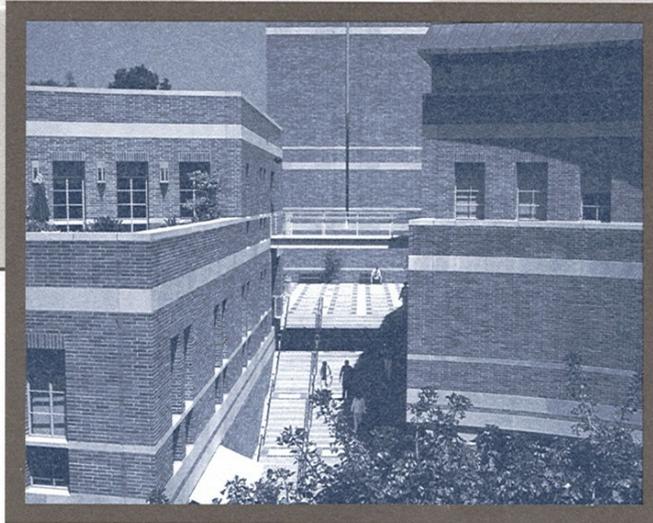


**UCLAAnderson**  
School of Management



**FROM WILLOW TO OAK?  
CHANGE AGENCY MODELS CIOs FOLLOW  
DURING THEIR TIME IN OFFICE<sup>1</sup>**

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Change Agency models CIOs Follow During their Time in  
Office<sup>1</sup>**

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## **FROM WILLOW TO OAK? CHANGE AGENCY MODELS CIOs FOLLOW DURING THEIR TIME IN OFFICE**

"So I think to be a good IT executive, it isn't about the right answer. It's about creating environments that are flexible enough so that you can adapt as you go. You just have to be able to respond and flexibility is how you do it...But more often than not, I think the oak approach of never bending and investing all your energy in one approach doesn't work. We need to be willows. We have to bend a little more the way the wind changes."

~ CIO of a large public University

### **Introduction**

During the last decades, the roles of Chief Information Officers (CIOs) have changed dramatically (Ross and Feeny 2000). Technologists with little discretion in the early days of computing, they are now members of most top management teams, and increasingly participate in the setting of the strategic direction of their firm (the State of the CIO Survey 2006). So far, IS research has focused on *what* roles CIOs should play and *what* factors makes them effective in these roles. We know, for instance, that CIOs must devise and diffuse the role of IT and of the IT function across their organization (Chatterjee et al. 2001), and build and maintain an effective IT management capability (Earl, 1996; Feeny and Willcocks, 1998; Rockart et al., 1996; Ross and Feeny, 2000). We also know that CIOs must be effective change agents (Markus and Benjamin 1996) to respond successfully to the demands imposed by the rapid evolution and convergence of new technologies and the turbulent and hypercompetitive nature of their firm's markets. Although we have now a better understanding of *what* roles CIOs must play, we still know very little about *when* CIOs are more likely to be effective in their various roles.

To fill this gap, this paper focuses on the role of change agent, and examines how and why this role evolves for CIOs as they progress in their tenure in office.

In their dealing with IT related change, CIOs may follow three ideal models of change agency or combination thereof: the traditional IS model, the facilitator model and the advocate model (Markus and Benjamin 1996). Effective CIOs are those able to follow the most appropriate model or combination of models of change given the nature of their environment (Markus and Benjamin 1996).

The question remains, however, whether CIOs are always able to choose. The management literature shows, indeed, that top executives are not as effective at managing change at the end of their tenure in a particular position as they are at the beginning (Boeker 1997; Miller 1991; Musteen et al. 2006), which would suggest that there may exist a set of evolving factors limiting CIOs in their choice of change models, thereby affecting their effectiveness as change agents.

Some of these factors have been discussed by Hambrick and Fukutomi (1991). The authors propose that as top executives' spend more time in the same position they develop a more conservative attitude and behavior toward change because they (1) become more committed to a paradigm, (2) engage more in incremental and routine learning, (3) have narrowed down their information sources, (4) have less interest in their job, and (5) have acquired enough power to avoid calls for change. Advancing our understanding of how these factors, and possibly others, may affect the ease which CIOs are able to follow a particular change agency model during their tenure, and hence affect their effectiveness as change agents, is important for several reasons. Practically,

organizations may be interested to know whether there is an optimum tenure for their CIOs, or whether there are periods in CIOs' tenure more propitious than other to embark on specific change projects. For instance, should a firm recruit a new CIO to reset its IT strategy or should it rely on its long tenured CIO? Do large implementation projects have a better chance of success if a new rather than a long-tenured CIO is in charge? CIOs may also want answers to the same questions for themselves in order to better serve their organization and manage their career. Theoretically, there is also the need to develop a more dynamic understanding of the relationships between CIOs' characteristics and their ability to manage, lead and implement change.

Drawing from the Management and IS literatures and empirical data from CIOs interviews, this paper proposes a three-stage model describing what combination of change agency models CIOs follow as they progress in their tenure in a particular position and why. The model discerns three main phases in typical CIO tenure, and I propose that within each phase CIOs' evolving characteristics combine in ways that render the use of a combination of change agency models more natural to follow.

### **Change Agency Models CIOs follow**

In this section, I remind us of the roles CIOs may play as change agents. Markus and Benjamin (1996) reviewed the practitioner, organization development, innovation, management and change politics literature and proposed three models of change agency: the traditional IS model, the facilitator model and the advocate model. Each model specifies the change agent's attitudes, beliefs and behaviors towards IT related change.

“Traditionalists” believe that technology causes change. They are agents of change because they design and build the systems enabling the organization to change. “Traditionalists” help the organization to achieve *its* objectives; but do not hold responsibilities for setting or achieving them. They are experts in technological matters, not in business matters, or organizational or behavioral matters related to the use of Information Systems.

Unlike “traditionalists”, “facilitators” believe that change is brought about by people and not technology. They help create the conditions for people in their organization to make informed choices on the basis of valid information. “Facilitators” are impartial in their views of and solutions to technical and business issues. “Facilitators” also serve the interests of their clients as a whole to the detriment, if need be, of the individual or even themselves.

“Advocates” also believe that people not technology cause change, and that they cannot make change alone, but through the actions of many others. They have a clear vision of what should be done differently and how change should be brought about. They openly and steadfastly champion their ideas and don’t hesitate to use persuasion, manipulation, power or even outrageous actions to get acceptance, but they will let the organization make the changes itself. “Advocates” work for the best interests of their organization, even when their personal or professional interests conflict.

In their dealing with IT related change would CIOs ideally follow a mix of the three models. The nature of IT projects may favor the use of a specific role—for instance, the “facilitator” role may be most useful when choosing and implementing black-box

technologies (such as Personal Digital Assistants), whereas the “advocate” role may be most needed for IT infrastructure projects (Markus and Benjamin 1996). The organizational structure—centralized vs. decentralized IT function (McLeod 1998; Rogers 1995)—may also favor certain roles. In an organization where IT is decentralized, the “advocate” role may be best suited to alleviate political tensions that exist among the various stakeholders. Whichever change agent roles CIOs choose to play, however, they will need the capabilities to do so. CIOs may have indeed the right beliefs about and attitudes towards change but may not be able to behave the desired way simply because they lack the abilities to do so. For instance, a CIO may have a clear vision of where his or her organization needs to go with IT, but may have little power or influence to realize his or her own ideas, and find it hard to play the “advocate” role.

Although Markus and Benjamin’s model has been established for over a decade there is surprisingly little empirical evidence supporting it. There is evidence of how the model plays out for IS specialists in general (Binbasioglu and Winston 2003; Paré and Jutras 2004) and IT consultants in particular (Winston 2002), but none for CIOs. Moreover, nor Markus and Benjamin (1996) nor the IS and Management literatures I reviewed address how the change agent role may evolve with CIOs’ tenure. One theoretical model, proposed by Hambrick and Fukutomi (1991), may offer the theoretical foundations for explaining why CIOs would follow different models of change agency as they progress in their tenure in a particular position. I discuss this model next.

## **The Evolution of CIOs' Key Characteristics over their Tenure in Office**

Hambrick and Fukutomi (1991) suggest that as top executives spend more time in office they develop a more conservative attitude and behavior towards change. They propose that top executives' attitude and behavior towards change may be explained by the patterns of evolution of 5 of their key characteristics: their commitment to a paradigm, task knowledge, information diversity, task interest, and power. In this section, I use Hambrick and Fukutomi's model as a template and reference to discuss how these characteristics evolve for CIOs in office. I also draw from the broader IS literature to inform and attune the model to the specificities of CIOs. My discussion is essentially theoretical, as Hambrick and Fukutomi's model has not yet received any empirical attention.<sup>2</sup>

*Commitment to a paradigm.* To apprehend the complexity of their environment CIOs rely on a simplified model of reality or paradigm (Hambrick and Fukutomi, 1991). CIOs' paradigms are based on two distinct but related elements: a schema and a repertoire. CIOs' schemas are the set of preexisting knowledge, preconceptions, beliefs, inferences and expectations they bring to their work environment and decision making. Schemas are derived from cultural, educational, familial and work experience. CIOs' repertoires represent their executive tool kit or abilities. For instance, CIOs with an IT background may be better at assessing complex technologies, whereas non technologists may have a better grasp of the business processes that pertain to their functional areas of origin. As

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<sup>2</sup> This claim is based on my reviewing all papers quoting Hambrick and Fukutomi's (1991) article. I searched the ISI Web of Knowledge and found 78 papers citing the original article. I read the abstract of all 78 papers, and, whenever in doubt, read further some of the articles in full.

with schemas, repertoires are derived from previous experiences and personal aptitude. Hambrick and Fukutomi (1991) suggest that CIOs enter their new position with a moderate commitment to a paradigm. The mere fact of having been selected for their new position let CIOs believe that their established paradigm is potent and valid (Vancil 1987). At the outset of their tenure, CIOs should thus have confidence in their vision of the role IT should play in their new organization.

As CIOs learn and experiment, they may “open-up” and broaden their mindset, and redefine their view of operating and viewing their environment. During this period of transition, learning and discovery, CIOs may relax their paradigm, aligning it with their better understanding of the reality and demands of their organization. After this period, CIOs will gradually and increasingly get recommitted to a paradigm, which may be the initial or a revised one. But at this stage of their tenure, CIOs have been socialized enough (Van Maanen and Schein 1979) that their paradigm is likely to reflect a shared understanding among the organization of what and how things should be done.

*Task Knowledge.* As CIOs enters their new position, they have to learn about their tasks: the facts, trends, contacts, and procedures that pertain to the successful conduct of their roles in the organization (Hambrick and Fukutomi 1991). A person who has before been CIO may be less at a disadvantage, but will still be confronted with unfamiliar actors, terms and norms, etc. Similarly, a CIO who has been promoted from within his or her own organization may have a better network for information exchange (Kotter 1982), but will still have to learn many dimensions of his or her new job. Two other types of knowledge are critical: strategic business and strategic IT knowledge (Armstrong and

Sambamurthy 1999; Smaltz 1999; Stephen et al. 1992; Westerman and Weill 2004). Strategic business knowledge refers to the CIOs' understanding of their organization's competitive forces and strategies, and is a prerequisite of new IT assimilation and a catalyst for the integration of CIOs in the top management team (Armstrong and Sambamurthy 1999; Stephen et al. 1982). Strategic IT knowledge refers to refer to the CIOs' awareness and understanding of current and emerging technologies and their relevance for the firm. At the outset of their tenure CIOs will exhibit low overall task knowledge but will learn rapidly. After a few years in office CIOs will tend to engage in more incremental and routine learning (Gabarro 1987) and their task knowledge will reach a plateau (Katz 1980).

*Information Diversity.* Hambrick and Fukutomi (1991) suggest that top executives tend to rely on narrower and more filtered sources of information as they progress in their tenure. With tenure, general managers have been found indeed to rely more on internal sources of information than external ones (Aguilar 1967; Katz 1982). With time, information filtering occurs also not only from top executives themselves, who tend to ignore information that does not fit their paradigm, but also from their peers and subordinates, who learn with time the executives' information preferences—the information format, timing, and even content.

As executives, CIOs are likely to suffer from information filtering, but unlike other executives, they are less likely to narrow their sources of information. Watson's (1990) study of 47 Australian IS managers, although dated, provides interesting findings about IS executives' information scanning behavior. Watson (1990) found, for instance,

that IS managers tend to scan sources close to the IT industry and that they are most influenced by their peers. He also found that the most influential sources of information were, in decreasing order, management conferences, discussions with colleagues in other professions, internal training sessions, industry seminars, and visiting other organizations. He also found that IS executives spend about 7.5 hours per week, i.e. about 15% of their total working time, on scanning for information to maintain the currency of their knowledge.

*Task Interest.* Newly appointed CIOs have great interest in the demands of their jobs, novelty reigns. As they spend more time in a particular position CIOs' level of task interest will tend to decrease. This is not to say that they will come to dislike their job, but rather that they will feel more comfortable in their role and less excited about and stimulated by their tasks as routine settles. As Jerry Gregoire (2002), former CIO of Dell, puts it: "If you've been in the same CIO job for 10 or so years and you're not bored, you're either an extraordinary person or lucky enough to be in extraordinary circumstances." Many parts of CIOs jobs are indeed recurring: budget planning, staff evaluations, clients' needs survey, etc. may be stimulating and novel at the beginning, but less interesting with time. CIOs will even get accustomed to the most demanding and challenging tasks and responsibilities, and find them less interesting and exciting (Katz 1980 104). CIOs' perception of the time they have left in their current position (e.g. retirement is looming or they are looking for another job) may have also significant motivational effects. Socio-emotional selectivity theory (SST) maintains that when time is perceived as open-ended people tend to focus on goals that are more preparatory,

focused on gathering information, on experiencing novelty and on expanding breadth of knowledge (Carstensen 2006). When time is perceived as constrained, however, people tend to emphasize goals that can be realized in the short-term, sometimes in their very pursuit.

*Power.* Formal power (authority) and power of influence (Enns et al. 2003) are both essential to the CIOs ability to perform their roles. Authority usually flow downward the hierarchical ladder and will directly affect CIOs' direct subordinates. Influence is more multidirectional and serves CIOs to persuade actors at all level of the organization, from subordinates to colleagues and superiors. Influence is important for CIOs because it helps them to create a shared understanding and vision about the role of IT in their organization, increasing the chances of aligning IT projects with the overall strategy of the firm, a critical component of success (Chan et al. 1997; Earl and Feeny 1994). Influence is also of particular importance when CIOs have little authority, which is often the case when IT is largely decentralized.

Newly appointed CIOs will have some authority but are unlikely to have a lot of influence, but both will increase with time in office (Hambrick and Fukutomi, 1991). Increase in authority will stem, for instance, from CIOs' reconfiguration of their own management team. CIOs' influence will build up with time as they establish closer relationships with their community. Tenure is also recognition of success, and a successful track record may also be a source of power. Of course, some CIOs may be brought in to "turnaround" specific situations, and will be given a lot of power at the outset to perform their task. Poor mid-tenure performers may see their power decrease.

In summary, typical CIOs should see their characteristics follow specific trends over their tenure in office. At the beginning of their tenure, CIOs commitment to a paradigm will be strong, decreasing as they become more open minded, and get stronger again as they progress in their position. CIOs' information diversity and power will diminish over time, and their task interest will be high initially, but will decrease slowly with time.

To understand how these characteristics may evolve with CIOs' tenures and how they may explain the type of change models they follow I conducted an empirical study which I describe next.

### **Research approach**

To investigate how CIOs' characteristics evolve with tenure and what model of change agency CIOs followed during that time, I conducted an exploratory study investigating how CIOs manage, lead and implement change in their organization as they progress in their tenure in a particular position.

To control for environmental factors and emphasize difference among CIOs, the study focused on a single industry: Higher Education. For the setting of my study I conveniently selected a large public university system in the United States, and interviewed the CIOs of the system's universities. Higher Education provides a good context for studying how CIOs manage, lead and implement IT change for several reasons. First, large public universities are notoriously slow in their dealings with IT related change and are not driven by quarterly results, which makes their change

processes easier to study and interpret. Second, CIOs of public universities tend to have longer tenure than their counterparts in other industries (the latest State of the CIO Survey shows that CIOs are in office for 5 years on average), which allowed to explore the effects of a broader range of tenure lengths. Finally, large public universities manage IT assets the size comparable to most large firms in other industries.

The chosen university system consists of 10 campuses. Under their governing body these universities share a common institutional and external technological environment, but have the freedom to adapt and respond to the demands of their local environment. To maintain anonymity I gave each university a letter name. The 10 universities represent a wide spectrum of research foci and vary considerably in size and operating budgets. For instance, University M, the smallest of all, had 900 students enrolled in 2006, and operated a \$3 million IT organization with 40 people. By comparison, one of the largest campuses, University K, had over 33,000 students enrolled in 2006 and operated a \$75 million IT organization with 450 people. Appendix 1 provides details about each university (size, age, population and operating budget) and its IT organization (size and operating budget).

I was able to interview the CIOs of 9 of the 10 universities; at the time of my conducting interviews, one university did not have a CIO and was conducting a search. I conducted a combination of “focused” and structured interviews with 12 CIOs (some universities distinguish between academic and administrative computing and have two CIOs). Interviews lasted an hour on average and were all tape-recorded and fully transcribed. The structured part of the interview aimed at gathering information about

CIOs' work history and background, and their IT organization. In the "focused" part of the interview I sought to explore CIOs' subjective experience in dealing with IT related change over their tenure in their current position. I chose a "focused" approach to minimize directing, and allow the interviewee to discuss and explore matters of significance to him rather than those imposed by me (Merton and Kendall 1946; Spender 1989). This approach was essential to capture CIOs' beliefs about and attitudes towards IT related change and maintain the discussion at a level of abstraction high enough to avoid entering into the operational and technical details of specific projects. Interviews started with my stating clearly my research interest: to understand how CIOs lead, manage and implement change. I followed a broad interview guide as a reminder of the topics I wanted to cover. During questioning, however, I concentrated on listening to the content of what was said, rather than follow a specific interview protocol, improvising whenever necessary and calling for retrospection and exploring feelings. During my interviews I asked CIOs to tell me about their work history, their biggest experience with change (IT related or not), their managing their organization, etc. All CIOs I interviewed were male, and contrast widely in their tenure in their current position, their educational backgrounds and work experiences (see Appendix 2 for a summary of these characteristics).

### **Interview analysis**

Interviews were fully transcribed and analyzed with three objectives in mind: reconstruct CIOs' work history and background, determine the evolution of CIOs'

characteristics during their tenure and identify the model of change agency they followed during that time.

*CIOs' backgrounds and work history.* The first step in the analysis of the interview transcripts was to reconstruct CIOs' work histories, profile and background. To maintain anonymity and facilitate reading, I gave CIOs a name starting with their university letter name; for instance, Ken is CIO of University K and Dave CIO of University D. CIOs work histories span the period between their graduating from university and my interviewing. Appendix 3 provides a temporal map of each CIO's work history, and specifies the time they have spent in their current position, and whenever applicable, the time all have spent in their current university but in another position and the time they spent in other universities or in non-university organizations. CIOs' tenures in their current position ranged from 6 months to 18 years. Three main groups of tenure lengths emerged and I characterized them as follows: early tenure or 0-3 years, mid-tenure or 4-7 years and end-of-tenure or 8-18 years. Appendix 4 presents a summary of the CIOs' educational background and the various positions and occupations they held since graduating. Two-thirds of CIOs spent most of their working life in a university environment, and of the 12 CIOs, only 5 have a computer science background; the others majored in fields as diverse as Linguistics, Electrical Engineering, or American and Latin studies. CIOs' work histories also allowed me to distinguish among CIOs who were recruited internally (7 of them) and those who were recruited externally (5 of them).

*CIOs' key characteristics.* I read all the transcripts line by line and identified all excerpts that discussed directly or indirectly any of the 5 key characteristics specified by

Hambrick and Fukutomi (1991). The specific content and context of each excerpt then allowed me to provide an assessment, on a simple low-moderate-high scale, of the level of a specific CIO's characteristic at a particular time in his current tenure. Whenever the evidence justified it, I also characterized the level of the characteristic as increasing or decreasing. For instance, Vincent's (CIO of University V) comment:

"...I was really excited about coming here..."

was categorized as pertaining to his "Task Interest", and measured as "high". Dave discussing his learning about his new job in the early period of his tenure:

"There were things I didn't know because I assumed the telecommunication units, which I didn't really work directly with at University A. So that was a lot of new stuff to learn. But it was a good experience. I transferred quite well and it was actually easier here."

was interpreted as relating to his "Task Knowledge" characteristic, and given a "low" but increasing level. Because of time constraints, my discussions with CIOs tended to focus more on their present experiences than their past ones. The collected body of evidence thus did not always allow for an assessment of the CIOs' characteristics over the whole of their tenure, but only at particular points in time. Because short-tenured CIOs' experience was more current and relatively shorter, the evolution of their characteristics was better documented; some of the characteristics, however, did not receive enough or strong enough evidence to be assessed at any particular level. In contrast, longer tenured CIOs received an incomplete picture of the evolution of their characteristics, interviews providing in general more supporting evidence about CIOs' present situation than about the early stages of their career. Mapping of the evolution of CIOs' characteristics with tenure is shown in details in Appendices 4a to 4l. The appendices also provide the

evidence I used to assess the level of the various characteristics. The amount of transcript material (measured in number of words) used to identify CIOs' characteristics and their evolutions represents on average 8% of the total amount of available transcript material (excluding questions). [Need to address if 8% is sufficient, how it compares to what has been achieved in other studies?]

*CIOs' models of change agency.* To identify the models of change agency CIOs followed during their tenure I read all transcripts line by line and sought instances in the CIOs' discourse of their beliefs attitude and behavior, which revealed their adherence to a particular model of change. CIOs "advocate" tendencies were revealed by statements of strong and clear convictions of what had to be done in the organization, the descriptions of proactive approaches to rally stakeholders to given courses of action, explicit formulations of will and desire to promote and initiate change, and instances of involvement in the politics of the organization. CIOs "facilitator" tendencies were revealed by acknowledgments of the importance of involving and consulting the various stakeholders in decisions making and change processes, descriptions of collaborative, helping and neutral approaches to serving and managing stakeholders. Finally, CIOs "traditionalist" tendencies were revealed by descriptions of their responding to the direct demand of their Universities and statements about their attitudes and beliefs about IT. Appendices 5a to 5k show the model of change agency followed according to their tenures. Discourse excerpts that supported my identifying the various change agency models are also presented *in extenso* there. The amount of transcript material (measured in number of words) used to identified CIOs' model of change agency represents on

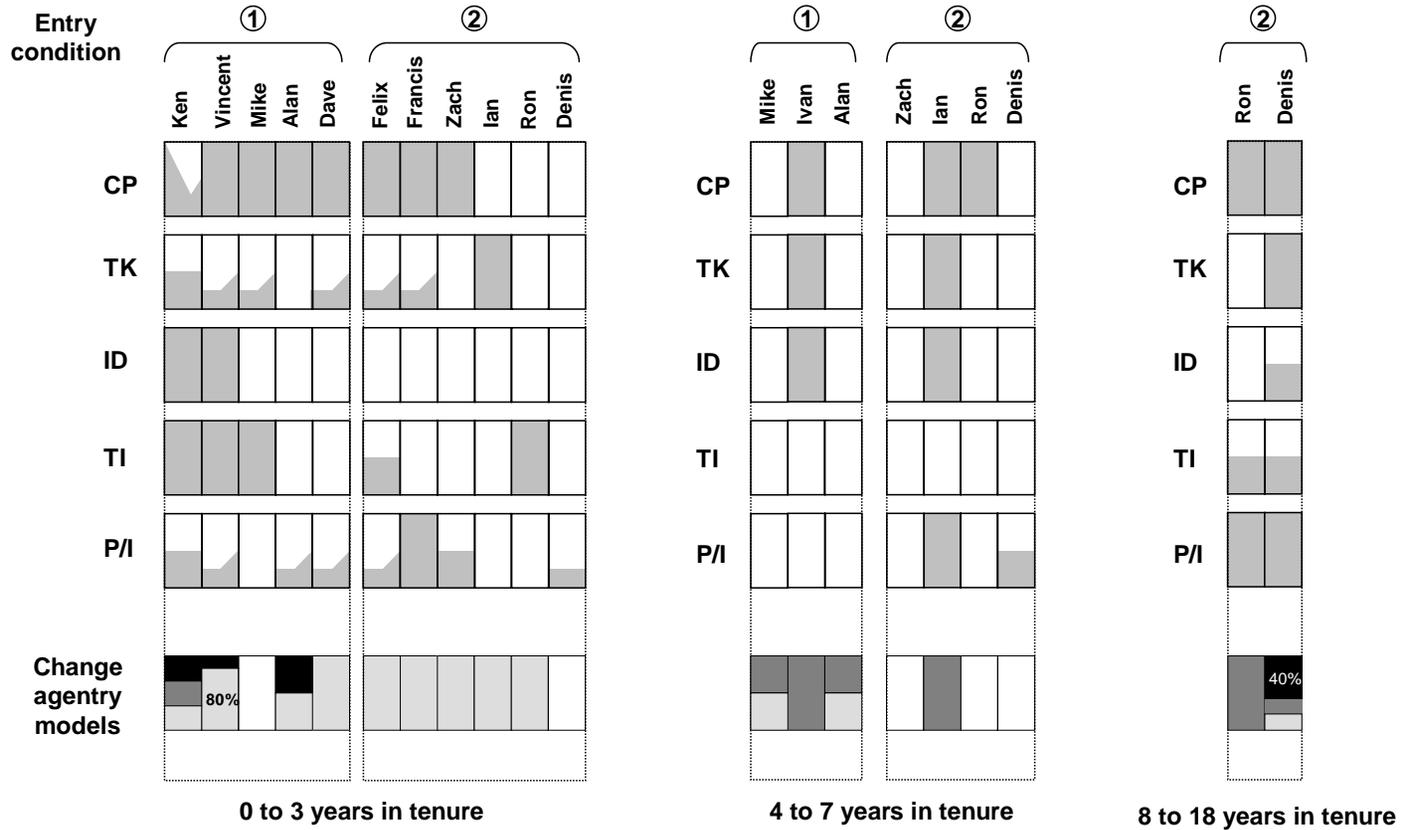
average 6% of the total amount of available transcript material (excluding questions).

Assuming that the more often CIOs expressed a particular way of approaching change in their discourse, the more likely they were to follow the approach, I measured, for each tenure period and each CIOs, the assiduity with which they followed the various models of change by calculating the relative number of discourse excerpts that supported them. For instance, I found for Vincent 4 excerpts supporting his following the “advocate” model and 1 excerpt supporting his following the “traditionalist” model, resulting in my giving him a relative distribution of change agency models of 80% “advocate” and 20% “traditionalist.”

All the raw results of the analysis are shown in Figure 1, and are presented for each of the three tenure periods (0-3, 4-7 and 8-18 years). For each period, the figure shows the level of CIOs’ characteristic on a scale of low-moderate-high and the relative distribution of the change agency models CIOs followed.

[Burt: some measures of the reliability of the determination of CIOs’ characteristics and change agency models from the transcript excerpts should be provided]

Figure 1. Summary of interview transcripts analysis (blank cells = no available or strong enough supporting evidence)



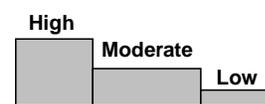
**CIO's entry conditions**

- ① CIO recruited externally with industry experience
- ② CIO recruited internally

**CIO's characteristics**

- CP: Commitment to a paradigm
- TK: Task Knowledge
- ID: Information Diversity
- TI: Task Interest
- P/I: Power/Influence

**CIO's characteristic levels**



**CIO's change agency models**

- Traditionalist
- Facilitator
- Advocate
- No supporting evidence

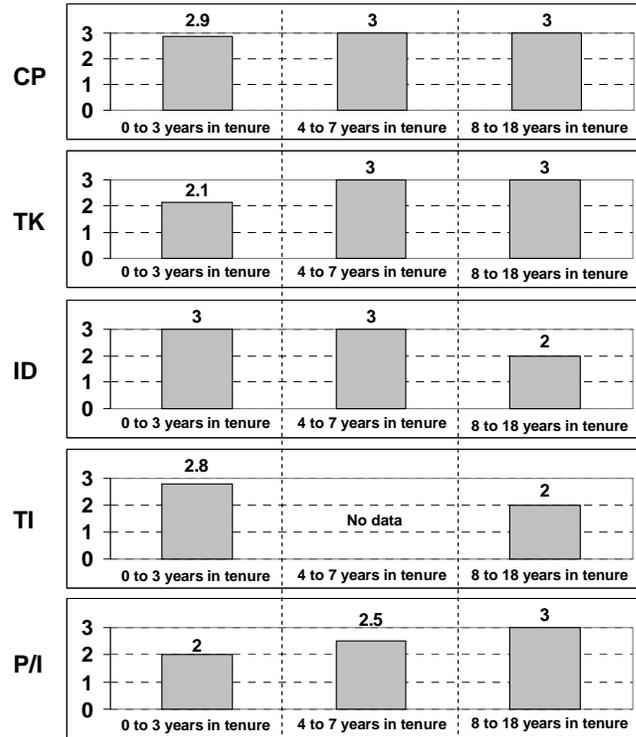
## **Findings and interpretation**

Although the picture presented in Figure 1 is not complete, some interesting patterns appear, and to facilitate interpretation, raw results were further classified and analyzed. Characteristic levels, originally measured as low, moderate and high, were attributed a numerical value of 1, 2 and 3, respectively, which allowed me to calculate, for each of the three tenure range (0-3, 4-7 and 8-18 years) their average. I also calculated the average distribution of change agency models for each tenure range. Results of this analysis are shown in Figure 2a and 2b. In continuation, I discuss both raw and compiled results, bringing to light general trends and interesting specificities.

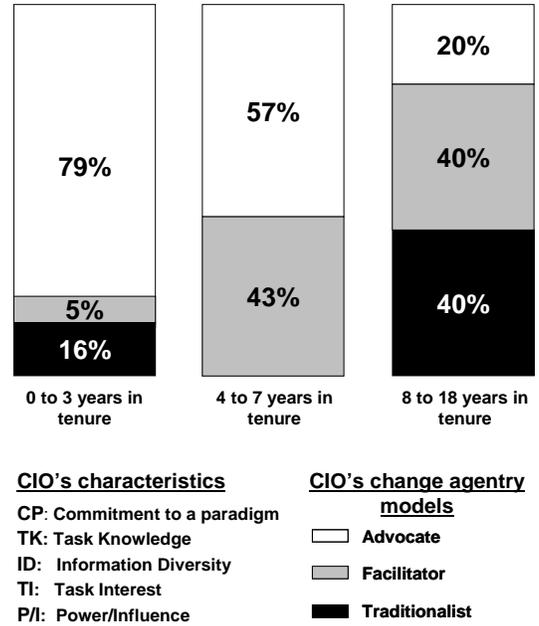
Results show that, on average, CIOs start in their new position with a high commitment to a paradigm, and remain highly committed to this paradigm for the remaining duration of their tenure. CIOs' initial high and continuing commitment may be explained by the fact that most were recruited internally and spent the majority of their work history in a University environment. The only exception to this general finding is Ken. During his first year as CIO of University K, Ken rapidly revisited his initial paradigm to realign it with the realities of his new environment. Ken spent all his experience as a CIO in the corporate world, and although he spent three years in University K before becoming its CIO, his paradigm was heavily colored by his corporate experience.

On average, CIOs' task knowledge rapidly increases in their early part of their tenure, to reach and remain at a high level for their remaining time in office.

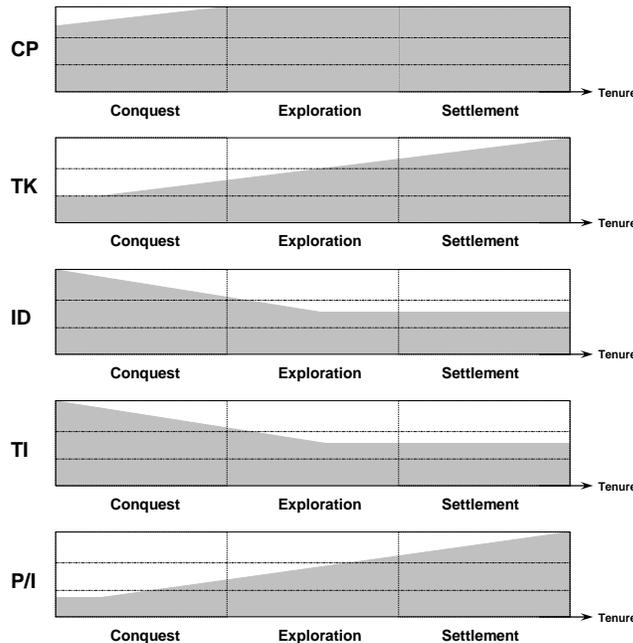
**Figure 2a. CIOs' characteristics evolution (average for each tenure period)**



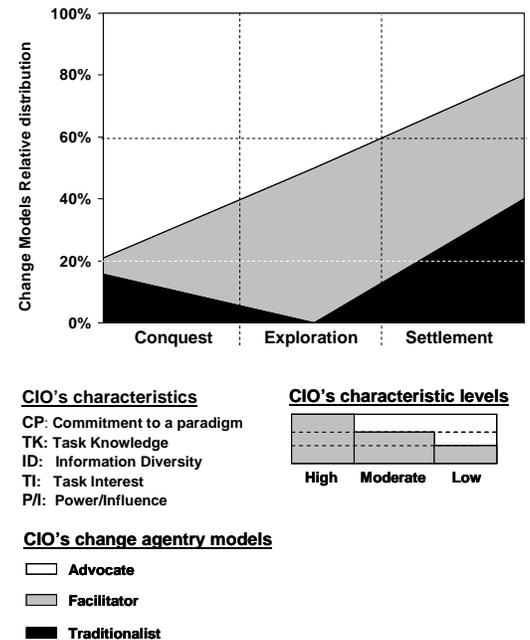
**Figure 2b. CIOs' change agency models distribution and evolution (average for each tenure period)**



**Figure 3a. Model of CIOs' characteristics evolution**



**Figure 3b. Model of CIOs' change agency model evolution and distribution**



This is true for all CIOs, but the CIO of University I, Ian, who started in office with a high knowledge of his task. Ian, indeed, had spent all of his work history (18 years) at University I in the very IT department whom he became the CIO.

On average, CIOs' information diversity appears to remain high for the most part of CIOs' tenure, becoming less diverse towards the end. Results also suggest that, on average, CIOs start their new tenure with a high interest in their task, but that this interest wanes with tenure. An interesting exception to this case is Felix whose task interest in the early part of his tenure was measured as moderate. Felix, co-CIO at University F, had been in office for 6 months only, but spent all of his working life (26 years) at University F. Although Felix was excited by to be in his new position, his enthusiasm was mitigated by a big concern: retirement was looming.

Finally, on average, CIOs' power and influence increase steadily over their tenure. Francis, co-CIO at University F, was the only CIO who started his new position with a high level of power and influence. Francis was indeed recruited internally after having spent 33 years at University F in various high-level managerial positions (e.g. Director of Human Resources).

These results, although specific to a particular type of executives, are the first set of empirical data supporting Hambrick and Fukutomi's model. Exceptions to the general findings stress the importance of whether CIOs were recruited internally or externally, and more importantly for those who were recruited internally the significance of the length of time they have spent in their organization before being promoted.

Turning now our attention to the results concerning CIOs' models of change agency, results show that CIOs tend to follow a specific combination of models

according to the length of their tenure in a particular position (see Figure 2b). In the early stages of their career (0-3years), CIOs predominantly follow the “advocate” model (79% of all supporting excerpts on average), dedicating little attention to the “traditionalist” role (16% of all supporting excerpts on average) and almost ignoring the “facilitator” role (5%). During their mid-tenure (4-7 years) CIOs seems to combine both the “advocate” (57%) and “facilitator” (43%) models. The absence of the “traditionalist” role at this stage is interesting given that CIOs follow this model at both the beginning and the end of their tenure. At the end of their tenure (8-18 years), CIOs rely less of the “advocate” model (20% of all supporting excerpts on average) and mainly adhere to a balanced combination of “facilitator” and “traditionalist” (both 40%).

Based on these finding, I propose next a three-stage model describing how CIOs characteristics and their evolution may explain the type of change agency model they follow as they progress in tenure in a particular position.

### **The Three Phases of CIOs’ tenure**

Hambrick and Fukutomi (1991) suggest 5 phases or seasons for the typical top executive’s tenure. I reduced these to 3 for CIOs, and labeled them metaphorically “conquest,” “exploration” and “settlement.” These 3 phases correspond to my previous categorizing CIOs’ tenure lengths in 3 main periods: early tenure (0-3 years), mid-tenure (4-7 years) and end of tenure (8-18 years). Although these 3 phases have some common features with those of Hambrick and Fukutomi, I found that they would describe better and more concisely a typical CIO’s tenure in office. The “conquest” phase corresponds to Hambrick and Fukutomi’s first season “response to a mandate.” I favored the name

“conquest,” however, to emphasize the proactive attitude of CIOs at this stage of their tenure, over “response to a mandate,” which has more passive connotations

The “exploration” phase may be seen as a combination of Hambrick and Fukutomi’s “experimentation” and “selection of an enduring theme.” Finally, “settlement” may be seen as the combination of Hambrick and Fukutomi’s last two seasons, “convergence” and “dysfunction.”

The model I present next is descriptive and rests on and generalize the results of this empirical study and broader insights from my discussion with the CIOs I interviewed. I present the model in two forms. First, based on my compiled data I drew a dynamic picture of the evolution of CIOs characteristics and the model of change agency they follow as they progress along the 3 tenure stages. Figure 3a shows how CIOs’ characteristics would evolve with tenure and Figure 3b present the evolution of the distribution of change models CIOs would follow during that time. The scales and trends shown in the figures are merely indicative, and the two figures are only intents to help the interpretation of a complex set of dynamic phenomena. To complement this graphic representation, I present next narratives that describe how and why CIOs characteristics affect the model of change agency they follow. The aim is to provide the foundations for the formalization of a more complete, operationalizable and testable theory.

### **Conquest**

Newly appointed CIOs not only have to conquer their new job but also their organization. They must learn about new tasks, and acquire the relevant business and technical knowledge that will allow them to understand and operate within their organization. They also have to build their credibility, legitimacy and political strength

to perform their roles as leaders and managers of their IT organization and as effective members of their broader community. Newly appointed CIOs also have to meet a lot of expectations: they have a mandate to fulfill and a job to justify. Highly committed to their new tasks and confident in the validity of their paradigm, CIOs thus strive to expose, defend and diffuse their vision for IT. Recruited for their leadership, they also have to behave as leaders. At the onset of their tenure, CIOs thus find the “advocate” model of change agency the most natural model to follow. A recent study by Leidner and Mackay (2007) further support this claim. The study investigated 36 CIOs transitioning into their new job during their first year, and provides interesting data on the type of challenges faced by newly appointed CIOs. I revisited Leidner and Mackay’s data and assigned to each of the challenges faced by CIOs the model of change agency which would be best used theoretically (see Appendix 6). My brief analysis shows that in most circumstances newly appointed CIOs would be better off playing the “advocate” role: of the 27 challenges listed by Leidner and Markay, 5 did not fit any particular change agency model; one would benefit most from a “facilitator” approach, 3 from a “traditionalist” approach and eighteen from an “advocate” approach.

Although CIOs predominantly follow the “advocate” role, they also play the “traditionalist” and “facilitator” roles, but to a lesser extent. CIOs find in the “traditionalist” model a means to rapidly obtain recognition among their community by dedicating their attention to satisfying some of the most pressing technological needs of their organization, tackling those low risk highly visible projects that have been initiated before their joining their organization. This approach, however, remains opportunistic and punctual. It is unlikely also, that such a passive approach be tolerated for long by

any organization, unless of course the organization chose to appoint a figurative CIO it can control completely.

During the conquest phase, CIOs are also less likely to play the “facilitator” role. As they learn about their new environment, CIOs still rely indeed on their established paradigm to inform their decisions, and are thus not prone to show impartiality in their advising their community about IT related change. Moreover, although CIOs have diverse sources of information—they listen pro-actively to their stakeholders, and also consult the network they have established in their previous position—they learn and build their influence to convince rather than provide impartial advice.

The “conquest” stage should be the most challenging and risky period in CIOs’ tenure. During this period CIOs will spend indeed a lot of energy to establish themselves and learn about their new environment. Their surviving the “conquest” phase will signal success and acceptance by their community, and CIOs will feel less pressure to perform and less threaten to keep their job. Successful CIOs will progress in their tenure and enter the second phase of their tenure: “exploration.”

### **Exploration**

Having conquered their new job and their organization, CIOs engage in more exploratory activities. They have learned about their new environment, sharpened their strategic business and IT knowledge and establish stronger relationships with key stakeholders. At this stage CIOs have acquired enough credibility and legitimacy to feel more comfortable in their role and ready to revisit or strengthen their commitment to their original paradigm, and align it with their new understanding of their reality. More open-minded and still highly interested in their task, they are more inclined to listen to the

needs of their organization and help it make informed decisions about IT related change. During their period of exploration, CIOs who engage in these reflective efforts are more inclined to follow the “facilitator” model. They do not, however, relinquish their “advocate” approach to managing change, mainly because they are in a better than ever position to follow this role. At this stage of their tenure, CIOs have indeed acquired enough power and influence, sufficient knowledge about their job, their organization and its needs, to sell their vision for IT with a relatively high chance of success. Why then would CIOs use a balance of “advocate” and “facilitator” models, and not exclusively adhere to the “advocate” role? The reason may lie in the fact that, at this stage, CIOs and their organization have aligned their vision for IT. CIOs’ socialization during their “conquest” period lent them to be highly committed to a paradigm that is shared across the organization. Although CIOs still need to convince using their power and influence, they have to do it less aggressively and frequently. CIOs are also careful not to use too much of the political capital they have acquired by abusing their new status.

During the “exploration” period CIOs have little if no opportunities to follow the “traditionalist” role. CIOs have indeed enough power and influence, energy and interest in their task to either take the time to listen proactively to their stakeholders and provide impartial advice and guidance, or to take the lead and convince them.

The “exploration” period should probably be CIOs’ most gratifying period in office, but the danger at this stage will be to fall into complacency, which may well occur as CIOs move to the last phase of their tenure: “settlement.”

## Settlement

As CIOs reach their last stage in tenure, they settle in their role and in their organization. By then, CIOs have acquired a lot of power and influence. But the very power and influence they have built are anchored in the close relationships and trust they developed with their stakeholders and broader community over the years. CIOs are thus careful not to disturb the established status quo by over-playing the “advocate” role, and limit its use to ensure, for instance, that their organization keeps up with the latest technological advances. CIOs must indeed carry on playing the “advocate” because they are still expected to behave as technological leaders. Failure to do so may signal the organization that time has come to find their replacement.

CIOs coming closer to the end of their tenure see their task interest wanes, and with it their motivation and energy to defend, diffuse and implement new visions for IT. Over their many years in office, CIOs have learnt a great deal, and they may feel they have seen it all already. For many, the French adage “plus ça change plus c’est la même chose,” that is “the more things change, the more they remain the same,” rings very true. As boredom and disillusion settles in, CIOs slowly fall into complacency and increasingly follow the “traditionalist” role, reacting and responding to the demands of their organization rather than leading it. CIOs also carry on following the “facilitator” role, but to a lesser extent, for the very reasons I have just mentioned. The “facilitator” role is indeed a good alternative to the “advocate” role for CIOs who have less energy and task interest, but more task knowledge.

The “settlement” phase should be the most tranquil period in CIOs’ tenure. It will be a good place to be for those reaching retirement, and a signal that time has come to move on for those with further career growth perspectives.

### **Exceptions and Variations**

The descriptive model I have just presented is an over-simplification of CIOs common tendencies to adopt a particular type of change agency role according to their tenure in office. Some exceptions and variations to this ideal model will occur, and I discuss those that can be easily anticipated, next. Other departures from the ideal model are also to be expected but only further empirical work will ascertain their nature and the degree of their generality.

#### **Exceptions**

Factors that may create exceptions to the ideal model may be considered at three different levels: environmental, organizational and individual.

Environmental factors such as competitive rivalry and uncertainty (Porter, 1980), technological discontinuities (Tushman and Anderson 1986) may force CIOs to start and continue their tenure within a particular phase. At one extreme, CIOs of firms operating in low turbulent environment where IT and new advances in IT play a small role, will feel little pressure and incentive to lead their organization on IT related matters. As such they may rapidly reach the “settlement” phase and remain there for the remaining of their tenure, predominantly following a combination of “facilitator” and “traditionalist” roles. At the other extreme, CIOs of firms operating in highly competitive and turbulent environment where new IT and its fast adoption are critical, will be continuously challenged. They will have to maintain their vision for IT current, and diffuse and

implement it fast and repeatedly. In those circumstances, CIOs are unlikely to ever reach the “settlement: phase, but will cycle quickly through the “conquest” and the “exploration” phase during their tenure.

Institutional forces may also play a role (DiMaggio and Powell 1982; Teo et al. 2003). A high degree of industry isomorphism (particularly mimetic pressures) may encourage CIOs to follow rather than lead and set them rapidly into the “settlement” phase. Ivan, co-CIO at University I for 6 years, explains how mimetic pressures from his peers influence his decision making about new IT:

**Ivan:** If I want to do something and all other 9 campuses say “Wow Ivan I’m really surprised you’re thinking that” that’s well more directly “What are you thinking?” That would get my attention...So the bottom line with all these changes is making sure that I have a sounding board at least with my peers. That I understand what others and how they are doing it. Are some of the innovators doing the same thing? Are we laggards or is it a safe decision? Is it a more riskier, more innovative decision?

At the organizational level, the business strategy of the firm may force CIOs to play specific roles and remain within specific phases. Firms with different strategic orientation have different technological needs and require different roles for their CIOs (Karimi et al. 1996). Prospectors (Miles and Snow 1978), for example, aggressively pursue new products and markets development, and CIOs of these firms are expected to (1) spend more time scanning their firm’s environment for new development in IT, (2) scrutinize the internal environment for opportunities to use new IT innovations, (3) link IT management strategies to their firm’s business strategy, and (4) develop solid relationships with the senior management team (Karimi et al. 1996). CIOs of prospectors are thus likely to feel the pressure to remain in the “conquest” phase and predominantly play the “advocate” role. Reactors (Miles and Snow 1978), on the contrary, have no

distinct competitive strategy, and simply react to their environment, and these firms are unlikely to devise aggressive strategies for their IT needs. CIOs of these firms will play little role beyond running the firm's IT assets, and should rapidly reach, and persist in the "settlement" phase.

As member of their top management team CIOs will also be directly and indirectly influenced by their peers' attitude toward IT and change. The literature suggests that top management team's composition and demography may potentially play important roles. Wiersema and Bantel (1992) found, for instance, that the younger the team members, the more educated and specialized, the more diverse and older the team the more likely is the top management team to change corporate strategy. In their study of banks, Bantel and Jackson (1989) found, for instance, that firms with teams' characteristics similar to those aforementioned are more likely to adopt innovations.

Denis, who has been CIO at University D for 18 years, explains how looming changes in the composition of his university top management team will affect him:

**Denis:** Basically, in another-- in six months, only one member of the executive team will be there that has been here for ten years. So there'll be a lot of new ideas. But there will also be a lot of lost history... But by August, it'll be me and the VC of business affairs that remember anything about what it was like in 1989. So that is worrisome in that we, you know, we have solved some problems. And people point to things as problems that I don't see as problems. You know, I think the things that were problems before were worse problems. And I worry that we'll go back and revisit some of these, you know, it's the reliving of history kind of things. So I do worry about that. And-- but on the other hand, in the area of technology, and the embrace of technology, many of these older VCs were not fans of technology. They saw it, as was traditional in their era, as a black hole, a sink for money, not a very good use of the money. You know, on and on. I think the newer generation thinks IT is a valuable thing to have, can be used for a lot, leads to productivity, and while it isn't cheap, it's necessary. So I think that there could be some good changes with respect to that.

The demography and composition of top management teams may thus influence CIOs evolution through and persistence within specific phases of their tenure. CIOs members of young, diverse and dynamic top management teams, for instance may find enough stimulation to never reach the “settlement” phase.

Finally, at the individual level, some CIOs’ personality traits may be strong enough to play a moderating or even overriding role. Of the “Big Five” (Digman, 1990), openness and extraversion have been found to be positively associated with CIOs’ creativity and innovativeness (Li et al. 2006). CIOs high on openness are more adventurous and curious about their environment. CIOs high on extraversion feel comfortable with uncertainty, proactively seek change opportunities and have the charisma to rally others to their vision. CIOs high in either or both of these traits are unlikely to be satisfied with the status quo, and may thus never reach the “settlement” phase, but persist in the “conquest” phase and follow the “advocate” role over the whole duration of their tenure in office. There is of course a litany of other personality traits that could be considered. Hambrick and Fukutomi list among others, the need for achievement, tolerance for ambiguity, and internal locus of control. Because all these personality traits are likely to be permanent and consistent over CIOs’ life time (Clark 1997), their actual influence could be well reflected in CIOs’ paradigm and difficult to discern independently.

### **Variations**

Some variations to the standard model may also occur. CIOs may, for instance, cycle several times through the three phases during their tenure. The appearance of disrupting technologies (Bower et al. 1995) or radical changes in the top management

team at several points during CIOs tenure may cause CIOs to “reset their tenure clock” and initiate this cycling process. Some CIOs may evolve through the various phases but in a different sequence than suggested by the original model.

CIOs’ entry conditions may also affect CIOs’ evolution through the various stages of their tenure. CIOs who have been in the same organization for a long time and promoted internally may have already acquired substantial power, influence and task knowledge, with the effect of shortening their “conquest” phase and accelerate their moving to the next ones. Although variations to the general case are expected, they are likely to be rare, but will provide interesting cases to explore in future research.

### **Contributions**

The results presented in this paper hinge on the study of a small group of CIOs from a public university system, and the limitations that ensue should be kept in mind during interpretation. Although CIOs of public universities manage assets the size comparable to those of firms in other industries, and face similar issues they have more time on their hands to manage change; they are not subject, for instance, to the demands imposed by the reporting of quarterly returns, nor do they have to react quickly to the pressures of aggressive competitors. CIOs of public universities have also limited discretion in managing their own staff: they cannot fire incompetent personnel easily, which may slow down their change initiatives in some instances. Despite these limitations, this study offers several important contributions to research and practice.

#### **Contribution to research**

This study provides the first set of empirical evidence showing, in accordance with Hambrick and Fukutomi’s model, that CIOs’ characteristics evolve with their tenure

in a particular position. These results are important because they provide the foundations for exploring new questions about CIOs' effectiveness and ultimately that of their organization. IS research has indeed paid very little attention to *when* CIOs are more likely to be effective in their various roles. If CIOs are to be strategists, educators, architects, etc. as the literature suggests, the question remains to know whether they are as effective in these roles at the beginning of their tenure in office as they are at the end, and if not what are the implications for them and their organization? For instance, do CIOs always have the "credibility" to build strong and strategic partnerships with functional area, a key criterion for ERP implementation success according to Willcocks and Sykes (2000)? Knowing what and how CIOs' characteristics evolve with time should help address questions such as those.

Of all the roles CIOs must play, this study focused on that of change agent, and the findings contribute to our little understanding of this role for CIOs, suggesting that they tend to follow naturally specific combinations of change agency models depending of their tenure in a particular position. Ideally, CIOs should choose the combination of change agency models according to the nature of the change project they deal with (Markus and Benjamin 1996). The present study suggests, however, that CIOs may not always be able to choose, and may have to fight their natural tendencies at some points in their tenure, limiting their abilities to be effective change agents. CIOs effectiveness as change agents could thus be seen as the disparity between the combination of change models they tend to follow naturally given their time in office and the combination they should ideally play given the nature of the IT related change projects they face.

Understanding and measuring how much disparity exists could bring new answers to the fundamental question of why some IT projects fail while others succeed.

Results about the evolution of CIOs' characteristics during their time in office and the combination of change agency model they follow during that time were combined into a model in an attempt to explain *why* CIOs would tend to follow a combination of change models over another. Although this model is still in its infancy, and requires additional elaboration and testing, it provides a solid foundation for further theoretical and empirical research seeking to understand the reasons CIOs, and other IT professional for that matter, are or not effective as change agents.

Finally and more broadly, this study is also an important reminder to IS research not to neglect the temporal dimension of the organizational and individual characteristics it studies.<sup>3</sup> CIOs do have long lasting personality traits that shape their beliefs, attitudes and behaviors about IT and IT related change, but they must also learn during their time in office to adapt to and operate within their environment, and this process undeniably takes time.

### **Contribution to practice**

This study has also several practical implications for individual CIOs and their organization. The model presented in this study has the potential to help CIOs and their organization answer the critical question of when to innovate, assisting them to better assess the risks and challenges associated with embarking in specific IT related change

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<sup>3</sup> Guilty of such negligence, and probably not the only one, is the classic Technology Acceptance Model (TAM) (Davis and Bagozzi, 1989). The TAM, originally published in 1989, proposes that user's beliefs and attitudes are key factors driving information technology usage. Since its first apparition, a score of studies tested the model under various conditions and refined and augmented its original design, but the first study which considered the notion that users' characteristics may change over time, appeared 7 years after David and Bagozzi's original paper. Only two additional papers making the same considerations have been published to date.

projects. For instance, an ERP implementation project headed by a CIO in the “conquest” phase may be seen as more risky than one headed by a CIO in the “exploration” phase, simply because in the “conquest” phase the CIO has not yet developed enough understanding of his or her organization, nor has he or she acquired enough power and influence.

CIOs’ awareness of their standing in a particular phase should help them make better decisions about their career and how to best contribute to adding value to their firm. The “settlement” phase is of course the most worrisome, because in this stage CIOs increasingly rely on the “traditionalist” model of change, which may not only hurt CIOs’ credibility but also lead to dramatic consequences for their organization (Markus and Benjamin, 1996). CIOs reaching this phase may thus well decide the time has come to move on to new ventures, pending their organization hasn’t made this decision for them already. By being aware of where they stand, CIOs also have the opportunity to fight their natural tendencies to follow a particular model of change agency. They may consciously try to operate within different frameworks, and also have the option of delegating some of their roles to members of their team more apt to operate in the appropriate mode of change agency.

The model may also help organizations better manage the CIO position, and assist them in deciding whether and when recruiting new ones. Organizations that know where their CIOs stand are be in a better position to avoid them reaching a particular phase (e.g. “settlement”, by removing them from office or finding creative ways to reignite their original fervor) or to maintain them in a specific one. Organizations should also be in a better position to decide whether to recruit their CIO internally or externally. The present

study suggests that outsiders will need time to reach the “exploration” phase, and may thus not be a good choice for implementing radical change rapidly. Insiders will have the benefit of reaching the “exploration” phase more rapidly, but they may also reach the “settlement” phase too soon.

### **Conclusions**

The study presented in this paper drew from Hambrick and Fukutomi's dynamic of executives' tenure in office, Markus and Benjamin' model of change agency and empirical data from CIOs interviews to explore what change agency models CIOs follow during their tenure in a particular position and why. The study suggests that if CIOs start in their new position as willows they will grow inexorably as oaks with tenure. More specifically, findings show that CIOs' key characteristics evolve with time in accordance with Hambrick and Fukutomi's model prediction and that CIOs follow specific combination of change agency models according to their tenure in office. Based on these findings, a three-stage model was developed, which describes how the combined evolutions of CIOs' characteristics over their tenure in office explain the combination of change models they follow during that time.

As their position becomes more institutionalized, CIOs will see their average tenure in office lengthen, and with it the period of time they will have to perform as effective change agents. Understanding the dynamics of the role CIOs must play as change agents over their tenure in office is thus critical. This study is a first step towards this aim, and more empirical research will help the formalization of a more operationalizable and testable set of theories.

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## Appendix 1. Universities Characteristics<sup>4</sup>

Campus	Founded in	Campus Size (acres)	Campus Operating Budget (\$Millions)	Academic Staff	Of which: Faculty	Professional and Support Staff <sup>5</sup>	Senior Management, Management and Senior Professionals <sup>3</sup>	Total Student Enrollment	IS Organization <sup>6</sup>	
									Headcount	Budget (\$million)
<b>A</b>	1919	419	3,588	10,166	3,326	25,647	1,561	37,221	40	4
<b>B<sup>7</sup></b>	1944	989	638	3,461	1,054	6,114	276	21,016	n/a	n/a
<b>D</b>	1960	2,040	2,156	6,582	1,471	15,923	932	25,938	Acad.: 112 Admin.: 200	Acad.: 7.5 Admin.: 25
<b>F</b>	1873	178	2,640	4,973	1,686	13,071	1,094	4,174	Acad.:50-75 <sup>8</sup> Admin.: 150	Acad.: 10-15 <sup>6</sup> Admin.: 34
<b>I</b>	1965	1,489	1,446	5,178	1,400	10,187	606	25,024	Acad.: 85	Acad.: 12
<b>K</b>	1868	1,232	1,599	8,326	1,950	11,441	882	33,558	450	75
<b>M</b>	2005	910	66	69	89	291	59	878	40	3
<b>R</b>	1959	1,160	435	2,443	851	4,024	190	16,622	150	50
<b>V</b>	1905	5,300	2,310	7,804	2,091	17,991	834	29,637	280	30
<b>Z</b>	1965	2,000	432	2,100	614	4,620	231	15,012	250	26

<sup>4</sup> Data are for FY 2006-2007, compiled from Universities' Websites.

<sup>5</sup> **The Senior Management Group** is composed of the senior leadership positions at the campus requiring the exercise of a high degree of independent judgment in the development of Universitywide or campuswide policy and program direction and acceptability for long-term results. The Senior Management Group includes academic deans. **Management and Senior Professional (MSP):** Positions provide leadership to major campus units, programs or fields of work, and frequently involve responsibility for unit or program policy development and the management of resources through the direction of others. Incumbents possess a high degree of autonomy in their work and make significant contributions to the University.

<sup>6</sup> Headcount and Operating budget figures are rough estimates and for comparison purpose only.

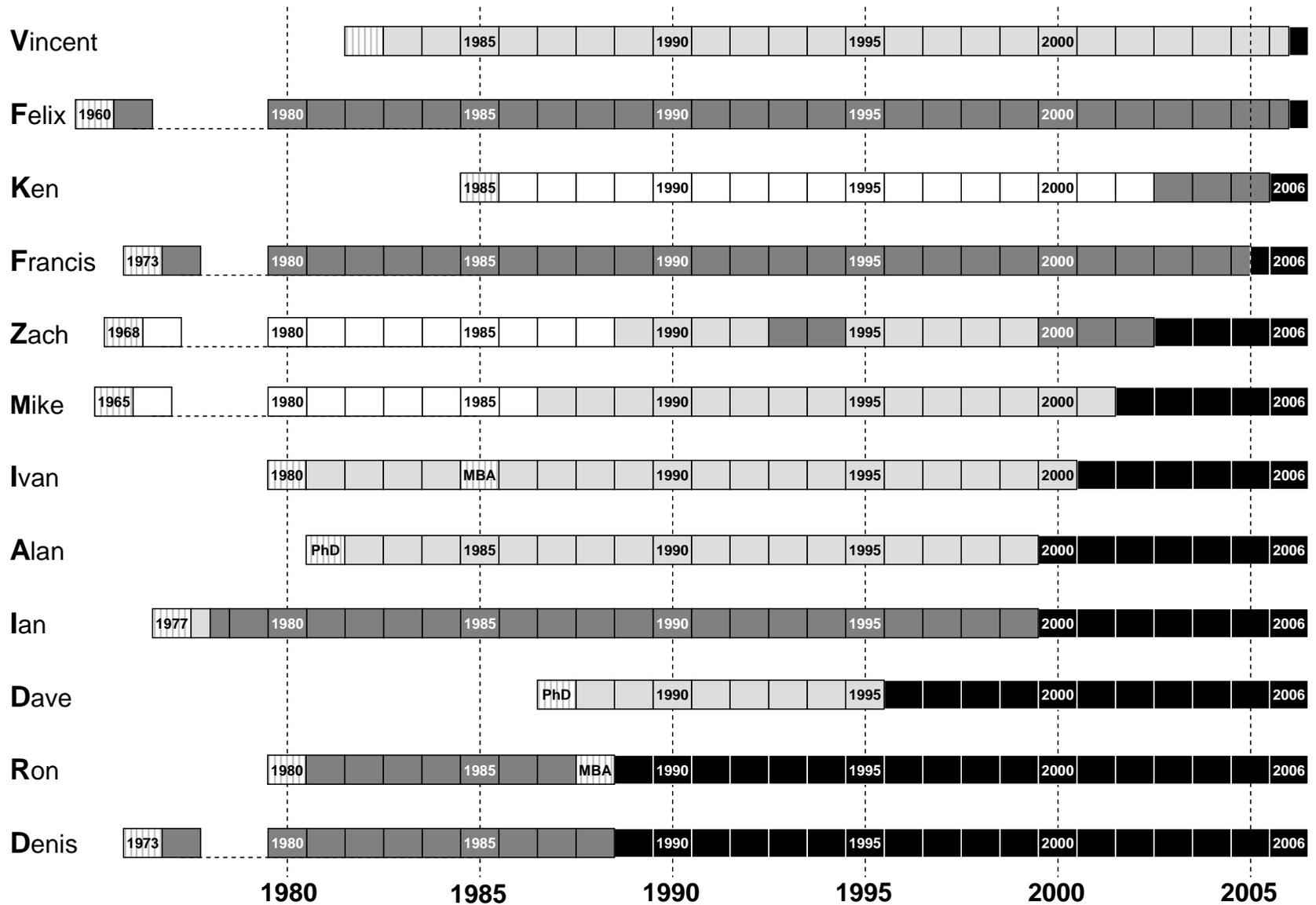
<sup>7</sup> For information purpose only: University B did not have a CIO at the time of this study and was not considered.

<sup>8</sup> Projections

## Appendix 2. CIOs' tenure, educational background and work experience

CIO	Years in current organization	Years in current CIO position	Recruited	Educational Background and Work Experience
<b>Vincent</b>	0.5	0.5	Externally	M.A. in Linguistics; Director of Computer Facility, Executive Director of the other High Tech. Center, Director of Academic Information Technology at major University; CIO of other major University.
<b>Felix</b>	26	0.5	Internally	M.A. Health Administrating and Planning, Ph.D. Sociology; Professor of Medicine and Health Policy; Associate Director of Institute for Health Policy Studies at University <b>F</b> .
<b>Ken</b>	4	1	Internally	B.A., American Studies and Latin American Studies; Senior Manager, Director of IT major software company; Senior Director, CIO major communication company.
<b>Francis</b>	33	1.5	Internally	B.A. English Literature, M.B.A.; Director of Affirmative Action Office, Assistant Director and Director of HR at University <b>F</b> .
<b>Zach</b>	9	4	Internally	B.A. and M.B.A.; manager and consultant in organizations providing support and direction in areas of institutional investment management, economic analysis and corporate planning. IT consulting for major University; Associate Professor of Information Systems, Associate Dean of the Faculty of Management, and Associate Vice-President of Administration at other major University.
<b>Mike</b>	5	5	Externally	B.S. Electrical Engineering, M.S. Computer Science; researcher and system engineer for major IT corporation,; systems programmer, manager of systems services and director of systems and operations at major University; Director of technology services, Chief IT architect at other major University .
<b>Ivan</b>	6	6	Externally	B.A., M.B.A; programmer, computer lab manager M.B.A. program; Assistant Dean of Medical School for Information Technology at University <b>D</b> ; IT Assistant Director, Assistant Vice-president at University system <b>J</b> ; Director for Administrative Computing at university <b>I</b> .
<b>Alan</b>	7	7	Externally	B.S., M.S. and Ph.D. Chemical Engineering; faculty member at major research university; interim CIO position at major University.
<b>Ian</b>	18	7	Internally	B.S. Computer Science; system administrator, various managerial roles, Associate Director, Director of Computing Services at university <b>I</b> .
<b>Dave</b>	11	11	Externally	Ph.D. Management; Director of Administrative Information Systems at university <b>A</b> .
<b>Ron</b>	26	18	Internally	B.A. Political Science, M.B.A.; technical sales/unit management IT and peripherals hardware companies; Finance Dept., CIO University <b>R</b> .
<b>Denis</b>	33	18	Internally	Computer Science degree from University <b>D</b> ; programmer, mainframe consultant, manager User Services, and Director of Academic Computing Services at University <b>D</b> .

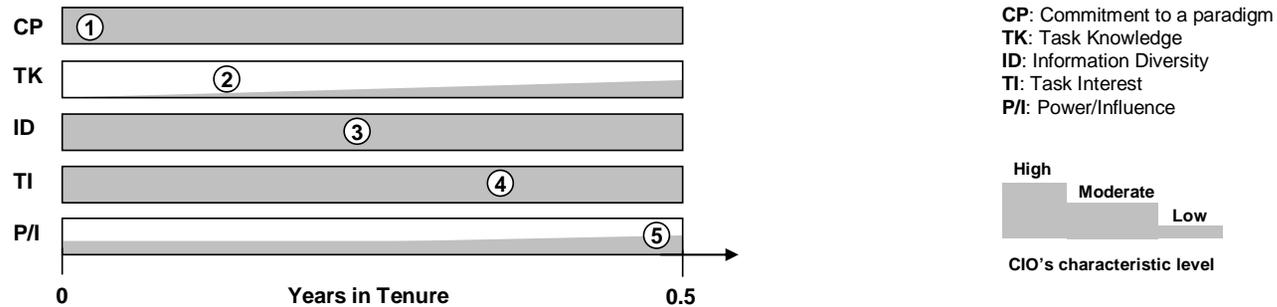
### Appendix 3. CIOs' work history



Each block represents:

- 1 year in current position
- 1 year in other university
- 1 year in current university, but other position
- 1 year in a non-university organization
- Graduation year

## Appendix 4a. Vincent's characteristics



1. "I'd like to think from the faculty point of view, but my job really is to make an administrative bureaucracy work and to work within that environment. I think one of the reasons I was brought here was a sense from the faculty that I act like I try to think from their point of view. In some respects, for some of these things we're talking about, the faculty has very minimal involvement in the issues, and that at the end of the day; I want them to say what they did with those administrative services made my life easier. It's really that kind of notion that I'm not an administrator, separate from the faculty. Even though it doesn't appear to impact them directly, having them value what we do and understand it is a priority. That's what I think I bring from my career start."

2. "There were people here that I knew, but in general, during the spring, I was given access to a large amount of information. People put me on their mailing lists and other things, so I had a few months of, I would say, head start, but that was it."

3. "I've been very active in Educause<sup>1</sup>. I mean I have actually two conference calls today with Educause, one on business continuity, the other on security related issues. To me, it's been a great investment, because it's nice to help the national community, but you always get more back to your own campus, so it's something I spend a lot of time on."

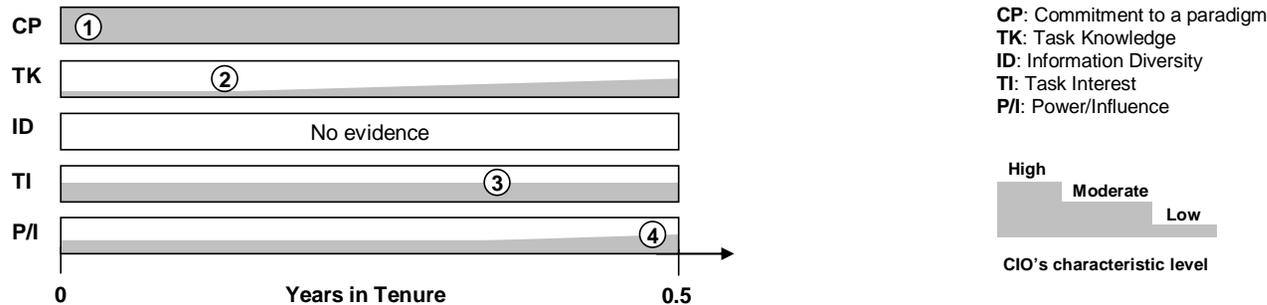
4. "...I really was excited about coming here, because I saw that sort of governance structure in the way the campus worked as something where success or failure depends on like-minded people working very hard. That there wasn't a bureaucracy that basically said no matter how hard and how well you worked, you still had these big obstacles."

"And then here, where what I would define as the unique and, I think, very exciting element of the position here. I really have two jobs and I try to do both of them. One is to be an advocate for information technologies and information services broadly on the campus, no matter who does them. The best way to do it is in the department. And then secondly, to run a 270-280 person IT organization that provides campus services. I tell the faculty the first job is, in some respects, the most important, which is to understand where their investments need to be."

5. [About getting the stakeholders onboard] "A big part of it is what I'll call the walk-around model. It's just basically meeting with them, getting names of other people to meet with. The second thing is to get groups of faculty together to actually discuss directions, and sometimes, people use committees to do that as just a way to get them to talk. And the third way is a strategic planning process."

<sup>1</sup> EDUCAUSE is a nonprofit association whose mission is to advance higher education by promoting the intelligent use of information technology.

## Appendix 4b. Felix's characteristics



1. "And the bottom line is faculty will always have that choice. We will never, as long as I have anything to do with it, anybody who's staying in academia will never require faculty to use a particular system or whatever."

"This new organization is also active in administrative information systems and information technologies, and that's purposeful, because I want to get away from the idea that IS/IT is things; its wires, and its chips and its computers. Because actually, those are just the means for us, we use those as we develop the systems. And it's really the systems, and the software and the re-engineering of the processes that is what's important."

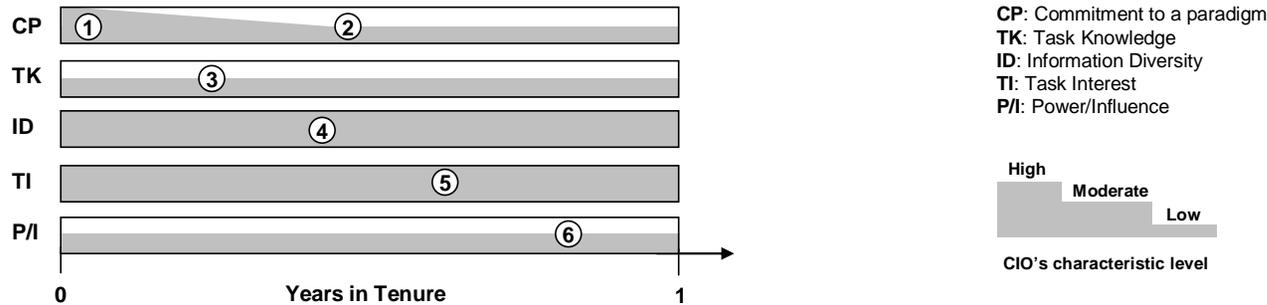
2. "And for the last ten years, I've been the Associate Director of this institute for administration. And in that time, actually, I developed our own local administrative information systems. And so now that we're going to be developing systems from a campus level, I have a very good sense of what is needed at a departmental level."

3. "Well I'll tell you one of the things that is an interesting one. I'm 60-years-old. I've been in the university retirement system for over 30 years, and you know what that means immediately, which is that it'd be fine for me to retire right now and I was thinking about it before this position came along. This is a chance for me to make a difference at the university, an institution that I'm very loyal to. I think it's a great institution and I can build something. But I'm not going to be here in ten years. I don't want to be here in ten years. I actually think that I was the right person at the time, but now what I think needs to happen over the next couple of years is to identify somebody who's younger, who has 10 or 15 years left, who maybe can move into this kind of position. I'm starting to even be concerned. What are we going to have in three years or five years? Five years, for me, is at the very outside of how long I want to work. Three years is what I'm thinking. But I'm also thinking boy, I'm going to be leaving something right in the middle of the transition. Am I going to feel comfortable doing that? So maybe I'll never retire."

4. "But I can tell you at University F, I couldn't do this position without having this background, because I know all the faculty and I'm able to speak as a peer to faculty, and to tell them, like I said to someone recently. They were being a little obstreperous in a discussion. I said, "You know you're real tough. Come on. Let's just get the job done. Let's figure out how to do it. I don't have any vested interest in having it done one way or the other. Let's just choose the right way to do it."

"...but the fact that this is my first formal campus level IT positions, possibly makes me somewhat less legitimate in the eyes of the old IT hands, some of the folks that have been around..."

## Appendix 4c. Ken's characteristics



1. "In my methodology, the way you are never at risk in your job is by taking risks, by doing things. You should always be trying to work yourself out of a job because then you're indispensable. But we have a lot of people who believe that the way to be successful here is to take no risks. Success is defined as never failing. That, I think, is just an awful mistake and a terrible cultural paradigm to set."

"So I think to be a good IT executive, it isn't about the right answer. It's about creating environments that are flexible enough so that you can adapt as you go. You just have to be able to respond and flexibility is how you do it. Sometimes, you know, you wish, "If I'd only invested more in that area, it wouldn't have happened." But more often than not, I think the oak approach of never bending and investing all your energy in one approach doesn't work. We need to be willows. We have to bend a little more the way the wind changes."

2. "If you run on a treadmill and you run really, really, really fast and then you step onto a treadmill that's really, really, really slow, you can't do it. It's too hard. So the question for me is how do I get off the fast treadmill and speed up the slow treadmill so that you get it to a better pace."

3. "I'm a strong technologist. I can hold my own in conversations with the campus on what it needs technology wise."

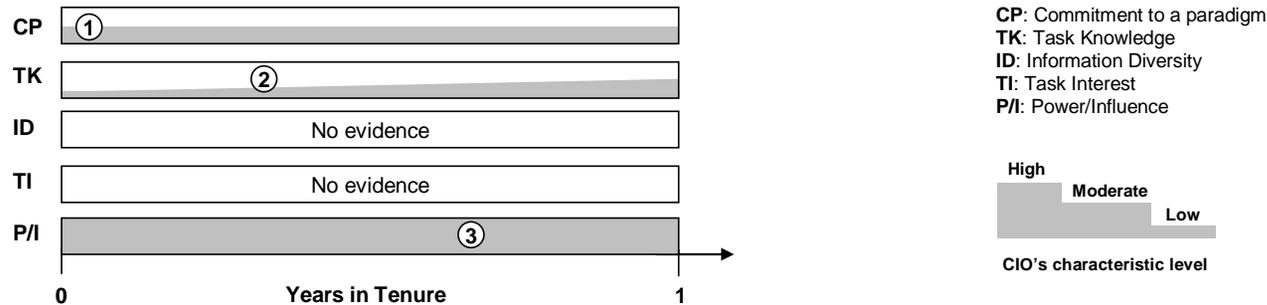
4. "The fact that everything is public makes it much easier because everything is available. There's nothing proprietary. I share all of the data with the other institutions. Any other university that wants to talk to me, I give them what I'm working on. It's a great collaborative opportunity."

5. "When I came here, one of the reasons I did was I needed to be professionally fulfilled in a way that also tied into my personal objectives. My wife is a public high school teacher. My kids are in public schools. We went to public universities. I'm a University K as opposed to Stanford or MIT for a reason. The public mission is a big part of why I'm here. So it's been very effective for me at matching my professional objectives with my personal objectives."

"In the private sector, I haven't been able to achieve the same level of satisfaction for me professionally in doing strategic plans because of the turnover in the executives or the changes in the market and the quarterly driven culture."

6. "I think they [three years of my being second in command here prior to this appointment] were critical for the campus to accept me as much as it was for me to understand what the campus needed. I could have done it just coming in, but I would have had to take a long time to learn the environment."

## Appendix 4d. Francis' characteristics



**1. and 2.** "...going through a structured due diligence process was a technical skill that I actually appreciate and use even when we're not doing mergers, in other words it structures your way of analyzing business and problems. But probably more than those technical skills, I think the sort of, I don't know how to describe it, it's a sort of a psychological skill...psychologically I think learning how to just get more comfortable with risk-taking and sometimes a leader has to lead even in the dark, you don't know where you're going, it sometimes is the appropriate thing and you just need to get used to it, and not just be "Well, I'll wait until I know more certainly what's going to happen," because you can't wait. So I'd say that probably was the more important skill, just sort of the psychological learning."

"I'm feeling comfortable, I know the lay of the land and I know where the priorities are...I'm certainly not groping my way around like I was a year and a half ago."

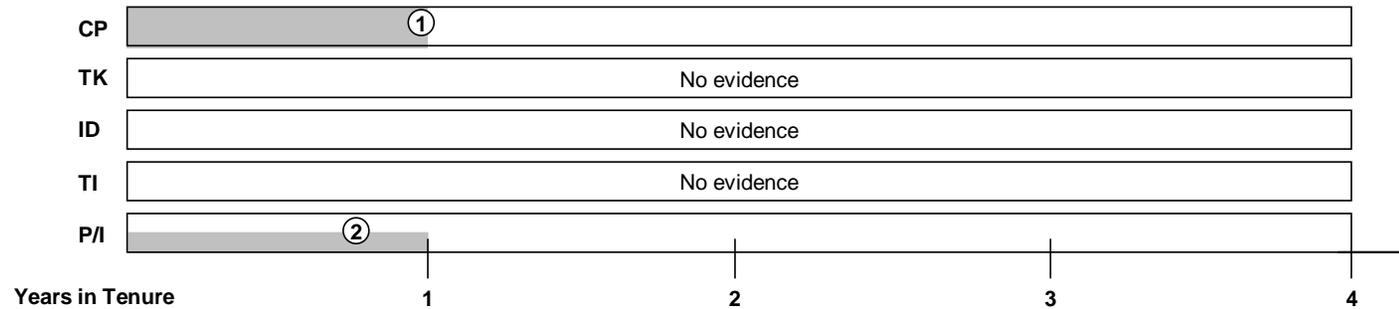
"My suite of responsibilities before I became CIO did include a project management office which we were in charge of implementing technology projects, we intentionally called that part of IT, so I was sort of the broker between technology and functional users, and all of the projects that we've been implementing are large ERP people, software implementation for four years, I was managing that before I was the CIO...."

"...I like technology, I respect it, I've always-- I mean I was an early subscriber to computers, before the idea of a PC, I had early computers, but it was always a tool to get something else done, not so much the technology itself, although I certainly like technology. So I guess the pluses and the minuses, is I certainly feel disadvantaged when they were highly technical issues about why should we buy Sun servers or IBM servers, what is the advantages of both."

"...the MBA program gave me a little bit of a lot of things, but it shows you how to tie it all together, in other words I don't want to be an accountant, I don't really want to be a finance person, I don't want to be an organizational development person, but it gave me tools in all of those areas to be able to say here's how I can tie all those things together to have sort of a complete, a more complete assessment of a problem and how to approach it..."

**3.** "...we have an organizational chart that you can look at and say "Okay, that's the organizational chart," but the way work actually gets done, it's through relationships, knowledge, trust, it's not always reflected on that, matter of fact it's often you're misled if you follow the organizational chart, universities just are notoriously not hierarchically driven. So the fact that I've been here twenty years, and I know who I can go to and say "Can't we work through this and figure out a way to do this together?" they may or may not have any relationship to me on our organizational chart, is the best way to avoid or mitigate problems in managing change, and the fact that I know a lot of people and I sort of have relationships that are, I hope, trust, that someone coming in says "Trust me, if you go along with me on this I promise X, Y, Z we'll work out in the future," if you're Joe Shmo, brand new CIO, coming in from the outside, they're looking at you like well, you know, maybe, but if you have a relationship that we said "Okay, I've trusted you before and generally you've come through," that's a value, that's an absolute value."

## Appendix 4e. Zach's characteristics



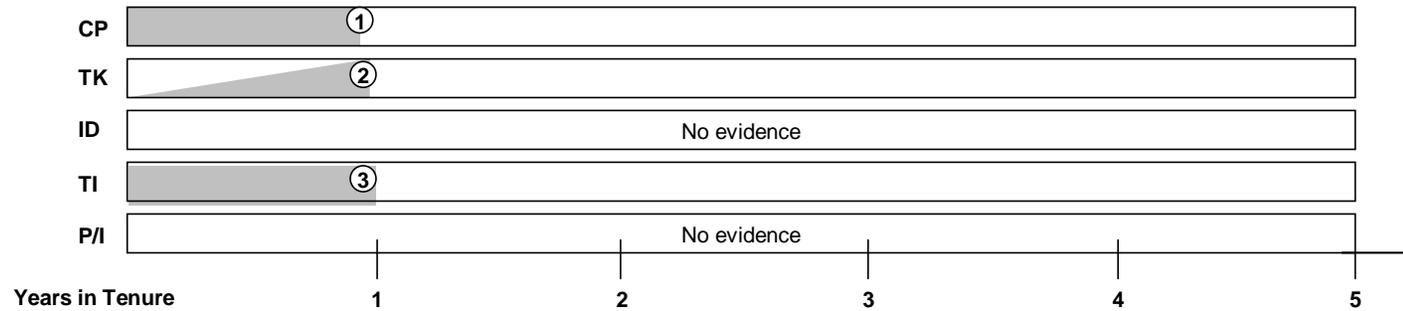
1. "What helped was the confidence that comes from being engaged in many different organizational change efforts, regardless of their context-- understanding what the real needs and issues are in a change project like this and just having the guts to stick it out. It's really-- it's bloody hard work. I hope I never have to do this again. Well, let's say that differently. I will never do this again. I'm at the end of my formal career, and this is-- I will retire this time and do something that is less dramatic. Let's just put it that way."

2. "Well, I started coming in '94, so I was well known... I don't think we could've succeeded if I hadn't had, for me at least-- for what I needed-- without having the confidence of people that I had worked with and said, "Well, we can trust this guy." I think we-- I've used up a fair amount of that capital in the last few years. Because we've had to make decisions that didn't make people very happy a lot of times. But going into it I think that was very important to have. If I'd have been a stranger coming off the street to do this, it might've worked-- but it would've been-- you know, it would've been tougher."

CP: Commitment to a paradigm TK: Task Knowledge ID: Information Diversity TI: Task Interest P/I: Power/Influence



## Appendix 4f. Mike's characteristics



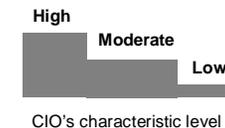
1. "I mean it's just a talent; I was always good at, from an architectural perspective, of picking out which technologies were good building blocks and would get you somewhere in the future, and which ones would be dead ends and cause problems...Where to use vendor products, where to use open source standards, how to build things so you can replace pieces of it without having to do everything. So that's tied very much into strategic planning, and helped me in this job, obviously."

2. "My skills were not greatly suited to a start-up, because my skills were running large organizations. And most start-ups are really looking for a technology person that can create the product. And that's technology development and product creation, whereas my skills turned into, from the management side. As a programmer I could have done anything; from the management side was how do you take a relatively large institution with a lot of IT and make it work well, and keep it working well and make it maintainable and affordable and flexible and all that, which was a dilemma because starting in a small college made no sense, because they use totally different IT. It's just small scale, it's not where my expertise was. It's not that I couldn't have done it, but the salary wasn't there and my skills weren't being used. For a large university, I had no track record as a CIO, although I would have in some second tier state colleges who I was talking to, I certainly would have done the job and I would have been fine with it, would have been a stepping stone. This was sort of ideal, because it's a UC, it's going to be 25,000 people, so the technology I put in, even though we were small, is designed to support that large-scale environment, where my skill set is"

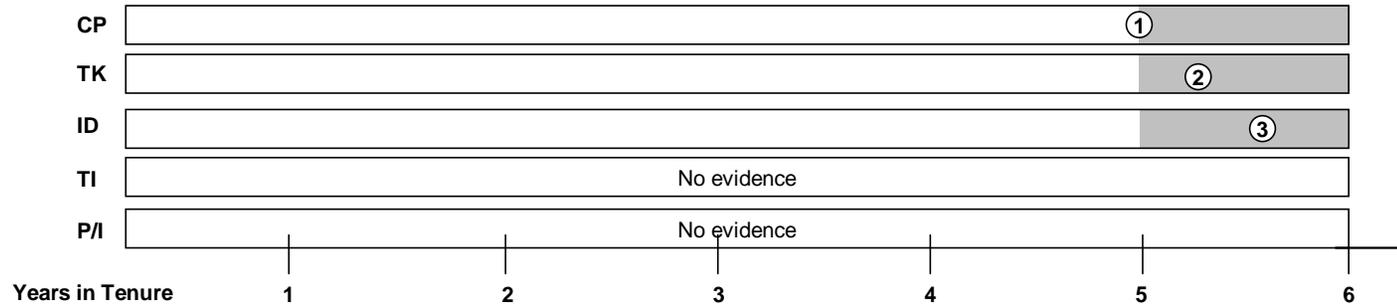
3. "Now, it turned out to be an exceptional opportunity because we were building a UC campus from scratch..."

"...and then you have all the excitement of being able to do it right from the start. So it's I would say the most interesting higher ed CIO job in the world..."

CP: Commitment to a paradigm TK: Task Knowledge ID: Information Diversity TI: Task Interest P/I: Power/Influence



## Appendix 4g. Ivan's characteristics

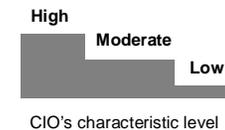


1. "We're more early adaptors, not the very first wave of founding partners but we're in that second wave. So it's been a combination but I think part of it is you need political coverage and more importantly you kind of need that experiential coverage of knowing what others view."  
 "So the bottom line with all these changes is making sure that I have a sounding board at least with my peers. That I understand what others and how it are doing. Are some of the innovators doing the same thing? Are we laggards or is it a safe decision? Is it a more riskier, more innovative decision?"

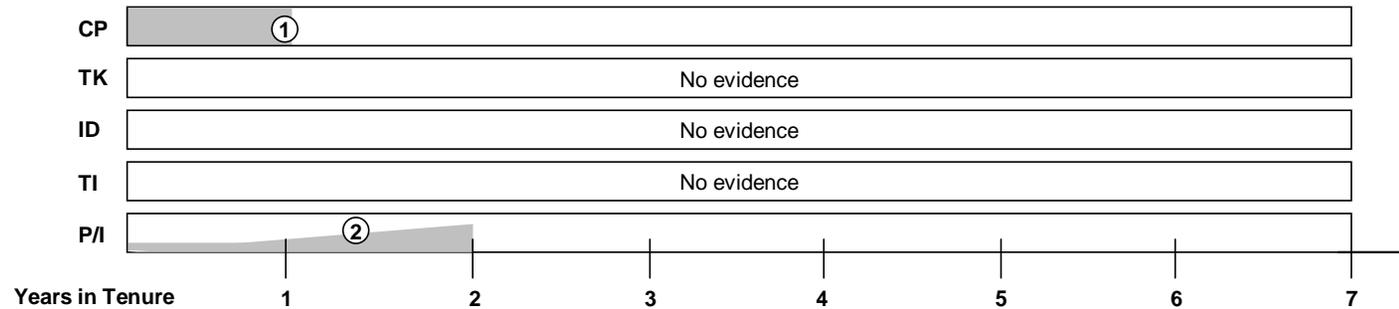
2. "Well I think part of it for me was to identify who were the not only the key stake holders on campus, I think part of that in more traditional thinking has been okay this isn't going to happen without the users and who are the key stake holders. So that I think is fairly well understood. I learned that both the good way and hard way over the years..."  
 "But the bottom line is that I think where I'm confident, where we're confident is the community is "We understand networking, we understand transactional processing, we understand how to do things now, we're learning what security is to a much greater extent, we know we're using new models that helped us support other things.""

3. "I think some of the most rewarding parts of my job of working not only with the user community and our staff but also with the UC colleagues. So we meet three times a year then we have conference calls each month. So in making those kinds of decisions part of it is checking with a Gardner [ph?] or trying to keep up with what's kind of going on in the industry. A bigger part of it is what's going on with our peers. We're very active in Educause [ph?]. I'm on the Educause [ph?] program committee for 2007. We've published articles, done presentations, but more importantly been listening, we've been participating and contributing but we've been listening..."

CP: Commitment to a paradigm TK: Task Knowledge ID: Information Diversity TI: Task Interest P/I: Power/Influence



## Appendix 4h. Alan's characteristics



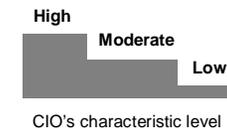
1. "...from the X University experience, I had a very good base of things that don't work and so that - those which don't work was actually a strong influence for me."

2. "...my first step was just simply to build some credibility in a tangible way. So it actually was not so hard to find some opportunities; see that was the interesting thing. So there were two that I seized upon almost the moment I got here and they weren't hard decisions because they were things going south pretty quickly."

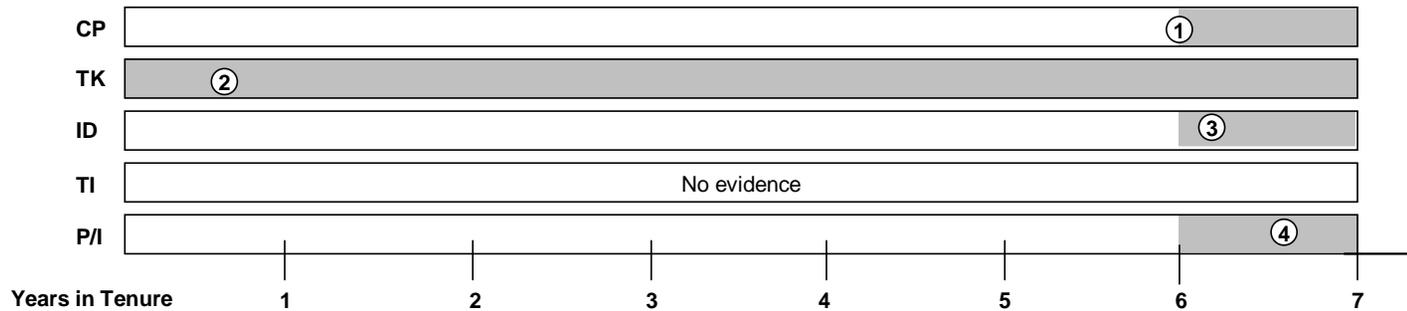
"...from the point of view of someone that's new and without any definition, the first place that fell to me that I could have some impact was to start what was the governance process. It actually proved to be in true in hindsight because that actually was the best move of all was to focus attention and resources on just building the governance process, because that served to bring people together, that served to build credibility, that served to get me involved with lots of different groups and what they were doing and etc., etc."

"I and my office, another point of influence is simply neutrality; credibility and neutrality are probably the biggest - what's the word? That's what gives us our capacity to do things, neutrality and credibility. So there can be lots of fighting and tension, and competition, and all these sorts of things, and so we time after time step in and us the governance process or we use our neutrality to help sort the situation out and that - so this is kind of a program management office component combined with a governance process component, literally spending much of the time doing that but that's actually proved to be the most powerful component in all of this."

CP: Commitment to a paradigm TK: Task Knowledge ID: Information Diversity TI: Task Interest P/I: Power/Influence



## Appendix 4i. Ian's characteristics



1. "...I'm probably a little bit jaded. I'm use to this environment...so maybe I don't have the benefit of seeing other ways of doing things as much as some people do..."  
 "...for some reason change doesn't worry me and I'm trying to figure out why that is. Part of it is I don't have high expectations about change. When there's change I don't expect it to happen over night. It's going to be gradual and my experience is every change we've ever had to endure has worked better when you did it gradually."

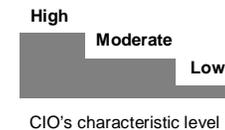
2. "...I've been here my whole career, with the exception of a few months very early on and in fact, I even graduated from University I with a degree in computer science."  
 "...and another thing is maybe I enjoy it also it's just that I appreciate the unique, I don't always agree with it, but I appreciate the unique culture at this campus. I understand University I's culture versus University A's culture versus UC whatever. And I think that's helpful to know where, what you can change, what you better leave alone and then when you want to get something to happen how you can move it in the right direction."  
 "But it helps [being a computer scientist] because I guess several ways; one, you never have enough free source right. So you're constantly getting requests from your staff to do things and I'm in a better position to kind of push back a little bit and ask the hard question about "Why are you doing it that way do it this way?" They know more than I do no doubt about it but it just makes it so that I can participate in the discussion a little more. I can't just, people don't just hand you something and I'm stuck with it that's just it and then in terms of outward I think with, it provides some credibility for me that I understand what the problem is or what not. On the other hand the fact that I'm not a faculty member, I think impedes my interactions with faculty. I mean not in a real, people will open their doors to me of course, but there's just a different mindset and..."

3. "...but it's a very open environment where we're always working with, especially the other Universities of the system, we've always, collaborated with all of them..."

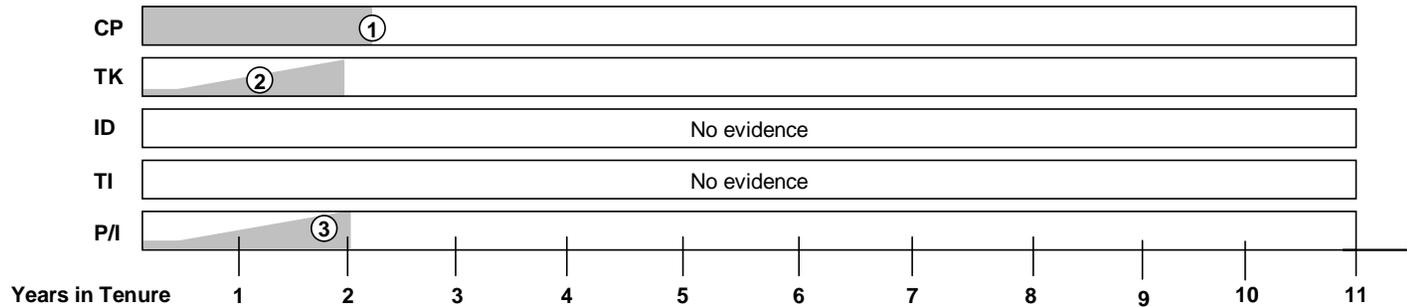
4. "...I know an awful lot about the campus. I have a lot of people I've worked with forever. I can have a new problem now and there could be somebody I haven't talked to for 5 years who was instrumental in solving that problem and I can then up "Hey how's it going?" Those contacts are extremely helpful. People know me so when I show up they're not immediately turned off or they don't have a preconception that I'm probably there to try to help or to do something reasonable not "Oh here comes trouble"."

"So if you talk, if you're reasonable and you present arguments and information and ideas that are value to them, they value you. But then I've also a position of authority on campus and they also value that. I have some resources and what not so I think that also helps me."

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## Appendix 4j. Dave's characteristics

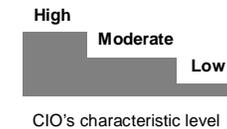


1. "Well, I tried to make sure everybody understands that customer service is number one. That was not the philosophy before that. The philosophy before that was that we know better. We know what to do and the customers don't really know what they want. Sometimes, it was true, but most of the time, it wasn't true. So changing that culture was a very big one. Another change of culture is to say that we want to stay leading in technology and not trailing in technology. So using the latest technologies and adopting them quickly was very important. When I came here I said that everything we do is going to be Web-based."

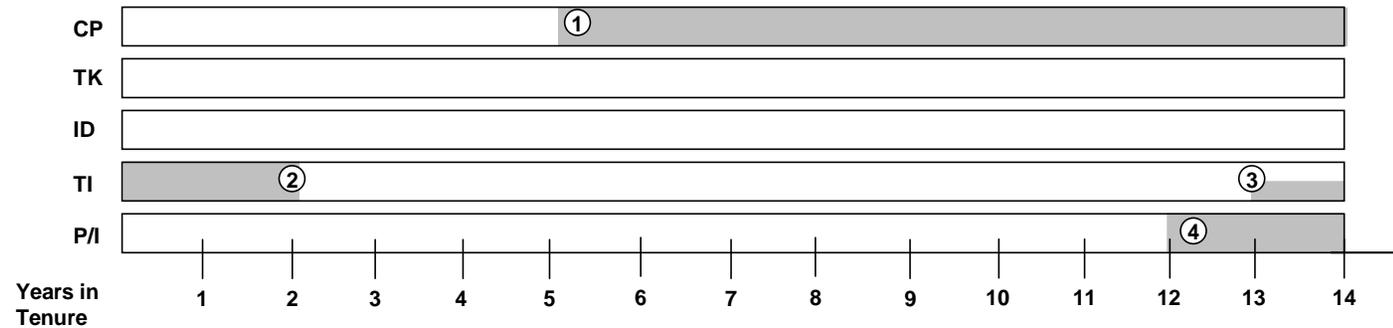
2. "There were things I didn't know because I assumed the telecommunication units, which I didn't really work directly with at University A. So that was a lot of new stuff to learn. But it was a good experience. I transferred quite well and it was actually easier here."

3. "Yes. I tried to get to know all the key people right away. I suggested having, in addition to the business meeting and so on, having lunches with every one of the key people once a month or once every two months to kind of keep the relationship going."  
 "So we had to make a lot of changes, people changes and organizational restructuring. So it took a couple of years to kind of change that. So there was a change, a significant change in the group."

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## Appendix 4k. Ron's characteristics



1. "So very early on what we had to do we had to say "We cannot be all things to all people, we just can't". Even internally within the organization we cant be that and so as we were anticipating all of this change and all of this coming and everything else, one of the fundamental things that we decided to do was we were going to pick three or four core technologies and we were going to be the absolute positive best at those and we weren't going to diffuse ourselves. So one of the first decisions that we made was Oracle. When we deployed the campus financial system in '98 – '99, we said "Oracle", now right now today, we have, if I went around the building and counted how many different Enterprise [ph?] applications that we support so if the light goes out and you want to get the light fixed you go into a Web system you request a new light. It's an Oracle backend."

"...the huge disadvantage is that it's much harder to create dramatic, there are some things that we're doing here at R that are not right and to get that done is going to require a dramatic change in culture. Because I'm part of the culture, I'm part of it, it becomes very difficult to have me make those huge, to get those cultural changes. Now if someone were to come from the outside and say "Look I've been 10 years here and 5 years here" and everything else, that you're doing these things well but you really need to re-think this" and that's very hard for me."

2. "Being able to use my skills and talents in the service of an important cause, I mean I rank those very high. So it was that combination of looking for an opportunity that would allow me to do something that I felt was important and also just saying "You know I've had 10 years of sort of this low end capital equipment, I've made it work but I don't see myself progressing along the way that I want it to". So those things came together and I found the opportunity here within the technology organization of the University."

3. "We're coming back to the point where the economy is right, ratcheting up a little bit and so I'm beginning to get more and more people inquiring about whether I might be interested in taking a look and I'm actually at an age, I'm 48 and I'm hoping that I'm going to work for 10 more years, I'd like to work for 10 more years and I'm thinking about how do I want to spend those last 10 years."

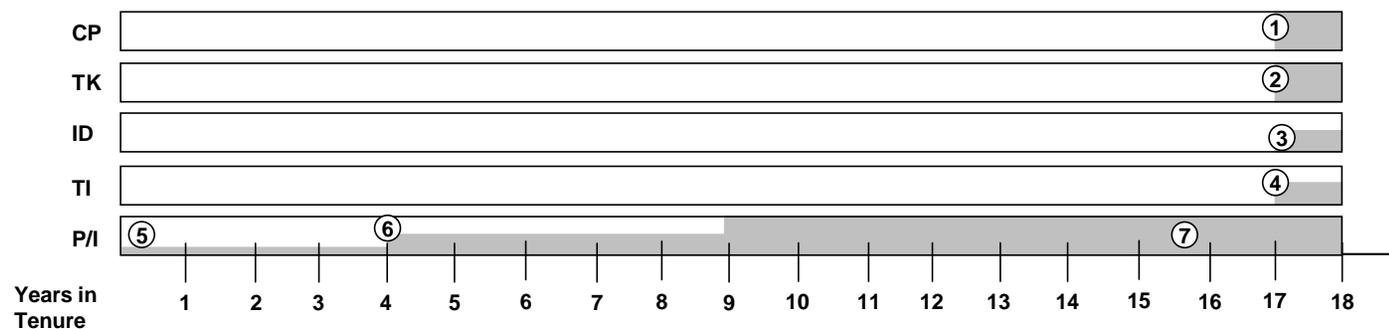
4. "So being with one organization for a long time the huge advantage I have are the interpersonal relationships. It's a huge, and the institutional knowledge I mean so I know where our strengths are from a faculty perspective. I know where, who is doing what with research technologies and whose not doing what and where can I go when I want to do something innovative relating to instruction I know who my champions are..."

"And these relationships I've built up over years and years and facilitate me getting things done. I just can't tell you, I mean the Deans of the colleges to get the Deans to buy into this type of thing, that's huge advantage."

CP: Commitment to a paradigm TK: Task Knowledge ID: Information Diversity TI: Task Interest P/I: Power/Influence



## Appendix 4I. Denis' characteristics



1. "So that is worrisome in that we, you know, we have solved some problems. And people point to things as problems that I don't see as problems. You know, I think the things that were problems before were worse problems. And I worry that we'll go back and revisit some of these, you know, it's the reliving of history kind of things. So I do worry about that. And-- but on the other hand, in the area of technology, and the embrace of technology, many of these older VCs were not fans of technology. They saw it, as was traditional in their era, as a black hole, a sink for money, not a very good use of the money. You know, on and on. I think the newer generation thinks IT is a valuable thing to have, can be used for a lot, leads to productivity, and while it isn't cheap, it's necessary. So I think that there could be some good changes with respect to that."

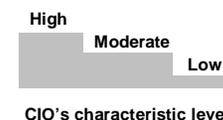
2. "Well, so I know how the campus is organized very well. And I know the history. In fact, you know, one thing I tell the staff a lot of the time is those that don't learn the lessons of history are doomed to repeat them. And quite often, we'll be talking about something and I'll say, well, you know, the reason we don't do it that way is back in year such and such, it was done that way, and it created these problems. And we don't want to create those problems again. Those problems have been solved. But, you know, with a lot of management, or with a lot of managers who are not seasoned, they just change to change. And they don't change to improve. So having that history keeps us-- gives us some perspective about what will work and what won't work. And so I think that's been useful."

3. "Our students, of course, bring us ideas all the time. And one of my managers was-- is young enough to be a user of instant messaging. And she started using it with her staff....And so one of the things we did is we gradually opened that up to the whole department. Now the whole department uses instant messaging."  
"...in terms of instruction, we the faculty really-- we really drive the truck. And what they do is they induce us to change by suggesting a new piece of software or something like that."

4. "And I'm, you know, I'm late enough in my career that it's hard for me to-- I have a certain cynicism about those games, you know, or those exercises. And having been through a lot of them in early years where they were just ignored by the management. I get weary and I'm afraid the staff will get cynical if we, you know, if we don't deliver a product as a result of these."

5, 6, and 7. "And so when I became director, I was reporting to this faculty member who was the head of the office of academic computing. He became a dean, and he began to give me more autonomy. But there-- I guess I have to take a small drift and say one of the ways we determine how we're going to change, technically, is we conduct an annual survey of our customer base. That process, at that time, in 1989, was evaluated by a committee...But it's extremely difficult to report to a committee. Even when you have a boss who-- my boss at the time was not hands-on with things. So in about 1993, the university hired a new university librarian. And he had some IT background. And so there was a reorganization that ended up having me report to the librarian. Now, what was good about that was I had a boss that was engaged. What was bad about it was I was down a layer in the organization financially. So that was hard. He was here for five years. And towards the end of that time, we got a new vice chancellor of academic affairs...But as this librarian was leaving, she moved us so that I report partially to her and partially to a direct report of hers who is-- his title is assistant vice chancellor for programs and planning. So that change was by far, for me, the biggest one because I was much closer then to the academic-- the strategic academic planning that was going on. And so that interaction has been quite good from my point of view in that it was-- while it's informal, he will call me and say this is happening, what do you think? So I have a lot greater voice and a lot greater participation in things at the highest level of academic affairs."

CP: Commitment to a paradigm TK: Task Knowledge ID: Information Diversity TI: Task Interest P/I: Power/Influence



CIO's characteristic level

## Appendix 5a. Vincent's change agency models

Change model	Tenure phase	Evidence from interview
Traditionalist	0-3 years in tenure	"...the university was looking at how to make investments in data centers that would support the research community. That's something that I tried to accelerate."
Advocate	0-3 years in tenure	"The other thing that I've done, which is more, I would say, process oriented is like many campuses, we have a number of advisory boards I'm working with. I think substantial success at getting them to understand advisory boards is playing a critical role. They aren't groups that are intended to whine or complain; they're groups that are intended to help set the campus direction, but also, to use their position as a variety of faculty members, members of the senate, the human researchers to in fact, convince the rest of the campus what investments need to be made. I've been slowly, over a couple of months, really getting those committees to understand that it needs to be clear what they make recommendation doesn't appear in minutes somewhere. The recommendations are actually understood by the campus as here is what we are asking the CIO and the provost to consider their highest priorities. And then I've made it clear that in return, we're going to give them clearer responses. A clear response might be we love it, but we don't have the money, or we don't like this. It's good, but it shouldn't be priority two; it should be priority six. The idea is to create that accountability both ways. They need to lead and we need to lead in terms of the directions..."
Advocate	0-3 years in tenure	"...I think it's getting faculty to align that these priorities are so important that there were some sacrifices to make. The provost can find the money one way or the other, but I think that they're not likely to put enough resources in unless there's a strong sense from leading faculty. I think it's really identifying the innovative faculty on the campus-- and we've come a long way to do that, but there's more work to do."
Advocate	0-3 years in tenure	[About getting the stakeholders onboard] "A big part of it is what I'll call the walk-around model. It's just basically meeting with them, getting names of other people to meet with. The second thing is to get groups of faculty together to actually discuss directions, and sometimes, people use committees to do that as just a way to get them to talk. And the third way is a strategic planning process. I think what we're going to settle on is some kind of significant faculty retreat where we get the leading faculty together...and take the recommendations that come out of that, build some sort of more operational plans-- here's what we can do and here's what it will cost-- so that we have really some focused thinking on their part...So part of the model is explained where some of these limitations are and where the investments will make a difference. Convince them that they need to lead in this, where we can then identify solutions based on that leadership. In some respects, we're already saying we know what we want to do, but we have to be very careful. If they can't be convinced, then it isn't the right thing to do. If they come away convinced, then we have a multi-step process so we can bring along a larger group of faculty, say, some who are less technology oriented, so that by the time we're done...the resources can be found because there's such strong support from the faculty."
Advocate	0-3 years in tenure	"For example, administrative IT issues, the idea is that there can be no question that those all have to come into a coordinated process. The group that's paid for it should be able to head off in their own direction, unless it's extremely important to the campus. Part of it is to bring that governance together and that's going well, but there's a little bit more policy work to do there so that everyone understands, because people often have a view of what I do doesn't impact anyone. Why should I have to go through a governance group process? The second part with the colleges is much more complicated. We don't provide their salaries, but we're doing a lot of innovative work, and so some of it is to say if it's innovative and valuable to your college, we need to be working accordingly. So here it's a matter of; how do we create a common interest in working together where we don't have the actual direct control. If the college is doing something that's foolish, we can get it changed."

## Appendix 5b. Felix’s change agency models

Change model	Tenure phase	Evidence from interview
Advocate	0-3 years in tenure	“The real issue now is whether we can deliver, so one of my main jobs right now is to lower expectations, because I’d rather have them lower and then exceed them, than I would to not meet them. I’m very aware that faculty-- and I certainly have been one of those faculty-- have very high expectations and very high standards, have great needs for information systems, to the degree that we have a lot of faculty who have gone out and built their own systems. We have functional networks that have been built by faculty in major areas that are totally, in a sense, outside of the central system. They’re connected to it. And the bottom line is faculty will always have that choice. We will never, as long as I have anything to do with it, anybody who’s staying in academia will never require faculty to use a particular system or whatever.”
Advocate	0-3 years in tenure	“The other big issue here is that in order to implement, to identify, and prioritize and gain resources for information systems at UCSF requires a very complex governance structure. It requires that all of the functional owners be involved in the development, in the choice, so on a functional basis, you’ve got to have the customers as well as the providers. But you also need-- and this is why we formed the Academic Information Systems Board-- you also need the political force to be able to say at a campus level that we need major funding for this area. And so that’s why we went through this process of creating this board, doing a lot of background work and raising the profile of the issue.”
Advocate	0-3 years in tenure	[Recruiting the board] “We did a lot of political work, but we ended up picking the people...It was very important that everybody on this board be very high level, be well-known, and know something about technology and be interested in it’s so that they can be advocates.”

## Appendix 5c. Ken’s change agency models

Change model	Tenure phase	Evidence from interview
Advocate	0-3 years in tenure	“But I have found that what I have to offer is really what the campus needs. It’s a good match. They need somebody who is willing to stick their neck out and do some things and make some change. So that’s what I’m trying to accomplish.”
Facilitator	0-3 years in tenure	“I’m interested in doing what people need to have done. It’s personally fulfilling for me to provide services to others. So when you think about it from an entrepreneurial vent, I like to create opportunities and I like to win, but I don’t need to do so at the expense of others. So I don’t need to be the only winner. So for me, if can achieve something that helps the campus do better, that’s success for me.”
Traditionalist	0-3 years in tenure	“So a lot of my passion is around building systems and processes to make us fast, make us efficient. Then when we run into cultural issues where things can’t happen very quickly, it gets frustrating.”
Advocate	0-3 years in tenure	“So I’ve really been promoting much faster change. The HR organization tells me that my restructuring, with the number of people that are going through it, etc., is the largest and fastest one they’ve ever undertaken on the campus. I’ve agreed that the transition is going to take 18-months before we’re fully up and running in the new model and for everybody around here, that 18-months is ridiculously fast. But from my perspective, if you can do it in 36-months, you can do it in 18-months. I would rather get 80% of the way there in 18-months than 90% of the way there in 36-months. So I think part of my job is to set those expectations.”
Advocate	0-3 years in tenure	“I think we’re doing that here. I think we are resetting expectations as to what’s acceptable. I think we are delivering on an aggressive time schedule, publishing what our commitments are going to be and sticking to them.”

#### Appendix 5d. Francis' change agency models

Change model	Tenure phase	Evidence from interview
Advocate	0-3 years in tenure	"...we expected some resistance and we got some resistance <laughs>, we're still getting resistance. But it's happily, I think, like most change processes, I think, you have to kind of create a burning platform to say you really can't do it, continue to do it the way we're doing it, and there was enough value in this new system from everyone's point of view, and there was enough pain in the way we had been doing it, that there was sufficient motivation to say-- nobody was standing there "What do you mean, we're changing things, it's beautiful the way it is," no-one was saying that it was beautiful the way it was, so there was enough motivation to say we need to change, but getting everyone to agree on not just where we're going, but everyone had their favorite piece of the place that they wanted to do and you can't do a change management project that big, or a technology project that big, you can't solve all the problems at once. So the way of prioritizing these problems has been, and continues to be, the biggest struggle."

#### Appendix 6e. Mike's change agency models

Change model	Tenure phase	Evidence from interview
Advocate	4-7 years in tenure	"So we've gotten, we've had some real fights about them developing their own applications which turn out to be a different technology, don't fit into our portal, and I really sort of lost, to some extent. But now we're letting-- well we're not just letting nature takes its course, but we're insisting that they integrate into our portal in ways that they can't say no. They could fight and other things, but it's very hard for them to say they shouldn't be a part of the portal. So we'll see how that develops over time."
Advocate	4-7 years in tenure	"So we're focusing a lot more than other campuses on our things that touch the end user. And I sort of-- my strategy is to build it from the outside in and influence, you know."

#### Appendix 5f. Ivan's change agency models

Change model	Tenure phase	Evidence from interview
Facilitator	4-7 years in tenure	"Well I think part of it for me was to identify who were the not only the key stake holders on campus, I think part of that in more traditional thinking has been okay this isn't going to happen without the users and who are the key stake holders. So that I think is fairly well understood. I learned that both the good way and hard way over the years..."
Advocate	4-7 years in tenure	"...part of it is to make sure that you know you got a three legged stool of the key stake holders in the user community, your own key leaders within your department and then in effect the management you work for in making sure that you're meeting, you reach their needs and as they view them for the entire campus community. I think in terms of day in day out, taking care of business here at University I, keeping an eye on those three and managing those relationships. "Listening, although there are a few things that quite frankly we're going to do some of these things regardless and that's generally not a maybe a positive strategy, but there are a few, especially infrastructures have areas where it's not about what the users want it's about best practices we have to define. So far we've been able to keep a pretty good balance."

## Appendix 5g. Alan's change agency models

Change model	Tenure phase	Evidence from interview
Traditionalist	0-3 years in tenure	<p>"Well that was exactly the first step, was to build nothing more, that was my first step was just simply to build some credibility in a tangible way. So it actually was not so hard to find some opportunities; see that was the interesting thing. So there were two that I seized upon almost the moment I got here and they weren't hard decisions because they were things going south pretty quickly."</p>
Advocate	0-3 years in tenure	<p>"That was the first thing, that was the very first thing that was tackled in a organizational manner, so I did not go after reporting lines, I did not try to build up staff quickly, I did not do any of those kinds of things to start. I started down the path of just nothing more then let's put a governance structure in."</p> <p>"I mean it was very clear that the campus needed to have some systematic way to talk about IT from an institutional perspective. It had no way to do that so it was needed no matter what. But secondly, from the point of view of someone that's new and without any definition, the first place that fell to me that I could have some impact was to start what was the governance process. It actually proved to be in true in hindsight because that actually was the best move of all was to focus attention and resources on just building the governance process, because that served to bring people together, that served to build credibility, that served to get me involved with lots of different groups and what they were doing and etc., etc."</p>
Facilitator	4-7 years in tenure	<p>"...another point of influence is simply neutrality; credibility and neutrality are probably the biggest - what's the word? That's what gives us our capacity to do things, neutrality and credibility. So there can be lots of fighting and tension, and competition, and all these sorts of things, and so we time after time step in and us the governance process or we use our neutrality to help sort the situation out and that - so this is kind of a program management office component combined with a governance process component, literally spending much of the time doing that but that's actually proved to be the most powerful component in all of this."</p>
Advocate	4-7 years in tenure	<p>"I tend to believe - well believe is the wrong word. I know that the operational stuff can fall into place if you get the directional stuff well defined and the buying in the right place and so I prefer to work in that level of discussion and prefer to delegate the operational aspects..."</p>

## Appendix 5h. Ian's change agency models

Change model	Tenure phase	Evidence from interview
Advocate	0-3 years in tenure	<p>"I've been just a part of many different changes as we phased one system in and replaced it with another. There was something that I was pretty instrumental in creating here called Distributed Computing Support. Which was a, that we still this group in the office today, it's a little different than what it was when I started it. But this was a group that essentially provided system administration and other technical support for higher of other people's computers. So we were an organization that just ran our own services. And this was one of the first times we actually said "We'll run your, you buy the computer, we'll help you run it." And so we created a whole business model around us providing support and it started out very, very small and there was a lot of, people had the attitude that we're just a central computing facility; they had a very strong stereotype of what we could or could not do. And so us was showing up on the doorstep offering to help, was not always met with open arms. It was "What good are you, you're the people that run that mainframe? What do you know about my fax?" or whatever they had. And so we had to do a lot of slow bootstrapping of confidence and we did it through just kind of volunteering to support people for free, demonstrating we knew, how much we could do for them. You're also fight the mindset of "Well I can do that myself or I'll live without it or I'll get a grad student to do it on the side, what's the value of professional support". And so I think that was a pretty interesting thing. We started out very slow and ended up being something that, we've never had, it's never been a full we charge system it's always been subsidized but we went from no income to it being half paid for which was a big accomplishment at the time. "</p>
Facilitator	4-7 years in tenure	<p>"...people do their work themselves when you provide advice as needed. They take care of themselves but they ask us to do things for them or they ask how to, there's a lot of, we do a lot of coordination now. You have technical people in every unit and we bring them together and help them share problems and solutions with each other and we try to do things as a campus even though, you're from UCLA so you know about that. There's a tendency everybody wants to do their own thing. So we're a force for some commonality, very cooperatively it's not big brother but and that whole series of shifts, the DCS, the distributing computing support thing and also this becoming an organization that supports the supporters is a big shift that I've played a big role in. I mean I didn't, obviously didn't do it by myself and I think there was a time when our reputation was pretty poor and I think it's generally pretty good now. People look at us as somebody who wants to, we may not always be able to help but we want to help our heart's in the right place, and we often can't."</p>

## Appendix 5i. Dave's change agency models

Change model	Tenure phase	Evidence from interview
Advocate	0-3 years in tenure	<p>"Well, I tried to make sure everybody understands that customer service is number one. That was not the philosophy before that. The philosophy before that was that we know better. We know what to do and the customers don't really know what they want. Sometimes, it was true, but most of the time, it wasn't true. So changing that culture was a very big one. Another change of culture is to say that we want to stay leading in technology and not trailing in technology. So using the latest technologies and adopting them quickly was very important. When I came here I said that everything we do is going to be Web-based. This was 1996. No more client server. No more mainframe. Everything-- I mean from a user perspective."</p>

## Appendix 5j. Ron's change agency models

Change model	Tenure phase	Evidence from interview
Advocate	0-3 years in tenure	"So very early on what we had to do we had to say "We cannot be all things to all people, we just can't". Even internally within the organization we can't be that and so as we were anticipating all of this change and all of this coming and everything else, one of the fundamental things that we decided to do was we were going to pick three or four core technologies and we were going to be the absolute positive best at those and we weren't going to diffuse ourselves."
Facilitator	8-18 years in tenure	"We sat around for months with representatives, in this room actually, with humanities, arts and social sciences, engineering, physical sciences and we got them to agree that everyone would use one Web interface to capture their publications per that schema. That is hard. We got, that took four or five months."

## Appendix 5k. Denis's change agency models

Change model	Tenure phase	Evidence from interview
Traditionalist	8-18 years in tenure	"With-- in terms of instruction, we the faculty really-- we really drive the truck. And what they do is they induce us to change by suggesting a new piece of software or something like that..."
Traditionalist	8-18 years in tenure	"...one of the ways we determine how we're going to change, technically, is we conduct an annual survey of our customer base. And it's called the instructional computing plan...we send this survey to all of our academic departments once a year. And they report-- they give us sort of an assessment of how we're doing. And they report on some budgetary information and some other things like that. But then they have-- there's a section of it that's called the wish list. We call it the wish list, informally. And basically we get them to tell us or to request of us new facilities or major upgrades of old facilities."
Advocate	8-18 years in tenure	"And so in talking to the faculty, we, you know, you can place them into those groups, but that doesn't really help you decide where to or how to scope the service. And so what we do there is we talk a lot to departments. And we typically work with-- now, this varies from department to department. And the departments each have their own characteristics. Sometimes they're very difficult to deal with. And we do pretty much have to work individually with the faculty. And what we try to do is we try to find some faculty that are influential and that work with us well. And we try to figure out what they need. And if we can meet their needs, generally, what they will do for us is they'll tell their faculty colleagues about the service, and we can-- I should-- I want to show you this. Because this is the key to this thing. We can get them to help influence the faculty with our use."
Traditionalist Facilitator	8-18 years in tenure	"...we survey the departments. And then when we're-- when we have the plans summarized, we produce a report for each division or school. And I have a contact in those divisions or schools, and I go visit them and we work out what their priorities are. Because they-- there's a history, of course. You know, this department got this much last year. This department didn't get anything. So we might favor them. I take along a chart with me that shows our computer labs and how old the equipment is and that's useful, because I can say well, you know, the writing of the proposal isn't very good. But if you look at the numbers, they really need this. So we talk about that. And sometimes-- and then sometimes the deans will have ideas about what things they want to push...And so what I do is the deans pretty much decide, with my advice, what goes on in the divisions. And then they say-- we work out a plan and then I come back and implement."

## Appendix 6. Leidner and Mackay's (2007) data revisited

Relevant Change Agency Model	Challenges Facing Transitioning CIO	Type of Predecessor
Advocate	Dealing with a "What have you done for me lately?" attitude among executives	<b>Successful</b> <b>Keep-It-Running</b>
Advocate	Energizing a maintenance-model IT operation	
Advocate	Initiating systems in a company that has not had new systems for some time	
Advocate	Moving away from a purely support role to a more involved, possibly more strategic, role	
Advocate	Building credibility fast—confidence in IT among stakeholders is very low and the CIO must start off running	<b>Unsuccessful</b> <b>Keep-It-Running</b>
Advocate	Developing and nurturing an IT organization that has lost visibility and has been mismanaged	
n/a	Securing funding for needed improvements	
Traditionalist	Solving IT operational issues	
Advocate	Demonstrating that IT can do more for the organization than simply keep systems running	
Traditionalist	Completing the backlog of incremental requests without losing strategic relevance	<b>Value-Adding</b>
Traditionalist	Preparing the infrastructure for the future needs of the organization	
n/a	Maintaining predecessor's relationships with business units	
n/a	Understanding the strategy needs and cultural readiness of the organization	
Advocate	Increasing IT visibility to senior managers, which may be low because of the lack of major initiatives	
Advocate	Establishing a vision and direction in an IT department that has been running on auto-pilot	
Advocate	Maintaining IT credibility following a very successful predecessor	<b>Successful</b> <b>Big Bang</b>
n/a	Continuing the relationships already fostered with executives and business units	
n/a	Decreasing the IT budget	
Advocate	Searching for Value-Adding projects	
Advocate	Maintaining the IT department's high morale	
Facilitator	Working closely with business units to complete Value-Adding projects which had been put on hold	
Advocate	Rebuilding confidence in the value of IT	<b>Unsuccessful</b> <b>Big Bang</b>
Advocate	Convincing executives that IT expenditures are still necessary and add value to the organization	
Advocate	Working with executives who may be disillusioned with IT	
Advocate	Creating a vision for how IT can help the firm	
Advocate	Building the morale of the IT organization	
Advocate	Rebuilding relationships between IT and business units	