A decade of e-government indexes: The emerging mode of participative communication

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Abstract

The unique nature of e-government can be recognized as an engagement in significant activities with other people. This study builds on the notion that the mediating interfaces of information systems (IS) reflect human relationships that can be captured through evaluation criteria of IS. By observing the evolution of e-government evaluation indexes we reveal the different contexts and values that were considered and made important over the years (2000-2010). Thus, we first show *what* values the evaluation indexes (the artifact of concern) symbolise, and then clarify the underlying mechanisms: *how* then are these indexes made, by whom, and *why* these values. The producers and constructors of these indexes are important actors, framing and placing e-government in alternative settings. This paper makes several important contributions: it shows the evolution of e-government evaluation criteria over a decade; it points at changing trends that are not yet explicitly addressed by the extant body of literature; and it proposes a theoretical framework for e-government as a tool in the social discourse.

Keywords: e-government, IS evaluation, IS design, discourse ethics, CSR

1 Introduction

The nature of information systems (IS) has changed since the first years of computing and technology adoption. The standalone and definable system have evolved into conjunctions of elements, features and functions that constantly increase. Many functions and attributes of information systems have evolved into readymade, useable, expedient, and accessible subsystems. The boundaries are blurred, especially in the interactive World Wide Web. The proliferation of Web-based information systems changed forever our transportation and actual locations in the physical world (GIS, GPS) and in online worlds (e.g., virtual museums). Another striking phenomenon is the large number of important areas of application, e.g. medicine, war, government, commerce, science, education, games, libraries; and interfaces, e.g., speech, touch, on the skin, under the skin, etc. The study of information systems requires the adoption of a new paradigm that can capture the evolution of electronic data processing and

information systems from their early beginnings (Ein-Dor & Segev, 1993), through the emulation of existing analog processes to Web-based IS, to their current state in which they become more and more dominant.

However, despite the potential contribution of a continued research, an updated conceptualisation of the evolution of IS was not found. Efforts to conceptualize IS were typically about the identity of the IT artefact (e.g., Agarwal & Lucas, 2005; Benbasat & Zmud, 2003; Hevner, March, Park, & Ram, 2004; J. . King & Lyytinen, 2004; Orlikowski & Iacono, 2001; Zhang, Scialdone, & Ku, 2011) and lack an examination of the evolution of IS per se (Simon, 1962). The examination of IS per se will be useful, ontologically and analytically, as many systems are self-organized conjunctions of other systems and sub-systems. An *ontological disclosure* is expected to emerge through the partition of systems into subsystems and add another level of critical refection. Following Simon's (1962: 468) view, a complex system is made up of a "large number of parts that interact in a non-simple way. […]. In the face of complexity, an in-principle reductionist may be at the same time a pragmatic holist".

The current study proposes to describe past developments in information systems (Orlikowski, 2010) in the context of e-government which we regard, for this purpose, as encompassing different levels of adoption on a continuum from completely analog worlds to advanced interactive worlds. Legacy systems were replaced by online systems that provided online transactions and interactive services, increasing the degree of technological sophistication. Beside sophistication, openness is another dimension that can be recognized along this continuum, evolving from simple automated systems of static information provision (one-way) to form provision, advice systems, and applications of e-democracy. In other words, observations of the same systems and functionality may disclose different meanings. Our intention is to emphasize dimensions that extend the business-oriented perspective and recognize the plurality of preferences and alternatives (Mingers & Walsham, 2010). For example, system design can result in a closed system (e.g., protecting current economic structure), or in open systems that move beyond limitations; with controlled information flow or with reciprocity (Chwe, 2000; Elkink, 2011). The nature of the political institutions is reflected by communication channels that these organizations design (Risse-Kappen, 1994), and at the same time policymaking process are affected by external dynamics, incorporating new norms into national policies (Finnemore & Sikkink, 1998).

The engagement in a variety of significant activities with other people can be recognized in the unique nature of e-government. This engagement is not merely following "after the manner of a technological device" (e.g., receive and reply), but an experience that "enables me" (Lucas, 2011). In the experience of communicating, or while making IS design decisions, communication channels (CC) are informed by an ongoing sense of human behaviours, simply for being what they are, information and communication technologies (ICT). As a phenomenological being, the experience of communicating in an "ongoing active unity" that provides an "active and ongoing framework (or necessary background)". In IS design, the taking of CC implies an already existing sense of what ICT is, something that makes it possible for us to take these CC as human action, not only service channels. IS design decisions affect the relationship between us and the phenomena we encounter in our engagement with the world. From the phenomenologist viewpoint, technology and society co-constitute each other, and depend on each other's possible states and conditions. This duality does not imply symmetry. While many sociotechnical studies are focused on the im-

pact of technology on society, the question remains as to how the technological arti-fact is shaped by people and institutions. Our focus is on underlying processes that shape technology rather than the impact of technology on society.

The conceptual structure of this paper draws on Mingers & Willcocks (2004) who proposed to understand the underlying laws and mechanisms (the real domain) that generate the events (the actual domain) which cause the observable ones (the empirical domain). The proposed framework builds on the notion that the mediating interfaces of IS reflect human relationships. According to this approach, IS design is expected to be carried out as a social action of the designer. E-government evaluation indexes are chosen as the empirical material to expose symbolic values. Under the premise that e-government evaluation indexes can serve as useful units of analysis (i.e., the artifact of concern in this paper), we first try to establish trends among the plethora of e-government indexes. By observing their evolution over a decade (2000-2010) I would try to clarify *what* are the different contexts and values that were con-sidered and made important over the years. This is done on the basis of 24 interna-tional indexes.

The empirical examination we propose is not an 'impact analysis' but a 'dis-closive analysis' of technology, carried out to indicate common themes and ap-proaches. On the "empirical" level, our interest is in the evaluation of IS measures that can be understood as artifacts that capture human relationships. The increased importance of social goals and communication, in addition to pragmatic goals, leads to a new conceptualization of the value of information. The first part of the paper comprises the empirical domain. While the empirical section postulates the values that the evaluation indexes symbolise, in the second part of the paper a theoretical framework is proposes to understand *how* then are these indexes made and by whom, and *why* these values.

On the "actual" level, we would like to show that the evolution of information systems towards an interactive networked world manifests Habermas's (1984) design of a social world of normatively regulated social relations. Web-based IS are expected to transform the organizational viewpoint to many-to-many net-enabled relationships. The need to act on behalf of the common good (e.g., community, society, environ-ment) is a new aspect of the value of information in the network. The network-view is not about optimizing solutions, achieving the most efficient bargain (Mingers & Walsham, 2010), or linking social responsibility to competitive advantage (Porter & Kramer, 2006) which remains in a self-interested perspective. The idea is that with so many communication channels between people and organizations, in large or small groups, almost every agent would consider, at this time or another, the interest of larger groups and networks. When Arrow plays the role of the "guardian of rationali-ty" that prescribes it to the social world, he claims that "collective action can extend the domain of individual rationality. From the network viewpoint, collective action is a means of power, a means by which individuals can more fully realize their individ-ual values" (Arrow, 1974: 16). However, he then stresses: "A truly rational discussion of collective action in general or in specific contexts is necessarily complex, and what is even worse, it is necessarily incomplete and unresolved. Rationality, after all, has to do with means and ends and their relation. It does not specify what the ends are. It only tries to make us aware of the congruence or dissonance between the two" (Arrow, 1974: 17). From a rational-choice perspective, and although the purpose of governments is to ensure social justice, the chance to reduce information asymmetry

depends on the adoption of an ethical view; or requires an adaptation to a new environment of intensive communication that eventually leads to self-regulated agents, able to maintain open discourse with the public, undermining their own domination.

On the "real" level, the proposed framework recognizes the need for responsibility for the other (Levinas, 1991) that drives the social action of innovators (Eisenstadt, 1968; Weber, 1997). New system goals, found in recent evaluation criteria, are proposed as an operationalisation of the symbolic perspective. Figures 1-2 illustrate the conceptual and methodological structure: the implicit social values will be accessible through the evaluation criteria, which are the activity and practical ways to fulfil design principles.

Real: the underlying knowledge, ideals and ideas that generate the events. A philosophical concept to understand the "universal" human nature: *why* these values

Actual: the technological representation of abstract ideals. A theoretical framework to understand *how* then are the IT artefacts made

Empirical: the observations that expose changes in evaluation criteria over a decade (2000-2010) and capture the evolution of instruments and applications planning and implementation. A comparison of e-government evaluation indexes to clarify *what* are the contexts and values that were considered and made important over the years
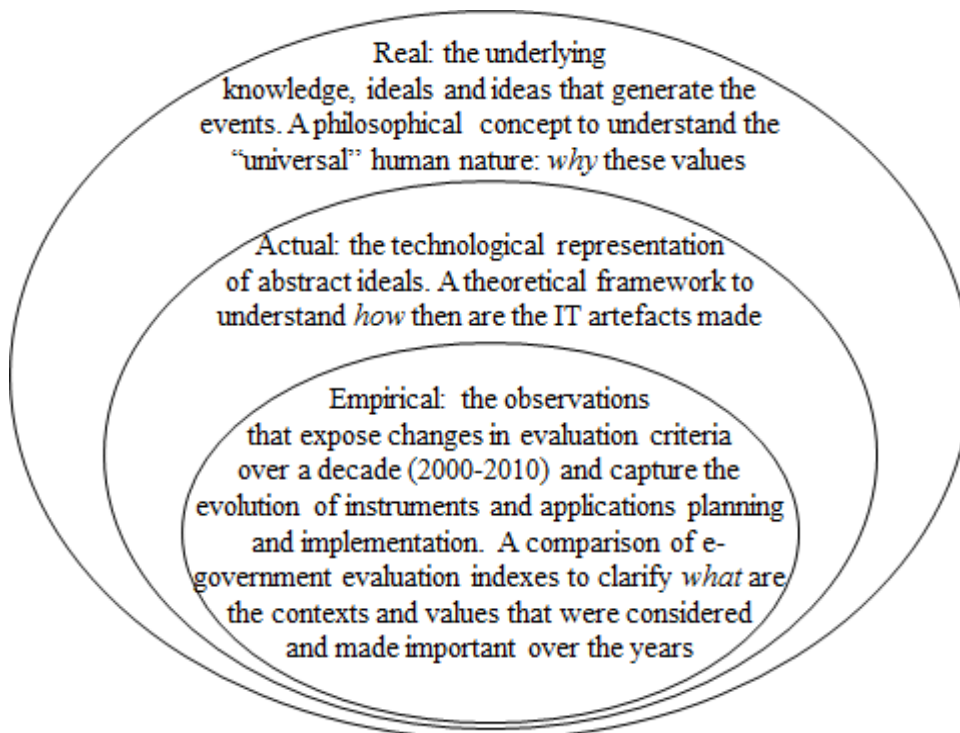
Figure 1: The Conceptual Structure (based on Mingers & Willcocks, 2004).
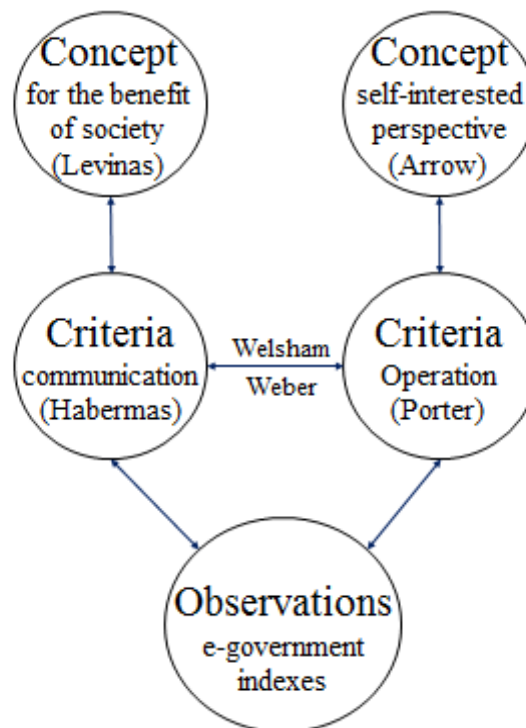
Figure 2: The Methodological Structure and Main References

This study shows that IS evaluation in terms of productivity, pragmatically exploiting the economic value of the IS, is misleading. Concepts that have thus far guided IS research, and especially IS evaluation, must adapt to new emergent goals, i.e., the responsibility to guide social action as opposed to the self-centric attainment of organizational benefits. Transforming the business-oriented, profit-driven view to an ethical perspective is not necessarily irrational. As long as managerial success depends on profit, a decision maker can "succeed as a manager and fail as a human being" (Argyris, 1971: 278). Rationality depends on the desired goals, and those goals depend on the shift in values. Broadened values would probably change the definition of success. Thus, in order to avoid actions that are "governed by the values of win, don't lose", policy decisions may "alter the governing values" (Argyris, 1990: 93).

The trajectory of evaluation criteria development indicates the extent to which individuals use IS to change their reality and create a different one altogether. This change could be directed towards optimization and efficiency, productivity and improved performance, or many other pragmatic goals. The fact that new mechanisms of participation are more prominent – according to the central theme developed in this paper –has theoretical implications.

2   The empirical domain – new system goals

Changes in evaluation indexes are assumed to reflect changes in general web development (more web 2.0), as well as changes in e-government development and in the

views among e-government evaluators regarding e-government evaluation. Accordingly, the indexes symbolise new IS goals in the network structure.

2.1 The evolution of information systems

The continuation of the early evolution of electronic information systems was studied by Ein-Dor & Segev (1993). That study tracked the evolution of computerized information systems from their inception until about 1990. Back in 1993, the development of new types of systems was considered within the framework of a theory of technological evolution. It was shown that newer types of systems resulted from gradual accretion of new technologies on one hand, and loss of older ones on the other (Ein-Dor & Segev, 1993). The 1993 analysis pointed out that two fairly distinct paths of development were identified: the "applied artificial intelligence" path, from early computing though scientific computing, CAD/CAM, manufacturing robots, was characterized by the increased application of artificial intelligence techniques; the "human interface" path, from early DP, MIS, mature DP, DPSS, EIS, and OIS/OA, was characterized by increasingly diverse and natural user interfaces. They concluded with a forecast on the convergence of the many different kinds of information systems then in existence.

Twenty years have passed. Information systems are now both the backbone and the major change agent of today society. Yet, the 1993 study was not followed by further attempts to conceptualize the current state of IS and IS research. Rather than reflections on the development of information systems, studies often focused on specific functionalities, levels of analysis, and domains. These perspectives are not approaches to IS classification; but that is as close as we found. Few exceptions are earlier studies (e.g., Barki, Rivard, & Talbot, 1993; Wegner, 1997) and a collaboration with 1993's paper author (Nevo, Nevo, & Ein-dor, 2009, 2010). Two important classification efforts that should be noted are ACM's (1998, 2012) update of its Computing Classification Systems (CCS), and that of the Encyclopaedia of Information Systems (ScienceDirect, 2003). ACM's (2012) updates reflect the increasing specialization in the field since the last major update in 1998. Information systems, a category that contained data warehouses, DSS, EIS, and GIS, expand to multimedia and Web-related applications. Nanotechnology and quantum computing were added; "special-purpose" systems are elaborated to embedded systems, real-time, etc. ACM's classification shows some inconsistencies, e.g., a mixture of dimensions in "applied computing" (banking, data interchange, infrastructures, personal computers, etc.); concepts of security and privacy are grouped together but concepts of collaborative and social computing are split.

Attempts to classify IS and conceptualize the evolution of IS can be found in specific fields, such as e-learning, creativity, content management, infrastructures, etc. However, even with the explicit goal to recognize and understand changes, and gain insights regarding the course of development, the prevailing tendency is to narrow the boundaries of observation and reflection. The common goal is to "utilize information systems to improve productivity and in many cases to increase customer service in a dynamic business environment", as stated, in this case, by Science Direct (2003).

This is surprising, as the evolution of information systems (IS) into the wide network view leads to the revival of values and behaviours, beyond the pragmatic perspective of productivity and customer satisfaction. The introduction of new technolo-

gies that enhance the open flow of information and decision-making is changing also the nature of communication, enhancing reciprocity in addition to two-way contact channels. And still, when Mignerat & Rivard (2012) have traced the timeline of institutionalization processes since the introduction of the computer and first corporate applications, they proposed three processes (formal control, external integration, and risk management), none was social. The evolution of digital infrastructures was analyzed through three self-reinforcing processes, none is social: innovation "by which new products and services are created as infrastructure malleability spawns recombination of resources", adoption "by which more users adopt the infrastructure as more resources invested increase the usefulness of the infrastructure", and scaling "by which an infrastructure expands its reach as it attracts new partners by offering incentives for collaboration" (Henfridsson & Bygstad, 2013: 13).

In the attempt to understand IT trends, (Adomavicius, Bockstedt, Gupta, & Kauffman, 2008) examined the digital music technologies and wireless networking technologies. IT ecosystem was operationally defined as "a portion of the IT landscape centered on a specific set of technologies in a specific context that is the subject of analysis" (Adomavicius et al., 2008: 780). Adomavicius et al. (2008) emphasized the "lack of development of analytical tools that provide real value to practitioners based on an ecological perspective" (Adomavicius et al., 2008: 782). In order to show how new technologies constantly drive and utilize each other's development, they adopted a path-dependent view, in which components, products or infrastructures may affect each other's development. "Paths of influence represent the impact one technology role has on another in the evolution of a set of technologies in the ecosystem" (Adomavicius et al., 2008: 784). However, although based on broad conceptual foundations, the model proposed by Adomavicius et al. (2008) relates to resulting technologies rather than broadening the conceptual scope of technological development.

2.2 E-government – justification and motivation

Changes with respect to e-government and its evaluation are central to the theme developed in this paper. In examining the evolutionary process of e-government evaluation, one might begin the great undertaking of establishing a theoretical framework for the study of e-government systems, a lacuna that has recently been noted by Bélanger & Carter (2012).

In earlier studies government comprised the executive, legislative, and judiciary organs of the government while the "consumer" or "citizen" includes any member (individual or organization) of the civil society (OECD, 2001). E-government systems have been classified into G2C (government to citizen), G2B (government to businesses), and G2G (government to government) (e.g., EC, 2003; Hiller and Belanger, 2001; Lee, Tan, & Trimi, 2005; Moon, 2002). However, in the dynamic context of e-government, the traditional categories of IS can hardly grasp the online interaction between local authorities and their public.

E-government is expected to reflect the needs and requirements posed by the entire population rather than those of a specific, targeted audience. Warkentin, Gefen, Pavlou & Rose (2002) noted that mandatory relationships exist only in e-government. They have recognized the political nature of government agencies as a feature distinguishing e-government from e-commerce. The depth of e-government can be demonstrated by Jorgensen & Cable (2002) who identified three major differences between

e-government and e-commerce: access – a city cannot choose its customers; accessibility should be ensured with concern to disabilities, socioeconomic status, age, and other obstacles; structure – decision-making and implementation are less centralized in government agencies than in businesses; and accountability – the need to allocate resources and provide services for the benefit of society rather than for profit (Jorgensen and Cable, 2002).

This and more, e-government can be implemented on various levels, from the lowest level of static online information pages, through active services, such as transaction facilities, to the most complex level of interactive services incorporating participative democratic processes and decision-making (Layne & Lee, 2001; UN, 2005). The Web 2.0 practice of sharing – including coordination stimulating mechanisms – has led to governmental presence in social networks, the development of open discussions in e-government, and the establishment of joint decision-making in that context. The U.S. administration, for example, initiated the development of three aspects of "open government" (Noveck 2009): transparency, public participation, and collaboration (i.e., open innovation). The emergence of public 23participation in democratic processes has further shaped the evolution of e-government in recent years (Paivarinta & Saebo, 2006, 2008; Saebo, Rose & Flak, 2008). Yet, e-government covers a broad scope of domains. In addition to the social and political aspects, the tremendous progress in technological, organizational and operational areas is evident. (Purian et al., 2010), involving greater complexity both technically and conceptually (Irani, Al-Sebie, & Elliman, 2006).

Thus, as a socio-technical system, e-government highlights core issues of IS research and IS/IT management, augmenting their pertinence and worthiness.

While a network structure is assumed to enhance communication and access to information, the nature of the new dynamic is yet to be defined, whether focused on optimization of processes, service integration, increased control and monitoring, and other goals on the operative level, or tends towards social involvement and goals such as public participation in planning and decision making.

2.3 The evolution of e-government evaluation

In the attempt to capture the sundry essence of e-government, dozens of indexes have been developed by researchers, public institutions, and consulting firms, applying different success measures and spread over many domains such as business environment and business making, technological maturity of the government, IT-driven policy, social inclusion, social readiness, and data reusability, to name a few. Today worldwide evaluations of e-government are carried out annually and include criteria such as service supply, availability of information, effective contact channels, inclusive communication with all groups of society, e-participation, and so on.

Earlier models represented an evolutionary process from the least sophisticated levels to the most complicated ones, often termed "stages" (e.g., Layne & Lee, 2001; Lee et al., 2005). The least complex stages in these models represent an administration-centric delivery of static information while the most complex stages represent a fully participative, customer-centric e-government system. Intermediate stages range from unidirectional downloadable information to bidirectional transactional services, aimed at increasing customer awareness, and to interaction over the Internet, in social networks, aimed at increasing customer engagement (e.g., Capgemini, 2009).

While earlier models of e-government evaluation usually delineate rudimentary stages and share similar criteria, mainly concerning the delivery of online information, over time stages have evolved into institutional frameworks covering a broader set of aims, including policy and implementation (e.g., Capgemini, 2006; Gartner, 2000; Irani et al., 2006; Wimmer, Codagnone, & Janssen, 2008; UN, 2005; 2008; 2010). These criteria range from lean measures, such as the number of Internet subscribers and online services (ITU, 2012), to rich measures (Burton-Jones & Straub, 2006) such as the extent of interoperability and service integration, or the accomplishment of citizen empowerment. Four criteria proposed by Irani et al. (2006), for example, were: information disclosure, listening/consultation, online deliberation, and online decision making. In a similar way, a framework proposed by Baumgarten & Chui (2009) rates four web capabilities: data-based decision making, site experience, advertising and promotions, and multi-channel coordination. These targets are incorporated into a scorecard that aims to help agencies identify areas for investment. Grant & Chau (2005), in contrast, focus on different managerial criteria (e.g., service automation, collaboration and partnership programs, infrastructure consolidation and standardization, etc.). The variation of indexes in the area of service integration is high even when limiting the scope to operational measures alone (see Grant & Chau, 2005, who carried out a comparison of operational e-government definitions).

Today a variety of criteria, needs and desires are involved in the evaluation of e-government. Capgemini's (2009, p. 13) i2010 Action Plan, for example, demonstrates a significant expansion in measures as it combines social inclusion, efficiency, effectiveness, prioritization of implementation decisions, and the strengthening of participation and democratic decision-making. The wide scope of e-government research was emphasized by various scholars (e.g., Gronlund & Horan, 2004; Irani et al., 2006; Irani et al., 2005; Janssen & van Veenstra, 2005; Kunstelj & Vintar, 2004; Purian, Ahituv, & Ein-Dor, 2010a). This study aims to establish *what* features and capabilities were measured in greater detail over the years and *what* previously prominent features have become neglected or obsolete.

The attempt to find out what is the main change in e-government evaluation criteria during the last decade leads to the first proposition about the meaning embedded in evaluation criteria: **the indexes symbolise contexts and values that are considered and made important over the years.**

2.3.1 Method

A review of main concepts and evaluation methods used hitherto in the field is key to this study. Such a review appears below, examining the criteria in national and international e-government indexes, published between 2000-2010.

A total of 24 e-government evaluation indexes were collected, published between the years 2000-2010 (see Table 1 below) in local, national and international annual, periodical, and occasional outlets. Based on the evolution of e-government evaluation criteria delineated above, criteria of each index were classified into the following three categories:

- Criteria reflecting **unidirectional information delivery** that require no engagement or any action on behalf of the user. These typically include criteria such as information and online presence or the number of languages provided, where citi-

zens are passive recipients. Often these criteria seek to asses quantitative measurements, although later indexes also measured the quality of information.

- Criteria reflecting **bidirectional service delivery** and supporting mechanisms, where operations and back office processes enable higher levels of service quality and an integrative mode of delivery, e.g. personalized one stop shop or case tracking that requires full integration of transactions and services. Included here are criteria concerning inter-organizational building blocks, such as service-oriented architectures, standards and interoperability, as well as two-way communication channels such as e-mail, news lists, and online feedback forms, aimed at enhancing service delivery and customer experience.

- Criteria reflecting a **participative mode of communication**. These typically include different measures of social or public communication aimed at making an impact through many-to-many open interactive tools as well as presence in social networks. Included here are criteria concerning operational improvements that have wider social benefits for the citizens, i.e., their purpose is "to understand and engage the citizen through user-centered service provision, as a foundation to built trust and confidence" (Capgemini, 2009: 11) and not only as "higher efficiencies and productivity for business and the government" (Capgemini, 2009: 13).

In order to characterize the changing nature of e-government indexes, that data is collected and presented in a simple procedure, e.g., frequency counts and ranked data, in conjunction with detailed description of the studied phenomena – e-government evaluation – an activity that is expected to indicate patterns of social action and discourse.

We examine the elaboration and specification of measures included in each e-government index, and examine how many indexes evaluate a *participative mode of communication*; as opposed to measures of *unidirectional information delivery* (assumed to decrease over time) and *bidirectional service delivery* (expected to remain prominent) in the past decade. Once classified, trends were then summarized, as in Table 2 below.

2.3.2 Results

A total of 24 studies were found in a literature review (three additional reports were excluded due to insufficient methodological information). Table 1 describes these analyzed indexes and the dispersion of their measurements over the three categories: unidirectional information delivery; bidirectional service delivery; and participative mode of communication. Some of the original measurements were divided, and their parts were classified in two or all three categories, according to their nature.

Table 1. E-government evaluation criteria of the years 2000-2010 classified according to core characteristics

Index	Unidirectional information delivery (online presence)	Bidirectional service delivery (operations)	Participative communication (many-to-many)
(UN, 2012)	· Emerging information services, i.e., provides information on public policy, governance, laws, regulations, relevant documentation and types of government services provided, including links (1st of 4 development stages) · Number of ministerial websites (i.e., finding and selecting the appropriate site(s) at the ministerial level) · Amount of information (e.g. news from the national government and ministries, links to archived information) · Easily navigated website; features found easily, quickly, and intuitively (and not merely present on the site) · Audio and video capabilities · Multi-lingual	· Enhanced information services, including simple applications such as downloadable forms for government services (2nd of 4 development stages) · Transactional services, i.e., two-way communication with citizens, electronic authentication of the citizen identity, financial and non-financial transactions, e.g., downloading and uploading forms, filing taxes online or applying for certificates, licenses and permits (3rd of 4 development stages) · Number of services available; overall quality · Number of transactional services · Back office integration · Compatibility with mobile applications · Data and services are transferred across departments and ministries in a seamless manner, through integrated applications.	· Transactional services, i.e., requesting and receiving inputs on government policies, programs, regulations, e-voting (3rd of 4 development stages) · Connected services, i.e., proactive approach in requesting information and opinions from the citizens using Web 2.0 and other interactive tools, cross-department e-services and e-solutions; empowering citizens to be more involved with government activities so as to have a voice in decision-making (4th of 4 development stages) · Rate of inclusion: high Internet penetration rate, indicated rate of use of online services by citizens · Participation potential: Web 2.0 tools, blogs, discussion forums, online chat features, bulletin boards and social networking tools, online voting and petitioning, e-participation calendars
(UN, 2010)	· Number of loosely integrated program and subject-specific sites. · Amount of information available (growth of websites and increase in their number) · E-information: provision of information by governments and access to information by citizens is facilitated by the Internet	· Easily accessible information · Integrated back-office operations · Amount of services and degree of sophistication	· e-Consultation: offers interaction with stakeholders. · e-Decision-making: offers engagement in decision making processes. · Use of Web 2.0 tools

(Capgemini, 2009)	· Simple information provision in certain services · Enhancement and aggregation of information to citizen and business, structured by theme or life-events and easy to find · Accessibility to people with disabilities (automated assessment of compliance with standards) · A form of privacy protection · Ability to track progress · Help functionality · Data security · Visibility of public tenders to the multiple suppliers (focus on eProcurement in this index) · Increased transparency	· The availability of 20 services, such as: · Registration (e.g., births, company, change of address) · Permits and licenses (e.g., building, education, passport) · The profitability of 20 services, e.g.: · Income generating (for government) · Service returns (e.g., health, social, libraries) · Regional progress and domain specific measurement · User Experience and usability: · The site provides optional service channels and channel choice · One-stop-shop approach (of 20 basic services) · Personalized pro-active case handling · Channel migration · Focus on major phases of eProcurement: · Pre-contract-award phases: eNotification, eSubmission, and eAward (includes eAuctions). 14 process steps were measured, e.g., level of interaction, personalization of suppliers; implementation models (centralized vs. decentralized platform) · Post-award-transaction: 5 process steps were measured, e.g., back-office operations and user experience	· Availability of Web 2.0 technologies (social networking etc.) · Online participation: customer involvement in service design; with the purpose to increase citizen engagement, trust, and interaction with public authorities · Open collaboration: whole customer view and unified access; the degree of interaction between service provider and user · Empowerment and inclusion of citizens · User feedback mechanism · eProcurement is evolving to a networked more controlled process, cutting across the silos of governments
(Naz, 2009)	· Effectiveness in services: · Timely information · Assurance (knowledge, courteous, trust and confidence) · Reducing discretion and chances of bribery · Increased transparency · Equity in services: · Affordable services · Accessible services · Nepotism, kickback and greasing the palm	· Effectiveness in services: · Accurate and timely responses and feedbacks · Reliability in services · Reducing transaction cost · Efficiency in services: · Cost factor is low · Waiting time is low · Procedures are streamlined by reducing bureaucracy	· Endorses openness · Citizen participation (initiatives aimed to build trust and confidence)

(UN, 2008)	· Emerging information services (see UNPAN, 2012 above) · Available information (i.e., list of elected officials, government structure, policies and programs, points of contact, budget, laws and regulations, and other information of public interest) · Passive dissemination channels including newsgroups, and e-mail lists · Elected officials archive their discussions with citizens	· Enhanced information services (see UNPAN, 2012 above) · Transactional services (see UNPAN, 2012 above) · Reactive dissemination channels including text messages, newsgroups and e-mail lists.	· Interactive and networked communication (transactional and connected stages in UNPAN, 2012 above) · e-Consultation: web site provides the necessary tools · e-Petitioning: web site allows citizens to set agenda for debate · Elected officials communicate directly with citizens on web sites they operate · Citizens e-inputs transparently included in governmental decision making processes · Participative dissemination channels including community networks, blogs, and web forums
(West, 2008)	· Available information (i.e., publications, advertisements, audio and video clips, information about privacy and security policy, and online access to databases) · Information readability · Passive dissemination channels: e-mail updates · Sector accessibility: foreign language or language translation, disability access	· Premium services available (paid) · Payment channels include credit card · Personalization options by users · Digital signatures available · PDA (Personal Digital Assistants) compatibility	· Availability of officials' e-mail addresses · Availability of comment forms
(Pradeep, 2007)	· Available information		· Listening/consultation · Online deliberation · Online decision-making
(Melitski, Holzer, Kim, Kim, & Rho, 2005)		· Online registration for municipal events or services	· Online interaction with the municipality
(Scott, 2005)	· Reliable and easy to use website · Increased transparency · Users are able to monitor official public records	· Transactional services: The site allows users to complete a wide range of online transactions. · Automatic personalization based on analysis of user preferences and behavior.	· Direct communication: The site makes it easy for users to communicate with city officials. · Networking: The site connects users with other individuals or organizations that contribute to the local civic interest.

(UN, 2005)	· Emerging information services (see UNPAN, 2012 above) · Available information (i.e., policies and programs, budgets, laws and regulations, and other briefs on key public interest) · Passive dissemination channels: email lists, newsgroups.	· Enhanced information services. · Transactional services. · Reactive dissemination channels. For a detailed explanation, see UNPAN, 2008 above.	· Interactive and net-worked communication (transactional and connected stages in UNPAN, 2012 above). · e-Consultation: web site provides the necessary tools. · e-Petitioning: web site allows citizens to set agenda for debate. · Elected officials communicate directly with citizens. · Citizens e-inputs included in decision making. · Participative dissemination channels. For a detailed explanation, see UNPAN, 2008 above.
(Accenture, 2004)	· Publish: the number of informative services, and their technological level. · Information services are easily accessible.	· Transact: the number of transaction services, and their integration level (rather than the direct evaluation of back-office processes). · Interact: the number of interactive services, and their technological level. · Customer relationship management (CRM): system is available, interacting with customers and integrating services.	
(Capgemini, 2004)	· Stage 1: Online presence: availability of any publicly accessible website. · Stage 2: One way interaction (downloadable forms).	· Stage 3: Two way Interaction: aimed at service provision (including user authentication). · Stage 4: Transactions: full electronic case handling (fully completed via the website (including payment; no paperwork). · Availability of 20 services. · Available information necessary to start a procedure of online service.	
(Leben, Kunstelj, & Bohanec, 2004)	· Available information is clear · Usability, accessibility, and standardized design of websites · Available life event portals and their scope.	· Online services are coordinated · Life event portals provide personalization options	

(Steyaert, 2004)	· Online presence: rate of site visitors relative to the other agencies. · Available information about licenses. · Aspects of convenience, security, and privacy with online data.	· Service quality measured on the basis of customer satisfaction, transactional services (federal and state levels), and visitor time. · Customer loyalty and retention based on repeat transactions and repeat visits.	· Available communication channel via e-mail
(Vintar, Kunstelj, & Leben, 2004)	· 1. Dispersion (unidirectional dissemination). · 2. Coordination (single entry point, no back office integration).	· Coordination: single entry point. · Integration: corresponding back-office processes are reengineered into a single process.	
(EC, 2003)	· Available information is accessible and easy to use. · Comprehensive language. · Information quality: awareness to ensure better information.	· Service quality measured by website response speed, help and control. · Timely and time-saving service. · Cost-reducing service. · Flexible service deliver.	
(Chandler & Emanuels, 2002) (cited by Irani et al., 2006)	· Unidirectional dissemination.	· Available transactional services. · Cross-agency and cross-departmental integrative services.	· Interactive services allowing for easy and simple to use communication channels.
(DPEPA, 2002) (cited by Irani et al., 2006)	· Two development stages: · Emerging: the website provides limited or static information. · Enhanced: information is updated regularly.	· Two development stages: · Interactive: downloadable forms · Transactional: enables complete processes, e.g. obtaining visas, licenses, passports, birth and death records, etc. · Cross departmental, fully integrated, seamless services.	
(Howard, 2001) (cited by Irani et al., 2006)	· Stage 1: Publish: Information about activities of government available online. · Available information concerning government activities (termed *publish)*	· Stage 2: Interact: Enables citizens to have simple interactions with their governments such as sending email or 'chat rooms'. · Stage 3: Transact: Provides citizens with full benefits from transactions over the Internet, such as applying for programs and services, purchasing licenses and permits. · Transaction services (e.g., applying for programs and services, purchasing licenses and permits) are beneficial for citizens when carried out online (termed *transact)*	· Simple interactions between citizens and their governments, i.e., sending email to officials or presence of chat rooms (termed *interact)*

(Layne & Lee, 2001)	· Stage 1: Cataloguing: Creating websites and making government information and services available online. · Online presence termed *available information*	· Stage 3: Vertical integration: Focuses on integrating disparate at different levels. · Stage 4: Horizontal integration: Focuses on integration of government services for different functions horizontally. · Vertical integration: integrating disparate at different levels · Horizontal integration: integration of government services for different functions horizontally	· Stage 2: Transaction: Enables citizens to interact with their governments electronically. · Transaction: citizens interact with their governments
(NOIE, 2001) (Australian Office for Information Economy) (cited by Kunstelj & Vintar, 2004)	· Available information concerning online services. · Information is integrated.	· Downloadable forms. · Transaction services are integrated.	
(TietoEnator Trigon, 2001) (cited by Kunstelj & Vintar, 2004)	· Usability: service covers real user needs, easy to learn and use, ensure few user errors, pleasant, presentation in foreign languages. · User-friendly (pleasant) website (termed *usability*) · Presentation in foreign languages (*usability*) · Ease of use in the EU and from abroad (*accessibility*)	· Supply: user evaluation of completeness and quality. · Accessibility: ease of use in the EU and from abroad. · Service covers real user needs easy to learn and use, ensures few user errors (*usability*) · Completeness and quality of services according to user evaluation (*supply*)	

(Deloitte Research, 2000)	· Stage 1: Information publishing: Creates websites by departments and agencies. One-way communication.	· Stage 2: Official two-way transactions: enables customers to interact with government services such as renewing licenses, payments, etc. · Stage 3: Multi-purpose portals: Enables customers to obtain government services and information from a single point. · Stage 4: Portal personalization: provide customers with opportunities to customize portals according to their need. · Stage 5: Clustering of common services: portals will gather common services to hurry the process of delivery. · Stage 6: Full integration and enterprise transformation: departments will appear, disappear, etc. · Stages 2-6 of 6: "Official" two-way transactions, multi-purpose portals, portal personalization, clustering of common services, full integration and enterprise transformation.	
(Gartner, 2000)	· Phase 1: Information – presence. · Online presence (information phase).	· Phase 2: Interaction - intake process · Phase 3: Transaction - complete transaction · Phase 4: Transformation - integration and organizational changes · Complete online services available (transaction phase). · Organizational change and integration was carried out as a prerequisite to service automation (transformation phase).	· Intake process was carried out as a prerequisite to interaction (interaction phase).

Table 2 best describes the summary of our index analysis. Results show that nearly all indexes (96%; n=23) measured information delivery and service delivery, whereas only two thirds (63%; n=15) include measurements of participative communication.

Table 2. Index findings summarized

Year	Index/Study	Unidirectional information delivery	Bidirectional service delivery	Participative communication
Summary all	**Total N(all) =24**	**Total N(all) =23 (96%)**	**Total N(all) =23 (96%)**	**Total N(all) =15 (63%)**
Summary late	**Total N(late) =10**	**Total N(late) =9 (90%)**	**Total N(late) =9 (90%)**	**Total N(late) =10 (100%)**
Summary early	**Total N(early) =14**	**Total N(early) =14 (100%)**	**Total N(early) =14 (100%)**	**Total N(early) =5 (36%)**
Late period				
2012	UNPAN	✓	✓	✓
2010	UNPAN	✓	✓	✓
2009	Capgemini	✓	✓	✓
2009	Naz	✓	✓	✓
2008	UNPAN	✓	✓	✓
2008	West	✓	✓	✓
2007	Pradeep	✓		✓
2005	Ideas Group		✓	✓
2005	Scott	✓	✓	✓
2005	UNPAN	✓	✓	✓
Early period				
2004	Accenture	✓	✓	
2004	Capgemini and Ernst & Young	✓	✓	☐
2004	Leben et al.	✓	✓	
2004	Steyaert	✓	✓	✓
2004	Vintar et al.	✓	✓	
2003	PLS Ramboll and Eworx	✓	✓	
2002	Chandler and Emanuels	✓	✓	✓
2002	UN DPEPA	✓	✓	
2001	Howard	✓	✓	✓
2001	Layne and Lee	✓	✓	✓
2001	NOIE (Australian Office for Information Economy)	✓	✓	
2001	TietoEnator Trigon	✓	✓	
2000	Deloitte Research	✓	✓	
2000	Gartner	✓	✓	✓

An arbitrary division is made between the early period (years 2000-2004) and the latter (2005-2010). Out of the 14 early indexes, all 14 measured both information delivery and service delivery, but only 5 included some measurement of participative communication. Among the later indexes, 9 measured information delivery, 9 measured service, and all 10 measured participative communication.

Figure 1 best demonstrates trends over time that can be observed in each of the three categories. Results show that the earlier indexes include measurements of in-

formation delivery as well as service delivery while measurements of communication and participation are less prevalent. The category of participative communication, which has become so dominant, even crucial, in recent years, was rather absent during the first years of e-government evaluation. More specifically:

- Information delivery and online presence appears to be the most important measurement in all analyzed indexes, yet it seems to have lost some prevalence dropping from 100% in early indexes to 90% in later indexes;

- Service delivery and operations also shows a slight negative trend dropping from 100% in early indexes to 90% in later indexes;

- Participative communication shows a major shift in importance between early years, where only 36% of indexes were concerned with such issues, and later years, where such measurements appeared in all indexes.
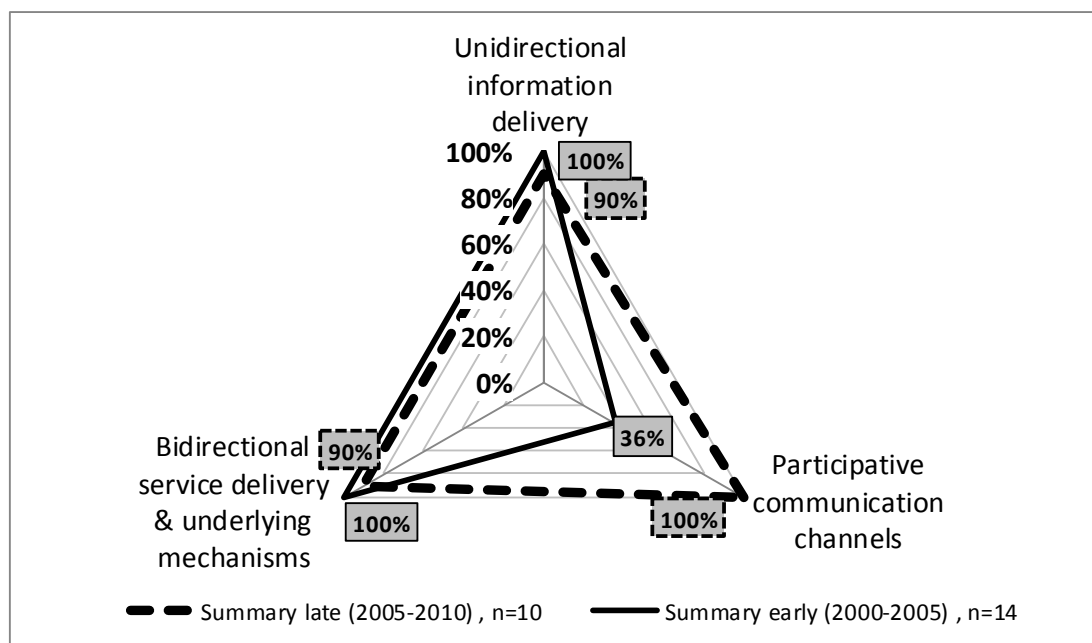

Figure 3: The small proportion of participative communication measurements during the first years of e-government evaluation (2000-2004) and its growth in recent years (2005-2010) compared to the measurement of information delivery and service delivery

The important finding is the increased interest in communication compared to measures of service and operation. Reviewing the many indexes predominantly reveals a growth in the number of studies that include measurements for communication channels (Figure 1). The operational aspects of service integration take an important part in e-government indexes. However, the increased interest in the social aspects is clearly demonstrated, elaborated in new rating methods (e.g., the UN surveys 2005, 2008, 2010). One of the well-accepted indexes, i2010 Action Plan by Capgemini (2009: 13), integrates the following criteria: no citizen left behind; making efficiency and effectiveness a reality; implementing high-impact key services; putting key

enablers in place; and strengthening participation and democratic decision making. Thus, different agents are needed to qualify the system.

As mentioned above, lack of methodological information made us exclude three reports (in addition to the 24 indexes). Still, the reports present criteria that align with the finding so far. A report by CapGemini & Ernst & Young (2006) examined the progress in online availability of public services in Europe based on four stages: 1. online presence; 2. one way interaction (downloadable forms); 3. two way interaction; and 4. transactions (full electronic case handling). The World Bank examined different levels of service delivery capability and process integration, resulting in four quadrants: 1. moving online; 2. channel integration; 2. process integration; and 4. service integration. A report by ABM Knowledgeware Ltd. India examined four stages: 1. e-Foundation; 2. e-Service; 3. e-Business; and 4. e-Collaboration (cited in Datar, 2007).

2.3.3 Summary of results

Information delivery and online presence (unidirectional mode) as well as service delivery and operations (bidirectional mode) are common measures throughout the years but showing some decline in recent years.

Participative communication measures are rare in the first years of e-government evaluation, and show a conservable increase in rate in subsequent years. This trend is particularly noticeable with indexes that have remain active over the years, periodically adjusting themselves (e.g., UN, 2008; 2010; 2012; Capgemini, 2009).

These results may be interpreted to mean that information and online presence are still not taken for granted albeit showing a small trend of abandonment. At the same time, despite the increased complexity of integrated service provision, the availability of bidirectional communication also shows a small trend of decrease. In contrast, the high rise in participative communication would insinuate that evaluators are encouraging e-government to fulfill a social role.

3   The actual domain – structural change

In the networked world, where information and communication technologies (ICT) provide, as by their definition, access to information and flexible communication, they can build joint perspective and coordinate actions.

The transformation of e-government systems from static Internet web pages used unilaterally to relay information to fully interactive services (Irani et al. 2006; Janssen & van Veenstra, 2005) also amounts to social action. Governments are affected by the new rules that the network imposed, such as openness and transparency, as opposed to well-formed system boundaries. The organization must consider social, cultural, and moral interactions in addition to pragmatic implications, which are now growing in their reciprocity, drawing a line from stakeholders and shareholders to people at large. Any manipulation of these systems changes their concealed values and goals, as they foster more rapid communication and increased number of communication channels.

This leads to the second proposition about the actual events to be described: **the structural changes that emerge with the development of applications and communication channels over the Internet generate the initiation of new system goals.**

Current literature occasionally mentions the triple bottom line view that includes people, planet, and profit. New legislation for mandatory disclosure favours stakeholders over shareholders, and performance measurements are being changed to balance financial goals with societal and environmental values (e.g. Porter & Kramer, 2006). The new performance criteria actually lead to the creation of public goods – usually a governmental responsibility – by the open market economy. According to this view, profit is not the single purpose of the firm, and governments are not the single provider of social justice. Organizations are forced to introduce the social and environmental bottom lines as performance criteria, being regulated by new laws or supervised by public opinion. The framework of corporate social responsibility (CSR) copes with similar questions. Mingers & White (2010) define CSR as the effort made by organizations and businesses to "align their values and behaviour with the expectations and needs of different stakeholders" (Mingers & White, 2010: 1155). CSR is one way in which organizations can interact with society. The structural change already leads to the constant engagement with stakeholders.

However, although CSR also addresses additional criteria, its motivation and goals are different from those presented here. Aimed at the management of organizations, CSR remains in the pragmatic dimension of regulation or management fashion, in self-interested perspective. More than justifying business goals and organizational norms, we expect to evaluate IS (i.e., assess the value of information) according to the subjective goals of additional participants (Ein-Dor & Segev, 1993; Malone, 1988).

Service providers that wish to understand the preferences of their customers are already applying new tools of participative planning and evaluation. The mechanism itself might vary, from crowd-sourcing of discrete and incremental contributions, to collaborative development of new IS. Either way, IS design and evaluation should include the subjective decision makers. However, this is done from a pragmatic business-oriented perspective of self-interested agents (individuals, groups, organizations, governments, etc.).

Looking at the rest of the information systems (IS) in the model, which are all one-way IS, it becomes clear how the Internet is structurally changing society: in organizational flattened hierarchies and NGOs increased presence in western democracies; open-innovation and crowd-sourcing; or by the growing incidence of anti-social usage.

The new systems are expected to increase "organizational effectiveness through flattening hierarchies and enhancing public sector creativity" (Chadwick, 2006: 94), to create deeper relationships with the users (Benbasat, 2010; Burton-Jones & Straub, 2006), and to enable collaboration "among individuals, groups, and communities" (Davern, Shaft & Te'eni, 2012: 273). In their historical review, Davern et al. (2012) observed that the individual-oriented design of IS is changing to support distributed cognition, with interactivity and cooperativity as main cognitive qualities. The value of information and the meaning of communicating in a networked world are, therefore, among the most tempting challenges for researchers today.

Furthermore, the notion of technology that makes individuals and organizations act on behalf of the common good is demonstrated as a new aspect of the value of information in the network. When referring to the network as if it was a single entity, the notion is of "the integration of the processing logic found in computers with the massive stores of databases and the connectivity of communication networks"

(Agarwal & Lucas, 2005: 394). Communication has received much attention in various fields, among them organizational theory, i.e. Weick's enactment (Weick, Sutcliffe, & Obstfeld, 2005). Understanding values and beliefs is a major part of many models, e.g. in conceptual modelling (Wand & Weber, 2002) or in IS development in general (Walsham, 2009). As Mingers & Walsham (2010: 840) put it: "the primary function of communication is the construction of understanding and then agreement about shared activities".

IS research has been situated over the last years around the intersection of people, organizations, and technology (Hevner et al., 2004). The missing perspective is that of societies. Emphasizing the need to understand human nature, the current rationale is that we first have to identify the trends and directions most appreciated by society, when evaluating information systems (IS), and then reveal the leading forces that shape the emerging environment of technology, organizations and users (Hevner et al., 2004) as well as society. Different attitudes and values would lead to different approaches and their representations in IS.

The evolution of net-enabled systems expands from the organizations realm to the social and environmental reality. Organizations may apply ICT to better understand the preferences of their customers between two extremes, i.e., for profit, or for the benefit of society, e.g., by deliberative and participative decision processes. New many-to-many relationships evolved with the proliferation of connections in the network. In the interactive networked world, communication with the public is necessary as the public becomes a major stakeholder to consult with. Well-accepted IS goals and evaluation criteria (e.g., business alignment) now extend to include goals that are not necessarily related to the benefit of the organization. For example, rather than service-oriented goals which are organizational interests (e.g., evaluation criteria such as user satisfaction, service quality, perceived usefulness, and other system delivery measures), the design and evaluation criteria should demonstrate discourse intentions from the network view.

3.1.1 The value of information

The value of information (VI) has been defined and operationalized in various theoretical contexts. Approaches to evaluating information and IS vary from the simplistic entropy concept (Shannon & Weaver, 1949) to the economic approach (Arrow, 1996), and the economics of IS (e.g. King & Epstein, 1983; Kumar, 2004). Just to illustrate the accepted notion of economic VI a few IS studies are briefly reviewed here.

The economic VI is the core of the well-known IT productivity paradox (Brynjolfsson, 1993; Brynjolfsson & Hitt, 1998). Typical to the economic mainstream is the claim that the classic economic principles offer the same strategic value in a marketplace that depends on IT (Shapiro & Varian, 1999). In their book, Shapiro & Varian (1999) urge managers to evaluate their IS in a pragmatic perspective of economic VI. Although they identify the value of the Web with the increased access to information, they are devoted to organizational concerns such as business processes management, i.e. a single agent perspective.

The direct impact of IS availability on the quality of decision making was proved once again in the organizational context by Ahituv & Greenstein (2005), through theoretical models of information economics, that "illuminate certain facets of the productivity paradox" (p. 505). In a more recent study, Oh & Pinsonneault (2007)

evaluated the strategic value of IT from two perspectives, the resource-centred view and the contingency-based view; their focus was on IT strategy and business alignment.

Even Benkler (2006), in his book The Wealth of Networks, is focused mainly on the economic impact of open access to information on the network. The value of institutional, social, and political systems is discussed in the context of productivity.

Ten years ago Straub & Watson (2001) recognized the transformation from the internal perspective of the organizational IS to the external view. New systems connected businesses to customers (B2C), to other businesses (B2B), to the government, employees, investors and other stakeholders. Straub & Watson (2001) referred to the new relationships as dyadic. When Straub & Watson (2001: 337) identified how the "entire concept of firm boundaries has come under attack", the firms still remain within the market-space. Straub & Watson (2001) state that the value of IS is universally recognized, but their statement is said from within the boundaries of the market-space.

Today the vast connections that the Internet enables attack the boundaries of the market-space, spread and shape the public sphere. A new transformation occurs from economic goals to social motivations. Economic concepts such as that of utility, which usually relates to business criteria, must now coincide with the interests and desires of agents which are external to the organization. Therefore, in a networked world, outside the boundaries of the market-space, IS should accommodate an ethical net-enabled value.

3.1.2 The value of information in the network

Communication between the agents plays a key role in the network. A useful theoretical framework for recognizing the plurality of preferences and alternatives is the discourse ethics. The discourse ethics will be presented in order to emphasize the attentive relationship; and to specify the ethical perspective, separated from the pragmatic perspective. The *ethical dimension* enables IS design (and evaluation) in contexts where there is more than one agent. This is the case once the community, the environment, the society, or any other related entity outside the organization becomes one of the stakeholders. The ethical criteria require a communicative process between people and organizations where the related information is open and accessible. It depends on an open design that enables sharing with a variety of subjective agents in the network, not only the authorized official agents.

One of the differences between the pragmatic and the ethical viewpoints is best expressed by stating their motivations: to gain "understanding rather than merely a bargain" (Mingers & Walsham, 2010: 845). On the ethical dimension, IS actions should be judged in terms of developing the good life within one's community, based on core values as strong preferences (Mingers & Walsham, 2010). Taking this notion further, the network-view is not about optimizing solutions or achieving the most efficient bargain. The network-view requires openness for listening and understanding other interests and concerns.

Evaluation criteria are thus artifacts that provide social action by use of IT. Therefore, the e-government evaluation criteria, considered as IT artifacts, acquire the moral power of social actors. The indexes may represent reality; be adapted to new trends in developed economies; or aim to set standards for developing countries. The indexes can fulfill normative rules for IS design, as effective tools of IS production.

Either tacit and deliberate, this dispositional action "will be meaningful, and have a type of moral valence" (Yanchar, 2011: 282).

4 The real domain – social action

A good decision process should clarify the criteria, the raison d'etre of the decision maker, even "force the decision maker to understand his or her preferences and allow the set of alternatives to be expanded" (Henig & Buchanan, 1996: 4). The decision analysis paradigm provides some basic concepts to discuss the decision processes (Keeney & Raiffa, 1976). Criteria are the fundamental objectives to be achieved, before comparing alternatives. One may consider clean environment as a goal to achieve in addition to sales and service supply; transparency versus productivity; openness and contact channels, etc. Alternatives are the means rather than the goals. Essentially, the purpose of the decision process is to explore not just the problem, but to understand also the decision maker (Keeney, 1992). With this approach to the decision process in policy problems Nagel (1984) proposed to determine the relation between the means and the goals before reaching a decision on the best means to adopt. Policy makers should address the question, what does public policy seek to achieve, and then structure and evaluate means for achieving the goals (Nagel, 1984). However, means received much attention in the decision literature. IS design and evaluation involves many preferences and alternatives.

A major challenge is to resolve the dichotomy of values versus opportunities: in order to determine a design strategy, the goals of the IS should be stated; What are the core values that the IS actions should be judged on? What are those strong preferences?

This leads to the third proposition about the social action: **how these indexes are made and by whom.**

The producers and constructors of these indexes surface as important actors that facilitate reproducible design of e-government systems. Some designers would reproduce systems based on criteria explicitly elaborated in e-government indexes. This is a functionalist (reproductive) action that conforms to the indexes, as opposed to the deliberate (authentic) action of innovators. Designers who are framing and placing e-government in new and alternative settings are considered social actors.

Weber (1997: 88) defined the social action as a subjectively meaningful behavior, "either overt or purely inward or subjective", potentially consisting of "positive intervention in a situation, or of deliberately refraining from such intervention or passively acquiescing in the situation." The choice between the "constrictive and the creative aspects of institutions" (Eisenstadt, 1968: xvii) gives meaning to the action, aiming to either change or maintain the social status quo.

As such, we consider changes in the evaluation criteria of e-government as a reflection of social action. New mechanisms of participation are often designed by people who consciously act to change their social and economic environment. The new design of features and systems can be reproduced, e.g., by governmental officials, and consequently revoke restrictive and alienating conditions of the status quo.

The consolidation of new evaluation criteria can be explained in terms related to explicit knowledge (Popper, 1986), suggesting that indexes may introduce new concepts and routines to the process of IS design, and still make a contribution. Thus,

evaluation criteria enable moral participation even if applied in routines processes without focused awareness and involvement of the decision maker.

4.1 Moral and psychological meaning

The proposed framework recognizes the need for responsibility for the other in e-government. The responsibility adds importance to the act, makes it more profound, and significantly different from most accounts of agency. The act of IS design and evaluation is not an abstract game but rather a political activity, in which the "other" is not a mental representation, and being human is not some static philosophy (Levinas, 1991). The act of IS design and evaluation holds others responsible for their actions (Levinas, 1991) and embodies trust. The other is a person, available to communicate, and whose actual characteristics affect the relationship.

In ethical eyes, the direct system's owners are expected to understand preferences other than their own; and the public must take responsibility and act together, with ICT, in organized forms. This solution suggests that many agents should participate in the design process and that they should act mindfully. Many organizations adopt this attitude to some extent when designing IS with their workers. User participation in IS design contributes to IS ownership (Mumford, 1993), which was recognized in the IS literature as a main factor for IS success (Huang, Zmud, & Price, 2010; Kim, Shin, & Grover, 2010; Schultze & Boland, 2000). User participation and the question of IS ownership have an ethical dimension, in addition to the pragmatic aspects of IS success and IT governance (e.g. Stiglitz, Orszag & Orszag, 2000; Walsham, 2009). Once the design process exceeds existing role definitions of people and organizations, toward the wider view of society and environment – ethical concerns appear. This is where the reciprocal influence of society and technology happens.

People who consciously act to change their social and economic environment design new systems that can be reproduced; and consequently revoke restrictive and alienating conditions of the status quo. This is the subjective and material world delineated by Habermas's (1984). In this world, man-made entities such as social relations bear actual material significance.

5 Discussion

E-government research is not merely a special case of IS research. The social and public implications of e-government make it an ideal context for studying information technologies (IT) as a tool for socially meaningful subjective action. While Bélanger & Carter (2012) considered it as "an excellent Petri dish to study how research topics in information systems mature over time" (Bélanger & Carter, 2012, p. 380), I believe it embodies far more potential. In this paper e-government is considered not only as a microcosm of IS, but as a system that amplifies the many facets of IS. This is because of the professional challenge ingrained in the operation of large and complex systems as well as the strategic and ethical considerations that inherently accompany the management of e-government.

Furthermore, unlike other evaluated contexts, e-government serves a purpose in shaping citizen involvement and hence plays an active role in the extent and manner by which a nation appears to exercise social responsibility. Perhaps more than any other IS, "e-government goes beyond simple task automation" (Chadwick 2006, p. 194). The rich environment of e-government intensifies the questions associated with

the processes of IS planning and implementation, and even decisions that seem to be minor and technical may carry broader public consequences.

We observe changes in the orientation of IS evaluation methods, which are growing in richness and diversity. The evolution of IS measures is not merely a reflection of the development of technology; rather, it represents the richness of the relationships between mediating technologies and the new actions they enable (e.g., social networks, or the growing needs and interests of the instigators, rather than recipients, of the services provided).

Reviewing the many indices predominantly reveals a growth in the number of studies that include measurements for communication channels (Figure 1). The operational aspects of service integration take an important part in e-government indices. However, the increased interest in the social aspects is clearly demonstrated in new rating methods (e.g., the UN surveys 2005, 2008, 2010). One of the well-accepted indices, i2010 Action Plan by Capgemini (2009: 13), integrates the following criteria: no citizen left behind; making efficiency and effectiveness a reality; implementing high-impact key services; putting key enablers in place; and strengthening participation and democratic decision making. Thus, different agents are needed to qualify the VI.

In conjunction with the evolutionary development of evaluation models delineated above, the transition from unidirectional to participative evaluation criteria is reflected in frequency and form of communication channels. Specifically, compared to early evaluation indexes, subsequent indexes are characterized by more criteria concerning the quality (elaboration) and quantity of communication channels (as opposed to the decrease in information measures over time, or service delivery channels that remain prominent). Further research is needed to assess the validity and reliability of the three criteria categories proposed in this study (Zeller & Carmines, 1979; Cronbach, 1951).

6 Implications

As more Internet websites meet high technical standards and share similar features, it seems that users and evaluators alike expect deeper relationships with the technological artifact. With the commoditization of online services, including e-government online services, the challenge is how the online interaction may affect – perhaps even construct – the relationships between people, in this case citizens and officials, customers and service-providers. These trustful relationships extend beyond trust in the website, reflecting personal beliefs and social relations.

Moreover, while various forms of social, cultural and political domination often seem deterministic (Myers, 1997), the structure of the network makes it possible to moderate or restrict them. However, this is not the network that produced new system goals, but people who seek for emancipatory system design and pose limitations on current constraints. Therefore a framework of system goals – or a new typology of IS goals – should view society at large, and emphasize the ethical dimension.

The research context, e-government, covers technological, organizational and social challenges (e.g., social inclusion, readiness). Considering its importance, it is of relevance to identify and understand the shift from the fundamental delivery of online information to new areas of democracy and public participation (Irani et al., 2006; Purian, 2011). By observing the evolution of evaluation indexes over a decade (2000-

2010) we reveal the different contexts and values that were considered and made important over the years. The strengthening role of participation and democratic decision-making, observed in this paper, is not an obvious change with respect to e-government and its evaluation. While the growing number of criteria and their levels of elaboration seem to reflect a metamorphosis of e-government research over time, the characteristics of this metamorphosis has yet to be determined.

The need for theoretical foundations in the field of e-government was acknowledged by Bélanger & Carter (2012) in their historical review of e-government research. However, this need expands to IS design in general. Questions of implementation and innovation have not been sufficiently recognized in the literature on IT, as is shown in the retrospective analysis of Lucas, Swanson & Zmud (2007). Researchers (e.g., Belanger & Carter, 2012) concur that IS literature has failed to present a unifying theory for the study of IS design.

We propose a theoretical framework showing e-government IS design as a tool in the discourse between institutions and citizens. Further research is needed to understand the extent and manner by which a nation appears to exercise social responsibility. Taking into account the social impact of e-government, the underlying causes or drivers of this change should be better understood. The distinction between the pragmatic and the ethical value of IS should be further emphasized as it doesn't fully grasped in works such as Porter & Kramer's (2006) in its ethically-motivated meaning. The ethical dimension enables IS design and evaluation in contexts where there is more than one agent, e.g., the community, the environment, the society, etc. The network-view is not about optimizing solutions or achieving the most efficient bargain. The network-view requires openness for listening and understanding other interests and concerns, as suggested by the discourse ethics and concepts borrowed from the decision literature; and to act on behalf of the common good as a new aspect of the value of information in the network.

The structure of the network is considered as the underlying mechanism that adds new system goals. The actual initiation of new system goals has facilitated the development of the network (e.g., open-data initiatives that lead to further collaboration) and used the network structure towards that end. Concepts that have thus far guided IS research, and especially IS evaluation, must adapt to new emergent goals, i.e., reciprocity and the responsibility to guide social action as opposed to the self-centric attainment of organizational benefits.

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