

Chapter

6

Methodologies and Technologies for Citizen Participation

Cristiano Maciel, Claudia Cappelli, Cleyton Slaviero

Abstract

This paper discusses the challenge of defining methodologies and technologies for public electronic participation (e-participation) so as to make methodologies and technologies allies during the implementation of systemic strategies in governmental organizations.

6.1. Introduction

Citizenship is the practice of rights and duties of an individual in a State, providing him/her with the opportunity to actively engage in the government of people. In modern societies, citizens have been increasingly pursuing their rights, thus making citizen participation a pressing need [Maciel, 2008]. As models of citizen participation suggest, access to information is the first step towards achieving the democratic participation of citizens so that they can be heard and have the power to make decisions. To this end, participation must necessarily be supported by information transparency. When Considering the need for information transparency and access, it is necessary to plan processes in a way that a citizen can understand procedures done by governments along with information thereby generated, so that to he can be an active participant - a key feature of citizenship.

To make this participation viable, along with information access, promoting processes such as discussion, voting and deliberation around each demand of society is also needed. When mediated by technology, there is what is called e-participation or e-part. Public participation is defined by Rowe and Frewer (2000) as the consultation and involvement of public members during decision-making, via public activities managed by organizations or institutions which are responsible for the development of policies.

To characterize democratic participation and e-participation, multiple frameworks and classifications have been proposed. One of the oldest is a classification called the “ladder of participation” [Arnstein 1969], containing 8 levels (or degrees) of participation. Its initial degrees (manipulation, therapy and information) are equivalent to an anecdotal level of participation. The government has all the influence and citizens are “educated” according to governments’ own interests. At the following levels (consultation, conciliation and partnership), citizens have their voices heard, but the final decision remains in the hands of their representatives. At the final levels (power delegation and public control), citizens are not just consulted but their opinions also have decision power in political processes. This one can be compared with the classification described in the book about promises and problems in e-democracy [OECD, 2001]. Here public participation is organized into three main levels: information: (comparable to the three initial levels of the ladder of participation), consultation (comparable to the intermediate levels of participation) and participation (comparable to the last two levels of the ladder of participation). Another classification proposed by the International Association for Public Participation (IAP2) splits participation into involvement, in which there is the guarantee that opinions are listened to and considered by representatives; collaboration when government and citizens collaborate to make decisions; and delegation, when citizens make the final decision).

The research by Gomes (2004), inspired by IAP2’s classification, suggests five levels of participation that explicitly consider the point that the relationship between governments and governed is performed through social interactions or, at least, through the Web (Figure 6.1).



Figure 6.1. Levels of democratic participation [Araujo et al. 2011]

The term e-participation is used to describe the use of Information and Communication Technologies (ICTs) to promote citizen engagement, turning them into active participants in decisions which influence both themselves and the society around them. Throughout the literature, e-participation and e-democracy definitions are alike. However, e-democracy encompasses wider aspects, such as the information availability and citizens' consultation, areas considered primary aspects of e-democracy [Islam 2008]. In this framework, e-participation describes citizens' engagement as active participants of the democratic process, at a more advanced level of relationship between citizens and government than information and consultation levels. From another perspective, according to Maciel et al. (2011) e-democracy is the use of ICTs and Computer Mediated Communication (CMC) to intensify active citizen participation and support collaboration between distinct actors such as citizens, governments, civil society, among others, in the elaboration of public policies.

In Brazil, the traditional development of e-democracy has been following a relatively predictable and traditional course: information is offered, some online services are provided and there are attempts at participation from citizens using many technologies. When engaged via social networks, citizen participation challenges the public administration. On the one hand, this mobilization enables easy and quick engagement [Muriana et al., 2013]. However, it enables the proliferation of unverified news and opinions [Pinheiro et al., 2015]. Additionally, the rich dataset created in these networks is unstructured, and although it opens the door to citizen (mis)information, it does not favor consultative and deliberative processes, such as those discussed by Maciel et al. (2009). The Brazilian Federal government has been promoting initiatives with the Chambers of Deputies and Federal Senate in attempts to organize such information using pools and public consultation about sensitive topics, as well as creating environments to promote discussion around these topics. These environments can be seen as open discussion spaces, if we consider the distinct methods for promoting citizen participation, such as those proposed by Rowe and Frewer (2000): referenda, public hearings/pools; public opinion surveys; rule negotiation; consensus conferences; panels or popular juries; public consultation committees and focus groups.

In the electronic government ranking defined by UNPAN [UNPAN, 2014], Brazil is not among the top countries at any level of participation (e-Information, e-Consultation and e-Decision making), despite the many efforts of the government in the digital area. This demonstrates the need to investigate how ways to increase engagement of citizens in e-participation.

Brazilian Computer Society (Sociedade Brasileira de Computação – SBC) has indicated “participative and universal access of Brazilian citizens to knowledge” as one of the five biggest challenges for the 2006-2016 period [SBC, 2006]. In this challenge, among other things, technological and educational barriers which hinder access and interaction have been discussed. The aim of this challenge is to propose systems, tools, models, methods, procedures and theories capable of addressing the issue of Brazilian citizens' access to knowledge, a basic premise for them to practice their citizenship. This challenge also adds that this access must be universal and participative. The citizen is not a passive user who only receive information but also engages in the generation of knowledge. It has been argued we need to develop technology which allows and motivates user participation to tackle this (SBC, 2006). However, this requires multidisciplinary competences and relationships with other knowledge areas outside Computer Science in order to establish systems and methods which support the definition of a digital culture for citizen access and participation.

This chapter lists the challenges for methods and technologies for e-participation seeking for greater integration between academia and government agencies so that research and development of solutions may contribute to the implementation of systemic strategies in government organizations.

6.2. Relevance in the context of Information Systems

Since the establishment of the Internet worldwide, governments have been adopting strategies for the use of Information and Communication Technologies (ICT) as a tool for providing services, information and offering channels for participation of the population, thus building a model of public management called e-government or e-Gov. In this model, the use of information systems is fundamental at all levels and spheres of public organizations, whether local, state or federal.

Current complexity in terms of developing applications, especially Web and mobile, has challenged governments for the adequate implementation of e-Gov. In addition to the features required for these systems, non-functional requirements emerge as usability, security, portability, interoperability, transparency, among others, are essential for applications where the targeted public, i.e. the citizen, is universal. Nonetheless, one must consider that users today are not only consumers of information but also producers of it, in particular in environments such as social networks [Muriana et al. 2013]. Thus, the quality of information offered to these users is critical and requires the investigation of socio-technical aspects in the development of information systems.

With respect to technologies used internally by government agencies, in which the user is a civil servant or outsourced employee of that public organization, there is also the challenge of understanding cultural changes and valuing the systems which have been deployed in many organizations. In 2006, the Organization for Economic Co-Operation and Development [OECD, 2006] identified five challenges for e-democracy: i) the problem of scale (to be available for all) ii) capacity building and empowerment iii) ensuring consistency of information iv) evaluation of the effectiveness of the process and vi) ensuring continuity of the process. They also stressed that the critical factors in the development of e-democracy tools and their subsequent adoption by citizens include accessibility, usability and security.

In 2015, these challenges remained and gained scalability. The BISE Research [Eymann et al., 2015] states that personal success and participation in society is increasingly characterized by an actual interaction between people and computers to communicate and gain access to online services. It should be intuitively possible to use these services with a variety of user interfaces without any formal training or reading manuals. Besides making services usable to a wide range of people and use contexts, users must be able to anticipate the consequences of their actions. We emphasize that cooperation with other disciplines is needed to design solutions for human-computer interaction which will enable all people to use ubiquitous communication and information services effortlessly and in a self-determined way. In this context, understanding information and the usability of systems is essential, without forgetting access for all (accessibility). Designing information systems that meet these characteristics is essential.

Another interesting factor which has persisted over the years is related to electronic processes in Latin America. Padgett (2005) claims that the enthusiasm and innovation with respect to these are strong, however, the population size, weak economies and the digital divide are obstacles to the development of this area when compared to the European and American

context. The author further adds that the development of systems which in fact allow the participation of citizens should be the focus of research in countries seeking economic development. Electronic processes, especially the use of the Internet by citizens, are challenges for Brazil.

6.2.1. International Initiatives

There are many international experiences which can serve as inspiration for possible solutions in Brazil. One of these experiences is a set of tools created by Delib.net (DELIB, 2012) that can be used to create the multiple forms of participation. These tools are described below:

- **CitizenSpace:** this allows the creation and publishing of consultation of citizens by the government. It has many features: consultation management, consultation search, reports, and the possibility of adding plug-ins to add functionality. It is used, for example, by the South Australian government to centralize online consultations.
- **DialogApp:** this is a tool for creating spaces for the discussion of ideas. Along with the possibility of management by the government, this tool allows discussion of new ideas and we can add tags, notes and comments to them. It is used by Bristol City Council in the participatory budgeting process to raise ideas for budget allocation.
- **Budget Simulator:** a tool that allows the government to create participatory budgeting processes. Citizens can then propose what and how to spend in areas proposed by the government. Results can either be presented in a report or exported. The Board of Warrington City Council in England has applied this tool to gather the citizen perspectives on use of the city budget.
- **QuickConsult:** this is used to create online surveys, unlike CitizenSpace, which aims to be a place to publish consultation. Like other tools, it is possible to extract reports that can assist the government in making decisions. It is used by the London Fire Brigade.

Another tool that aims to support democracy is Gov2DemoSS [GOV2U, 2012a]. Gov2DemoSS is a customizable open source platform designed as a proof of concept of the use of ICT to facilitate communication, exchange of knowledge, and modernization of government services. It allows discussion of demands of citizens, using discussion forums. It also allows the creation of applications.

- **weGov** [GOV2U, 2012b] is a project that aims to investigate the use of ICTs to promote citizen participation through work plans. There are templates, tools and scenarios to verify the various aspects of eParticipation.
- **MySociety** [UKCOD, 2012] is a project that aims to create websites that allow citizen engagement. It provides websites such as FixMyStreet [mySociety, 2012a], to report problems on the streets; the WhatDoTheyKnow [mySociety, 2012b], which allows citizens to ask questions to be answered by the government, according to public transparency laws; and HearFromYourMP [mySociety, 2012c], which allows citizens to talk to government representatives.

Initiatives of e-participation in Europe are described in greater detail in Panopoulou et al. (2009). Using a template, the authors report multiple e-Participation initiatives, organizing them in e-participation areas. Most e-Participation initiatives are local and regional. It was noted that the degree of usage of participation initiatives varies given the area of interest. Advisory initiatives tend to have more users than other initiatives. Initiatives in spatial and deliberative area planning can be found in smaller quantities. The authors conclude that there has been a

growth in e-Participation activities in Europe being implemented and planned. However, there are several opportunities to improve initiatives being implemented, such as transferring good practices and cooperation between regions and countries at different levels of participation.

In Germany, where popular participation has been encouraged since the 70s, discussions regarding e-participation have been from different perspectives [MAMBREY, 2008]. The author adds that there is still much to be investigated on the effectiveness of e-participation, mobilization effects of these e-participative initiatives, and tools and technologies for e-Participation.

6.2.2. Current Brazilian initiatives

In Brazil, in the context of industry, the main efforts have been made at federal level via the Participa.br portal. It is an interactive and participatory environment for public consultation that aims to provide citizens with tools to discuss public policy. This platform connects profiles, blogs and other content production instances on the Internet. Among its main goals is the idea of enabling a opinion and discussion space for any citizen or organization to make the building of public policies increasingly efficient and effective in an environment which allows you to qualify information and systematize participation. It also encourages the formation of virtual communities around issues related to social participation, along with promoting the construction of collective blogs, mobilization via social networks, hangouts and web conferences.

In general, solutions are adopted by governments at all three levels via the web. According to Maciel and Cappelli (2015) these initiatives are being conducted by providing media such as email, chats and discussion forums, still not the most effective and appropriate means. Nationally and internationally, experiences with more robust environments offering advisory and/or decision-making processes in an organized manner are still scarce [SLAVIERO, 2012], [MACIEL; CAPPELLI, 2015].

As for academic research, works such as Maciel (2008) and Slaviero (2012), developed this theme not only from the perspective of research, but in particular its application in government agencies. Besides the construction of integrated models of consultation and deliberation [(Maciel et al., 2009) and the use of ontologies for e-participation [Slaviero et al., 2012], research has been carried out and tools are being developed in order to analyze the quality of government websites that provide information, services and strategies of e-participation, through monographic work related to the Interactive Virtual Environments Laboratory (Laboratório Virtual de Ambientes Interativos - LAVI) at UFMT. Furthermore, issues related to usability, communicability and accessibility of government websites have been increasingly investigated, and research topics are targeting the use of multiple devices, especially mobile ones.

The development of a Maturity Model in Organizational Transparency has also been research topic as it is a pillar of major importance for participation. This model defines methods and practices that ensure access, use, quality, understanding and information auditability. Research on this has been carried out at the Federal University of the State of Rio de Janeiro (UNIRIO) in partnership with other government institutions and bodies [Cappelli et al., 2010], [Cappelli et al., 2013-1) (Cappelli et al., 2013-2). In this context research actions very closely linked to the information sensemaking [ENGIEL et al., 2012] and with the intention of building a citizen language [Carvalho et al., 2016] have been developed. These works seek to contribute to the understanding of processes and information delivered by the government to citizens so that,

with a better understanding, they can participate more actively and practice their citizenship. The work of Diirr et al. (2011) also contributes in the same direction by discussing the importance of mechanisms supporting not always formal conversations among citizens on public processes. Another very promising area, also one of the pillars of transparency and thus participation, is the auditability of information on social networks. It is known that currently much of the citizenship activity is done through social networks and they be contaminated by unreliable facts, making this a research topic (Pineiro et al. 2014). Experience reports with the characteristic of transparency have also been carried out together with public agencies to analyze citizen participation, as in Oliveira and Maciel (2013).

6.3. Challenge Proposal

The motivation of this work is to analyze the viability and improve solutions which may contribute to the implementation of e-participation in government systems. Despite the many already existing features and integrations available, we believe that many challenges remain.

Our proposal seeks to achieve the following goals:

- 1) discuss the major problems in e-participation and e-government in a long-term horizon
- 2) contribute to the creation of grants for the implementation of public policies in e-participation and e-government
- 3) contribute to education for transparency and citizenship practice
- 4) contribute to creating a theoretical framework for e-participation and e-government
- 5) contribute to the construction of mechanisms for understanding public processes for transparency and improving participation
- 6) promote adequate computational support for the treatment of large volumes of information in discussions, voting and deliberation
- 7) contribute to the auditability of information circulating on the web
- 8) promote better data visualization to support decision-making of citizens
- 9) promote maturity of discussions in participatory processes
- 10) attempt to identify mechanisms for participatory construction services.

To achieve these goals, the following non-exhaustive list of actions are proposed:

- to establish a current overview of e-gov and e-part research in Brazil by looking at fieldworks in research and government institutions
- to improve existing mechanisms [Engiel et al., 2012] and languages [Carvalho et al., 2016] and research new elements which may facilitate understanding of citizens regarding public processes
- to make available mechanisms for auditability [Pineiro et al., 2014] of web data
- to implement new ways for visualizing information which may increase citizen participation
- to improve e-participation models [Maciel, 2008] which may be applied in consultative and/or deliberative processes
- to develop, test and/or systematically apply e-participation ontologies [Slaviero 2012] and other ontologies which may contribute to interoperability among systems
- to develop, test and/or apply indicators which may be used to measure the level of e-participation of citizens [Maciel, 2008], researching the use of gamification and virtual communities building strategies to increase engagement

- to build and/or improve norms and standards of issues related to usability, communicability and accessibility of e-government websites dedicated to e-participation
- to develop and test applications in mobile and IoT (Internet of Things) devices to increase e-participation
- to develop patterns and indicators for monitoring websites to check for compliance to transparency guidelines
- to develop methods and patterns for the implementation of service coproduction
- to enable professionals to develop and manage models and technologies related to e-government and e-participation
- to develop competencies in distinct research methods applied to e-participation, both quantitative and qualitative
- to develop applied research in society and government issues, in a seamless and combined manner
- to perform experiments on human aspects and content modelling, including aspects of social dynamics and socially aware systems
- to develop agile mechanisms for data queries and storage of content continually generated by the citizen
- to develop mechanisms which can give citizens information about Service Level Agreements as dictated by the Letter to the Citizen.

To evaluate these goals and actions, we propose the use of mixed research methods. We must strive for both quantity and quality in the results. Quantitative studies seem appropriate to study the primary impact of the actions performed, especially regarding number of citizens and level of engagement. Qualitative studies are appropriate to embrace the epistemological aspects of citizen participation and engagement. More than just embracing the citizen in public participation, the goal of e-participation is to make the user an active participant of the public agenda. Quantitative analysis is not enough to capture the subjective aspects of this research, therefore qualitative analysis is also important.

6.4. Final Remarks

In ancient times, Athenian *agoras* were similar to what we now call direct democracy, in which citizens participated in political decisions (although to be a "citizen" at that time, certain requirements had to be met) [ARAUJO et al. 2011]. These days, direct democracy has been replaced by a semi-direct democracy, largely as a result of population growth, personal reasons, among others. The power of decision is now shared between the government and citizens, but with the latter representatively or indirectly participating in decisions. As opposed to direct democracy, in a representative or indirect democracy citizens delegate power to govern cities, states and countries to those people acting as their representatives. In some countries, citizens still can have their voice heard through popular initiatives, referenda and plebiscites, as in Brazil [AUAD, 2005]. However, there remains a need to bring together government and citizens, there being active participants in decisions giving them a voice to be heard; their opinions and desires considered [UNITED NATIONS, 2010].

Popular participation is an important axis in a democratic society. However, an analysis of the current Brazilian scenario indicates the need for methods and bold and effective technologies to provide solutions to achieve a level of participation as close as possible to direct

participation. Therefore, these issues should be discussed with the Information Systems community at SBC. There is a need to design, model and develop a discussion environment and propose solutions to satisfy the demands of society and ultimately engage researchers and other stakeholders in the pursuit of an increasingly democratic society.

References

- AUAD, D. Mecanismos de participação popular no Brasil: plebiscito, referendo e iniciativa popular. *Revista Eletrônica Unibero de Comunicação Científica*, p. 1-44, 2005. (In Portuguese)
- ARAUJO, R. M.; CAPPELLI, C.; DIIRR, B.; ENGIEL, P.; TAVARES, R. L. Democracia Eletrônica. In: Mariano Pimentel; Hugo Fuks. (Org.). *Sistemas Colaborativos*. 1ed. Rio de Janeiro: Elsevier, 2011, v. 1, p. 110-121. (In Portuguese)
- CAPPELLI, C. “Uma abordagem para transparência em processos organizacionais utilizando aspectos”, Ph.D Thesis, Pontifícia Universidade Católica do Rio de Janeiro. 2009. (In Portuguese)
- CAPPELLI, C., LEITE, J. C. S. P., ARAUJO, R. M. (2) Importância de um Modelo de Estágios para Avaliar Transparência. *Revista TCMRJ*, v.45, p. 97-103, 2010. (In Portuguese)
- CAPPELLI, C., ENGIEL, P., ARAUJO, R. M., LEITE, J. C. S. P. (1) Managing Transparency Guided by a Maturity Model In: 3rd Global Conference on Transparency Research, v.1. p.1–1. 2013.
- CAPPELLI, C., LEITE, J. C. S. P., TANAKA, A. K, ARAUJO, R. M., NUNES, V., ENGIEL, P. (2) Um Modelo de Estágios para Avaliar Transparência Organizacional. *Revista do TCMRJ*. *Revista TCMRJ*, v.53, p.77 - 85, 2013. (In Portuguese)
- CARVALHO, L. P.; CAPPELLI, C. Using a citizen language in public process models: the case study of a Brazilian university In: 5th International Conference on Electronic Government and the Information Systems Perspective - EGOVIS, 2016, Porto. *Proceedings of 5th International Conference on Electronic Government and the Information Systems Perspective*, 2016.
- DIIRR, B., ARAUJO, R. M., Cappelli, C. Talking about Public Service Processes In: Third International Conference on eParticipation, 2011, Delft. *Lecture Notes in Computer Science*, 2011. v.6847. p.252 – 161
- EYMANN, T.; LEGNER, C.; PRENZEL, M.; KRCCMAR, H.; MUELLER, G. (2015) "Addressing Grand Challenges - Implications for BISE Research," *Business & Information Systems Engineering*: Vol. 57: Issue 6, p.409-416. Available at: <http://aisel.aisnet.org/bise/vol57/iss6/7>
- ENGIEL, P. Projetando o entendimento de modelos de processos de prestação de serviços públicos. *Dissertação de mestrado - Universidade Federal do Estado do Rio de Janeiro – UNIRIO – 2012*. (In Portuguese)
- GOMES, W. *Transformações da política na era da comunicação de massa*. São Paulo: Paulus, 2004. (In Portuguese)

- ISLAM, M. S. Towards a sustainable e-Participation implementation model. *European Journal of ePractice*, v. 5, n. October, p.1-12, 2008.
- MACIEL, C. and GARCIA, A.C.B. Design and Metrics of a 'Democratic Citizenship Community' in Support of Deliberative Decision-Making. *Electronic Government*. 2008. Volume 4656 of the series Lecture Notes in Computer Science p.388-400.
- MACIEL, C., ROQUE, L. and GARCIA, A.C.B. 2009. Democratic citizenship community: a social network to promote e-deliberative process. In *Proceedings of the 10th Annual International Conference on Digital Government Research (dg.o '09)*, Soon Ae Chun, Rodrigo Sandoval, and Priscilla Regan (Eds.). Digital Government Society of North America p.25-34.
- MACIEL, C.; GARCIA, A. C. B. ; ROQUE, L. E-Democracy: Concepts, Experiences and Challenges. In: Peter Herrmann. (Org.). *Democracy in Theory and Action*. New York: Nova Science Publishers, Inc., 2011, p.51-92.
- MURIANA, L.M., MACIEL, C. and GARCIA, A.C.B. 2013. Do Facebook às Ruas - Comunidades em Interação. In *WAIHCWS*, p.39-50. (In Portuguese)
- NORRIS, D. F. e-government... not e-governance... not e-democracy not now! Not Ever? *Anais do 4th International Conference on Theory and Practice of Electronic Governance - ICEGOV '10*. New York, New York, USA: ACM Press, 2010.
- OLIVEIRA, L. K. B., MACIEL, C. Transparency and Social Control via the Citizens Portal: A Case Study with the Use of Triangulation. In *Technology-Enabled Innovation for Democracy, Government and Governance*. Lecture Notes in Computer Science, v. 8061, p.112-124, 2013.
- OECD. Organization for Economic Co-operation and Development. Available at: <<http://www.oecd.org>>. Last Accessed: 15 mai. 2006.
- PADGET, J. E-Government and E-Democracy in Latin America. *IEEE Intelligent Systems*. Volume: 20 Issue: 1 Jan-Feb 2005. pp. 94-96.
- PINHEIRO, A., CAPPELLI, C. and MACIEL, C. 2014. Increasing information auditability for social network users. In *Human Interface and the Management of Information. Information and Knowledge Design and Evaluation* (pp. 536-547). Springer International Publishing.
- ROWE, G.; FREWER, L. (2000) Public participation methods: a framework for evaluation. *Science, Technology & Human Values*, v. 25, Winter, p.3-29.
- SBC. *Grandes Desafios da Pesquisa em Computação no Brasil – 2006 – 2016*. 2006. (In Portuguese)
- SLAVIERO, C. (2012) Um método para modelagem de ambientes e-participativos baseado em ontologia. *Dissertação (Mestrado em Computação) - Universidade Federal Fluminense, Niterói, RJ*. 133p. (In Portuguese)
- SLAVIERO, C., GARCIA, A.C.B., MACIEL, C. (2012) Exploiting e-Participation Using an Ontological Approach. *Lecture Notes in Computer Science*, v. 7444, p. 144-155.
- UNITED NATIONS. *E-Government Survey 2010 - Leveraging e-government at a time of financial and economic crisis*. 1. ed. New York, USA: United Nations, 2010. 140p.



Cristiano Maciel

CV: <http://lattes.cnpq.br/5234437367053668>

DSc in Computer Science, Federal Fluminense University, Cristiano is an Associate Professor at the Federal University of Mato Grosso. He teaches on the Post-Graduation Program in Education, is a researcher in the Laboratory of Interactive Virtual Environments and in the Laboratory of Studies on Information and Communication Technologies in Education. He is also the Regional Secretary of Mato Grosso in the Brazilian Computer Society. His research interests involve human-computer interaction, software engineering, project management, social networks, electronic government, post-mortem digital legacy and technologies in education. e-mail: crismac@gmail.com



Claudia Cappelli

CV: <http://lattes.cnpq.br/4930762936357558>

DSc degree in Computer Science from the Pontifical Catholic University of Rio de Janeiro and M.Sc. degree in Computer Science from the Federal University of Rio de Janeiro. Claudia is a lecturer and a member of the post-graduate program at the Applied Informatics Department at the Federal University of the State of Rio de Janeiro, Brazil. She worked for many years in multinational industry companies. She also held a Post-Doctoral internship at Unirio (2010) and is the Regional Secretary of the SBC (Southeast Region) in Brazil. Over the years she has developed several partnerships and work with government entities. Her research focuses on Information Systems, in particular: Business Process Management, Enterprise Architecture, E-Government/E-Participation and Organizational Transparency. e-mail: claudia.cappelli@uniriotec.br



Cleyton Slaviero

<http://lattes.cnpq.br/2597846545908488>

MSc in Computer Science from Universidade Federal Fluminense (2012), and has a PhD in Computer Science from the Pontifical Catholic University of Rio de Janeiro (PUC-Rio). He is an Assistant Lecturer A at the Federal University of Mato Grosso (UFMT), Campus Rondonópolis and a researcher at the Laboratory of Interactive Virtual Environments. His areas of interest include Human-Computer Interaction, Computer Education, Computer Theory and Electronic Government. e-mail: cslaviero@gmail.com