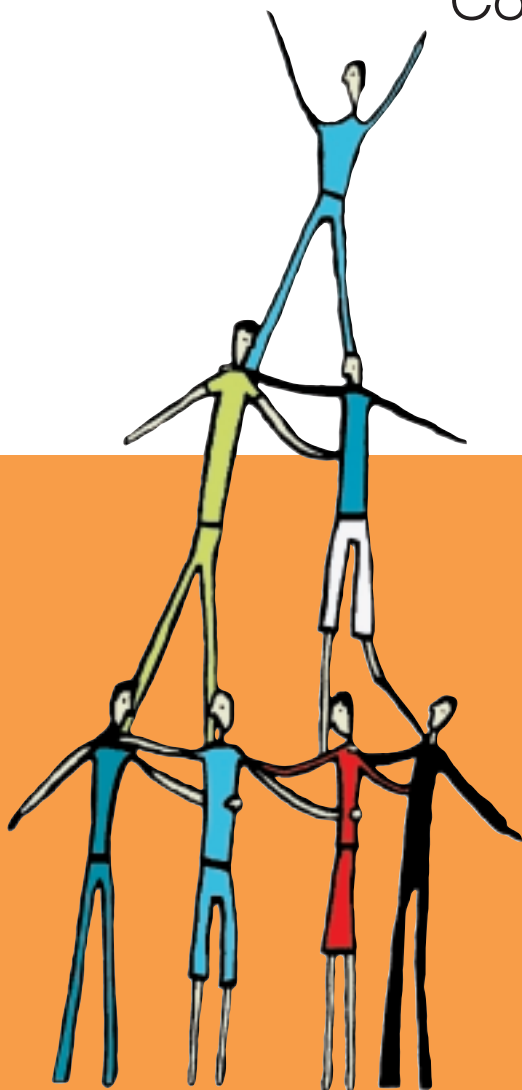




Electronic democracy and citizen participation

A sociological and legal
report about the Citizen
Consultation



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Electronic democracy and citizen participation.
A sociological and legal report about the Citizen Consultation MadridParticipa

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0. Executive summary

This report aims to reflect the functioning of the electronic consultation *MadridParticipa* undertaken during the past 28th, 29th and 30th of June in Madrid. It is a report focused on sociological and legal aspects and does not, therefore, carry out a technological analysis of the experience.

MadridParticipa constitutes the electronic consultation of the highest quality undertaken up to the moment in Spain. Although certain precedents do exist, never before have these instruments been used with such a high potential population –136.227 people– and with so many participating channels –Internet, Java mobile phones, SMS messages and on site centres–.

From a sociological perspective, undertaking a quantitative study allows the following aspects to be highlighted:

- The data indicates a low participation among young people between the ages of 16 and 24, as well as the elderly. However the participation of those citizens between the ages of 25 and 69 proved to be quite positive.
- Although Spanish citizens are in the majority, the consultation did include the participation of a significant number of EU and Latin-American citizens, which proves to be an excellent mechanism to facilitate the integration of the different communities living in the central district. Nonetheless, the close to zero participation of African and Asian citizens should also be mentioned, given that these groups are especially significant in some areas of the District.
- The link between the income level and access to new information and communication technologies (ICT) is reconfirmed; the discriminating point is situated at a level of monthly income of 1,200 euros.
- The socio-technological profile of the those surveyed corresponds to the possession of a mobile telephone and computer at home that is over two years old with connection to internet via a modern modem. The network is accessed daily from the home and the work location, with the objective of working or sending e-mails.
- The information channel provided by the City council with the greatest impact, has been that of informational pamphlets sent to citizens homes. On the other hand, neighbours Associations have also proven to offer excellent information channels.
- Those surveyed valued very positively the need for this kind of Citizen Consultation, although they were especially critical of the questions posed and the response options provided.



- The possible future coexistence of traditional and electronic voting systems proves to be an option which gathers more and more support on the part of those surveyed.
- The technology used in the Citizen Consultation was valued highly by citizens, especially in those aspects relating to the rapidity, simplicity and security during the voting process.
- The income level and age are the main determining elements of greater or lesser support for generalized electronic voting systems: those surveyed who were over the age of 45 preferred the traditional system, as well as those interviewed whose income level was below 1,200 euros per month.
- The participation in electoral processes does not prove to be an incentive for a greater predisposition towards the acceptance of ICT, and it does not confirm the supposed mobilizing effect either.
- Half of those surveyed decisively favour the use of electronic systems in any kind of electoral process, whatever being Citizen Consultations similar to *MadridParticipa* or binding elections. Only 15% of those surveyed indicated their reluctance to their use in binding elections.

From a social-legal perspective, the following aspects can be highlighted:

- The participation of foreigners and the under-aged –from the age of 16 onwards –deserves a positive appraisal because it contributes to the consolidation of participative habits in relation to the problems identified in the district.
- The election of the Central District proved to be a correct one because it gathers a series of urban, demographic and historical peculiarities that transforms it into an area which very much needs instruments that encourage social cohesion and communication between the Public Administration and citizens.
- Electronic Consultations like *MadridParticipa* contribute significantly to avoiding the deviation from the current representative democracy towards models with a high level of protagonism of political parties and where citizens are more clearly marginalized. These Citizen Consultations encourage a model of participative democracy which balances the dangers mentioned.
- Given the fact that these experiences are quite new, it is especially important to design a previous informational campaign that encourages participation and offers the necessary elements to take part in the Consultation. The City council sent a personalized letter to all citizens to this effect.
- The identification of the voter was undertaken by way of an alpha-numeric key that was provided once identification had been confirmed by way of traditional means or digital certificate. The solution proposed in order to guarantee the protection of personal data consisted in checking the identity of the citizen by way of an identifying number on a server, that being under the control of the City council, would then send another number associated to this citizen to a different server. It was this last number that would finally be linked to the alpha-numeric key needed to participate. On the other hand, the technological applications developed by Scytl, mainly known as *Pnyx*, are designed to guarantee the anonymity of each of the votes.
- The existence of an important digital divide, that is, the presence of citizens with scarce technological habits, was handled with the set up of on site centres strategically located (markets, Associations of neighbours, elderly centres) as well as multiple voting channels, including the popular ones, easily accessible but technologically questionable SMS messages.



- The ability to verify the process was not based, as in most traditional cases, on forms, but rather on the existence of an individual receipt for each vote with which the voter could consult the list of processed codes published at the end of each electoral day.
- The existence of an polling Chair, composed of citizens, institutional representatives and experts, constituted the most relevant measure to compensate the risk, always present in the instances of electronic voting, of an excessive protagonism of the technicians. This Chair kept the cryptographic key of the ballot box used for counting, even though on this occasion its competencies did not include the audit of the code used.

1. Introduction



Electronic democracy constitutes one of the clearest examples where the need to coordinate continuous technological advances with a simultaneous reflection of a social nature, that is, social and legal, becomes patent. It is known to this effect, that many technological innovations generally find serious difficulties in their implementation and social expansion, and on numerous occasions this situation is due to the desire to transform society without taking into consideration its internal mechanisms for modernization and evolution.

If such a thing occurs with the entire number of technological products, it can be easily understood that in the case of innovations directly linked to the political structure of society and the manifestation of the public will, the need to rely on serious and rigorous social studies will grow enormously.

The objective of this report consists precisely in filling this gap in relation with the general Citizen Consultation driven by the City Council of Madrid under the name *MadridParticipa*. The report consists basically of two main sections. The first of these outlines the results obtained with a quantitative study undertaken during the time of Consultation among the citizens that came to vote, both remotely and on site. The second section is centred, on the other hand, strictly around legal-political aspects, that is, on the guarantees that any test of these characteristics should have in order to comply with essential principles of any democratic process.

2. Acknowledgements



The authors wish to thank various people and institutions for their support in the elaboration of this report. Firstly, we would like to mention ScytI and Accenture, the main organizers of the survey together with the Madrid city council, who have given us all the help needed both to collect the necessary data as well as efficiently develop a way of observing that proved to be essential for the elaboration of the report.

The Madrid city council has made some demoscopic information available to us that reflects the technological structure of homes in the central district. It is very valuable information in terms of correctly interpreting the results of the quantitative analysis carried out during the days of the survey.

We should also make reference to the efforts made by Professor Franciscom Javier RUIZ MARTÍNEZ from the Carlos III University of Madrid, who efficiently coordinated the team of people that undertook the ground work in different locations in the central district. We wish to express our most sincere gratitude to this team who was made up of the following people: Rebeca CANTALAPIEDRA PUERTAS, Rubén FERNÁNDEZ SERRANO, Marta JIMÉNEZ MORAL, Pedro Alberto MADUEÑO MUÑOZ, Jorge REÑONES ZAZO and Miguel Ángel SANTACRUZ SEVILLA.

Lastly, we should also mention the efforts of our colleagues from the Observatory of electronic voting (Observatorio del Voto Electrónico (OVE)) in the University of Leon. As participants of this initiative we are fully aware of the need for a common framework for analysis and study that allows reports such as these to be developed in a systematic and coordinated manner.



3. General aspects of MadridParticipa

3.1. Precedents

MadridParticipa constitutes the most extensive experience developed until the moment in Spain in the area of public electronic Consultations. During the last few years various initiatives had been undertaken, but none had the combined objective of reaching such a large number of citizens and simultaneously activating four voting channels. In the respect, for example, the district of Hoyo de Pinares (Ávila) undertook a similar initiative, but its total population did not exceed that of 2.800 people and the Consultation itself consisted of only one question.

In addition, we should also mention that a series of electronic voting tests were undertaken in parallel to the Catalan elections (November 2003), Andalusia and general elections (March 2004). These, did however make reference to experiences that were not binding because in the case of *MadridParticipa*, we were not in an electoral situation but rather a public Consultation that aimed to decide on a series of issues that were of public interest.

In any case, *MadridParticipa* came about in September 2003 after some initial conversations with the Madrid City Council led to a series of key actors of significant importance in the development of an Information Society (ScytI, Accenture, Oracle, Telefonica, HP, Intel) joining their efforts in order to undertake a pioneering experience in electronic voting. Their objective was to initiate a journey, which provided it achieved the expectations created, could lead to the generalization of these sorts of surveys both for the Madrid City Council as for other districts. In end effect, it is about undertaking a “pilot” experience whose objective is to evaluate both the technical and social feasibility of these tools. It was intended that all parties involved learn to collaborate in similar experiences and also helped identify aspects that required improvement in order to help improve these on later occasions. According to the representing districts, all of this entails that the participation rate not be information of excessive relevance to evaluate the success or failure of *MadridParticipa* given the fact that the main priority is to initiate a journey whose solid and conclusive results will be provided by future tests.



3.2. The Central District

The Citizen Consultation undertaken was carried out in one of the districts in which the city of Madrid is divided. The central district is made up of another six areas –Palacio, Embajadores, Cortes, Justicia, Universidad and Sol–. An electoral census was used with a total of 136,227 people.

The election of this district was not accidental, a series of factors come together in this area that make an especially ideal place for undertaking an electronic Consultation such as *MadridParticipa*. Its urban characteristics, which are especially complicated due to the fact that is an old residential area, and its demographic structure, which is made up both of elderly people to a large degree as well as having a significant number of immigrants, are just some of the factors that decisively lead to the Central District finally being selected as the area in which to carry out the public Consultation.

In this sense, *MadridParticipa* provides diverse values, that, well-structured and channelled can revitalize social life within the district. Note, for example, that this Consultation combines elements such as the use of new technologies, encouraging citizen participation, awareness of topics which are specific to the District and the presence of associative networks. These are highly positive and necessary factors both for the regeneration of these districts as for their analysis and as a result the *MadridParticipa* experience proved to be a unique one.

It should also be noted that the City Council had recently created a so-called *Oficina del Centro* or central district office, that is, an administrative unit specifically designed to initiate a global policy aimed at revitalizing the District. Projects like *MadridParticipa* undoubtedly contribute to reinforcing the wide array of activities pertaining to the above mentioned office.

3.3. Voter census

Even though only EU citizens and Norwegians living in the Central District would be able to vote in elections, the City Council considered it appropriate to expand the demographic base given the fact that in contrast to other representative groups, *MadridParticipa* constitutes a public Consultation. As a result, it is not about electing other people that represent us, but rather to comment on those aspects of citizens that are of specific interest to the central District. Given the fact that there may be people present that are different to those outlined whose opinion may be interesting to gather, the roll was extended to those residents over the age of 16 and foreigners, that is to say not only European citizens and Norwegians.

Such a decision undoubtedly deserves a positive evaluation. In relation to those under age, it seems clear that at the age of 16, a person is sufficiently mature enough to indicate their opinion in relation to the local questions that are related to their district. These experiences allow democratic habits to be developed in this age group in such a way that when they reach the age of 18, their participation in elections seems to be normal and routine step.

On the other hand, to allow the participation of foreigners living in Spain also indicates a very positive step of undoubted importance. There is currently an increasing debate around whether to provide this sector of the

population with the right to vote in local elections. Given that these are local elections where local problems are debated and it does not jeopardize the overall sovereignty of the State, it seems logical to allow this segment of the population to vote. Otherwise, local policy could end up being based on a number of assumptions that are fictitious given that a significant part of the population is not able to express their opinion, especially in those districts with especially high numbers of foreigners.

It is for all of these reasons that the decision to undertake *MadridParticipa* is certainly a positive step towards integrating into urban life people, who in a district such as the one selected, constitute a considerable percentage of the population.

3.4. The questions

The questions that were posed to the citizens related to various topics of interest for the District:

1. *Which public infrastructures do you believe could be improved within the Central District?*

A. Education centres	B. Centres for the elderly
C. Artistic-cultural centres	D. Shopping Centres
E. Green areas	F. Libraries
G. Children's parks	H. Child care centres

I. I do not wish to give my opinion on this question/ No opinion
2. *What is, according to your judgement, the most important priority in order to improve the quality of life in the Central District?*

A. Improve traffic	B. Improve security
C. Improve cleanliness	D. Improve housing
E. Improve the availability of public infrastructure	F. Integration of the immigrant community

G. I do not wish to give my opinion on this question/ No opinion
3. *Which activities would most contribute to energizing and revitalizing the Central District?*

A. Street theatres	B. Thematic street markets
C. Travelling Expositions	D. Improving traditional commerce
E. Converting streets to pedestrian areas	

F. I do not wish to give my opinion on this question/ No opinion

It should also be noted in relation to these questions, according to the explications received, that their selections generated a certain level of debate among the organizing institutions and finally a series of questions were selected that were considered relevant to the District in which the survey would take place. The municipal representative Alejandro Arranz, who was at the time Managing Director of New Technologies in the Madrid City Council and Co-ordinator of the project *MadridParticipa*, classified the questions, for example, as "relevant, ...(with) a certain attractiveness" (see table 4.3 / graph 7).

4. Sociological analysis



One of the characteristics of the different electronic voting experiences undertaken in our country is the scarce number of socio-political studies. Up until now the main exceptions are centred in the university environment: on the one side the study elaborated by the team of Electoral Studies within the Autonomous University of Barcelona (UAB) regarding elections of the Vice-chancellor to the UAB carried out using remote voting and on the other hand the survey carried out by Demotek during the first round of votes for the Vice-chancellor elections to the Basque Country University (UPV).

In any case, the sociological study related to the Citizen Consultation *MadridParticipa*, aims to gather the opinions of citizens that took part in the Citizen Consultation and to collaborate in the elaboration of information that may constitute a reference for future studies. There are three main areas of interest:

- Awareness of citizen's opinion regarding citizen participation and the initiative developed by the Madrid City Council.
- Awareness of citizen's opinion regarding the technology used during the Citizen Consultation *MadridParticipa*.
- Awareness of citizen's opinion regarding the use of new information and communication technologies in the process of political participation.

In order to gather these opinions, a questionnaire was designed to be distributed among participants, using two channels: Internet and on-site surveys. In the first case, the citizen that took part in the Citizen Consultation was automatically invited after voting to fill in the questionnaire on-line. On the other hand, those citizens that cast their vote from any of the six special centres specially set up for this purpose were invited by the team of polltakers to respond to a questionnaire in the event of not having done so after completing their vote via Internet or due to the fact that they voted by using a mobile phone.

4.1. Quantitative Investigation methodology

The methodology used to undertake the quantitative study was based on the application of a survey (See appendix I) using two different channels. On the one side, citizens that participated via Internet could respond



once they had voted. The survey appeared automatically on the screen of their computer once the voting receipt had been delivered. On the other hand, those citizens that went to one of the six centres set up in the central district for voting could, in those instances where they had not answered the survey via Internet or voted by mobile phone, were able to answer the questionnaire thanks to the collaboration of the team of six pollsters.

The fieldwork was undertaken on the 29th and 30th of June, and responses were also received via internet once the process of remote voting was launched on the 28th of June at 9 p.m.

The global percentage of responses to the survey was 63.94% of the participants, a sufficiently significant value in order to consider the tendencies reflected as being representative of the citizens that took part in the Citizen Consultation. Nonetheless, it should be noted, that according to the registered participation rate (882 votes / 0.65% of the total electoral roll), in no case can the tendencies outlined in this report be extrapolated to all citizens living in the Central District.

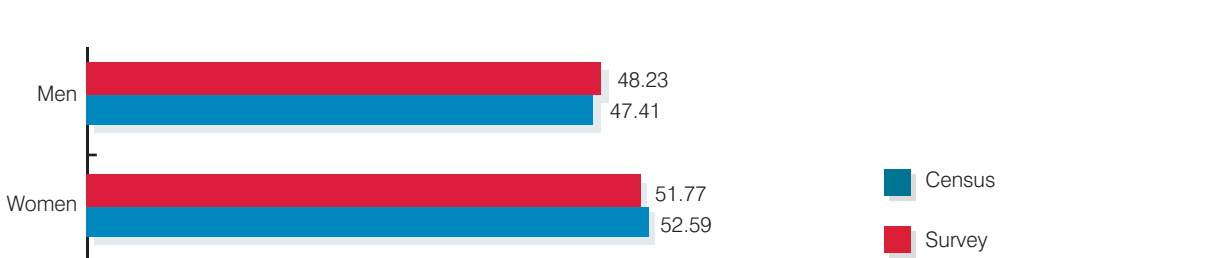
4.2. Sociological profile

Before proceeding to the analysis of the of those surveyed opinions, it is necessary to establish their sociological profile from two angles: on the one side the socioeconomic characteristics, including variables such as the education level, labour situation or their income level, among others. On the other side we also have what we call the socio-technological angle, where our attention is centred on variables such as owning a mobile phone, a computer in the home together with their habits regarding the use of the net.

4.2.a. Socioeconomic characteristics

With regard to the distribution of genders, the values obtained from the responses to the survey correspond quite accurately to the information regarding the 2003 electoral census, in which case the survey is also dominated by women (graph 1).

GRAPH 1. Distribution of those surveyed according to gender (values in %).



All the distribution by gender does appear to adjust to expected data, this is not the case in the distribution by age groups. The data in table 1 mainly shows how the youngest citizens (16 to 24 years) are underrepresented, constituting just over 4% of the total number of people polled.

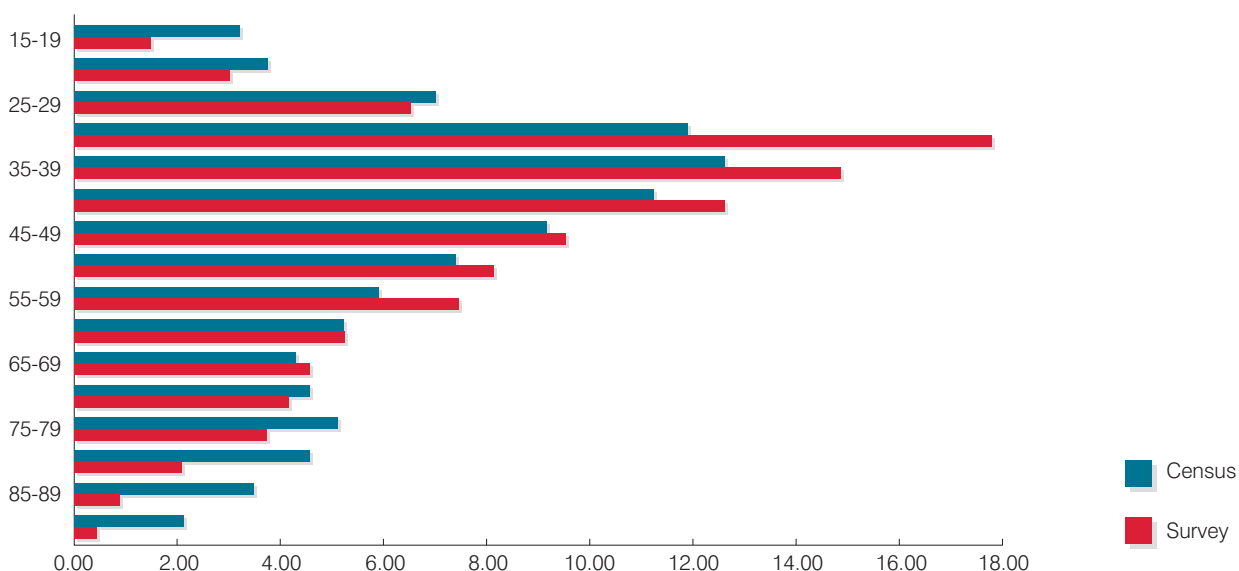


TABLE 1. Distribution of those surveyed according to age group.

Age Groups	%
16 to 24	4.3
25 to 34	23.9
35 to 44	27.1
45 to 54	17.4
55 to 64	12.4
Over 65	14.9

In this sense, the distribution by age groups presents slight deviations with respect to the information from the census in those segments of the population between the age of 30 and 69 (graph 2). The scarce presence of young people can be observed together with the scarce participation of citizens that are of legal age. The main differences can be found, in this regard, in those adults that are over 75. This assumes that those surveyed between 30 and 59 have a stronger weight than those that would have been expected according to the information from the census.

GRAPH 2. Distribution of those surveyed by age groups (values in %).



Another aspect that allows us to get closer to the sociological profile of those surveyed is the level of education. The information in table 2 indicates that nearly half (over 46%) of those surveyed have higher graduate studies. If we add to this their labour situation (table 3), we find that the scarce presence of the two following groups stand out in the sociological profile: housewives/husbands and students.

TABLE 2. Distribution of those surveyed according to education level.

Education	%
Illiterate	0.4
Without studies	4.3
Primary school studies incomplete	10.3
High School	15.2
Professional training levels 1 and 2	3.5
Baccalaureate	20.0
Graduates/Technical Engineers	11.2
Graduates/Honours	30.3
Doctorates/Postgraduates	4.8

TABLE 3. Distribution of those surveyed according to their labour situation.

Labour situation	%
Self-employed	13.0
Wage earner	50.9
Retired / Pensioner	17.1
Housewife/ husband	3.3
Student	3.7
Unemployed	11.9

These absences enable us to explain the similarity in the distribution of those surveyed with respect to their monthly income (table 4). This is a very sensitive indicator for measuring the digital divide from its social angle, establishing a proportionately inverse relationship between the income level and the access and knowledge of new information and communication technologies (ICT). Nonetheless, survey data presents a profile that is somewhat unclear where the population segment with a higher level of monthly income is over dimensioned.

TABLE 4. Distribution of those surveyed according to monthly income.

Monthly income	%
Less than 800 €	32.4
Between 800 and 1,200 €	23.0
Between 1,200 and 1,600 €	19.7
Over 1,600 €	24.8

By crossing the information regarding income with that of the labour situation of those surveyed, table 5 shows that higher volumes of monthly income are owned by self-employed workers and the wage earners that represent a higher volume of monthly income. In addition, it has been found that nearly 85% of pension-



ers and people that are retired do not earn more than 1,200 € monthly. In any case, this distribution of data should be taken as an indicative value, given the absence of general economic data with which the information in the survey should be compared.

TABLE 5. Distribution of those surveyed according to their labour situation and monthly income (in %).

	Less than 800 €	Between 800 and 1,200 €	Between 1,200 and 1,600 €	Over 1,600 €
Self-employed	18.8	21.9	21.9	37.5
Wage-earner	13.7	24.6	27.3	34.4
Retired / Pensioner	57.0	27.9	9.3	5.8

With respect to the marital status of those surveyed we find that the majority are single (46% table 6) and only one third are married. Until now we have seen that the general profile of those surveyed is that of a person who is between the age of 25 and 44, has higher graduate studies and is a wage-earner with a medium to high monthly income. We should add to this the fact that most are single and live with one other person at the same home (tables 6 and 7).

TABLE 6. Distribution of those surveyed according to their marital status.

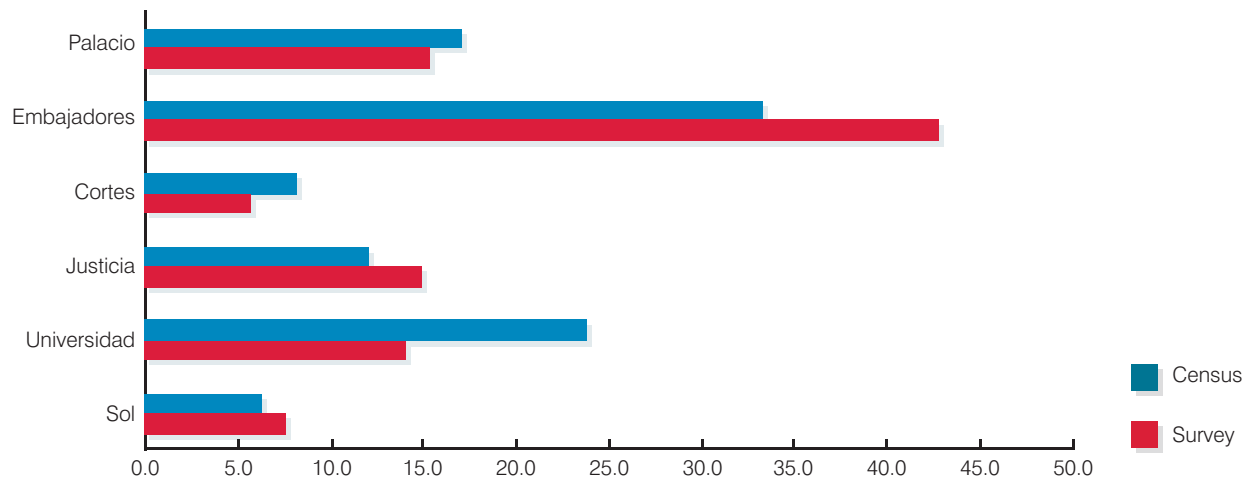
Marital status	%
Single	46.1
Married	33.0
Widow	5.9
Separated	2.2
Divorced	4.8
Unmarried couple	8.0

TABLE 7. Distribution of those surveyed according to the number of people that live in the same home.

Number of people	%
Lives alone	24.3
With one person	32.8
With two people	20.2
With three people	13.9
More than three	8.7

On the other hand the distribution of those surveyed according to their area of residence within the Central District highlights some differences in relation to the data from the census (graph 3). In this sense we can see that there are two groups with an uneven participatory behaviour: the areas of Justicia and Embajadores show a proportionately higher level of participation than would be expected on the basis of the information on the census. On the other hand, the areas of Cortes, Palacio and especially the area of the University are found to be below the reference values.

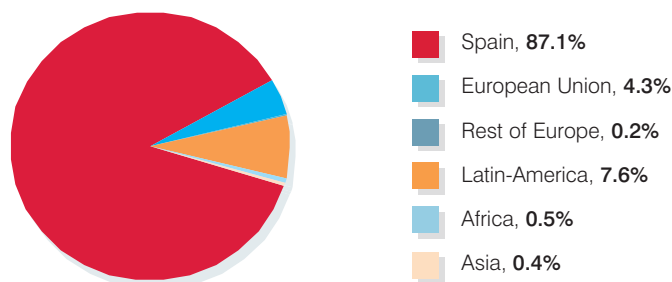
GRAPH 3. Distribution of those surveyed according to their residential area (values in %).



With regard to the voting channel used, nearly 90% of those surveyed used a remote voting system via the Internet, from their homes or other locations or for one of the on-site centres set up for this purpose. In this sense, the percentage of those surveyed that used the on-site centres exceeded by nearly eight points the registered values in the overall vote (61.5% with regards to 53.3% of the total votes). The rest of those surveyed voted by mobile phone, especially by sending short text messages (SMS). Nonetheless, certain different behaviours can be appreciated if one takes into consideration the area where those surveyed live, where Justicia and Embajadores presented the highest levels of participation in the on-site centres (64.6 and 70.1% respectively). On the other hand, the areas of Cortes and Universidad were the ones where remote voting via Internet from home or other locations was most used.

On the other hand, one of the most relevant elements in the design of the Citizen Consultation *MadridParticipa* was the inclusion of non-Spanish citizens to the participative process. According to the social characteristics of the Central District, a true example of multiethnic co-existence, those responsible for the Citizen Consultation allowed all of the citizens living in the District to participate in the Consultation. In order to do this, the only requirement was that the resident be registered as a resident in the District. This enabled groups that have no political voice in our country to participate actively and, most importantly, initiate a process to open up channels to facilitate their social and political integration.

GRAPH 4. Distribution of those surveyed according to their nationality.





The result of this political decision should be considered quite positively given the fact that although a logical majority of those surveyed were Spanish, responses were obtained from citizens that were from another 28 different nationalities. In this respect, the participation of citizens from different Latin-American countries is particularly relevant (7.6%) as well as those from countries which are members of the European Union (4.3%).

4.2.b. Sociotechnological characteristics

Another aspect which is of considerable interest is to define the technological profile and usage of ICT amongst those surveyed and in this respect there is a need to underline the relation between economic level and access to ICT. The table below illustrates the impact that the above-mentioned economic variable has, and we can deduce a directly proportionate relation between economic resources and having a computer at home.

TABLE 8. Level of monthly income and ownership of a computer at home (in %).

	With PC	No PC
Less than 800 €	52.6	47.4
Between 800 and 1,200 €	57.1	42.9
Between 1,200 and 1,600 €	78.9	21.1
Over 1,600 €	92.5	7.5

If we place the information into two categories, combining those that are above 1,200 € monthly into one, the differences in computer ownership at home are even more evident: 54,8% with regard to 85,7% respectively. Nonetheless, and as can be seen in table 9, the combined values related to mobile telephone ownership and computers at home are values that are above the Spanish average¹. As a result eight of ten people surveyed had a mobile phone, even though in the higher age groups (54 to 65 and over 65) this percentage is lower (75% and 52% respectively).

This difference is appreciated more clearly in relation of having a computer at home. Even though the general values are situated nearly at seven of each of those surveyed, the qualitative jump takes place in the group of those over 65, where only 17% of those surveyed have a computer at home. For this group, there is also a correlation between the number of people living in the home and the ownership of a personal computer.

¹ Data from the National Institute of Statistics (INE) indicates that 43.3% of homes have some type of computer, a value that increases to 51.5% in Madrid region (INE, 2004: 334). On the other hand, TNS-Demoscopia estimates this percentage to be 61.5% for the whole of the city of Madrid (TNS-Demoscopia, 2003: 39).

TABLE 9. Technical Profile of those surveyed (in %).

¿Do you have...					
...mobile phone?			...Personal Computer at home?		
Yes	No		Yes	No	
82.9	17.1		68.7	31.3	
How old is your computer?			Do you have a connection to Internet?		
Less than 1 year	Between 1 and 2 years	More than 2 years	Yes	No	
18.0	27.4	54.6	82.1	17.9	
What kind of connection do you use?					
	Modem	DSL	Cable	Another	
	50.2	46.5	1.7	1.6	
Where do you connect?		How often?		Main use of the computer	
Home	52.3	Everyday	74.4	Work	57.3
Work	38.8	Weekly	18.1	Leisure/Games	9.0
University	0.5	Monthly	2.3	e-mail	31.6
Cybercafé	2.9	Hardly ever	5.2	e-shopping	1.0
Civic Centre	3.4			Chats	1.0
Other places	2.1				

On the other hand, in those situations where the person surveyed owns a personal computer at home, the computer is in the majority of cases over two years old, and 82% also have a connection to Internet. Access to the network is made almost exclusively over modem using the basic Telephone Line (BTL) or a broad band line (DSL). About this question, network access, we come across the divide mentioned previously with regard to computer ownership and income level yet again (table 10). On the one hand, from the total number of those surveyed with access to Internet at their home, those with an income over 1,200 € monthly nearly double those surveyed that are below this level. In addition, the data also confirms that the ability to finance a broad-band connection is easily affordable amongst those segments with higher monthly incomes, even though the percentage of those that use a BTL among this is still significant.

TABLE 10. Internet access according to monthly income (in %).

	Connection to the Internet at home	Type of connection		
		Modem	DSL	Others
Less than 800 €	21.0	58.9	41.1	–
Between 800 and 1,200 €	18.4	50.0	40.0	10.0
Between 1,200 and 1,600 €	24.0	41.5	53.9	4.6
More than 1,600 €	36.5	49.0	49.0	2.0



With regard to Internet access habits, the majority of those surveyed (52.3%) stated that they connected to Internet both from the home as well as from their workplace (38.8%). Nonetheless, clear differences can be established in relation to the capacity to access the network from their own homes.

TABLE 11. Point of access to the network according to the connection possibilities from home (in %).

	Home	Work	University	Cybercafé	Civic Centre	Other locations
Yes	65.1	32.9	0.7	0.3	0.3	0.7
No	–	64.7	–	11.8	13.7	9.8

Table 11 points to the workplace as the main point of access to the Internet in those cases where no access is available from the home. It is in these cases that the person surveyed also turns to Civil Centres or PIAC (Public Internet Access Centre) as well as cybercafés, even though in most cases they take advantage of the facilities available at work. In any case it should be pointed out that nearly a third of those surveyed, although having access Internet at home, stated that they also connected to Internet from their workplace². One possible explanation for this is that which links access to Internet with the high cost of a service in our country where universal access to the network is by no means guaranteed. In addition to this there is also the question of the frequency of access to the web, where nearly three quarters of those surveyed indicated that they access on a daily basis.

In this sense, the values in table 12 are also significant because they reinforce the relationship between access to the web and the workplace. They also illustrate the values that refer to access to the web from cybercafés or civic centres. In the case of those cybercafés their usage is normally on a weekly basis, while civic centres present higher values in terms of daily connections, even though the frequency of use in civic centres is higher in what refers to daily connections, it maintains its characteristic of being a weekly access point.

TABLE 12. Frequency of access to the net according to point of connection (in %).

	Daily	Weekly	Monthly	Hardly ever
Home	73.0	19.5	3.0	4.5
Work	89.9	7.4	–	2.7
University	50.0	50.0	–	–
Cybercafé	10.0	70.0	10.0	10.0
Civic Centre	30.8	53.8	–	15.4
Other Locations	12.5	50.0	25.0	12.5

Finally, the use of the computer on behalf of those surveyed (see table 8 above) is basically double: in the large majority of cases for work related issues (57.3%) as well as for sending and receiving e-mails (31.6%).

² This data is coherent with those corresponding to EGM of thhe AIMC, according to which 61.9% of users connect to Internet from the home, 32.2% from work, 18.9 from University or Study Centre and the remaining 13.9% from other places (AIMC, 2004).

The only marginal use of the computer for e-shopping as well as for chats, should also be highlighted, their being barely mentioned amongst those surveyed. By segmenting the use of the computer according to monthly income level a certain tendency can be identified according to which a higher income level is usually associated with greater use of the computer for work related issues (table 13).

TABLE 13. Computer use according to the level of monthly income (in %).

	Work	Leisure/Games	e-Mail	Others
Less than 800 €	43.0	11.4	44.3	1.3
Between 800 and 1,200 €	53.5	8.5	33.8	4.2
Between 1,200 and 1,600 €	52.4	14.3	29.8	3.6
More than 1,600 €	76.4	6.4	17.3	–

In this case those surveyed earning less than 800 € monthly use the computer in much the same for work related questions as for sending e-mails, while in the case of those with greater income the e-mail is only used in 17% of the cases.

THE KEY

The typical profile of the person surveyed corresponds to a women, of Spanish nationality between the age of 30 and 45. She's single and lives in the area of Embajadores, and lives with another person. She had completed university studies, is a wage earners with a monthly income between 800 and 1,200 €. She has a mobile telephone and a computer at home. The computer is over two years old and she connects to Internet via modem using a Basic telephone connection. Her connection points, on a daily basis are either from the workplace or from home using the computer for activities related to work or for e-mail.

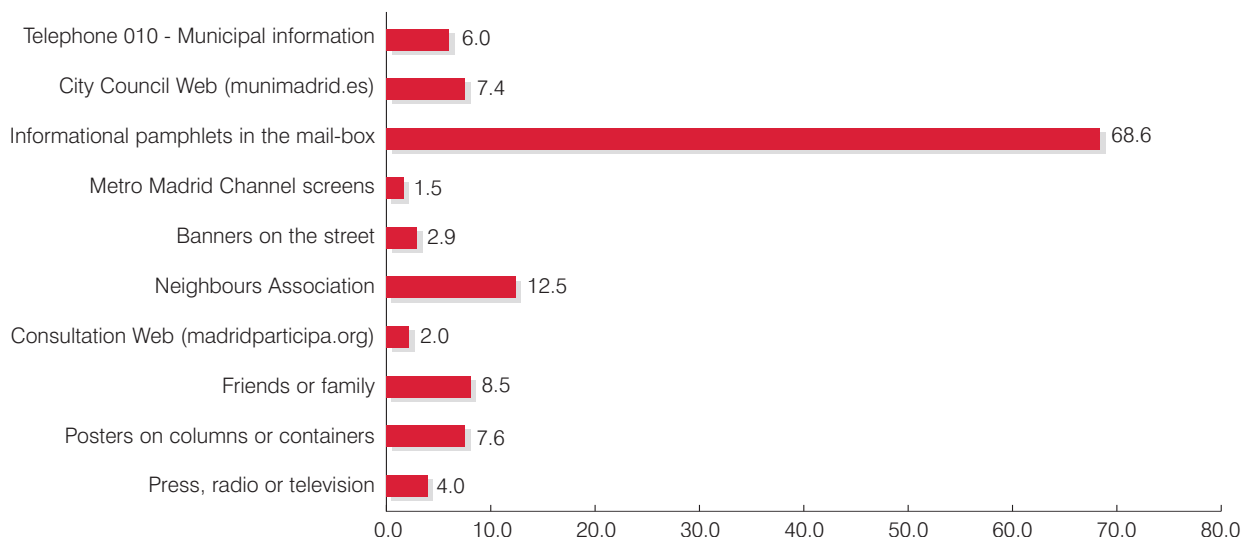
4.3. Institutional evaluation of the Citizen Consultation

Once the main sociological characteristics of those surveyed have been determined, our interest centres around the evaluation of those surveyed with regard to the more *institutional* questions related to the Citizen Consultation *MadridParticipa*. In this respect a series of opinions which relate to organizational elements of the Citizen Consultation (information, on site centres...) and the initiative of the Madrid City Council are evaluated.

One of the fundamental requirements to take part in any event is, obviously, the need to be aware of its existence. In this sense, the Citizen Consultation *MadridParticipa* undertook a serious of informational activities whose impact was quite varied as we can see from graph 5. The main channel through potential participants obtained information regarding the Consultation was a personalized letter together with a brochure (i.e. informational pamphlet) that was placed in their mail-box. The informational channel related to Neighbour Associations appears as an additional channel, and in which the association "La Corrala" should be highlighted.



GRAPH 5. Information channels regarding the Citizen Consultation “MadridParticipa” (values in %)³.



From data contained in graph 5 it follows that the rest of the channels foreseen by the organizing committee had a low level of impact, as was observed during the fieldwork. The analysis by way of gender and age group (table 4) provides us with some additional information. In this sense we should also highlight that amongst the youngest age group (16 to 24) neither the banners or the Consultation website are mentioned in their responses. On the other hand, a more significant presence of Neighbours associations appears amongst the older groups (over 45), being those over 65 that, in percentage, have mostly been informed via this channel.

TABLE 14. Information channels regarding gender and age groups (in %).

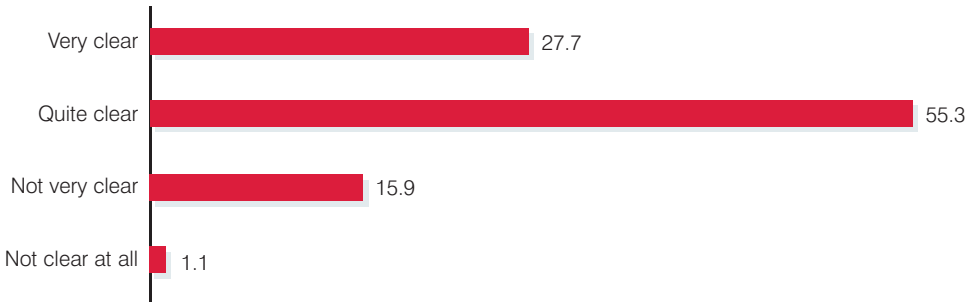
	Gender		Age groups					
	Male	Female	16-24	24-34	35-44	45-54	55-64	> 65
Telephone 010	7.1	4.9	8.3	10.7	7.3	5.3	–	1.2
City Council Web	4.9	9.9	8.3	6.9	12.0	6.3	5.7	2.5
Mail brochures	65.9	71.1	70.8	74.0	70.0	68.4	72.9	53.1
Canal Metro	1.5	1.4	12.5	3.1	–	–	–	1.2
Banners	3.4	2.5	–	6.1	2.7	2.1	2.9	–
Neighbours association	13.5	11.6	8.3	6.9	5.3	17.9	12.9	29.6
Web Query	2.2	1.8	–	5.3	–	2.1	–	2.5
Friends/relatives	10.5	6.7	12.5	5.3	10.0	6.3	10.0	11.1
Posters	7.1	8.1	16.7	8.4	10.0	5.3	4.3	4.9
Press, radio, TV	3.0	4.9	4.2	3.8	5.3	1.1	2.9	6.2

³ Values in graph 5 and table 14 do not add up to 100% given that they are based on a multiple choice question.

On the other hand, in the areas of Embajadors and Universidad the informational activities carried out by Neighbours Associations proved to be more relevant, in percentage terms, than in the rest of the areas. Nonetheless, in all areas the main information channel proved to be the letter and the pamphlet sent by the Madrid City Council.

Apart from the attention paid to the impact of the information channels used, it is also interesting to observe the appraisal offered by those surveyed regarding the information that these channels transmitted. In general terms the appraisal offered is certainly satisfactory: over 80% consider that the information received was Very clear or quite clear.

GRAPH 6. Evaluation of the information received (values in %).



The positive appraisal is maintained when dividing the information according to gender or age groups of those surveyed (table 15). As it was to be expected, only a slight increase of criticism can be noted among the older segments in consonance with the fact that they are less familiar with ICT.

TABLE 15. Evaluation of information received according to gender and age group (in %).

	Gender		Age groups					
	Male	Female	16-24	24-34	35-44	45-54	55-64	> 65
Very clear	30.2	25.3	20.8	34.4	22.1	26.3	29.4	29.1
Quite clear	53.6	56.9	66.7	55.0	58.4	51.6	58.8	48.1
Not very clear	15.5	16.4	12.5	9.9	18.8	22.1	11.8	17.7
Not clear at all	0.8	1.4	–	0.8	0.7	–	–	5.1

From the mentioned information, citizens should have been able to obtain a credential to be able to take part in the survey. These credentials could be obtained through two channels: via Internet, using a digital certificate recognized by the Madrid City Council (that which corresponds to the one emitted by the “Fabrica Nacional de Moneda y Timbre” or official currency producer) or by identifying themselves on site in one of the six survey centres set up in the Central District. Nearly 90% of those surveyed opted to obtain their credentials in one of the centres, the process of which was appraised very positively (table 16).


TABLE 16. Location where the credential and evaluation of the process is obtained (in %).

Where did you get your credentials?	
Internet	On site Centre
11.3	88.7

It was...	
Very easy	55.9
Easy	39.5
Difficult	3.7
Very difficult	0.9

Although small differences do exist according to the gender of those interviewed, data in table 18 does point to a tendency with regard to the use of ICT: those between the ages of 16 and 44 surveyed used Internet more in proportion to obtain their credentials. On the other hand, in the remaining age groups a gradual decrease in the number of those surveyed that decided to obtain their credentials via Internet can be observed.

TABLE 17. Location where credential according to gender and age group was obtained (in %).

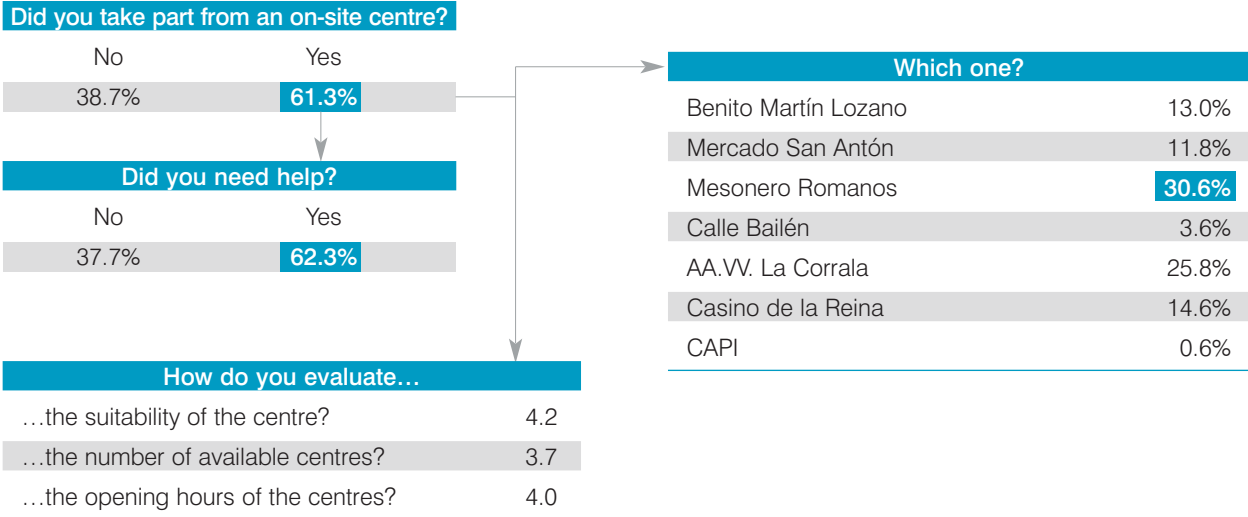
	Gender		Age groups					
	Male	Female	16-24	24-34	35-44	45-54	55-64	> 65
Internet	16.3	6.5	12.5	19.1	14.9	6.5	4.5	2.5
On site Centre	83.7	93.5	87.5	80.9	85.1	93.5	95.5	97.5

Differences can also be observed with regard to the residential areas of those surveyed, the area of Cortes being the one where the largest percentage of credentials were processed via Internet. On the other hand, the areas of Justicia and Embajadores registered a larger proportion that obtained their credentials via the on site centres.

Once credentials had been obtained, the voting process could be undertaken from the home or any other location with access to Internet or one of the centres set up for this purpose as well as the public service centres (CAPI) of the Madrid City Council.

Six out of ten people surveyed took advantage of this option, mainly using the Mesonero Romanos centre, located in the very central Plaza Mayor, or the centre provided by the La Corrala Neighbours Association (table 18). Although the aggregate data indicates that nearly two thirds of those surveyed needed assistance during the voting process, the highest percentages in this respect were located in the Mesonero Romanos centre and the La Corrala Neighbours Association.

TABLE 18. Use and evaluation of the on site Centres.

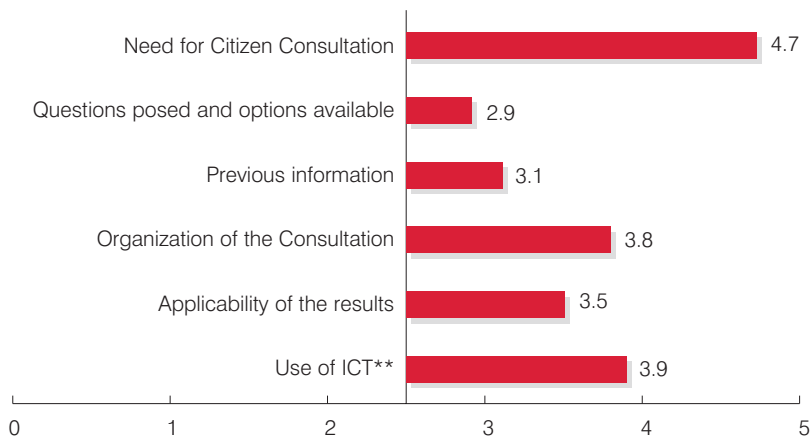


On the other hand those who participated in the Consultation and voted at one of the six centres were requested to appraise certain aspects on an scale from 0 to 5, where 0 indicates “very badly” and 5 indicates “very well”.

In this regard, those surveyed valued quite positively the appropriateness of the general set up at the different centres. Of these, those most positively evaluated were the Casino de la Reina and Mesonero Romanos, with 4.4 and 4.3 points respectively. On the contrary, the centre which met with the least approval with regards to its set up was the San Antón Market, with 3.6 points. One of the main reasons for this may be the low number of citizens that went to the centre, a reason which also led to its being selected with the objective of increasing activity in the area.

With regard to the number of centres available, fewer points were awarded by those surveyed. The location of the centres may be the reason for this. Finally the opening hours of the centres were quite positively evaluated in general terms, very much in line with the general appraisal.

Nonetheless, the most interesting part of this section regarding institutional evaluation refers to the appraisals provided by those surveyed regarding the different points directly related to institutional aspects of the citizen consultation. In much the same way as in the previous question, those surveyed were asked to appraise different institutional aspects related to the need for this type of citizen consultations, the questions and answers provided or the applicability of the results obtained amongst others.

**GRAPH 7. Institutional evaluation of the citizen consultation initiative.**

In general terms, the initiative of the Madrid City Council to promote a Citizen Consultation among residents in the Central District of the capital obtained positive appraisals. In all the aspects valued, the points awarded exceed what we may consider the minimum required for citizen approval which is 2.5 points (graph 7). Nonetheless, it should be noted that the last of the factors appraised –(**) the use of new technologies instead of traditional ones–was only appraised by 35% of those surveyed. This forces us to take this value as something which is merely a guide given that it lacks the numeric consistency of the rest of the aspects evaluated.

Nonetheless, we should highlight that those surveyed do coincide in the special emphasis that they place on the need to carry out this sort of citizen consultations, obtaining on this point a close to maximum value (4.7 points). Similarly, the organization of the survey was also valued quite positively (3.8 points), as we have previously ascertained when referring to appraisal of the on site centres, together with the future applicability of the survey results (3.7 and 3.5 points respectively). In this aspect we should recall the repeated manifestation of members of the Madrid City Council with regard to classifying the results as politically binding, but not legally.

On the other hand, the worst evaluations refer to the information given prior to the survey together with the questions posed and the answers given. The lower points given with regard to the information provided beforehand should be interpreted as a critique of the scarce means used to distribute information during the campaign initiated by the Madrid City Council. As mentioned previously, of the different channels used only the letter and informational pamphlet sent to the homes of residents in the Central District achieved a much greater informational impact. Notwithstanding this, it was not a problem to value such information received as clear or very clear.

The least points awarded during the appraisal were to those questions and answers included in the Consultation, instance in which those surveyed not only provided a quite critical score but also took the opportunity to express their opinion. In this respect, nearly a third of those surveyed took advantage of the only open question in the survey to outline their criticisms on this point. The comments can be summarized in two large groups: on the one side criticism over the number and type of questions posed and, on the other, criticism regarding the answers.

In the first group of comments, those surveyed show their disagreement with the number of questions posed, scarce in their opinion, as well as the fact that those questions posed do not correspond to the true problems of the Central District⁴. With regard to the second group, several of those surveyed point out their interest in different responses to those provided during the Consultation, together with the need to address problems with more than one solution⁵.

Finally those surveyed expressed their opinion regarding the use of ICT instead of traditional means. As we will see later on, this is one of the main elements to take into account for the future development and implementation of an electronic voting system. The value reflected in graph 7 differs from the rest with regard to the response base from which it has been obtained. If in previous aspects the percentage of responses obtained from those surveyed was around 85%, in this area the number of responses obtained was of only 35% reason for which it should only be considered a guide as indicated previously. Nonetheless, the points obtained (close to 4) reflect the existence of a clear opinion which looks favourably to the use of ICT even though its intensity cannot be compared to that expressed with regard to the need to carry out these sort of Consultations. As we shall see later on, those surveyed look positively to the use of ICT in decision making processes, although they do significantly underline that this predisposition is centred mainly around processes including Citizen Consultation. This strengthens the generalized opinion in the literature regarding the necessary coexistence of traditional voting systems with those systems based on ICT, especially when it comes to binding electoral processes.

4.4. Evaluation of the technology used in the Citizen Consultation

As indicated previously, the second of the main areas of interest in the report are those which constitute the opinions of citizens with respect to the technology used during the Citizen Consultation *MadridParticipa*.

With regard to this topic certain things should first be noted. Due to the design of the survey and the fact that the main voting channel was voting via the Internet, the results surrounding the appraisal of technology only make reference to remote voting. On the other hand, as with previous questions regarding the appraisal of

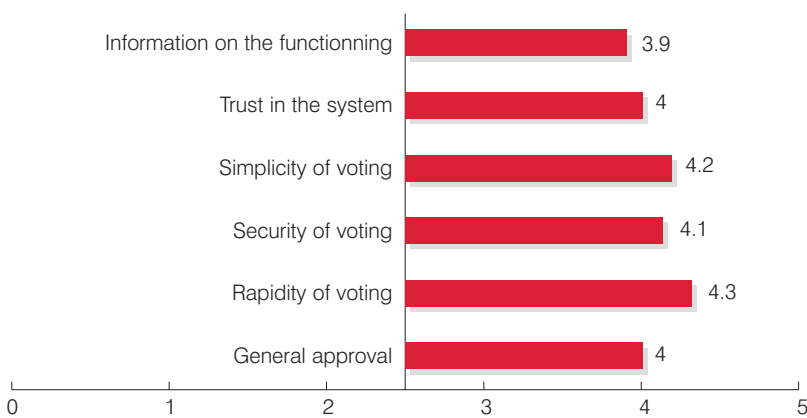
⁴ Examples of some of these comments are those expressed by person surveyed number 274 surveyed, "I think that it [the Consultation] is insufficient because it should have posed questions around many other questions of considerable in relation to the district, such as parking, tunnels, pavements in bad condition and noises"; or number 361: "there are other types of problems in the central areas that are not reflected in this Consultation such as noise: too many terraces, too many restaurants with their respective chimneys, smells, that turn our homes into real ovens" or person number 592: "I congratulate the Council on this initiative that encourages democratic participation. However, it could clearly be improved. Not only close-ended questions should be posed. It would be good if one could write down other responses or place the topics proposed in order of priority".

⁵ In this respect, person number survey outlines that "it should be possible to choose various options, if in a certain order, given that it is difficult to decide whether it is the traffic, security or cleanliness that is the most important priority, or whether it is the educational services, green areas or children's parks, etc that should first be improved, or all of these"; number 252: "I believe that the questions were too closed and with only one option they did not meet my expectations", or person number 556 surveyed: "There are questions in which more than one answer should be offered, given that they are not mutually exclusive".



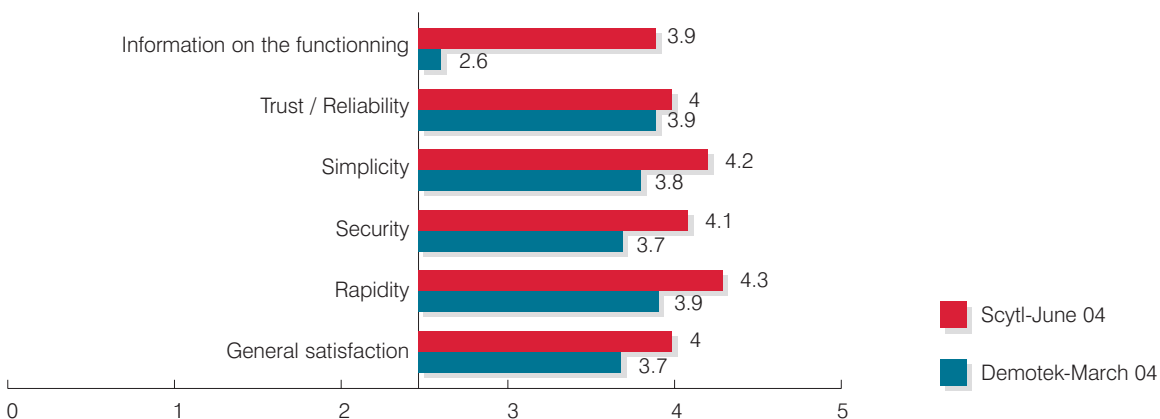
the on site centres and the institutional initiative of the Madrid City Council, those surveyed were requested to appraise different aspects related to the voting system used, for which the firms ScytI World Online Security and Accenture were responsible for. The percentage of responses to this question was of 94% among those surveyed whereby all of the aspects posed were evaluated.

GRAPH 8. Evaluation of the electronic voting technology.



In general terms, the enormous acceptance of the system in all of its aspects should be noted: information, trust, simplicity, security and rapidity. With an average score in terms of general satisfaction of 4 points over a total of 5, those scores given in terms of rapidity and simplicity (4.3 and 4.2 points respectively) clearly stand out. These scores, undoubtedly very positive, are strengthened by the homogeneity of these with regard to gender, age, residential area or income level. There seems to appear, therefore, no discriminating factor in the excellent perception on behalf of those surveyed of the technological system used to vote.

GRAPH 9. Comparative evaluation of the electronic voting technologies used.

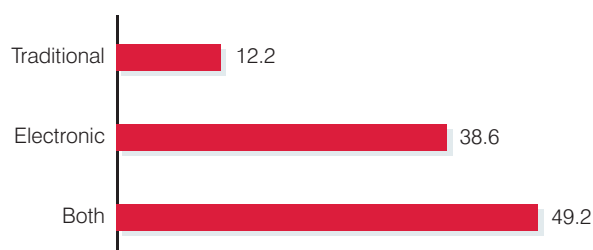


As has occurred with other surveys and/or pilot tests, the rapidity in voting and the management of the votes is one of the advantages most highly valued by those citizens with regard to electronic voting systems. Data provided in graph 9 supports this affirmation, being rapidity, simplicity and the reliability or trust that these systems inspire their strongest points⁶.

4.5. Evaluation of the use of ICT in participative processes

Finally, the third main area of analysis is the evaluation on behalf of citizens regarding the future use of ICT in processes related to political participation. In the first instance, those surveyed were requested to express their preference without taking into consideration the area in which the participation would take place. As indicated in graph number 10, those surveyed showed themselves to be clearly in favour of the co-existence of traditional and electronic voting systems.

GRAPH 10. Voting system preferred by those surveyed (values in %).

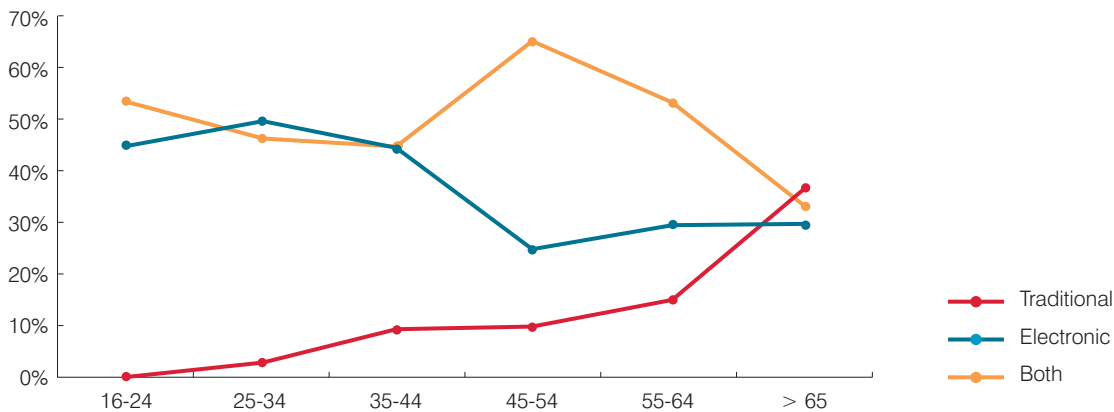


Nearly half of those surveyed opted for both systems, although nearly four out of ten preferred only an electronic voting system. Nonetheless, and as will be confirmed later on, this opinion with regard to how complementary voting systems are, differs according to the participative area which it refers to. In any case, when considering the responses according to age groups we see again the existence of a changing tendency from the age of 45 onwards (graph 11). While the youngest people surveyed showed themselves to be quite unwilling to maintain traditional voting systems, older citizens clearly preferred the use of these systems.

⁶ Data in graph 9 relative to Demotek corresponds to a survey undertaken during the first round of votes, the 24th of March 2004, for the election for the Vice Chancellor of the University of the Basque Country. A total of 1.523 voters were surveyed and the information used to elaborate a graphic comparison have been pondered on a scale from 0 to 5.

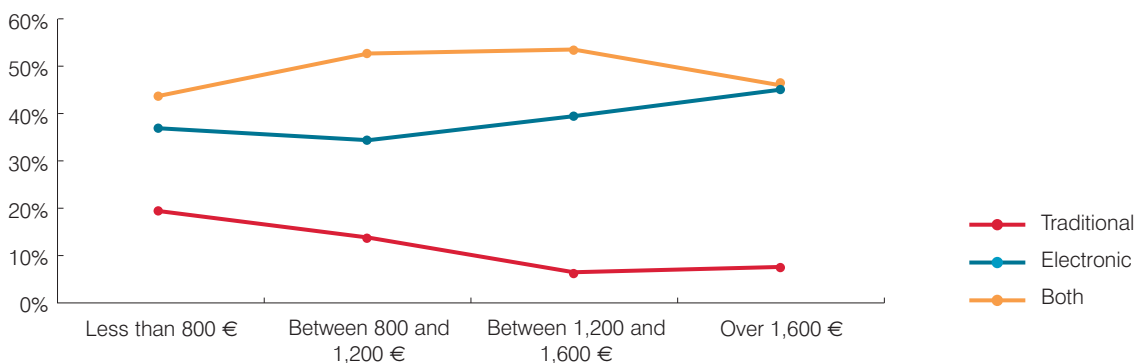


GRAPH 11. Voting systems preferred by those surveyed according to age groups.



On the other hand the distribution of preferences on behalf of those interviewed according to their level of income strengthens the previous arguments with regard to the existence and characteristics of the digital and social divide: as the purchasing power increases the predilection for traditional voting systems is reduced (graph 12). That is, that of those surveyed, those whose monthly income exceeded 1,200 € mostly showed a preference for electronic voting systems. Nonetheless, in all cases one can observe that the option which entails the coexistence of both types of voting systems clearly prevails.

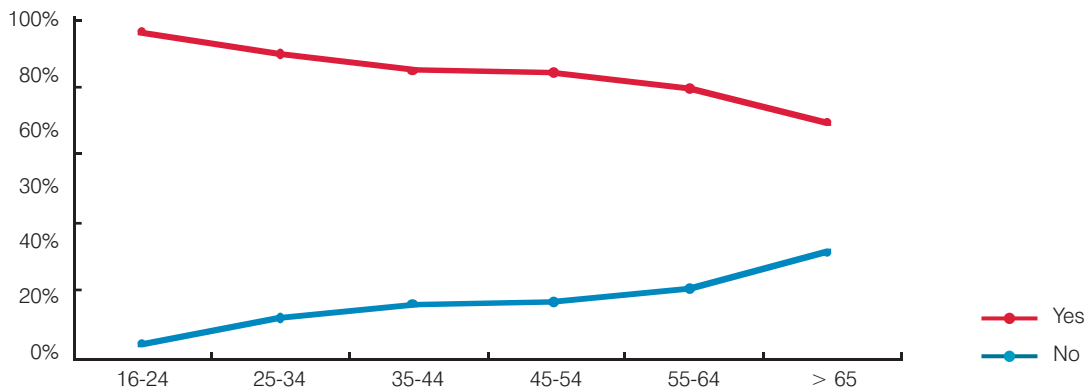
GRAPH 12. Voting system preferred by those surveyed according to income level.



This information is complimented by the clear determination of those surveyed with regard to their opinion on the generalization of the use of ICT in participative processes. In general terms, 83.3% of those surveyed offer a positive opinion in this respect, although a slow decreasing tendency can be observed according to the age group (graph 13). As was the case with regard to the preferred type of system, it is from the age of 45 onwards that the main point of change can be detected, while the younger groups appear as clear defendants of the ICT.

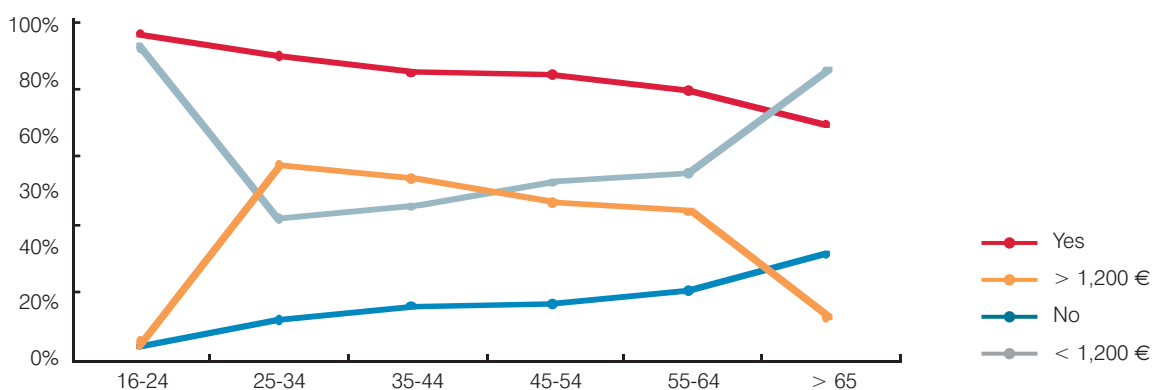


GRAPH 13. Predisposition towards a generalized use of ICT according to age groups.



We therefore find proof that supports our previous declarations with respect to the sociological characteristics of the digital and social divide. The existence of the mentioned tendency appears to be accentuated beyond the age of 65, age which in Spain corresponds to the time when labour activity ceases. In addition, the interpretation of this data should take into consideration that the survey was only applied to those citizens that took part in the Citizen Consultation, and as such it appears that the acceptance values would be considerably reduced if the opinions of those citizens that did not participate in the Consultation were incorporated. We can, therefore, verify once again the presence of a pro-technological bias, induced by the will of the citizens that took part in the Consultation. In this sense we should not forget that prior to their effective participation, citizens needed to obtain their individual credentials in order to be able to vote so this double mobilization can be interpreted as a previously positive predisposition towards the whole experience.

GRAPH 14. Predisposition towards the use of ICT and level of income according to age groups.

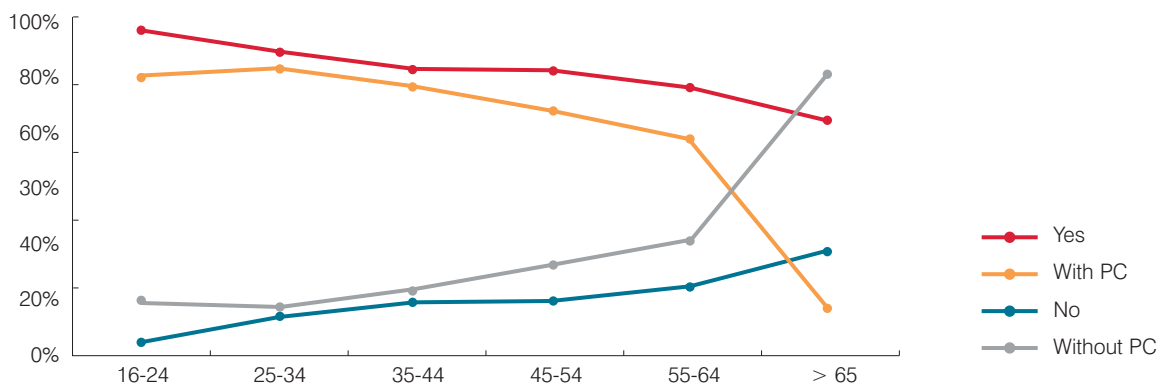


Despite the importance of the so-called effect, the sociological data that we have at our disposal allows us to evaluate the impact of the digital and social divide from its economic angle. Graph 14, therefore, shows the



relations that can be established between the predisposition to accept the generalized use of ICT and the economic level of the different age groups. As previously indicated, the *cut off point* or borderline from which the digital and social divide can be observed is placed at 1,200 € per month. If we exclude the youngest group (16 to 24), in its large majority students and where this economic variable therefore lacks effectiveness, the fact is that the respective curves follow very similar paths. Although average differences do exist around the thirty percentage points between both variables, the fact is that it confirms the tendency of a reduction in support for a generalization of the use of ICT when the age increases and the percentage of citizens that are below 1,200 € monthly.

GRAPH 15. Predisposition towards the use of ICT and technological level according to age groups.



We should add to this one other possible explanation which makes reference to the degree of familiarity of citizens with the technology base used. From data related to the ownership of personal computers (PC) at home of those surveyed, data shows a much more evident correlation between this indicator and the predisposition to a generalized use of ICT (graph 15). In effect, except in the segment of those over 65 we can observe an almost exactly similar evolution between the personal computer in the home and what may be denominated as *pro-technological attitude*. Nonetheless an exception does exist with regard to the above mentioned tendency: the existing disparity within the group of those surveyed over 65 that present low numbers of computer ownership, but on the contrary, show a relatively high acceptance of the use of ICT.

In this sense we should recall the above-mentioned role that the Neighbours Associations played by decisively supporting the realization of the Citizen Consultation. As a result of their active participation brought about the fact that the voting in these centres took on a *liturgical* character, of social interaction, facilitating the participation of these groups. In addition, if we take into account the average age of those citizens associated is on the higher third of the scale (from 50 or 55 years onwards), the positive bias that has been identified is much more understandable .

As a summary of this approximation, table 19 shows us the distribution of the total of those surveyed regarding both questions. In addition to manifesting the decisive support of those surveyed in favour of more generalized use of ICT, the argument regarding the complementarities of the systems is strengthened.

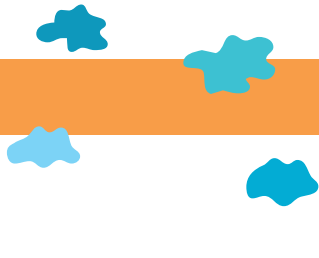


TABLE 19. Generalisation of ICT usage and the preferred system.

Which system do you like the most?	Should the use of ICT be generalised?	
	Yes	No
Traditional	5.6	6.7
Electronic	37.2	1.3
Both	40.6	8.6

Four out of ten surveyed favoured progress in terms of the use of ICT, even if they did so as a compliment and together with traditional systems. Nonetheless, data also points to the existence of a group decisively prepared to support the generalization of electronic voting systems, in a proportion very similar to the previous groups. Their profile is that of a group of people between the ages of 16 and 45, of a medium to high socio-economic profile (above 1,200 € per month) familiar with ICT due to having a PC at their homes. This sociological profile supposes no difference with regard to the information gathered in other investigations in which the income level, technological knowledge and age are established as the main discriminating variables with regard to the identification of the digital and social divide.

TABLE 20. Generalization of ICT usage and recall of participation.

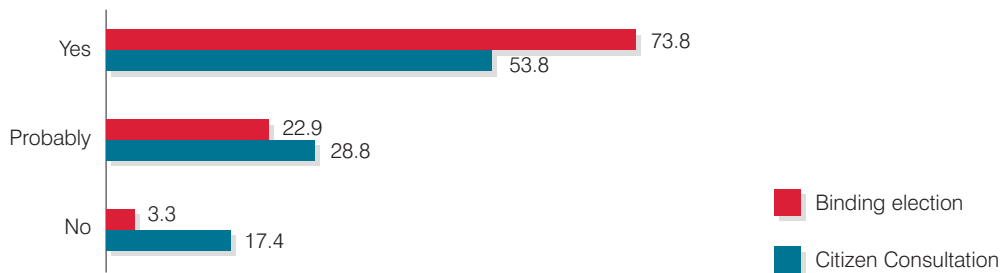
Did you vote at the local 2004 election?	Should the use of ICT be generalised?	
	Yes	No
Yes	70.7	15.8
No	12.1	1.4

On the other hand, there is a commonly accepted claim that the generalization of ICT use in the political participation process shall have as its most visible result an increase in participation of citizens. Without going on to appraise the reasons for this participation, something which goes beyond the objectives of the current report, the fact is that this taumatúrgique value of the ICT has been placed –in theory and in practice– repeatedly questioned. Although this has not been one of our interests in the analysis of the Citizen Consultation *MadridParticipa*, the fact is that the information in table 20 does point towards the inconsistency in this relation. As such, we can observe that the level of participation holds no correlations with the desire to generalize the use of ICT. That is to say, in other words, 15% of those surveyed that did participate in the last local elections do not believe that ICT should be implemented, and as such the reasons for their participation should be sought in the operation of other variables.

Upon the confirmation of the acceptance of the use of ICT together with the support –with some differences in intensity– of electronic voting systems, the interest shifts to trying to determine in which participative processes the introduction of these electronic systems would meet with the greatest acceptance.



GRAPH 16. Predisposition towards the use of an electronic voting system according to the type of participative process (values in %).

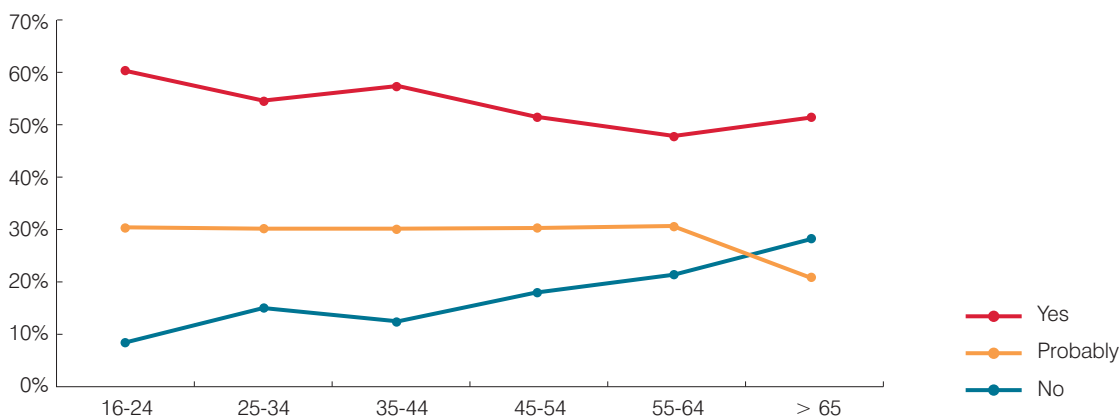


Initially, and in line with the overall positive acceptance of the Citizen Consultation *MadridParticipa*, the use of electronic systems for this type of Consultation met with broad support on the part of those surveyed (graph 16). Only 3% indicated that they were not prepared to use it in the future, while seven out of ten surveyed confirmed their desire to use this technology again in the future. Difficulties appear when considering the application of electronic voting system to binding elections. Nearly two out of ten surveyed indicate their reluctance to use this system, while nearly three of ten were initially dubious of their position.

This is especially relevant for various reasons: in the first instance it supposes that the validity of those electronic systems is being questioned in areas where traditional voting formulas have provided a satisfactory performance since 1977. However, in the second instance, we should not forget that the values that are registered here indicate a considerable *pro-technological* bias, as we have already indicated.

As such, the fact that we are confronted with values that are somewhat negative in this universe *decisively in favour* of using electronic voting systems, leads us to believe that for the total population, this would be a highly problematic question. Following on from these observations, the information contained in graph 17, has a much greater relevance, given that we can perceive a tendency towards an increase in the values relating to a rejection of electronic voting systems in binding elections the higher the age of those surveyed.

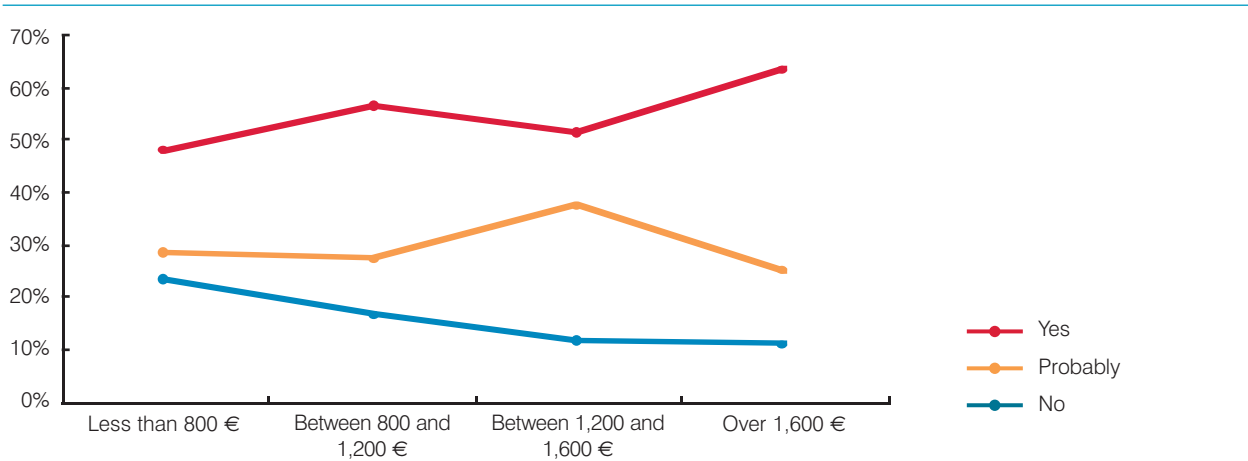
GRAPH 17. Predisposition towards the use of an electronic voting system in binding elections according to age groups.



While the percentage, by age groups, of those surveyed that are dubious regarding the acceptance of the use of electronic voting systems in binding elections remains stable (nearly 30%), it is beyond the age of 45 that we again detect the breaking point. The intensity of this change in tendency reaches the extreme of exceeding the percentage values of no regarding the indecisive responses.

On the other hand, the distribution of values according to the level of income confirms the previous affirmation with regard to the expected behaviour in this sense (graph 18): we find a greater predisposition among those surveyed with a level of income above 1,200 €, being the main value those citizens whose monthly income exceeds 1,600 €.

GRAPH 18. Predisposition towards the use of an electronic voting system in binding elections according to income level.



In summary, the future projection of the scenario resulting from the *MadridParticipa* experience has its basis on the data contained in table 21. In it, one can observe that half of those surveyed are in favour of the future use of an electronic voting system for Citizen Consultations as the one undertaken in Madrid as well as in binding elections. We would then have a significant basis for public acceptance of the implementation of electronic voting systems.

This scenario is strengthened by the relatively scarce percentage of those surveyed who were reluctant to the generalization and use of these systems (with an aggregated value of 18.2%), but of which nearly one of every ten surveyed indicated they would not use it in binding elections but would in citizen consultations (8.2%).

TABLE 21. A future scenario regarding the use of an electronic voting system.

Would you use an electronic system in...			
...a citizen consultation?	...a binding election?		
	Yes	Probably	No
Yes	50.9	14.7	8.2
Probably	2.2	14.5	6.1
No	0.2	-	3.2



Nonetheless, both the diffusion efforts and future pedagogy channelled towards the implementation of electronic voting systems should make a special stress with regard to those groups of citizens that indicate their doubts about it. In this regard, nearly three out every ten surveyed are not clear about their future response in relation to the use of ICT in both types of votation (table 21). It being said that half of these would not have any issue with using them for future citizen participation initiatives (14.7%), the doubts appear in their extension to binding electoral processes. In any case, assuming that these citizens finally decided to support electronic voting in binding elections, one of the main advantages of the Citizen Consultation *MadridParticipa* will have been that it was completed with nearly two thirds of those surveyed supporting the implementation of ICT in participative processes. Something which, no doubt, constitutes very important news for our country.



5. Socio-legal considerations

Sociological and technological studies are not sufficient for an appropriate implementation of electronic voting procedures given that these innovations are undertaken in very delicate areas, such as the voting area, where judicial guarantees constitute fundamental pillars. It is as a result of this that any mechanism for electronic voting should respect the electoral principles that currently exist given that not doing so would endanger the freedom and sovereignty of the public will.

The following sections cover the different aspects of this problem. In order to offer a systematic vision of the questions that electronic voting poses, six areas of study have been identified in which it is appropriate to analyse the operation of these systems and compare it with the guarantees of the models that currently exist. Each of these sections begins with a brief explanation of the risks that could arise and a series of information is offered regarding the exact organization of the Citizen Consultation *MadridParticipa*. In this respect, there is an attempt to outline the measures adopted during the survey to guarantee its success and avoid the dangers that can arise through the use of electronic equipment.

In any case, the objective of this report is not to offer a detailed compilation of the requirements that an electronic voting system should fulfil, but rather analyse some of these in relation to the survey instantiated by the Madrid City Council. There are several documents in which all of the characteristics of a legally admissible electronic voting system have been summarized, and among these it can be useful to review the following two:

REFERENCE DOCUMENTS - LEGAL PARAMETERS

COUNCIL OF EUROPE (2004) "Recommendation of the Committee of Ministers to member states on legal, operational and technical standards for e-voting", Multidisciplinary Ad Hoc Group of Specialists on Legal, Operational and Technical standards for e-enabled voting (IP1-S-EE), Integrated Project 1 – Making Democratic Institutions Work, IP1 (2004) 31.

MINISTÈRE DE L'INTÉRIEUR (2003) "Règlement technique fixant les conditions d'agrément des machines à voter", 17 novembre 2003, Ministère de l'intérieur, de la sécurité intérieure et des libertés locales, Francia (Journal Officiel, 27 november 2003).



5.1. Participative democracy

5.1.1. Representation and participation

Our political system is based on a concept of democracy which is basically representative, that is, it refers to models that, although recognizing the people as the owners of sovereign power, they grant high protagonism to those people elected by the citizens to guide the destinies of a community. The existence of this link between representatives and those represented is certainly indispensable in order for the political structure as a whole, not only be democratic, but also efficient. We should recall, in this sense, that one of the major threats of any democracy can be precisely the fall of the assembly and the ensuing consolidation of institutional inefficiency unless appropriate corrective measures are adopted.

Despite these considerations, we should not forget that the representative system is also exposed to a series of dangers given that, as we have been observing since the beginning of the previous century, an excessive protagonism on behalf of political representatives can easily destroy the central role that citizens should play in all good democratic systems. If we add to this tendency, the appearance and consolidation of political parties as new actors in representational activities, it is easy to understand the reasons why at the end of the 20th century and beginning of the current one, the feeling that the current political system has series defects has become increasingly widespread.

Bearing in mind that one of these, probably the main one, is the only scarce specific weight that citizens retain, we have thought it convenient to encourage mechanisms for participative democracy, that is, instruments by which citizens can express their opinions and become involved in the complex world of political decisions. In effect, its objective is that citizens not only express themselves in very distant periods of time, but rather that they play a leading role in the daily adoption of decisions on behalf of the corresponding administration.

We should emphasize, that in any case, any democratic model, including a participative one, bears some denaturalization risks. A participative model, for example, in the event of it being structured in an inappropriate form, could easily derive in populist practices that have little to do with a mature democracy. We, therefore, find ourselves in a situation where the balance between representative and participative models constitutes one of the most important objectives.

REPRESENTATION / PARTICIPATION

Representative Democracy

Public indifference, excessive protagonism of political parties.

Participative Democracy

Link between citizens and political decisions.

Dangers ➡ demagogical and populist drifts.



5.1.2. Need for the electronic vote

In any case, before analysing in detail the voting system used in *MadridParticipa*, we should consider whether it is really necessary that the structure of the current electoral systems be modified and that they incorporate the latest technological improvements. Such instruments can enrich democratic processes but, are they really a priority? The answer cannot be based on a naïve technological optimism given that this attitude would easily lead us to a situation where technique would become an end in itself when in reality the objectives and priorities of any electoral model should be different. The electoral regulation should, in effect, change only if we are able to demonstrate that the new tools are useful in terms of improving the expression of the public will and encouraging the public participation channels.

The solution depends to a large extent on the political electoral situation which we are confronted with and we should take into consideration different variables. In the first instance, it may occur that we find ourselves with a solid electoral system in which there is no legal or public need to introduce such large reforms. It is what occurs for example in the majority of European countries where the electoral debate centres on the formula elected (proportional, simple majority etc.), but not on the practical implementation of the system. It refers to models that have smoothed out their defects until the point of reaching procedures that have been broadly accepted. Given these examples, is it really a priority to introduce electronic voting mechanisms? Would we not perhaps be assuming too high a risk that could discredit a system whose reliability is proven such as the current one?

NEED FOR THE ELECTRONIC VOTE

Posible anachronic image
Benefit marginal communities
Versatility
Increase in participation?

In our understanding, this refers to correct and reasonable concerns given that we are dealing with highly sensitive areas in which the expression of the sovereign public will is at stake. It would not, therefore be wise, to introduce innovations whose consequences have not been sufficiently analysed and compared. Even so, we estimate that different reasons exist that do encourage a slow introduction of electronic voting systems.

It should be noted, in the first instance, that electoral procedures cannot be limited to an **outdated** technological framework give that it would offer an image that is scarcely adapted to the current society. As Michale REMMERT points out “modernising how people vote will not, per se, improve democratic participation but failure to do so is likely to weaken the credibility and legitimacy of democratic institutions» (2003: Vol. 34). This initiative can in any case not ignore the correct functioning of many electoral systems. In effect, it is about maintaining a constant awareness so that, without endangering the success and stability already reached, electoral processes gradually incorporate technologies that characterize our era.



On the other hand, the electronic vote can be enormously useful for certain **sectors** of society –for example disabled citizens, absent residents–. This refers to groups that often encounter many problems when it comes to exercising their right to vote and new technologies, if designed correctly, could considerably facilitate their participation. It would therefore be possible, for example for both groups to vote remotely or even, in the case of the blind, electronic tools could allow their physical vote in an autonomous fashion.

Thirdly, electronic voting systems can offer a **versatility** and flexibility unknown until now. Today, the logistics surrounding elections involves economic, time and human costs that make it difficult for citizen consultations to be conducted frequently. On the other hand, some electronic voting models –not all– simplify this process and allow us to imagine a future in which a series of participation tools will be able to be made available to citizens. It should also be mentioned, without forgetting the unknown factors that arise regarding security, that a good electronic voting system is much more exact and precise than the current ones given that, as the responsible party from Scyt! Andreu RIERA outlined during the presentation of the survey, there are still “many more errors on paper than in an electronic format”.

Finally we should note that the level of **participation** in elections could increase as a result of the implementation of electronic procedures. It is outlined that the use of new technologies would make voting more attractive and certain segments of the population that traditionally abstain from voting, such as young people, may change their attitude with these measures. The fact is, however, that no conclusive studies exist. While some experiences have shown that the electronic vote increases participation others indicate the opposite results. As a guide, we should include amongst the first tests undertaken during the last Catalan elections in which certain absent residents, among these Catalans living in Mexico, were allowed to use the Internet experimentally to vote. In this case the number of participants exceeded by 226% the number of official voters (cfr. BARRAT / RENU, 2004: § 3 / table 3). On the other hand, other experiences show very low rates such as, for example, the current citizen consultation (0.63% of the total electorate), even though the absence of precedents makes comparison difficult and so too the conclusion as to whether new technologies encourage more or less participation. There are a number of variables that influence these results given that a survey for example is not the same as an election. Nor are they the same as electronic systems that act in a unique or complimentary way and lastly the method used also influences the process given that those systems based on remote voting in non-controlled environments do not present the same degree of difficulty as those models based on ballots.

CONSOLIDATED SYSTEMS

In conclusion we can indicate that although finding ourselves with countries that have a perfectly **reliable** electoral systems, the introduction of new technologies can offer favourable results in terms of enriching the **participative** mechanisms available to citizens, provided it is done so with **care**.

In any case, not all countries offer consolidated systems. Many states undertake enormous efforts to increase the reliability of the electoral logistics, but are often confronted with corruption, disinterest, or with the illiteracy of large segments of the population. Can the electronic vote offer positive elements to this concerning sit-



uation? Would we not perhaps be making a mistake by intending to introduce sophisticated technological mechanisms in countries whose priorities, as we have seen, should be others?

The response depends both on the situation with which we are confronted as with the technological option chosen. We should remember in the first instance what we are being confronted with as well as the technological option chosen. Firstly, we should be aware that although we may find ourselves with countries that have structural deficiencies in the socio-electoral area, large differences can exist between them in such a way that it is not possible to anticipate the generic approach to questions that require an individual study. In any case it should also be said that even in extreme cases, the electronic vote can offer positive new aspects.

CONSOLIDATION SYSTEMS

Brazil ➡ graphical elements

India ➡ technical simplicity

Brazil and India can serve as a reference given that they are countries where the logistics surrounding elections can present very serious problems. Its geographical dimension, corruption of the democratic process, extensive poverty or illiteracy constitutes enormous challenges for any proposal that plans to develop a new democratic process from the beginning. Despite this, both countries have announced that they will introduce electronic ballot boxes.

Brazil for example, has been able to generalize the use of electronic voting by way of touch screens (cfr. RIAL, 2003: § 31-47). The relevant aspect of this case is that technological modernization has contributed to the reduction of some of the deficiencies previously mentioned. In this way, the design of the screen, where emphasis was made on a series of graphical elements such as the photo of the candidate, has allowed illiterate people, be it complete or functional, to exercise their right to vote in a more simple, intuitive and sure way than the traditional ballot. On the other hand, the fact that computers carry out an automatic recount of all the votes, could hinder, although not eradicate, the traditional dangers of electoral corruption.

In the case of **India**, recent elections demonstrated the possibility to introduce extraordinarily simple electronic systems (cfr. TECHAOS, 2004; IDA, 2004). Although the model may contain defects, the novelty of the experience consisted in testing a series of electronic voting tools that were not complex but could modernize the Indian electoral process at a reasonable price.

After analysing these examples, we can conclude that legal electoral regulations cannot be left aside from technological innovations such as electronic voting systems. All of this should naturally be undertaken with **care**. There is no room for adventurous behaviour here, which disregards the virtues of current systems, and hopes to improve these with excessive naivety or technological optimism. It is not admissible, for example, that the electoral fiasco that took place in the United States in the last presidential elections be hastily resolved by way of introducing electronic ballot boxes that have not been adequately controlled (cfr. KOHNO, 2004). The scandals that have arisen over the last few months in relation to firms such as *Diebold* do very little in favour of a technological modernization process that if adequately implemented represents an already imperative need in current democratic systems.



THE KEY

MadridParticipa supports a line of action that allows a proportion of citizens, summoned by the City Council, to outline the actions they consider necessary in their District. Such an initiative **renews and freshens the current representative and participative political models**, allows the citizens themselves to voice their opinion without suppressing the responsibilities of their representatives.

After analysing various examples, we can conclude that the legal electoral regulation cannot be **left aside from technological innovations such as electronic voting systems**. Whether it be as a result of the need to discontinue representative processes in an outdated form, or due to the desire to facilitate the voting process for groups with special needs such as absent residents, or due to the possibility to reduce existing corruption, electronic voting should be present in any electoral debate that is posed.

5.2. Electoral information

Any electoral process requires that it be surrounded by a series of indispensable elements in order for the right to vote to be appropriately exercised. One of these consists in providing citizens with the necessary information for them to be able to freely exercise their right. An incorrect step in this process could cause serious difficulties during the electoral process given that it would eradicate the clarity and transparency that it should have.

ELECTORAL INFORMATION - REQUIREMENTS

- Provide the citizen with **sufficient** information in order for them to exercise their right to vote in a agile and simple way. As a guideline, information regarding the voting system is included in this section (ej. Open/Closed lists) together with those people who are allowed to vote (ej. EU citizens in municipal elections).
 - Provide the citizen with **neutral** and **unbiased** information, that is, ensure that the information received by the voter does not influence their election of the corresponding candidate or response option.
-

It is easy to ascertain that both factors acquire special relevance in the instance of electronic votes given that because they are **new procedures**, citizens surely require more information in order to correctly exercise their right to vote. Given that various electronic voting mechanisms exist, in this case three –Internet, SMS messages and new generation telephones–, the informational strategy should indicate which systems will be used

and detail, step by step, the process to be undertaken in each one of them. Attention should be given with priority to those people that have technological literacy deficiencies so that they do not perceive the technological factor as an insurmountable barrier.

On the other hand the **interactivity** and dynamism inherent in these new technological tools increases the risk that the voter, be it at the time of receiving information from different organisms or at the time of voting, receive biased information that favours the election of certain options. All of this should be avoided by undertaking an appropriate informational campaign and by technically blocking non-authorized information and messages. Voting via Internet is especially dangerous given that, when a computer is connected and perhaps with various applications open –be they navigators, instant messaging etc.– there is a high risk that, when it comes to voting, the citizen may receive messages that may alter their electoral behaviour. In any case it should be noted that it is difficult to avoid such dangers given that it could easily contradict the utility of voting remotely, that is, that it could be exercised from any location as well as slightly altering citizen's habits. In this respect, it would involve the voting process being incorporated as a routine activity that the citizen undertakes, as with other on-line activities, together with others. If this were not the case, the only option would be that the application contain a function by which the activation of the voting system generated the automatic blockage of any other activity on the computer.

In any case, the informational system used in *MadridParticipa*, both at the on site centres and other locations with a connection, consisted of computers that offered free access to any page (Bailén, Casino de la Reina, La Corrala, San Antón) and that had certain programs installed such as instant messaging applications (MSN Messenger). Many of the computers also had certain accessories such as USB ports and diskette grooves (ej.: Casino de la Reina, Bailén). This possibility meant that when there were few people, some citizens took advantage of the moment when they were voting to carry out a series of other activities such as reading their e-mail, visiting a website or even connect with other people using the MSN Messenger (Mesonero Romanos). The mobile telephones available in the centres also allowed people to make all sorts of calls.

ELECTORAL INFORMATION - PARAMETERS

Interactive technological means
Informational campaigns
Information channels (telephone service –010–, web, etc.)
Logistics of voting centres
Binding character

Free access to any Internet site does imply a risk that the citizen, when voting, may find on their screen information specific to the process and that this may distort this process. Fortunately this instance did not arise in *MadridParticipa*, except in one instance, in the San Antón Market, where one of the registry screens offered, at least for some moments, institutional information around the Madrid City Council, the driving organism of the survey. The information was related to sexual behaviour and the use of the so-called day-after pill (29M – 11:30). As indicated, given the fact that this was the only instance reported we cannot extract negative conclusions regarding this aspect.



It should also be mentioned that surveys such as *MadridParticipa* need to be accompanied by an intensive **informational campaign** that communicates to all citizens the objective of the survey as well as other necessary elements such as locations and voting mechanisms. Given the fact that it refers to uncommon survey, that is one that is not foreseen in the ordinary electoral calendar, the Council should make a special effort to communicate the information. In the specific case of *MadridParticipa*, mention was already made during the sociological analysis that the most important element was delivery of a personalized letter to all citizens registered in the Central District in which information regarding all aspects of the survey was provided. Various advertising elements were also put in place in different urban infrastructure, but given the dimension of the District and the fact that the activities undertaken did not have a huge impact, a more intense campaign would probably have been needed. The scarce participation may have been among other factors, due to this fact. Let's now analyse some of the various elements of this communications: telephone service, the quality of the website and the identification of the voting centres.

With regard to the **telephone service**, we were able to confirm (30J – 09:25) that it worked correctly. Precise and appropriate information was provided, although some elements of greater technical complexity, such as those related to telephones with Java, did require that the operator read certain information that they had in a paper format.

On the other hand, the information provided on the **website** was made available weeks before the participative day in such a way that citizens did have a reasonable amount of time to read and familiarize themselves with its content (Fig. 1). The existence of a demo of the steps needed to be taken to vote that included detailed information regarding the registration and identification process should also be mentioned. In addition with regard to the centres, a map with their location, postal address and opening hours was also included.



FIGURE 1

The identification of the **voting locations** constitutes in the last instance, an essential part of this strategy. The majority were able to satisfy most demands, but some did come across certain difficulties.

IMAGE 1. Casino de la Reina.

The Casino de la Reina, for example, was located in an enclosure within the municipality among other buildings, one of which had been set up to carry out the survey. The building was not in the entrance but rather behind another adjoining building (Image 2) and the room equipped with computers was on the second floor. A location such as the one described should be accompanied by guiding panels that inform of the exact location in which the activity shall be undertaken otherwise some citizens may become disorientated and decide not to participate. On the other hand in the case of Bailén, the stand with the informational poster was placed inside the building when it would have been much more efficient to place it on the street as had been the case in other locations (Mercado San Antón).

It is true that residents in the area certainly are aware of the location of these centres, however, this should not detract from their being extra information in the entrance and in the interior of the locations. In any case, as previously indicated municipal street works, unfavourable weather or difficulties of diverse nature can logically also influence the logistics as occurred in certain cases during *MadridParticipa*.



Special mention should be made of the information provided by citizens regarding the **binding** nature of the survey. Firstly, we should bear in mind that we find ourselves before a referendum and that these types of participative mechanisms present different characteristics to those relating to representative elections. In this regard, we should perhaps recall that the Spanish Constitution itself does not foresee holding binding elections in a decision which has met with some criticism. Article 92 only allows the existence of opinion seeking referendums at least at the state level.

A good understanding of this distinction does require that the legal and political effects of a referendum be differentiated. Even if a merely opinion seeking poll is not legally binding, it does not prevent citizen representatives from committing themselves politically to the will expressed by citizens in the ballot box. There are no legal resources that would allow a specific behaviour to be demanded, but this should not undermine the value and relevance that a political commitment which is publicly recognized may have. What occurred in the case of *MadridParticipa*?

According to explanations received, the mayor of Madrid, declared that he considered the results “morally binding” during a presentation of the survey days after its completion. This stimulated considerable debate at the heart of many institutional organizations, but the final decision taken favoured the binding character,



at least in its moral aspect –meaning political–. All of this can be confirmed in the information provided to citizens given that in the informational posters it is specifically outlined that the results were to have a binding nature.

It is a rather courageous and committed decision that certainly benefits the future implementation of the electronic vote, but this should not hide the contradiction that exists upon proclaiming *MadridParticipa* to be a pilot exercise but at the same time declare that the results are assumed binding. Any pilot experience, and *Madrid-Participa* is no exception, aims to demonstrate the reliability of certain elements, but does require a thorough implementation of all security and quality guarantees that should exist in elections that are not considered experimental. If this is the case, we would be claiming that a process which is still in a test phase is a binding process and this would not be an appropriate decision because it may confuse citizens. The fact that the results of the survey in which less than 1% of the overall census voted was declared to be binding leads to the same doubts.

THE KEY

MadridParticipa designed a global communication strategy whose objective consisted in providing information to citizens in the Central District regarding various aspects of the electronic consultation that was about to be undertaken. A key element of this initiative was the **personalized letter** that the Council sent to each of the possible voters indicating both the questions included in the survey and the necessary procedure to exercise their right. A telephone help service was also set up together with an official website of the event. The content of the information provided deserves a positive appraisal because it was neutral and did not encourage citizens to vote for any of the possible responses.

On the other hand, the software application did prevent that the specific voting Windows receive distorted messages except in isolated cases, although the use of **open computers** did facilitate the use of different programs during the voting.

The binding nature did reinforce the credibility of the survey in the eyes of the citizens, but remained conditioned by the scarce participation and the experimental nature that the organizers described the votes as having.

5.3. Identification and registration

We find ourselves with a new process, which can be carried out quite simply using traditional electoral methods, it can lead to important headaches in the case of electronic voting procedures. On the other hand, among the various types of electronic voting that exist (electronic ballot, touch screen and remote vote), the last one is the one that involves the greatest risk given that the identification procedures and registration cannot be traditional.

IDENTIFICATION AND REGISTRATION – PROCEDURE

Identity verification (DNI, NIE or Passport) – Physical or not (digital certificate)
Anonymous identification credentials
Subsequent use of credentials / ¿Transfer of credentials?

In this case, the **identification** of the voters was based on the use of an alphanumeric credential –16 characters– that was provided once the voter identified themselves using one of the traditional methods, that is, demonstrating their national identification card and indicating its number. The same process could be undertaken remotely if the voter had a digital signature which was accepted by the Madrid City Council –normally the certificate of the Fabrica Nacional de Moneda y Timbre / FNMT– that verified their identity, given that in this case the system automatically provides the credentials previously mentioned.

The solution that was proposed to guarantee the protection of the personal information provided was to verify the identity of the citizen by way of their identity number –DNI, NIE or Passport– on a Server controlled by the Council that would subsequently transfer to another Server a number associated with that citizen. This number was the one that was finally linked to the alphanumeric key that was needed to participate creating as a result an **anonymous** system given that the voter only needed to introduce a credential that did not reveal their identity.

After filling in both the DNI –or similar– on a form as the identifying number of the credential, the server provided the following message:

«You may deliver the envelope with the identification credential: znuc to the person with document number 2516506. Do not forget to maintain a receipt of delivery [correctly] signed by the citizen».

The whole process with the delivery of the corresponding credential and the signature of behalf of the citizen, concluded quite rapidly, on an average time observed of five seconds.

On the other hand, the Madrid City Council was the exclusive and only owner of the first server and as such although this administration could accredit that a person appeared on the census, it could not know either the vote cast by this citizen or the credential used given that they did not have access to the data bases. The software applications developed by Scytl, mainly known as *Pnyx*, are designed to guarantee the secrecy of the votes, that is in order to avoid a link being established between a certain alphanumeric credential and the specific vote made by the corresponding citizen.

Finally the risk, always present both in this electronic voting as in traditional elections, of collusion between all of the actors that would allow security patterns to be altered is contrasted with the presence of various actors with contradictory interests –the electoral college, municipal administration, technicians– and the decisive involvement of the Electoral College in the reconstruction of the key needed to open the ballot box for counting.



All of this should be undertaken, however, by respecting a series of protocols regarding actions, ones which in the case *MadridParticipa* were overall respected. Some isolated cases could be observed though, such as the delivery of credentials to a citizen that had not shown any identifying documents (28J – La Corrala) simply by virtue of the fact that it was related to a person that was very well known. These are instances which should be avoided, however if they are occasional, we can confirm that similar cases can also occur with traditional voting systems. This is, therefore, not a behaviour that could jeopardize the process as a whole or discredit the electronic votes in comparison to the traditional ones.

However, there was no real guarantee that the voter was in fact the owner of the right to vote given that, once in possession of credentials, they could see themselves exposed to coercion or a possible **purchase and sale**. These make reference to fundamental weaknesses in any vote made from uncontrolled environments and, in this case, such a possibility is extended to on site centres because no credentials were requested in order to access the voting area –in one case, we observed how one person was even able to vote on behalf of their mother expressly indicating such a circumstance (29J – Casino de la Reina)–. At a generic level, the only possibility of allowing a situation such as the one described consists in considering the risks that exist with other parameters, for example the participation stimulus that the possibility of voting remotely may suppose. In the case of absent residents, for example, such a contrast may lead to positive results. Postal voting procedures should also be compared with the electronic variants given that, depending on how the first are, they may pose the same weaknesses that we have identified in electronic voting. In the next section we will analyse these aspects in more detail.

On the other hand, it is very important to facilitate as much as possible the process of identification and registration, otherwise only certain groups will be favoured in this way increasing the concerning digital gap that surrounds a trial of this nature. Conscious of this danger, the organizers set up different information points –market, neighbours associations, elderly centres, public service centres– where already two weeks prior to the trial, any citizen registered in the Central District could identify themselves and obtain the corresponding credentials.

THE KEY

The process of identification and registration was undertaken by way of using an **alphanumeric key** that was provided once the identity had been duly accredited physically or via Internet by using a digital certificate. The use of several servers for accrediting the identity of voters and for expediting credentials ensured, among other measures, that the organizers could not correlate the critical information of the voters.

Given that in certain cases votes made remotely were not controlled, **the system did not guarantee that the voter was truly the person with the right to vote**. This structural weakness should be pondered with other parameters such as a greater accessibility to voting or with the current postal voting procedures.

Finally, the existence of several locations in which credentials could be obtained facilitated the participation of people who are not familiar with new Technologies.



5.4. Voting

Voting can begin when a person accesses the electronic voting application. It constitutes the culminating point of the whole process, and as with other traditional systems should be used freely, equally, secretly and universally (cfr. § 5.3). Bearing in mind that each of these characteristics has a series of implications in terms of implementing electronic voting, we will analyse these in the following sections and evaluate the degree to which *MadridParticipa* has fulfilled these.

THE KEY

It constitutes the culminating moment in the overall process, and as with traditional systems its use should be exercised **freely, equally, secretly and universally** (cfr. § 5.3)

5.4.1. Freedom

Universal suffrage requires that a minimum of four conditions be fulfilled: prior information that is also impartial (cfr. § 5.2), the absence of any type of coercion, adaptation to the electoral culture and tradition in each territory, and the admission of votes that are blank or invalid.

FREE SUFFRAGE - REQUIREMENTS

Prior information that is sufficient and impartial (cfr. § 5.2)
Absence of coercion
Adaptation of electoral traditions
Blank votes / invalid votes

The absence of any type of **coercion** represents one of the challenges that is most difficult to solve for an information system that is based on voting remotely. The absence of a controlled environment, that is an environment sufficiently supervised by the organizing administration can make it easier for certain types of coercions or purchase-sales for example, to be made within work or family environments.

These considerations should not lead us to reject outright a system of remote voting because these inconveniences can be compensated by other factors. It should be mentioned, for example, that there are currently significant segments of the population with a low level of participation –ej. Absent residents– for which the introduction of a remote voting system would be an ideal tool to encourage their participation and in so doing enrich the Spanish democratic system. In these cases, the possibility to approve dissuasive penal measures that would, in certain cases, avoid the existence of coercion, is often proposed even though there are logically a series of variables that should be considered with great care.



The same can be said for those cases in which the level of citizen participation constitutes a fundamental parameter. Citizen consultations similar to *MadridParticipa* can only be consolidated if they are able to involve a high percentage of citizens and that is where remote voting, which can considerably facilitate the process, can prove to be very useful. In this case the low level of participation –considering it in absolute terms given that similar initiatives obtained less results– can be due, among other reasons, to the need to make a more concerted effort to distribute information (publicly recognized, for example, by the representative of the Neighbours Association “La Corrala”).

We should also add that, according to the postal voting system which is accepted, remote electronic voting systems may not increase the dangers that already exist given that, in many cases, votes sent in by ordinary mail are not free of certain issues be they logistic problems or directly related to the total absence of coercion while exercising the right to vote. Postal votes, therefore, also leave room for some level of coercion to be used, and the presence of this same factor in remote electronic voting would not be a peculiar characteristic and could be analysed in the same way as in postal votes.

Finally, it is important to note that admitting electronic voting does not necessarily imply the absence of a controlled environment. Although it seems obvious that the main advantage of this modality lies in the possibility of voting from any location, many projects plan a phased approach whereby, at least in the first two phases –voting from a certain electoral college and voting from any electoral college– voting is still undertaken in a controlled environment, even though remotely. It would, therefore, be feasible to propose a series of experimental phases by which remote voting could be used but we would not be faced with the danger of coercion because we would still be in controlled environments. As a result, we will have certainly made progress in our journey towards implementing electronic voting and banishing one of its major risks.

In the case of *MadridParticipa*, it is known that the use of controlled environments has been combined with the possibility of voting from any location by way of computers or telephones. A certain risk of coercion did therefore exist and even of the sale and purchase –by way of passing on the voting credential–, however all of this should be taken into account within the framework of a referendum designed in an experimental manner to test different modes of voting.

On the other hand, all electronic voting systems should respect the peculiarities of each country given that, beyond the basic democratic requirements, certain electoral traditions may exist that should be taken into consideration by new technologies. Michael Remmert, for example, makes reference to those cases in which «the electoral system allows voters to change a previously cast vote on election day (“advanced preliminary voting”) [or when] a judicial authority is authorised by law to ascertain by whom, where and by what means any ballot was cast» (2003: sheet 13). With respect to a referendum in Spain, there are no significant variables, which only affecting our country, should be assumed by electronic voting systems. In any case, if the survey had been undertaken in a bilingual region, it would have been necessary to include the possibility of using various languages. Although this was not the case, it should perhaps be noted that electronic procedures enormously facilitate these possibilities in such a way that they could even admit more languages than the two that are often used in certain regions of Spain if necessary.

Respect for electoral traditions is also applied in the possible admission of the blank or invalid vote following the specific regulations laid out. The first can easily be included by way of adding a new option both in the form of optic ballots such as with touch screens, even though we should recall that the current electoral

legislation in Spain describes it as “envelope that does contain a ballot” (art. 96.5 of the Organic Law of the General Electoral Regulation –LOREG–). It therefore refers to a vote which is irrelevant in the traditional party system and such a philosophy should be conserved in those electronic voting systems by way of an appropriate design of the screen. In the case of referendums, the dilemma is less because political parties do not concur and the blank vote is just another option together with the affirmative and the negative or, as was the case in *MadridParticipa*, the options proposed in the question. A good design of the voting process demands, as such, the existence of this option and this was the case in the survey we are analysing.

On the other hand, **invalid** votes are more problematic given that many electronic systems aim to eradicate them. An invalid vote is considered an error on the part of the citizen and, although it cannot be avoided in traditional voting systems, the electronic ones do have sufficient mechanisms to guide the voter and guarantee correct voting in favour of some of the existing options.

The possibility that the citizen may have cast a vote consciously and deliberately as an invalid vote is generally not considered. Such a situation would certainly hold some participative value that should not be underestimated given that it refers to people who for various motives, may want to show their rejection of the system by way of this type of voting. If this instance is allowed in traditional systems, electronic ones should be no different. In addition, in some cases the invalid vote has important political significance. This occurred, for example, in the Basque Country where, after the illegalization of political party *Batasuna*, a high percentage of citizens used non-official ballots with this name. It is obviously an invalid vote, but with significant political meaning and it would be erroneous to implement an electronic voting modality that would prohibit this form of expression.

However, should invalid votes also be admitted in a referendum such as *MadridParticipa*? Note that this is not the case of representative elections where the election of one political party or another is being decided. On the contrary, it is about seeking citizen’s opinions around certain topics that are considered important for the political and social future of a community. Even though this factor can certainly condition the casting of the invalid vote, its possible existence should not be excluded. It is true that, in certain cases, the citizen will surely not want to protest regarding the excessive protagonism of political parties, but may wish to do so against the system itself. This option should therefore be foreseen and surveys similar to *MadridParticipa* conducted in the future should include, as a minimum, a specific button to cast an invalid vote.

5.4.2. Equality

This is another fundamental requirement given that democratic systems are based on participation and, from this perspective, all citizens should receive the same treatment. This principle does not exclude different voting modalities, but all of these must be adequately justified. In this instance it could be admissible for someone to assist a blind person, but this procedure would not be possible if it were applied in a generalized manner. On the other hand, identical reasoning could be made in relation to equality among candidates given that they should also be treated equally.

In the case of electronic voting, protecting equality among voters and candidates demands the following minimum elements:



UNIVERSAL SUFFRAGE – REQUIREMENTS

- Mechanisms that impede the same citizen voting more than once and that guarantee that all voters have the right to vote can effectively exercise it ➡ **DUPLICATION OF VOTES**
 - Equal treatment of political formations ➡ **PRESENTATION OF CANDIDATURES**
 - Adequate measures to compensate a deficient technological literacy among citizens ➡ **DIGITAL GAP** (cfr. § 5.6)
-

As we have seen previously, the first requirement demands some very robust identification and registration procedures, however, once these have been provided the system should also prevent various votes being emitted. Traditional systems avoid this problem by physically introducing the ballot in the ballot box. The existence of an envelope that personalizes each citizen's vote –Spain– or the placement of a special groove that allows the introduction of only one ballot at time –Mexico– constitute systems with a proven efficiency.

On the other hand, in the case of electronic systems, other mechanisms must be designed given that an instance could arise where there were no internal obstacles for the citizen to **duplicate** his/her vote, once they have handed over their credentials with alphanumeric characters. This, for example, is what would occur with *Diebold*'s touch screens given that, according to the report on the source code developed by the Avi Rubin team, «since an adversary can make perfectly valid smartcards, the adversary could bring a stack of active cards to the voting booth. Doing so gives the adversary the ability to vote multiple times. More simply, instead of bringing multiple cards to the voting booth, the adversary could program a smartcard to ignore the voting terminal's deactivation command. Such an adversary could use one card to vote multiple times. Note here that the adversary could be a regular voter, and not necessarily an election insider» (Kohno, 2004: 10). They were in fact touch screens, however this distinction is not relevant to these effects because the same situation could arise with a type of voting like the one that we are analysing. Taking into account the nature of electronic systems, one of the solutions to the dilemma posed consists in guaranteeing a detailed audit of the information system. In this way, the existence of appropriate internal protocols to avoid multiple votes by a single citizen could be checked. This refers in effect, to an element which as we will see later is linked to the necessary verification of the electronic vote (§ 5.5).

Similar reflections could be made regarding the need for the information system to really allow each and every citizen that is legally able to vote to exercise that right once the onsite process of identification has been undergone. The audit undertaken of the source code should verify that these requirements have been fulfilled.

On the other hand, the **candidatures** should be displayed in a neutral form, that is with no elements that may favour one option or the other. Given that efforts are already made during traditional elections to ensure an equal presentation of all options, we can easily see that in electronic elections the risk of deliberately favouring certain candidatures or responses increases exponentially. An apparently naïve element on the screen (placement, size, colour, etc.) can encourage certain decisions to be made and this would be quite unacceptable in any process that attempts to respect the minimum democratic requirements.

This situation would not pose a problem in the case of optical ballots given the fact that they are similar to the current ones, and the guarantees that are already in place today should also be adopted. On the other hand, computers with or without touch screens, and telephone devices, that is the mechanisms used in *MadridParticipa*, pose obstacles that are much more difficult to resolve. For example, in what order should the candidatures be placed in order to ensure a neutral lay out? What would happen when there are numerous candidatures and the size of the screen does not allow for all of them to be included? Would it be admissible for them to be distributed across successive screens? Would this solution be compatible with the principle of equality?

The first question can be easily answered given that the traditional Spanish system offers a case in which this question should be resolved. In this regard, it is well known that the Spanish Senate, being based on a system of open lists, is elected by way of only one ballot on which all of the legally accepted candidatures are presented. Each voter, except in certain cases regulated by the Constitution, should choose a maximum of three candidatures that may be from different political parties. As such, if electronic systems include the use of only one electoral ballot, that is, only one selection screen, the criteria used to order the candidatures could be the same as for the Senate.

Whatever the option taken, the case of *MadridParticipa* poses questions which are slightly different bearing in mind that it is a referendum and not an election. As a result, no preferential treatment can be given to a particular party, but this does not mean that if there are various possible responses to each question, the design of the screen may favour some of them. The recent referendum in Venezuela provides us with a significant case given that although there was only an affirmative or negative response possible, the option “No” was placed to the left of the screen and the option “Yes” to the right when the normal tendency would have been to place these in the opposite order. Without going into the reasons and methods by which this decision was adopted, what is certain is that it reveals the importance of an appropriate distribution of information on the voting screen.



FIGURE 2

In the case of *MadridParticipa* the responses were placed vertically with an identical format (Figure 2). No elements were introduced to make one option stand out from the other and therefore the voter was confronted with a series of options of identical possibilities. On the other hand, the technical operators included the responses in the order communicated by those responsible within the municipal administration.

The second requirement is somewhat more complicated given that if many response options exist, something quite probable in certain elections, the system may not admit their inclusion in a single screen or if they are included it is with a format that reduces the usability of the system and as such its equality. It is quite significant that the already mentioned draft provided by the Council of Europe limits itself to indicating that «there shall be equality in the manner of presentation of all voting options on the device used for casting an electronic vote» (COUNCIL OF EUROPE, 2004: § 47), but does not specify how this should be put in place. On the other hand, French



regulation indicates that «les noms des candidats (scrutin nominal), les listes de candidats (scrutin de liste) ou les questions posées (référendum) doivent pouvoir, pour un même scrutin, être présentés intégralement et *simultanément* sur la machine à voter» (MINISTÈRE DE L'INTÉRIEUR, 2003: § 3.3.1 – 32; the cursive is ours).

In our understanding, simultaneous exhibition is a very relevant requirement that can only be obviated in exceptional and adequately justified cases. In any event, it could be argued that in a society with sufficient technological habits, the fact that candidatures are spread over several screens should be a cause for concern given that citizens should be familiar with the process of passing from one screen to the next. Even so, it is known that even if we find ourselves confronted with people with a high technological education, unconscious psychological mechanisms could lead to the candidatures that are placed first on the list to be favoured.

Fortunately the design of *MadridParticipa* did not pose these problems given that the options available for each question were correctly inserted and able to be laid on a single screen for voting.

5.4.3. Secret

This requirement demands that no-one be able to link a specific vote with the person that has emitted it. In traditional elections, this is achieved by the combination of transparent ballot boxes with opaque ballots. In the case of electronic ballot boxes, the solution is not that simple because the information system does not offer the same transparency and clarity that traditional procedures do. The citizen operates with a machine that they are not familiar with and that is in itself unable to guarantee the correction of the vote. All of this complicates the guarantee of secrecy during the voting process, but does not make it impossible. The key factor in these cases consists in knowledge of the source code, but given the fact that this information is not visible for the majority of citizens, it is very important that each person be able to verify individually and universally the system, that is, even introducing the secret vote, the voter is able to verify that their vote has been correctly processed and that the process as a whole can also be verified as is the case in traditional elections. As with previous cases, we refer again to the next section (§ 5.5) where the process of verifying electronic voting systems will be further analysed. This question becomes crucial for an appropriate implementation of these models as we shall see.

SECRET SUFFRAGE

Traditional system ➡ Opaque ballot (with or without ballot) + transparent ballot box
Electronic voting ➡ Audit of the source code

Whatever the case, casting a secret vote should also be present in those centres set up to this effect. The location and distribution of the various critical elements –identification box, voting box, etc.– should be analysed scrupulously so that the voter has full guarantee when they exercise their right to vote. The placement of computers, the distance between them, the existence of separators, the building used or the qualification of the personnel, are, among other many elements, factors of key importance if we wish to liken electronic voting to traditional voting. *MadridParticipa* carried out the design of the locations correctly because it sought to provide all centres with an ambience respectful of the voting that was taking place.



IMAGE 2. Placement of computers at the San Antón market.

In certain cases, the location of computers and the direction of the screens should have been different. Given that these were voting centres located in public places, efforts should have been made to ensure that each screen had some form of protection to avoid other people, most probably accidentally, seeing the sequence of voting carried out by another citizen. One simple measure may have been for example, to place screens facing the walls, but if this were not possible, isolated voting cabins could also have been set up (Image 2).

The majority of these centres met with these requirements (ejs.: San Antón, La Corrala), however some such as the de la Reina or Mesonero Romanos, had uncovered screens facing the hall (Image 3). In the first case the two screens set up for the survey had other characteristics while in the second some were correctly placed but others were not.



IMAGE 3. Distribution of computers at the Mesonero Romanos Centre



IMAGE 4. Distribution of computers at the Citizen Participation Centre

In the case of the Casino de la Reina, voting was undertaken in a centre with existing Internet access and so the computers already installed were used. This computer equipment had a touch screen imbedded in the wall that impeded mobility. In the case of Bailen, there were also screens that had not been embedded in the wall, unfortunately though they were not used by the scarce number of citizens that came to this centre. However the placement of screens between the computers with posters that outlined instructions for use proved to be successful.

Bearing in mind that the process of identification and of voting were clearly separate, it is worth mentioning the distribution of tables organized at the Casino de la Reina. The room for voting could be found on the second floor, while the identification office was situated on the first in the entry to the building. This proved to be a good decision which should perhaps be replicated in other centres given that in this way, the citizen is able to perceive much more clearly the different steps that should be undertaken to participate in the survey.

The set-up of the printers in the different centres could perhaps have been improved. In the case of the Casino de la Reina, for example, two printers had been set-up for the survey, but only one printer, that was managed by the supervisor in the room, was connected to all the computers in the room. Given that the printers are devices which provide key elements such as voting receipts, it would have been better that each computer had its own mechanism for printing. This would therefore avoid, possible confusion and mixing receipts that, in the case of Casino de la Reina, probably did not arise given the scarce number of citizens that went to this centre.

5.4.4. Voting process

The voting period ran from 9 p.m. Monday the 18th of June until 5 p.m Wednesday on the 30th of the same month. The main centres remained open all Tuesday and Wednesday both in the morning and in the afternoon. The opening hours were respected and coincided with that outlined in the information sent out,

although in some cases, such as at the San Antón Market, the rules of the centre allowed for extended opening hours on Tuesday (until 8:30 p.m) however forced opening hours to be reduced on Wednesday until mid-day (2:30 p.m.).

When accessing the voting application and after seeing a message indicating the need to have valid credentials and a Java navigator –an essential encryption element to guarantee, according to the organizers, the technical security of the process–, the voter needed to introduce their credentials, that is the 16 alphanumeric characters that can be found in the envelope that was provided at the time of registration (Figure 3).



FIGURE 3

VOTING PROCESS

- Identification – Credentials with alphanumeric code (fig. 3)
- Response selection (fig. 2)
- Response confirmation (fig. 4)
- Receipt (fig. 5)

It is very important to note the scenarios where some error has occurred given that these are where the voter surely requires the greatest level of help. As a result, with respect to the first message that appears, it is quite useful that the system already included a link to a technical help manual given that one cannot suppose that all voters know, for example, what a java navigator is or how to vote in case in the event of not having one.

On the other hand, if credentials were introduced incorrectly or the accreditation was invalid, the following error message would appear:

«Voting credentials incorrect ... If after various attempts the error continues, consult the help section of www.madridparticipa.org with the following error code: 1010 – 2900604163525. Please excuse the inconvenience».



As with previous cases, this message was accompanied by a link to the corresponding technical help manual.

The fact that the system personalizes each error in such a way that if the voter contacts the organizers they would more easily be able to detect the cause of the error is also positive. In any case given the fact that the systems should be accompanied by the largest number of help channels possible, *MadridParticipa*, set up various of these: telephone 010, a postal box and their own web.

If the previous steps had successfully been completed, the system then indicated the questions that made up the referendum with the various options available. Once the voter had selected one of these, a confirmation screen appeared with the options selected and finally they voted (Figure 4). The system finally provided a voting receipt made up a vote identifier –16 alphanumeric characters– and a code controller that was much longer and complete (Figure 5). The voting system using telephone devices was similar although each of the steps was logically adapted to another technology environment.

Finally, it should be noted that carrying out the survey correctly does demand that the information systems be permanently available in such a way that every citizen has the possibility, when and wherever, to access the corresponding application and vote.



FIGURE 4.



FIGURE 5. Test screen

In this respect, it is enormously important to guarantee an appropriate coordination amongst the various agents involved. A survey such as *MadridParticipa* requires that a wide variety of knowledge be brought together given that while some firms may be very specialized for example in security around voting, others may be centered on connectivity and so forth.

As with any other area, involving a large number of parties poses a risk that should be mitigated with coordination measures that indicate the role of each agent. Contingency plans should also be elaborated in which the team must act in a coordinated and quick fashion. *MadridParticipa* allowed the different firms and institutions involved to progress in this coordination process detecting the issues that arose and avoiding as much as possible that the systematic crises that came up affect the citizen when voting. These details are outlined in the corresponding technical report of the survey.



THE KEY

MadridParticipa constitutes an experimental initiative in which both new Technologies and citizen mobilization are combined in a renewed democratic process. The aim was to encourage residents in a certain District to become more engaged in the problems in their area and freely express their opinion.

From this point of view, an electronic voting system needs to accredit the **same conditions as the current models today** and more specifically it should respect the principles of **freedom, equality, secrecy** and **universality**. Each of these components can be broken down into various elements that need to be accredited in an electronic voting system. The characteristics that are inherent in these types of systems surely imply that the way to fulfil these is different to the ones currently, however this should not prevent the key objectives from being respected as indicated in the requirements previously outlined.

5.5. Verification

We now come to the most controversial aspects of any electronic voting system. Given the fact that traditional voting models offer ample guarantees in this field (transparent voting box, controllers, polling stations, public recount, etc.), the doubt arises as to which electronic procedures can offer a similar level of security regarding the processing of votes made by citizens.

VERIFICATION - TYPES

Individual

Traditional system ➡ opaque ballot + transparent ballot box

Electronic voting ➡ paper receipt / verification code

Universal

Traditional system ➡ process and public scrutiny

Electronic voting ➡ source code audit + polling station

In principle, it seems obvious, that it will be difficult for this new model to be able to reach a level of transparency and simplicity identical to the current ones, but this should not become an unsalvageable obstacle given that electronic systems can also involve control and audit processes that are sufficiently robust to allow elections to be celebrated or public opinion polls to be undertaken. This would involve applying methodologies that offer a similar level of security to those that exist today, that is security based on the same principles and applied to the new technological framework. It should be noted, in this respect, two central elements to verifying the vote: the capability of each voter to verify that their vote has been correctly processed –individual verification– and the control of the systems functioning as a whole –universal verification–.



5.5.1. Voting receipts

In relation to the first aspect, a large part of current studies regarding electronic voting focus on the possibility of providing the voter with a receipt on paper that allows them to have physical confirmation in the event of system failure. This receipt can have different formats depending on the type of electronic vote used. In the case of touch screens, for example, it would be feasible for a receipt to be printed on paper that could be stored in a ballot box similar to traditional ones while the vote is being processed by the system.

VOTING RECEIPTS

Individualized verification code for each vote

Publication of the **list** of codes processed

Need to compliment this with source code **audits**

In the case of remote voting, this solution could prove to be more complicated, although perhaps not impossible. The surest formula in this case as put into practice with *MadridParticipa* consists in showing the voter a receipt in which the alphanumeric key can be seen (vid. *supra* Figure 5). These characters can be subsequently verified in the list of processed keys that the organizers publish once the electoral day is over. On the other hand this receipt does not specify the concrete option of voting, avoiding in this way a possible coercion or the purchase and sale of votes. According to the philosophy outlined by representatives from ScytI and Accenture, this would involve replicating in an electronic format the traditional guarantees that exist in current elections (envelopes, transparent ballot boxes, mixture of ballots, etc.). The receipt together with the modular elements that will be analysed below, is a sample of this⁷.

In any case, considered in an isolated form, the existence of the receipt described is insufficient given that, although the final list of codes can be compared with the identifier of each vote, the lack of knowledge around the global functioning of the information system impedes offering the voter an absolute guarantee without a shadow of a doubt that their vote has been processed. It may very well occur that the system allows the comparison of codes, but they are then not effectively computed. All of this indicates that a system of individual verification as that analysed must be complimented with some type of universal verification otherwise it would not be admissible. We will now analyse this extreme.

5.5.2. Source code

In this respect, the most effective guarantee consists in the transparency and thoroughness of the **auditing** process of the internal information system protocols used. This is really the only possibility of offering completely credible systems. The complete **availability** of the code could be proposed or, as has been the case in other experiences, it could be provided to a series of agents such as electoral administrators or representatives of political parties.

⁷ In the case of voting by SMS, the transmission of these receipts can be distorted because this technology bears a temporal latency that can lead to a late reception of the corresponding messages, up to several hours later. This is a factor which should be taken seriously into account when evaluating the viability of these messages in electronic voting.

SOURCE CODE - REQUIREMENTS

Transparency / Credibility of the system ➡ Required audit of the source code.

Extent of the audit ➡ Complete or partial availability (only electoral committees + parties).

Elements audited

➡ All
➡ Modular structure ➡ Only critical elements

The draft of the already mentioned Recommendation (cfr. COUNCIL OF Europe, 2004: § 24) does not indicate that the complete revelation of this information is obligatory it is sufficient for it to be communicated to the electoral authorities, but we should ask ourselves whether these measures are sufficient. Note, for example, that the electoral administration does not have the same credibility in all countries. The traditional procedure being based on public recounts allows the citizen to confide in the system itself and not on certain institutions. The electronic vote on the other hand, leads to the increasing protagonism of technicians which leads to citizens losing immediate and direct control of the voting correction, even for those specialized that may value this. Given that this is a concerning tendency, there should be an effort made to mitigate this and in this respect, it would be desirable that knowledge of the internal code of computers be as extensive as possible.

Given that this is “basically an experimental experience, although binding”, the organizers did not consider it opportune to implement an external control on the computer protocols used however it can be expected that in future tests these technical elements will be handed over to the electoral authorities, or better still to the public in general so that they may be adequately supervised and pass the necessary official certification process that should be implemented.

In the case of *MadridParticipa*, it should be noted that the **modular structure** of the application developed by Scytl and Accenture would allow the public supervision of these components to be facilitated if the case were to arise. According to the information provided, its voting system is based on concentrating the critical operations in a few operational modules in such a way that by auditing these elements and ensuring that they work correctly, we can confide in the normal development of the whole process. These modules include the voting agent and the electoral table or recount ballot box agent. The first consists in a Java applet (200kb) and the second is an isolated computer which is not connected to any network within which the votes are counted once the voting information extracted from the server in Internet is transferred.

MODULAR STRUCTURE - SCYTL

Modules to be audited

- a) **Recounting** agent ➡ isolated computer during the day
 - b) **Voting** agent ➡ Java applet (200kb)
-



Both modules should have on the one side, an adequate and permanent physical protection that avoids unwanted intrusions given that otherwise the inherent advantages in this type of structure would be eliminated. If the modules can be accessed from the exterior, the possibility of universal verification of the system based only on auditing the critical parts would be eliminated. In this respect, the **recounting** box was situated in the main office of the Madrid City Council during the three days of the survey. It was closed and there was no immediate risk of manipulation, however it may have been preferable for Scytll, Accenture and the Council to have agreed a greater marginal protection given that, in the way it was undertaken, many employees of the consistory could certainly access this computer without adequate supervision.

In relation to the **voting** agent we should note that in a remote system such as this, citizens that do not use controlled environments, such as the onsite centres set up to this effect, can use computers that can become hostile environments for the voting *applet*. This risk cannot be underestimated and the possibility of assuming it in a completely open voting as the one undertaken, should be adequately considered. There may be certain reasons, such as making it easier for absent residents to vote, they may perhaps justify this decision, but it should be taken into account that the protection offered by the *applet* may be compromised. The technical report should evaluate these risks. In the case of controlled environments, closing down and blocking computers constitutes a simple solution to this problem. In any case the use of wireless technology, used at least on the identification server on Mesonero Romanos, should be avoided given that, even though it may be able to offer all of the necessary guarantees, these types of tools, as Wallach rightly suggests, add little real utility to the system and unnecessarily increase the risks of malicious intrusion (2004: 36).

According to explanations received, the possibility of minimizing or even eliminating the risks of a hostile environment by way of using external modules such as for example cd-rom disks in the case of votes from non-controlled environments –assuming in this instance the possible usability problems that could arise– or a similar extractable hardware in the case of remote votes from controlled environments, could also be considered. These are options which should seriously be considered in future tests of this kind.

Finally it would have been convenient for the extraction of the data on the voting server and its transfer to the recounting box to have been in a public act similar to that which took place at the beginning of the survey or that was made minutes after the final count. This act was not undertaken in a hidden or secret way, but it was not publicized in a way that perhaps would have been necessary given its importance. According to the explanations received, the reason for this was the Council's desire to limit the public act to providing the data already counted and to the corresponding institutional closing speeches. Despite the fact that the ballot box was finally opened publicly, the transfer of the data was not.

5.5.3. Polling station

In any case even if a control of internal modules were allowed, the risks would persist and perhaps even increase given that a large part of the responsibility would be transferred to technicians, that is, it would avoid non-experienced citizens being able to control, as is done today, the correction of the whole electoral process. In order to avoid or at least, decrease this danger, the organizers of *MadridParticipa*, did foresee the set up of a polling station in which there were no technicians. The objective, announced by those responsible for the initiative during the inaugural session, consisted in transferring the control of the process and establishing a new way of supervising the work of the technicians.

POLLING STATION - COMPOSITION

Citizens (Presidents of Neighbours Associations of Madrid and “La Corrala”)
Institutions (Economic and Citizen Participation areas / Madrid city Council)
Experts (José-David CARRACEDO / Javier CREMADES)

The polling station was composed of citizens –President of Neighbours Associations “La Corrala”, Presidents of Neighbours Associations Madrid–, institutional representatives –person responsible for the Economic and Citizen participation areas at a regional level– and experts –José-David CARRACEDO y Javier CREMADES–. Their mission consisted in reducing this risk in the final **counting** phase of the votes given that the intervention of its components, each one of which had a cryptographic code needed to open the ballot box, was indispensable –with a minimum of four out of eight– if they wanted to undertake the final count.

In any case, it should be noted that these types of guarantees should be accompanied by thorough control procedures otherwise what initially appears to be a protecting mechanism can become a mere file to emit a false image of guarantees and control. As such the **audit** of the source code that we discussed previously for example should cover, when it is really put into practice, the analysis of all cryptographic procedures to protect the ballot box. On the other hand whatever the degree of availability of the source code, it is indispensable that at least the components of the mentioned polling station can have access to the internal protocols of the system in order to ensure that cryptographic protection announced by the organizers effectively exists. Otherwise, the existence of the fragmented code and its subsequent reconstruction cannot really be verified and the processes undertaken both during the opening and the close could be undertaken with no real backing.

POLLING STATION - FUNCTIONS

- Control of the counting ➡ Custody of the cryptographic protection of the counting agent.
 - Responsibilities of the station ➡ Control of the process ➡ Audits.
 - Fragmentation of the cryptographic codes ➡ System for secret sharing.
 - Centralization of electoral management ➡ Risks and solutions (diffused counting/ alternative custody of codes).
-

An end effect providing the polling station with supervising responsibilities constitutes an indispensable requirement for their work to really be useful. It refers to an ideal supervising mechanism, however as indicated, it should be accompanied by other measures. The organizers of *MadridParticipa* made the right decision in admitting a polling station with supervising functions given that this allows for an adequate control procedure. Tests undertaken in the future will surely favour publicity of the source code and also of the sections in the code which are directly related to the functions of the station.

The station's functions began on the Monday with the creation of the pair of cryptographic codes used to protect the counting agent, that is, the isolated ballot box with which the count on the final day would be under-



taken. Each member of the station was provided with a cryptographic card which when introduced into the server recorded a fragment of the code that was necessary to open the ballot box. This is a system of **sharing secrets** with which the risk should be reduced by multiplying the number of actors and responsibilities. Each member created to this effect a personal password for access –minimum of eight special characters–. Two organizers –Jordi PUIGGALÍ on the part of ScytI and Pedro BRUNA on the part of Accenture– also had cards and personal access codes to the machines, even though their job should be distinguished from those that correspond to the members of a station. The opening act of the ballot finalized at 7:45 p.m.

Given the relevance of the work carried out by the polling station it is advisable to avoid excessive protagonism on the part of the technical staff given that, as indicated at the start of this section, the purpose of the station consists precisely of reducing the importance that an electronic voting system by its nature grants to these. The station should constitute a citizen representation comparable to the current polling stations where citizens with no technical knowledge are called upon to ensure a correct electoral procedure. It is these people that currently take control, even with relevant legal powers, to ensure order in the voting area. If this is the case and if we want to replicate in a virtual environment what occurs in traditional elections, it would be convenient for the members of the polling station to assume a more leading role in the whole process. The computer systems used today should be designed in such a way that any citizen with no special knowledge is able to undertake these tasks as is the case today.

In the case of *MadridParticipa*, an effort could have been made to have the members of the polling station overlook the whole process with no direct and immediate presence of the technicians given that such a decision would have reinforced the needed citizen and institutional protagonism that these tests require. The work to be undertaken –introduction of the card in the server and the creation of a password– are simple and could be undertaken with no technical staff.

It was also observed how certain members were assisted by the technical staff mentioned when they came across some difficulties upon the creation of personal passwords. On the other hand, in relation to the special distribution chosen –presidential table–, it was one of the technicians that introduced a card in the corresponding groove and it was another that then passed it on to the corresponding member. It would have been preferable to set up a special area –similar to the screens used in electoral colleges– so that each member could undertake the necessary operations. Finally, although all could be done publicly and under the supervision of the observers, organizing a prior training session would have probably avoided disorientation among the members.

On the other hand, similar things occurred on Wednesday afternoon when the members of the station had to meet again to reconstitute the cryptographic code. The disappearance of the presidential table and the absence of the individual cabins gave the act a formal touch that should be avoided given that it contributes to decreasing the transcendence of the act that is taking place.

Finally, what would happen if when it came to the time of counting, we were not able to bring together the four members who, in this case, were needed at least to open the ballot box? This is a concerning aspect because the viability of all election can be in the hands of an extraordinarily reduced number of people. In this way, according to the information received, if we are not able to bring at least four people together or if, although present, over a quarter have forgotten their personal password, it would be technically impossible to obtain the electoral results.

It should also be noted that the station is the only existing one in the whole process and this factor constitutes a very high risk in comparison with the current electoral procedure. As Jordi CAPO points out, one of the positive aspects of the current system resides in its decentralized character meaning that if anomalous events were to occur at the station, the process as a whole could follow its course because the risks would be compartmented (FUNDACIÓ JAUME BOFILL, 2000: 14). On the other hand the example of electronic voting involves a large **centralization** and, as a result increases the risk that an exceptional occurrence arising and that this situation may not be able to be rectified therefore affecting the whole system.

This is a factor which should certainly be taken into consideration for future tests of electronic voting. The creation of a cryptographic decentralization that could act in case of collapse, for example, could be a solution that would replicate to a certain degree the current electronic voting system. In this way, if counting cannot be undertaken centrally, the additional possibility of undertaking partial counts whose results would be later summed up would also exist. This proposal adds complexity to the operation and its technical feasibility should be considered, however it is also true that it would reduce the risk outlined. We could also consider the custody of both the cards and the passwords in separate safes supervised by notaries, but this solution does not eliminate the dangerous centralization described.

Finally, it should be noted that the final public act began at five twenty indicating that the colleges had duly closed at the time foreseen and that the information would be provided, after carrying out a series of processes, at about six (finally 18:34). During this time the information from the servers connected to internet was downloaded using an ADSL / 256Kbps connection and the initial processes were undertaken –eight minutes approx– prior to mixing. This last activity consisted in marking as incorrect those votes that may have been emitted with revoked certificates. This therefore, avoids the possible existence of votes which have been fraudulently added.

THE KEY

Both the emission of an individual voting receipt and the existence of a polling station constitute necessary actions in order to provide remote voting systems with the credibility and the reliability that they need. The receipt provides the voter with a basic element of confidence by allowing them to compare their votes code with the codes finally Publisher. On the other hand, the polling station, where there is no presence of the technicians responsible for the voting, ensures that the electoral process is not exclusively in their hands given that such a case could pervert the foundations of the any democratic system. Both elements nonetheless, depend on the success of the universal verification by way of undertaking the corresponding audit of the source code.

5.6. Digital divide

This is without a doubt the most important variable which we must confront in any electronic voting system. Once a large portion of the technical unknowns that surround this field are resolved, their introduction should serve to overcome many objections raised by societies, including the Spanish society, where an insufficient level of digital literacy prevents many people from comfortably viewing the electronic voting procedure.



DIGITAL DIVIDE – SOLUTIONS

- Danger of inequality ➡ Citizens not digitally literate
 - Compensating measures ➡ Public kiosks (selection of centres ➡ associated / neighbour environment)
 - Help when voting ➡ Training voters and assistants
-

In this sense a precipitated implementation of electronic voting could seriously affect the guarantee of **equality** that should prevail in any selection. The participation of those citizens familiar with new technologies would be favoured and the vote of other citizens would be hindered. This obviously does not mean that innovations should be rejected based on the fact that such an action would lead to perverse effects given that the democratic procedures in place would be disconnected from the technological innovations of our time and have a very concerning outdated image. The existence of a digital divide requires that the necessary measures be adopted to ensure the electoral process is not affected.

The organizers of *MadridParticipa* did foresee various mechanisms to reduce the digital divide that exists in the central district. One of the most relevant consisted in setting up several **centres** in which the citizen could freely access a computer or a telephone to cast their vote. There was also a team of assistants at these locations that had received previous training regarding the survey –two hour course once a week prior to the event– and if necessary could help citizens during the voting process. Each centre had a minimum of two people, except in exceptional cases ej Bailen.

It should be noted, in this respect, the importance that an appropriate selection of the centres had. Some of these, such as the one situated in the central office of the Neighbours Association “La Corrala” –Lavapiés–, had a significantly high number of people coming in wishing to exercise their right to vote⁸. It is not by chance that such dynamism should occur within a neighbours association and it shows us the importance that an associative environment can have in relation to reducing the existing digital divide. In the case of “La Corrala”, many citizens who perhaps in other cases would not have voted, saw that their access to democratic participation had been made much easier by simple virtue of the fact that the event had taken place in an environment which guaranteed security, comfort and help. It was a location where apart from these participative events members often meet for other group acts.

Although in a familiar environment we should not forget the seriousness of any electoral process. An official election would not be able to allow for example, that the election day coincide with an internal event of the association –as was the case of La Corrala on Monday the 28th of June summoned members to celebrate “the inauguration of an office after being closed one and a half years .. (and to) participate in the project **MADRID PARTICIPA**”– or that the friendly and cordial ambience led to secrecy during the voting process being almost absent. Both elements contribute without a doubt to reducing the digital divide, but they can

⁸ Cfr., both for this extreme as well as the whole section regarding the digital gap, the first part of the report in which sociological aspects are looked into.

also cause a great deal of harm which is difficult or impossible to repair. It is certainly useful to collaborate with associations such as those mentioned above however, voting activities should be strictly separated from their own activities.

An identical consideration could be made of a similar occurrence at the Mesonero Romanos where, during a break between a series of conferences that the organizers offer to observers, a table with snacks was organized in the same room where only a few meters further on voting was being undertaken.

Both in this case as well as the others (ej.: Casino de la Reina) we could observe how many people required **assistance** by the team responsible for the survey in each of the centres. As has been seen in similar experiences, there are large segments of the population that have serious difficulties to carry out activities on their own when using devices such as a mobile phone or computer. All assistants tried to facilitate this task informing people of the steps they should take, but in many cases the insistent requests of the citizen led to them casting the vote in conjunction with the assistant who introduced their credentials, and what is more serious, on some occasions even voted for them. Some rather peculiar cases are also worthy of note such as one person with cataracts who an assistant at Bailen helped to introduce the code needed to vote himself.

These acts should not be condoned provided that the petitions are made expressly by the voter, however the relevant conclusions should be extracted given that these situations would not be acceptable in official elections. Disabled people, such as the person with cataracts or other citizens with deficient eyesight, have legal mechanisms that allow them to vote and that should be put in place. On the other hand, assisting the rest of the people was foreseen in each centre with the introduction of demonstration machines, however their use could perhaps have been better encouraged although this may have slowed down the voting process to a certain extent. Remember, in any case that the web page had a whole session set up where the steps required were clearly shown.

Finally, it would be desirable to avoid those centres where the voting room is not on the bottom floor. Even though there were elevators (Casino de la Reina) and access ramps (Centre for the elderly), it is always more convenient to have the voting room near the entrance to the building with no gaps if possible.

On the other hand, the set up of various voting modalities should be viewed positively at least from a strictly social-legal perspective and not technological because it reduces the level of social imbalance. Even if there were no traditional means for voting –a decision made by the organizers in order to bring new technology closer to citizens–, the possibility of voting by Internet (89%) and by telephone (11%), even by SMS messages, encourages participation. Many people may be reticent about voting over the Internet they may view the telephone as a much easier way to vote given that they are more familiar with its use. Although not analysed in this report, the technical obstacles that the use of these channels may have given that they have no cryptographic protection, means that they can easily be exposed to attacks. Votes could also be cast using phones that are much more sophisticated and support Java technology and will most surely incorporate digital signatures in future versions.

This last device mentioned was used fairly unequally in the on site centres for various reasons, including the fact that there were PCs nearby which were easily accessible and there were some logistic difficulties in the distribution of the mobiles, which discouraged their use.



5.6.1. Usability

This aspect will take up a large part of this chapter because a good design of the computer application to be used will make it easier for new segments of the population to familiarize themselves with the process. On the other hand, this also refers to an element which is often forgotten due to the speed of mechanisms. However, a good electronic voting system requires a detailed analysis in this respect. Among the numerous factors that this topic covers, we will focus our attention on the possibility of designing voting systems that are apt for daltonics.

DALTONICS / TYPOLOGY

Homogenous colours
Differentiating terms
Changes in text

In order to offer a systematic outline three examples have been chosen from *MadridParticipa* that apart from showing us how the model could be improved, helps us to create a **typology** of the cases that are susceptible to being analysed, on future occasions, from this perspective.

Firstly, the use in some cases of colour as the only distinctive element of the web page links can be detected:

Type A

«We remind you that in order to vote you will need to have **valid voting credentials**, as well as a **navigator that supports Java**»

This was the message displayed to the voter when accessing the application and as can be seen, its usability could easily have been improved by underlining the text in red. As the technical regulation elaborated by the Interior Ministry, devices for electronic voting should be conceived in order to avoid these types of discriminations that make it difficult for certain segments of the population such as daltonics. A similar situation occurred at the end of the survey where the following screen appeared:

Type B

«**The voting period has concluded**. Thank you very much for your participation. **Click here to see the results and your voting receipt**»

Here we see something new which is quite important because it is not the same case as the previous one: the text now indicates that a click should be made in a certain place and this information can help guide daltonics. In any case, it would have been preferable, in our opinion, that the typography not try to create any difference in treatment among people. Thirdly –type C– in the case of the page where the results are shown, there are three links, but each of these is embedded in an image that slightly alters its colour when

you slide the mouse over it. Daltonics could, in this case, surely detect the change of the mouse's figure (from an arrow to a hand in the Windows XP navigator), however once again it would be preferable to create clearer links for this group of people.

Finally within this detailed review of the hypothesis we should outline the screen that appears after selecting a voting option. At first there are various response options and each one has a button where the following can be read "Select option". When you press on one of these, a coloured band appears that unites that button with the response text and the internal legend is also modified (Figure 6). While the others remain the same, in this one the text outlines "Option selected".

As we shall see, this refers to a case where indications in colour and in text are combined and this may be a good decision for daltonics. However, it would also help to add other symbols that could facilitate the process like crosses and ticks (✓) for example to identify the option selected.

The event could also have been used to put in place, albeit experimentally, some special device for other groups with difficulties such as blind people –audio applications or brail key board–. Please note that as outlined previously, one of the advantages of these electronic procedures consists precisely in offering certain groups greater accessibility than in traditional processes.

On the other hand, the organizers included the use of **tablets PC** with the objective of evaluating its acceptance among citizens and possible incorporation into future tests. Their level of success during this survey was low however, given that this modality for voting presents a level of usability which is quite inferior to other similar devices.

Apart from their reduced size, they only had an embedded keyboard in the screen with which they should operate digitally or with an optique pencil. This is therefore not a recommendable method if we take into consideration that these machines can be easily substituted by normal computers that are much easier to use for those segments of the population that have sight deficiencies.

In any case, one of the key identifying characteristics of this survey consisted of putting in place multiple voting channels and it is logical that some may have lower levels of usability than others. As mentioned previously, the presence of various channels does encourage citizen participation and reduce the deficiencies these systems may have if considered in an isolated form. Even so, these deficiencies are justifiable in those cases such as mobile phones given that their use, obviously more difficult than with a normal computer, is compensated by other advantages such as its extraordinary mobility. In the case of the tablet PC, it is however, more difficult to perceive an advantage that compensates the scarce usability mentioned.



FIGURE 6. Type D



THE KEY

The **digital divide** is a social problem of such a large magnitude that we can obviously not hope to resolve it through isolated actions such as a citizen consultation. It requires on the other hand, a **systematic action and long term**. This is why electronic surveys should take into consideration their existence by way of applying **compensating measures**. MadridParticipa did this by setting up on site voting centres strategically selected, by way of offering the possibility to vote over the Internet as well as by phone and by designing a plan to help assist citizens that requested this.

Bearing in mind that an important part of this section consists in achieving the greatest level of **usability** possible among voting systems, it should also be noted that electronic mechanisms generate problems until now non-existent such as for example **the possible discrimination of daltonic people**. A good electronic voting system should foresee sufficient measures to guarantee equality among voters.



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Appendix I

Citizen Consultation

The organizers of MadridParticipa together with the Madrid City Council are undertaking a survey in order to study citizen's evaluation of this type of participation system.

Would you collaborate with us? It would only take a few minutes. Thank you very much.

Evaluation of the Citizen Consultation MadridParticipa

1. Could you tell us how you found out about the Citizen Consultation MadridParticipa?

(Indicate all of the means used – Multiple response)

- | | |
|--|--|
| <input type="checkbox"/> Telephone 010 for regional information | <input type="checkbox"/> Council Website (munimadrid.es) |
| <input type="checkbox"/> Informational pamphlets in the letter box | <input type="checkbox"/> Screens on the Madrid metro channel |
| <input type="checkbox"/> Banners on the street | <input type="checkbox"/> Neighbours association |
| <input type="checkbox"/> Survey web site (madridparticipa.org) | <input type="checkbox"/> Friends or family |
| <input type="checkbox"/> Posters on columns or containers | <input type="checkbox"/> Press, radio or television |

2. In general terms, how would you appraise the clarity of the information obtained?

- Very clear Quite clear Quite unclear Not clear at all

3. How did you obtain the credentials for voting?

- Via the Internet From a on site centre

4. Obtaining the credential proved to be ...

- Very easy Easy Difficult Very Difficult

5. Did you participate from one of the centres? Yes No ((go to q.6)

5.1. which one?

- | | | |
|---|---|---|
| <input type="checkbox"/> Benito Martín Lozano | <input type="checkbox"/> Mercado de San Antón | <input type="checkbox"/> Mesonero Romanos |
| <input type="checkbox"/> Bailén | <input type="checkbox"/> La Corrala | <input type="checkbox"/> Casino de la Reina |



5.2. Did you require assistance to participate? Yes No

And how would you value the following aspects? (0 means very badly and 5 means very well)

	0	1	2	3	4	5
5.3. The appropriateness of the centre used	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.4. The number of centres available	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.5. The opening hours of the centres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. How would you evaluate the following aspects of the Citizen Consultation MadridParticipa? (0 means very badly and 5 means very well)

	0	1	2	3	4	5
6.1. Need for these types of citizen consultations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.2. The questions posed and the responses provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.3. Information provided prior to the survey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.4. The organization of the survey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.5. The applicability of the survey's results	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.6. The use of new technologies instead of traditional ones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. Did you vote in the last district elections? Yes No

Evaluation of the electronic system and the use of new technologies

8. How would you value the following aspects of the electronic system used in the survey? (0 means very badly and 5 means very well)

	0	1	2	3	4	5
8.1. Information regarding the functioning of the system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.2. Confidence in the voting system used	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.3. Simplicity of the voting procedure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.4. Security around the voting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.5. Voting speed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.6. Degree of overall satisfaction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. Which system do you prefer: the traditional participation system or the electronic one as used during this survey?

Traditional system Electronic System Both

10. Do you believe that the use of new technologies should be generalized in other types of surveys or elections? Yes No

11. In a future citizen consultation, would you use a new system like this one?

Yes Probably No

12. In future elections, would you use a system like this one to cast a binding vote?

Yes Probably No

13. Do you own a mobile phone? Yes No

14. Do you have a computer in your home? Yes No (go to q. 15)

14.1. Age of your computer: Less than one year Between 1 and 2 years Over 2 years

14.2. Do you have access to Internet in your home? Yes No (go to q. 15)

14.2.1. What type of connection do you use?

Modem (basic telephone line) DSL Cable PLC Other type

15. Where do you normally connect from?

Home Work University Cybercafé Civic Centre Other place

16. How often do you connect?

Each day Weekly Monthly Almost never

17. Main use of the computer

Work Leisure/games E-mail Electronic shopping Chats

Socio-economic information

18. Marital status

Single Married Widowed Separated Divorced De facto couple

19. Number of people that live with you

Live alone One Two Three More than three

20. What is your current labour situation?

Self-employed Wage earner
 Retired- Pensioner House wife/husband Student Unemployed

21. Could you tell us what your monthly income is?

Less than 800 € Between 800 and 1,200 € Between 1,200 and 1,600 € Over 1,600 €



22. Are there any observations, suggestions or criticisms regarding the Citizen Consultation “MadridParticipa” or the electronic system used that you would like to mention?

Many thanks for your collaboration!



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