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National Center for Digital Government

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Exploring E-Government Evolution: The Influence of Systems of Rules on Organizational Action[1]

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Abstract

In general terms, e-government can be defined as the use of information and communication technologies in government settings. However, it is neither a homogeneous nor a static phenomenon. In recent years, empirical studies have identified two interesting dynamics in e-government evolution. First, e-government has evolved from its initial presence on the Internet to a more transactional and integrated approach. Second, at the aggregate level and as a general trend, national governments have started adding technological sophistication and have been followed by state and local governments. This paper attempts to explain these two dynamics in the evolution of e-government as a result of pressures from the administrative apparatus of government and from the expectations of stakeholders involved in the policy process such as citizens, politicians, and businesses. Both forces promote change in the system of rules governing the design, implementation, and use of e-government initiatives. Some policy implications are provided at the end of the paper.

I. Introduction

Governments are increasingly using information and communication technologies in their daily business. As a consequence, the study of e-government has increased in recent years and several theoretical approaches to understand e-government and conduct digital government research have been developed (Gil-García and Luna-Reyes 2003; Schelin 2003). One of these approaches to e-government understanding describes the evolution of e-government initiatives in terms of their degree of technological and organizational sophistication (Moon 2002; Gil-García and Luna-Reyes 2003; Schelin 2003). Within this evolutionary approach, several studies have been

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[2] Authors' names are ordered alphabetically; their contributions were equally important.

developed, but their scope is mainly descriptive. In order to explain how and why this evolution has taken place, more analytical research and sound theoretical frameworks are needed. This paper proposes a theory of e-government evolution as a result of important dynamics found in the way in which systems of rules interact with action in organizational settings. This theoretical framework poses a link between how public managers decide on e-government initiatives and how citizens and other stakeholders involved in the policy process internalize those decisions and subsequently influence them over time.

In the context of e-government evolution, we use institutional theory and the study of rules as sources of change (Feldman 2000) to reframe the well-established politics-and-administration dilemma (Wilson 1887). Our theory explains that, at the aggregate level, e-government has been adding more technological and organizational sophistication as a result of both institutional isomorphism and pressures from citizens, politicians, businesses, interest groups, and other stakeholders. In addition, e-government initiatives are evolving from the national to the local level. If local governments are more sensitive to citizens' needs as devolution scholars argue, the situation described above may imply a change from self-imposed initiatives searching for solutions (administration-performance), to externally imposed requirements by citizens, their representatives, and other stakeholders (politics-accountability).

This paper is organized in seven sections including these introductory comments. Section two describes two dynamics of e-government evolution. First, there is a constant addition of technological sophistication, interaction capabilities, and business rules. This dynamic has been framed as e-government stages from presence to transaction to integration. Second, the evolution according to these stages has not been equal at all levels of government. In fact, there seems to be a trend from the national level to state and local governments. Section three introduces basic concepts about the study of rules and rule evolution. In section four, it is shown how systems of rules can be designed mainly to address problems (performance) or to exercise control (accountability). These two dimensions are not mutually exclusive and all rule systems represent certain degree of both solution-guiding and behavior-constraining dimensions.

Section five integrates the bi-dimensional framework to systems of rules with some of the complexities of government settings. Specifically, this section addresses the issue of multiple stakeholders, and therefore, multiple designers of rule systems in the public sector. It also provides some examples of how this work for e-government initiatives. In section six, the old politics and administration dilemma is revisited and framed in terms of performance,

accountability, and the bi-dimensional framework to systems of rules. This framing is exemplified by analyzing the second dynamic of e-government evolution and hypothesizing some potential implications. Finally, section seven discusses other practical implications of the theoretical model and suggests avenues for future research.

II. E-Government Evolution

In order to understand how systems of rules affect the evolution of e-government, it is necessary first to comprehend the way in which scholars have characterized e-government evolution (Hiller and Bélanger 2001; Layne and Lee 2001; UN and ASPA 2002). The evolutionary approach examines e-government stages: from developing a web page to integrating government systems behind the web interface. In this view, governments evolve from one stage to the other (Schelin 2003). Each of the stages represent different levels of technological sophistication, citizen orientation, and administrative change (Moon 2002; Holden, Norris and Fletcher 2003). In addition, some empirical studies have identified a dynamic progression in e-government sophistication from national to state to local governments (Stowers 1999; Moon 2002; Edmiston 2003). Following, we briefly describe these two e-government dynamics.

E-Government Stages

This section presents a summary of different stage-models to e-government evolution (Hiller and Bélanger 2001; Layne and Lee 2001; UN and ASPA 2002). It is important to clarify that in reality these stages are not necessarily mutually exclusive or progressive (Moon 2002; Sandoval and Gil-García 2005). In fact, specific e-governments initiatives may include characteristics identified with several of the following stages. Therefore, this paper does not argue that the stages are necessarily right, but recognizes that at the aggregate level technological sophistication has been continuously added.

Initial Presence. This happens when a country, state, or local government has a formal presence on the Internet through a limited number of individual governmental pages (mostly developed by single governmental agencies). Governments in this stage normally offer static information about agencies and some of the services they provide to citizens and private organizations.

Extended Presence. In this stage, governments provide more dynamic, specialized information that is distributed and regularly updated in a great number of government sites. Sometimes a national government's official site serves as an entry point with links to pages of other branches of government, ministries, secretariats, departments, and subnational administrative bodies. Some governments might start using electronic mail or search engines to interact with citizens, businesses and other stakeholders.

Interactive Presence. Governments use a statewide or national portal as the initial page providing access to services in multiple agencies. The interaction between citizens and different government agencies increases in this stage (e.g., e-mail, forums, etc.). Citizens and businesses can access information according to their different interests. In some cases, passwords are used to access more customized and secure services.

Transactional Presence. Citizens and businesses can personalize or customize a national or statewide portal. This portal becomes a unique showcase of all the governmental services available in the relevant area of interest. The needs of different constituencies are the main criteria for portal design and access (government structure and functions are only secondary criteria). The portal allows secure electronic payments to be made, facilitating transactions such as tax, fines, and services payments.

Vertical Integration. This stage encompasses the integration of similar services provided by different levels of government. This integration can be virtual, physical, or both. Therefore, this stage does not refer solely to an incipient integration in the form of government websites, but to the change and reconstruction of the processes and/or governmental structures.

Horizontal Integration. Layne and Lee (2001) argue that horizontal integration between different governmental services must exist for citizens and other stakeholders to have access to all the potential of information technologies in government. Therefore, in this stage governments need to cross organizational boundaries and develop a comprehensive and integral vision of the government as a whole. Vertical and horizontal integration do not necessarily happen together or sequentially.

Totally Integrated Presence. This stage refers to the situation in which government services are fully integrated (vertically and horizontally). Citizens have access to a variety of services through a single portal, using a unique ID and password. All services can be accessed from the same web page and can be paid in a consolidated bill. A transformation unseen by the

public has taken place, and now services are organized according to processes and constituencies, not only virtually, but also physically. In this stage, governments undertake institutional and administrative reforms that fully employ the potential of information technologies (Grönlund 2001).

From National to Local E-Government

The descriptions above show how each of the stages represent the addition of several rules and standards relating to what e-government activities are expected to be in a governmental community. The stages are presented as the correct path to follow in order to develop a fully integrated e-government initiative (Layne and Lee 2001). However, it is important to emphasize that these stages vary among national contexts and levels of government. In fact, there seem to be clear differences between national, state, and local governments.

Figure 1 shows hypothetical trends in e-government sophistication adoption at different levels of government. The actual shape of the curves can be very different and does not have to be linear, but the point of this figure is to show, graphically, what has been found in empirical research. Studies have explicitly or implicitly identified a trend in the evolution of e-government initiatives (at the aggregate level) that seems to go from national to state, and to local governments (Stowers 1999; Moon 2002; Edmiston 2003; Holden et al. 2003). This is not exclusive to the United States; in other countries with highly developed electronic government initiatives at the national level such as New Zealand, many local governments are still in the very initial stages of e-government (Cullen, O'Connor and Veritt 2003).

Generally, national governments have both financial resources and technical expertise to be able to move constantly toward continuously more sophisticated stages of e-government. Arguably, they also have the least direct democratic control from citizens, businesses, and other stakeholders. However, state and local governments are also improving their e-government initiatives. For instance Moon (2002) mentions that "following the federal initiative, many local governments also adopted IT for local governance." (p. 424). As mentioned earlier, e-government adoption and sophistication is increasing fast, but as of 2000, "most local governments had a presence on the Web and were at least at the beginning stages of e-government development [but] few of them offered sophisticated on-line services involving interactive transactions." (Holden et al. 2003, p. 341).

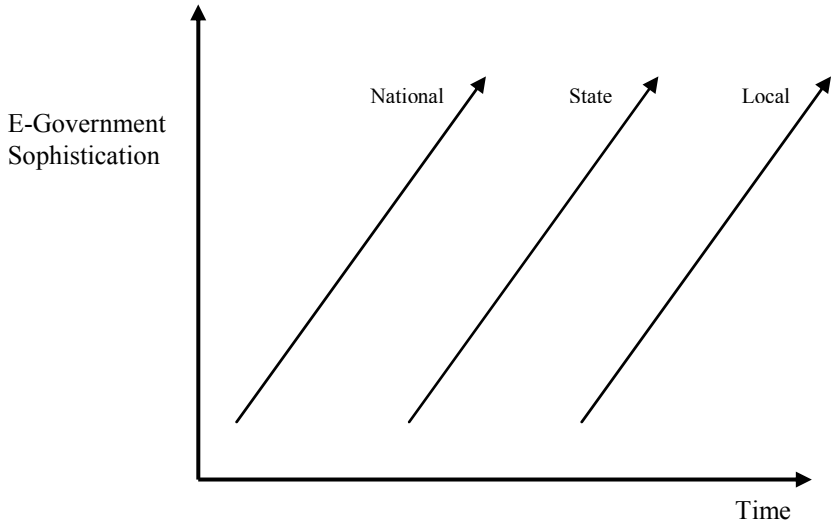

Figure 1— E-Gov Evolution (From National to Local)

As an example of this trend, in the United States of America there is a clear disparity between federal, state, and local governments (Moon 2002; Edmiston 2003; Holden et al. 2003). Many state and local governments are attempting to make the transition from the initial or extended presence stages to the transactional stage. Some other local governments are still cataloging information (Reddick 2004) or trying to establish their first web page for citizens and business use. In a different context, some European countries, Canada, and the United States are competing to have the most advanced e-government capabilities. It is important to clarify that this trend does not refer to the government portal or main page only, but to the complete government website including agency-specific and inter-agency websites. As a result of this second dynamic, "e-government at the local level is still in its formative stages" (Holden et al. 2003). However, there are important exceptions to this trend such as G2B applications (Reddick 2004) and e-government websites in some large cities (Ho 2002). These exceptions highlight how specific contexts and the capabilities and resources of certain stakeholders (e.g., business) can influence e-government evolution.

The two e-government dynamics described in this section are not mutually exclusive and normally work in a complex interplay. The following hypothetical situation can help to understand some of the mechanisms of both evolutionary dynamics. In the Nation of Utopia, some national-level government agencies start including more transactions on their websites generating two different dynamics. First, other government agencies at the same national level,

either from the same country or from other countries, decide to include more services and sophisticated features as a case of emergent institutional isomorphism (La Porte, Demchak and Friis 2001). The fact that more agencies are providing transactional services creates pressure on other governmental agencies to follow the same path (at the national level and the state and local levels). Second, once government agencies at different levels (e.g., federal, state, and local) are providing transactional services through their websites, citizens from other governments realize this can be useful and start demanding e-government transactional services to their own politicians and public managers (Curtin, Sommer and Vis-Sommer 2003).

III. The Study of Rules

Organizational action is established around rules which fit together to create and maintain the systems organizations use to grow and evolve (Vanberg 1994). Because "rules and resources mediate human action while at the same time they are reaffirmed through being used by human actors" (Orlikowski 1992, p. 404), studying both rule systems and the behavior of the actors in those systems is important.

Scholars in the social sciences have recognized that rules enable action in organizations and everyday life (Berger and Luckmann 1966; Ganz 1971; Hayes 1989). Possibly, there is no action—including e-government activity—that is not related to rules, either written or unwritten (Schauer 1991). However, despite the powerful role rule formation and its dynamics play, they have been studied only rarely (for examples see March, Schulz and Zhou 2000; and Martinez-Moyano 2004).

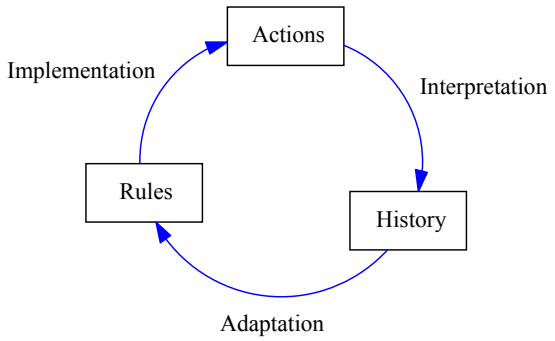

Figure 2—Cycle of rule evolution (adapted from March et al. 2000)

As portrayed in Figure 2, rules influence action through a process of implementation. Over time, and through interpretation mechanisms, the results of actions are translated into a history that determines what an effective and useful practice in organizations is. Understanding the interpretation mechanisms is essential to comprehending the lessons that are formalized as history. In the interpretation process, there can be several biases and misidentification problems (for a review see Kleindorfer, Kunreuther and Shoemaker 1993). The way action becomes history is a social process in which knowledge is socially constructed (Berger and Luckmann 1966) and, in some cases, has little or nothing to do with logic and evidence.

Once a set of insights has been recorded as history, an adaptation process transforms the lessons of history into rules. The accumulation of rules creates a rule repertoire in the organization, closing the evolutionary cycle of rule formation and change. Organizational rule systems then become organizational repositories of lessons from history: organizational memory in action. The problem of using organizational memory in the future still exists though. The fact that organizations are capable, through learning, of accumulating knowledge about how to deal with the challenges of their environments does not ensure that this information will be used adequately, or at all. Rule-following preferences of individuals and norms for rule compliance in organizations, can act as enablers of the inherent power of the rule systems. A very powerful rule system that is not adequately used and followed will be inefficient, just as a fully followed, but weak, rule system. Compliance dynamics play a key role in understanding the observed capabilities of systems in organizations (Martinez-Moyano, McCaffrey and Oliva 2005).

A viable theory that includes the notions of rules and evolution requires, at the least, a definition of what a rule is that will enable the individuals to examine the existence, change, and reproduction of rules and systems of rules as general, ongoing, and historically embedded mechanisms in organizations. Referring to rules, Giddens (1984, p. 21, 377) proposes the notions of 'structure' and 'rules.' Sewell (1992, p. 8, 27) advances ideas of 'structure' and 'schema,' while Bourdieu (1977) suggests the notion of 'structure' and 'habitus.' Meyer and Rowan (1977) identify rules as 'formal structure' and 'myth and ceremony,' and Barley and Tolbert (1997, p. 96) link rules with their definition of 'institutionalization' and 'institutions.' Synthesizing notions from the literature, we define rules as 'probabilistic generalizations of behavior' and systems of rules as 'the set of written organizational codes—herein called rules—and unwritten organizational norms—herein called norms—that conditions action in organizations.'

IV. Goals in Systems of Rules

Why do rule systems change over time? Part of the answer to this question seems to be related to the different concerns designers of systems of rules have about rule systems and their goals (Zhou 1993), because the goal of the rule system determines its structure over time. Goals in systems of rules can be conceptualized using two different approaches (Martinez-Moyano and Gil-Garcia 2004). Rules and rule systems can be designed primarily as behavior-constraining mechanisms (OReilly and Chatman 1996; Feldman 2000; Feldman 2002), or they can principally be thought of as solution-guiding mechanisms (Burt, Gabbay, Holt and Moran 1994; Roberts and Dowling 2002). This distinction is introduced as a way to organize and understand better the different concerns identified in the literature. We know that every time that a rule is issued, the rule maker can have both purposes in mind, constraining behavior and generating a solution to a problem.

Identifying rules and systems of rules as solution-guiding artifacts focuses the attention on how well the system of rules 'embodies' the set of solutions to the problems and opportunities the organization faces at any given time. Presumably, changes in the systems of rules are guided by the adequacy of the current set of rules with respect to the current set of recognized problems and opportunities the organization faces (the main driver is related to performance enhancement). Alternatively, the behavior-constraining approach to systems of rules is more concerned with the adequacy of the systems of rules to generate a predetermined, or expected, behavioral response from both individuals and organizations (driver focused on accountability concerns).

Systems of Rules as Behavior-Constraining Mechanisms

Systems of rules in organizations can be conceptualized as means for control (Hayek 1945; Schauer 1991; Hauser 1995). Researchers have found empirical evidence of this. For example, O'Reilly and Chatman's (1996) work looks at control systems based on shared norms and values that influence members' focus of attention and interpretation of events, and guide their attitude and behavior. In addition, investigating organizational routines, Feldman (2000) identified great potential for change in the way organizations carry out supposedly invariant lines of action embodied in organizational routines. Feldman (2000; 2002) emphasizes the behavior-

constraining characteristics of the system of rules embodied in organizational routines by reporting that change in organizational routines comes from the internal dynamics of the routines, connections between citizens, understanding about what needs to be done, and from thoughts and behavioral reactions of individuals participating in the routines. She says, "people will tend to breathe life into the routines they engage in because of the relationship between their behavior and their plans and ideals" (Feldman 2000, p. 627).

The introduction of a new rule as a behavior-constraining mechanism was found in a federally-funded training on the job program: the Job Training Partnership Act—JTAP—of 1982. JTPA created one of the largest federal employment and training programs in the country (Courty and Marschke 2003). The JTPA replaced its precursor Comprehensive Employment and Training Act—CETA—as the major job-training program for the poor (Cragg 1995). Its main innovation over the previous program in place—CETA—was the use of a performance-contingent incentive system. JTPA had a budget of nearly $4.0 billion dollars and served a constituency of almost one million people annually. JTPA's mission has been defined as to "raise the earnings ability and lower the welfare dependency of the poor." (Courty and Marschke 2003, p. 275) Alternatively, it has been identified as to increase the long-term human capital of program enrollees. JTPA's mission, in other words, was to help the economically disadvantaged do better in the long run via improving their skills and capacity to become employed and be self-sufficient, a very noble mission indeed .

Congress intended JTPA activities to influence participants' human capital by helping participants become more capable and efficient workers by means of training. In order to provide incentives for the service providers to align their efforts with the intended results, performance measurement changed over time. Performance measurement in JTPA changed from cost-based performance measurement, to termination-based performance measurement, to follow-up-indicators-based performance measurement. Under these mechanisms, the service agency graduates enrollees as part of their normal process. An enrollee that has finalized the training, under ideal circumstances, would be graduated and reported to the state. However, that was not the case always. For example, in some cases, training agencies reported graduation dates differently than the actual dates in which the enrollees finished training causing interesting dynamics derived of these behaviors.

The first significant rule change under JTPA was the introduction of 'the 90-day' rule. This rule was introduced as a behavior-constraining mechanism to force the providers of services to behave in a certain way. After CETA was replaced by JTPA in 1982, performance measurement of the providers of services was conducted in the exact same way as during CETA. Under the original rule, the providers of services were compensated according to a metric called 'employment rate at termination' that measured the job success of the trainees at moment of termination from the training program. Under this regime, the higher the employment rate at termination (ERT), the better. Managers in training agencies were given latitude on when to terminate enrollees. Managers would terminate individuals only if they had jobs, not before. This created incredible high ERTs. This continued until the department of labor recognized that it had been determined "by monitors and auditors" that managers in training centers had allowed "some participants continued to be carried in an 'active' or 'inactive' status for two or three years after last contact" (US_Department_of_Labor 1993, p. 4) with their training programs. Their way to constrain the behavior of the providers was with the creation and implementation of a new rule: the 90-day rule. With the inclusion of the 90-day rule, the DOL required training agencies to measure performance using the ERT measure but also required agencies to terminate individuals that had not received any services after a maximum of 90 days. The new rule, the 90-day rule, was designed to provide agencies "some latitude in securing jobs for their customers" (US_Department_of_Labor 1997, p. 1) [and improving their performance measure], and at the same time avoiding the possibility of hiding bad performance by not terminating unsuccessful candidates.

After the introduction of the 90-Day-Rule Regime, "another important change in the measurement system was to move to 'follow-up' measures." (Courty and Marschke 2003, p. 279). The introduction of the follow-up-rule regime became, in JTPA, the way to solve different problems identified over time in JTPA-related provision of training services. The follow-up-rule regime was the response of JTPA officials to the problems identified after the introduction of the 90-day rule regime. The most important problem identified was the possibility of influencing the performance measure by means that were not aligned with the 'true spirit' of the program. JTPA officials identified, at least, three mechanisms that providers of services decided to use after the implementation of the 90-day rule regime to influence their performance outcomes: introduction

of post-training actions, strategic termination of enrollees, and cream skimming (for details of the mechanisms see Martinez-Moyano 2004)

Systems of Rules as Solution-Guiding Mechanisms

The solution-guiding approach to systems of rules is mainly concerned with the way in which systems of rules represent a solution—or match—to the problems managers are able to identify and consider important. Additionally, it represents the concern to create organizational solutions for the simplification of the decisional process. According to the solution-guiding view, the more rules individuals in organizations can use, the simpler their decision process will be. Rules become solutions to problems.

Researchers such as Burt, Gabbay, Holt, and Moran (1994) have identified a clear link between the value of a system of rules in an organization and the type of market the organization is in. According to these researchers, a strong corporate set of guidelines is a valuable asset in competitive markets and can be almost worthless in non-competitive environments. Additionally, Roberts and Dowling (2002), who have investigated the link between corporate reputation and sustained superior financial performance, report that "good reputation is difficult, if not impossible, to replicate in the short term" (p. 1079). This is because it is linked to tangible assets such as previous financial results and to intangible assets such as the organizational way of doing what they do—procedures, rules, and routines. Roberts and Dowling (2002) explicitly compare their findings with those of Sorensen's study (2002) that investigated the relationship between the strength of corporate culture and organizational performance.

Roberts and Dowlings' (2002) study and Sorensen's (2002) study stress the capacity of systems of rules to be solution-guiding mechanisms over time; part of their findings is that this capacity declines as time goes on, implying that the rate of change of the system of rules does not match the rate of change of the environment.

Other researchers, such as Ensminger and Knight (1997), stress the idea of sets of rules as solution-guiding mechanisms in their investigation of norms. They say, "in some cases they [members of the society] will create norms consciously; in other cases the norms will emerge as unintended consequences of the pursuit of strategic advantage. In each case the focus is on the substantive outcome; the development of the norm is merely a means to that end" (Ensminger

and Knight 1997, p.5). The rules are there to provide strategic advantage and to improve the chances of generating appropriate outcomes.

Researchers in evolutionary economics have recognized the significance of organizational rules, particularly in relation to changes in technological production (Massini, Lewin, Numagami and Pettigrew 2002). Massini, Lewin, Numagami, and Pettigrew (2002) investigated the evolution of organizational routines from an evolutionary perspective, exploring adoption and adaptation of new structural and procedural organizational routines and emerging dominant managerial practices in large European, Japanese, and US firms between 1992 and 1996. They reported that, "procedures relate to the rules and routines underlying the firm's execution of activities'' (Massini et al. 2002, p. 1334), and that they relate to changes firms make in competitive environments that influence the level of organizations' performance.

One of the findings of the study by Massini, Lewin, Numagami, and Pettigrew (2002, p. 1335) is that "from an evolutionary perspective, organizational differences are grounded in the ability to generate and internalize innovations, rather than in the possession of certain technologies" speaking to the power of systems of rules as solution-guiding mechanisms in organizations. The greater an organization's ability to internalize changes in their systems of rules, the greater the probability it will exhibit 'successful' results over time.

For example, a new rule as a solution-guiding mechanism arose when in 2003, in an epic-making action, the Securities and Exchange Commission announced enforcement actions against ten Wall Street firms and two individual analysts arising from an investigation of research analyst conflict of interest (SEC 2003; SEC 2004) totaling $1.4 billion. The settlements were reached with the Securities and Exchange Commission (SEC), the National Association of Securities Dealers (NASD), the New York Stock Exchange (NYSE), the New York Attorney General (NYAG), and other state regulators. The firms accepted that they had encouraged their investment analysts to publicly exaggerate corporations' investment value, misleading investors, in order to win the corporations' investment banking business. Martinez-Moyano, McCaffrey, and Oliva (2005, p. 10) report email exchanges between analysts and institutional investors about excessively favorable rating for firms conveying the situation.

> An institutional investor and an analyst discussed the effect of the conflict of interest on the analyst's research in the following exchange:

> Institutional Investor: I understand – business is business. But I feel bad for those naïve investors who assume that sell-side analysts are objective! I wish some buy-side institutions would get together to establish an independent equity research consortium with analysts paid for on a subscription basis or something…
> Analyst: well, ratings and price targets are fairly meaningless anyway, buy-side [large investors] generally ignores, commentary is what matters and I'll be a [more negative about the company]…in my comments . . . but, yes, the "little guy" who isn't smart about the nuances may get misled, such is the nature of my business (NYSE 2003, p. 15).

The net result of the settlements included the introduction of the new rule in which investment baking and research were to be managed as two independent entities within in the firms. This rule presented a solution to the problem identified. Solutions like this may or may not include explicit constraints to individual or organizational behavior.

Systems of Rules as Bidimensional Mechanisms

Designers of systems of rules in organizations might have a set of preferences and skills that will allow them to design systems of rules that will have a combination of the two goals just discussed (see Figure 3). The combinations create four quadrants of possible types of rules and of systems of rules, according to the main goal of the system's designer.

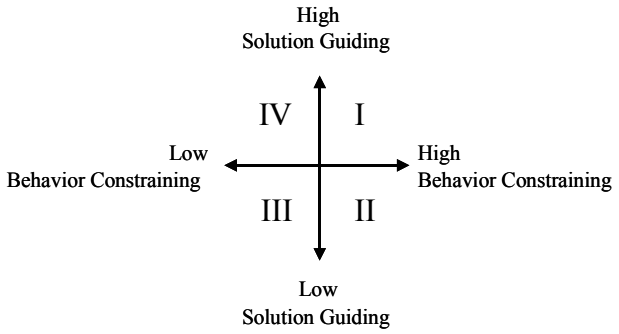

Figure 3—Goals in systems of rules

Quadrant I—high on the solution concern and high on the behavior concern—represents systems of rules created to solve the problems the organization faces via constraining individual behavior. This would be the case in which the problem that the organization experiences is derived mainly from the behavior of certain individuals. For example, in the wake of the terrorist attacks on the United States, the Federal Aviation Administration determined that the solution (at

lest partially) to the problem of having weapons inside air carriers was to constrain the range of behaviors that the passengers could adopt. Specifically, what types of things could be carried on board. The FAA changed the rules of carry-on items and those related to personal searches limiting the behavior of passengers and 'solving' the problem.

Alternatively, quadrant II—high on the behavior control concern and low on the solution concern—represents systems of rules designed primarily to constrain behavior, even when that is not necessarily aligned with the solutions needed to the current problems the organization is facing. In this case, the designer of the system of rules is more concerned with the internal dynamics than the external ones. This approach—a housekeeping approach—is widely used due to the illusion of being in control of the organizations' destiny. It is always easier to try to control the internal environment than the external. For example, a typical response to growing levels of absenteeism or accidents in organizations is to increase the reporting required to document this phenomenon. The more accidents or people absent, the more reports produced. This response creates an illusion of being in control by constraining the range of behaviors (with respect to reporting) that individuals can engage in. However, it has very little effect (if any) on solving the associated problem.

Quadrant III—low on both dimensions—represent rules that have no real impact on the organization, these could be considered some sort of irrelevant rules. For example, in the case of Federal initiatives for training on the job, critical variables to measure performance of service providers changed when the original program (Job Training Partnership Act –JTPA) changed to become the Workforce Investment Act (WIA)[3]. Under JTPA, the variables used were the Employment Rate at Termination (ERT), the Welfare Employment Rate at Termination (WERT), the Average Wage at Termination (AWT), the Cost per Employment (CE), the Employment Rate at Follow-up (ERF), the Welfare Employment Rate at Follow-up (WERF), the Average Weekly Earnings at Follow-up (AWEF), and the Average Weeks Worked by Follow-up (AWWF). Under WIA, the measures changed to the Entered Employment Rate (EER), the Employment Retention Rate (ERR), the Earnings Change in Six Months (ECSM), and the Employment and Credential Rate (ECR). However, independently of the number of measures used, the main driver of performance assessment remained the same, the employment rate of the graduates of the training programs (ERT & EER). In this case, changing the definition

[3] See Appendix 1 for a description of the measures used in the programs.

of the measures used was of little consequence in terms of behavior of the providers of services and in terms of solving the problems of the program.

Lastly, quadrant IV—high on the solution guiding and low on the behavior constraining—represent rules that are truly seeking to resolve the challenges that the organization is facing assuming that the individuals in it are capable and will follow the rules. For example, in the case of the financial markets regulation, prominent failures and scandals overrode reservations about the effect of new legislation on the markets and produced major securities laws, such as the Sarbanes-Oxley Act in July of 2002 (Seligman 2003). Part of the changes introduced in the Sarbanes-Oxley Act (2002) contemplates the introduction of new rules that promotes enhanced financial disclosures (Title IV) and auditor independence (Title II). These change were designed to provide a clear solution to lack of communication prevalent in the market and to the normalization of deviance problem (Vaughan 1996; Vaughan 1998; Vaughan 1999) generated over time.

In general, the Sarbanes-Oxley Act (2002) introduced changes that could be identified in the solution-guiding area and in the behavior-constraining area. This is true of most systems of rules due to the multiplicity of rules contained in them. However, at the level of specific rules, it is possible to distinguish better the specific type of rules using the distinctions presented in this section.

An assumption of this model is that the designer of the system of rules is a single actor who can unilaterally decide the components of the system of rules and its overall orientation—solutions vs. behavior constraining. This assumption may be valid only for private-sector organizations, especially small ones. In private sector organizations the decision making process tends to be more centralized than in public sector organizations. Additionally, in the private sector in general, the operations are not carried out in a participatory manner. However, in the public sector, and for large organizations, the single-designer assumption might be difficult to sustain due to the complexity of the decision-making processes, and the necessary degree of participation due to the existence of multiple stakeholders with multiple and often conflicting views and goals. Additionally, in the public sector exist institutionalized checks and balances systems (Wilson 1887; Waldo 1980; Rosenbloom 1983; Riccucci 2001) that make it difficult for a single individual or organization to decide and define changes to the systems of rules. This situation makes the single-designer assumption hard to sustain in governmental contexts.

V. Multiple Designers and Systems of Rules in the Public Sector

The single-designer assumption in the construction of solutions must be relaxed to incorporate the characteristics public managers have to consider in e-government initiatives. E-government initiatives can be characterized in general as solutions to problems identified by public managers. The problems identified might vary from unclear, ill-defined issues that will be solved by e-government action, to very clearly defined requirements requested of the government by citizens, politicians, interest groups, among others (the principals). Problems can also range from relatively clear technical problems to complex political, economic, or social considerations.

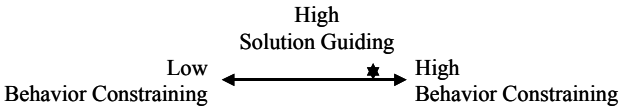

Figure 4—Citizens' view (including other stakeholders)

Frequently, a solution via e-government is often devised first by public managers and then, if certain conditions are met, it becomes a requirement that must be fulfilled in order to be evaluated as 'doing the right thing.' In the public sector, particularly in the case of e-government initiatives, at least two parties will be involved in the system design: public managers as suppliers, and citizens, businesses, and other stakeholders as demanders. This characteristic transforms the goal-definition problem in the design of systems of rules from a single-designer problem to a multi-designer problem. In general, citizens are able to 'see' the problem across only one dimension: the behavior-constraint dimension. Citizens and other stakeholders are concerned with how public managers are doing their jobs and how they comply with the requirements set for them (accountability). Citizens expect that public managers have the ability and technical expertise to provide high-level solutions to the problems identified. Therefore, as presented in Figure 4, the most important dimension for citizens and other stakeholders is the control dimension.

In the case of public managers, e-government initiatives concentrate mainly on the solution-guiding dimension (see Figure 5). The ideal operating scenario for public managers is to be able to concentrate exclusively on how good their initiatives are with respect to the problems they are facing (performance). Public managers seek having enough discretion to be able to

design and implement the solution that best addresses the problem at hand (flexibility). This case implies a low behavior-constraint emphasis on the part of the citizens and other stakeholders. Moon and Welch (2004) explain that "the bureaucrat's enthusiasm for swifter implementation of e-government appears to be fueled by strong confidence in the capacity of government to securely provide services and respond to citizen needs." (p. 8)

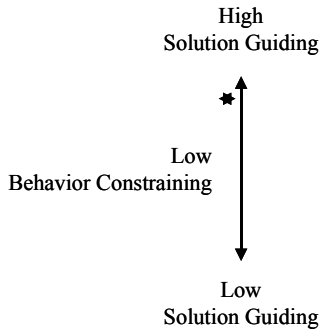

Figure 5—Public managers' View

The ideal scenario would be the one in which public managers are capable of doing exactly what they think they should be doing with respect to one specific problem (high solution-guiding concern), while the citizens they serve evaluate that precise activity as a requirement that the public managers should be fulfilling (high behavior-constraining concern). The likelihood of this being the case is very low. However, this idealized exploration enables us to identify the power of a shared vision—in the sense that Senge (1990) describes—on what the e-government activities should be. If there is an alignment (natural or created) between what the public managers want to do and what the citizens and other stakeholders consider is required, the two constituencies would be operating at the height of their own relevant dimensions with respect to the design of the system of government activities—e-government in particular.

VI. E-Government Evolution: Reframing the Politics and Administration Dilemma

If the view that government is closer to citizens at the local level is true, then the degree of responsiveness and accountability will be greater in local governments. The capacity of citizens and other stakeholders to control public managers increases from the national, to the state, to the local level (see Figure 6). For instance, scholars interested in topics such as devolution or decentralization have identified that state and local governments are more sensitive to citizen's needs and potentially also more accountable to them (Gore 1996; Nathan 1996; Thompson and

Riccucci 1998). Thus, the system of rules that governs the development of e-government initiatives moves from a self-imposed, solution-oriented goal (at national level), to a behavior-control-oriented goal (at local level).

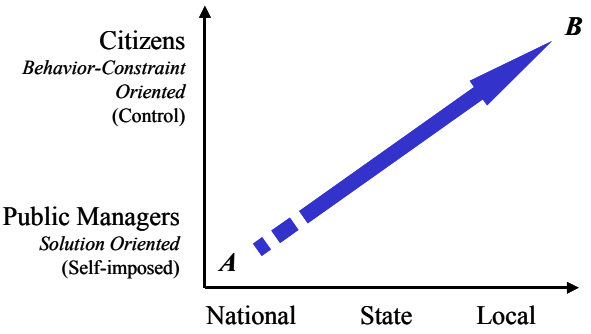

Figure 6—Evolution of e-government initiatives

This argument suggests that e-government initiatives may evolve from national to local levels of government, and that decision-making power would simultaneously shift from public managers to citizens and other stakeholders. As the reader can observe, this dimension between problem-solution-oriented and behavior-control-oriented goals can be equated to the well-established politics and administration dilemma (Wilson 1887). Initially e-government initiatives are greatly shaped by public managers' concerns (mainly at national level). After some time, citizens and other stakeholders (directly or through their representatives) gain more control over what e-government is, or should be; in other words, what level of technological sophistication is considered adequate, and what services they want. However, it is important to clarify that citizens' expectations, or e-government demand, may or may not have a direct effect on e-government functionality but a more complex indirect influence (La Porte et al. 2001; Ho 2002; Gil-García 2005).

The dynamics described above might not always generate ideal results. Using a democratic lens, and assuming that citizens and other stakeholders have complete information about the details of e-government initiatives and their actual results, the change in control seems very positive. However, this is not always the case. Sometimes citizens demand a greater level of services and technological sophistication only because that is what they observe in other contexts, not because they actually need it. Therefore, this approach enables an understanding of the positive and negative impacts of e-government initiatives, even if citizens and other

stakeholders (as principals of public managers) have certain level of control. In fact, due to an information asymmetry problem, public managers will have discretionary spaces to re-interpret and modify some of the demands of citizens, businesses, politicians, and other stakeholders.

VII. Final Comments

This paper explored the interaction between the way e-government evolves over time and the way in which the systems of rules that influence e-government action change. We used institutional theory and the study of rules to reframe the well-established politics and administration dilemma in our model. Additionally, we have characterized the design problem in systems of rules as mainly a single-designer situation in the private sector and as a multi-designer situation in the public sector. In the latter case, actors involved have different interests along different dimensions that make coordination more difficult than in the first case. It seems that, in the case of public-sector action, in general, and in e-government activity, in particular, the development of a shared vision between public managers and their constituencies of the initiatives to be accomplished could be key for a successful outcome across dimensions and expectations. Part of what is needed to create a useful shared vision is the development of clear dynamic indicators for the evaluation of e-government initiatives. Researchers argue that today, metrics used to asses e-government initiatives are "designed to measure the static nature of e-government performance mainly based on web content analysis" (Moon, Welch and Wong 2005, p. 10) not capturing adequately the dynamic nature of their actions and interactions.

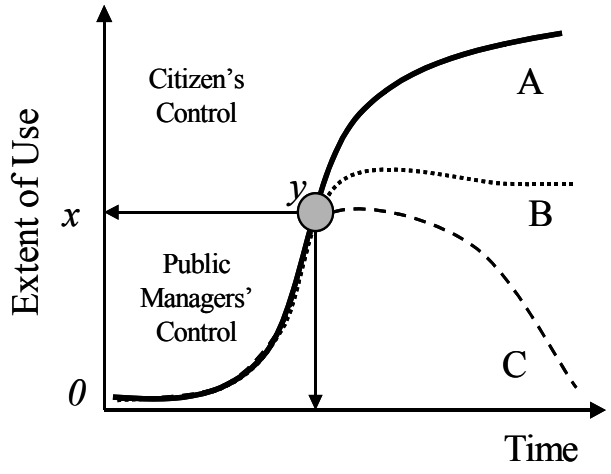

Figure 7—Extent of use of e-government initiatives

We argue that, in the case of e-government initiatives, public managers are *in charge* for a period of time in which they develop and test initiatives to assess their efficiency and

effectiveness. However, after the extent—the combination of frequency and importance—of use of those initiatives reach a critical point (point ***y*** in Figure 7)—herein called tipping point (for an extended treatment of the subject see Sterman 2000)—the control of the initiative changes to the citizens and other stakeholders by declaring the existence of the initiative as a requirement for 'normal' operation.

This insight has potential implications in the way in which new initiatives are to be designed and tested (by bureaucrats) in order to maintain their control and be able to contain its use and growth. Furthermore, it has been argued that setting the pace for implementation of e-government in a democratic environment "requires the understanding of the different mental models according to which citizens, bureaucrats and politicians operate." (Moon and Welch 2004, p. 9) According to this rationale, public managers might be better off when, and if, they identify where the tipping point is to determine if they want the e-government initiative to behave like the 'A' curve in Figure 7, or in a more constrained fashion like curve 'B', or if needed, terminate the initiative (curve 'C'). In order to find the said tipping point, public managers can rely on longitudinal studies of relevant characteristics of e-government action—like sources of funding and requirements—and, additionally, in the use of dynamic modeling techniques (Richardson and Pugh 1981; Sterman 2000). In general, public managers might be able to maintain control of the e-government initiative from point '*0*' in the extent of use scale to point '*x*'; beyond that point, citizens and other stakeholders will control the initiative via establishing requirements—explicit or implicit—of e-government operation and using those systems. Simultaneously, "as with all other types of significant managerial activities by public organizations, [e-government] success will be determined by the ability of public servants to understand and address the desires and concerns of the governing citizens and to communicate informed decisions to the same individuals as governed citizens." (Moon and Welch 2004, p. 9)

One example should serve to clarify how this can work for specific e-government initiatives. First, a new application for online driver's license renewal is developed. For some time, citizens and other stakeholders start using the application at a very low pace (beginning of the curve). During that initial period and until certain extent of use (represented by x), public managers can evaluate the cost-effectiveness of the new application and make decisions about modifications or even terminating the program (which would lead to a curve like C in figure 6). Once many stakeholders are using the application, or relatively few stakeholders are using the application very intensively (extent of use), which is represented as the curve after point y,

terminating the program would be a very difficult option. By then, citizens, businesses, and other stakeholders will be knowledgeable about the benefits of the online driver's license renewal application and they will expect to continue being able to use it. Therefore, even if the application is not cost-effective or have other major problems, it would be very difficult for public mangers to abandon the initiative. At that point, only curves A and B are potential alternatives. For example, if they want to increase the use of the online application in a major way, they can use an aggressive marketing campaign to communicate effectively with the citizens as Moon and Welch (2004) suggest to do to ensure success in e-government implementation processes. If this campaign and other actions are successful, then the initiative may look like curve A. The evolution of a good online application without other managerial support (e.g., marketing) may look like curve B. Public managers should be aware of all this complexity and develop strategies according to their different options (including terminating the initiative) and the goals of the e-government applications.

According to the theory presented in this paper, e-government is evolving toward more sophisticated and complex standards due to several mechanisms. Simultaneously, public managers looking for solutions to their interests, and citizens and other stakeholders looking for better services and accountability mechanisms will produce continuous pressures for the evolution of e-government definition and requirements. Thus, this paper provides a useful theoretical model to understand the evolution of e-government and to identify some of the feedback mechanisms that create that evolutionary pattern. One question that remains is how to create e-government policies and standards that can be both solutions to what public managers consider problems and, at the same time, be responsive to citizens' actual needs. This paper proposes the desirability of a system of rules and standards for e-government initiatives that can accomplish both goals: solution guidance and behavior control. A truly useful e-government model should foster the alignment between these two dimensions that can be translated into effective and responsive e-government action.

Appendix 1

Table 1— Federal JTPA Performance Measures in Effect in Years 1987-1989 (Courty and Marschke 2004)

Performance Measure		Definition
		Adult Performance Measures
Employment Rate at Termination	ERT	Fraction of terminees employed at termination
Welfare Employment Rate at Termination	WERT	Fraction of terminees receiving welfare at date of application who were employed at termination
Average Wage at Termination	AWT	Average wage at termination for terminees who were employed at termination
Cost per Employment	CE	Training center's year's expenditures on adults divided by the number of adults employed at termination
Employment Rate at Follow-up	ERF	Fraction of terminees who were employed at 13 weeks after termination
Welfare Employment Rate at Follow-up	WERF	Fraction of terminees receiving welfare at date of application who were employed at 13 weeks after termination
Average Weekly Earnings at Follow-up	AWEF	Average weekly wage of terminees who were employed 13 weeks after termination
Average Weeks Worked by Follow-up	AWWF	Average number of weeks worked by terminees in 13 weeks following termination
		Youth Performance Measures
Youth Employment Rate at Termination	YERT	Fraction of youth terminees employed at termination
Youth Employability Enhancement Rate	YEEN	Fraction of youth terminees who obtained employment competencies (see note 3 below)
Youth Positive Termination Rate	YPTR	Fraction of youth terminees who were "positively terminated" (see note 3 below)
Youth Cost per Employment	YCE	Training center's year's expenditures on youths divided by the number of youths positively terminated

Notes:

1. The data of termination is the date the enrollee officially exits training. A terminee is an enrollee after he has officially exited training.
2. All measures are calculated over the year's *terminee* population. Therefore, the average follow-up weekly earnings for 1987 was calculated using earnings at follow-up for the terminees who terminated in 1987, even if their follow-up period extended into 1988. Likewise, persons who terminated in 1986 were not included in the 1987 measure, even if their follow-up period extended into 1987.
3. A positive termination is entering un-subsidized employment, attaining youth employment "competencies" (through course-work, training and/or tests in work maturity, basic education, or job-specific skills), entering non-JTPA training, returning to school full-time, or completing a major level of education.

Table 2— Federal WIA Core Performance Measures in Effect in Years 2000-2004 (US_Department_of_Labor 2004)

Performance Measure		Definition
		Adult Performance Measures
Entered Employment Rate	EER	# of adults who have entered employment by the end of the 1st quarter (Qtr.) after exit / # of adults who exit during the quarter
Employment Retention Rate	ERR	# of adults who are employed in 3rd Qtr. after exit / # of adults who exit during the quarter
Earnings Change in Six Months	ECSM	[Total Post-Program Earnings (earnings in Qtr 2 + Qtr 3 after exit)] - [Pre-Program Earnings (earnings in Qtrs 2 + 3 prior to registration)] / # of adults who exit during the quarter
Employment and Credential Rate	ECR	# of adults who were employed in the 1st Qtr. after exit and received a credential by the end of 3rd quarter after exit / # of adults who exited services during the quarter
		Customer Satisfaction Measures
Participant Customer Satisfaction	PCS	The weighted average of participant ratings on each of 3 questions regarding overall satisfaction with services received. This score is reported on a 0-100 scale
Employer Customer Satisfaction	ECS	The weighted average of employer ratings on each of 3 questions regarding overall satisfaction with services received. This score is reported on a 0-100 scale.

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