Escalation and de-escalation of commitment: a commitment transformation analysis of an e-government project

Gary Pan,* Shan L. Pan,† Michael Newman‡ & Donal Flynn§

*Department of Accounting and Business Information Systems, The University of Melbourne, Parkville VIC 3010, Australia, email: gpan@unimelb.edu.au, †Department of Information Systems, National University of Singapore, 3 Science Drive 2, Singapore 117543, email: pansl@comp.nus.edu.sg, ‡Manchester Business School, The University of Manchester, Manchester, M13 9PL, UK, email: mike.newman@manchester.ac.uk and Agder University College, Gimlemoen, 4600 Kristiansand, Norway, and §School of Informatics, The University of Manchester, Manchester, M13 9PL, UK, email: Donal.Flynn@umist.ac.uk

Abstract. *This paper presents a commitment transformation framework for analysing the change in actors' commitment during the transition from escalation to de-escalation in information technology projects. De-escalation is potentially a more important issue than escalation because de-escalation provides remedies for the ills of escalation. Therefore, it is important to understand how stakeholders may bias facts in the direction of previously accepted beliefs and thus prevent an organization from de-escalating. Here, we adopt Lewin's change theory to examine the commitment transformation during the transition from escalation to de-escalation of an e-government project in a local council in the United Kingdom. By conceiving actors' commitment transformation as an 'unfreezing–changing–refreezing' process, researchers may develop a deeper understanding of how actors may give up previous failing course of action and accept an alternative course of action. Practitioners can also utilize the framework in post-mortem analyses of projects which have faced escalation to devise useful de-escalation strategies for future project development.*[1]

Keywords: escalation of commitment, de-escalation of commitment, e-government project, Lewin's change theory

INTRODUCTION

The phenomenon of escalation of commitment to information technology (IT) projects has attracted attention in recent years (Keil, 1995; Newman & Sabherwal, 1996; Mähring *et al*.,

[1]An earlier version of this paper was presented at the 2004 European Conference on Information Systems and published in its proceedings (Pan *et al*., 2004).

2004). This may be explained by the somewhat alarming findings from the Standish Group's (2003) survey which indicates that 43% of software projects were over budget and 54% had time overruns – a behaviour underlying the phenomenon of escalation of commitment to a failing course of action (Brockner, 1992). Generally, escalation occurs when decision-makers throw good money after bad, pursuing a course of action that is not yielding the desired result (Keil & Robey, 2001).The high incidence of software projects exhibiting the escalating phenomenon is due to a combination of many different factors categorized as project, psychological, social and organizational factors (Staw & Ross, 1987; Keil, 1995; Newman & Sabherwal, 1996). The Taurus project at the London Stock Exchange provided a very good example that illustrates the escalation phenomenon. The exchange began the Taurus project, a computerized system for equities settlement in May 1986. The project was initially expected to take 3 years and cost £6 million. As the Taurus development process unfolded, one problem after another began to surface. The project was eventually cancelled in 1993, costing the London Stock Exchange over £80 million (see Drummond, 1996).

Experts have suggested that the most effective way to eradicate the phenomenon of escalation of commitment to IT projects is through de-escalation of commitment (Keil & Robey, 1999; Montealegre & Keil, 2000). Keil & Robey (1999, p. 65) define de-escalation of commitment as 'the reversal of escalating commitment to failing courses of action, either through project termination or redirection'. This implies that troubled projects must be detected as early as possible so that corrective actions can be taken before project conditions worsen. A good example which illustrates the de-escalation phenomenon is the baggage handling system at Denver International Airport (DIA) (see Montealegre & Keil, 2000). The troubled IT project, which was 16 months behind schedule and close to $2 billion over budget, was eventually turned around after a series of de-escalation activities. Despite the significant role played by de-escalation of commitment in unlocking the escalation entrapment, there has been a paucity of research on de-escalation in the information systems (IS) research area (Heng *et al*., 2003). In particular, little is known about how actors give up their commitment to a present failing course of action and accept an alternative course of action.

This paper draws upon Lewin's (1951) theory of change to explore the dynamic process of commitment transformation during the transition from project escalation to de-escalation in an organizational setting. We view Lewin's theory as an appropriate analytical lens for this study because in many 'entrapment situations', there are competing forces of change which may encourage persistence or abandonment (Teger, 1980). The concept of 'unfreezing–changing–refreezing' helps to analyse these competing forces of change which tend to create a conflict over the decision to continue or withdraw from the entrapment situations. Against such a backdrop, we undertook a case study of an electronic government (e-government) project in a local UK metropolitan borough council (UKC, a pseudonym).

The remainder of the paper is organized as follows: first, we explain the concepts of escalation and de-escalation of commitment and outline how Lewin's theory of change can act as a theoretical lens to make sense of how de-escalation can be enacted. This is followed by a case study conducted from January to August 2002 where we analyse the development process of an e-government project that initially went out of control (a cycle of escalation) but was

successfully turned around. We use a commitment transformation framework to identify and analyse how and why actors give up their commitment to a present failing course of action and accept an alternative course of action. The framework represents a useful analytical model that can organize the transition from escalation to de-escalation into three commitment stages: unfreezing, changing and refreezing.

THEORETICAL FOUNDATION

Escalation of commitment to a failing course of action

Escalation of commitment is a phenomenon which refers to situations where decision-makers commit additional resources to a failing course of action (Staw & Ross, 1987). While escalation is a general phenomenon that can occur with any type of project, IS projects are susceptible to incur much more time and cost than originally expected (Keil, 1995; Keil *et al*., 1995; Newman & Sabherwal, 1996; Mähring & Keil, 2003; Mähring *et al*., 2004). The intangible nature of software makes it difficult to obtain accurate estimates of the proportion of work completed, which may promote escalation of commitment by giving a false perception that proximity to completion of the project is close. Furthermore, IS projects are complicated and tend to have erratic requirements (Zmud, 1980; Abdel-Hamid & Madnick, 1991) that cause project scope to change frequently. Projects that exhibit such volatility are especially difficult to manage and control. For these reasons, it is not surprising that escalation occurs with high frequency among IS projects.

Drummond (1996) has characterized escalation as why organizations seem to persist with failing ventures long after any sensible person would surely have given up. Keil (1995) considers project escalation to occur when there is continued commitment and negative information. Although escalation involves resource commitment in the face of negative interim outcomes, the eventual outcomes may or may not be negative. Also, escalation involves the allocation of additional resources, but not necessarily at an increasing rate (Keil, 1995; Sabherwal *et al*., 2002). Organizations apparently keep investing additional resources in failing IS projects in an attempt to make them work, and consequently these 'runaway' projects (Barki *et al*., 1993; Keil *et al*., 1995) are continued even though it may make more economic sense to stop them. Keil (1995) even suggests such decision dilemma as one of the most difficult management issues that can arise in connection with IS projects. 'Runaway' IS projects sometimes are abandoned after absorbing large investments over long periods of time. According to a study on IS project abandonment (Ewusi-Mensah & Przasnyski, 1991), at the time of abandonment, eight out of 21 projects were in the implementation stage, and four of these had already consumed greater expenditure than the budgeted amount. This suggests that IS managers are doing a poor job of identifying or terminating projects that are likely to fail.

Previous research suggests that escalation is a complex phenomenon that may be influenced by many different factors. Staw & Ross (1987) group these factors into four categories: project, psychological, social and organizational. Similar to projects in the construction industry

(Sauer *et al*., 1999), these factors have been used widely in experimental-based studies (Sabherwal *et al*., 2002) and case studies (Keil, 1995; Newman & Sabherwal, 1996; Mähring *et al*., 2004) to understand the escalation phenomenon in IS settings. In their study, Newman & Sabherwal (1996) examined a case of escalation of commitment to an IS development project at an organization called CENTCO. They found that 'project and structural determinants are crucial in obtaining initial commitment for the IS project, social and structural determinants influence whether commitment to the project is withdrawn, and psychological and project determinants influence escalation of commitment' (Newman & Sabherwal, 1996, p. 45). Their findings differ considerably from those reported by Ross and Staw (Ross & Staw, 1986; 1993). They attribute the difference to the multiple phases of escalation and withdrawal, as well as the high degree of turnover among senior management in CENTCO. Keil (1995) also used Staw & Ross's (1987) taxonomy of factors to examine the escalation of commitment to an IT project at CONFIG. In his study, he found three factors that had not been widely discussed in the escalation literature: 'emotional attachment to the project', 'empire building' and 'slack resources and loose management controls'. Sabherwal *et al*. (2002) examined the effects of project, psychological, social and structural factors during four stages of an IS project. Their results support escalation in IS projects. Moreover, project factors and psychological factors, but not structural factors, seem to aid escalation. Besides, project, psychological and social factors also have different effects during various stages of the development. To alleviate the impacts of project escalation, Keil & Robey (1999) suggest an effective way of reducing commitment to a failing course of action, which is through de-escalation of commitment to a failing course of action.

De-escalation of commitment to a failing course of action

To date, empirical research on de-escalation of commitment is relatively limited (Drummond, 1995; Heng *et al*., 2003). Most of the studies were conducted in non-IS settings (e.g. Ross & Staw, 1993) and only very few were related to IT projects (Keil & Robey, 1999; Montealegre & Keil, 2000). While escalation studies seek to understand why decision-makers increase commitments to failing courses of action, de-escalation studies examine how decision-makers extricate themselves from escalating commitments. Keil & Robey's study (1999) examined specific actors and actions taken to turn troubled projects around. For actors responsible for triggering de-escalation, their results suggest that top management was most frequently mentioned as the actor who triggered de-escalation. Other frequently cited actors include internal IS auditors and external auditors/consultants. Their study concluded that actors who are not directly involved in projects are more likely to trigger de-escalation. As for specific actions to turn troubled projects around, their study identified 'redefine the project', 'improve project management', 'change in project leadership' and 'adding and/or removing resources' as the four most effective actions cited for project turnarounds.

Although these actions are useful for triggering de-escalation, one should not assume that these actions can be instantaneously carried out once unambiguous negative feedback is received (e.g. Garland *et al*., 1990). Rather, a project would have to pass through several phases before de-escalation can be triggered and successfully carried out. It is difficult to

change direction suddenly because of the build-up of commitment that occurs during the escalation process (Montealegre & Keil, 2000). Montealegre & Keil (2000) suggest that de-escalation is a process that unfolds gradually over time, leading to a reduction in commitment to a previously chosen, and the enactment of an alternative plan of action. Based on the case of the baggage handling system at DIA, they inductively developed a model of de-escalation process. The model reveals de-escalation as a four-phase process: (1) problem recognition; (2) re-examination of prior course of action; (3) search for alternative course of action; and (4) implementing an exit strategy. For each phase of the model, they identify several key activities that may enable de-escalation to move forward.

Finally, a review of the de-escalation studies in the IS literature highlights a knowledge gap. For example, how does one conceptualize the change in actors' commitment during the transition from escalation to de-escalation? While Montealegre & Keil (2000) have offered a process perspective on how de-escalation can take place, little information is available on how actors overcome their previous failing courses of action either on their own or through the influence of other actors. Furthermore, the more important issue of gaining consensus among actors towards the alternative course of action remains largely unaddressed.

Adopting Lewin's theory of change

Given that people have a tendency to bias facts in the direction of previously accepted beliefs and preferences, it is possible for various stakeholders in the IT project environment to try to prevent an organization from de-escalating (Montealegre & Keil, 2000). To help the various stakeholders overcome their commitment to a previous course of action, managers should build consensus towards the alternative course of action and negotiate the implementation of an exit strategy that all parties will find acceptable (Montealegre & Keil, 2000). Therefore, it is important to understand how actors' commitment evolves over time – specifically, how actors give up their commitment to the previous failing course of action and adopt the new alternative course of action. To achieve this objective, we adopted Lewin's (1951) theory of change as a theoretical lens to help us to understand the phenomenon better. His three stages of change have continued to be a generic recipe for studying organizational change (Weick & Quinn, 1999) and the concept has been surprisingly durable over the years. Indeed, Hendry (1996, p. 624) suggests that 'the whole theory of change is reducible to this one idea of Kurt Lewin's'.

Lewin's (1951) theory of change can be used as a lens to conceptualize the inertias and enablers of the transformation of actors' commitment during the transition from escalation to de-escalation. Generally, the theory revolves around a basic change model of unfreezing, changing and refreezing. The model perceives human change as a 'profound psychological dynamic process that involved painful unlearning without loss of ego identity, and difficult relearning as one cognitively attempted to restructure one's thoughts, perceptions, feelings, and attitudes' (Schein, 1996, p. 27). The model assumes that the change involves actors' attitudes and values, and the unlearning of the present set of behaviours is initially inherently painful. In addition, the model also suggests change as a multistage process and all stages must be negotiated before a stable change can be said to have taken place (Schein, 1988). So far,

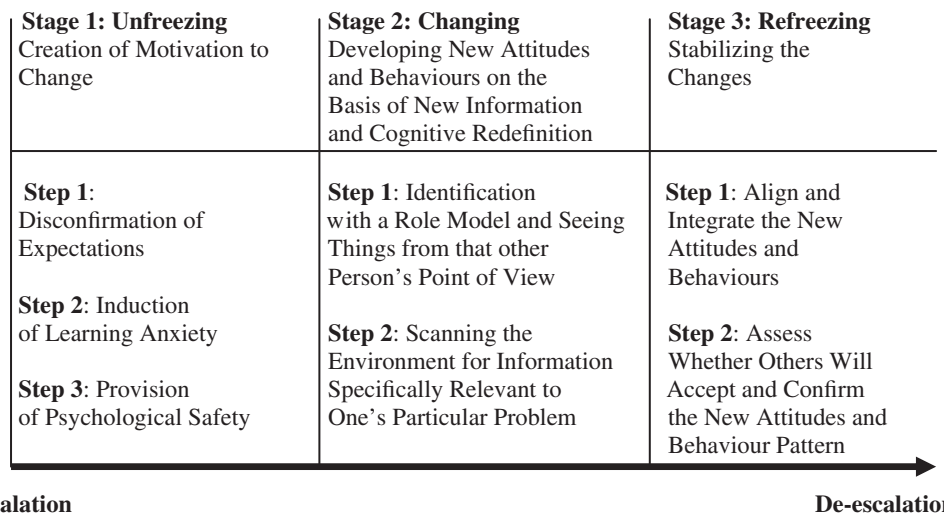

Figure 1. A commitment transformation framework (adopted from Lewin, 1951).

the model has been used widely in the organizational development area (Marshak, 1993), but more recently, also in IS research (Wastell *et al*., 2003).

The concept of deploying IT to bring about organizational transformation is not new in the IS area (Wastell *et al*., 2003), but examining the actors' commitment to change in the transition from escalation to de-escalation is still exploratory. Figure 1 shows Lewin's stages and steps – a tentative framework we adopt for guiding our study. The framework suggests that unfreezing can only take place when there is motivation to change, and such motivation could either be self-induced or influenced by peers (Wastell *et al*., 2003). Unfreezing tends to generate a certain extent of psychological struggle within individuals, which can often be inherently painful. The change process involves the development of new attitudes based on new information and cognitive redefinition. Generally, learning takes place during the changing phase. Refreezing, it is believed, can only begin when new attitudes and behaviours are adopted. Finally, before relearning stabilizes, there must be successful alignment and integration with individuals' values and beliefs.

RESEARCH APPROACH

Our strategy was to undertake in-depth case research of an electronic procurement (e-procurement) project conducted in UKC. We did not consider laboratory experiments because the subjects may not have the same emotional attachments as managers personally involved in an IS development project (Brockner, 1992). The case study approach is particularly appropriate for our exploratory study because it allows us to capture the organizational dynamics of

the phenomenon better (cf. Newman & Sabherwal, 1996). Its strength also lies in its ability to explain the phenomenon based on the interpretation of data (Klein & Myers, 1999).

The research access was negotiated with the organization in December 2001. From January 2002 to August 2002, we conducted our data collection. When we began our field research in January 2002, the organization had just decided to continue and try to turn around the failing project. It was in the midst of preparing its turnaround strategies. Therefore, we were able to capture clearly the dynamics of the de-escalation process. Primarily, semi-structured interviews and informal discussions were conducted with all the relevant project stakeholders (Klein & Myers, 1999). These semi-structured interviews were taped-recorded with interviewees' permission and transcribed immediately after the meetings. Twenty-eight interviews were conducted, each lasting an average of one and a half hours involving altogether 17 interviewees. Semi-structured interviews and observation were the main sources of our data because the researcher could grasp the interviewees' interpretations of their actions and events, as well as their beliefs and aspirations. Secondary data such as reports, memos and meeting minutes were also gathered to supplement the information collected through the interviews. The interview schedule is summarized in Appendix 1.

As a first step in our analysis, the first author used the interview transcripts to prepare a detailed case description containing a summary of the entire development process. Major events, key actors and the actions taken during the development process were identified and summarized. The data were validated with several individuals who were familiar with the project's history. To reduce researcher bias, the project information was shown to the other author who was uninvolved with data collection, to identify portions containing actors' commitment and actions taken that influence their participation in the de-escalation process. The entire data analysis process went through numerous iterations, with each iteration cycle following the double hermeneutic circle principle to case study development (Klein & Myers, 1999).

CASE STUDY: UKC

Background of the e-procurement project and why it went wrong

UKC is a UK municipal borough with an elected council that serves a local population of 221 000 residents and provides a large range of services. The idea of e-government originates from the UK central government's 1999 white paper, *Modernizing Government*, which challenged all public sector organizations to achieve 'citizen-centred services', by integrating policies and programmes, 'joining-up' delivery, harnessing the power of IT and getting the best out of staff. The white paper committed the government to the 'use of new technology to meet the needs of citizens and business and not trail behind technology development'. The overall champion for the e-government initiative was the cabinet deputy of the council, who was assigned a special post known as the 'E-envoy'. His main responsibility was to propel the e-government initiative within UKC. In the United Kingdom, an E-envoy has several key responsibilities: to deliver the existing Cabinet Office target for electronic service delivery

(e-government agenda); to define and drive implementation of a government-wide IS strategy to support the public sector reform agenda; and also to provide leadership and guidance for the e-government initiatives.

In 2000, there was a need to revamp the existing purchasing function in order to meet the target set within the e-government strategy plan that 100% of the goods purchased by the council had to be purchased electronically by 2005. Besides that, there were other considerations for the UKC to implement the e-procurement system. These reasons included improving purchasing efficiency, setting up a cost control mechanism and a strong desire to be the first local council in the United Kingdom to purchase goods and services electronically. The council head gave full support for the project and the 12-month project was launched in January 2001 with an initial estimated cost of £150 000. The project was headed by the IS manager, who was supervised by an e-procurement committee formed by a group of senior managers within the council. An external software vendor, selected through a bidding system, helped to develop the software. Other key stakeholders include the internal users of the system such as the chief procurement officer, corporate service manager, corporate affairs manager, technical service manager and the e-business manager. External users would include goods and services suppliers.

The project faced several problems during its early stage of development. The main problem concerned conflicts among the IS project manager, the users and the IS contractor over design issues. On the one hand, internal users complained about the low quality of the software prototype and the failure of the contractor to understand their requirements. On the other hand, the IS project manager and the IS contractor were dissatisfied with the indecisiveness of the users and pinpointed their frequent requests for design change as the main reason for delaying project development. The project initially stalled because of a disagreement between the users and the IS contractor. It started when the IS contractor demanded an additional £150 000 for '*redesigning the software again*'. Their reason was that, because the contract price was 'fixed', any changes to the software after the users signed off the earlier versions of software prototypes were chargeable. The reason why the IS contractor asked for 100% of the original cost for the cost of redesign was that it had anticipated the users to make many more rounds of modifications to the requirements. However, the users disagreed with their claim because they viewed those changes as alterations resulting from the contractor's mistakes, rather than additions requested by them. Eventually, the e-procurement steering committee intervened and agreed to make the additional payment.

After the committee's intervention, the project continued for another 2 months before it finally collapsed. The same problems resurfaced and the users refused to continue participation in project development. Instead, they proposed the purchase of e-procurement packaged software. At the same time, the IS project manager seemed to lose control of the project and was busy haggling with the IS contractor over the issue of what requests were categorized as 'additions' or 'alterations'. Despite this dire situation, the e-procurement committee did not intervene directly, except for insisting to the users that the project had to be continued. However, they did promise more resources. While the users were resolute about project abandonment, the IS project manager insisted that they should continue. He explained:

> How could we give up? With all the resources invested, the option of reverting back to buying packaged software was unimaginable.

At that stage, the project had already exceeded £300 000 and was 6 months behind schedule. Apparently, the IS contractor was billing for changes made on an ongoing basis plus the fees for engaging a subcontractor who specialized in system integration.

The transition from escalation to de-escalation

Refusing to continue with the troubled project, one of the users decided to 'blow the whistle' on the project by reporting to the E-envoy. She explained why she blew the whistle:

> I believed the involvement of the E-envoy would resolve the entanglement. The committee and the project manager were too optimistic and irrational from my perspective.

In December 2001, the E-envoy was informed and was surprised at the problems facing the project. He explained why the news came as a surprise to him:

> I had delegated the project manager and the e-procurement steering committee to lead the project. Besides, even at the bimonthly management meetings over the past few months, the committee members did not inform me of any problem arising.

Immediately, he delayed the development project indefinitely until a decision had been made. To resolve the problems, the E-envoy gathered relevant internal and external stakeholders, who include the Council Cabinet representative, the strategic management director, the head of IS services and the project development team consisting of the IS project manager, an IS analyst, users representing several business functions, the goods and services suppliers and the IS contractor. The E-envoy had to send emails to these stakeholders requesting them to attend the meeting. In some cases, he even had to convince them the importance of the meeting by conducting numerous rounds of telephone conversations. To reconfirm his commitment to the project, he stated a strong desire for the project to be continued rather than abandoned and was very confident of a project turnaround. He commented:

> It was important for everyone to understand my standpoint, especially in that state of confusion. Besides, those problems could be easily resolved as long as everyone was committed to turn the troubled project around.

Once everyone had agreed to continue the troubled project, the E-envoy organized a focus group meeting with the e-procurement steering committee, the IS project manager, the user managers and the IS contractor to re-examine their previous problems. With the E-envoy's presence and participation, everyone showed great enthusiasm in the meeting. At the beginning of the meeting, the E-envoy delivered a speech to explain the significance of the meeting:

> I simply assured them that no individuals would be punished in this project. I also stressed that turning around the failing project was our utmost priority in order to salvage our reputation and the confidence the external stakeholders had in us.

The assurance from the E-envoy was well received by everyone present in that meeting as they began to discuss their differences openly. They were unafraid of highlighting their mistakes. In that meeting, several problems were identified. Sensing the E-envoy's determination to succeed, all relevant stakeholders arrived at a multilateral consensus to attempt to turn the project around. The IS project manager explained the change of attitude:

> Basically, he [the E-envoy] banged all our heads together. All he wanted was to try and get the cohesion of the team back. We promised him that we would get together and work out the differences.

Despite the successful turnaround of the attitudes, the IS project manager did admit that it was a very difficult phase:

> We felt relieved that the E-envoy accepted our apologies for the earlier mess and it also took several of us quite a while to restore our confidence that a turnaround was indeed possible.

Furthermore, it was also discovered later that any packaged software would need a large degree of customization, which supposedly might take up to 6–9 months. The chief procurement officer admitted:

> It was unsuitable for the council as the customization process would be too long for the project.

Having identified the problems, the whole team started to explore alternative courses of action. For the first time, with the participation of the E-envoy and the e-procurement steering committee, the three groups (the user managers, the IS project manager and the IS contractor) started to co-operate and work towards a common goal. The team proposed the adoption of a partial abandonment strategy, which was to reduce the original scope of the project without causing significant changes to its original specification. For that reason, three user departments were shortlisted as the pilot sites, hence allowing the IS project manager to deal with the needs of only three user departments rather than eight departments as formerly. Furthermore, the project had been separated in three stages. Instead of implementing full-scale procurement functions all at one go, the first stage would now focus on the 'front purchasing process', which included ordering, issuing of purchase orders and delivery of items. The E-envoy concluded:

> By reducing the scope, certainly enhanced our chances of success.

Sensing the E-envoy's determination to succeed, all relevant parties arrived at a multilateral consensus to draw up a list of turnaround tactics. The list is summarized in Table 1.

In February 2002, the E-envoy ordered a stakeholder analysis before carrying out the action plans. The purpose was to find out whether relevant internal and external stakeholders fully supported the devised turnaround strategies. The E-envoy reckoned that a new stakeholder analysis must be performed because actors involved in the development process could still be strongly committed to the prior failing course of action. The e-procurement steering committee members carried out the stakeholder analysis. Many project members and users still had doubts, but because the E-envoy was personally involved in the turnaround effort, they did not

Table 1. A list of problems identified in the earlier development process and remedies planned as part of the turnaround strategies

Problems identified in the earlier development process	Remedies planned as part of the turnaround strategies
Ambitious project scope – implementation across eight user departments	Reducing the project scope – implementation across only three user departments
Ineffective project strategy – 'big-bang' approach	Adopting an alternative project strategy – incremental approach
Involvement of too many stakeholder representatives	Reducing the number of stakeholder representatives in a stakeholder group
Low product quality and poor service performed by the IS contractor	Requesting to deal with a new team which included a senior project manager from the IS contractor
The irrational composition of user representatives in the project group	Involving users who were handling purchasing transactions on a day-to-day basis
No direct communication between the users and the IS contractor	Allowing direct communications between the users and the IS contractor
Varying levels of stakeholder commitment	Obtaining fully committed users by excluding non-committed user departments from the pilot tests
Little involvement in the development process by the E-envoy and the e-procurement steering committee	Close monitoring from the E-envoy and the e-procurement steering committee. Weekly progress meetings were planned
Inflexible 'fixed price contract'	Restructuring of the original contract
No changes should be allowed after signing off the prototype	Strictly enforcing the 'no change' rule after a prototype was signed off

IS, information systems.

put up a strong resistance for fear of upsetting him. The E-envoy and the committee members had spent considerable effort to convince the project group and the users. One of the committee members explained what they did:

> We simply made sure that everyone felt comfortable with the exit strategy. We also encouraged project members to discuss among themselves to see if the exit strategy was the best available option.

All the changes were implemented immediately and they produced remarkably encouraging results. The corporate service manager commented positively:

> This time, we started to thrash out what the problems were with the IS contractor and found out what we needed. We drew up a timescale and everybody had to stick to it. The turning point was that we were able to communicate with the IS contractor directly. Everything was so easy after that.

The IS project manager also commented:

> With fewer users, things seemed to progress smoothly and quickly. I would think that every one of us was determined to make this work. Even the IS contractor came to meetings two or three times a week. The new team seemed to show more enthusiasm and responsibility. In addition, the E-envoy's close monitoring kept all of us on our toes.

The chief procurement officer commented on the drastic improvements:

> I personally felt that they should have broken the project into smaller parts at the outset of the project. The whole system was modular, and every bit would assist each other. Overall, the project was not complex, but they made it more complex than they could handle. It was like five or six activities, all being managed at the same time. With smaller parts, you could achieve these targets easily.

When the first phase of the e-procurement system finally went 'live' in August 2002, the project was 8 months behind schedule and close to £500 000 over its original budget. The relatively smooth implementation after the adoption of the de-escalation strategy meant that the crisis concerning the project was finally over.

DISCUSSION

We know that de-escalation is a complex and gradual process (Montealegre & Keil, 2000), and actors play key roles in facilitating the de-escalation strategy (Heng *et al*., 2003). So understanding the process of how actors overcome their commitment to a previous failing course of action (and, subsequently, jointly agreeing to an exit strategy) becomes important in facilitating a de-escalation strategy. By applying the steps provided by the framework shown in Figure 1, we analyse in the following section showing how actors surrendered their commitment to a previous failing course of action and accepted a jointly agreed exit strategy. Our findings indicate that the change in actors' commitment was planned and intentional, initiated by the change agent, the E-envoy, who consciously set out to establish conditions and circumstances that were different from the earlier stages of the project development and then accomplished these through a series of actions and interventions in collaboration with the e-procurement committee members.

Stage 1: unfreezing commitment to previous failing course of action

Schein (1996) suggests that unfreezing basically involves three processes: (1) disconfirmation of expectations; (2) induction of learning anxiety if the disconfirming data are accepted as valid and relevant; and (3) provision of psychological safety that converts anxiety into motivation to change. Schein (1996, p. 29) also highlights the issue of learning anxiety, 'if we admit to ourselves and others that something is wrong or imperfect, we will lose our effectiveness, our self-esteem, and maybe even our identity'. Lewin (1951) views that equilibrium would change more easily if restraining forces such as personal defences and group norms were unfrozen. The overall presumption is that change would occur during periods of divergence when entities are moving away from their equilibrium conditions (Weick & Quinn, 1999).

In the case of UKC, the gap between the expectation of the E-envoy and the actual progress of the project widened as the E-envoy's decision to delay the project was a clear signal that the failing course of action had been disconfirmed. Basically, the E-envoy was surprised at the

problems facing the project when he was informed of this in December 2001. His decision to intervene sent clear signals to the project group members that they had failed to live up to his expectations. The whistle-blowing and the E-envoy's intervention could be considered as vital de-escalation triggering activities (Keil & Robey, 1999) that punctuated the escalation cycle. The data also suggest that when the project group members were told to give up their commitment to the failing course of action, there was a sense of anxiety among the project group members. Failure is viewed as a negative emotional response which has been found to interfere with individuals' allocation of attention in the processing of new information (Shepherd, 2003). This confirms earlier finding that peer support may be important during project de-escalation (Heng *et al*., 2003).

Subsequently, the anxiety was relieved when the E-envoy provided the necessary endorsement and 'safety net' over the project turnaround. His involvement helped raise the importance of the turnaround and also encouraged more participation among project members. Furthermore, the assurance of no recrimination was vital, as previous research has suggested the importance for managers to reduce the severity of penalties for failure to avoid escalation of commitment (Keil, 1995; Newman & Sabherwal, 1996). The creation of psychological safety helped to encourage project members to participate actively in the turnaround efforts. Furthermore, it is also important that project group members were adequately motivated not only to participate in the discussions but, more importantly, also to devise a useful alternative course of action. Therefore, one of the ways to instil motivation and enthusiasm in project group members is to provide adequate assurance (Heng *et al*., 2003).

Stage 2: changing previous beliefs and attitudes

Previous research (Prochaska *et al*., 1992; Grimley *et al*., 1994) suggests that when people are exposed to change interventions, they are at one of four stages: precontemplation, contemplation, action and maintenance. Weick & Quinn (1999) also suggest that change is not a linear movement through the four stages but a spiral pattern of contemplation, action and relapse and then successive returns to contemplation, action and relapse before entering the maintenance stage. The organization development literature suggests that the triggers of change come from at least five sources: the environment, performance, characteristics of top managers, structure and strategy (Huber & Glick, 1993). In many situations, people develop new attitudes by identifying with a role model or scanning the environment for information relevant to the change (Schein, 1988). Here, the role of the change agent is that of a prime mover who creates change. The logic of attraction suggests that when leaders make deep changes in themselves, they will behave differently towards their immediate subordinates, and the new behaviours in the leader would attract new behaviours from followers (Spreitzer & Quinn, 1996).

In the case of UKC, the challenge for the E-envoy was to neutralize the tendencies of both the e-procurement committee and the project group to continue with the failing project. Large groups tend to induce stereotyping, decrease ownership of ideas and are less willing to express unique thoughts (Royer, 2003). Large-scale interventions as such rely more on gath-

ering data from the environment (see Montealegre & Keil, 2000) and sharing them widely across the organization. For example, the users abandoned the idea of replacing the software development with packaged software because of the take-up time following customization. The change went through a series of cognitive restructurings and semantic redefinitions. This was evident in the case as the actors promised to work together proactively. Basically, the E-envoy communicated alternative schema and set a new perspective. This initiated the change as the whole team started to explore alternative courses of action. The three groups (the user managers, the IS project manager and the IS contractor) started to co-operate and work towards a common goal. The end result was the adoption of a useful partial abandonment strategy, which could reduce the original scope of the project without causing significant changes to its original specification. It is important to highlight the important roles played by the E-envoy and the e-procurement committee in instilling co-ordination and commitment of the project turnaround within the project group.

Stage 3: refreezing the new attitudes and behaviours

Refreezing involves creating supportive norms and making changes congruent with personality (Weick & Quinn, 1999). Refreezing that embeds the new behaviour and forestalls relapse is most likely to occur when the behaviour fits both the personality of the target and the relational expectations of the target's social network (Weick & Quinn, 1999). It also assumes that change occurs through replacement (Ford & Backoff, 1988). The idea of replacement is that 'one entity sequentially takes the place of or substitutes for a second. The first entity does not become the second but is substituted for it. . . . [T]he change process becomes a sequence of events in which a person (a) determines or defines what currently exists; (b) determines or defines its replacement; (c) engages in action to remove what is currently there; and (d) implants its replacement' (Ford & Ford, 1994, p. 773). Beer *et al*. (1990) highlight that refreezing is difficult as the replacement of one programme with another restricts change to either-or thinking. Even in project settings, integrating new attitudes and behaviours seems challenging simply because belief is a powerful sentiment and sometimes this 'faith' can be so hard to kill (Royer, 2003).

In the case of UKC, the E-envoy was aware that full support and total involvement of the stakeholders held the key to the success of the turnaround process. He encouraged a cohesive culture by gathering relevant project stakeholders and consulted their opinions on the prior course of action. With an open and forgiving culture, project group members were open about their mistakes. The E-envoy also promoted teamwork by gathering the whole team to brainstorm for turnaround strategies. By adopting a consultative approach towards devising the turnaround strategy, he helped to legitimize the new course of action by making it a joint decision among the stakeholders – a refreezing process. Furthermore, a stakeholder analysis was conducted to identify the relevant stakeholders and their expectations towards the new course of action. This is important because some project group members were in favour of abandoning the failing project rather than continuing with project development. Several influence tactics were employed to influence the stakeholders to overcome the commitment to the existing course of action and persuade the stakeholders to accept the alternative course of action. It is

Table 2. Summary of the three stages identified in the e-procurement project at UKC and the respective actions taken

Stage	Description	Actions taken
Unfreezing commitment to previous failing course of action	Unfreezing involves three processes: (1) disconfirmation of expectations; (2) induction of learning anxiety if the disconfirming data are accepted as valid and relevant; and (3) provision of psychological safety that converts anxiety into motivation to change.	Identified gap between senior management expectation and actual project progress Undertaken intervention to induce anxiety and discomfort to challenge the strong belief Provided assurance and support
Changing previous beliefs and attitudes	Identified with a change agent and scan the environment for information	E-envoy introduced cognitive restructurings and semantic redefinitions Consulted various stakeholders to explore alternative course of action Scanned the environment for information
Refreezing the new attitudes and behaviours	Align and integrate new beliefs and assess whether the beliefs are 'bought in'	Formulated alternative course of action – collective approach Assessed stakeholder 'buy in' Implemented influence tactics to ensure 'buy in' Monitored the sustainability of the new belief

clear from the findings that even though all stakeholders accepted the new course of action, not everyone was convinced that the new strategies would succeed. The finding concurs with the de-escalation literature which notes that direct appeals to internal and external stakeholders may be needed to negotiate and implement an exit strategy (Ross & Staw, 1993).

Table 2 below summarizes the three stages identified in the case study and the respective actions taken.

IMPLICATIONS, LIMITATIONS AND CONCLUSIONS

This paper presents a commitment transformation framework for analysing the change in actors' commitment during the transition from escalation to de-escalation in IT projects. By drawing upon a case study of an e-procurement project at a UK public organization, we argue that unfreezing of commitment to a failing course of action is critical if de-escalation is to be effected. It is clear that the entire process of 'unfreezing–changing–refreezing' has occurred in the case of UKC, and enacted through *unfreezing commitment to previous failing course of action*, *changing previous beliefs and attitudes*, and *refreezing the new attitudes and behaviours*. Through interviews with relevant stakeholders and the review of important documents, we have gathered data on how actors may give up previous failing course of action and accept alternative course of action.

While the case study approach adopted here may have several strengths, three major limitations were found in this study. First, the use of 'change management' metaphors in this paper may have implied that change is seen as necessarily desirable and inevitable, but in fact it is

contingent and contested. Second, the Lewin's metaphor may be too static and mechanistic for today's fast-changing project environments (Beer & Nohria, 2000). Third is the issue of generalizability as in most private sector organizations, there may not be someone who could play the role like the one played by the E-envoy in our case – heavily involved and influential in the project turnaround. Despite the limitations, we are convinced that this study is still useful, because project escalation is a common and costly problem among IS development projects (Keil, 1995), and there can be no question about the importance of better understanding its avoidance (Newman & Sabherwal, 1996). Furthermore, the E-envoy's important contributions in the case may serve as a useful example for private sector organizations to consider setting up a similar portfolio when faced with escalation situations in IS development projects.

For researchers and practitioners, the commitment transformation framework has several important implications. For researchers, this paper makes a contribution by providing a process perspective to examine commitment transformation during the transition from escalation to de-escalation. Although previous studies have identified several triggering activities that promote de-escalation (Keil & Robey, 1999) and formulated a process model (Montealegre & Keil, 2000), little is known about how actors give up their commitment to previous failing course of action and accept an alternative course of action. In short, the analytical framework for the commitment transformation process during the transition from escalation to de-escalation can serve as the basis for further de-escalation research. Furthermore, we have also provided valuable insights into how troubled projects can be turned around, especially when there are few turnaround experiences in the IS development literature.

For practitioners, this study provides managers with useful insights on how to break project members' escalating commitment to previous failing course of action and accept alternative courses of action. The UKC case underscores the need for managers to be aware of barriers threatening the transformation of commitment. In addition, managers can also utilize the analytical framework in post-mortem analyses of projects which have faced escalation to devise useful de-escalation strategies for future project development. An effective, feedback improvement-oriented review would be helpful for gaining top-management support for evaluations, thereby increasing the possibility of more substantive and meaningful evaluations being performed. In particular, this shows how strategies and tactics can be deployed to ensure that the commitment transformation process is smoothly facilitated. Further research could also explore the possibility of operationalizing Lewin's (1951) change framework. Finally, while this study represents an important step towards understanding de-escalation, longitudinal field studies that involve multiple case studies are clearly called for to reflect the diversity of commitment change dynamics.

REFERENCES

Abdel-Hamid, T. & Madnick, S. (1991) *Software Project Dynamics: an Integrated Approach*. Prentice Hall, Englewood Cliffs, NJ, USA.

Barki, H., Rivard, S. & Talbot, J. (1993) Toward an assessment of software development risk. *Journal of Management Information System*, **10**, 203–225.

Beer, M., Eisenstat, R. & Spector, B. (1990) *The Critical Path to Corporate Renewal.* Harvard Business School, Boston, MA, USA.

Beer, M. & Nohria, N. (2000) *Breaking the Code of Change*. HBS Press, Boston, MA, USA.

Brockner, J. (1992) The escalation of commitment to a failing course of action: toward theoretical progress. *Academy of Management Review*, **17**, 39–61.

Drummond, H. (1995) De-escalation in decision making: a case of a disastrous partnership. *Journal of Management Studies*, **32**, 265–281.

Drummond, H. (1996) The politics of risk: trials and tribulations of the Taurus project. *Journal of Information Technology*, **11**, 347–357.

Ewusi-Mensah, K. & Przasnyski, Z. (1991) On information systems project abandonment: an exploratory study of organisational practices. *MIS Quarterly*, **15**, 67–85.

Ford, J. & Backoff, R. (1988) Organizational change in and out of dualities and paradox. In: *Paradox and Transformation*, Quinn, E. & Cameron, K. (eds), pp. 81–121. Ballinger, Cambridge, MA, USA.

Ford, J. & Ford, L. (1994) Logics of identity, contradiction, and attraction in change. *Academy Management Review*, **19**, 756–785.

Garland, H., Sandefur, C. & Rogers, A. (1990) De-escalation of commitment in oil exploration. When sunk costs and negative feedback coincide. *Journal of Applied Psychology*, **75**, 721–727.

Grimley, D., Prochaska, J., Velicer, W., Blais, L. & DiClemente, C. (1994) The transtheoretical model of change. In: *Changing the Self: Philosophies, Techniques, and Experiences*, Brinthaupt, M. (ed.), pp. 201–207. State University, NY Press, New York, NY, USA.

Hendry, C. (1996) Understanding and creating whole organizational change through learning theory. *Human Relations*, **49**, 621–641.

Heng, C., Tan, B. & Wei, K. (2003) De-escalation of commitment in software projects: who matters? what matters? *Information and Management*, **41**, 99–110.

Huber, G. & Glick, W. (1993) *Organizational Change and Redesign*. Oxford University Press, New York, NY, USA.

Keil, M. (1995) Pulling the plug: software project management and the problem of project escalation. *MIS Quarterly*, **19**, 421–447.

Keil, M., Mixon, R., Saarinen, T. & Tuunainen, V. (1995) Understanding running away information technology projects: results from an international research program based on escalation theory. *Journal of Management Information Systems*, **11**, 67–87.

Keil, M. & Robey, D. (1999) Turning around troubled software projects: an exploratory study of the de-escalation of commitment to failing courses of action. *Journal of Management Information Systems*, **15**, 63–87.

Keil, M. & Robey, D. (2001) Blowing the whistle on troubled software projects. *Communications of the ACM*, **44**, 87–93.

Klein, H. & Myers, M. (1999) A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly*, **23**, 67–94.

Lewin, K. (1951) *Field Theory in Social Science*. Harper & Row, New York, NY, USA.

Mähring, M., Holmström, J., Keil, M. & Montealegre, R. (2004) Trojan actor-networks and swift translation: bringing actor-network theory to IT project escalation studies. *Information Technology and People*, **17**, 210–238.

Mähring, M. & Keil, M. (2003) Information technology project escalation: a process model. Proceedings of the Eighth Annual Informs Conference on Information Systems and Technology, Atlanta, Georgia, 18–19 October.

Marshak, R. (1993) Lewin meets Confucius: a review of the OD model of change. *Journal of Applied Behaviour Science*, **29**, 393–415.

Montealegre, R. & Keil, M. (2000) De-escalating information technology projects: lessons from the Denver international airport. *MIS Quarterly*, **24**, 417–447.

Newman, M. & Sabherwal, R. (1996) Determinants of commitment to information systems development: a longitudinal investigation. *MIS Quarterly*, **20**, 23–54.

Pan, G., Pan, S., Newman, M. & Flynn, D. (2004) Unfreezing–changing–refreezing of actors' commitment: the transition from escalation to de-escalation of commitment to information technology projects. ECIS 2004: The 12th European Conference on Information Systems, Turku, Finland, June.

Prochaska, J., DiClemente, C. & Norcross, J. (1992) In search of how people change: applications to addictive behaviours. *American Psychology*, **47**, 1102–1114.

Ross, J. & Staw, B. (1986) Expo 86: an escalation prototype. *Administrative Science Quarterly*, **31**, 274–297.

Ross, J. & Staw, B. (1993) Organizational escalation and exit: lessons from the Shoreham Nuclear Power Plant. *Academy of Management Journal*, **36**, 701–732.

Royer, I. (2003) Why bad projects are so hard to kill? *Harvard Business Review*, **February**, 49–56.

Sabherwal, R., Sein, M. & Marakas, G. (2002) Escalating commitment to information system projects: findings from two simulated experiments. *Information and Management*, **2032**, 1–18.

Sauer, C., Liu, L. & Johnston, K. (1999) Enterprise-level project management capabilities: a comparison of the construction and IT services industries. International Conference on Information Systems (ICIS), Charlotte, NC, USA.

Schein, E. (1988) *Organizational Psychology*. Prentice Hall, Eaglewood Cliffs, NJ, USA.

Schein, E. (1996) Kurt Lewin's change theory in the field and in the classroom: notes toward a model of managed learning. *System Practice*, **9**, 27–47.

Shepherd, D. (2003) Learning from business failure: propositions for grief recovery for the self-employed. *Academy of Management Review*, **28**, 318–328.

Spreitzer, G. & Quinn, R. (1996) Empowering middle managers to be transformational leaders. *Journal of Applied Behavioural Science*, **32**, 237–261.

Standish Group Inc. (2003) CHAOS: a recipe for success. [WWW document]. URL http://www.standishgroup.com (accessed 25 May 2004).

Staw, B. & Ross, J. (1987) Behaviour in escalation situations: antecedents, prototypes, and solutions. In: *Research in Organizational Behaviour*, Cummings, T. & Staw, B. (eds), pp. 39–78. JAI Press Inc., Greenwich, CT, USA.

Teger, A. (1980) *Too Much Invested to Quit*. Pergamon, New York, NY, USA.

Wastell, D., Kawalek, P. & Newman, M. (2003) Plus Ca change: defensive translations and resistance to IT-enabled change in local government. Proceedings of European Conference of Information Systems, Naples, Italy.

Weick, K. & Quinn, R. (1999) Organizational change and development. *Annual Review Psychology*, **50**, 361–386.

Zmud, R. (1980) Management of large software efforts. *MIS Quarterly*, **4**, 45–55.

Biographies

Gary Pan is a Lecturer for Business Information Systems in the Department of Accounting and Business Information Systems, Faculty of Economics and Commerce, at the University of Melbourne, Australia. His research focuses on the areas of software project escalation and organizational capability development. His papers have appeared (or will be appearing) in the *Management Information Systems (MIS) Quarterly Executive*, *European Journal of Operational Research*, *Decision Support Systems* and *Journal of Strategic Information Systems*.

Shan L. Pan is the co-ordinator of Knowledge Management Laboratory in the Department of Information Systems, School of Computing at the National University of Singapore. His primary research focuses on the recursive interaction of organizations and information and communication technology, with particular emphasis on organizational issues such as work practices, cultures, structures, decision-making, change and strategy implementation. Dr Pan's research work has been published in *MIS Quarterly Executive*; *IEEE Transaction on Engineering Management*; *Journal of the American Society for Information Systems and Technology*; *IEEE Transactions on Systems, Man, and Cybernetics*; *IEEE Transactions on Information Technology in Biomedicine*; *Journal of the Academy of Marketing Studies*; *European Journal of Operational Research*; *Communications of ACM*; *Information and Organization (I&O)*; *Journal of Strategic Information Systems*; *Journal of Organizational Computing and Electronic Commerce*; *European Journal of Information Systems (EJIS)*; and *Decision Support Systems*.

Michael Newman (BSc, MSc, PhD) is a Professor of Information Systems at the Manchester Accounting and Finance Group, Manchester Business School, University of Manchester, UK and is a Visiting Professor at Agder University College, Kristiansand, Norway. Since graduating with a PhD in MIS from the University of British Columbia in 1981, he has authored many academic papers in leading MIS and management journals in Europe and the United States including *MIS Quarterly*, *ISR*, *JIT*, *JMS*, *AMIT*, *EJIS* and *Omega*. Professor Newman's research focuses on the process of information systems (IS) development, and he has conducted several empirical studies in a variety of organizations. He currently serves on the editorial board of *JIT* and has just finished a term as an Associate Editor (AE) for *ISR*. In January 2004, he was appointed AE for *MIS Quarterly*, and in 2005 he was appointed AE for *I&O.* He has held visiting positions at the University of Connecticut, Florida International University, Erasmus University, Rotterdam and the Free University, Amsterdam. Professor Newman has served as a track co-chair, doctoral consortium co-chair and programme co-chair at the International Conference on Information Systems.

Donal Flynn has research interests in the socio-organizational processes that underlie the interaction between IS and their human and organizational contexts. Currently, he is researching into the application of different social theories within IS, legitimation, systems abandonment and project post-mortems; a recent research area is consumer health informatics, which investigates the design and implementation of socio-technical systems for individuals within a context of interactive eHealth systems for Primary

Care. Mr. Flynn has worked in the United Kingdom, the Netherlands and Belgium as programmer, database designer, project consultant and project manager. He has degrees in Chemical Physics (BSc, University of Kent), Sociology and Psychology (MSc, Imperial College, University of London) and Conceptual Modelling (PhD, University of East Anglia). He has taught and given seminars in Brazil and America, has authored over 60 papers in journals and conferences, as well as two books, and has been a Visiting Research Scholar in the Computer Information Systems Department, Robinson School of Business, Georgia State University in 2005. He is a Senior Lecturer in Information Systems, School of Informatics, University of Manchester, England.

APPENDIX 1

Interview schedule for the case of UKC

Title	Interview date/Duration (hour)	Transcript
IS strategic director	15 December 2001 (1)	#UKC-1
	15 January 2002 (1.5)	#UKC-2
	29 July 2002 (1.5)	#UKC-19
IS project manager	20 January 2002 (1.5)	#UKC-3
	4 July 2002 (1.5)	#UKC-13
IS analyst	7 February 2002 (1.5)	#UKC-4
	29 June 2002 (1.5)	#UKC-12
IS programmer	25 February 2002 (1.5)	#UKC-5
	14 July 2002 (1.5)	#UKC-15
Chief procurement officer	2 March 2002 (1)	#UKC-7
	28 July 2002 (1.5)	#UKC-18
Corporate service manager	15 March 2002 (1)	#UKC-8
	4 August 2002 (1)	#UKC-22
Technical service manager	25 February 2002 (1)	#UKC-6
	14 July 2002 (1)	#UKC-16
Purchasing officer	25 March 2002 (1)	#UKC-9
	8 July 2002 (1)	#UKC-14
Head of corporate affairs	2 April 2002 (1.5)	Rough note-2
	8 July 2002 (1)	
Corporate affairs clerk	2 April 2002 (1)	Rough note-3
	16 August 2002 (1)	
IS contractor – sales manager	8 August 2002 (1)	Rough note-1
E-business manager	12 May 2002 (1)	#UKC-10
E-business clerk	18 May 2002 (1)	#UKC-11
Cabinet deputy of co-ordination services (E-envoy)	30 July 2002 (1)	#UKC-20
Corporate service clerk	27 July 2002 (1)	#UKC-17
IS contractor – senior manager	27 July 2002 (1)	Rough note-4
Technical service co-ordinator	2 August 2002 (1.5)	#UKC-21

IS, information systems.

