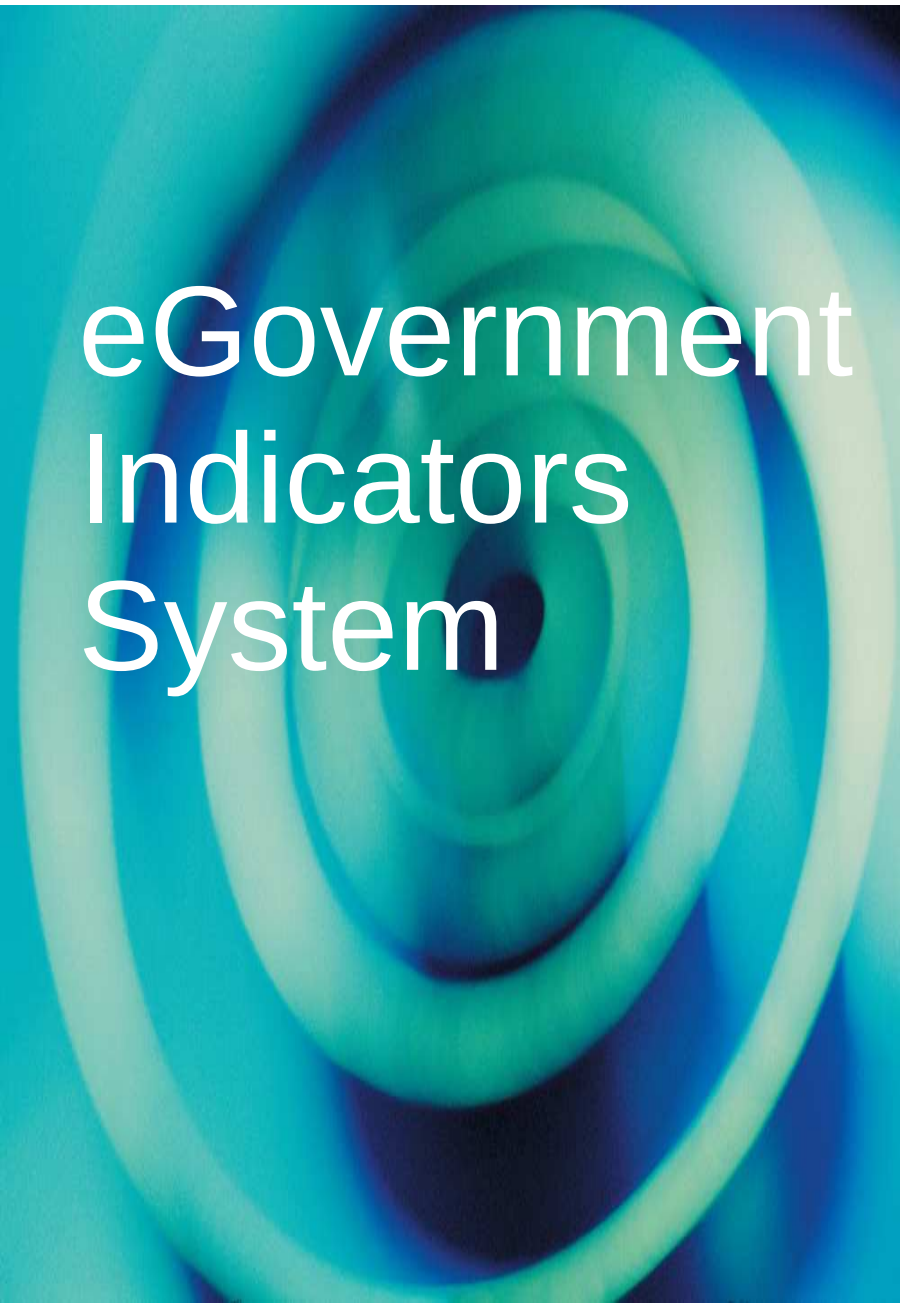
Fundación OVSI



eGovernment Indicators System

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DESIGNING THE SYSTEM OF INDICATORS

0. INTRODUCTION

The e-Government infobarometer came into being due to the need of studying the impact that the New Information and Communication Technologies have on the Public Administration. This study allows the observation and measurement of various processes and proceedings that do not only affect the civil service, but also the population they give service to.

This infobarometer needed a different theoretical build-up to that of the other infobarometers developed by Cevalsi (Social and Business Infobarometer) for the development of its own system of indicators. The novelties that this new system includes are summarised in the following points:

- A major importance is given to the overall approach, starting from a complex concept development that takes into account **information objectives** (penetration, use, opinion), **areas of the Administration** (infrastructure, human resources, budget and service), **technological environments** (ICTs, Internet, web) and **relational environments** (e-administration, e-government, e-democracy).
- The **subjective variables** (motivations, beliefs, opinions) are given the importance they deserve
- The selection of indicators is carried out thinking of **triangulation of the methodology upon the level of the data collection techniques.**

  Main characteristics of the techniques used:

  - **Personal interview:** It is an interview designed on the basis of the indicator system, in the same manner the surveys for the Social and Business Inforbarometer were designed. It is a face-to-face interview.
  - **Observation of the Town Halls web pages:** The proceeding conceived for data collection based on observation is the following: Taking the Town Hall sample, we requested their http address from

those that answered Yes to the question "Does the Town Hall have a web page?". After confirming the correct access to the portals, we filled in a standard observation form. This proceeding included a thorough tracking over their menu or site map, searching for technical contents and development. We also searched for a consensus concerning the definition of everything registered on each item of the observation form. Each observation item, therefore, had a tracking and confirmation protocol to standardise the data collection.

- **Role-play:** Taking the e-mail addresses provided by the Town Halls (and after confirming them as their Customer Service addresses), a bulk e-mail was sent to all the Town Halls from an address and sender created for this interaction. The enquiry sent was: “Hello, could you tell me what are the usual customer service opening hours and if you are open any evening in September? Thank you”. The e-mail was sent in three waves allowing for an answering period of 12 working days (the time unit was "working days", thus respecting the Administration schedule, so in order to calculate the answering time, Saturdays and Sundays were not taken into account). After those 12 days, the answers that would reach the imaginary sender would not be taken into account, although, in fact, no response was received after that period, therefore there is no information leak. For this role-play those Town Halls whose e-mails were returned systematically (even after checking with the Town Hall the correct address by telephone queries) were left out.

In this document, we shall summarise how the **design of the system of indicators** was carried out for the e-Government Infobarometer.

The steps taken for the creation of the system of indicators are the following:

1. Definition and implementation of the concepts;
2. From this conceptualization, the conceptual scheme will be carried out;
3. Provisional build-up of the system of indicators;
4. Selection of the final indicators

1. DEFINITION AND IMPLEMENTATION OF THE CONCEPTS:

Bellow, we proceed the two main concepts for the present study are defined: the **Information and Communication Technologies** and the **Public Administration.**

- **Information and Communication Technologies (ICTs).**

  In the information societies "we have become specially aware that social life is increasingly based on the creation and exchange of information"[1]. In fact, the term is coined following the "importance that the information processes, production and transfer of information have on it [the information society], becoming more and more important in the economic and social reality"[2]. In a broader context, we are placed in what authors like Valéry call the 5th great cycle of innovation since the advent of the Industrial Revolution[3]; this cycle is defined by the expansion of networks and new media, which have provided a greater sense for the generalization of the name given to the new society.

  The computer is the visible head of an ensemble called *Information and Communication Technologies* (ICTs)[4] which, according to Papp[5] would be comprised of: fibre optics, computers, human-computer interaction systems, digitalization and information storage, satellite communications, cellular technology and communication networks. Out of the three industries involved in the ICTs (IT industry, telecommunications industry and communications industry), we are interested in the first two. IT is mainly focused on the production and processing of information and Telematics on telecommunications and processes of transferring or transporting information[6]:

[1] Lucas Marín, Antonio, *La nueva sociedad de la información, Una perspectiva desde Silicon Valley*, Madrid:Trotta, 2000, page 9.
[2] Lucas Marín, Antonio, 2000, page 35
[3] Valéry, N., "Innovation in industry", en *The Economist Report*, 20-II-1999.
[4] ICTs are "convergence technologies between computers and telecommunications for information processing which are applicable in different areas and which allow higher speed, larger information processing capacity, easier access, different types of messages and has a great demand from the public.", in Lucas, A., 2000, pages 103-105.
[5] Papp, D.S., "The impacts of advanced information technologies on Internet and International system", in Porter & Read, *The information revolution: current and future consequences*, Greenwich, Conn.:Ablex Pub., 1998, pages 184-197.
[6] Lucas Marín, Antonio, 2000, pages 106-107

IT-computer industry
hardware·software·support elements (screen, printer, CD-ROM, scanner, modem)
Telematics-telecommunication industry
Fibre optics·satellite communication·cellular technology·communication networks

The system of indicators that we propose shall try to measure the impact of ICTs and, more specifically, the Internet, on the Public Administration: in short, the aim is to measure the repercussions of the on-line Administration through policies/strategies[7], motivations and actions, fixed as indicators. The chosen technology is therefore, Internet and, indirectly, the computer, as a basic network support. We are in principle leaving out other technologies, as their repercussion on the Administration's operation is lower.

- **Public Administration.**

  Public Administration is the State organisation that represents the joint effort of the *members of the civil service* to manage the public *budgets and infrastructures*, with the purpose of offering (under the principles of legality, effectiveness and efficiency) *goods and services* to satisfy social demand.[8].

  Abstracting this theoretical definition forces us to operationalise the concept of **Public Administration** (which is still a latent variable, i.e., not directly measurable) in order to transform it into empirical or shown variables, i.e., directly measurable variables. In order to do so, we need to determine the aspects of the concept:

[7] Considering its three components: information/knowledge, assesment and forecast.
[8] Definition created by the organisation after reading: ROBERTSON, David, *A dictionary of modern politics*, Europa Publications, 2002; ARGÜELLES, Antonio & GÓMEZ-MANDUJANO, J.A., *Hacia la modernización administrativa*, Porrúa, Méjico, 1995; RAMIÓ, Carles, *Teoría de la organización y de la Administración pública*, Tecnos-Universitat Pompeu Fabra, Barcelona, 1999.

CONCEPT	FIELDS OR ASPECTS
Public Administration	▪ Infrastructure ▪ Human Resources ▪ Budget ▪ Service

From this list of Public Administration fields, we shall specify each of them in order to provide continuity to the operationalisation process:

a. **Infrastructure**: would refer to everything related to ICT infrastructures and equipment[9] and their use, which forms part of the Public Administration operation.

b. **Human Resources**: is the Public Administration's human capital who carry out the tasks aimed at satisfying the public interests and are trained to do so. In this field, training aspects shall become specially relevant.

c. **Budget**: is the annual joint systematic estimate of the total income and expenses expected to be registered during the specific year, and also the tax benefits related to State taxes, which is distributed in a hierarchical order among all the bodies that make up the civil service. It represents the expenditure and tax collection field[10]. Within the budget for each Administrative organizational unit the total financial transactions, payments, collections, repayments, etc. that affect the civil service are taken into account.

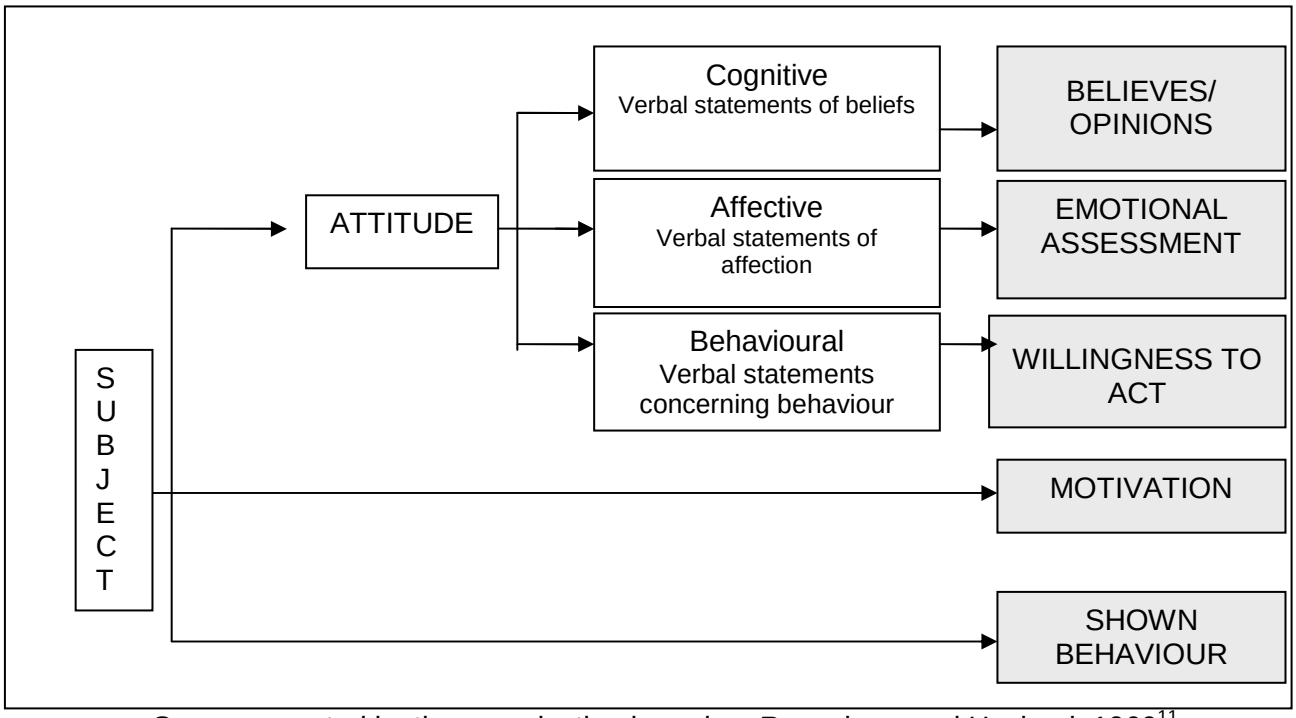
d. **Service**: in this case, we shall refer to the **State civil service** concept, which is the Administration activity aimed at satisfying needs of general interest in a regular and continuous manner with agreement on equal conditions and a special legal system set up as mandatory.

[9] "Convergence technologies between computers and telecommunications for information processing which are applicable in different areas (...) and which allow higher speed, larger information processing capacity, easier access, different types of messages and has a great demand from the public. They shall comprise of: fibre optics, computers, human-computer interaction systems, digitalization and information storage, satellite communications, cellular technology and communication networks". *Lucas Marín, Antonio, La nueva sociedad de la información, Madrid:Trotta. 2000.*

[10] Definition based on Section 134 (Title VII, Economy and Treasury) of the Spanish Constitution.

2. SELECTION OF THE PSYCHOSOCIAL INFLUENCE INDICATORS FOR THEIR APPLICATION TO THE PUBLIC ADMINISTRATION.

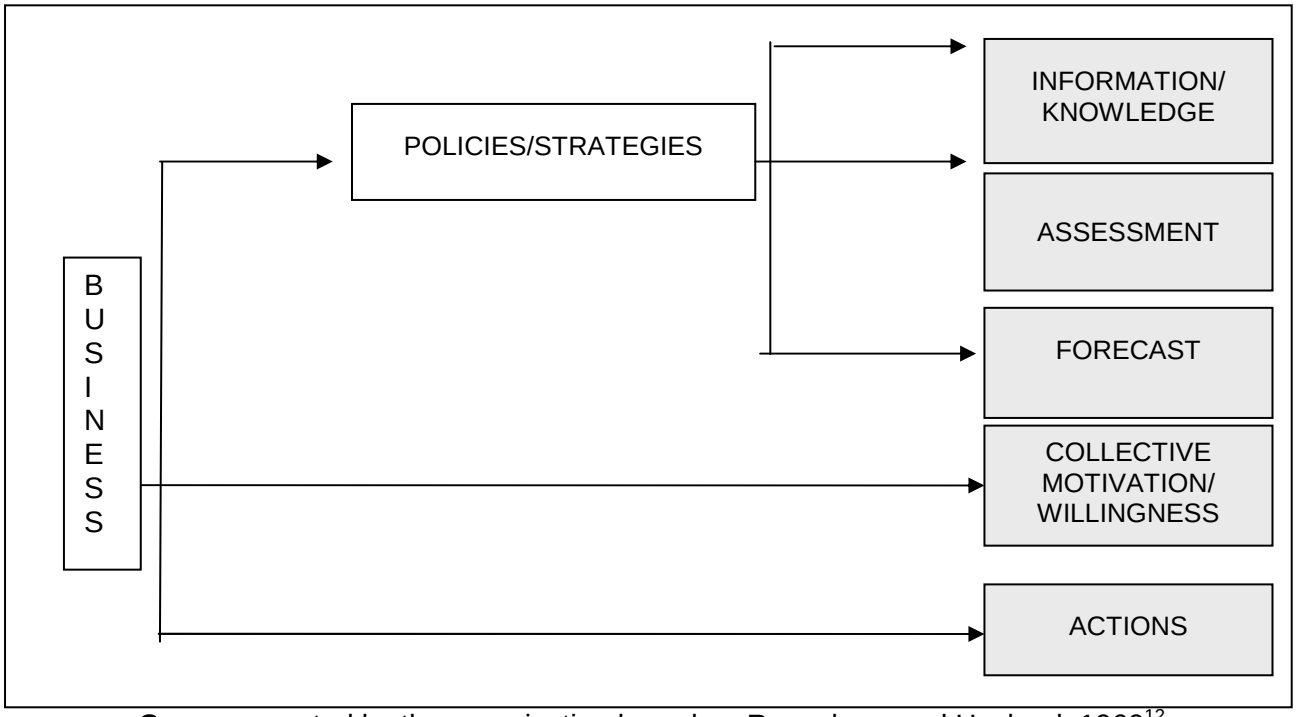
In the analytical scheme created for the Social infobarometer the psychosocial nature of the indicators was specially relevant and important. The different aspects of attitude, along with subject motivations and patterns of behaviour had, apart from a taxonomic function, a key role as an analytical "tool"



Source: created by the organisation based on Rosenberg and Hovland, 1960[11]

We can transfer this scheme to the Public Administration, now bearing in mind its behaviour and functions. Although the importance of the psychosocial nature is lower when applying it to the administration, it is appropriate to do a lexical and conceptual adaptation in order to specify the analytical model.

[11] Rosenberg M.J. y Hovland C.I., "Cognitive, affective and behavioral components of attitudes" en Hovland C.I. y Rosenberg M.J. (eds.), *Attitude organization and change: an analysis of consistency among attitude components,* New Haven: Yale University Press, 1960.



Source: created by the organisation based on Rosenberg and Hovland, 1960[12]

1. Policies/Strategies: we understand by policies or strategies the ensemble of information, knowledge, assessment and forecast that make up the prospective plan of action taken by the Administration. They form the first logical link in the organizational-political decision-making chain of the Administration. Taking the Rosenberg and Hovland scheme, it is equivalent to attitude, and therefore comprises of three components (cognitive, affective-assessment and behavioural). In this process, which leads to a decision making (in the case of the subject, the attitude shown or seen), first of all, the Administration must have information, must learn the necessary knowledge, then with that information assess the situation; and finally, define or foresee the action lines, which do not yet represent a specific behaviour, but only "willingness to act". In short, it is what we consider as **information/knowledge**, **assessment** and **forecast**, a three-component scheme obtained from attitude.

- ***Information/knowledge***: for the study we are dealing with, we understand by information/knowledge everything that affects the cognitive aspect, that is: the

[12] Rosenberg M.J. y Hovland C.I., "Cognitive, affective and behavioral components of attitudes" en Hovland C.I. y Rosenberg M.J. (eds.), *Attitude organization and change: an analysis of consistency among attitude components,* New Haven: Yale University Press, 1960.

level of knowledge and skills, perceptions and considerations, as well as non-evaluating opinions surrounding the considered technologies.

- ***Assessment***: in this analytical scheme, we understand by assessment everything that affects the evaluating aspect, i.e., all the evaluating verbal statements that the administrative staff (respondents) pronounce through feelings, conditions, pleasure/displeasure, etc
- ***Forecast***: will or intention to carry out a specific behaviour. For this study, we understand by forecast everything that affects the Administration behavioural aspect, that is, any tendency to purchase or use any of the proposed technologies

2. Motivations: states and processes that impel, manage or support the activity of a subject, in this case, the Administration. For the study we are dealing with, we understand by motivation all those aspects that have some influence when it comes to using/not using a certain technology, purchasing it or not, etc. We would refer, somewhat (always referring directly to the administration) to the collective will, which is the final impulse that decides a specific behaviour, at least in theory.

3. Action: actions that can be seen and/or conducts carried out by the Administration. For this study, by action we understand all the aspects related to use and purchase of new technologies, training activities carried out, etc..

3. PROVISIONAL BUILD-UP OF THE SYSTEM OF INDICATORS.

From the conceptual scheme developed for the Public Administration, we can set five types of nature of the indicators:

Nature of the indicators	▪ Information/knowledge ▪ Assessment ▪ Forecast ▪ Collective motivation/will ▪ Action

By combining the Areas of the Administration with the psychosocial influence indicators, we have two criteria to create the matrix which will be used as a

guideline to structure the indicators. This way, for the model to be comprehensive, each of the cells of the chart must be completed with indicators (20 cells).

Areas of the administration	**NATURE OF THE INDICATORS**				
	Subjective Information				**Objective information**
	Policies/strategies			*Motivation /opportunity*	*Action*
	Information/ Knowledge	*Assessment*	*Forecast*		
Infrastructure					
Budget					
Human Resources					
Service					

(***Source:*** created by the organisation)

Relational environments.

In the System of Indicators of the Administration Infobarometer, as the number of technologies is low (basically Internet and, as a network support, the computers), we proposed to include in the defining ensemble another criteria for classification of the indicators, that would refer to the different types of relationship the Administration has. We are talking about relational environments where the Administration is involved along with another subject, this being another Administration, the citizens or the businesses.:

A↺	**Relationship of the Administration with itself**	**e-Administration**
A→A	**Relationship of the Administration with another Administration**	**e-Government**
A→B	**Relationship of the Administration with businesses**	
A→C	**Relationship of the Administration with citizens**	
A⇆C	**Reciprocal relationship of the Administration with citizens**	**e-Democracia**

These relational environments will be useful to specify the taxonomy of indicators and provide more sense to the explanation model, but will not represent specific variables in the Administration Infobarometer.

The environments, with the participation of new technologies, suffer an important transformation and become a new concept ensemble, lead by the **Electronic Administration (e-Government)**, which is defined as the use of the information and communication technologies (ICTs) in the public administrations, related to changes in the organisation and new qualifications of the staff. The aim is to improve public services, reinforce the democratic processes and support public policies (eEurope2005).

Following the definitions used in the Regional-IST project, financed by the European Commission which, in turn, were taken from the terminology used by the United Nation, we can become specific and talk about:

- **e-Government:** it is applied to inter-organisational relationships (between organisations) and includes coordination and implementation of policies and rendering of public services.
- **e-Administration:** it is applied to intra-organisational relationships (within the organisations) and includes development of policies, organisational activities and knowledge management.
- **e-Governance** (e-Democracy): it is applied to the interaction among citizens, government organisations, civil servants and elected members. It includes democratic processes, open government and clear decision-making.

This way, considering the fields and nature of the Administration, as well as the relational environment, we can establish, provisionally, the following classification of indicators:

Indicator	Administration field	Nature of the indicator	Relational environment
Web penetration on the administrative unit	Infrastructure	Action	e-Administration
Motivation for not creating a web site in the administrative unit	Infrastructure	Motivation	e-Administration
Penetration of broadband connection	Infrastructure	Action	e-Administration
Type of broadband connection	Infrastructure	Action	e-Administration
Basic Public Services available on-line	Service	Action	e-Government
Areas available for participation	Service	Action	e-Democracy
Number of employees with jobs devoted to ICT-related tasks	Human Resources	Action	e-Administration
Number of employees who have received ICT training provided by the Administration	Human Resources	Action	e-Administration

4. FINAL SYSTEM OF INDICATORS.

Bellow there is a double-entry chart that specifies the indicators in use for each of the techniques employed divided into the three relational environments the current infobarometer comprises of. As the initial indicators have been modified due to the changes suffered by the Administration itself, the chart bellow shows the current indicators (those used in the last Infobarometer).

TECHNIQUE / FIELD	PERSONAL INTERVIEW	WEB PAGE OBSERVATION	ROLE-PLAY
e-Administration	Number of computers		
	Number of computers with Internet access		
	Type of Internet access technology		
	Maximum Internet Connection Speed		
	Security services used		
	Town Halls with Intranet		
	Last year's ICT expense (software & hardware)		
	Number of employees with access to a computer		
	Number of employees with access to Internet		
	Number of employees who have an e-mail account provided by the Town Hall		
	Number of employees who carry out specific ICT tasks		

	Availability of an ICT strategy		
	Communication systems totally or partially substituted by the Internet		
	Staff in charge of using different ICT functions in the Administration		
	Number of employees who use Intranet		
	Functions of the local Intranet		
	ICT training for employees		
	Number of employees who received ICT training		
	On-line training for employees		
	Assessment of the ICT budget		
	Security problems		
	Obstacles of the Town Hall in the use of computers and Internet		

	Impact of IT and computers on the different Administration fields		
	Changes suffered after the implementation of the Electronic Administration		
e-Government	Town Halls with centres for public Internet access		
	Number public Internet access centres per Town Hall		
	Number of public Internet access points		
	Town Hall initiatives to make access to ICTs easier for citizens		
	Town Halls that provide mail accounts to the citizens		
	Town Halls that issue digital signature to citizens		
	Channels the Town Hall has to offer services to the citizens		
	Town Halls with a web site		
	Intention to have a web site		

	Reasons for not having a web site		
	Town Halls that use applications that require digital signature		
	Assessment of the offer of the Town Hall's on-line local services		
	Level of electronic interaction with other Administrations		
	Main obstacles that make the implementation and development of Electronic Administration difficult		
		Type of domain of the Town Hall web site	
		Languages of the Town Hall web site	
		Possibilities of the Town Hall web site	
		Services available at the web site with 1 as the maximum level (information)	

		Services of the web site with 2 or 3 as the maximum level (interaction and two-way interaction)	
		Services available at the web site with 4 as the maximum level (transaction)	
			Response to a basic enquiry through the Town Hall's email
			Response time (days)
e-Democracy	Possibility to carry out on-line queries at the Town Halls web sites		
	Number of queries via the web site over the last year		
	Publication of the on-line queries results		
	Town Halls that take into account the citizen's opinion in their online queries for political decision-making		
	Town Halls that offer the citizens the possibility to have individual contact with an elected member		