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Relations Among Governmental Project Actors: The case of Paraná mGov

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Abstract

This paper aims to study an eleven-year project of mGov in the state of Paraná, Brazil. From 2000 to 2010, Paraná State Government introduced the cell phone as a means of service provided to the citizen. The precocious experience in Brazil in Mobile Government (mGov) and the number of cell phones used in the country (over 224 million in 2011) are not arguments for these to be used in providing mass public services. The reason may be the difficulty of establishing relations among multiple mGov actors. The study of such relations motivated this research. Mason's Historical Method was used to get to know those eleven years of the project, raising available information and retrieving happenings and results. To identify events, relevant actors, their roles, aspects in collaboration, setting and density of the relations among these actors, Network Theory was used. The study of the relations among actors concluded that the organizations involved only with the aim to experiment in mGov remained for a short time, normally only one of the phases. Those visualizing opportunities in fulfilling their role as an organization using mobile technology remained longer in the project. Interactions indicate that relationship dynamics among actors contributed to develop the idea, in the initial exploration phase, using technology for the maturity and survival of the project.

Keywords

Mobile Government, mGov, ICT in developing countries, Electronic Government, eGov, Short Message Service, SMS.

1. Introduction

This paper dwells on the experience of Paraná State Government using cell phones to provide services to citizens. It reports on the investigation on how the Mobile Government Project (mGov) was developed from 2000 through 2010. It reports especially on the relations among the actors in the project. Paraná State Government pioneered in making cell phone services available. In 2000, services already prospered in this platform, offering traffic services, job opening warnings, farming product values, frost warning and giving access to cultural events.

In the 1990s, in various countries, there was massive access to cell phone services. In Brazil, they were greatly spread out after the regulation of pre-paid services. In 2011, mobile telephony in Brazil went over the mark of 224 million cell phones, with a density of 114.9 phones for every 100 inhabitants. The most used function was SMS (Short Message Service), representing 58% of

the functionalities used. The number of pre-paid phones represent 81.75% of the total of phones (TELECO, 2011). Brazil has the fifth largest number of cell phones in the world. In Latin America, it's the leader in working cell phone lines. According to the National Agency for Telecommunications (ANATEL, 2010), 5 565 Brazilian cities will have cell phone service by 2013.

These numbers show the potential this technology has to become infrastructure for the government to offer services to citizens. Despite over a decade in mobile government projects in Brazil and the numbers of penetration this technology has in all layers of the population, these devices are not yet a channel for massive availability of public services. In other developing countries, the situation is not different. One of the explanations posed for this phenomenon is the difficulty to establish relations among multiple actors of mGov, necessary for a corporative model to sustain itself operative in the long run. Departments and autarchies, governmental computing organizations (computing companies), departmental computing structures in the Departments and autarchies, telecommunication companies, brokers, ICT providers and the main actors: citizens.

This paper is comprised of five chapters. After this Introduction, the second chapter contains Mobile Government. The third chapter introduces the methods used: Historical Method and Social Network Analysis, followed by the methodology used in the research. The fourth chapter describes Paraná Mobile Government. The last one finishes this paper with the main conclusions from the research.

2. Mobile Government

The definition of mobile government (mGov) in the studies from mGovLab, International University of Japan (KUSHCHU; YU, 2004), is a strategy of implementing public services made available in mobile platforms to provide the citizens and the society with the benefits and information anytime, anywhere. It is the migration of eGov services and applications to mobile platforms (DINIZ; GREGÓRIO, 2007). The term 'mobile government' can be understood, according to Cunha et al. (2007), in three manners: the first one regards the opportunity governments have to use mobile devices as a means to deliver services and information to the citizen; the second one is about the use public agents make of these devices in their actions in field; and the third one concerns setting up mobile units for the government to be able to expand reach in providing electronic services to the population that lives in places with no access to public services (CUNHA et al., 2007). Diniz & Gregório (2007) consider mGov an essential communication platform between government and citizens.

The research from the Brazilian Internet Steering Committee (CGI.br) pointed out that in 2009, amidst the cell-phone-owning population, 35% has internet access and only 5% of them accessed it. These data point to an electronic channel already in existence with a great potential in the use of cell phones as a means to deliver governmental services to citizens.

The data reveal that Brazil has not evolved in mGov, while numbers of mobile telephony increased exponentially. One of the ventured explanations is the difficulty to establish relations among multiple mGov actors: governmental institutions, Departments and autarchies, computing organizations, such as ICT state companies in Brazil, departmental computing structures in Departments and autarchies, telecommunication companies, brokers, IT providers, and the main actors: citizens. This relationship involves also the establishment as a business model to be sustained in the long run.

3. Research Methods

The methods used in the research were Mason's Historical Method (1997) and Social Network Analysis (SNA).

3.1. Historical Method

Historical research investigates things taking place in the past aiming to assess their influence in the present (LAKATOS & MARCONI, 2007; NEUSTADT & MAY, 1996). It is also a process-oriented research, as it concerns understanding how and why projects evolve through time. Process researches normally deal with retrospective data, based on narratives about what happened and on who did what and when. It is events, activities or choices ordered in time (LANGLEY, 1999).

Historical research methods can be of great use, as they offer the business researcher the opportunity to obtain an ample comprehension of situations and contexts where they are inserted (O'BRIEN, 2004). Vizeu (2010) highlights the interest in research with these methods is in retrieving historical and intercultural aspects standing out in the dominant ideological reproduction, which tends to exclude the past or the context of organization theories and practices. Historical perspective can contribute for the advance in the analysis of administrative phenomena by means of enriching and broadening researches, both by adopting a conceptual-theoretical framework built from the historical analysis and by the application of historical research as a method for analysis.

Mason et al. (1997) propose a historical method concerning specifically IT research. It is of particular use when one wishes to know how these phenomena came to be or how they evolved through time, their implications in the present. Mason et al. state that historical method research offers advantages so as to understand contemporary phenomena concerning the use of IT. Mason et al.'s method consists in the application of seven phases: 1) Formulating a research question; 2) Specifying a well defined investigation domain; 3) Gathering evidences from documental sources and other registries; 4) Assessing critique of the gathered empirical material; 5) Spotting patterns, from the empirical phase to the inductive one; 6) Writing the report; 7) Situating contributions to the report regarding existing literature.

For expositional effects, the phases were presented in a sequence; however, when performing this research, they often suffered juxtapositions or repetitions. This includes applying basic logic so as to check internal coherence of the data, and going back to the sources to deparure inconsistencies. Using this method, we studied organizational processes of the mGov project of Paraná State, in addition to the official corporative history, interpreting existing organizational structures not as determined by law, but as a result of past decisions.

3.2. Social Network Analysis (SNA).

This method assumes social relations constitute a basic unit of society, helping identify attributes of various sorts, which should not be isolated; on the contrary, the focus should be the interdependency of the indicators (WASSERMAN; FAUST, 1994; LAZEGA, 2007; HANNEMAN, 2008; TOMAÉL; MARTELETO, 2006; CABALLERO, 2005; PIZZARO, 2004; MARTELETO, 2001). Although it bears characteristics from a strict modeling sociological method, inductive of relational structures in society, it is flexible as it proposes hybridism among different matrixes to cause a series of conceptual elements to interact for new contributions

coming from these interactions (CABALLERO, 2005). This method is used to set behaviors in context so as to reach systematic visualization of the relational dimension, sometimes invisible, of social connections within a society. It is a tool to serve collective action theory, which helps redefine disciplinary concepts and produces new knowledge from the perspectives that set in context the researcher's sight, coming from different areas (PEREIRA, MEIRELLES, 2009). In social networks, depending on the researcher's disciplinary background, a simplified interpretation can be done, reducing the complexity of the object of research. In order to neutralize this influence, the Network Analysis method combines a structural approach (visualization, graph generating) with other methods of network actions in context. Thus, the complex social interdependency of networks cannot be dealt with from mathematical formalization alone, but also with the elaboration of pertinent sociometric questions. Social networks are considered important partners to build knowledge about themselves. Thus, it is possible to establish dialogues to treat questions such as politics, technology management, world economy and the environment.

3.3. Adopted methodological approach

Based on the categories to classify a research in its epistemological assumptions, Orlikowski & Baroudi (1991) present three perspectives: positivistic, interpretational and critical. This research is based on a group of positivistic epistemological assumptions, even if not explicit, regarding the nature of knowledge and how it is obtained (MYERS, 1997). Although we adopted a positivistic perspective, we register here a belief of non-neutrality of research, especially since we participated of the Paraná State Electronic Government Project, which is the object of analysis of this research.

Studies on mobile government are still relatively scarce in literature. The phenomenon of using mobile technology to deliver public service is also new. So an exploratory study was considered more appropriate. The qualitative analysis (case study) allows one to build the case, registering what changed throughout the lives of the organizations by means of interviews applied to those involved.

The selected period for this research was from 2000 to 2010. In 2000, the first mGov movements in Paraná Government started and, in 2010, some state companies in Paraná still used mGov. The case includes public and private institutions participating of mGov in Paraná State, totaling 20 institutions: CASA CIVILⁱ, CCTGⁱⁱ, CEASAⁱⁱⁱ, CELEPAR^{iv}, DEPEN^v, DETRAN^{vi}, e-PARANÁ^{vii}, IAPAR^{viii}, JUCEPAR^{ix}, POLÍCIA CIVIL^x, SEAP^{xi}, SECS^{xii}, SEFA^{xiii}, SEOG^{xiv} e SETS^{xv}. The private companies were: BRT^{xvi}, GLOBAL^{xvii}, SERCOMTEL^{xviii}, TIM^{xix} e VIVO^{xx}.

Based on Mason's Historical Method, the research question was formulated (Method Phase 1), and the investigation period and domain were specified (Phase 2) – in this case, Paraná mGov project from its conception in 2000 to 2010. Material was gathered from which evidences were collected (Phase 3). The tools used to collect data were documental research and interviews. 256 documents were examined. In the end, 59 of them were used: WebPages, registries based on databases from the researched organizations, digital files, printed documents such as press material, project descriptions, reports, meeting minutes, contracts and formal agreements, emails (digital and hard copies), and internal documents from the participating companies for Paraná State mGov project. The documents were analyzed using documental analysis technique (Richardson, 1989). Technicians and managers from the organizations participating in Paraná State mGov project were interviewed. The interviews took place from July to September 2010.

They were recorded in audio and video. The running time varied from 35 minutes to 2 hours and 20 minutes. The interactions with the interviewees were not restricted during the interview. Contact was kept with interviewees, either by telephone, email or in person, to clear doubts and complement or correct information, all of which were added to the material gathered or transcribed. The documental research data served as a source for consultation for the description of the case and the triangulation of the information obtained from the documents, 6 in-depth interviews and 42 questionnaires. The interviews were transcribed and analyzed by means of content analysis technique. Phase 4 of the method by Mason et al. (1997) consists in the critical assessment of the gathered material, which involved a thorough reading of the whole material (documental sources, transcribed interviews and research notes) so as to spot information gaps or contradictions in the data. In some cases, interviewees were contacted again, either by phone or e-mail, in order to resolve doubts, update information and clarify contradictions found in the data. Finally, the inductive analysis of the material – gathering and relating events, according to what was foreseen in Phase 5 of the method. This allowed the elaboration of a report (Phase 6), presented in Chapter 4. Also the timeline figure was developed: a table summing up the 11 years of the project (figure 5).

For the network analysis, the program used was UCINET 6.289 for Windows. Square matrixes were used.

4. Paraná mGov

Paraná State mGov Project went through different phases throughout its existence, influenced by political happenings or choices the managers made. To describe it properly, it was necessary to characterize these phases and understand the influences and context of each of them. To mark the beginning of each phase, we used the criterion of event, i.e. a choice, activity, decision making or happening that strongly influenced how the project was conducted in the given period. The established phases, hence, have no standard duration. Their descriptions, main actors and relation among actors while they occurred are detailed as follows.

4.1. From the genesis to the institutionalization: mGov exploring and pre-project

The initial phase of Paraná mGov Project started in 2000, in CELEPAR (Paraná Computing Company, a public computing company belonging to the State). It is responsible for the computer actions in the institutions of the whole State, or by their coordination and integration. It is a company with approximately 1000 employees. At the time, cell phones were being introduced in Brazil. Then, mGov was initiated with no predetermined aim, deadline or budget, inherent characteristics to the project exploration phase. The initial phase was marked by partnerships. There was interest in mobile telephony, specially in WAP and SMS technologies and partners noticed their potential. However, they did not yet know how to use them in governmental applications.

The actors' roles were defined as the project progressed. CELEPAR was in charge for keeping and providing for governmental database infrastructure, assuming the role of exploration. The purpose and priority of all was to “learn how to do”.

The first service to be made available was experimental: consulting traffic tickets from Paraná Traffic Department. The technology used was WAP, the service allowed to consult vehicle debts, including speed and parking tickets or vehicle tax debts.

It is important to highlight in this phase: 1) the fact that it presents a prototype, i.e. the idea of the project of using the cell phone working in practice, changed the dynamics of the adoption of this technology, both for governmental actors and private ones; 2) in that period, certain regions of the state were not covered by mobile telephony services, especially rural areas; 3) a debate began by part of the technicians and managers from CELEPAR and also from the Traffic Department on what today is called equipment usability, and also on the high cost of the information traffic. In this phase, CELEPAR was the central actor. It idealized and conducted the mGov project, especially considering its position in the government. It is responsible for the installations, equipment, software, maintenance and safety of State governmental data. Analyzing the actors by their relationship nature, it is possible to notice in this phase that there were no actors in contractual or commercial relation. All four actors had a partnership relation, with participation and mutual learning during the exploring phase. In what concerns institutional and legal relations, the only interacting actors were the Traffic Department and CELEPAR, as shown in Figure 1.

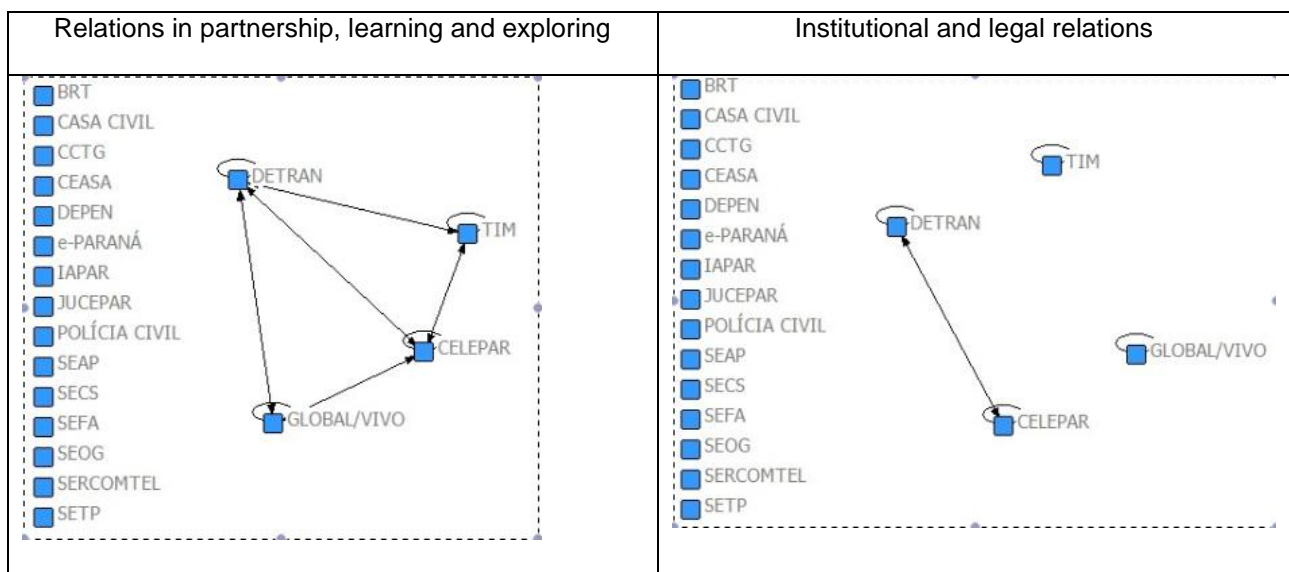


Figure 1 – Relationship nature of the actors in mGov Phase 1

4.2. mGov institutionalization and government change: maturing mGov

The significant event marking the beginning of Phase 2 was the formalization of eGov in Paraná (e-PARANÁ). Its institutionalization took place in March 2001 with the State Decree #3769. The practice of eGov was then made official. It actually started in 1995 with a team from the State Computing Company, CELEPAR. Once it gained official status, legal support was given for the involvement and integration of the governmental departments and agencies. This act also created in Paraná the Executive Committee for Electronic Government, aiming to formulate and establish policies and articulate actions of implementation and operation of projects such as, for instance, mGov.

From 2001 to 2003: mGov was disseminated in the governmental structure, adding to the effort of institutionalizing and firming mGov in a proactive way with the representatives of CASA CIVIL & SEOG; nine projects or tests to offer service to the citizen or to the governmental internal structure were identified; discussions started on the commercial viability of the project, and the first proposal was presented for hiring corporative SMS service; there was the involvement of CELEPAR treatment coordination aiming to make SMS become a service line to

be offered as a corporative service to State agencies. In this phase, governmental actors intensified partnerships with information providers and became concerned with the commercial viability of the project. It was also the phase that rendered the most applications available – eight in total. In this phase, there was no contractual or commercial relation among actors. Partnership and learning were the strong motives for the relationship between actors. The institutional or legal relations among actors become stronger. Figure 2 illustrates visually the nature of the relations of the actors in this phase.

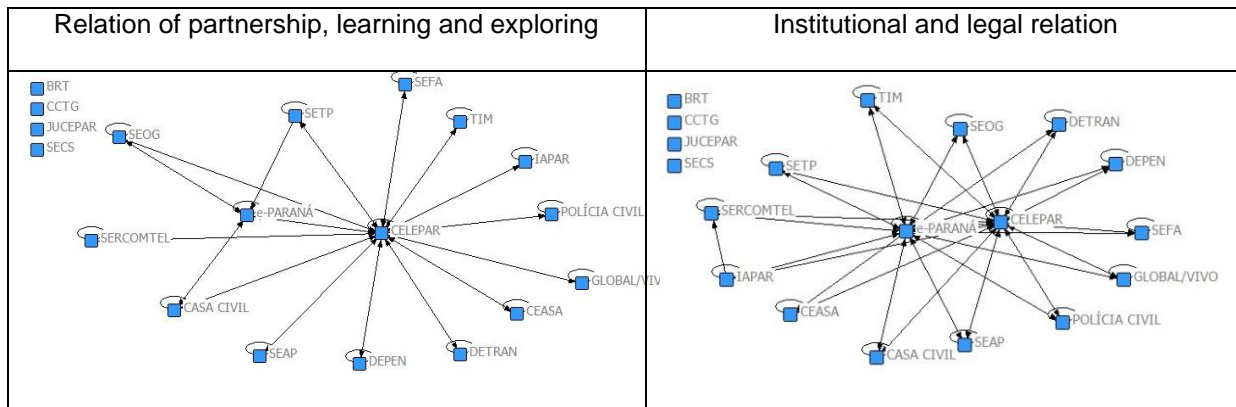


Figure 2 – Nature of relations among actors in Phase 2 of mGov

4.3. Government exchange and discontinuity of eGov; formalizing mGov

When the new governor, elected in 2002, took his position in January 2003, special attention from high-rank managers for the governmental portal was observed. This portal is where one finds the services the government provides to citizens, companies and to the government itself. In order to treat the demands for services from citizens, businesspeople and the governor himself, it was imperative that technology to be used would not bring about great costs and to be developed and implemented in a short time. mGov grew stronger to present these characteristics.

In April 2004, after the informal partnership with TIM finished on March 31st 2004, Paraná Government decided to use SMS services in a corporative form and with isonomy, i.e. with all phone companies acting in the State, for greater coverage to the public services provided by means of this channel. The idea, at the time, was to sign a contract with each one of the companies, but following a standard defined by the Government.

The eGov “Services” workgroup led the discussion and the corporative SMS acquisition was sent to the Government. At the time, the estimated number of text messages per year was 1 800 000 (one million and eight hundred thousand) for the total lots, distributed according to the number of clients for each registered company in the systems of the Executive Branch. This project, called “SMS Corporative Use” in Paraná Government, was prized with the 9th Prize of Excellency in Public Computing. In the same year, the project was invited and presented in the Government Technology (GTEC) in Ottawa, Canada.

Three more new services were developed in the scope of the mGov project. The e-Torpedo (SMS from the government) system was developed in CELEPAR – eGov Division. It centralized, distributed and controlled all SMS movements in Paraná State.

In this phase a contractual relation came to be. With the adopted method, CELEPAR and SEAP signed a contract with private cell phone companies: BRT, GLOBAL/VIVO and TIM. CELEPAR provided governmental agencies their SMS quota. As a result to the corporative

contract, SEAP now was, along with CELEPAR and e-PARANÁ, a central actor in institutional and legal relations. The partnership and learning relation remained strong in this phase, as displayed in Figure 3.

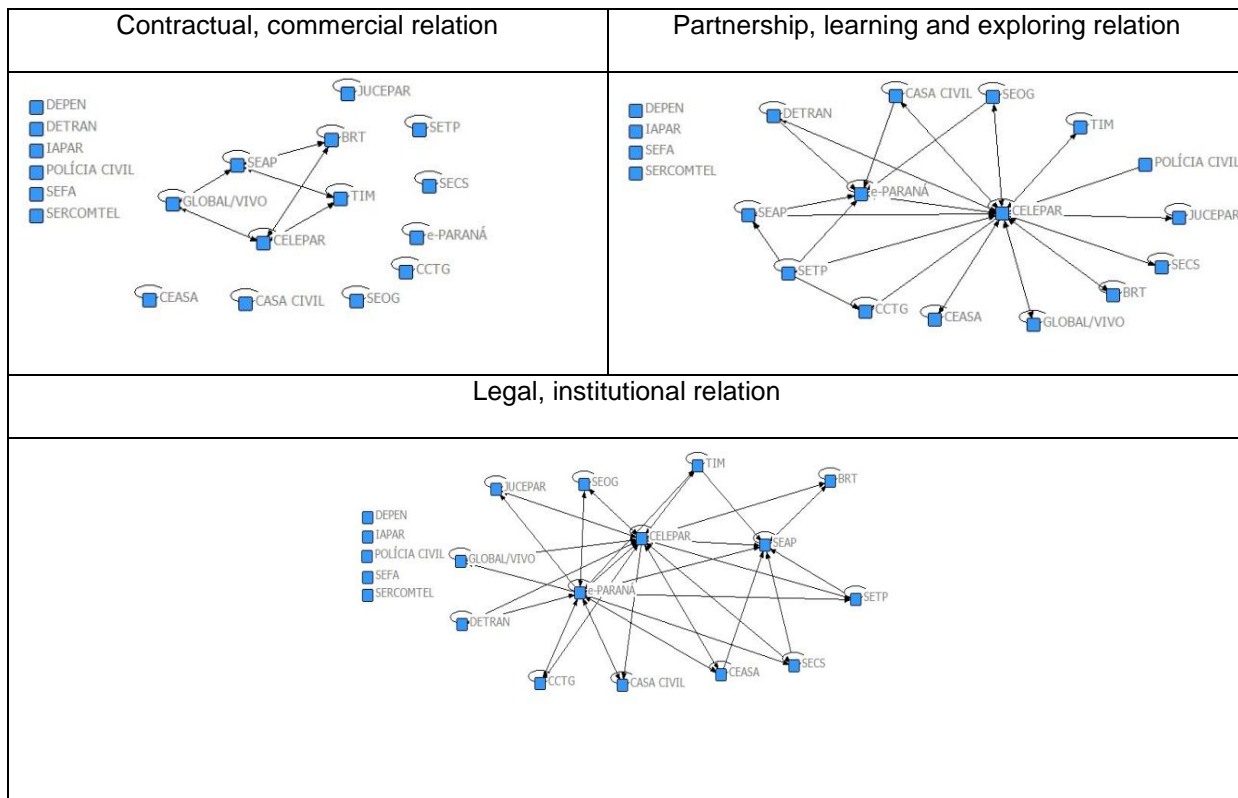


Figure 3 - Nature of the relation among actors in Phase 3 of mGov.

4.4. Discontinuing eGov and CELEPAR departure: the fall of mGov

In 2006, when changing the coordination responsible for the operations of eGov and workgroup meetings of e-PARANÁ were interrupted. Even with no formal act, the corporative project using mGov was discontinued. In 2006, CCTG was added to the project, with cultural programming and sales with the fidelity card from Guaíra Theater, an autarchy linked with Paraná Government and one of the largest theaters in Latin America. The outstanding fact in this period, more precisely in 2009, was the departure of CELEPAR, pointed as the central actor since its creation in 2000. TIM, considered an important actor, partner in the creation, development and maintenance of the mGov project, also leaves the project. The contract, a bidding object in 2007, was not renewed in 2009.

The contractual or commercial relation continued existing in this phase through the SMS contract, albeit without the participation of all actors. DEPEN was isolated in the network, as it participated of the project only as a test. Regarding legal relation and roles, one can see clearly outlined: CELEPAR as the technical company that related technically with the phone companies, and commercially with SEAP, as shown in Figure 4.

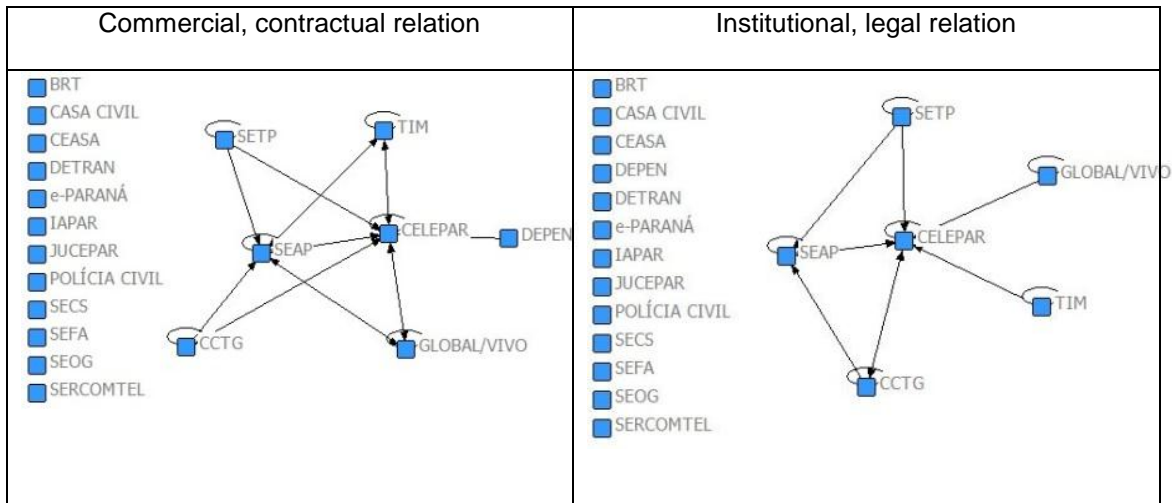


Figure 4 – Nature of relation among actors in Phase 4 of mGov

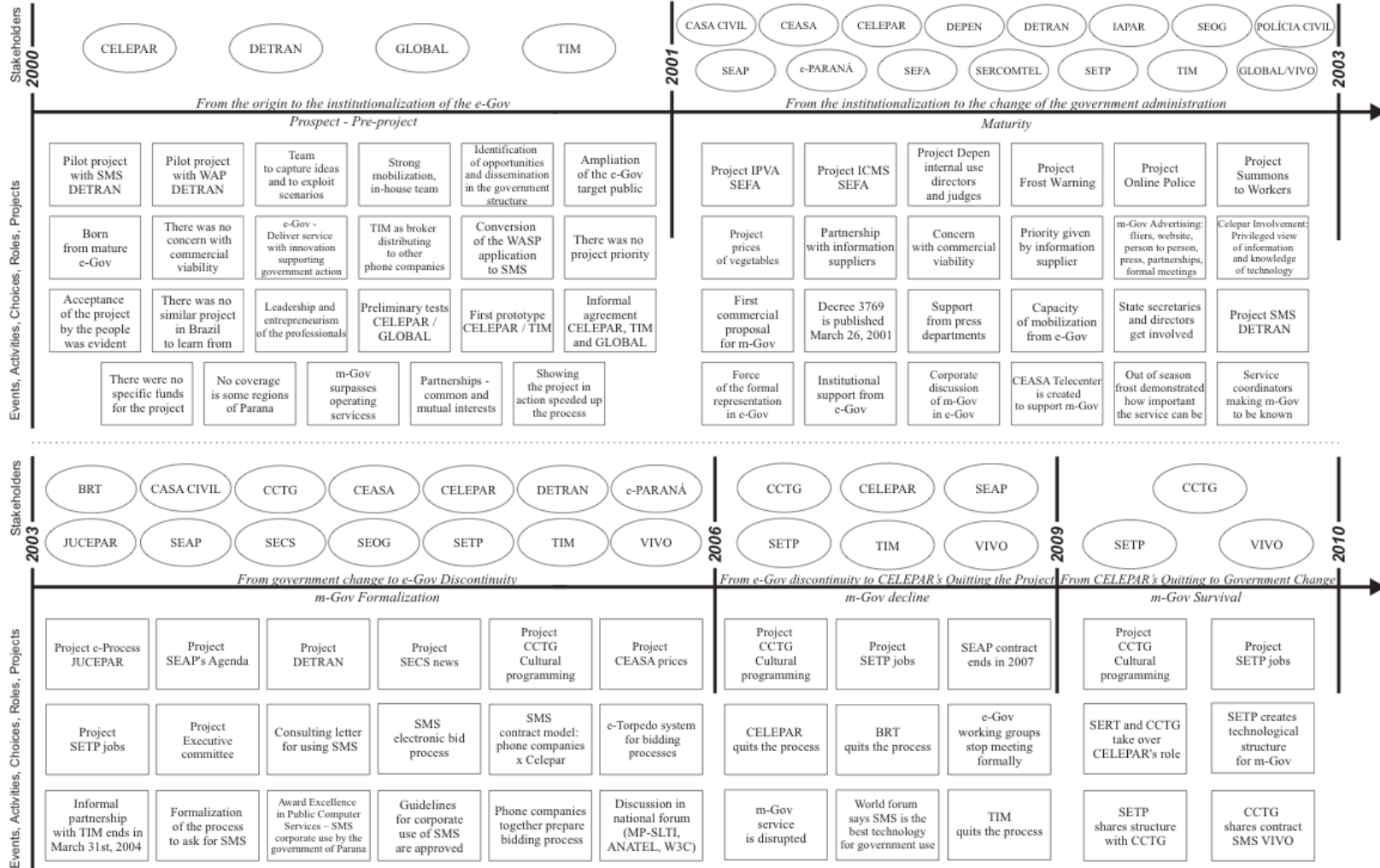
4.5. Departure of CELEPAR and government change: survival of mGov

SETS and CCTG, not accepting the service they provided to be interrupting, despite the rupture of providence from CELEPAR, adapted the technological infrastructure to support and maintain the project working. Without the corporative contract renewal for the acquisitions of SMS, CCTG hired the mobile telephony company VIVO and the service was then made available only to those who owned a phone from that company. The services of Job Opportunity Warning and Guaíra Theater Cultural Program are still offered to the citizens.

Commercial relation took place between CTG and VIVO, since the corporative contract was not renewed and CCTG signed a contract directly with VIVO. In the institutional or legal relation, there was interaction with these three actors remaining in the project.

In the end, a timeline of the mGov Project of Paraná Government was drawn (Figure 5), visually displaying the five phases and their nominations, event, decisions and projects in the eleven years of existence of the project.

TIMELINE OF THE MOBILE GOVERNMENT OF THE STATE OF PARANA



Source: official documents and personal interviews with the author (November 2010).

Figure 5 – Paraná mGov timeline

5. Conclusions

This study aimed to register the origin, construction and survival of the mGov Project of Paraná Government, emphasizing the relations among actors. In that respect, different motivations were observed from the actors throughout the five phases. The first phase of the project was characterized by cooperative actions, outstanding partnerships for exploring, learning, discovering and experimenting. No concert was found regarding establishing commercial or contractual relations. In the second phase, the government showed interest in strengthening and disseminating the mGov project in State agencies to quicken the process and the quality of citizen treatment. There was a motivating factor in this phase to use the new technology. Many actors were involved in a group effort to discuss and discover a possible corporative use for it. This phase was, so, the one with the highest number of actors and projects, with synergy among governmental communication agencies to divulge the project, fronted by e-PARANÁ and CELEPAR. In the third phase, mGov was formalized with the corporative contraction of SMS for the Government. This model later served as reference for the Federal Government and other States of the federation. It was prized and presented abroad. However, in the fourth phase, with the discontinuing of e-PARANÁ, which gathered actions from the state electronic government, the mGov project started to show it was falling. From the sixteen actors from the previous phase, only six remained in this phase. Finally, in the fifth (final) phase, only three actors went on in the project. The managers responsible for the service providing did not accept its deactivation.

Note the existence of six different roles performed by twenty organizational actors participating of the mGov project during the eleven years of its existence, performed by different organizations throughout the duration of the project, some public, some private, in partnership or under commercial contracts: 1) the SMS hirer, the organization responsible for the process of purchase and corporative availability of State Government technology; 2) content provider, the organization holding information and/or responsible for the service to be provided; 3) mGov disseminator; 4) solution developer; 5) broker, the organization in charge of distributing the service to various companies and also in charge of tasks such as ticketing and/or charging telecom services; 6) SMS provider, usually mobile telephony.

When analyzing the density of collaboration, it becomes clear that the third phase formed a denser network, in which CELEPAR, in the relation of partnership, learning and exploring, was very important. Nevertheless, commercial/contractual relation was not expressive. It is inferred that, when comparing density and motives for the actors to join the project in the Phase 2, the institutionalization of eGov was a catalyzing event for the increase in mGov actors and projects.

The interactions observed showed the relation dynamics among actors contributed to develop the idea of use of a technology, at the time little explored, and to mature the project. In general, actors in the project aimed to provide mGov with information or service and remained only in one of the phases. Those with firm proposals concerning service providing and the fulfillment of their organizational mission survived or remained longer in the project. Commercial contractual relation that began in Phase 3 was not enough to sustain the project in the long run.

Network Theory defends that reciprocity is heightened when there is a long run perspective. Safety and stability encourage new ways to perform tasks to originate, bringing about learning, information exchange and generating confidence (POWELL, 1990), which could be noticed in Phases 2 and 3, when actors sensed stability in Paraná mGov Project, especially when eGov was institutionalized and mGov was formalized.

Finally, certain findings from this research may serve as insights for governmental technology corporate project managers. In Paraná mGov, the institutionalization of eGov, meetings with

actors and group discussions, all caused the corporative project to grow – hence the importance of institutionalization is evidenced. On the other hand, the institutionalization of eGov did not guarantee the mGov project to continue. It “died” without being closed, hence the importance of central actors keeping the project “alive”.

The withdrawal of one of the central actors, CELEPAR, caused the service providing in this channel to be nearly closed, but some applications survived despite that. Their managers did not allow the discontinuity and keep the project in public interest. So new associations are formed in the absence of central actors, even when the actors’ area is not technology – this is an aspect worthy of further investigation.

For future research suggested that: i) replicate the study in other spheres of different governments in Brazil and abroad; ii) continue this longitudinal study, looking at how this project behaves in time, iii) develop a study to assess and compare other enterprise technology projects; iv) advance the study of the proposition mGov business model.

Albeit obvious, it is worth mentioning that corporative projects can be leveraged or discontinued by changes in the government. The ones who are technically responsible for these projects should be prepared for governmental changes.

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- ⁱ Paraná State Government Civil House
- ⁱⁱ Guaíra Theater Cultural Center
- ⁱⁱⁱ Paraná Fueling Centers
- ^{iv} Paraná Computing Company
- ^v Paraná State Prison Department
- ^{vi} Paraná Traffic Department
- ^{vii} Paraná State Electronic Government
- ^{viii} Paraná Agricultural Institute
- ^{ix} Paraná Board of Trade
- ^x State Police Department
- ^{xi} Pension and Administration State Office
- ^{xii} Social Communication State Office
- ^{xiii} Finance State Department
- ^{xiv} Special Department for Internal Affairs and Ombudsman
- ^{xv} State office of Labor and Social Promotion
- ^{xvi} Mobile Telephony Brasil Telecom
- ^{xvii} Mobile Telephony Global Telecom
- ^{xviii} Mobile Telephony in Londrina area
- ^{xix} Mobile Telephony Tim (for Southern Brazil)
- ^{xx} Mobile Telephony Vivo