

# Intelligent Citizenship Assistants for Distributed Governance

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## INTRODUCTION

One of the main reasons for lower levels of participation in the political arena by the common citizen is the apprehended distance from actions such as representative election to perceived change. People feel that they have less and less power to exercise. Impotence leaves to indifference (“it doesn’t matter who will I choose ... anyway they won’t care/change thinks that I consider important”). More and more technology may put another bureaucratic barrier between people and their legitimate right to exercise power: citizenship.

Politics is the process of formation, distribution, and exercise of power (Bobbio, Matteucci & Pasquino, 1983). In this sense, the term *e-democracy* (Riley & Riley, 2003) has emerged as the goal to be reached by our technology. It is defined by Clift (2004) as the use of information and communication technologies and strategies by democratic actors within political and governance processes of local communities, nations and on the international stage. Such democratic actors/sectors include governments, elected officials, the media, political organizations, and citizen/voters.

The first steps towards e-democracy (i.e., the current e-government frameworks), even though the efforts taken, are mostly centralized (Bicharra Garcia, Pinto, & Ferraz, 2004; Clift, 2004; Macintosh, 2004; Macintosh & McKay-Hubbard, 2004). Furthermore, the information they provide about government decisions and acts and their consequences are presented as (mostly) unproven facts. It is often difficult for the common citizen to check whether the myriad of data and their sources are even legitimate, not to say legal or fair. Certainly, political confidence and faith (even though mediated by technology) have some

limits, to say the less. If technology is to be put for a good use it has to be not only accessible to the common citizen, he/she has to feel and exercise power not only through voting on candidates or accessing some services online.

Currently, there are two aspects considered as the main targets of e-government technologies (Riley & Riley, 2003):

- **E-Voting:** Taking part in elections or other ballots
- **E-Participation:** Allowing degrees of access to policy decision making

Thus, for the citizen the actual range of possible actions is rather narrow. Our democratic societies require bridging a gap between current IT based Democracy and well established democratic practices. A suitable option is to be served by democracy enabler social software, allowing a new dimension:

- **E-Enaction-and-Alterity:** Collective planning, monitoring, awareness, and enforcement of already set actions and decisions made by representatives and public institutions

Such an approach tries to incorporate and extend the idea presented by Clift (2003) as “e-democracy + public net-work” and illustrated in Figure 1.

Seeking for direct citizen/stakeholder/leadership involvement, this new dimension, along with the *e-voting* and *e-participation*, can be implemented with decentralized *digital citizenship systems* (DCS), composed by *intelligent citizenship assistants* (CAs). Such systems can create an extended channel to restore the capillarity of power back to the citizens. We will now discuss some

Figure 1. Networked input and output contrasted to traditional processes. Both, e-democracy and public network are assigned similar IT tools (Clift, 2003)

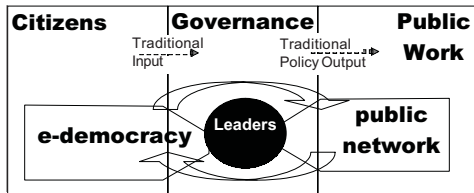
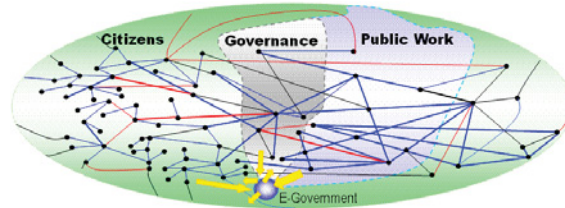


Figure 2. Networked conception of democracy showing social networks of individuals (connected through CA's forming a DCS) co-existing with traditional (centralized) e-government facilities



aspects that are to be explored in the quest that may (hopefully) lead to implement DCS in the near future.

## DIGITAL CITIZENSHIP SYSTEMS

Citizenship assistants are conceived as the main components of digital citizenship systems. CAs are *intelligent agents*, that is, programs that run continuously, know what to do and when to intervene. Agents communicate with other agents, asking solicitations and executing the requested tasks. An agent has a long list of properties, among which can be highlighted (Jennings & Wooldridge, 1998): autonomy, social ability, reactivity, and proactivity.

Due to the enormous amount of information accessible through the Internet, and the short time a user generally has to find relevant information, a suitable type of agent for that task is the so called intelligent information agent (Klusch, 2001). Information agents themselves are defined as computational software entities that can access one or multiple information sources that are distributed and heterogeneous and can acquire, mediate and maintain proactively relevant information on behalf of the user or other agents, preferably in a just-in-time fashion (Klusch, 2001). Citizenship assistants agents are a special case of information agents that work in a cooperative, *peer-to-peer* (P2P) manner. As in current peer-to-peer systems like Gnutella and Kazaa, some of them dedicated to share media files, citizenship assistants are conceived to work in a distributed and purely decentralized way (i.e., there is no need of a central authority or control) (Benkler, 2003; Saroiu, Gummadi & Gribble, 2002;).

To better understand such a concept, imagine the following scenario: you, as a citizen, have a dedicated intelligent citizenship assistants (CAs) in the form of a computer program. When elections come, it gathers information about the candidates (bios, affiliation, campaign related funding, etc.) looking not only on Web sites (officials or not) but also on recorded Parliament discus-

sions and sessions, and, what may be most important, asking other people's CAs whether they have more information about obscure points. Still, your CA can analyze, classify, and filter the information according to the social and political positions of the owner of each CA (party, position, known interests, and relations). Furthermore, the CA can repute the information, checking it with the contacts of your social network. The CAs base their analysis on the reputation system formed by the owner's social networks. There is no centralized control in the complex system formed by the CAs, as shown in Figure 2.

As human societies are connected through complex *social networks* (Granovetter, 1973), there are several kinds of ties relating individuals to each other: emotional, authority, reputation, communication, etc. (Wasserman & Faust, 1994). Each contact of an individual is qualified by such ties that are implicitly interweaved referencing past experiences. A CA dedicated to serve an individual, can take advantage of those ties given that a suitable model is provided to explicitly express and qualify them (to some degree). Each individual, immersed in a social network has a subjective view of it, as shown in Figure 3 (left). The same can be said of our knowledge (i.e., given a computationally explicit model of it). A knowledge model can be expressed computationally using an ontology (Fraser et al., 2003; Guarino, 1997) (i.e., a set of interrelated concepts) (as in Figure 3, right).

The importance of CAs is even more evident when considering the effects of political decisions in day-to-day life. Citizens can have a channel to operate directly, starting their engagement focusing on the "visible" effects of politics (children's education, fares, taxes, medical care, public finances). Even more, CAs are not displacing e-government initiatives, their are complementing them, giving a chance for cross-checking data and their sources, taking back the main reasons for politics: social justice, freedom, knowledge sharing and equal opportunities (Heller & Fehér, 1989). CAs of neighbors can en-

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