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Escalation and de-escalation of commitment to information systems projects: Insights from a project evaluation model

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Abstract

This paper outlines a project evaluation model for examining escalation and de-escalation of commitment to information systems projects. We view escalation and de-escalation of commitment as processes involving recurring instances of approach-avoidance conflict. In the model, the sequential mapping of project events is integrated with a model of approach-avoidance conflict that identifies periods of gradual evolution at two separate levels of social analysis (project and work) that are punctuated by sudden, revolutionary periods of rapid change. By conceiving the processes of commitment escalation and de-escalation as sequences of events involving approach-avoidance conflicts, researchers may develop a deeper understanding of *how* and *why* projects escalate and de-escalate. Practitioners can also utilize the evaluation model in the analyses of projects that have faced escalation to diagnose the issues surrounding the escalation and devise useful de-escalation strategies for future project development. The evaluation model is developed and illustrated with a case study that exhibits both project escalation and de-escalation conditions.

Keywords: Escalation and de-escalation of commitment to information system projects; Project evaluation model; Approach-avoidance theory; Case study

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1. Introduction

Most research on information systems (IS) development has sought to understand why commitment to projects escalates (e.g., Keil, 1995) and how to reduce commitment to troubled

projects (e.g., Montealegre and Keil, 2000). Despite this progress, escalation still occurs with high frequency among IS projects (Pan et al., in press). Specifically, there are two main problems contributing to this alarming regularity: the inadequacies of project evaluations (Kumar, 1990; Pan, 2004) and the utilization of over-definitive escalation explanatory models (e.g., Staw and Ross, 1987).[1]

The IS evaluation literature has suggested several advantages of project evaluations. For instance, Abdel-Hamid and Madnick (1990) suggest that project reviews may result in beneficial outcomes, such as learning from software development failures in order to improve subsequent system development practice. Irani (2002, p. 21) highlights the "importance of increasing the focus and depth of evaluation analysis, which in turn supports increased manageability and project success." Serafeimidis and Smithson (2003) claim that a comprehensive evaluation process would be value adding, supports organizational learning and a 'deeper' understanding of the IS infrastructure. Despite the perceived importance of and the need for project evaluations, such reviews are often performed inadequately (Pan and Flynn, 2003; Pan, 2004). For example, Pan and Flynn (2003) argue that organisations fail to learn effective means for solving problems apparent in IS projects, due to attribution errors committed during project reviews. Furthermore, Pan (2004) also highlights a need for an integrated project escalation and de-escalation evaluation model.[2]

One reason that may also explain the alarming situation could be the over-reliance of a theoretical and simplistic staged models in past escalation and de-escalation research (Royer, 2002; Staw and Ross, 1987) which offer limited views on why and how escalation and de-escalation occur during project development. Staged models have been criticized as mechanistic and unrealistic in today's fast moving and turbulent organizational environments (Stubbart and Smalley, 1999).

For that reason, we aim to approach escalation and de-escalation of commitment from a new angle—that of *treating project development processes as a series of sequential events involving approach-avoidance conflicts*. Our approach is in line with the suggestion of Keil et al. (2000) that escalation situations in IS can be viewed as instances of approach-avoidance conflict. From the approach-avoidance perspective, escalation of commitment is viewed as a behavior that results when motivating forces that encourage persistence outweigh defensive forces that encourage abandonment (Brockner and Rubin, 1985), despite unambiguous negative feedback. Similarly, these conflicts could also exist in project redirections, since persistence is an essential condition for successful turnarounds.

The goal of this paper is to *formulate a project evaluation model that can be used to examine escalation and de-escalation of commitment to IS projects*. We propose a process model that draws upon punctuated equilibrium theory (Gersick, 1991) which views the IS development process as a sequence of stable and evolutionary periods (equilibria) that are punctuated by critical and revolutionary events (disequilibria). Here, a 'state of equilibrium' indicates that the project group has agreed on project leadership responsibilities and targets such as budget, manpower level and project completion date. Project development will continue as it does unless pushed to change by some unexpected event (such as a major environmental change), or intentionally changed to address a new need in the project. We further propose two separate levels of social analysis—the *project* level and the *work* level—for better explanatory power (Lyytinen and Newman, submitted for publication). In this paper, we approach de-escalation

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[1] Staw and Ross's (1987) escalation prototype has been criticised for its two shortcomings. First, "although the prototype indicates what categories are at play during each phase, it does not give much explanation about why these categories change about time, with some new ones appearing and other ones disappearing" (Royer, 2002, p. 1). Second, it does not constitute a process theory, as the sequential order of factors adds relatively little to our understanding of escalation processes (Mähring and Keil, 2003).

[2] Pan (2004) highlights the lack of an integrated project escalation and de-escalation evaluation model in the IS development literature. Existing project escalation and de-escalation models examined their respective phenomenon separately (e.g., Keil, 1995; Montealegre and Keil, 2000). By dissecting the two phenomena, some of the detailed contents containing the information regarding the transition from escalation to de-escalation may be inadequately captured by the researcher (Pan, 2004).

with our focus on project redirection rather than abandonment since successful project turnarounds are rarely documented and discussed in the IS literature. Accordingly, we undertake a case study where we evaluate the development process of an IS project that initially went out of control (cycles of escalation) but which was successfully turned around (de-escalation). In the subsequent sections, we will introduce our proposed model and demonstrate how it could enrich the current understanding of escalation and de-escalation of commitment to IS projects during project reviews.

2. Past research

Escalation of commitment is a phenomenon that refers to situations where decision makers commit additional resources to a failing course of action (Staw, 1981). Early escalation studies suggested that the escalation phenomenon represents a syndrome of decision errors, which tends to lock decision makers into a course of action (Staw, 1981). However, an alternative definition was later proposed by Bowen (1987) which suggests that escalation of commitment can also result from a dilemma caused by the interplay between the degree of commitment to a course of action and the amount of equivocality perceived in the feedback on prior investments and in expectations for the future. Escalation studies have been applied to a variety of settings. In IS projects, commitment escalation is a widely observed phenomenon, such as in the well-known Taurus project at the London Stock Exchange (Drummond, 1996), and the case of the baggage handling system at the Denver International Airport (Montealegre and Keil, 2000). The escalation literature has suggested four types of determinants of commitment, namely project, psychological, social and structural, that together can explain the escalation phenomenon in IS settings (Staw and Ross, 1987; Keil, 1995). To alleviate the impact of project escalation, Keil and Robey (1999) have suggested a de-escalation strategy as an effective way of reducing commitment to a troubled project.

De-escalation of commitment is defined as the "reversal of escalating commitments to failing courses of action, either through project termination or redirection" (Keil and Robey, 1999, p. 65). To date, the IS development literature has suggested a stage-based process model of de-escalation (Montealegre and Keil, 2000). While Montealegre and Keil's (2000) four-phase de-escalation model fits well with large-scaled IS project context and has provided useful insights on the de-escalation process, Pan (2004) suggests that an alternative explanatory model may be necessary to explain the de-escalation process in other types of IS projects. This is important especially in today's multi-dimensional and complex project environments as one may have to recognize the importance of contextual differences in determining the appropriateness of a particular model.

Several theories have been used to explain the escalation phenomenon, such as self-justification theory (Staw, 1981), prospect theory (Whyte, 1986), agency theory (Jensen and Meckling, 1976) and approach-avoidance theory (Rubin and Brockner, 1975). Among these theories, the approach-avoidance theory appears to provide a more complete explanation of the escalation and de-escalation phenomena for two main reasons. First, it captures the essence of complex situations that tend to create conflict in the mind of a decision maker who faces a project with an ambiguous future (i.e., a decision maker who needs to decide whether to persist with or abandon the project). Second, the approach-avoidance perspective acts as a foundation to bring several different escalation theories into one over-arching model (Mann, 2003). This is possible as many of the 'drivers' (which may alternatively be known as 'aspects' or 'attributes') that encourage and discourage persistence in the approach-avoidance perspective could also be used to explain escalation theories. In an approach-avoidance conflict, there are aspects that attract and attributes that repel. This creates conflict. The decision maker has to weigh the positive and negative attributes in order to decide which is stronger—the need to approach or the need to avoid (Rubin and Brockner, 1975). Table 1 summarizes the attributes that encourage and discourage

Table 1
A summary of approach-avoidance attributes that encourage and discourage persistence in project development (adapted from Mann, 2003)

Driver to persist

Cost of withdrawal

– The decision maker will be considered a failure by others (Rubin et al., 1980)
– Sunk cost effect (Keil et al., 2000)

Reward for success

– To be viewed as successful and perhaps to gain status or even promotion (Rubin and Brockner, 1975)
– The organization will reap the benefits of the project that have been envisioned at the outset. (Brockner et al., 1979)

Proximity to goal

– Completion effect (Conlon and Garland, 1993)

Ambiguity

– The confidence that the project could be turned around (Rubin and Brockner, 1975)
– The visibility of project completion (Conlon and Garland, 1993)

Driver to desist

Cost of persistence

– Opportunity cost incurred for investing in a project turnaround rather than a new project (Northcraft and Neale, 1986)

persistence. Intriguingly, the drivers to persist outweigh those to desist.

The IS evaluation literature lists a variety of benefits for evaluating information systems (e.g. Farbey et al., 1999; Irani and Love, 2001) which include benefits such as ensured compliance with user objectives, improvements in the effectiveness and productivity of the design, and realization of cost savings, by modifying systems through evaluation, before, rather than after, a real operation. Birk et al. (2002) also suggest that project evaluation is the best way to eradicate IS project failure. Despite their potentials, IS project evaluations are seldom performed adequately (Pan and Flynn, 2003; Pan, 2004). For instance, Kumar (1990) suggests that project reviews are being performed for the limited, short-term reason of formalizing the end of the development project and may not provide the more important long-term, feedback-improvement benefits of the evaluation process. Pan and Flynn (2003) question the effectiveness of these project evaluations by putting forward the concept of project groups committing attribution errors. Overall, the review of the IS evaluation literature reveals the significance of project evaluations and identified a knowledge gap which indicates a strong desire for an evaluation model of

escalation and de-escalation of commitment to IS projects.

3. An evaluation model of escalation and de-escalation of commitment to IS projects

In this study, we specify an evaluation model of escalation and de-escalation of commitment to IS projects. We propose the use of a punctuated equilibrium model over a staged-based model to aid the empirical detection of repeated patterns of social activity and their complex social history (e.g., Newman and Robey, 1992) and better reflect today's uncertain and rapidly changing project environments. In this model, we view events as instances of social action relating to the IS development process (Hirschheim et al., 1991). Our interest lies in explaining the source and consequences of these events, which follow a path dependency principle.[3] Therefore, we need to rec-

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[3] The concept is illustrated in Lyytinen and Newman (submitted for publication, p. 1) as they portrayed "information system evolution as episodes punctuated by critical incidents thus creating a new 'state' (episode) leading to specific evolutionary 'traces' in system history".

ognize necessary antecedent conditions for any event to take place by observing the system state (and history) at that stage and possible internal or external changes that create the event (Pettigrew, 1987, 1990). Thus, IS development is portrayed as a sequence of events that unfolds over time. A series of negative project information that is not heeded by the project manager would satisfy the requirement of project escalation (Keil, 1995). Project redirection is triggered by a critical event when a project shifts from escalation to either an 'ambiguous' or 'positive' state. When a project stops after a period of escalation, it may represent project abandonment.

In a research setting, the researcher has to decide what to classify as events and which events to consider as critical. In this paper, we assume that organizations are complex entities, comprised of many goal-directed individuals whose purposes may be incompatible. Therefore, we analyze sequences of events at *two* separate social levels—the *project* level and the *work* level—to offer greater explanatory power and also to reconcile any contradictions in the processes (Cule and Robey, 2004). Project level events are described as incidents occurring in the project that influence the proceeding or outcome of the project. Work level events are characterized as incidents occur-

ring in the 'work systems' that influence the progress of the project. For example, a user manager leaving the project group during the project development process to take up a new assignment unrelated to the IS project could affect the development process. Basically, the project emerges within the organization and develops its own boundaries that give the project its identity that differs with the identity of the organization (Lyytinen and Newman, submitted for publication). In this model, we argue that two sets of project and organizational work identities exist and are expected to interact in parallel. Both project and work level events unfold simultaneously within an organization and their necessary intersections may alter a project's evolutionary path. Antecedent (historical) conditions may also affect subsequent events in project development. Every project event is continuously influenced by its environment. The model also suggests that at every critical event (an incident that changes the project's trajectory), the project manager may have to weigh the positive and negative attributes in order to persist or desist project development (Mann, 2003). The researcher may need to use his or her judgment to determine the net force (whether positive force or negative force is stronger) that seems to best fit the information
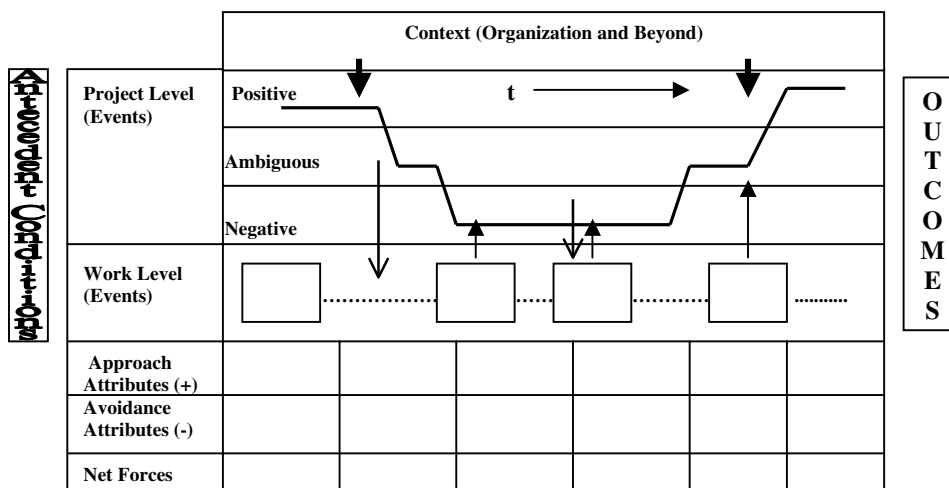

Fig. 1. An evaluation model of commitment escalation and de-escalation in IS projects.

presented. Fig. 1 shows the general structure of the model.

4. Research approach

Our strategy was to undertake an in-depth interpretive case study (Klein and Myers, 1999) of an electronic procurement (e-procurement) project conducted in UKC (a pseudonym). The research site is a large metropolitan borough council located in the United Kingdom (UK). The case study approach is adopted as it allows for the better capturing of the organizational dynamics of a phenomenon (Newman and Sabherwal, 1996). We have selected the particular case for study as the project escalation and turnaround experiences it exhibits offer a valuable example of the escalation and de-escalation phenomena, which may prove useful when devising de-escalation strategies and tactics.

We negotiated research access with UKC in December 2001. From January 2002 to August 2002, we carried out data collection, which began in the field with a meeting with the IS Strategic Director, who provided additional documentation (internal project management records) outlining the project management history in UKC. Primarily, semi-structured interviews and informal discussions were conducted with all relevant project stakeholders. The relevant stakeholders were the Council Cabinet representative, the Strategic Management Director, the head of IS services, and the project development team that consisted of the IS Project Manager, an IS analyst, users representing several business functions and the IS contractor. Twenty-eight interviews were conducted, each lasting an average of one and a half hours involving altogether 17 interviewees. Details such as the dates of the interviews, the interviewees' job titles, the duration of the interviews, and whether a transcript was produced are shown in Appendix A. Secondary data such as reports, memorandums, and meeting minutes were also gathered to supplement the information collected through interviews. We established a set of topic guides to help us with the interview questions (e.g., "Discuss various critical incidents that have affected the progress of the project"; "Identify the de-escalation triggering activities"). Materials drawn from the escalation and approach-avoidance theory literature guided the design of the questions. Most interviews were taped-recorded and transcribed with interviewees' permission. We took notes for four interviewees who refused permission for the use of a tape recorder. In our attempt to motivate the interviewees to speak openly about their experiences in the project, we tried to reduce their suspicion and uneasiness by explaining our research objectives and the significance of our study clearly, which was to help improve future project management performances within the council. In addition, we conducted all our interviews on a one-to-one basis and assured them that all interview conversations would be kept confidential, even from their colleagues. Inter-subject reliability was increased by using the narratives from one subject to confirm or contradict others in a social triangulation (Miles and Huberman, 1994). But there was no attempt to privilege one account over another. The researchers judged that there was no overt attempt by subjects to systematically conceal details or to distort their stories.

As a first step in the data analysis, the first author analyzed the antecedent conditions, interview transcripts and secondary data, and created a detailed history of the project in narrative form. Next, he identified the events that unfolded over time. These events were analyzed at both the project and work levels. The alternating slow and rapid paces of change seemed to best conform to a punctuated equilibrium model (Newman and Robey, 1992). After validating the events with several individuals who were familiar with the project's history, the researcher rated the events as positive, ambiguous, or negative. To reduce researcher bias, the project information and interview transcripts were shown to a co-researcher who was uninvolved in the fieldwork. The role of this co-researcher was to "bring a different and possibly more objective eye to the evidence" (Eisenhardt, 1989, p. 538). The information he received did not include the first author's list of events and ratings. Next, the co-researcher developed his own list

of events and ratings. After that, both researchers met to compare their individual lists of events. In cases where it was difficult to categorize an event[4] or agree on a rating, two steps were taken. First, the two researchers used their own judgment to assign the ratings that seemed to best fit the information presented. Second, the other authors of the paper went through the list and discussed among themselves how the events ought to be rated. A final decision was made after an agreement by all the authors of the paper. After the events were rated, the entire project development process was presented in the form of the evaluation model as shown in Fig. 1.

The next step of the analysis was to determine the approach and avoidance attributes at several critical events in the development process. The evaluation model was used as the basis for identifying and organizing the attributes. The first author compared the forces promoting approach and avoidance, and determined which was greater, hence explaining the various evolutionary and revolutionary periods. These approach-avoidance attributes were compared and contrasted against the array of factors identified in the IS development literature as contributory to escalation or de-escalation. The entire data analysis process went through numerous iterations (Klein and Myers, 1999) before an overview of the case organization could be formulated.

5. The e-procurement system at UKC

This section presents background information about UKC and its e-procurement project. UKC is a UK municipal borough with an elected council that serves a local population of 221,000 and provides a wide range of services. The antecedent conditions suggest that the idea of electronic government (e-government) originates from the central government's 1999 White Paper, *Modernizing Government*, which challenged all public sector organizations to achieve ''citizen-centered services'' by integrating policies and programs, 'joining-up' delivery, harnessing the power of IS, 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'. The main purpose of this post was to propel the e-government initiative within UKC.

The case highlights the escalation process and identifies critical events that punctuated the de-escalation process. The case facts are presented in a series of events that illustrate both the escalation and de-escalation processes (shown in Appendix A: Tables 2 and 3). Table 2 also provides information about the project timeline, and its accumulated investment. Approach and avoidance attributes and their net forces that determine the project trajectory are summarized in Table 4 (Appendix A). Detailed contents of the E-Envoy's role, challenges encountered and major decisions made during the project are summarized in a table in Appendix A. Finally, the project evaluation model of commitment escalation and de-escalation to the e-procurement project at UKC is shown in Fig. 2. Fig. 2 also identifies a period of escalation (Events 2–4) punctuated by two de-escalation attempts (Events 5 and 7). Fig. 2 further indicates that the de-escalation process does not necessarily move forward to a desired end goal. Instead, there may be 'twists and turns' (Drummond, 1998) during the de-escalation process (e.g., Event 10).

6. Discussion

We have demonstrated the use of a project evaluation model to examine the escalation and de-escalation process at UKC (shown in Fig. 2). We

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[4] An example was that we had different interpretations on users' request to abandon the software development and accept a packaged software during the later stages of the project development. While it may be viewed as a negative event due to reducing commitment to the project, it may also be considered as a positive de-escalation triggering activity.

Table 2
A summary of project events illustrating the e-procurement project development at UKC

Determinants of commitment	Event 1: proposal to develop the new system (positive)	Event 2: requirement problems (negative)
Project-related factor	The e-procurement system was proposed due to reasons which included improving purchasing efficiency, setting up a cost control mechanism, and a strong desire to be the first local council in the UK to purchase goods and services electronically	The project faced several problems during its early stages 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 and the failure of the contractor to understand their requirements
	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 directors within the council	"The new version was even worse than the earlier one. They did not seem to understand what we really wanted." (Corporate Service Manager, 15 March 2002, #UKC-8)
	An external software vendor, selected through a bidding system, was tasked with developing the software. Other key stakeholders included the internal users of the system, such as the Chief Procurement Officer, the Corporate Service Manager, the Corporate Affairs Manager, the Technical Service Manager and the E-Business Manager. External users included goods and services suppliers	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 the delay in project development
		"In my view, these changes were not so critical." (IS Project Manager, 20 January 2002, #UKC-3)
Psychological factor Social factor Structural factor		
Timeline Acc. cost	January 2001 Budget: £150,000	March 2001 £150,000

Determinants of commitment	Event 3: dispute over design changes (negative)	Event 4: request to renegotiate the contract (negative)
Project-related factor	Despite several meetings and discussions, the problem remained. In fact, the situation worsened when the volume of change intensified and became increasingly unmanageable.	The project initially stalled due to 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'.
	"The users' number of requests doubled from 25 to almost 50 per design meeting." (IS analyst, 7 February 2002, #UKC-4)	Their reason was that since the contract price was predetermined, any changes to the software after the users had signed off a version of the prototype were chargeable. However, the users disagreed with the claim because they viewed those changes as alterations necessitated by the contractor's mistakes, rather than additions that they were requesting
		"They did not follow our initial requests and they were charging us for the mistakes they made?" (Chief Procurement Officer, 2 March 2002, #UKC-7)

Psychological factor
Social factor
Structural factor

Timeline	May 2001	July 2001
Acc. cost	£150,000	£150,000

Determinants of commitment	Event 5: intervention by e-procurement committee (positive)	Event 6: disagreement over project direction among stakeholders (negative)
Project-related factor	Eventually, the e-procurement steering committee intervened and agreed to make the additional payment	After the committee's intervention, the project managed to continue for another two 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 an e-procurement module which would be added to the existing financial system. At the same time, the IS Project Manager seemed to have lost 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 to insist to the users that the project had to continue. However, they did promise another £100,000. While the users were resolute about project abandonment, the IS Project Manager however, insisted that they should continue "How could we give up? With all the resources invested, the option of reverting to buying packaged software was unimaginable." (IS Project Manager, 4 July 2002, #UKC-13)
Psychological factor		"The project was his baby. He would never give it up." (Technical Manager, 14 July 2002, #UKC-16)
Social factor	"What were we going to tell everybody if the project did not succeed? The stakes were very high and we could not disappoint them." (IS Strategic Director, 15 January 2002, #UKC-2)	
Structural factor	"We had to continue. We had to answer to our cabinet deputy." (Corporate Service Director, 4 August 2002, #UKC-23)	

Timeline	August 2001	November 2001
Acc. cost	£300,000	£400,000

(*continued on next page*)

Table 2 (*continued*)

Determinants of commitment	Event 7: whistle-blowing on the troubled project (ambiguous)	Event 8: affirmation of continued commitment (positive)	Event 9: clarifying the magnitude of the problem (positive)
Project-related factor	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	To resolve the problems, the E-Envoy gathered all internal and external stakeholders, including representatives from the IS contractor and goods and services suppliers, to reaffirm his commitment to the project. He stated a strong desire for the project to be continued rather than abandoned	The E-Envoy organized a focus group meeting to re-examine previous problems. With the E-Envoy's presence and participation, everyone showed great enthusiasm in the meeting.
Psychological factor	"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." (Corporate Service Manager, 4 August 2002, #UKC-22)		"I simply assured them that no individuals would be punished in this project. I also stressed that we had to succeed at whatever cost." (E-Envoy, 30 July 2002, #UKC-20)
Social factor		"It was important for everyone to understand my standpoint, especially in that state of confusion. Besides, the project was highly critical to us. It was the next-generation way of running a local council. Furthermore, the central government expected us to be a role model in the e-procurement initiative in the UK." (E-Envoy, 30 July 2002, #UKC-20)	
Structural factor	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 "At the bi-monthly management meetings over the past few months, the committee members did not inform me of any critical problem arising. We were so close. It was too late to give up." (E-Envoy, 30 July 2002, #UKC-20) Immediately, he halted project development indefinitely until a decision was made		
Timeline	December 2001	January 2002	February 2002
Acc. cost	£400,000	£400,000	£400,000

Determinants of commitment	Event 10: project members lacking confidence in project turnaround (ambiguous)	Event 11: identifying & legitimizing the partial abandonment strategy (positive)
Project-related factor		Having identified the problems, the whole team started to explore alternative courses of action. 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
Psychological factor	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. 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 our differences." (IS Project Manager, 4 July 2002, #UKC-13) Despite the change in attitude, the IS Project Manager conceded that it was a very difficult phase "It took several of us quite a while to restore confidence that a turnaround was indeed possible." (IS Project Manager, 4 July 2002, #UKC-13) "Even though a lot of us appeared co-operative, I knew we were all lacking faith that the second time might work out." (Chief Procurement Officer, 28 August 2002, #UKC-18)	"With only three departments and the project divided into many stages, all of us felt confident that the first stage was within our reach." (IS Project Manager, 4 July 2002, #UKC-13)
Social factor		
Structural factor		For that reason, three user departments were short-listed as pilot sites, hence allowing the IS Project Manager to deal with the needs of only three user departments rather than eight departments as before. Furthermore, the project was divided into three stages. Instead of implementing full-scale procurement functions all at once, the first stage would now focus on the front purchasing process which included only ordering, purchase orders issuance and items delivery "Reducing the scope certainly enhanced our chances of success." (E-Envoy, 30 July 2002, #UKC-20)
Timeline	April 2002	June 2002
Acc. cost	£400,000	£400,000

Table 2 (*continued*)

Determinants of commitment	Event 12: stakeholders 'bought in' (positive)	Outcome: troubled project successfully turned around (positive)
Project-related factor		All the changes were implemented immediately and they produced remarkable results. When the first phase of the e-procurement system finally went 'live', the project was eight months behind schedule and close to £300,000 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. One of the user managers commented: "With fewer users, things seemed to progress smoothly and quickly. I would think that everyone of us was determined to make it work. Even the contractor came to meetings two or three times a week. The new team seemed to show more enthusiasm and commitment. In addition, the committee's close monitoring kept all of us on our toes." (Chief Procurement Officer, 28 August 2002, #UKC-18)
Psychological factor	"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." (IS Strategic Director, 29 July 2002, #UKC-19)	
Social factor	The E-Envoy ordered a stakeholder analysis before the rollout of the action plan. The purpose was to find out whether all internal and external constituencies fully supported the devised turnaround strategies. The E-Envoy reckoned that a new stakeholder analysis must be performed since the 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. For those who still had doubts, the E-Envoy and committee members spent considerable effort to convince them.	
Structural factor		
Timeline	July 2002	August 2002
Acc. cost	£400,000	£400,000

Table 3
A summary of work-level events that intersected project-level events in the e-procurement project at UKC

| Level of analysis	Antecedent conditions	Event 3: annual department audit (negative)	Event 6: alternative e-purchasing application (negative)
Work (events)	By end 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 also other considerations for 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 UK to purchase goods and services electronically. The project was predicted to save millions of pounds sterling annually. It was planned to be ready within a year	During the annual audit conducted in the procurement department by an established external auditor, it was found that there were several deviations concerning work practices. Several of the existing practices were contradictory to the standard policy manual. Due to this, the policies in the standard manual had to be drastically modified. The implication was that many more changes would have to be made. As a result, the volume of change intensified and became increasingly unmanageable. To make matters worse, user managers demanded to introduce two specialists from their departments who were more experienced than the existing project team in daily procurement transactions. The reason for their addition was to assist with the new changes "We needed to bring in people who were familiar with the policy changes and the daily purchasing operations." (Corporate Service Manager, 4 August 2002, #UKC-22)	While the IS Project Manager and the IS analysts were still struggling to sort out the problems, the Finance Manager introduced into the project an accounting information system vendor who was interested in providing an e-purchasing module to be incorporated into the existing system used in the finance department The Chief Procurement Officer was interested and made arrangements with the software vendor to conduct a demonstration for other user managers. "The software vendor promised that by switching to his recommended module, we could obtain more functions and a higher level of performance than the one that we were developing." (Chief Procurement Officer, 28 August 2002, #UKC-18)
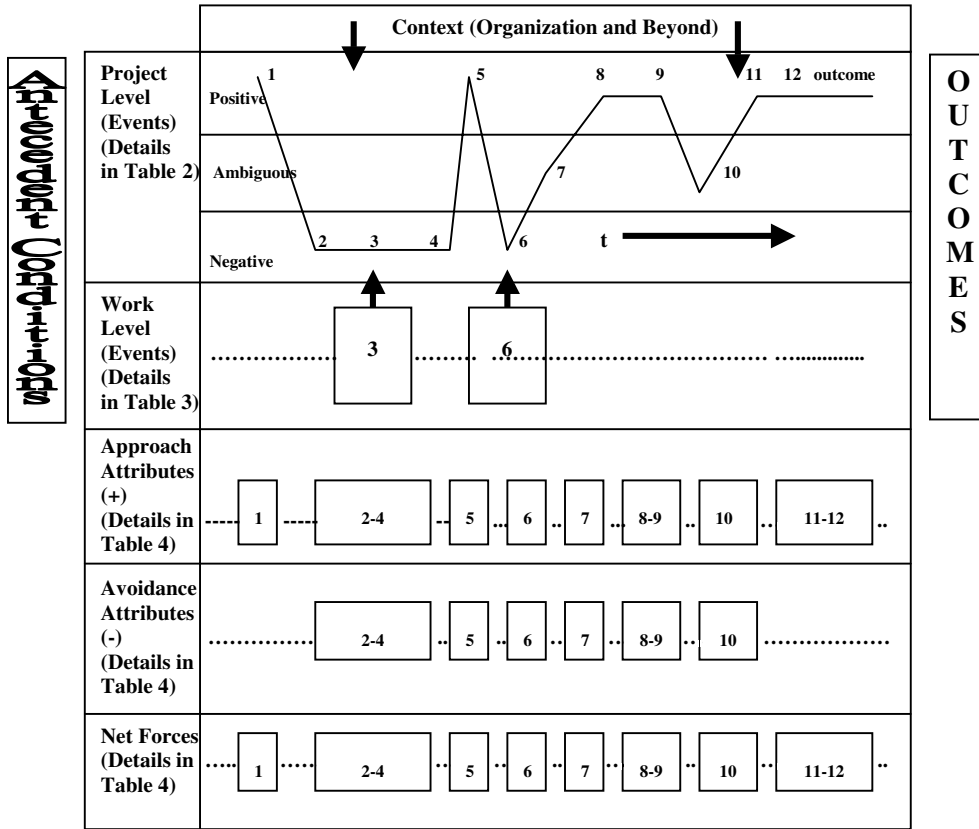
Fig. 2. The approach-avoidance punctuated equilibrium model of escalation and de-escalation of commitment as applied to the e-procurement project at UKC.

will next discuss how the model could enrich our present understanding of the escalation and de-escalation of commitment to IS projects, which could eventually help organizations to improve their future system developments.

7. Escalation as instances of approach-avoidance conflict

Our results support the view that escalation can be viewed as instances of approach-avoidance conflict (Rubin and Brockner, 1975), and that approach-avoidance attributes operate simultaneously in a project. However, we also note that some attributes may appear earlier than others in a project. For example in the case of UKC, 're-ward for success' attributes appeared in Event 1, whereas 'cost of withdrawal' attributes only started appearing from Event 5. The e-procurement project began to show signs of escalation in Events 2–4, when persisting drivers such as 're-wards for success' and 'ambiguity about the pro-ject future' overrode desisting drivers in the face of project failure. Our results also confirm the existence of the completion effect (Conlon and Garland, 1993), which is a core component of the approach-avoidance theory. It could be seen in interviewees' comments such as: ''We were so close, it was too late to give up now.'' (E-Envoy, 30 July 2002, #UKC-20) (Event 7—project level);

Table 4
Approach-avoidance attributes and their net forces that determined the e-procurement project trajectory at UKC

	Event 1: Positive	Events 2–4: Negative	Event 5: Positive	Event 6: Negative	Event 7: Ambiguous	Events 8–9: Positive	Event 10: Ambiguous	Events 11–12: Positive
Approach Cost of withdrawal			– Considered a failure by others – Responsible to internal and external constituents – Fear of recrimination	– Sunk costs – IS Project Manager's public identification with the project		– High business criticality		– Support and commitment of the top management in a turn-around – Stakeholders 'bought in' for the turn-around
Reward for success	– Increases purchasing efficiency – A good cost control mechanism – First local council in the UK to purchase goods and services electronically	– Increases purchasing efficiency – A good cost control mechanism – First local council in the UK to purchase goods and services electronically	–Viewed as successful and may gain status or even promotion			– 'Role model' in the UK e-government initiative – Assurance of no recrimination and blame-free	– Re-establish-ment of project group's credibility	– A new team from the IS contractor to reestablish credibility and customer relationship – First local council in the UK to purchase goods and services electronically
Proximity to goal					– Close to completion			– Close to a successful turnaround
Ambiguity		– Problems viewed as temporary			– Reassessment of problems	– Clarified the magnitude of the problems	– E-Envoy was confident of a turnaround	– Reduced project scope and a smaller stakeholder group

(*continued on next page*)

Table 4 (continued)

	Event 1: Positive	Events 2–4: Negative	Event 5: Positive	Event 6: Negative	Event 7: Ambiguous	Events 8–9: Positive	Event 10: Ambiguous	Events 11–12: Positive
Avoidance Cost of persistence		– Political rivalry between the IS department and users	– Opportunity cost of investing in another project	– Opportunity cost of investing in another project	– Information processing errors – Loss of faith in the project leadership		– Opportunity cost of investing in another project – Project members lacking confidence of a turnaround	
Net force	Approach	Approach	Approach	Approach	Pause	Approach	Approach	Approach

and ''The first stage was within our reach.'' (IS Project Manager, 4 July 2002, #UKC-13) (Event 11—project level). The level of persistence increased as the e-procurement project inched closer to completion. There was a 'false' perception that the e-procurement project was close to completion in the earlier part of project development, and this may be attributed to a lack of information about the actual status of the project. Indeed, the E-Envoy was totally unaware of the problems faced by the project group during the early stages of its development process. Overall, the UKC case illustrates a scenario of the project manager being overly optimistic in his perceptions (e.g., Events 2–6) and the top management failing to receive accurate status reports (cf., the so-called 'mum' effect).[5]

Furthermore, the findings from the case of UKC also suggest that the approach-avoidance perspective could act as a foundation to bring several different escalation theories into one over-arching model (Mann, 2003). For example, approach-avoidance attributes (refer to Fig. 2) such as 'considered as a failure by others' (Self-Justification Theory), 'sunk cost' (Prospect Theory) and 'information processing' (Agency Theory) indicate that aspects of several theories may be operating simultaneously within the e-procurement project. Here, we view these escalation theories as complementary rather than competitive when used to explain escalation behavior (Keil et al., 2000).

Finally, our analysis identifies 'high business criticality' as an important approach attribute that has contributed to the persistence of the e-procurement project at UKC. Interestingly, it is a contributing factor for both project escalation and redirection in the case. This signifies that the project had such a significant meaning to the organization that it had to be turned around. It was strategically critical to the organization, as it possessed significant business values in two ways: ''It was the next-generation way of running a local council. Furthermore, the central

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[5] Here, we acknowledge the influence of the hindsight effect.

government expected us to be a role model in the e-procurement initiative in the UK'' (E-Envoy, 30 July 2002, #UKC-20) (Event 8—project level). This has not been acknowledged in both the escalation and de-escalation literature, and could potentially be important since 'high business criticality' can also be used to make sense of why the baggage handling system at the Denver International Airport was still completed despite being 16 months behind schedule and close to US$2 billion over budget: ''There was a growing realization that baggage handling would be critically important in an airport of this size and that this issue could not be off-loaded to the airlines that would be operating out of DIA'' (Montealegre and Keil, 2000, p. 418). In other words, the importance of the problem in our case as well as the baggage handling example did not escalate or de-escalate: they remained critical to the organizations and had to be pursued.

8. De-escalation as a gradual process with 'twists and turns'

Our findings support the view that de-escalation is a gradual process (Montealegre and Keil, 2000) rather than a sudden event that occurs almost instantly when certain conditions, such as unambiguously negative feedback, are present (e.g., Garland et al., 1990). However, we also propose that the de-escalation process may encompass some 'twists and turns' (Drummond, 1998). This differs significantly from the prevailing argument in the IS development literature that the de-escalation process is always forward-moving and comprises of only four-phases (e.g., Montealegre and Keil, 2000). The 'twist' in the de-escalation process at UKC (refer to Event 10—project level) was due to project members' lack of confidence that the project would be turned around, which in turn derailed the progress of the turnaround process. We consider this a 'twist' from the 'positive' to the 'ambiguous' state before eventually returning to the positive state (see Fig. 2). This implies that critical events may alter the trajectory

of a project and revolutionize de-escalation proceedings.

Fig. 2 also suggests that the project entered into two crises during the development process (Events 2, 3, 4 and 6—project level). In both crises, dramatic interventions were necessary to turn the troubled project around. However, the e-procurement committee did not seize the opportunity and failed to take any major corrective actions, except to provide additional financial support (refer to Event 5—project level) for project development. The irony is that such behavior could, in fact, encourage persistence in a troubled project and lead to project escalation. The E-Envoy, however, with the help of the rest of the project group members, identified an alternative strategy and successfully implemented the turnaround strategy. Importantly, the findings suggest that triggering activities that promote de-escalation must be available before any successful implementation of de-escalation could take place (Keil and Robey, 1999). Four triggering activities may be identified in the UKC case: *making negative outcomes less threatening*, *giving unambiguously negative feedback*, *identifying the problems* and *appealing to stakeholders* (Montealegre and Keil, 2000). Among these activities, the whistle-blowing act could be considered a major turning point in the e-procurement project development at UKC. The events that unfolded over the project development process at UKC illustrated both the 'mum effect' and the 'deaf effect' (Keil and Robey, 1999). The mum effect, which is the failure to transmit unambiguous negative feedback, could explain why the project still progressed despite having trouble—the decision maker was unaware of the actual status of the project. The deaf effect could be seen in the e-procurement committee members' unwillingness to take corrective action even though they were fully informed about the problems inherent in the project development. It was clearly a situation of 'decision dilemmas' (Bowen, 1987) that was surrounded by several contradictory voices from the IS project manager and the users. The case also demonstrated how both the mum effect and the deaf effect were overcome (refer to Events 7 and 8) before a project turnaround could take place (Keil and Robey, 2001).

9. Necessary intersections between project and work level events may trigger both the escalation and de-escalation processes

Our analysis suggests that project and work level events unfolded simultaneously and mostly independently during the e-procurement project development at UKC, and their necessary intersections triggered both the escalation and de-escalation processes in the project. For example, activities that occurred in the work systems (Event 6—work level) triggered the de-escalation process in the troubled project. Basically, the alternative e-procurement solution provided user managers with an opportunity to re-assess their failing course of action. Though it might have undermined group unity in the project, nevertheless, it has provided an important condition that prompted the whistle blowing (Event 7—project level) (Keil and Robey, 2001). Similarly, the annual department audit that took place in the procurement department (Event 3—work level), served as a good example of why activities in the work systems could trigger escalation of commitment to the troubled e-procurement project. As a result, more resources had to be invested since several new modifications had to be added to the prototype and the project group had to be reorganized. This greatly disrupted project development, which was already facing some problems at that stage, and further delayed the progress. At that point, the project situation at UKC clearly fulfilled the essential condition of a runaway project (Keil and Robey, 1999).

The two examples from the case of UKC suggest that the necessary intersections of work and project level events are subtle but critical interplays between simultaneous processes and events. By positing that the development process should be examined at two separate levels of social analysis (project and work), we have introduced greater explanatory power and reconciled the contradictions in the two processes of the organization (Cule and Robey, 2004). Overall, this demonstrates that any process analysis has to carefully outline an influence and its direction at various points along the evolutionary path in order to show how the project constitutes and influences its context and vice versa.

10. Implications, conclusion, limitations and future research challenges

The purpose of our paper is to outline a project evaluation model for examining escalation and de-escalation of commitment to information systems projects. By drawing upon a case study of an e-procurement project at a UK public organization, we have developed a project evaluation model for analyzing escalation and de-escalation using the theories of approach-avoidance conflict and punctuated equilibrium. The model depicts instances of approach-avoidance conflict over the course of project development. Through interviews with relevant stakeholders and the review of important documents, we have gathered data on attributes that encourage and discourage persistence, and that determine the trajectory of the project. These instances of approach-avoidance conflict provide a clear explanation of how and why escalation and de-escalation could take place as they did in the project at UKC. Our model also distinguishes interacting courses of activities at separate levels (project and work), and suggests that their necessary intersections can have important bearings on project trajectory.

While the case study approach adopted here may have several strengths, a main limitation in this study concerns the generalizability of a single case study. Herriott and Firestone (1983) suggest the preference of a multiple case-study design over a single case-study design for obtaining more compelling and robust data. However, in our view, project failure is a sensitive subject and it may be difficult to obtain the opportunity of a multiple case-study design. Therefore, we posit, "one must follow a more opportunistic approach even if that means settling for a single case study" Keil (1995, p. 447). Besides, a single case is also useful in theory building (Eisenhardt, 1989).

Despite its limitation, we believe the study is very useful and has made several contributions: First, it provides a detailed illustration of how an IS project

can be trapped in cycles of escalation before it is eventually turned around. Such turnaround experience is valuable since there are very few de-escalation studies available in the IS development literature (Montealegre and Keil, 2000). Second, by using the UKC case as the basis, we have demonstrated how the approach-avoidance perspective could bring several escalation theories (e.g., self-justification, prospect, etc.) together to be combined into an overarching model. Until now, the approach-avoidance theory has been adopted only in field studies to investigate the escalation phenomenon in IS settings (Keil et al., 2000). This study represents one of the first in-depth case studies to use the theory to explore both the escalation and de-escalation phenomena within an IS project in a dynamic organizational setting. Third, our model shows that a dual-level process perspective of project development could provide a greater explanatory power of how projects escalate and de-escalate. We acknowledge that the dual-level concept is still at an exploratory stage, but it may potentially emerge as a useful extension to one of the authors' earlier work that focused on user–analyst interaction episodes (Newman and Robey, 1992; Newman and Sabherwal, 1996) as critical incidents to explain process outcomes. Fourth, in this paper we argue that since project evaluation is a complex, human centered activity that cannot be divorced from its organization context (Pettigrew, 1987, 1990; Serafeimidis and Smithson, 2003), practitioners can therefore utilize the model in evaluating projects that have faced escalation to diagnose the issues surrounding escalation and devise useful de-escalation strategies for future project development. Finally, we believe our punctuated equilibrium evaluation model **complements** the existing stage-based models (Staw and Ross, 1987; Montealegre and Keil, 2000) in providing an understanding and explanation of the escalation and de-escalation processes. Our model accounts for the revolutionary periods of rapid change that may be embedded, in gradual incremental processes, thus providing an accurate reflection of today's uncertain and rapidly changing project environments.

To establish the validity of the project evaluation model proposed in this study, future research could apply the model in other project escalation and de-escalation contexts. As the existing approach-avoidance literature has generally considered only 'desist' as the single driver promoting avoidance, further research could explore other drivers. We posit that 'ambiguity about a project's future' could be a possible strong candidate since one could argue that a risk-averse decision maker may pull the plug on a project whose future is highly ambiguous. It is hoped that by identifying additional avoidance drivers, a more balanced assessment of approach-avoidance conflicts may be arrived at. More longitudinal field studies on project turnarounds—especially those that involve in-depth case studies—are clearly called for, so that we may have a deeper understanding of the dynamics of the phenomena of project commitment escalation and de-escalation in various contexts. Furthermore, while Montealegre and Keil's (2000) four-phase de-escalation model fits well with large-scaled IS project context, the proposed model in this paper may offer itself as an alternative explanatory model for analyzing the de-escalation process in other types (medium-to-small) of IS projects. What the model offers for now is an example of a 'middle range theory' (Wallace and Wolf, 1999) that may need to be modified in the light of further case studies. This is an important issue especially in today's multi-dimensional and complex project environments as one may have to recognize the importance of contextual differences in determining the appropriateness of a particular model.

Finally, 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. Besides, such process analyses could also be carried in relatively low cost in project reviews to understand how and why the dynamics of the process unfolded as they did. The model could offer a vocabulary to frame experiences and to learn from the situations in terms of how a project group behaves and how causes and effects are related. Unless the above recommendation is achieved, project evaluation will continue to serve the limited purpose of a 'ceremonial' ritual in organizations.

Appendix A

Stakeholders in the IS development process

Roles	Interviewed in	Transcript
Cabinet Deputy of Co-ordination Services (E-Envoy)	30 July 2002 (1 hour)	#UKC-20
IS Strategic Director	15 December 2001 (1 hour) —Negotiated Access	#UKC-1
	15 January 2002 (1.5 hour)	#UKC-2
	29 July 2002 (1.5 hour)	#UKC-19
Chief Procurement Officer	2 March 2002 (1 hour)	#UKC-7
	28 July 2002 (1.5 hour)	#UKC-18
IS Project Manager	20 January 2002 (1.5 hour)	#UKC-3
	4 July 2002 (1.5 hour)	#UKC-13
Corporate Service Manager	15 March 2002 (1 hour)	#UKC-8
	4 August 2002 (1 hour)	#UKC-22
IS Programmer	25 February 2002 (1.5 hour)	#UKC-5
	14 July 2002 (1.5 h)	#UKC-15
Technical Service Clerk	2 August 2002 (1.5 hour)	#UKC-21
Technical Service Manager	25 February 2002 (1 hour)	#UKC-6
	14 July 2002 (1 hour)	#UKC-16
IS Contractor—Sales Executive	8 August 2002 (1 hour)	Rough Note-1
E-business Manager	12 May 2002 (1 hour)	#UKC-10
IS analyst	7 February 2002 (1.5 hour), 29 June 2002 (1.5 hour)	#UKC-4 #UKC-12
E-business Clerk	18 May 2002 (1 hour)	#UKC-11
Head of Corporate Affairs	2 April 2002 (1.5 hour) 8 July 2002 (1 hour)	Rough Note-2
Corporate Service Clerk	27 July 2002 (1 hour)	#UKC-17
Purchasing Officer	25 March 2002 (1 hour)	#UKC-9
	8 July 2002 (1 hour)	#UKC-14
Corporate Affairs Clerk	2 April 2002 (1 hour) 16 August 2002 (1 hour)	Rough Note-3
IS Contractor—Senior Manager	27 July 2002 (1 hour)	Rough Note-4

Role of the E-Envoy	
Responsibilities	• Delivering the existing Cabinet Office target for electronic service delivery (electronic government agenda)
	• Defining and driving implementation of a Government-wide information systems strategy to support the public sector reform agenda
	• Providing leadership and guidance for the electronic government initiatives

Appendix A (*continued*)

Challenges encountered during the project	• Project initiation • Project monitoring (progress assessment) • Project completion • Project approval (Event 1) • Delegated the authority to the e-procurement committee (Event 1) • Receptive to negative feedback (Event 7) "For a while, I did not want to believe what she said (the whistle-blower). However, I knew I needed to find out by myself what was happening to this project." (E-Envoy, 30 July 2002, #UKC-20)
Major decisions made	• Continued commitment despite clear signs of project failing (Event 8) "The project was highly critical to us. It was the next-generation way of running a local council. Furthermore, the central government expected us to be a role model in the e-procurement initiative in the UK." (E-Envoy, 30 July 2002, #UKC-20) • Entrusted existing e-procurement committee members and project group members despite earlier problems (Event 8) "I had the choice of removing all of them or keeping them and re-motivated them. I chose to keep them because they had done well in previous projects. This might be just an one-off incident." (E-Envoy, 30 July 2002, #UKC-20) • Provided assurance rather than recrimination (Event 9) "I simply assured them that no individuals would be punished in this project." (E-Envoy, 30 July 2002, #UKC-20) • Ensure stakeholder buy-in despite severe time overruns (Event 12) "I knew we were already running out of time. But everyone must be committed or at least showed their support to the new solution before we could go ahead. We could not compromise on this issue." (E-Envoy, 30 July 2002, #UKC-20)

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