither 'mandatory' maintenance subscriptions nor automatically renewed prescriptions are accepted. Finally, vendors are asked to deliver product documentation both on paper and in electronic form.

The club gladly distributes its technical framework outlined above to the public, though the Strategic Framework is held by Research and Planning as an internal document of the IT Division. The IT leadership at the club believes that the more people become convinced of the open system paradigm, the stronger will be the incentive for vendors to standardize their offerings. This in turn will mean that IT will become less of a set of specialized products and more of a commodity, and that the club will be able to choose among a number of vendors offering standard IT products. As soon as possible the club wants to achieve a position where it can purchase commodity-like products and rely on competition among vendors to improve maintenance, service, and pricing. Such standardization of products does not exclude the addition of special features which might be needed to fulfil the high performance requirements for betting systems.

Finally, the club's IT executives arrange awareness seminars for their colleagues in other departments on modern concepts of IT investment evaluation. This required re-education of the accounting staff, who viewed IT investments in terms of the costs and benefits of individual packages.

### **Applying the Strategic IT Road Map Concept: The New Telebet System**

The new Telebet system was the first system that the club developed and implemented after it had laid out its open system strategy. It made the club

the first site in Hong Kong to implement the Open Software Foundation's Distributed Computing Environment.

In 1992, the club decided to replace its 1,600 teletext terminals installed in 1979 at the Sha Tin racecourse, which had reached their upgrading capacity. Following the Strategic Road Map outlined above, the club decided to apply a PC-based client server architecture and chose Windows NT running on 486 PCs as the most suitable operating platform. The latter decision was heavily supported by a partnership between Digital, a major vendor to the club, and Microsoft to service Windows NT. To migrate the Teletext system to the new client server architecture, the club wrote gateway applications to connect the PCs with the old VAX/VMS host back-end system using the Remote Procedure Calls of the Distributed Computing Environment. Following the idea of consistent user interfaces, the look and the feel of the terminal display has stayed pretty much the same, and operators can easily switch between English and Chinese.

Within the same migration effort, the Automated Call Distribution (ACD) unit, which answers the customers' telephone calls and transfers them to a waiting operator, was replaced. Few vendors offered the required equipment, which had to process up to 35,000 calls within the 15 minutes immediately prior to a race. Vendor selection turned out to be a major difficulty. The ACD finally chosen is a UNIX-based machine running on an IBM RS/6000 that supports voice and data. For later releases the club expects to integrate the operator management console into the Windows NT betting terminals.

With its new Teletext system, the club has become one of the most visible members and Distributed Computing Environment users of the Open Software Foundation (OSF). The club is now represented on the core Architecture Planning Committee of the OSF and the Research and Planning Controller takes part in the X/Open User Council. The Chief Executive of the Open Software Foundation has spoken at an event hosted by the club to introduce other leading Hong Kong organizations to the new technologies

## Towards Object-Oriented Technology

In 1992, the club began to investigate the possible use of object oriented technologies. It began by joining several syndicated research programmes<sup>17</sup> and visiting several users of object-oriented technology in Europe.<sup>18</sup> At that time, few people were making a major commitment to object orientation, but most experts were convinced that the principal problems with this new technology would be resolved by 1994-5. The club's executives were persuaded that it was time for direct involvement. Therefore, the Research and

Planning Department established Internet connections with various information providers and joined the Object Management Group<sup>19</sup> as well as X/Open and the Open Software Foundation. The latter two organizations proved invaluable in providing early information about emerging standards. The club believes that membership of these groups allowed it to evaluate proposed standards and their timely adoption more effectively.

By late 1992, the club's executives in charge of systems development started planning an education programme for the Systems Engineering staff in Hong Kong and Australia. The participants began with self-directed learning, and then took intensive courses in object-oriented concepts and Smalltalk, culminating in an externally administered formal examination (Neely, 1994b). Afterwards they completed prototype projects in Smalltalk, intensive C++ training, and the rework of the prototypes in C++. To complement the education programme an external consultant was brought in as a project mentor.

To further facilitate information exchange with other users the club joined the Object Interest Group in 1993. While the Object Management Group consists primarily of vendors, the Object Interest Group is restricted to commercial organizations whose primary business is not selling Information Technology or related services. In fact, most members of this latter group are financial institutions.<sup>20</sup>

The club considers risk management — as embedded in the technical framework — a crucial ingredient of successfully implementing any new technology. Especially in the case of object orientation, knowledge of forthcoming software developments has proven to be useful in assessing and managing the risk of migration, and has thus led to a 'competitive advantage'. This knowledge is acquired from the memberships in various consortia, which the club can easily afford because of its non-profit status. For example, the club's membership fee for the Open Software Foundation is US\$25,000 per year, roughly 2.5% of what large profit-making vendors must pay. Nevertheless, club officials have stated repeatedly that the principal value of membership in these organizations comes from personal contacts developed within these groups.

During the last two decades the club has achieved worldwide recognition for its successful IT applications and its professional IT department. However, the senior IT executives maintain that these successes have not eliminated the need for further change — efforts in the continuing move to open systems. Three issues arise in managing this change. The first is convincing some members of the staff that further change is necessary. An example is the retirement of legacy systems. In an environment where security and reliability are essential, people are often reluctant to replace systems that meet these requirements with new systems that have additional intangible benefits, such as standardization and integration. As John Markwell,

Director of IT, said, 'Legacy systems are like electronic concrete. People are willing to commission new systems, but they don't want to decommission old ones.'

The second issue is the expatriate issue, which is found in many other organizations in Hong Kong. There are two questions here: one is whether the existing staff can provide the skills needed to implement continuing technological change or whether it is necessary to recruit overseas staff. As Robert Neely, Research & Planning Controller at the club, says, 'For most of the innovative systems that we've been putting in place, we have to go outside Hong Kong to get expertise in the areas of advanced client/server, modern security architectures, object-oriented technology. So across the more innovative technologies that we're looking at, in almost every case, to get going we've had to go outside of Hong Kong.' The other question concerns the concentration of expatriates at the higher level of the IT Division, which may give rise to cultural differences between the IT leadership and the staff.

The third issue is a linguistic one. Out of 400 IT staff, only about 10 persons — mostly at the senior levels of the IT Division — do not speak Cantonese. This language barrier, typical for Hong Kong, sometimes makes it difficult for top executives to determine the staff's true feelings about planned or executed changes.

## **Selected Future Issues**

### **Relationship With Vendors**

The club's move to open systems has had both positive and negative effects. On the negative side, the move has weakened the club's relationship with its vendors, since vendors feel less responsible for any problems occurring at the club. In addition, the IT Division is more concerned with risk management. If a problem occurs with a particular system, there is no single vendor to assume responsibility, and each of the several vendors involved in the system attempt to shift blame to the others.

On the positive side, the commitment to open systems makes the club less dependent on specific vendors, and especially their business situations, the technical performance of their products, and their service policies. To some extent, the shift towards standardized technology has even increased the club's influence over its vendors. John Markwell, Director of IT at the club, says, 'Vendors don't sell to us, but we buy from them.' The reason is that the club has become an attractive customer for those vendors who offer hardware and software that meet open systems standards. For them, the

club has become a catalyst for selling open systems in Hong Kong. Consequently, an increasing number of vendors try to 'jump on the train' and use the club as a showcase for their products and services.

### Increasing Competition

Although the club is a monopoly, it faces competition along two dimensions: 'leisure dollars' and 'leisure time' (Markwell, 1994). That is, an increasing number of alternative leisure attractions may reduce either the money or the time that customers will devote to betting and attending horse races. Competition regarding the 'leisure dollar' will come from two sources. The first consists of money spent on non-gambling activities such as movies, travelling, and other forms of entertainment. The second refers to the possibility that lotteries will be coupled with other activities, such as insurance, mail-order shopping, or savings accounts. Says John Markwell, 'One bank in Japan already offers a savings plan in which the customer can select a high-interest account or a lower-interest account with a fixed amount transferred to a lottery. It is quite possible that tying lotteries to other services will gain popularity elsewhere.'

Competition regarding 'leisure time' will increase because of two possible developments: (1) traffic congestion will increase the time needed to attend race meetings, and (2) video-on-demand and, eventually, virtual reality gaming will provide people with more rapidly accessible entertainment opportunities that may reduce the attractiveness of race meetings and betting. Since Hong Kong Telecom is planning to provide video-on-demand services, these developments are not as remote as one might think.

### Future CIT Developments

The next CIT generation to be offered by the club, the CIT-5, will follow Hong Kong's urge for mobility and provide connectivity with mobile phones. Other features include a larger display and the support of Chinese characters.

During the next five years Personal Digital Assistant (PDA) technology may have a significant impact on the club, since the PDA might be used as a sophisticated betting machine. The IT Division is building prototypes in which a 'betting card' would fit into one of the PDA slots, another of which would be used for mobile communications.

The increasing complexity of possible future betting devices will bring



about a need for more sophisticated project management. System integration will become significantly more difficult because of the large number of parties involved. (Motorola for the wireless technology, a network operator for the wireless service, and the terminal manufacturer.)

## Hong Kong 1997 — Business as Usual?

Since 1 July 1997 Hong Kong has become a Special Administrative Region of the Peoples Republic of China. This transfer of sovereignty has given rise to many questions concerning the future of Hong Kong, including a few that directly concern the club. The only certainty was dropping the word 'Royal' from the name of the club. However, there are several other issues, some of concern to the IT Division.

One such issue, which already exists but will become increasingly important after 1997, is the computerization of Chinese characters. There are at present no international agreements on the coding of Chinese. The club has approached the appropriate officials in Beijing, assuming that their recommendations will become the de facto standards for East Asia. The club's adoption of open systems should be helpful in adjusting to these standards and promoting them in Hong Kong and possibly elsewhere.

Two more general issues are (1) to what degree the club will have to change its business practices in Hong Kong, and (2) to what degree it will be allowed to expand into China. With regard to the first, betting is currently illegal in China, but several provinces have established betting facilities, and the central government in Beijing has quietly allowed this to take place. A reasonable assumption is that the lottery managed by the club for the Hong Kong government will continue and racing will be accepted as a sport, but the legal status of betting in Hong Kong after 1997 is not clear. However, the current practices in the provinces and the 'one country, two systems' policy suggest that the club can make a good case for allowing it to continue its current operations. In addition, the central government will face many far more pressing problems elsewhere in China, and the club estimates that it will take 10 years for the question of gambling in Hong Kong to become of concern to the leadership in Beijing.

With regard to the expansion of the club's operations into China, matters are less certain. There are three ways in which such an expansion might take place: (1) people in China may be allowed to bet on club races either directly via telebetting or eventually by cross-betting at other tracks in China; (2) the club may be allowed to establish its own tracks and betting facilities at certain locations in China; and (3) the club might be allowed to sell or lease its software to other tracks in China. Although it is not clear whether

any or all of these events will occur, the open systems approach adopted by the club should provide the flexibility needed to facilitate these operations.

## Conclusion

As the only operator of racing and betting services in Hong Kong, the club has developed and implemented innovative front- and back-end information systems for distant betting. Its strategic focus on open systems provides the club with additional flexibility to facilitate necessary adaptations to uncertain business conditions in the context of Hong Kong's return to the People's Republic of China.

## Notes

- 1 This work was done while the authors were in the Department of Information and Systems Management in the School of Business and Management at the Hong Kong University of Science and Technology. The authors wish to thank Mr. John Markwell and Mr. Robert Neely for their cooperation in preparing this chapter.
- 2 Handling all correspondence.
- 3 In recognition of the club's contributions to the community, Queen Elizabeth II granted the 'Royal' prefix to the Club's name in 1960.
- 4 1HK\$ = 0.128 US\$
- 5 Highlights of the club's community services include the creation of Victoria Park (1951), the Annual Summer Youth Programme (since 1969, more than 1.3 million participants by 1993-4), Ocean Park, Hong Kong's largest amusement facility (1977), the Jubilee Sports Centre (1982), the Hong Kong Academy of Performing Arts (1986), Kowloon Park and Hong Kong Park (1989 and 1991), the Hong Kong University of Science and Technology, the Hong Kong Stadium (1994), and a public golf centre (1995).
- 6 Hong Kong consists of Hong Kong Island, Kowloon and the New Territories.
- 7 The group's total turnover (HK\$67.2 billion in 1993-4) generally comprises betting turnover, admission charges, livery charges, catering sales and charges for service provided to members.
- 8 Examples of such organizations include the Open Software Foundation (OSF), the X/Open Consortium, the ATM Forum, the Network Management Forum and the Object Management Group (OMG).
- 9 Open systems are systems that implement interface specifications promoting application portability, interoperability, and user portability.

- 10 With distributed computing the end-user has a small but adequate set of resources (such as personal computing) with easy access to a manageable variety of resources (such as a time-sharing system), yet with resources distributed over an extensible network. In addition distributed computing adds transparency, the network and all accessible resources appear to be local to the end-user. Since software and hardware must all work together in a distributed computing environment, each computer should be an open system, thus providing application portability and interoperability, and possibly user portability.
- 11 De facto standards refer to specifications that are widely implemented and used as opposed to de jure standards that have been officially approved by a recognized standards body.
- 12 De jure standards refer to officially approved standards recognized by a standards body.
- 13 Confidentiality refers to the prevention of unauthorized disclosure of information, integrity to the prevention of unauthorized modification of information, and availability to the prevention of the unauthorized withholding of the information.
- 14 Integration refers to the extent to which the components of a system form a coherent whole. Two key aspects can be distinguished: interoperability, i.e., the extent to which system members interact effectively, and uniformity, i.e., the extent to which the set members are invariant with respect to a set of attributes (e.g., look and feel of user interface).
- 15 Extensibility refers to the ease with which a system can be adapted to meet new requirements. It includes the ability to add or change functions or data without (1) requiring changes to existing function, data, and interfaces, and (2) introducing unwanted side-effects, e.g., reliability, portability, etc.
- 16 Encapsulation refers to a form of modularity that encapsulates a data structure with the routines that manipulate the data structure.
- 17 Syndicated research refers to the outsourcing of major research activities to organizations like the CSC Index Foundation and the PE IT Management Programme. However, the club sees its real value not in the officially presented research results, but in the informally transmitted electronic messages.
- 18 Logica Research, International Computers Limited (ICL), and Hewlett Packard.
- 19 The Object Management Group is an industry group dedicated to promoting object technology and fostering the standardization of the technology. Although much of the group's efforts are geared towards vendors, it has been a good source of information for the club. Examples include security issues and aspects regarding the interlinking of technologies.
- 20 The club is also member of the ATM Forum, the European Electronic Messaging Association, the Advanced Networking System Architecture consortium, and the Introduction of Process Technology Club, which has grown out of work funded by UK's Department of Trade and Industry.

## References

- Brisbane-Cohen, R. 1994. *Telebet, an Essential Club Betting Service Is Upgraded*. Royal Hong Kong Jockey Club (September).
- Foley, A. 1994. OSF opts for a back-seat brokering role. *ComputerWorld Hong Kong* (3 November).
- Jelassi, T. and C. Loebbecke. 1993. *Betting on IT: The Case of the Royal Hong Kong Jockey Club, INSEAD Case Study*. France: Fontainebleau.
- Markwell, J. 1994. *IT and Business Strategy*. Presentation to an MBA class at the Hong Kong University of Science and Technology (17 November).
- Loebbecke, C. and R. Blanning. 1995. Racing towards an open betting system at the Royal Hong Kong Jockey Club. In *Proceedings of the 3rd European Conference on Information Systems (ECIS'95)*, ed. Doukidis, G. et al. Athens (July).
- Neely, R. 1994a. *Object-Oriented Technology — The Strategic Issues*. The Royal Hong Kong Jockey Club.
- Neely, R. 1994b. Participation in the managers' roundtable. *ComputerWorld Hong Kong*, Assessing Hong Kong's software skills (11 August).
- O'Hara, C. 1994. Betting on technology. *Technology Performers* (13 October).
- The Royal Hong Kong Jockey Club. 1994. *Annual Report*.
- The Royal Hong Kong Jockey Club. 1994. *IT Technical Framework V. 2.0* (July).
- The Royal Hong Kong Jockey Club. *Information Brochure 1994-95*.
- The Royal Hong Kong Jockey Club. *Information Technology*, Information brochure published for the 12th Intertoto Congress Hong Kong, 10-15 October 1993.

## Appendix 13.1

### Survey Questions

1. The club has pursued an open systems strategy in a number of systems development areas. Is such a strategy more appropriate in some of these areas than in others? That is, should the club adopt a contingency view of open systems? If so, should it make this view known to the vendors?
2. The IT Division is organized into four departments, along with an Australian subsidiary. Is this organization structure the most effective one, given the changes that the club will soon see in its technological and political environment? Would you reorganize the IT Division? If so, how?
3. At present the club has not taken any specific steps to prepare for Hong Kong's transfer of sovereignty to the Peoples Republic of China in 1997, other than to adopt an open systems strategy to provide flexibility. Is there something more specific it should do? If so, what?
4. What should be the club's policy towards the retirement of legacy systems? How does one trade off the benefits of a system that is known to accomplish its specific mission with a new system that promises additional but less tangible benefits?
5. John Markwell sees the technological future of the betting business as 'operatorless, cashless, and ticketless'. Is this a realistic expectation? If so, in what time-frame? What technological advances would be needed to achieve it?