



# A Heuristic Model to Implement Government-to-Government Projects

*Luis Antonio Joia, Getulio Vargas Foundation, Brazil*

---

## ABSTRACT

*Electronic government has proven a watershed in the domain of public administration, despite being difficult to pin down precisely. Indeed, the government-to-government arena is one of the least studied aspects of this newly established field of knowledge. This article aims to present a heuristic model to implement government-to-government endeavors effectively. The framework presented in this article was largely drawn from an actual government-to-government case study successfully implemented in Brazil. From the analysis of this explanatory case study involving the Brazilian Central Bank and the Brazilian Justice Department, some key success factors were singled out, as well as the major hurdles to be overcome and causes thereof. These findings led the researcher to propose a heuristic framework not only to explain the conclusions drawn from the case study presented, but also to help researchers, practitioners and policy-makers to deploy government-to-government projects adequately.*

*Keywords: e-government; government-to-government; Web services; public administration; Brazil*

---

## INTRODUCTION

The main scope of this article is to present a heuristic model to deploy government-to-government initiatives effectively, as well as establish some key success factors for building government-to-government (G2G) enterprises successfully. It also aims to show how public agencies themselves can benefit when they are electronically linked to others, thereby innovating and streamlining their working processes, in order to achieve greater agility and efficacy at reduced cost.

In order to generate a heuristic framework and pinpoint the key G2G success factors, a single explanatory and successful case study approach was used, namely one involving the Brazilian Central Bank (BCB) and the Brazilian Justice Department (BJD). In-depth analysis of this case enables us to appreciate the barriers surrounding G2G enterprises as well as the associated causes involved and possible solutions thereto.

The BacenJud system (Brazilian Central Bank's System to answer the Justice

Department legal claims) developed by the Brazilian Central Bank to be used together with the Brazilian Justice Department was analyzed in a more detailed manner. This case—considered a success—shows how this G2G project made it possible for both the Brazilian Central Bank and the Brazilian Justice Department to achieve greater agility and effectiveness regarding the processing of legal demands made by the Brazilian Justice Department, thereby handing down its sentences at reduced cost.

Therefore, this article intends to answer the following research questions:

- From the case study analyzed, what are the key success factors in the implementation of government-to-government processes between public agencies in Brazil?
- From the case study analyzed, what are the main barriers, causes and potential solutions associated with electronic interorganizational cooperation between government agencies?
- From the case study analyzed, is it possible to explore a heuristic framework to be used to implement G2G endeavors successfully?

Regarding the article's structure, first there is a bibliographical review section, for defining the theoretical background upon which this research is based. This includes the analysis of the strategic use of information and communication technologies in organizations and some discussion about e-government definition and government-to-government (G2G) issues. Then there is a research design section, where the methodology used by the researcher is presented. Subsequently, the case study is analyzed and presented in order to ascertain the key success factors for this kind of enterprise. The hurdles encountered, the

associated causes thereof and some possible solutions are also listed. After the case study analysis and outcome, a heuristic framework is proposed to implement G2G projects successfully. Then, conclusions are drawn and recommendations made by the researcher to practitioners, academics, public administrators and policy-makers so as to enable them to comprehend more clearly the dynamics and peculiarities of G2G enterprises, and to indicate options for further research.

## BIBLIOGRAPHICAL REVIEW

### The Incremental Effects of Information Technology in Organizations

According to Venkatraman (1994), the contribution of information technology (IT) to business was affected by skepticism in the early 1990s due to the failure to achieve the promised results. In view of this perception, the author pointed out the pressing need to create and develop new criteria to evaluate the impact of IT on business, duly reappraising automation logic, cost reduction and internal operation efficiency-based logic, which had prevailed until that time and might well no longer be relevant parameters.

In order to overcome this hurdle, the author developed a referential model in which five levels of IT-enabled transformations in organizations were described: localized exploration, internal integration, business process redesign, business network redesign and business scope redefinition.

According to Venkatraman (1994), the first two levels are evolutionary, whereas the latter three are revolutionary. His main thesis addresses the fact that the use of IT associated to evolutionary levels only has a very slight impact on business

change, despite the complexity of the technological infrastructure used. Consequently, the real benefits of IT in business only arise from the revolutionary levels, i.e., the redesign of business processes and also of business networks and the redefinition of business scope.

Internet technology enabled organizations to rethink ways of doing business. As regards the G2G realm, the redesign of business networks among public agencies is now a reality and the bedrock for G2G enterprises, as will be seen in the case study presented below.

### **E-Government: An Idea Lacking a Clear Definition**

E-government is still an exploratory knowledge field and is consequently difficult to define accurately. Moreover, it encompasses such a broad spectrum that it is difficult to find one expression that encapsulates exactly what e-government really represents.

According to Zweers and Planqué (2001, pp. 92), one can say that:

*E-government concerns providing or attainment of information, services or products through electronic means, by and from governmental agencies, at any given moment and place, offering an extra value for all participant parties.*

Lenk and Traunmüller (2001, pp. 64), on the other hand, choose to see e-government as a collection of four perspectives based on citizens, processes, cooperation and knowledge management, which is obviously merely taxonomy developed to help researchers study this field. Naturally, there is a great deal of interdependence among the facets quoted above and they can seldom be studied individually.

Other authors define e-government in a broader sense (see, for instance, Perri 6, 2001; Kraemer & Dedrick, 1997). For them, e-government encompasses a broad gamut of activities, from digital data and electronic public service to online pool, e-democracy and e-governance. Yet, the most recent definitions see e-government as the various ways government uses information and communication technologies to remain relevant in the knowledge society (ITAC, 2002).

Currently, substandard efficiency, efficacy and effectiveness, at a high cost and in the traditional governmental processes between two or more public agencies, were detected. Faced with this reality one question arises: If enterprises have discovered the enormous benefits that the Internet can generate for them through linkages among themselves, why don't public agencies use this technology and the integration it provides, in order to become more responsive at reduced cost? As public budgets are shrinking all over the world and society is increasingly calling for more accountable public administration, integrated electronic processes between public agencies, via the Internet, known as government-to-government (G2G), can be the answer to this question (Canuto, 2001).

Internet technology has spurred governmental agencies to participate in this new paradigm. However, this step is not achieved simply by offering new services to citizens via the web, in what are now called G2C (government-to-citizen) initiatives. In Brazil, most e-government projects have addressed the provision of new digital services (G2C) for the citizen as well as purchasing of goods and services from enterprises, mainly through web-based reverse auctions (Joia & Zamot, 2002), in what we now call government-to-business (G2B). Unfortunately, very

few projects strive to link public agencies so as to manage their knowledge and to allow them to put new workflows into effect (E-GOV, 2000). Consequently, in governmental processes involving two or more public organizations, we detect very low efficacy and effectiveness at a very high cost. The main reason for this lies in the traditional use of article as the linkage element between public agencies.

### **Government-to-Government Projects and Knowledge Management in the Public Arena**

In the business sector, when all the tasks and procedures of an undertaking are centralized in a single company, it is simpler to organize and assess knowledge accrued from a project. The problem is that a handful of different players may now be involved in any major project. Consequently, the question that arises is: how is it possible to manage and store the knowledge generated during a given venture in such a way as to use it in the course of a specific project and also manage to access it for use on future projects?

Some very important research has already addressed several aspects of this issue, such as Badaracco (1991), Bahrami (1992) and Baker (1994), to name but a few.

However important these articles are in their own right, the scope of this research just touches on how to create, deploy, transfer, store and retrieve the intelligence of an undertaking encompassing a handful of different companies, in different places, with different—although important—duties. Therefore, the next logical step includes expanding the research to ongoing and ad-hoc interorganizational groups. In order to accomplish this in the business realm, it is of paramount importance to understand how Information Technology can leverage

and strengthen knowledge links among the players of a major project involving a host of subcontractors, suppliers and other firms. Interestingly, this is precisely the government's environment.

Government as a collection of public agencies, each of them having their own information and knowledge, needs to ensure that these agencies are linked so as to share their explicit knowledge. It can be said that government is (or should be) similar to metabusinesses—quasi-firms, or virtual firms, created via digital links between several companies—in such a way that it is almost impossible to define their precise boundaries (Keen, 1991).

Information technologies have a threefold impact on metabusinesses, affecting their degree of connectivity, of sharing and of structuring (Haeckel & Nolan, 1993). These three parameters are considered vital to establish the intelligence of metabusinesses and their expertise in managing the knowledge involved.

The connectivity issue addresses the “degree of penetration” of the metabusiness, i.e., if and how the public agencies involved are linked within the metabusiness in such a way as to transmit data and information among themselves.

The sharing issue addresses the “degree of scope” of the metabusiness, i.e., the type of transactions developed within the metabusiness, and the way the public agencies are working together, in order to set up a workgroup environment.

Finally, the structuring issue deals with the ability that the public agencies possess for extracting useful knowledge from the data and information retrieved and shared by them. It is an established fact that knowledge—either tacit or explicit—is far more than the sum of data and information compiled and, according to the Theory of Autopoiesis (Maturana & Varela, 1980)

is generated when a “structural coupling” occurs among the workers.

This is the main reason why knowledge management within public administration cannot be adequately researched and studied other than in the government-to-government realm. Due to an inadequate technical infrastructure. Furthermore, no sharing exists without connectivity, no structuring can exist without sharing and no organizational intelligence will be created without structuring.

### RESEARCH DESIGN

The researcher in this article used a single case study research methodology. Close scrutiny was given to the case study analyzing the digital link between the Brazilian Central Bank and the Brazilian Justice Department, which was established to allow the former to assist the latter in its legal requests related to information on the investment situation of companies and citizens in the Brazilian Financial System. The researcher sought out the critical success factors involved in G2G projects, and also assessed the increase in efficiency over former processes conducted by these public agencies, relating to this workflow.

Case studies are particularly suitable for answering “how” and “why” questions, and are ideal for generating and building theory in an area where little data or theory exists (Yin, 1994). It also enables researchers to use “controlled opportunism” to respond flexibly to new discoveries made while collecting new data (Eisenhardt, 1994). Embedded single case research methodology (Type 2, according to Yin, 1994) was used in this article, as multiple units of analysis—courts throughout the country—were taken into consideration and analyzed.

According to Yin (1994), the single case study is an appropriate design under

several circumstances. One rationale for a single case is when it represents an *extreme* or *unique case* (Yin, 1994, pp. 39) in which a specific intervention, such as that successful G2G enterprise in Brazil, may be so rare that is worth documenting and analyzing. Another rationale for a single case study is the *revelatory case* (Yin, 1994, pp. 40). This situation exists when an investigator has an opportunity to observe and analyze an intervention previously inaccessible to scientific investigation, as in this research. Furthermore, single cases are used as a prelude to further study, such as the use of this research as an exploratory device that is supposed to be the first of possible multiple case studies to be analyzed when other G2G projects are developed and made available in Brazil, leading to a Type 4 case study, according to Yin’s (1994) taxonomy.

As stated above, an explanatory approach was adopted in this case study. Explanatory case studies are useful for assessing how and why a form of intervention is working. The methodology verifies whether problems and modifications are needed, and attempts to explain the causal effects revealed. Different sites are necessary in order to develop a comparative analysis (Morra & Friedlander, 1999), as was the case in this study.

Yin’s tactics (construct validity, internal validity, external validity and reliability) were carefully considered in this research.

In particular, construct validity was dealt with in the study through the use of multiple sources of evidence—as several courts were examined and related data collected—the establishment of a sequence of evidence, and having the members of the group review the draft case study report. Internal validity in the findings was also taken into account, mainly by interviewing

the professionals involved in the process and asking outsiders to read the research draft. External validity was verified by using replication logic and trying to infer behavior patterns in similar environments, so as not to introduce biases. Finally, the reliability of the results was ratified using a case study protocol and developing a case study database, in order to make it possible for other researchers to reach the same outcomes and conclusions, as those presented at the end of this article.

In conjunction with case study analysis, action research methodology was also used. Action research is methodology that deals both with action and research (Dick, 1999): action to introduce change in any community, organization or program; and research to leverage the researcher's understanding about what is happening. It is methodology where the researcher must belong to the team involved in the proposed change (Checkland & Holwell, 1998), as in this research. In this methodology, both rigor and relevance are pursued. According to West and Stansfield (2001), methodology that is not adequately structured in theory can lead to questionable outcomes. Further, the methodology must be useful in practical terms, in order to be relevant to the managers of the enterprise.

Therefore, theoretical background information related to this knowledge field was also analyzed, in order to obtain a match between the case study, action research practicalities and the current theory.

Finally, so as to propose a framework to implement G2G projects, a heuristic model methodology was also used. According to Winter (1998):

*A heuristic frame corresponds to a degree of problem definition that occupies an intermediate position on the continuum*

*between a long and indiscriminate list of things that might matter at one end and a fully formulated control-theoretic model of the problem at the other. Within a heuristic frame, there is room for a wide range of more specific formulations of the problem—but there is also enough structure provided by the frame itself to guide and focus discussion. On the other hand, a rich variety of different heuristic frames may represent plausible approaches to a given problem Winter (1998, pp. 172-3)*

Based on this assumption, the model presented is one among many that can be used again in the near future as it represents an effort to overcome the 'paralysis by analysis' effect (Ansoff, 1984), which is only too common when dealing with intangibles and leads to endless and fruitless discussion instead of producing practical results. A model is valid not by virtue of the excess of rigor it applies to itself, measured by the number of variables taken into consideration, but by the fact that it encapsulates and expresses the reality we are facing adequately. Hence, complexity is not necessarily synonymous with good results, and some flexibility is required when dealing with topics for which a considerable amount of critical perception is required.

Consequently, four methodological mainstreams were blended in this article: single case study (the major emphasis); action research (as one of the researcher's graduate students took part in the G2G team); bibliographical review and heuristic framework.

## CASE STUDY

The Brazilian Federal Constitution grants very few institutions right of access to the bank accounts of both citizens and companies or, indeed, the power to

freeze financial assets of either. One such institution is the Justice Department, which intervenes by means of judicial orders handed down by the judges of several courts nationwide.

As required, a judge can either freeze or liberate the bank accounts of both citizens and businesses and even declare the bankruptcy of a company. Judges are further empowered to suspend a decreed bankruptcy or request financial information about organizations and citizens under scrutiny.

When it issues orders relating to information about the financial assets of either citizens or institutions, the Justice Department sends them directly to the Central Bank, which then forwards the orders to the specific recipients, namely either an institution or the Brazilian Financial System. It is almost impossible for the Justice Department to know precisely where the request should be sent.

As there was already a computerized system in the Central Bank linking it to the Brazilian Financial System, it was relatively easy to meet the Justice Department's requests. However, the increasing demand for this kind of information made by the Justice Department obliged the Central Bank to involve several employees on a full-time basis and expend considerable financial resources just to deal with this requirement. Over the years, the number of claims has increased dramatically, as can be seen in Exhibit 1. In the meantime, the Central Bank's Legal Department issued an opinion alleging that the Central Bank had no constitutional duty to assist the Justice Department with these specific demands. However, in order not to jeopardize its relationship with the Justice Department, the Central Bank decided to rethink its *modus operandi*, in order to continue giving assistance to the Justice Department. Con-

sequently, the Central Bank acknowledged the need to redesign this working process, by streamlining it and achieving greater efficiency and responsiveness at reduced cost. At a time when the Federal Government has reduced the public spending budget and society is demanding greater efficiency, efficacy and accountability from the public agencies, it was of paramount importance to achieve this.

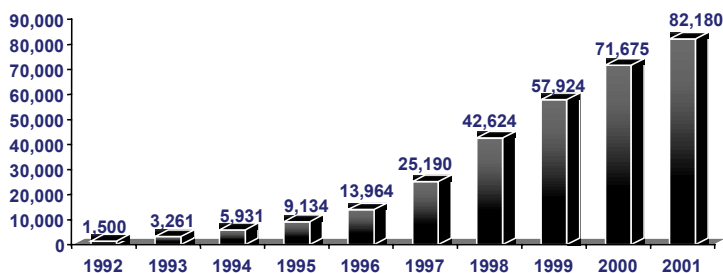
### **An Innovative Process**

By 1999, the Central Bank realized it was no longer feasible to process this operation manually, i.e., receiving claims on paper and feeding them into the communication systems linked to the National Financial System. In 2000, the Central Bank received 300 claims per day, totaling 71,775 claims in that year (see Exhibit 1). A team of 23 people working full time on this task was unable to meet the Justice Department's demands in time, thereby causing problems in terms of efficacy. The Bank was spending approximately US\$1 million/year to process these requests, including wages, equipment and so forth.

The Bank soon realized that there was a pressing need to develop an information system where the Justice Department itself could formulate its requests that could then be forwarded directly by the Central Bank to the financial institutions.

The Bank looked into the possibility of a revised information flow, seeking to take advantage of the deployment of the existing Internet access in most Brazilian courts. A Web-based system was developed in order to centralize the interaction of the judges with the Bank so that they could file their requests directly. A Web-based system was selected such that the judges would not have to install any specific software on their desktops, thereby reducing costs involved in the process.

Exhibit 1. Number of requests sent by the Justice Department to the Central Bank



### The Architecture of the New Interorganizational Process

The *modus operandi* between the Brazilian Central Bank and the Brazilian Justice Department is depicted in Exhibit 2. From the moment a court signs an agreement with the Central Bank, it designates a professional in charge of managing the system on its premises. This manager is supposed to conduct operations including: adding users; altering data; changing passwords; granting permission to judges to access the system and withdrawing this permission when necessary. These operations are done through the system itself, which has a dynamic interface, according to user profile. Users can then access a restricted site on the Internet and after their identity is verified, the system offers Web templates to allow them to fill out their requests. These are recorded directly in the Central Bank's corporate database.

At 7 p.m. every day, all requests received during the course of that day are processed and forwarded to the financial institutions as electronic files. Each institution then replies directly to the judge involved. The process allows the institutions to standardize their answers and send them directly to the judges' e-mail addresses.

### FINDINGS

#### Perceived Benefits

This new process has brought several benefits both to the Brazilian Central Bank and the Brazilian Justice Department, the main benefit being the marked improvement in efficiency in processing and answering requests. Under the former system, it used to take an average of five days from the moment the request was made and delivered to the Financial System, though, at times it could even take as long as 20 days. Such delays can render a legal request worthless, as it gives the suspects sufficient time to remove monetary assets from the banks. Using the new process, a maximum of 24 hours is needed to prepare, transmit to the Central Bank and receive the answer to a request from the Financial System.

The agility attained by this new process derived not only from the reduced turnaround time in handling requests, but also from the opportunity given to the institutions to make or buy their own software in order to answer the claims automatically, as the e-mails of the judges are also supplied to the financial organizations (JUDNET, 2001). Another improvement



in process performance arose from the tracking capabilities available in this new workflow. In the event the request is not answered in due time, the judge is aware of who must be contacted and can follow up and demand an immediate reply.

In financial terms, the new process reduces costs both for the Central Bank and for the Justice Department. For the Central Bank, the main costs are related to the infrastructure needed to complete the process. For the time being, the former infrastructure still remains in place, as some requests still have to be processed manually, though now with the new structure there is no further pressure to improve the structure. Whereas requests used to cost the Central Bank nearly US\$10.00 each, an automated request costs less than US\$0.80. Costs to the Justice Department were also reduced, as it is only necessary to establish Internet access in every court. The costs involved in traditional mail and

personnel to handle the legal requests have also been eliminated.

### Key Success Factors

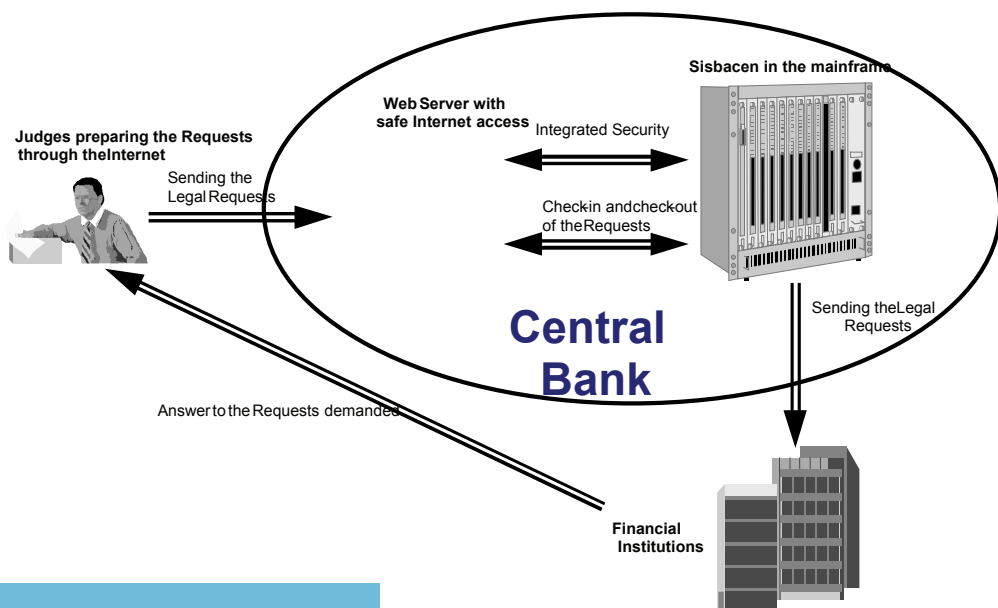
From researcher observations and analysis of the questionnaires, we may deduce that the key success factors associated with a G2G enterprise are as follows:

#### a) Security

As the Internet has become a very important link between governmental agencies, it is of paramount importance to avoid security flaws, such as information violation by ‘crackers’, breakdowns in communication and so forth. Losses caused by such problems are more than just financial, as they can cause loss of confidence and acceptance by users and even involve the interruption of a given communication link. (Endler, 2001).

In G2G processes, the issue of security is even greater, as confidential infor-

Exhibit 2. Process architecture



mation can leak and be made public. Most of this information is protected by laws of secrecy under Brazilian legislation.

Thus, as was shown generically above, it is clear that security is one of the key success factors for a G2G endeavor. An authentication failure can allow any person to issue a legal request and expose the private life of citizens and relevant organizational information to all and sundry. Several courts insisted on seeing how the process worked before actually deciding to join the network proper.

### **b) Organizational Culture**

Another factor that influences the success of an electronic governance model is the culture of the public agency in which it is developed. New processes of electronic governance, at different levels within the Public Administration, demand changes in organizational culture (ITAC, 2002).

The influence of the culture is even more relevant when two different public agencies are working together, concurrently. The changes required in the organizational cultures in order to integrate different internal processes demand very clear prior definition of leadership and respective function. This role, itself, demands that a clear path be followed and precise judgment so as to make innovative workflows feasible (Kieley et al., 2001).

Kling (1980) has provided a very helpful approach to examining the introduction and implementation of computer-based information systems, and the human resistance/acceptance that so often accompanies them. He says that people or groups resist/accept systems because of an interaction between characteristics related to the people and characteristics related to the system. This theory, according to the author, is difficult to define, but easier to describe. The operant word in the

definition is “interaction”. New information systems may prescribe a division of roles and responsibilities at variance with existing ones; they may structure patterns of interaction that are at odds with the prevailing organizational culture. In this light, systems can be viewed as a vehicle for creating organizational change. Similar articulations of a variant of the interaction theory can be found in Keen (1980) and Ginzberg (1975).

It should be noted that this explanation identifies neither the system nor the organizational setting as the cause of resistance/acceptance, but their interaction.

A second variant of the interaction theory can be called the political version. Here, resistance/acceptance is explained as a product of the interaction of system design features with the intraorganizational distribution of power and status, defined either objectively, in terms of horizontal or vertical power and status dimensions, or subjectively, in terms of symbolism.

The interaction theory explains clearly what occurred in the Brazilian Justice Department, regarding the BacenJud system implementation, as the judges perceived their interaction with the system as valuable and as a vehicle to increase their power and status.

Besides, it was observed that the courts that already had a culture of using computerized processes assimilated the new *modus operandi* very rapidly and naturally. On the other hand, courts without Internet access or that barely used information systems in their daily activities have resisted greatly in joining the G2G process.

Hence, as seen above, the success of the use of a new process depends on the culture within the organizations involved, in this case, the culture of the courts nationwide.

### c) Training

New technologies, new processes and new models of electronic governance require the acquisition of new knowledge not just by the persons involved directly in the process, but also by the persons in charge of administrating them. Consequently, public agencies must assess their human capital carefully, as it is mandatory to train personnel before deployment of G2G enterprises (Kieley et al., 2001).

When the process involves more than just one public agency, all players must implement training efforts, in order to leverage the knowledge of the personnel in the agencies involved equally.

Insufficient training can lead to misuse of the electronic processes, hindering the potential benefits that might be attained by this new model.

Although the system was developed based on a user-friendly environment via a Web interface, the Central Bank felt it necessary to make presentations to judges across the country, in order to explain how the system worked and explain the best practices associated with this new workflow.

In October 2001, the Central Bank started to make presentations to the judges in the courts in a state where only 10 judges had joined the system and a mere eight requests had been generated until that moment. In the two months following the presentations, 130 judges joined the system, and nearly 100 requests were generated. Interviews made by the researcher have shown that the use of the G2G process by trained people is increasing, proving the efficacy of the training strategy.

Thus, by consolidating information from all the observations, interviews and questionnaires, it can be seen that access and information security, organizational culture and training were the key success

factors in this G2G enterprise, as depicted in Exhibit 3.

### Barriers: Causes and Solutions

From the case study observations and various interviews with the major players involved, the existence of three types of barriers in a G2G project can be seen, namely structure-based, human-based and technology-based barriers. As shown in Table 1, the last of the three are the easiest barriers to overcome, as opposed to the other two that deal with organizations as a whole and their existing personnel who are set in their ways. Table 1 consolidates the results observed by the researcher. This result is very similar to that found in the implementation of major and complex technological projects as presented by Joia (1998).

### A HEURISTIC MODEL FOR IMPLEMENTATION OF G2G

Based on the data collected and the observations made, which enabled the researcher to grasp both the critical success factors for G2G projects and the obstacles commonly encountered, as well as the causes thereof and the possible solutions thereto, the idea took shape of consolidating these results into a heuristic model for implementation in G2G projects of a generic nature. Einsenhardt (1989) shows how case studies may be used to validate models, and Winter (1998) establishes how a heuristic model should be structured. With these two consultation sources and methodological parameters in mind, and adapting the model proposed by Christensen (1997) to understand how innovation arises in organizations, the researcher developed the g-RPV model (Resources - Processes - Values), applicable to G2G projects. This model explains the critical success factors listed above with respect to

the Brazilian Central Bank case, as well as illustrating and encapsulating the barriers, causes and solutions presented in Table 1 of this article.

### Resources

Resources include everything that can either be purchased and/or trained. Personnel, hardware, software, tangible assets, monetary values, among others, belong to this category. They can be hired or laid off, purchased or sold, depreciated or improved.

With respect to G2G projects, the main resources needed are skilled people—usually found through training initiatives—and an adequate infrastructure, not just to develop and implement information systems, but also to link the public agencies digitally in a secure and adequate manner.

Consequently, training sessions, skilled people, Web-based information systems, network infrastructure, proxy servers, firewalls and other computer features are necessary to deploy a G2G enterprise successfully. All of the aforementioned inputs are related to the “resource” dimension of the proposed g-RPV model.

Undoubtedly, “training,” as a key success factor of the case study analyzed here is the crux of the matter. Likewise, “security,” belongs to this area too as a key success factor, as tangible assets are needed to establish it in a G2G process.

To reiterate what was already stated above regarding the specific case involving the Central Bank and the Justice Department, it was of paramount importance to ensure that the personnel involved were properly trained and a technological infrastructure duly implemented in order to guarantee the required security.

### Processes

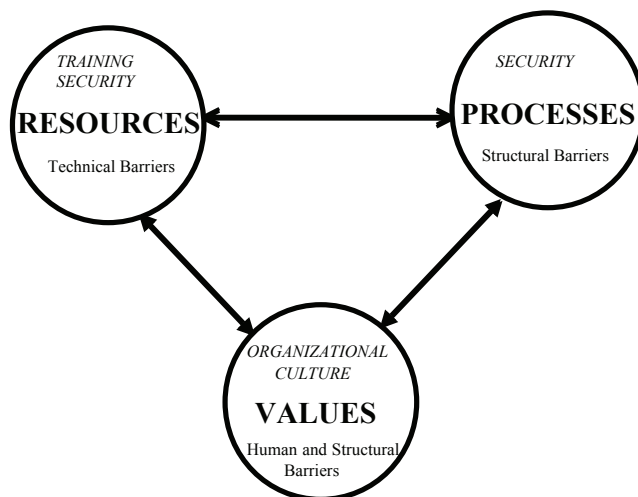
Organizations create value by transforming inputs (resources)—personnel, equipment, technology, information, energy, capital, etc.—into products or services of added value to the customer/citizen. The interaction, coordination, communication and decision choices made in order to achieve this goal are called processes (Garvin, 1998). Each public agency has its own internal processes, specific to its own value chain (Porter, 1980), a concept that has been enlarged to be used in the realm of public administration (Andersen, 1999). G2G enterprises impact the workflows of these organizations, obliging them to innovate, redesign or be more flexible (see Venkatraman, 1994). Furthermore, it is imperative nowadays for organizations to be familiar not only with their own workflows, but also with those of their partners, in order to streamline their *modus operandi* (Hammer, 2001).

Evidently, “security” as a key success factor is partly centered in this dimension of the proposed model, as the redesign of both the technological infrastructure (“resources”) and the organization’s intra and interorganizational processes are necessary, along with the redefinition of the business network—level 4 of the model proposed by Venkatraman (1994) presented earlier—in order to be successful in a G2G project.

### Values

The values of an organization are the sum of the criteria it adopts to establish and define its priorities, which is called “public choice” in the public administration arena. These values are the subjacent logic that explains how employees allocate their time and define their priorities, judge whether an order is attractive or not, decide whether or not a customer/citizen must

Exhibit 4. The g-RPV Model and its interactions



be assisted or ignored and realize if they must comply with a new *modus operandi*, which can either pose an opportunity or a threat for them. Therefore, within the scope of this article, awareness of the values of an organization is mandatory to be in a position to assess whether or not the civil servants will assist or sabotage (even in a passive way) a new enterprise, such as a G2G project.

Undoubtedly, the key success factor of “culture” is totally embedded in this dimension of the proposed model, almost overlapping with the “value” dimension.

It can also be seen that most of the barriers presented in Table 1 and associated to the implementation of G2G enterprises are embedded in this dimension. Only the technical-based barriers and a few structural-based ones linked to processes cannot be associated directly to this dimension. All the human-based hurdles, for instance, are associated to this aspect of the model presented.

### The Model and its Interactions

In order to test the proposed model—called g-RPV—research was conducted to establish whether a correlation existed between the model and the key success factors found by the authors, including the barriers encountered. Hence, Exhibit 4 is presented showing the links of the heuristic framework with the key success factors: Security, Organizational Culture and Training, as well with the observed barriers: the technical, structural and human-based ones.

As can be seen in Exhibit 4, the proposed g-RPV model explains the dynamics of a G2G project adequately, as all the dimensions, facets and outcomes arising in a G2G endeavor are depicted and included within the model.

### CONCLUSIONS AND FURTHER RESEARCH

From the case study analysis and several interviews conducted with the major players involved, it is possible to conclude that:

- Responsiveness to a G2G process is far greater than that obtained in traditional processes. This agility, itself, is of paramount importance in deploying more effective and efficient public policies.
- G2G processes are a valid alternative for Brazilian Public Administration, which is facing the dilemma of cutting back its operational budget to make the control of the governmental fiscal deficit feasible and to comply with citizen expectations regarding public agencies.
- The security issue in a G2G process is a critical factor, as breakdowns arising from it can cause losses not only for public agencies, but for society as a whole.
- To overlook the organizational culture of a public agency by concentrating efforts on a technological facet of a G2G project may cause the undertaking to fail. Nonetheless, public administration is ruled by the same legal agenda and must comply with similar procedures and rules. However, each public agency has its own identity, values and culture, leading it to develop different workflows, sometimes far different from workflows addressing a similar process in another public agency. To analyze the culture and values of a public agency is of paramount importance to the success of a G2G enterprise.
- Although technology offers people a user-friendly interface and, in some cases, the technology is already being used in the public agency, a G2G enterprise involves a *modus operandi* that is new for most of the people involved. It is necessary to show the benefits this new process can bring and the best *praxis*, as important steps for proper implementation of G2G projects.
- The structural and human barriers are far more relevant than the technological barriers. For each barrier, there are causes and possible solutions, as presented in Table 1 in this article.
- As several courts were analyzed by the researcher, it can be said that the overall results can be replicated within the Brazilian Justice Department as a whole. For other environments, multiple case studies and comparison of results are needed, so as to make extrapolation of the conclusions herein presented possible.

It can also be inferred that the paper deals with e-governance (Perri 6, 2001), as it taps digital support for public choices and workgroups among several public administrators of different ranks. This is important as, according to Kraemer and Dedrick (1997), it is the least researched facet of e-government. Similarly, the case study addresses the “process” and “cooperation” dimensions in the e-government taxonomy proposed by Lenk & Traunmüller (2001), as presented earlier in this article, as well as allowing public agencies to attain Levels 3 (Business Process Redesign) and 4 (Business Network Reconfiguration) regarding the use of information technology, according to the model proposed by Venkatraman (1994).

According to the organizational intelligence model developed by Haeckel and Nolan (1993), presented earlier in this article, it is clear that the degree of scope (connectivity dimension) and the degree of range (sharing dimension) of the metabusiness created between the Central Bank and the courts of the Justice Department were improved by this G2G endeavor. The structuring dimension of this metabusiness—transformation of received raw data and information into knowledge—could not be evaluated.

All the research questions presented earlier in this article have been duly answered, as the key success factors and the barriers, causes and possible solutions associated with G2G processes have been addressed. Further, a heuristic framework was also presented, explaining the outcomes derived from the case study and enabling public administrators to deploy G2G projects successfully.

Finally, more research is necessary to verify how these processes have worked in other countries, in order to verify whether these conclusions can be replicated in different political, economical, social, legal and technological environments.

This is a very recent knowledge field; therefore far more research is needed. This article attempts to make a contribution in this very challenging area, in the hope that the results achieved may benefit societies worldwide.

## REFERENCES

- Andersen K.V. (1999). Reengineering public sector organizations using information technology. In R. Heeks (Ed.) *Reinventing government in the information Age* (pp. 312-330) Routledge.
- Ansoff, H.I. (1984). *Implanting strategic management*. Englewood Cliffs, NJ: Prentice-Hall.
- Badaracco J. (1991). Knowledge links. In *The knowledge link: How firms compete through strategic alliances*, Harvard Business School Press.
- Bahrami, H. (1992). The emerging flexible organization: Perspectives from Silicon Valley. *California Management Review*, 34(4).
- Baker W. (1994). Building intelligent networks. In *Networking smart*, McGraw-Hill, Inc.
- Canuto O. (2000). O comércio eletrônico e a mobilidade dos gansos. *Jornal Valor*. São Paulo, September 12, 2000. In: <<http://www.eco.unicamp.br/artigos/artigo131.htm>>, available on 05/25/200.
- Checkland P. & Holwell S. (1998). Action research: Its nature and validity. *Systemic Practice and Action Research*, 11(1), 13-16.
- Christensen C. M. (1997). *The innovator's dilemma*. Harvard Business School Press.
- Dick R. (1999). *What is action research*, 1999. Retrieved July 29, 2002 from, : <http://www.scu.edu.au/schools/gcm/ar/whatisar.html>
- Endler A. (2001). Governo Eletrônico – A Internet como ferramenta de gestão dos serviços públicos. Retrieved from <http://read.adm.ufrgs.br/read14/artigo/artigo1.pdf> on 12/26/2001.
- E-GOV (2000) *1º Seminário Governo na Internet. Brasília: Rede Governo*, 2 CD-ROM.
- Eisenhardt K.M. (1989). Building theories from case study research. *Academy of Management Review*, 14(4), 532-550.
- Garvin D. (1998). The Process of organization and management. *Sloan Management Review*, Summer.
- Ginzberg M.J. (1975). Implementation as a process of change: A framework and empirical study. *Rept. CISR-13, Center for Information System Research, MIT, Cambridge*.
- Haeckel, S. & Nolan, R. (1993). Managing by wire. *Harvard Business Review*, September-October, 122-132.
- Hammer M. (2001). The superefficient company. *Harvard Business Review*, September, 82-91.
- ITAC(2002). Electronic government – The government of Canada as a model knowledge-based enterprise. Retrieved January 6, 2002 from <http://www.itac.ca/client/>

- ITAC/ITAC\_UW\_MainEngine.nsf/0/19f4c6b8e8a6bbf58525681000622b1f/\$FILE/pp991015.pdf
- Joia, L.A. (1998). Large-scale reengineering on project documentation at engineering consultancy companies. *International Journal of Information Management*, 18(3), 215-224.
- Joia, L.A & Zamot F. (2002). Internet-based reverse auctions by the Brazilian government. *The Electronic Journal of Information Systems in Developing Countries* (9), 1-12. Retrieved September 29, 2002 from <http://www.ejisdc.org>.
- JUDNET (2001). Troca de informações entre o Poder Judiciário e o Sistema Financeiro Nacional (Sistema JUDNET). In: <<http://www.ditech.com.br/judnet.htm>>. Available on 12/18/2001.
- Keen, P.G.W. (1980). Information systems and organizational change, *Rept. CISR-46, Center for Information System Research, MIT, Cambridge*.
- Keen, P.G.W. (1991). *Shaping the future*, Harvard Business School Press.
- Kieley B., Lane G., Paquet G. & Roy J. (2001). E-government in Canada – services online or public service renewal. Retrieved December 28, 2001 from <<http://www.governance.uottawa.ca/english/Publications/Downloads/Paquet/2001%20%20E%20Government%20in%20Canada%20%20Services%20Online%20or%20Public%20Service%20Renewal.pdf>>
- Kling R. (1980). Social analyses of computing: theoretical perspectives in recent empirical research. *Comp. Surv.* 12, 1, pp. 61-110.
- Kraemer K.L. & Dedrick J. (1997). Computing and public organizations, *Journal of Public Administration Research and Theory*, 7, 1, pp. 89-112.
- Lenk K. & Traunmüller R. (2001). Broadening the concept of electronic government. In J.E.J. Prins (Ed.) *Designing E-government*, Kluwer Law International, 63-74.
- Maturana, H.. & Varela, F.J. (1980) *Autopoiesis and cognition: The realization of the living*, Reidl, London.
- Morra L. & Friedlander A.C. (1999). *Case study evaluations*, OED (Operations Evaluation Department) Working Paper Series No. 2, May, World Bank.
- Perri 6 (2001). E-governance. Do digital aids make a difference in policy making? In E.J. Prins (Ed.) *Designing e-government*, Kluwer Law International, 7-27
- Porter M.E. (1980). *Competitive strategy: techniques for analyzing industries and competitors*. NY: Free Press.
- Venkatraman N. (1994). IT – enable business transformation: From automation to business scope redefinition. *Sloan Management Review*, 35(2), 73-87.
- West D. & Stansfield M. H. (2001). Structuring action and reflection in information systems action research studies using checkland's fima model. *Systemic Practice and Action Research*, 14(3), 251-281.
- Winter S. (1998). Knowledge and competence as strategic assets. In Klein D. (Ed.) *The strategic management of intellectual capital*, (pp. 165-187), Butterworth-Heinemann.
- Yin R. (1994). *Case Study Research: Design and Methods*, Sage Publications, 2<sup>nd</sup> edition, Thousand Oaks, California.
- Zweers K & Planqué K. (2001). Electronic government. From a organizational based perspective towards a client oriented approach. In J.E.J. Prins J.E.J. (Ed.) *Designing E-Government*, Kluwer Law International, 92.



*Luiz Antonio Joia is an associate professor and academic coordinator of the MBA Program at the Brazilian School of Public and Business Administration - Getulio Vargas Foundation, in Rio de Janeiro, Brazil, and also an adjunct professor of Rio de Janeiro State University. He earned a BSc in engineering from the Militar Institute of Engineering, Rio de Janeiro, Brazil, MSc and DSc in production engineering from Federal University of Rio de Janeiro and post-graduated in management studies from Oxford University. He has published widely in international journals like: Internet Research, Journal of Workplace Learning, International Journal of Information Management, Journal of Intellectual Capital, Journal of Knowledge Management, Journal of Teacher Training and Technology, Journal of Global Information Management, just to name a few. He is also the editor of the book, IT-Based Management: Challenges and Solutions, published by Idea Group Publishing. He serves as a member of the Editorial Advisory Board of the Journal of Intellectual Capital, Emerald and has consulted with the World Bank from 1999 to 2000.*

*This article originally appeared in Journal of Electronic Commerce in Organizations, Vol. 1, No. 4, pp. 49-67. Copyright © 2003*

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.