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1 Summary

PICTURE is a European Commission funded STREP (Specific Targeted Research Projects) that is pursuing research, technological development and implementation with the aim of enabling high quality service delivery for European citizens and businesses by strengthening information and communication technology (ICT) diffusion in European Public Administrations.

The overall objective of PICTURE project is to develop, implement and test a decision support system which is capable of measuring the potential impact of ICT on back-office processes in municipal Public Administrations, since a large potential for modernizing European PAs lies in process reorganisation with ICTs.

PICTURE is a web based instrument that enables PA decision makers to measure the potential impact of ICTs on processes and hence develop successful, long-term ICT investment strategies.

The PICTURE project started on 1st February 2006, it will end on 31st January 2009 and has been co-financed by 6th Framework Programme of the European Commission.

This document provides requirements for the definition of ICT Functionality Groups and thus lays the basis for the next steps of the project. The ICT Functionality Groups will be defined in deliverable 2.6. The current deliverable derives requirements from the following sources:

- Influencing factors for IT-investments in public administration in different European countries (Germany, Italy, Greece): At first it sketches the influencing factors for IT-investments and provides a 360° view on those within the boundaries of a certain cultural environment. The factors that avoid or slow down IT investments can be grouped in five categories:
 - Legal factors
 - Organizational factors
 - IT factors
 - Economic factors
 - Personnel factors

The view on the influencing factors is important to identify the reason for the gap in adoption of ICT in public administration compared to private enterprises. So the factors explain why things are not done, so this perspective give hints for the measurement tool, but it doesn't give an answer to the question about what needs to be done. Therefore a change of the perspective is needed focussing on what ICT functionality groups are required.

- ICT guidelines for public administrations in Europe. We cover examples from the EU, Germany, Austria, Switzerland, UK, Italy, Netherlands, Norway, and Greece.
- Expert interviews conducted by CSI in the City of Turin
- Characteristics and benefits from typical ICT applications for public administrations: The major challenges with the identification of ICT functionality groups are on finding the right level of granularity and on the delimitation of the ICT analysis. The main approach is to deduct from initial thoughts of the business of public administration. This leads to a number of systems that seem to be unquestionable valuable for public administration. According to the government press and the government IT press the following systems are state of the art IT for governments, or at least should be:
 - Workflow management systems

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- Document management systems
- Archiving systems
- Web content management systems
- Portals
- Forms management systems
- Electronic signatures
- Electronic payment systems

Speaking in such terms of product categories is helpful since it eases the communication between the business people and the IT people, because these categories are somewhat close to business functionalities, or even better they express required capabilities. But since there is no normalization in ICT wording the span on what is covered by such product categories is rather diverse, and the borders in between are not very clearly defined, so there is potentially quite some overlap from an ICT functionalities point of view. But again overlap is a challenge because it prohibits distinct impact measurement.

These applications will then be used as the basis for deriving appropriate ICT Functionality Groups in deliverable D2.6.

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2 Influencing factors for IT-investments in public administrations

Considering answers to the questions of the online survey on IT investments (see deliverable 2.1, chapter 4), several reasons for non-investments in the IT infrastructure are given. First, budget restrictions are announced. Other reasons were missing knowledge or less expected benefit. To engross the thoughts it was decided to perform a literature review relating to different influencing factors which avoid or slow down IT-investments in public administrations. The main factors identified by this literature review were:

- legal factors
- organisational factors
- IT factors
- economic factors
- personnel factors

To a large extent these factors are dependant from socio-economic conditions, thus in essence they vary not only, but mainly from country to country. PICTURE aims at providing decision support for IT investments in public administrations. Thus, local decision makers have to consider these national factors when actually applying PICTURE and deciding on particular investments. To get an overview of the factors that have to be considered and have the basis for some guidance for decision makers we have investigated these factors for Germany, Italy and Greece and have found a number of commonalities that are summarized at the end of this chapter¹.

2.1 Legal factors for Germany

In this first section we analyse the influencing factors for Germany. The analysis is based on an extensive literature study.

2.1.1 Federalism

The administrative competence in the Federal Republic of Germany is divided into competencies of the country, federal states, and local administrations. Local administrations are to adhere to instructions given by higher administrations but have the right for self-administration. Therefore, they decide how to act on their duties and responsibilities themselves. Advantages of this decentralised structure can be identified in a more efficient division of labour and the availability to citizens (subsidiarity). On the other hand, this division can have a negative impact on efficiency, especially in the field of Information Technology (IT) [1].

Formerly isolated systems of legal administrations are difficult to be integrated with other systems for more efficient communication. As every commune is coordinated autonomously, IT systems are heterogeneous, using a number of different applications and data types [2]. Nowadays, E-Government concepts like One-Stop Government are based on the assumption of systems to be integrated with the systems of other communes. However, today's applications are

¹ For UK these factors are mainly proprietary knowledge of consulting companies that implement ICT projects in public administrations, and of research organizations. Therefore, no literature review could be performed for this country to derive the influencing factors.

According to the FileNet UK Government sales team's experience the influencing factors (legal, organizational, IT, economic, personal) are valid. The team was not sure however whether to add "political" because it perceives the political agenda very influencing. On the other hand political can be subsumed to legal, since in most cases these political influencing factors end in legislative initiatives or finally are based on new laws or regulations.

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not designed for smooth interaction. Data formats are not standardized and thus do only allow for communication without media breaches if modified in a resource-intensive process. In addition to that, synergies are not made use of and similar systems are implemented from scratch multiple times.

2.1.2 Data protection

The notion of data protection according to German law is mainly focussed on the so called informational self-determination (“informationelle Selbstbestimmung”). This means, that every citizen is given the right to decide on the distribution of his or her personal data him/herself. Likewise, due to federalism collecting and handling data is subject to the principle of informational separation of powers (“informationelle Gewaltenteilung”) [3], which imposes high boundaries to an exchange of personal data amongst country, federal states, and local administrations.

Examples for personal data are name, address, religion, or income. On the other hand anonymous data is not subject to protection by law. The notion of processing data incorporates all aspects of administrating and handling personal data, such as collecting, storing, changing, transmitting, deleting, and using data.

The processing of data is only allowed if it has been authorized by law or by the citizen himself/herself. Thus, the principle of informational self-determination is accounted for. In addition to that, data must only be used for the purpose it has been collected for (“Zweckbindungsprinzip”) [4]. Administrations therefore have to pay careful attention to legal regulations when collecting and handling personal data of citizens. Any collection of data beyond the minimum needed to accomplish the task is forbidden, unless authorised by law or by the citizen himself/herself.

It has to be noted, that the citizens’ right for informational self-determination therefore opposes the idea of integrating information systems for shared access by administrations. Personal data collected by one functional area for a certain purpose may not be used by other functional areas or other administrations. Exceptions can be made if these organisational units have a vested interest to receive the data with respect to the purpose it has originally been collected for. If this is not so, the data has to be collected again. Public administrations therefore do not constitute informational units as data of several functional areas is to be kept separated.

An automatic exchange of data on the basis of information systems is subject to even more restrictive regulations. Automatic transmissions may only take place if conducted with respect to the right for informational self-determination. Thus, an appreciation of values has to take place between the informational rights of citizens on the one hand and a vested interest by public administrations on the other hand. Transmitting data is forbidden unless the interest of public administrations significantly outweighs the interest of protecting data.

This appreciation of values also is to be conducted when handling so called compound data [5]. Compound data is composed of several datasets belonging to different public administrations. Legislature hence to an extent penetrates the principle of informational separation of powers. Even so, an exchange of data is subject to the purpose it has been collected for.

2.1.3 Administrative regulations and legal framework

Several regulations guide administrative processes of local administrations. These regulations mostly stem from the time of paper-based processes and thus entail media breaches at the interface between administration and citizen. One important regulation is that most processes have to be conducted in written form [6]. In the information age this can also mean using electronic signatures as stated by law. However, citizens usually avoid costs and do not have their own electronic signature. Therefore, the value of electronic processes is mostly theoretical.

Another example is to be identified in the transfer of original documents, which mainly are

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paper-based. Scanning and emailing documents is impossible if local administrations demand handing in original documents, with the effect of citizens relying predominantly on paper-based processes.

Administrative procedures may require the involvement of third parties. Even if the citizen meets all requirements for electronic communication and the third party does not, the procedure has to be conducted in a paper-based fashion [7].

If a process requires the physical presence of the respective citizen, his or her attendance cannot be avoided. Attendance usually is required when dealing with processes that require unambiguous authentication, such as immigration affairs or passport issuing.

2.1.4 Public procurement law

According to public procurement law, administrations have to follow a detailed tender procedure. The competition shall on the one hand regard the economic principle. On the other hand it shall provide for a fair selection process without preferences and corruption.

The procurement process is carried out in a cascading style. If assigning projects with a value of above 200.000 Euros, the tender procedure has to be carried out on level of the EU. Projects of lower value are carried out on a national level according to national / communal law [8].

Due to the defined tender procedure, procurement processes are complex and rigid. Concentrating on major issues the process is carried out as follows: The administrative unit first has to create a detailed specification of services. Then requests for tender are issued and bidding documents are sent to interested applicants. After analysing incoming tenders, the most economical tender has to be accepted. The complexity of this process promotes errors and fosters the consumption of time and money [9].

The cascading legal fundament and the amount of legal constraints make the process non-transparent and foster erroneous decisions. As tender procedures are often lasting for month, especially IT systems as fast evolving products are developed due to out-dated specifications. In addition to that, the complexity of the process distracts from its objective of putting the requirements of IT systems into focus [10].

Current procurement law contrasts the nature of IT systems. On the one hand, specifications of services have to be abstract to meet legal allegations. On the other hand it is the focussed procurement of IT solutions that bears the opportunity for efficient and integrated systems.

In addition to that the knowledge of software and hardware vendors cannot be made use of, as the detailed specification of services is by law the responsibility of local administrations. In the light that administrative personnel sometimes lack exhaustive knowledge concerning IT systems, the incorporation of knowledge by vendors is beneficial to develop sophisticated solutions. However, legal conditions impose restrictions to the exchange of knowledge by focussing on a fair and abstract procurement process.

2.2 Organisational factors

2.2.1 Organisational structure and processes

While the preceding chapter focussed on the external structure of public administrations, this chapter analyses the organisational structure and processes from an internal point of view. The organisational structure describes the division of public administrations into subunits and their responsibilities. Processes on the other hand deal with coordinating transactions of the tasks.

Local administrations are given the right to design their organisational characteristics themselves. Despite this autonomy many local administrations for example in Germany have designed their structure and processes with respect to guidelines suggested by the Communal Community for the Simplification of Administrations (Kommunale Gemeinschaftsstelle für Ver-

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waltungsvereinfachungen, KGSt, [11]). These guidelines distinguish eight departments in a horizontal direction and different offices on a vertical axis. The number of offices is subject to the size of the respective administration and can be divided into several bureaus or functional areas.

Administrative processes adhere to Weber’s bureaucratic principles. These especially include compliance with legal specifications on the basis of written documents to make decisions understandable and prevent arbitrariness [12].

Taking the effect of a hierarchical organisation on IT systems into consideration, it has to be noted that processes currently are not viewed in their entirety. On the contrary, the flow of information is indeed subject to the fragmentation into different offices and departments. As many processes require the involvement of different organisational units, interfaces are created and impose media breaches in administrative processes.

Instead of redesigning processes for an effective and efficient use of IT systems, many administrations tend to apply their IT systems to out-dated paper-based processes. Algermissen/Falk/Janiesch point out, that 56% of local administrations in the state of North Rhine-Westphalia have accomplished no improvements at all or only insignificant improvements in their processes [13]. Typical weaknesses of these processes are the sequential execution of parallel processes, media breaches, redundant or unnecessary tasks, and idle periods. In this way, IT can only be of limited value, because their full optimisation potential remains unexploited [14].

2.2.2 Management factors

The structure of local administrations usually is twofold, incorporating an administrative and a political management layer [15]. Politicians usually tend to focus on short-term projects to legitimate their election and to simultaneously lay down the foundation for their re-election. This attitude is by no means to be considered immorally. However, it imposes major difficulties on IT projects, which are seldom conducted due to their complexity. The nature of IT projects thus does not correspond to the nature of political decisions. Because IT projects can only reap their full potential in the long-run, most projects are conducted uncoordinatedly and only on a small scale.

In addition to that, mayors and department heads usually lack sophisticated IT knowledge, caused by their economic or jurisprudential background of knowledge [16]. Therefore, they cannot recognise the potential benefit of IT investments leading to a fixation of the as-is state. IT staff on the other hand may evaluate the advantages of sophisticated information systems but do not have the authority to start and manage projects of their own. Usually they need the affirmation of responsible persons. When conducting IT projects, intensive communication processes are therefore to be put in place. These deficiencies usually lead to an uncoordinated development and use of IT systems across different functional areas. Thus, benefits to be gained from high quality and integrated systems cannot be reaped.

2.2.3 New Governance Model (“Neues Steuerungsmodell”)

To find significant deficiencies (such as low level of quality, little customer orientation, few incentives for economic decisions and overstraining executives with tall hierarchies) administration processes had been analysed and new structures were conducted. For example in 1993 the KGSt proposed the so-called “New Governance Model” (NGM) as a means to design processes in public administrations with respect to a customer centric view.

Core aspects of this model are management by products, a delegation of responsibility leading to enhanced autonomy of functional areas, as well as improved transparency by

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introducing cost accounting and results accounts [17].

The model has received wide attention in recent years and many communes redesign their administration processes with respect to NGM. However, the model merely acknowledges IT as an enabling factor, thereby questioning its value and impeding its application. Thus, considerable reorganisation potential still remains unexploited.

2.3 IT factors

2.3.1 Heterogeneity of system portfolio

Heterogeneous IT portfolios in local administrations impose barriers to benefits gained from new IT components. The portfolio has grown incrementally and with little respect to standardisation or integration. Cheap software often was bought instead of taking the lower administration costs of other components into account. As a result, local administrations utilize many methods independently, requiring a number of different and non-integrated IT systems such as hardware, databases, operating systems, and programming languages [18].

When attempting to migrate to an integrated IT platform, this heterogeneity significantly increases the complexity of the project, because the integration of different methods is far more complicated and resource-intensive. Thus, an exchange of data cannot take place or imposes media breaches. Especially the deployment of sophisticated IT components, e.g. Document Management Systems (DMS), requires an integration of many processes and methods and therefore is a highly complex undertaking.

In addition to internal deficiencies, strategies of software vendors complicate the implementation of maintainable applications. That is because vendors tend to implement cross-sectional functionality in their applications. On the one hand, local administrations thus have to pay for unnecessary functionality. On the other hand the heterogeneity of applications again is increased, thereby creating new barriers towards the integration of other cross-sectional systems [19].

2.3.2 IT Security

A broader use of IT systems entails the need to provide secure data transactions and store data in accordance with legal specifications. On the one hand, citizens demand for their data to be protected from unauthorized access, especially because they have to provide their personal data for certain purposes. On the other hand, all administrative processes after the implementation rely on a fail-proof functionality of the system.

When viewed in more detail, four aspects of IT security are of special importance: Authentication, Integrity, Confidentiality, and Availability [20]:

- *Authentication* means that all documents and people are identifiable genuine and credent.
- *Integrity* provides for the data to be secured against unauthorised access or manipulation.
- *Confidentiality* is provided for, if any unauthorised access is made impossible.
- *Availability* ensures that authorised persons can use the system continuously.

The secure operation of IT systems is threatened by an increasing number of computer viruses and Trojan horses. This is even more so if systems are integrated and networked. Apart from attacks from the outside, technical problems, human wrongdoings, and other disasters may harm the secure operation of IT systems. The Federal Office for Security in IT (Bundesamt für Sicherheit in der Informationsverarbeitung) distinguishes four categories of threats [21,22,23]:

- Natural disasters (e.g. lightning, fire, flooding)

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- Organisational failures (e.g. inadequate maintenance or capacities)
- Human wrongdoings (e.g. negligent destruction of equipment or data, failures in administrating or using the system)
- Technical failures (e.g. defect data storage, breakdown of databases or network components)
- Premeditative actions (e.g. manipulation of data or software, theft, computer viruses, Trojan horses)

Security concerns can easily be taken as arguments to prevent innovations and new IT systems, be it due to technical or financial causes. On the other hand, executives may overestimate security problems with new components or be unaware of their use, leading to the cancellation of promising projects.

2.4 Economic factors

2.4.1 Financial position

Public administrations in Germany tend to suffer from a weak budgetary position. Especially the financial situation of local administrations has deteriorated in recent years, leading to an annual deficit of around 2.3 billion Euros. The situation due to the federal structure in Germany is especially subject to decisions made by the state or country.

As an effect of weak financial capital, IT systems seldom are implemented in local administrations. Additionally, it has to be taken into account that budgets in public administration only are 20-30% as large as in highly administrative functional areas of companies. In effect, the budget can only be used to maintain the current IT environment, but restricts the introduction of new components [24,25,26].

2.4.2 Investments

Investments in public administrations are subject to rigid legal regulations. Especially public administrations have to pay the utmost attention to economical budgeting. They either have to reach certain objectives utilising the smallest possible budget (minimal principle) or gain the highest value from a defined budget (maximum principle). On the other hand the principle of economy dictates to restrict the amount of financial resources as far as possible. Both principles shall be viewed as complementary. Still they may contradict each other in some situations, e.g. in case the initially cheapest solution is not as cheap in maintenance [27].

To evaluate the economy of a procedure, a method is needed to systematically analyse advantages and costs in a formalised way. This method can be identified as an economic assessment. Several alternatives are to be analysed due to quantified costs and benefits. The problem with IT systems to this respect is that benefits often occur with a delay and may be partially intangible. Costs on the other hand can usually be evaluated a priori.

The quantitative benefit of investments in IT can be evaluated when comparing costs of processes before and after the investment in companies. In the area of public administrations this comparison is much harder to accomplish. On the one hand the huge amount of processes, for each of which process models have to be created, increases the complexity of comparisons. On the other hand public administrations seldom utilize cost accounting and results accounts. The allocation of costs to their originator thus is not provided for and therefore little insight into cost driving processes is gained [28].

As tangible benefits from IT systems are often subject to delays and public administrations have little financial resources at their disposal, IT investments are often postponed and never made.

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Unlike companies, public administrations do not primarily think in terms of economic objectives. They rather attempt to realise non-tangible aims like shorter cycle time, reduction of errors or higher transparency. However, these factors are not addressed in traditional economic assessments [29,30,31].

It is to be noted that public administrations tend to overestimate the costs of investments. IT projects thus are often estimated to be uneconomical and investments are not approved. The potential of new systems therefore remains unexploited.

2.5 Personnel factors

2.5.1 Organisational inertia and resistance

Implementations of IT systems in companies as well as in public administrations may entail significant changes of social reality. Employees may experience substantial fear and resist any possible change in a variety of ways. Fears of employees can include [32]:

- Loss of job: Employees fear to lose their job, caused by new IT systems.
- Loss of power: Employees fear a loss of their competences due to reorganisation efforts.
- Fear of insufficient abilities: Employees fear that they do not have sufficient competencies to work with the new system.
- Social fear: Employees fear to be disconnected from their team or their social environment.

These fears are facilitated by the rather conservative administrative culture in Germany emphasising strong formalisation and tall hierarchies. Thus, employees in public administrations often act risk averse. In addition to that, public administrations are not forced by competition to continuously reinvent themselves. Employees resist changes to keep up the status quo [33].

2.5.2 Personnel restructuring

Employees in public administrations can be divided into three groups with respect to their knowledge in IT systems [34]:

- Clerical assistants: Clerical assistants work in traditional functional areas and usually have only basic knowledge of IT systems. As IT systems have an impact on their daily work, they have to be trained to work with the systems.
- Executives: The work of executives more and more requires knowledge of IT systems, because changes concerning the organisational structure and processes have to be managed. Executives do not need detailed knowledge of the functionality of the systems, but rather need an overview to coordinate communication between technical and non-technical personnel.
- IT specialists: IT specialists concerned with e.g. the administration, development, or helpdesk need in-depth knowledge of IT systems.

When implementing IT systems the need for personnel of the groups mentioned above changes. The need for clerical assistants may decrease because processes are conducted more efficiently and require less human attention. On the other hand public administrations require more IT personnel to effectively run the systems. The amount of executives will be fairly constant. However, executives have to have some IT knowledge. This shift causes both a lack and a surplus of personnel.

The decreased need for clerical assistants leads to a surplus of personnel, because public administrations cannot reduce their staff due to dismissals protection. Other means like early

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retirements or compensation only have limited impact. This surplus of personnel threatens the modernisation of public administrations, because financial benefits due to reduced staff can not be reaped. Because of dismissals protection public administrations have a reduced incentive to make their processes more efficient. As a result processes remain inefficient [35].

On the other hand the need for IT specialists and for executives with IT knowledge leads to a lack of personnel. This lack is fostered by unattractive compensation of IT personnel in public administrations, especially IT managers / executives. Therefore, it is difficult to attract highly skilled employees, which has a negative effect on coordination mechanisms due to inadequate staffing. Thus, it can be inferred that a lack of adequate personnel negatively affects modernisation efforts [36].

2.6 Influencing factors - the Italian perspective

The second part of this chapter analysis the influencing factors for Italy. This section was prepared by the Italian consortium partners involved in work package 2, CSI Piemonte and the City of Torino. The main source of information is the experience of the two consortium partners and not so much a literature review. To make it comparable we tried to structure it in a similar way as done for the part for Germany.

2.6.1 Legal factors

The Italian legislative system has, even if small, experience with the evolution of technologies that have characterized the last 15 years. Given the exquisitely technical connotation, the Italian legislator has a major workload in translating the principal problematic areas and the main questions that characterize the IT world, and that has a real impact on a social and economic level. In fact, many choices made by the legislator in the last years have been the object of strong contestation of the part of the workers. A phenomenon that has put forward the necessity to acquire technical competences also were the definitions of norms and laws made. As mentioned before, this first aspect has to be kept in mind when analyzing the legal aspects that influence the development and the diffusion of ICT solutions, with the substantial ignorance of the Italian legal framework on the present theme.

In the last 10 years, the main normative arguments that influence the IT sector, in a more or less direct way, are the following:

- Accessibility
- Software at open code (Open Source)
- Digital signature
- Certified electronic post
- Digital protocol
- Electronic documents
- Privacy
- Information security
- Unified network of the public administration (RUPA)
- Public system of connectivity (SPC)
- Management of document flow
- Electronic identification card / National service card
- e-Learning
- Telework

The various local administrations put different priorities regarding the legislated decrees. For example, in Piedmont there is a noticeable high level of information systems diffusion put to

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manage the Protocollo Informatico, while in Lombardy (Milan), they decided to put priority on the opportunities that derives from the diffusion of the Electronic identity card or the National service card instead of the management of document flows. On some specific themes, the legislator has known when to give guidelines useful to stimulate the operative activities in the local entities in the realization of the correlated projects. In other cases the norms have instead played a role of an obstacle against the development, as in the case of the Law on Open Source, that gave incomprehensive directions from the law makers as to the technical and the economic effects of the phenomenon. Another widely visualized area is the attention on privacy law and information security, where they have created very strict rules for the development of information solutions and their use in different environments.

Another factor, not directly related to the ICT sector, but by more general nature, regards the phenomenon of intrusion, in which the related norms are inserted in a text having a completely different objective. The result is the substantial difficulty, if not impossibility, to act following the norm. The same phenomenon, together with the scarce technical preparation of the law makers, produce in some cases a level of insecurity where the local public administrations respond with immobility and insecurity that does not contribute to a favourable development.

All this has to be interpreted against the background of fundamental restructuring of the political and administrative system. According to Mr. Paolo Zocchi, senior advisor of the minister of regions and local authorities the law issued in 2001 should transform Italy into a federal state giving power from the central to the regions. With a lack of vision so far these efforts mostly ended up in concurrent competencies, thus central, regional and local initiatives blocking each other².

2.6.2 Organisational factors

In general the structural organisation of the public administration follows a divided competence approach. Over time the definition of the internal procedures has followed this above mentioned paradigm, for some part by free choice, and on the other hand as a spontaneous phenomenon not effectively directed. The tendencies of the organisational structure of this decisional type have an effect on the IT infrastructure and the profiling of the IT solutions of vertical type that are to a small extent adapted to fully exploit the synergies and the opportunities of dividing information. From this point of view the development of going towards logic based processes enable an essential approach to permit the full exploitation and advantages offered by new technology. The current use and planning concerning IT solutions are often not elaborated or in line with organisational rethinking, and aim instead at adapting itself to the existing structures. This division takes two aspects, organisational and technological, that influence aspects of work life and the reengineering of operative process that in its complexity brings a loss of efficiency and opportunity. From a cultural point of view, an important passage to confront regards the actual intake of knowledge concerning the impacts that use of technology has on the organisational aspects of public administration. These impacts change technology, expectations and requirements deriving from citizens, opportunities and internal relations as well as the line of thinking on operative process within the public administration.

2.6.3 IT factors

The diffusion of IT solutions within the public administration is a phenomenon that started in the 70ies, and in the years following that, the registration and profiling of vertical IT solutions. Solutions that today are deeply involved in the operative activities of various organisational entities. The different information technology solutions have over time been integrated between themselves according to their respective characters, this by using heterogeneous technology in a directed manner. By observing results one phenomenon that seems to be rather spread is the

² Paolo Zocchi at the IBM ECM Conference, Rome, May 24th 2007

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disarticulated integration and the seemingly spontaneous results from the lack of adequate projected activities (spaghetti integration). This scenario has constricted the public administration to revise the actual methods and making informed choices regarding IT governance. Today there is a high level awareness about the necessity to plan the construction of information technology in a coherent manner, and the requirement to follow a process plan that keep track of the requirements of scale, the integration and reuse within large organisational systems like the public administration. By interpreting these perspectives one can observe the increasing requests for application solutions of transversal type to substitute the former adopted vertical solutions used within the different organisational entities today. Different Italian regions today have a cultivation of service offered with the aim to satisfy and keep the technological requirements coming from public administrations within their territory. The phenomenon responds to the appeal to better exploit synergies and the economy of scale that characterise the complex ICT infrastructure.

2.6.4 Economic factors

The public administration as every other economic subject, works within an environment with limited resources. Choices of investment relating to IT solutions have often played a significant role in reference to the actual resources at hand. Factors that explain this affirmation can substantially be divided into two areas:

- On one hand it is difficult to determine the tangible elements that permit the quantification of the rate of return of investments in ICT
- Secondly, one needs to keep in mind the first stakeholder of the public administration, the citizen. These two have a difficult position in perceiving the added value deriving from investments in new technology, since these choices have an impact in the medium long term perspective and less in the short term related to the fact that actual costs are visible in the a short range. Furthermore, the kind of consuming strategy existing within the public administration guarantee a larger direct visibility that is preferred, especially in periods with possible law changes.

2.6.5 Personal factors

There is to a certain degree a lack of information competence regarding older employees, and furthermore existing sensibility and friction relating to change. These are the principal factors of personal character that slow down the spreading of information technology solutions. The two areas mentioned have to some extent faded today, on account of the larger familiarity with the new technologies that the new and younger employees of the public administration demonstrate. Also from the familiarity point of view and on the process of change there is worth mentioning that the effort made by public administrations to certify procedures that on the one hand are slow but constant and sensitive to citizen requirements, bring a gained conscience of the personnel on the requirement to evolve the activities and the participation in the operational process and the work life of every day.

2.7 Influencing factors – the Greek Perspective

The third part of the analysis of influencing factors was prepared by the City of Amaroussion and presents the Greek perspective on the influencing factors. The analysis is based on the feedback obtained by the participating Greek public administrations (PAs) in the first PICTURE workshop on 7th March 2007 (see also Deliverable 7.4). It is again structured along similar categories as the sections for Germany and Italy.

2.7.1 Organizational factors

The key influencing factor affecting IT investments in Greek Public Administrations is the lack of a strategic planning on IT. Most of the personnel who are involved in IT issues in PAs

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believe that the Greek Public Administration lacks a National Strategy for IT development and diffusion. This fact in conjunction with the lack of coordination between the Central and the Regional Administrations result in insufficient diffusion of IT in the Greek Public sector. Another issue is the underestimation of the role of informatics by managers and politicians and the delays in the implementation of the operational projects of public bodies.

The lack of knowledge of the managerial staff on IT issues also leads to poor communication between them and the IT staff, resulting in low levels of developing new ICT projects

2.7.2 Personnel / Human Factors

Informatics is a field which has not explicitly defined and consolidated working rights in Greece, which means that practically anyone can work as IT staff, without having any special knowledge on informatics. In the Public Sector almost anyone can manage IT issues and despite the Presidential Decree 347/2003, anyone can be considered as IT staff. Thereby, in most of the occasions there are no appropriate personnel for the elaboration of studies, set up, maintenance and monitoring of telecommunication infrastructure and IT projects.

Another very important issue is the reluctance of existing (across departments) PA personnel to the introduction of new technologies. One of the main causes of this phenomenon is the reaction of the users in any changes in their daily routine and also their ignorance for the usability of new technologies and operation of information systems.

2.7.3 Economic Factors

One of the key inhibitors for the diffusion of ICTs in Greece is the low level of budget in PAs for the development of information systems. The underestimation of the role of informatics in the public sector is also reflected in the low salaries offered to IT staff in the public sector. As a result, the most experienced and innovative IT staff are employed in private companies.

Another very important issue is the lack of experienced and scientific personnel in the Local Authorities, for the exploitation of externally funded projects (e.g. EC funded projects) which often result in waste of financial resources and development opportunities.

2.7.4 Legal Factors

Until now the Greek State's actions were based on recommendations for the need of modernization of the Public Administration's structure. In the future an increase of the e-Government services is expected, because Greece will have to follow the decisions taken at European level and the initiatives eEurope2005 and i2010, along with the directives of the Information Society. The revision of the legal framework will also contribute to the increase of G2G services, since many Public Bodies already exchange electronic certificates. Moreover, the continuous education of the citizens in new technologies and the wide spread of internet and mobile phones, increase the possibility of accessing new technologies, motivating also the Public Sector to provide new services. The General Secretariat of Information Systems and Electronic Government has already taken actions, for a framework study on e-Government, a framework study of participating e-Democracy and a project for a Central Internet Gate of Public Administrations.

2.7.5 IT Factors

In Greece only 5 municipalities have been certified under ISO, revealing that public administration in Greece is at an early stage of process monitoring and quality control. Also, methods for measuring the impact of ICTs in PAs are largely unknown. The majority of municipalities have only basic IT literacy; as such it is not in their "culture" to use tools such as PICTURE. As for the availability of IT technologies, it has to be mentioned that the Greek Market, along with the international market, have already developed many Information Systems and ICTs that can be applied in the Public Sector for the provision of modern and quality

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electronic services, for the back or front office procedures. There are also companies and organizations that develop free and open source software for the support of the Public Sector. This means that it is up to the Public Authorities on how to organize their services and take advantage of the new technologies. The issue of political will is very important to support the diffusion of ICTs.

2.8 Summary

While there are differences in details the dimensions of influencing factors identified are the same: legal, organizational, technological, economic, personnel. There are more commonalities in European public administration than one might have expected. Factors influencing the use of IT systems in public administrations are summarised in fig. 1.

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Legal factors

Federalism

- Self-administration of communes leads to highly isolated IT portfolios. Any exchange of data among local administrations is often subject to media breaches.
- Independent planning of IT components in local administrations does not make use of synergy potential as similar systems are developed from scratch each time.

Data protection

- Legal regulations set rigid boundaries both to the exchange of data among functional areas and among administrations.

Administrative regulations and legal framework

- Many regulations (e.g. electronic signatures, physical presence of the citizen) discourage the use of IT in administrative processes and create media breaches.

Public procurement law

- The complex and rigid public procurement process causes long cycle times and erroneous decisions. The incorporation of knowledge provided by external companies is highly impeded due to tender procedures.

Organisational factors

Organisational structure and processes

- The division of labour into a number of functional areas in a tall hierarchy creates internal interfaces and does not allow for an analysis of horizontal interdependencies.
- Processes often are not optimised during the implementation of IT systems.

Management factors

- The focus on short-term benefits of political executives and a lack of IT knowledge in the administration cause an uncoordinated and punctual use of IT systems.

IT factors

Heterogeneity of IT systems portfolio

- The heterogeneity of the IT systems portfolio and methods with cross-sectional functionality make networking methods difficult.

IT security

- An overestimation of security concerns prevents the implementation of new IT systems.

Economic factors

Financial position

- The lack of financial resources imposes an obstacle for investments in new IT components. Local administrations hence cannot make use of middle-term and long-term benefits.

Investments

- Local administrations tend to overestimate the costs of IT systems, because they do not estimate financial and intangible benefits adequately.

Personnel factors

Inertia and resistance

- Employees fear changes in their working environment by new IT systems. They resist and want to keep up the status quo.

Personnel restructuring

- The utilisation of IT is hindered by a surplus of clerical assistants and a lack of IT specialists and executives with IT knowledge.

Fig. 1: Factors influencing the use of IT systems in public administrations

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3 Public Administration's ICT Guidelines

Considering the state of the art of IT in public administrations, several guidelines have to be attended. Many European countries propose their own guidelines. These are more or less binding. To get an overview, different guidelines are introduced in the following subsections. The basic concepts and limits are pointed out.

In the context of PICTURE the reason to cover such guidelines is to screen for requirements relevant to the PICTURE tool and its underlying methodologies and assumptions. We covered eight national and one PanEuropean standards and we believe that through these the main common requirements can be identified. A complete survey of ICT guidelines for public administrations in all European countries is out of the scope of this deliverable and the PICTURE project.

In particular we had a look at the following guidelines:

- MoReq as an example of a European guideline
- DOMEA as a German guideline
- ELAK a an Austrian guideline
- Gever as a guideline from Switzerland³
- PRO/TNA as a guideline from the UK
- Protocollo Informatico / CNIPA from Italy
- ReMANO from the Netherlands
- NOARK-4 from Norway
- and a description of the situation in Greece

3.1 MoReq (EU)

The Model requirements for the management of electronic records (MoReq) were originally produced in 2001 in the framework of the IDA programme as a comprehensive specification of the functional requirements for the management of electronic records. MoReq roomy is accepted and available in nearly all European languages.

MoReq can help organisations to ensure that an Electronic records management system (ERMS) and procedures they develop comply with records management principles by outlining a guideline of requirements. MoReq can be used, e.g.:

- as basis for invitations to tender for ERMS;
- in evaluating software products (notably to check that they meet essential records management requirements);
- as a basis for the development of products by software suppliers;
- as a resource for training and education in ERM.

MoReq delivers a detailed set of functional requirements for electronic and paper based record management as well as requirements for corresponding electronic process handling systems and document management systems. The approach also includes guidelines for the consideration of operational systems and management systems as well as functions beyond simple recording but processing of electronic documents.

³ Regarding the guidelines of Germany, Austria and Switzerland, it should be mentioned that these guidelines nowadays are coordinated together to manage a common standard.

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In 2005 a report of the upcoming version two of MoReq was published, which contained details of changes in the old document. The overall goals for the MoReq2 development are to develop extended functional requirements within a European context.

To provide compatibility, MoReq2 is to be an evolutionary update to the original MoReq, not a radically different product. It is proposed that MoReq2 will be arranged in modules. Some of the modules will form an essential, or “base”, part of the specification as they will always be part of any interpretation of MoReq2. Other modules will be optional as their applicability will depend on circumstances. However, optional modules may contain “mandatory” requirements – known as “optional mandatory” requirements. Any module may also contain desirable requirements. Main parts of MoReq2 will be the sections:

- Classification scheme
- Controls and security
- Retention and disposal
- Capturing records
- Referencing
- Administrative functions
- Other functions
- Non-functional requirements
- Metadata requirements

At the moment MoReq2 is in a very critical phase. While specification is still underway single membership countries enforced the introduction of a chapter 0, which should cover national peculiarities. Since so far no regulations are in place what this may mean MoReq2 is endangered ending up in 25 national MoReqs instead of one PanEuropean. The upcoming months will show if it is possible to consolidate the approaches and define and adopt one standard across Europe.

3.2 DOMEA (Germany)

The DOMEA–concept describes how to introduce the „paperless office“ in public administrations and is divided into three sections: Organisation concept, Requirements catalogue and expansion modules.

IT-providers are able to let certify their products towards DOMEA. This is not required. However, there are 170.000 DOMEA licences approved in Germany, Austria, and Switzerland.

In the section of organisation concepts, guidelines on how to introduce the electronic record – as part of the paperless office – under regulations and laws are proposed. In order to explain these guidelines a standard process consisting of the following four part processes is defined:

Incoming-phase: The process of incoming documents or information covers processes from editing up to registration of receipts.

Adaptation: Adaptation means to receive, process and at last to transfer receipts to the next responsible arranger (under consideration of deadlines).

Outgoing-phase: In the process of outgoing documents or information different kinds of sending post are considered, especially separated into paper-based solutions and electronic solutions.

Archiving: The process of separating and archiving covers the assessment and the possible conservation of a processed file in archives.

In order to take full advantage of the optimization potentials of electronic records the actual state of the part processes – mentioned above – is described. Afterwards problems and

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organisational solutions as well as possible technical implementations are proposed. According to this, requirements of a records management system, which allows for creation, registration and administration of electronic records, are outlined. Furthermore, expansion modules which deepen single requirements are introduced.

Virtual post office and records management: The module discusses the integration of a virtual post office into an existing records management system. A virtual post office provides cryptographic services as well as services concerning incoming / outgoing mail (under consideration of rules which relate to paper based mail).

Integration of LOB-applications: The topic of this module is the integration of LOB-applications into a workflow management or records management system.

Scanning processes: The module shows different scanning and registration strategies as well as possibilities concerning the design of digitalisation methods for non digital documents.

Inner- and interadministrational communication: The goal of this module is to show methods of how data can be exchanged and which rules and requirements have to be considered in order to make these methods universally valid.

Separation and archiving of electronic records: In this module recommendations how to provide electronic records for federal government archives as well as municipality archives are explained.

Technical aspects of archiving: In the document concerning the technical aspects of archiving organisational topics of electronic archiving of documents or data in archive systems are discussed.

Forms management and IT based workflow management: By showing different usage levels of forms management systems (FMS) possible cooperation scenarios for FMS and workflow management systems (WFMS) are introduced.

Content management and IT based workflow management: The goal of this document is to describe the cooperative deployment of WFMS and content management systems (CMS) by means of existing cases and to identify and describe requirements for the cooperation of WFMS and CMS.

Payment platforms and IT based workflow management: By means of the payment platform of the federal government the integration of a ZVP into a VBS is described.

Data security and IT based workflow management: In this module problems and measures concerning data privacy are presented.

Project guide for introducing IT based workflow management: In this guide an exemplary procedure of introducing It-supported workflow management and a derived check list are presented.

The implementation of the principle of the electronic record regarding DOMEA is realised in three levels:

- In the first level only metadata is recorded electronically
- In the second level the electronic record is introduced
- In the third and last level the processing, recording and the forwarding of records is executed with IT-support only

Practical experience has shown that the three-level-concept causes disadvantages which can not be accepted. Therefore the concept was modified in 2005, so that the introduction is proposed not only in three levels but also for introduction in parts of an organisation or single processes.

3.3 ELAK (Austria)

The ELAK concept supports the design and choice of an electronic records management system (ELAK - System) based on the presumption that electronic records are used

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administration-wide.

Central administrations in Austria have to transform their processes as ELAK propose. So it can be seen as de facto standard.

The reorganisation of business processes does not directly play an important role in ELAK. In addition to DOMEA the ELAK concept describes requirements and functions of an ELAK – System in detail and gives examples what has to be considered in public invitations.

In order to derive such functions and requirements a general core process consisting of the following partial processes is defined:

Incoming information: In this part of the core process it has to be checked whether the receipt is relevant or not.

Registry of incoming information: Base data including the document is registered. For organisational means continuously numbers can be appointed.

Allocation: The goal of the allocation is to assign the document to the responsible person.

Logging: In this step a subject area is assigned to the receipt so that possible standard sequences can be initialised. Possible references to the receipt can also be attached in this step.

Adaptation: The responsible person has to make a proposal for the processing of the receipt and also has to attach relevant documents. By transferring the signed receipt a version is created.

Approbation: In this step one person has to approve or decline the receipt. The latter results in returning the receipt to the predecessor, which has to perform changes according to attached instructions. When the receipt was finally approved the receipt is stored as an unalterable version.

Access rules: For the purpose of information and contribution of all relevant departments the processor can define access rules.

Clean copy and dispatching: The purpose of this step is to create a clean copy of the receipt and all annotations which were made during the processing.

Archiving, Resubmission: The last step is to archive the record which was created during the single steps of the core process. When archiving files electronically it has to be considered that sorting parameters like year etc. are reasonable.

Based on the defined core process detailed functions for an ELAK-System are derived, which support the steps explained above. The general functions are shown below and are explained in the original document:

- General functions and system access
- IT-support of working steps
 - Support for business transactions
- Support processes
 - Electronic desktop and depot
 - Support of adaptation
 - Enquiry, analysis and printing
 - Other support processes
- Administration and configuration
 - General requirements
 - Figuring structural organisations
 - Figuring ELAK and resources
 - Figuring process organisation

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- Special functions for administration
- Interfaces
- Metadata and process data
- IT requirements
 - System architecture
 - Scalability and support of running distributed systems

The last part of the ELAK concept describes pre-configurations in order to support the introduction of ELAK – systems „out of the box“. The general goal of this is to minimize the adoption time for single departments as well as to standardise and rationalise the use of ELAK – systems.

3.4 Gever (Switzerland)

The Swiss GEVER (electronic business-administration) standards are binding requirements catalogues for standardised GEVER software products, for implementations of GEVER applications and for the control whether a file administration is conform to existing laws. The requirements are based on official regulations which apply to the Swiss federal government. The GEVER documents do not describe how the GEVER standards have to be introduced or what benefits and costs occur. They state basic requirements in order to enable administrations to abandon paper based records administration. If the requirements are not fulfilled, paper based records are obligatory in order to achieve a proper and traceable records management.

The GEVER - framework includes five standards which consider different aspects of GEVER:

A290 Business Administration (GEVER): The definition of the operating field serves the standardised deployment of GEVER in the federal government. The field describes the most important functions of GEVER as well as the architectural framework. According to the operating field one or more standard products are designated, which acquisition is structured in frame treaties.

P023 – Methods and functions with regard on legal defaults: This document describes the legal defaults, procedures and functional requirements, which are necessary in order to maintain an electronic record-keeping and business-administration according to the federal government.

P019 – Business model GEVER Federation: The business-model describes how to implement generic procedures and activities according to P023 with an easy ISO – based process model. The model supports ad-hoc as well as predefined workflows. In order to illustrate this, the document provides process-examples from the federal office and the general secretariat EVD.

I016 – service catalogue of GEVER – applications: The document describes the functional and non – functional requirements for GEVER – products. The catalogue also serves as a base for the evaluation and implementation for those products and is coordinated with other concepts like DOMEA and ELAK

I017 – GEVER Metadata: This standard lists which data elements are necessary in order to describe electronic documents. This is e.g. for easy finding. Furthermore, implementing the system relating to the document supports functions like traceability, the possibility of archiving, interoperability, etc.

3.5 PRO/TNA (United Kingdom)

In 2002 the “Public record office” and “The national archives” located in the UK developed an approach (PRO/TNA) for benchmarking the ability of government departments to support electronic records management (ERM) by a catalogue of requirements for ERM - Systems.

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Further more a baseline of minimum functionalities for ERM – Systems was set out. The PRO/TNA approach consists of 2 catalogues concerning different requirements. The first of these catalogues explains functional requirements which – depending on their importance – have to be implemented in order to maintain an ERM - System. The other catalogue describes a metadata standard which sets out the most important metadata which has to be stored like for example:

- Identifier
- Title
- Subject
- description

In 2004, another document was published which introduced a guideline for implementation of ERM – Systems with the goal to explain higher level issues on the possibilities of the configuration of ERM – Systems to assist public authorities in clarifying their needs. According to the PRO/TNA guideline such decisions can address major configuration issues like for example different user preferences, roles and responsibilities like access rights or issues like usability, metadata etc.

Meanwhile the English standard PRO II / TNA has run out, meaning there are no longer certifications against this standard. With the declaration of end of life of PRO II the National Archives announced that it will find its successor in MoReq2. National Archive's personal engagement in the MoReq2 definition process is accordingly high.

3.6 Protocollo Informatico / CNIPA (Italy)

CNIPA, National Centre for Information Technologies in Public Administration, operates for the actualisation of policy and reforms relating to innovation of using information systems in public administration. A primary objective of the organisation is to give support to the Italian public administrations in using and creating efficiency regarding information systems to further improve the quality of the services and keep the administrative costs down. They also address, coordinate and offer assistance and consulting for developing projects within the field.

CNIPA do not have law making status, but interpret and give recommendations on the laws and directives that the Italian state or regional/local lawmaking bodies generate. There is no obligation to follow their recommendations or published guidelines, but in the end many public administrations follow their decrees.

3.6.1 CNIPA guidelines

CNIPA publish reports, guidelines and research within a wide range of areas concerning ICT in public administration. Their main publications regarding the public administration are guidelines that refer to developments of policy, strategies or innovation highlighted by the state. An example is the strategies emanated from CNIPA in relation to the strategic line of action for the public administration for the years 2008-2010, that describe the activities to be considered regarding articles 9,2 letter a) of the legislative decree of 1993, nr.39. This decree deals with the national system of e-government strategies, and defines the strategic objectives that the central administrations have to realise in the following three years with certain focus of resources and planning [37]. Special areas of interest are:

Development of online services and applications for citizens and business

This chapter describes the line of action regarding the development of online service opportunities with thematic portals of national and/or local relevance for the exploitation of products or services available in the administrations. Special attention is put on systems of accurate automatic identification and enabling instruments of access such as: Carta d'Identità

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Elettronica (CIE) and Carta Nazionale dei Servizi (CNS).

Integration of services and databases of the local and central administrations

Link the main databases between the administrations to guarantee access for other administrations parallel with the process of data identification and maintaining law and personal information security.

Development of support and applications for the improvement of administrative efficiency

Usage of innovative technology to improve the efficiency and securing better operative capacity with the diffusion of electronic post, electronic protocol, document management and shared information.

Creation of support instruments for the evaluation of measuring the administrative activities.

Not only the classic verification methods of economic value are to be used, but also corrective actions, support to measurement performance, measurement of social impact, customer satisfaction and quality.

Dematerialising the proceedings of the management of documents (paperless office)

Simplification of the document management by key tools: electronic forms, protocollo informatica, digital signature, certified electronic post and electronic conservation of documents, this as a part of sharing information, less errors and gain interoperability of documents.

Improvement of the operative efficiency of the technological ICT infrastructures

Keeping control on the data exchange and related risk management.

ICT security

Use of safeguards such as Electronic Identity Card and certifications of physical security, access, physical utilisation, service security for net communication, transaction system protection, control and collaboration.

Adoption of innovative technological solutions

This is about impact of innovation ICT with focus on (Wireless, VoIP, RFID, Biometrie) for efficiency, quality improvement and integration.

Reuse of open source software

Diverse ad-hoc applications for specific administration activity are to be reused according to the catalogue of registered applications and their functionalities.

E-learning

Value added for public work by dividing information, qualifications and development.

The guidelines that have been introduced by CNIPA, explain how, in what way and the alternatives by presenting research results for changes or introductions of investments in ICT within public administrations. These concepts are presented in different sections since organisational structures, type of activities etc. change the approach of managing documents. The guides also relate to subjects of analysis of technical solutions used in terms of:

- centralised systems
- distributive systems
- ASP services ⁴
- adaptation
- security

⁴ Application Service Provider, relate to the use of one or more remote applications of different kinds (email, web, fax, CRM, database, administration systems etc..) provided in relation to services offered in this way.

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- responsibility
- cost evaluation: software, protocol products, hardware, connection, software development
- organisational aspects
- statistics

Actual recommendations are provided in the guides in the form of manuals divided into chapters of check list for evaluation, checklists for realisation of the changes, economic guide, solution catalogue and general compatibility chart standards etc.

3.6.2 The Italian Protocollo Informatico

The document published by CNIPA deals with the electronic protocol or the protocollo informatico [38] that by law is described as a framework of resources regarding calculation, solutions, communication channels and information procedures used by the administrations for managing documents. Which also incorporate the technological resources needed to realise an automatic system for an electronic management of document flow (workflow / routing). The protocollo informatico if introduced or planned etc. needs to follow specific indications decreed by law. DPR 445/2000. CNIPA has through its "competence centre" created several support documents or guidelines for support in the actualisation of these incentives for the public administrations. The guideline incorporates the following characteristics of methodology, approach and analysis of:

- context (organisational level of information)
- attention (definitions, management manuals, classifications)
- realisation (advancement, measurement)
- risk(organisational, operative, technological, conduction)
- ASP services (relevance)
- projects(relevance)
- ASP application service provider

While the accompanying manual [39] has the objective to describe the system of document management and to see to the phases of actual document flow process as of: corresponding entrance, internal process and final exit regarding the functions available for the actual activities conducted by the internal personnel and external persons that interact with the administration.

Also with only the minimum rate of functionality regarding this concept, it has become the base of the functional technical infrastructure and is the recommended concept when working towards a modernisation process and higher administration transparency in Italy.

ICT investments and quality

Quality of goods and services for contracts of public administration is the theme of a guide line for better management of ICT investments in the Italian public administration. The guide deals with the themes of measurement of the impact of ICT in the public administration to create strategy for business. In line with this theme, CNIPA has published a guideline [40] that consists of seven documents or so called "Manuals" and 36 attachment documents related to the operative manual "dictionary of the elementary ICT supplies". The guidelines have the intention to define:

- A comprising framework for public ICT service contracts for the administrations
- Quantitative methods for applying on defining measurement of quality and identifying measurement process, to make concrete indications that are applicable for the contracting

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administrations and for the actual service suppliers.

- Adequate clauses for use in negotiating phases, for the definition of the activities, products etc. that are realised for the indicators and measurement of quality of the service and the products.
- Clauses useful in the actual making of the contracts ICT. For the necessary actions of managing the contract and the development of monitoring the contractual requirements in terms of time, costs and work proceedings, quantity and quality of the requested ICT services.

The guide turn to as well administrations in their role of making contracts of ICT goods and services, as to the suppliers of these services that participate in these contracts. Thus outsourcing is a part to create a duality in the contract relations.

The administrations gain by the guidelines several advantages that are to be kept in mind: they accelerate the act of making contract competitions, homogenise the competition, ease the CNIPA emissions, integrate the different necessary cultures for the acquisition of ICT supplies, permits the valorisation and make a realisation of best practices.

The suppliers gain on their hand a descriptive approach of the acquisition process of ICT supplies that grow the transparency of competition, reduce possible litigations between the suppliers and the contracting partner, permits to give right values for the quality of the ICT services, contract the logic of low cost and improve the description of requested ICT solutions.

3.7 ReMANO (Netherlands)

In 2004 the “Nederlands Instituut voor Archiefonderwijs en – onderzoek” published a catalogue of software specifications for ERM – applications in Dutch government agencies (ReMANO). Although ReMANO is designed for the Dutch government it is related to similar projects like MoReq, DoD (DoD deals with enterprise records management and is developed by the Department of Defence of the United States) and DOMEA. ReMANO not really can be seen as a standard, its more like a reference architecture which is proposed.

The ReMANO software specifications are divided in six sections:

- Classification schema
- Admission control and safety
- Selection and record mining, transfer, export and destruction
- Gathering of archive data
- Identification
- Searching of data for requests and presentation
- Administrative functions

In the different sections functions and specifications are given and also compared with their implementation in other approaches (DOMEA, DoD, MOREq). Furthermore every specification has a niveau and an attachment whether the specification is obligatory or desired for ERMS. In the last chapter of the document another catalogue of specifications for altering of archived files is introduced, which discusses the following aspects:

- Specifications for the administration of request data (metadata)
- Miscellaneous functionalities
 - Workflow management
 - Document management
 - Further more

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- Non functional specifications
 - Performance
 - Technical standards
 - Further more

3.8 NOARK-4 (Norway)

Noark-4 is a specification of functional requirements for electronic record management systems used in public administration (in Norway). The specification lists requirements with regard to *information content* (what kind of information it should be possible to register and retrieve), *data structure* (design of each data element and the relationship between these elements) and *functionality* (the functions which the systems are to maintain). In some cases there are requirements with regard to the *user interface* (how the systems communicate with the users), but this is mainly left to the individual system developers or vendors to decide. The specification does not contain requirements with regard to how the data structure is to be implemented, or with regard to system design (This is left to the system developers). The report has two main parts:

Part I – Functional description and specification of requirements: First a general introduction to Noark-4 is given, where the record management system is placed in context with the record management and executive functions. Then a comprehensive presentation of the standard both at general and detailed levels follows. The presentation is in the form of a functional description which is closely linked to corresponding procedures and routines. Formalized requirements are given for the individual functions, and these constitute the specification of functional requirements of Noark-4. The presentation includes:

- general description and functional requirements
- main structure of the data model
- purpose, design and functional requirements for the various parts of the system (modules)
- main tables and their information contents (details: see list of attributes in part II)
- assumptions related to administrative routines
- reports and statistics
- integration with e-mail and executive functions
- deviations from Noark-3 and Koark

Part II – Specification of technical requirements: This gives a complete technical specification of the information contents and data structure of Noark-4. The specification takes the form of

- data models for the individual modules
- a complete list of attributes for all tables, associated with individual modules

The data structure in the shape of modules and tables are only guidelines; their purpose is to describe how a Noark system may be implemented to satisfy the functional requirements of part I. The attributes, on the other hand, are part of the specification of requirements. In addition, the following are specified:

- requirements for exchange and export formats
- deviations from Noark-3 and Koark with suggested principles for converting

Part II, together with the formalized functional requirements of part I, should be the frame of reference for the development of a system based on Noark-4.

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3.9 Greece

According to our research and the input from our Greek counterparts in the PICTURE consortium there are no common (across ICTs) guidelines for PA in Greece. Guidelines have been provided for specific ICT requirements for the public sector e.g. e-signature or focusing on specific issues e.g. on data protection. The following list provides an overview of the regulatory framework:

- E-signatures/E-identity legislation: Presidential Decree 150/2001 on digital signatures of 25 June 2001 implements the European Directive of 13 December 1999 on a Community framework for electronic signatures. It defines electronic signatures and advanced electronic signatures. It also deals with the legal consequences of electronic signatures, liability of suppliers of certification, obligation to protect personal information, terms in effect for recognised certificates and suppliers, assurance of the liability of the creation of a signature and recommendations for the verification of the signature.
- Freedom of Information legislation: There is currently no dedicated freedom of information legislation in Greece. However, the Greek Constitution provides for a general right of access. Its article 5A states that: "All persons are entitled to information, as specified by law. Restrictions to this right may be imposed by law only insofar as they are absolutely necessary and justified for reasons of national security, of combating crime or of protecting rights and interests of third parties". In addition, it specifies that "All persons are entitled to participate in the Information Society. Facilitation of access to electronically handled information, as well as of the production, exchange and diffusion thereof constitutes an obligation of the State". Furthermore, article 10(3) says that a request for information shall oblige the competent authority to reply, provided the law thus stipulates.
- Data Protection/Privacy legislation: Law 2472/1997 on the Protection of Individuals with regard to the Processing of Personal Data was adopted in April 1997. It establishes the terms and conditions under which the processing of personal data is to be carried out so as to protect the fundamental rights and freedoms of natural persons and in particular their right to privacy. It also allows any person to obtain their personal information held by government departments or private entities. The Law, which was amended in 2000 and 2001, is enforced by the Hellenic Data Protection Authority. It is complemented by Law 2774/1999 on the Protection of Personal Data in Telecommunications, and by Law 3115/2003 that establishes the Hellenic Authority for the Information and Communication Security and Privacy (ADAE) in order to protect the secrecy of mailing, the free correspondence or communication in any possible way as well as the security of networks and information.
- E-Commerce legislation: Presidential Decree 131/2003 on e-commerce of 16 May 2003 transposes Directive 2000/31 of the European Parliament and the Council on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market (Directive on electronic commerce).
- E-Communications legislation: The transposition of the new EU Regulatory Framework for Electronic Communications has not yet taken place in Greece. E-Communications remain governed by the Telecommunications Law 2867/2000 of 19 December 2000.
- E-procurement legislation: There is currently no legislation governing the use of electronic means in public procurement in Greece. The new EU public procurement directives, including their e-procurement provisions, are expected to be implemented in 2006-2007.
- E-government legislation: there is currently no dedicated e-government legislation in Greece.

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4 Requirements from Expert Interviews

According to the setup of PICTURE expert interviews are an important method to validate knowledge around the definition of ICT Functionality groups. Such interviews have been conducted by CSI Piemonte at the City of Turin based on a questionnaire that aims at deriving requirements for ICT usage in public administrations. Specifically, the questionnaire intends to recognize:

- the level of knowledge or awareness of IT applications/solutions
- the utilization of these instruments
- the consequent analysis of identified needs and benefits

The questionnaire has been used as an instrument to perform professional interviews in the setting of one Italian Public Administration entity as to generate the Italian contribution to the ICT specifications. The data was collected between December 2006 and April 2007, in Turin, Italy.

The interviews were held with Public Administration managers originating from several different fields of activity to capture a width of responses and consequently ensure the relevance of the results. While executed in Italian, the answers and results have been translated to English⁵.

4.1 Structure of the questionnaire guiding the expert interviews

One major challenge is to find the right level of granularity when identifying ICT functionality groups. Thus results of earlier examinations have influenced the generation of the questionnaire. The interviews have been conducted and planned in collaboration with the City of Turin, which has made available their resources to meet the objectives of the survey.

The sample number of interviewed Public Administration managers is 14, and represents different sectors and managerial areas to make sure the report covers a wide diversity of Public Administration operability. The questionnaire itself is divided into four parts to make the results more in-depth with an aim to distinguish the different issues and ICT solutions more clearly. The questionnaire is divided into the following sections and has both open and closed answer alternatives:

A General

This part represents an introduction with general questions that aims at covering and deriving results of basic organisational, positional and task related character, as to connect with their basic ICT strategy processes. Part A contains seven questions.

B Level of IT knowledge

Part B covers the level of knowledge of certain IT applications to be able to analyse the awareness in relation to the ICT sector, as well as questions with more open answers, such as: problems, benefits and general impact of IT solutions in their administrative environment. Part B consists of nine questions.

C Adopted IT applications

Part C is about mapping the actual IT infrastructure and utilization of the organization, with focus on specific applications and their eventual level of system integration with other authorities, organized in seven questions.

D Need and intervention areas

Part D contains a mapping section of the activities done in the organizational unit in relation to time and work process. The participants were also asked to give estimations of benefits that could be gained using various IT applications. Part D contains 16 questions.

⁵ The (English translated) questionnaire is documented as Annex to this deliverable

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The survey started in November 2006, and continued until April 2007. The interviewed persons originate from a wide range of organisational entities and management levels as to capture the diversity of the different entities.

4.2 Presentation of the expert interview findings

As the interviews were conducted and the results analysed, some tendencies were acknowledged that caused to present the results along the following categories:

| Categories | Questions |
|------------------------------------------------------------------------------------|---------------------|
| Framework | A1, A3, A5 |
| Level of Information System comprehension | A4, B1-B3, B6-B9 |
| Adopted IT applications | C1-7 |
| Indication of areas of need | D1, D5, D7-D13, D16 |
| ICT investment considerations | A6, A7 |
| Organisational process logic | D2, D3, D4, D14 |
| Organisational logic in reference to client oriented activities | D15 |
| Qualifying factors and the inhibiting factors to the exploitation of ICT solutions | B4-5 |

4.2.1 Framework

The composition of the different organisational units and the level of managers interviewed are presented in Table 1 and Figure 1 below, as to represent the different areas and their level of responsibility, their activities, and the number of people that they represent.

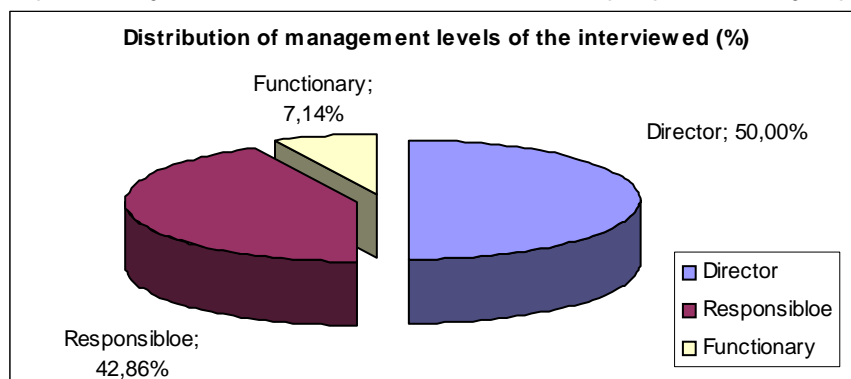


Figure 1: Distribution of management level

| | Organisational Unit | Number of Employees |
|---|----------------------------------------------------------------------------------------------------------------------------|---------------------|
| 1 | Contracts, Procurement and General Supplies Central Service | 145 |
| 2 | Building Services, Building Protocol, Town Planning Documentation Sector | 43 |
| 3 | Recruiting and Trade Union Relations Sector | 100 |
| 4 | Employment, Professional Training and Economic Development Division, Employment and Employment Policies Observatory Sector | 12 |
| 5 | Social Services Division | 1.500 |
| 6 | Municipal Police Division – Administration Sector | 250 |
| 7 | Civic Services Division – Registry Sector | 150 |
| 8 | Mobility Planning and Management Sector - Traffic Control and Traffic Management | 50 |
| 9 | Financial Services Division and Land Registry | 280 |

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| | Organisational Unit | Number of Employees |
|-------|-------------------------------------------------------------------------------------------------------------|---------------------|
| 10 | Public Residential and Periphery Building Division – Contest and Allocation Sector. | 60 |
| 11 | Office of the vice director, cabinet of the Mayor and Cultural Services - Field Archive and Protocol Sector | 34 |
| 12 | Education Services Division - Budget, Information Systems, Logistics and Control auto- certification. | 60 |
| 13 | Administrative and legal services – Economics and service activities | 6 |
| 14 | Division – Institutional functionality | 2.500 |
| TOTAL | | 5.190 (43,25 %) |

Table 1: Organisational setting

The different organisational entities are in comparison to size and dimension very heterogeneous. The organisational structure between the entities differs and the number of personnel employed varies from 6 to 2.500 persons. The interviewed managers represent all in all 5.190 employees out of a total of approximately 12.000 in the City of Turin, which imply that approximately 43 percent of the workforce in the City of Turin is represented.

A general impression that came out of the survey was that the level of IT solution knowledge, let alone that of diffusion and adoption of ICT solutions, was decidedly high in an absolute sense. The City of Turin is a metropolitan of important dimensions and has financial resources that allows for making relevant investments in different areas of interest and in various sectors. These first assessments, together with the survey material, also made evident that the information system culture differs in dimension and scope in comparison to the other communes of Piedmont. In fact, the City of Turin considers the advantage of new technologies as a determinant strategic component and aim at attaining key competencies for the improvement of the external service offered to citizens, as well as develop activities conducted within the different organisational areas.

4.2.2 Level of Information System comprehension

The initial data that is extracted from the questionnaire and the conducted interviews relate to the availability of PC's - Personal Computers for the employees, and can be observed in Table 2 below.

| | Organisational unit | Number of Employees | Number of PCs installed |
|---|----------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------|
| 1 | Contracts, Procurement and General Supplies Central Service | 145 | 140 |
| 2 | Building Services, Building Protocol, Town Planning Documentation Sector | 43 | 43 |
| 3 | Recruiting and Trade Union Relations Sector | 100 | 100 |
| 4 | Employment, Professional Training and Economic Development Division, Employment and Employment Policies Observatory Sector | 12 | 12 |
| 5 | Social Services Division | 1.500 | 800 |
| 6 | Municipal Police Division – Administration Sector | 250 | 160 |
| 7 | Civic Services Division – Registry Sector | 150 | 150 |
| 8 | Mobility Planning and Management Sector – Traffic Control and Traffic Management | 60 | 67 |
| 9 | Financial Services Division and Land Registry | 280 | 220 |

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| | Organisational unit | Number of Employees | Number of PCs installed |
|----|-------------------------------------------------------------------------------------------------------------|---------------------|-------------------------|
| 10 | Public Residential and Periphery Building Division – Contest and Allocation Sector. | 50 | 50 |
| 11 | Office of the vice director, cabinet of the Mayor and Cultural Services - Field Archive and Protocol Sector | 34 | 29 |
| 12 | Education Services Division - Budget, Information Systems, Logistics and Control auto- certification. | 60 | 50 |
| 13 | Administrative and legal services – Economics and service activities | 6 | 6 |
| 14 | Division – Institutional functionality | 2.500 | 2.000 |
| | TOTAL | 5.190 | 3.837 |
| | | | 73.93 % |

Table 2: PC availability

Here the data in Table 2 shows that the number of installed/available computers in the public offices corresponds to a rate of approximately 74 percent of the employees. Thus, more than two computers are available for every three employees, an especially high number that demonstrate an extended use of information solutions in the Public Administration for the management of their respective operative activities.

Similar results can be found referring to the level of IT knowledge concerning the most widespread IT solutions available on the market. The interviewed managers were asked to respond which of the assigned IT solution concepts or technologies they were familiar with in line with the earlier identified categories related to the ICT functionality groups for WP2 (see survey in deliverable D2.1).

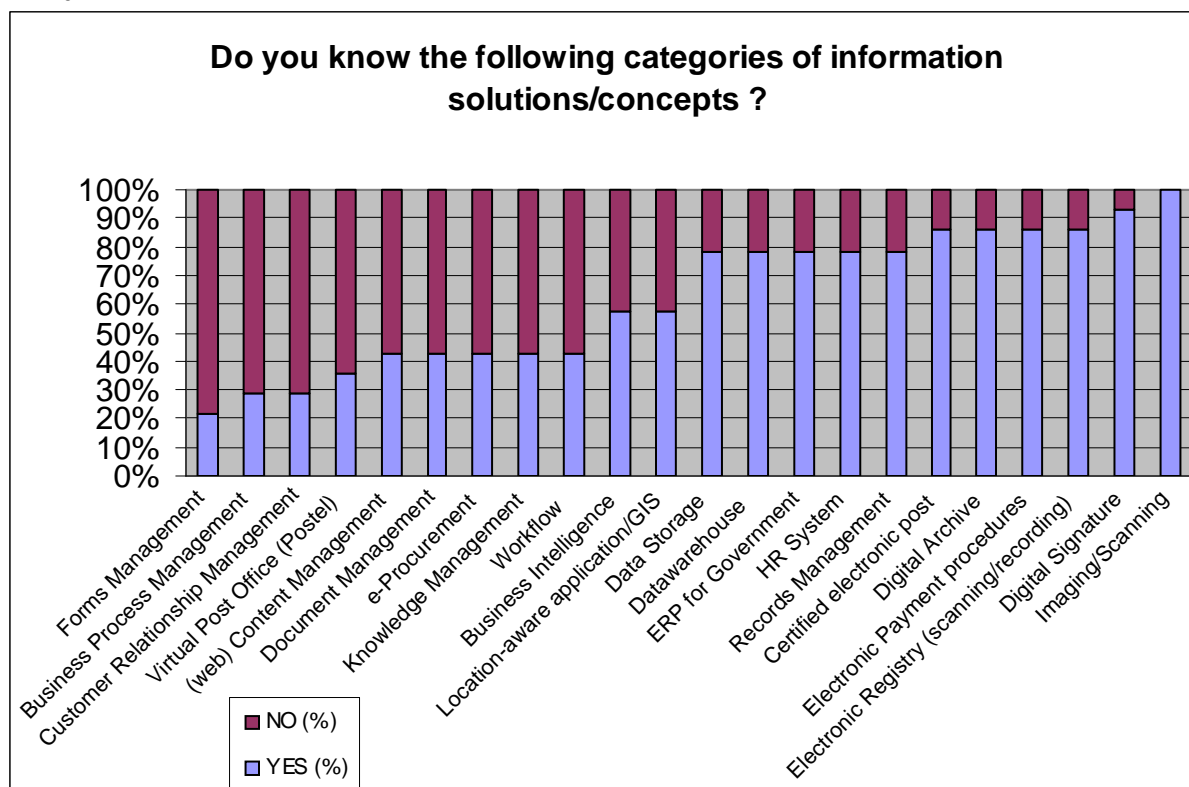


Figure 2: Familiarity with Information System solutions

The resulting responses are presented in Figure 2 above, that shows the managers' knowledge

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and familiarity with the different IT solution categories.

One observation that came out during the completion of the actual survey was that the level of IT knowledge is decidedly high within the City of Turin.

Substantially the distribution of the results from the interviews, between the different IT solution categories, reflects and captures to a large extent the existing requirements for the Public Administration offices. For example, solutions like Imaging/Scanning are widely known to be important functions for managing services in the Public Administration, while components such as Customer Relation Management and Content Management are less known. Particular attention should be put on the results of Document Management and Business Process Management, whereas these two last categories of IT solutions have a potential future to find strategic uses within the sphere of Public Administration. However, results in relation to these two categories are not properly consolidated. Also the same is evident in the case of e-Procurement. In fact one of the main activities within the Italian Public Administration consists of operations of public acquisition, where the choices are an important indicator to evaluate the expense policies, especially important in Italy where the cost of the Public Administration cost has an elevated rate of the GDP.

In the following an analysis of the familiarity with Office Automation solutions is conducted. Office automation is one of the most common categories of IT solutions used in the Public Administration and includes: e-mail, Word, Excel etc. and also Internet and Web Portals.

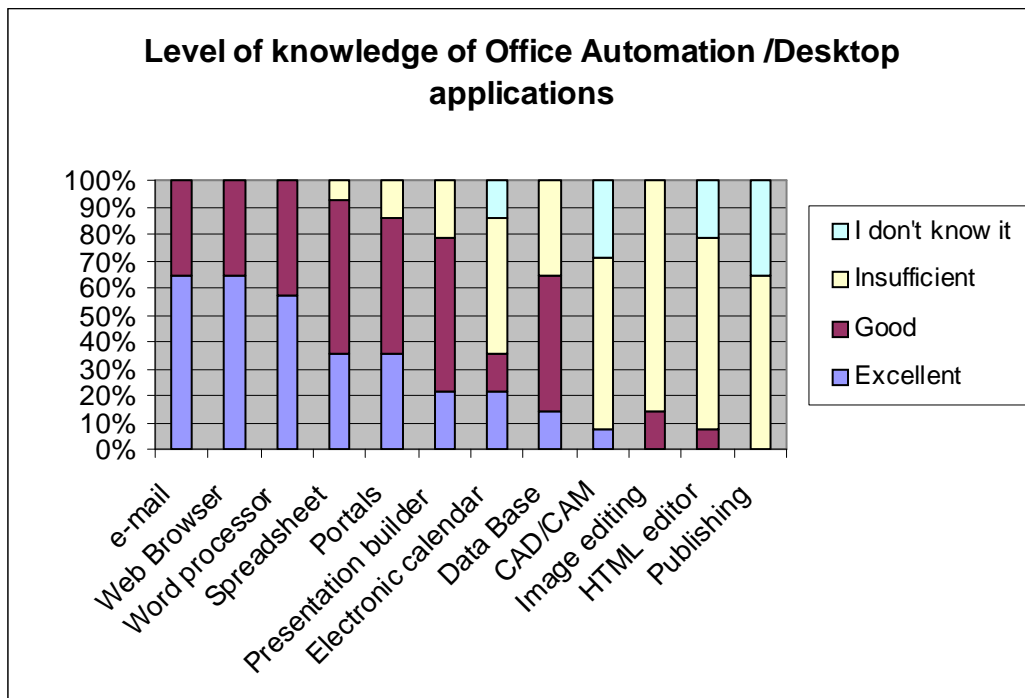


Figure 3: Office Automation

Reassuring results regarding the Office Automation solutions were extracted, out of which knowledge of instruments such as email, Word Processor and Internet are high and used by all of the interviewed managers. Some hesitation was however evident in reference to solutions used for creating presentations.

Further information was obtained regarding if the respondents knew their e-mail address and how often they verify its status. All the interviewed persons confirmed that they knew their e-mail address and that they consult it frequently during the working day. Some of the interviewed mentioned that they had the mail box "always open" or that they checked it "many times a day"

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Also, the quantity of times that they check their e-mail is related to the different work tasks of the managers with different practical responsibilities outside the office, which can be observed in Figure 4, that demonstrate the relation of the time they dedicate using their PC during the working day. The average time is about four hours a day, which implies that about 50 percent of the work is more or less conducted using the computer.

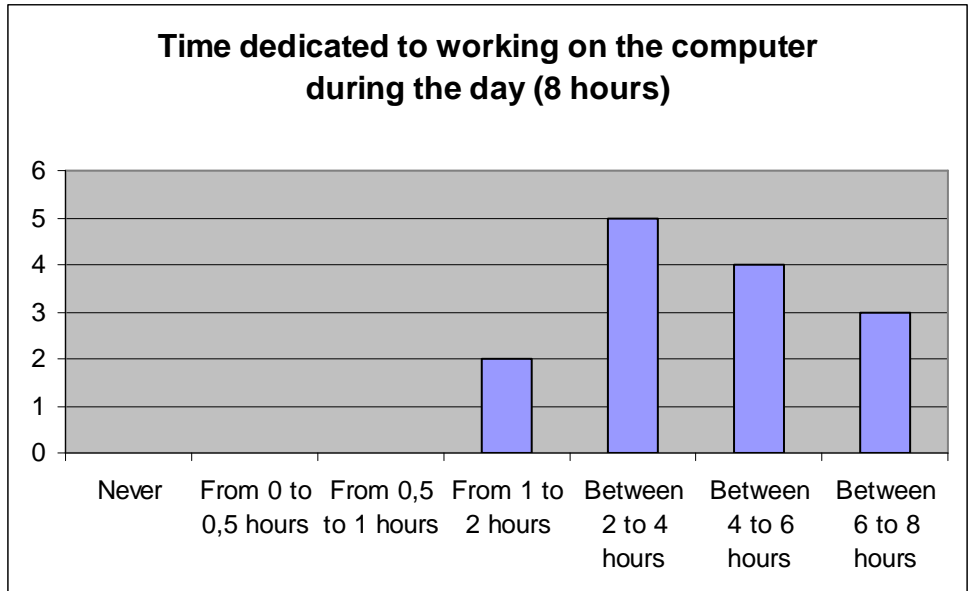


Figure 4: Time working on the computer

The persons interviewed are to main part managers or directors in their respective department, which also gave us input regarding the level of IT knowledge of their employees. The level of IT knowledge according to the interviewed managers was satisfying, apart from some observations that expressed a need of additional improvement in some areas. A general observation was that the employees have a tendency to get used to the IT solutions used every day, but demonstrate something like friction when they need to complete duties that ask for more complete PC experiences. 35 percent of the interviewed answered that the employees had an adequate level of IT knowledge. 42 percent answered "partly", and 21 percent did not agree.

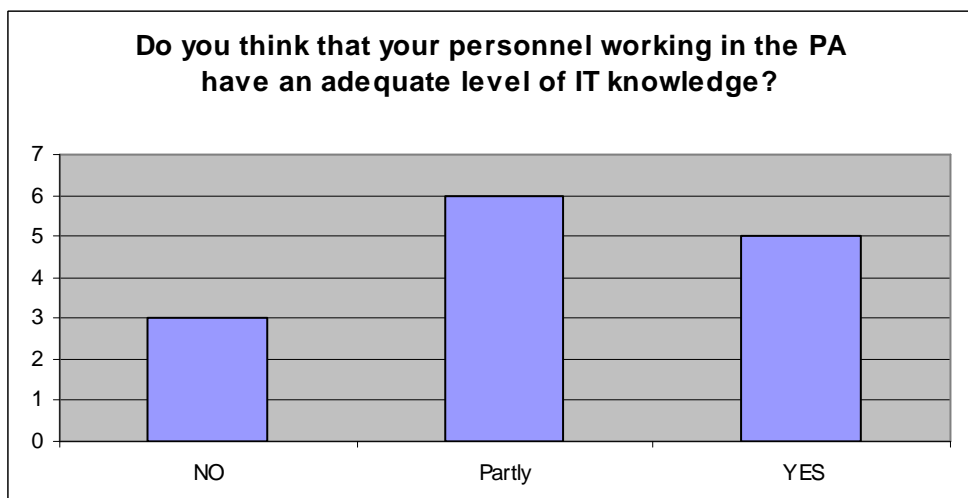


Figure 5: IT knowledge of the personnel

To conclude the aspects of IT knowledge, the survey has tried to cover the perceived "sensitivity" of the interviewed in relation to the impact that the introduction of new IT

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applications has on their respective organisational structure. This happened by analysing two of the questions from the questionnaire, starting with their opinion on the statement here below:

“A well designed IT solution effectively adjusts itself to the existing internal organisation”

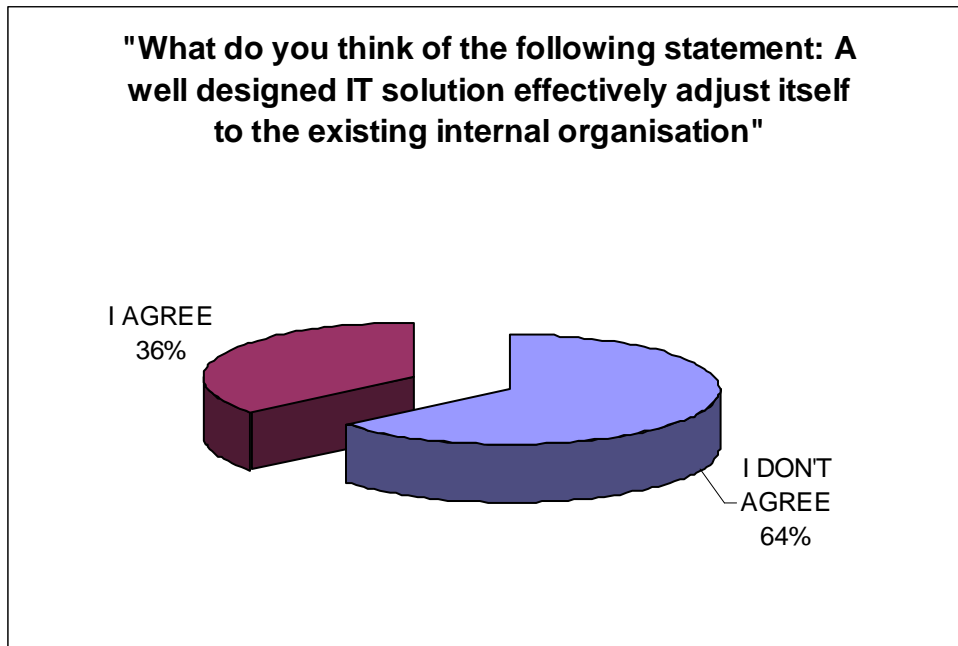


Figure 6: New IT solutions

65 percent answered that they agreed. All the interviewed however admitted that they are aware of the organisational impacts that an adoption of new information solution brings. Some of the answers related to the need of constant organisational rethinking, and that there is a need to align the organisation to new technologies respective examination of existing organisation processes, which testify an existing experience and correct expectations in relation to ICT within complex organisational structures.

The interviewed were also asked to describe the nature of the impact that presents itself with an introduction of new IT solutions in their organisational unit. Out of the answers we were able to connect the main perceived problems to a necessity of education for the employees and the need of revision within the internal personnel structures. Even if the interviewed seemed to be aware of the problems involved in these circumstances, they did not have a more pronounced strategy of managing the change to overcome these effects, rather the change is seen as a contingent and successive process to the new introduction. Some examples of the responses were:

Organisational change: organisational review together with revaluation of employee relations, as well as the revealing of certain organisational problems followed by a process to distribute resources for the new technology adopted. One noticeable tendency was the focus on managing the change from a medium-long time perspective, and not just in the short view.

Cultural dependencies: adaptation to innovation makes the organisation ask for knowledge or information that does not exist inside the own organisation and it is often complex to introduce into the organisation and the related personnel. There is internal friction existing against change even if there is a higher level of acceptance in relation to new IT introductions today, and that the personnel later find the change positive and stimulating

The general view expressed was that it is always a difficult process in the beginning, where personnel or the internal organisation difficulties make the changes hard to implement, whereas the situation becomes more stable in the long term, generally in relation to an organisational

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evaluation.

4.2.3 Adopted IT applications

Some of the questions used during the interviews refer to the actual ICT architecture and type of solutions used in the City of Turin. The data collection process has given information to form categories of the most spread and used IT solutions, as well as those that haven't yet found practical areas of usage.

Here below is a survey on the IT applications used on a daily basis, without counting Office Automation solutions:

| Solution | Type of Solution |
|---------------------------------------|--------------------------------|
| Anagrafe appalti | ERP for Government |
| Atti | ERP for Government |
| Bilancio | ERP for Government |
| Protocollo | ERP for Government |
| HR system | HR System |
| Archivio | Document Management |
| Workflow: iter stipulazione atti | Workflow |
| Economato e acquisti | ERP for Government |
| Inventari | ERP for Government |
| Archivio edilizio | ERP for Government |
| Estratto urbanistico | Location-aware application/GIS |
| Web intelligence | Business Intelligence |
| Archivio facile | Electronic Registry |
| CDU | Location-aware application/GIS |
| Access | Records Management |
| HR | HR System |
| RAP, Rilevazione presenze | ERP for Government |
| Split | ERP for Government |
| SPSS, analisi statistica dei dati | Business Intelligence |
| Datawarehouse (DWH) | Datawarehouse |
| GSA | ERP for Government |
| Atti | ERP for Government |
| Applicazioni di consulenti esterni | ERP for Government |
| Contabilità finanziaria | ERP for Government |
| Applicazione per gestione Legge Turco | ERP for Government |
| Siatel | ERP for Government |
| INPS | ERP for Government |
| PRA IMC | ERP for Government |
| VCS | ERP for Government |
| Verbali regolamenti comunali | ERP for Government |
| PMUNA | ERP for Government |
| GVC (gestione cassa verbali | ERP for Government |
| PRA IMC | ERP for Government |
| Bollo auto | ERP for Government |
| Lamzs | ERP for Government |
| Siatel | ERP for Government |
| Telemaco | ERP for Government |
| INPS | ERP for Government |

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| Solution | Type of Solution |
|-------------------------------------------------------|--------------------------------|
| Lampo | ERP for Government |
| Risconet | ERP for Government |
| Sistema software anagrafe | ERP for Government |
| Protocollo | ERP for Government |
| CAD | Location-aware application/GIS |
| GIS | Location-aware application/GIS |
| Explorer | ERP for Government |
| Sistema simulazione del traffico | Location-aware application/GIS |
| Bolle di manutenzione del suolo pubblico | ERP for Government |
| Regia cantieri | ERP for Government |
| AIMSUM NG | |
| COSAP | ERP for Government |
| Tris | ERP for Government |
| Tric | ERP for Government |
| Iciap | ERP for Government |
| Cnipe | ERP for Government |
| Acquisti | ERP for Government |
| Cassa tributi | ERP for Government |
| AAEP | ERP for Government |
| Infocamere | ERP for Government |
| HR | HR System |
| Protocollo | ERP for Government |
| Atti Amministrativi | ERP for Government |
| Consultazioni varie | ERP for Government |
| ATC | ERP for Government |
| HR | HR System |
| Datawarehouse | Datawarehouse |
| Portale ATC | ERP for Government |
| Protocollo | ERP for Government |
| HR | ERP for Government |
| Atti Amministrativi | ERP for Government |
| Atti Amministrativi | ERP for Government |
| Protocollo | ERP for Government |
| SISE | ERP for Government |
| DWH (SAS) | Datawarehouse |
| Sister (accesso al Catasto AdT) | ERP for Government |
| Inps (accessi per consultazioni) | ERP for Government |
| Conservatoria (accessi in consultazione al Ministero) | ERP for Government |

Table 3: IT solutions

There is a wide diversity of applications represented above, since the divisions have different areas of responsibility. Most of the applications however are related to the ERP for government solution applications.

As to render the responses more in-depth, the interviewed were also asked to make an inventory as to which of the following categories of IT solutions/technologies they use:

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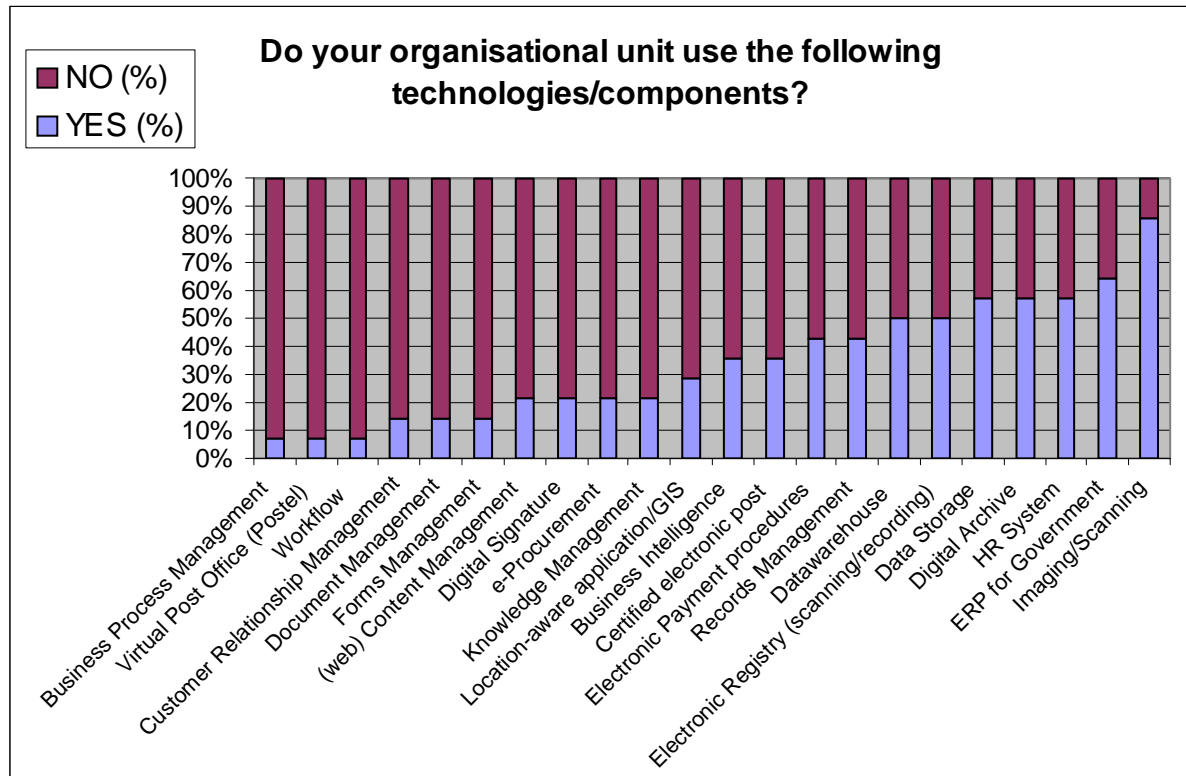


Figure 7: Used IT solutions

The most used and diffused IT solutions according to the interviewed managers is that of Imaging/Scanning, which probably derives from the fact that the commune has installed these instruments in the public offices in the City of Turin. Interpreting the results of the survey, one can say that the Imaging/ Scanning aspect have been interpreted by the interviewed as simple Desktop Automation solutions and not as complex distributed IT.

Another widely distributed category is ERP for government, which intends vertical solutions, that in the case of the City of Turin are connected to the specific organisational entity and it's activities where the entities have activity specific solutions (ad-hoc) for their precise operational tasks, as can also be seen in Table 3: IT solutions, above.

In some cases the interviewed have probably interpreted these programs as type specific, when the IT solutions could have been put into other categories, which could have influenced the results in Figure 7 above. The results are however coherent with the state of the art situation.

Other IT solutions used to a large extent is that of Digital Archive, Data Storage, Datawarehouse, Electronic Payment, Electronic Registry, and HR-systems.

Other categories of IT solutions are characterised by a lower level of diffusion. It is probable that we will see an increasing adoption of these solutions in the coming years, since they could be highly adaptable to Public Administration core activities. The following concepts make part of this category; Document Management, e-Procurement, GIS solutions, Business Process Management and Digital Signature.

Another aspect concerns the level of integration between the IT solutions used in the different organisational entities in the City of Turin. Four categories of this kind have been identified, and can also be seen in Figure 8 below.

- 1) Automatic procedures of data exchange with other organisational units within the City of Turin.
- 2) Integrated information systems applications with other units within the City of Turin.
- 3) Automatic procedures of data exchange with other entities outside the City of Turin.

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4) Integrated application systems with other systems of other entities outside the City of Turin.

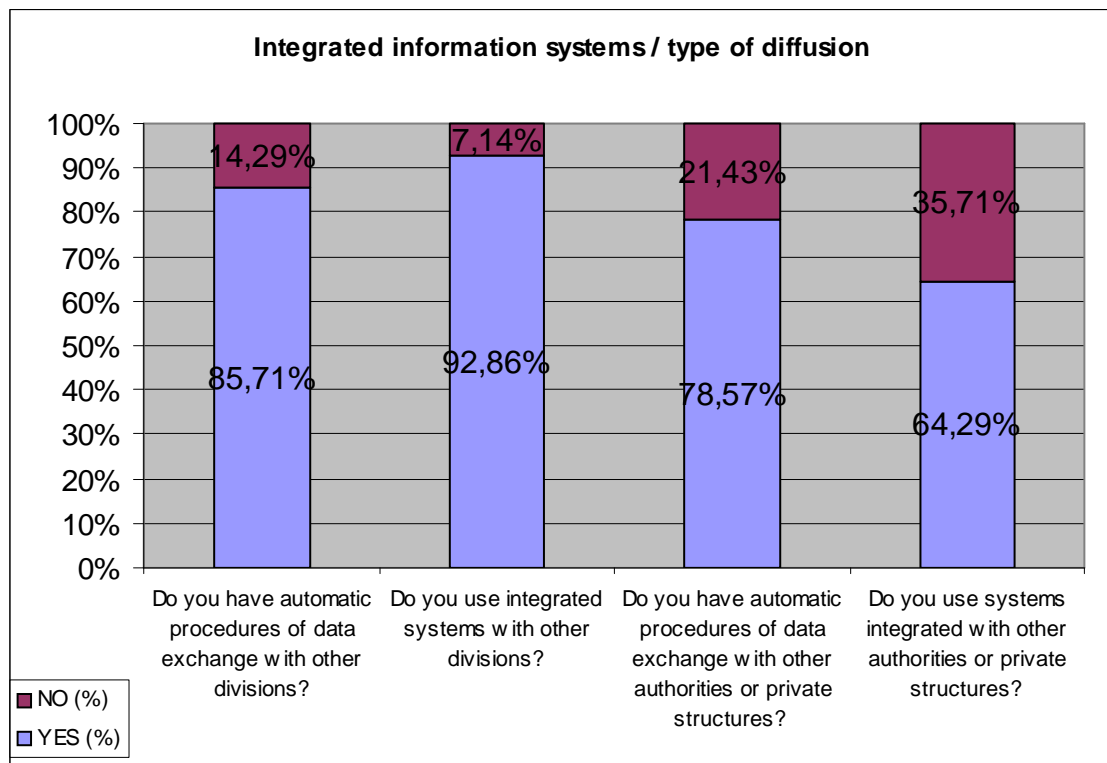


Figure 8: IT integration

The received answers verify the existence of corresponding information architectures as written above in the four categories. Inevitable the most easy to use type of communication is marked as the most diffused. The other results are however comforting and show a growing diffusion of IT solutions and system integration, also outside the City of Turin's confinement.

4.2.4 Indication on areas of need

In relation to WP2 outcomes, information was identified that covers the presumed "needs" of IT solutions within the City of Turin. Primarily, the interviewed managers were asked to evaluate the level of usefulness of the IT solution that has been defined in relation to WP2 and also related to previous steps in this report. The current question in the questionnaire has closed answers, and the following response alternatives were possible:

- I don't know (0)
- None (1)
- Insufficient (2)
- Some (3)
- Good (4)
- Excellent (5)

Every answer is marked with points varying from 0-5, in a way so one can measure the results of the whole, where the average, the median and the standard deviation etc. can be extracted.

Out of the elaborations made with this collected data material, a classification was created describing the average value of every category, in a decreasing order.

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Estimation of the potential benefits - Average value
(including I don't know)

| Application | Average value |
|------------------------------------------|---------------|
| Imaging/Scanning | 3,50 |
| Datawarehouse | 3,43 |
| Digital Signature | 3,43 |
| Digital Archive | 3,29 |
| Electronic Registry (scanning/recording) | 3,29 |
| Certified electronic post | 3,21 |
| Electronic Payment procedures | 3,21 |
| Data Storage | 3,00 |
| ERP for Government | 3,00 |
| Records Management | 3,00 |
| HR System | 2,71 |
| Document Management | 2,00 |
| Location-aware application/GIS | 1,93 |
| Business Intelligence | 1,79 |
| e-Procurement | 1,79 |
| Virtual Post Office (Postel) | 1,64 |
| Knowledge Management | 1,57 |
| Workflow | 1,50 |
| Customer Relationship Management | 1,43 |
| Forms Management | 1,43 |
| Business Process Management | 1,29 |
| (web) Content Management | 1,14 |

Table 4: Average estimation of benefit

The classification above is written in relation to the average value gained by the various IT solution categories. Overall, the obtained results enhance the calculations of the average value, also with the response "I don't Know" where the point attribute is 0.

In reality, the result is not indicating a positive or negative evaluation in relation to the IT solution categories. The classification was moreover elaborated in Table 5, this time excluding the answer "I don't know".

Estimation of the potential benefits - Average value
(excluding I don't know)

| Application | Average Value |
|------------------------------------------|---------------|
| Document Management | 4,67 |
| Datawarehouse | 4,36 |
| Data Storage | 4,20 |
| Records Management | 4,20 |
| Digital Archive | 4,18 |
| Forms Management | 4,00 |
| Electronic Registry (scanning/recording) | 3,83 |
| Imaging/Scanning | 3,77 |
| Certified electronic post | 3,75 |
| Electronic Payment procedures | 3,75 |

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Estimation of the potential benefits - Average value
(excluding I don't know)

| Application | Average Value |
|----------------------------------|---------------|
| Digital Signature | 3,69 |
| Knowledge Management | 3,67 |
| Business Intelligence | 3,57 |
| e-Procurement | 3,57 |
| ERP for Government | 3,50 |
| HR System | 3,45 |
| Location-aware application/GIS | 3,38 |
| Customer Relationship Management | 3,33 |
| (web) Content Management | 3,20 |
| Business Process Management | 3,00 |
| Workflow | 3,00 |
| Virtual Post Office (Postel) | 2,88 |

Table 5: Average estimation of benefit – recalculated

The average value in the last classification is obviously higher and has furthermore created changes in the scale ranking between the different categories, which is most noticeable in the category of Document Management. Seeing also the results of the categories; "Records Management", "Data storage" and Digital Archive", it is possible that the users have seen them as somewhat synonymous terms that indicates the same typology of IT solutions, since their points in the index are almost identical and put them in third place in the ranking. Workflow and Business Process Management that in the previous paragraphs have been put as scarcely used are also here placed in the bottom of the ranking and are not viewed as being particularly useful, even if these categories have a strong correspondence in their scope with that of Public Administration.

Finally, the two categories of Business Process Management, BPM, and Datawarehouse that in effect are complimentary and to some extent made to satisfy the same information requirements, have been given a very different rating. One motivation leads us back to the previous discussion on the interpretation of the defined categories. Here, in any case, the survey states that the cross-sectional group of information systems that handle functions such as ETL, Query and Reporting, is known under the term Datawarehouse and therefore indicate all these solutions. It is reasonable to think that the wide spread use of this term has been transferred to the final end-users and thus to the different organisational entities within the City of Turin.

To complete the generic survey on existing needs, the above given information has been cross-checked with the level of IT-diffusion of the various categories used for being able to extract an index of need. The index does not only cover the points given in relation to the usefulness perceived by the interviewed managers, but makes in the same time a consideration based on the diffusion of the solution itself. The index is calculated by taking into consideration that a solution perceived as very useful could have already been adopted and currently used within the organisation. Another solution perceived to have an equal level of usefulness, could however, be used much less frequently. The index therefore seek to take into account both aspects; the perceived usefulness AND the diffusion level, to be able to assign a unique value to every category of IT-solutions, to make it possible to line up a classification that enhance both considerations. The specific index of need is calculated in the following manner:

$$IN = MV / (1 + LU)$$

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- IN = Index of Need
- MV = Medium value of the perceived level of usefulness
- LU = Percent of the sample that already declared that they use the specific solution

Substantially, the index of Need has the following characteristics:

- If the perceived Medium Value of usefulness increases, the Need value rises
- If there is a increase in the use of the application in the organisational units, the index of need decrease

To conclude, the Index of Need values those categories of applications considered as useful but are little diffused within in the public administration in the City of Turin.

Estimation of the potential benefits - Index of Need (excluding I don't know)

| Application | Index of Need |
|------------------------------------------|---------------|
| Document Management | 4,08 |
| Forms Management | 3,50 |
| Datawarehouse | 3,39 |
| Knowledge Management | 3,21 |
| Records Management | 3,09 |
| Business Process Management | 3,00 |
| Workflow | 3,00 |
| e-Procurement | 2,94 |
| Customer Relationship Management | 2,92 |
| Digital Signature | 2,87 |
| Electronic Registry (scanning/recording) | 2,82 |
| Data Storage | 2,80 |
| Digital Archive | 2,79 |
| Location-aware application/GIS | 2,78 |
| Certified electronic post | 2,76 |
| Virtual Post Office (Postel) | 2,68 |
| (web) Content Management | 2,64 |
| Business Intelligence | 2,63 |
| Electronic Payment procedures | 2,50 |
| HR System | 2,20 |
| ERP for Government | 2,04 |
| Imaging/Scanning | 2,03 |

Table 6: Index of Need

Regarding the classification based on the average, the "index of need" confirm the importance of systems relating to Document Management, revalue the system of Workflow Management and place attention on the Forms Management solutions, whereas the last category is an important factor in the development of on-line forms management. Mentioned, but strongly penalised in this index is also the category of Imaging/Scanning. This is due to the already strong presence of this solution in the Public Administration, which is also a classic example of where widely used IT solutions are deemed as solutions outside the "real" progress category.

The questionnaire used during the interviews also contained questions aimed at capturing information with more specific character. At a first glance the answers accumulated from these questions do not seem to provide in particular fascinating results and are in part fragmented and

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incomplete. However, we decided to extract some information that could be used for future surveys. The answers provided below contain information in relation to the time put aside for different types of specific administrative activity and are used to map the areas overlooked in the other part of the survey. The answers are presented in relation to "type" of activity together with data that synthesise the distribution of the answers.

"What is the percentage of time used in your division to manage accounting/financial/fiscal matters in relation to the overall time at disposal?"

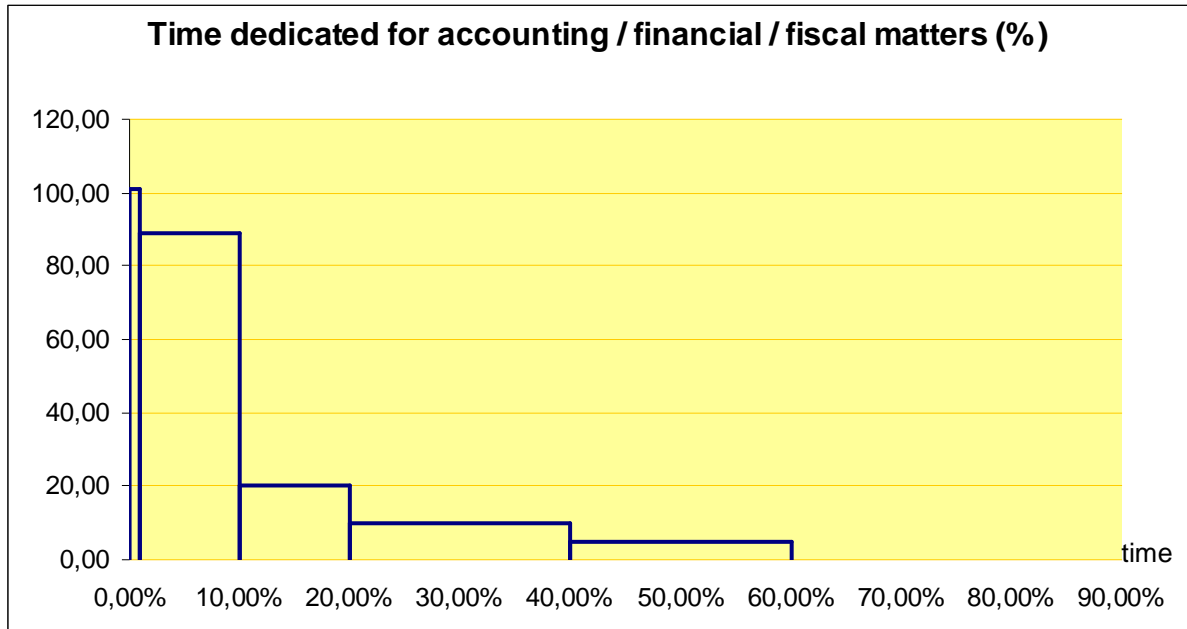


Figure 9: Time dedicated to financial activities

"What is the percentage of time used in your division to manage the document storage in relation to the overall time at disposal?"

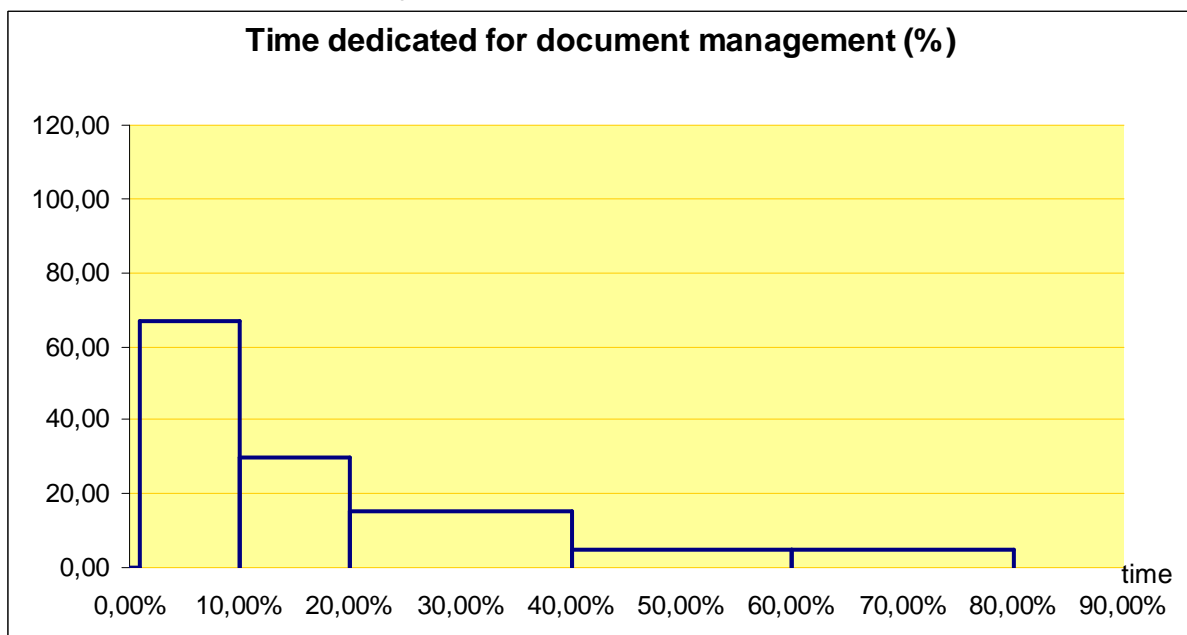


Figure 10: Time dedicated for managing the document storage

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“What is the percentage of time used in your division to manage administration activities in relation to the overall time at disposal?”

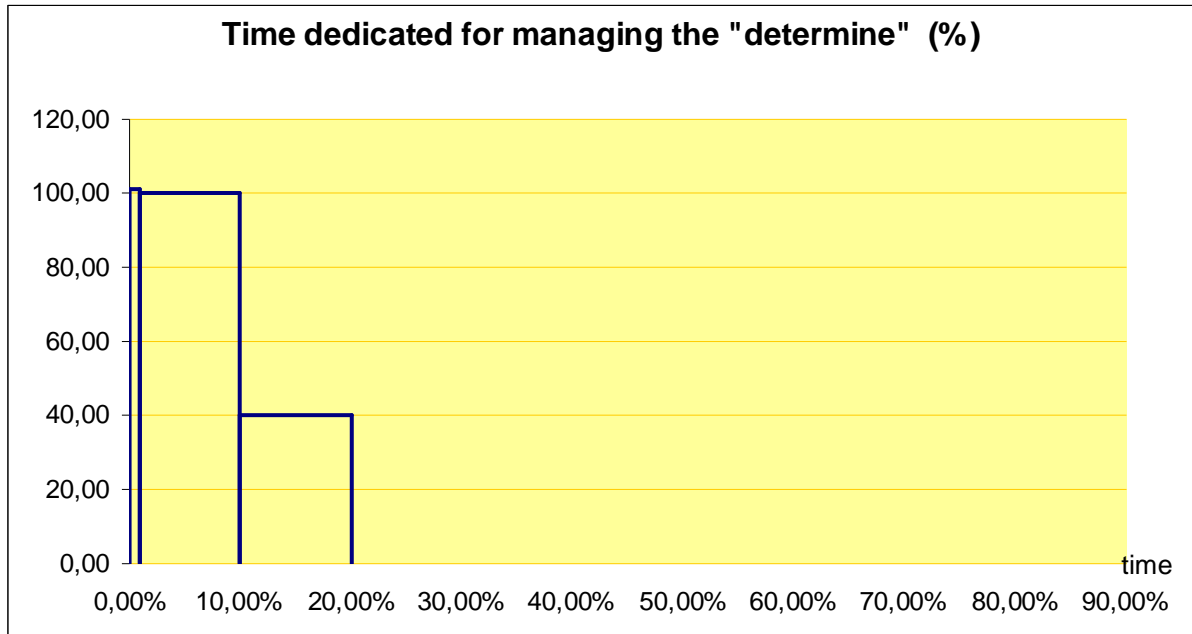


Figure 11: Time dedicated at managing incoming and outgoing

“What is the percentage of time used in your division to manage the workloads in relation to the overall time at disposal?”

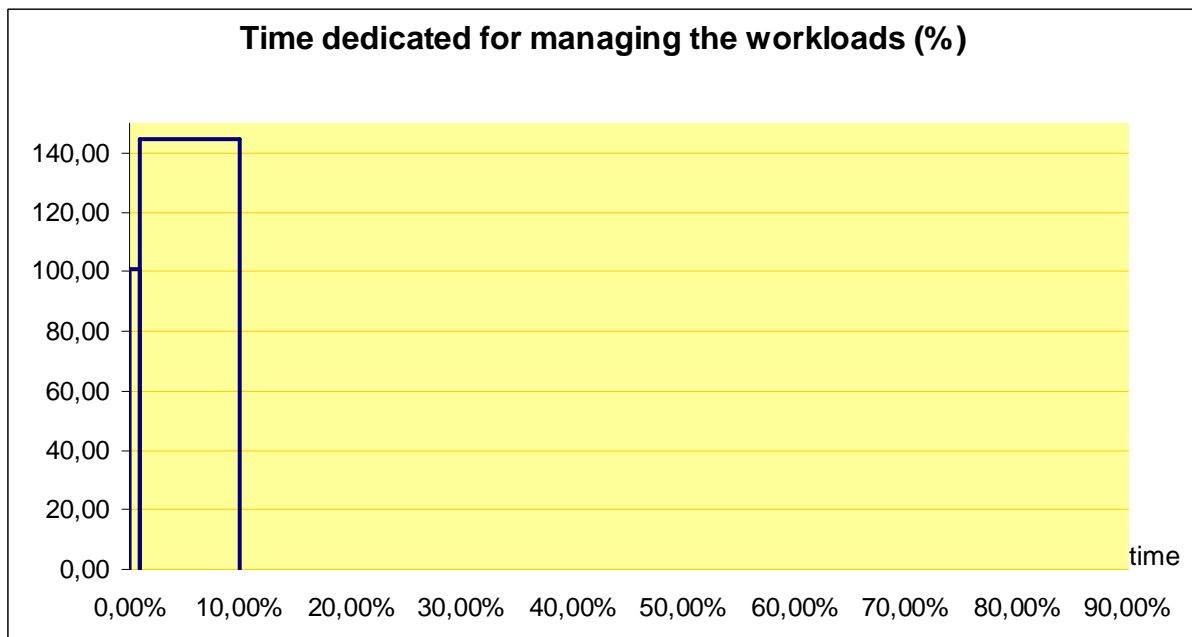


Figure 12: Time dedicated for decision management

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“What is the percentage of time used for managing protocol documents and related activities?”

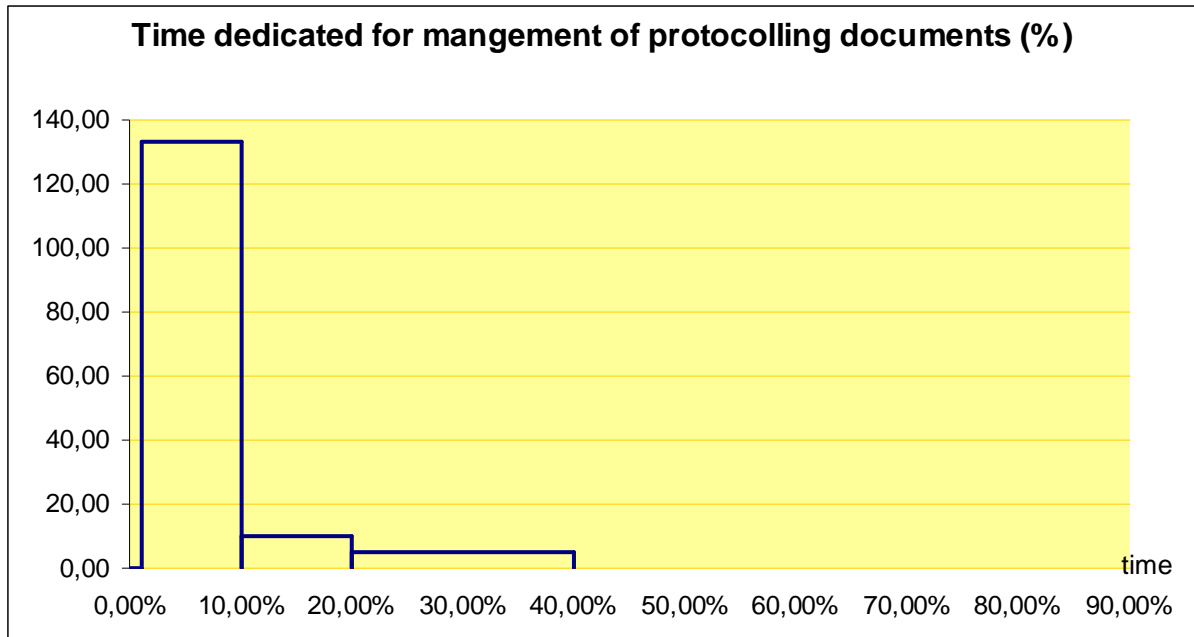


Figure 13: Time dedicated to protocol management

To conclude this part of the analysis, it is worth checking the results emerging from question D5 in the questionnaire; “Does the activity of the organisational unit has to do with territory management”? Even though the question might seem generic, it contains an intention to understand to what extent the interviewed entities are conducting activities in relation to territory management and that they as a consequence could be interested in new IT solutions of geo-referential character. About 50 percent of the interviewed stated that they handle activities in relation to territory management. The result is relatively important since the question itself states that the Public Administration takes an important and fundamental role concerning these issues.

In another perspective, if the private economic sphere in some way could replace or put itself side by side with the Public Administration in the case of territory management, the PA would find it hard to find a possible substitute. The results of the interview substantially confirm this line of thinking, also if the quality and the level of collected data might not allow with taking such a strong position.

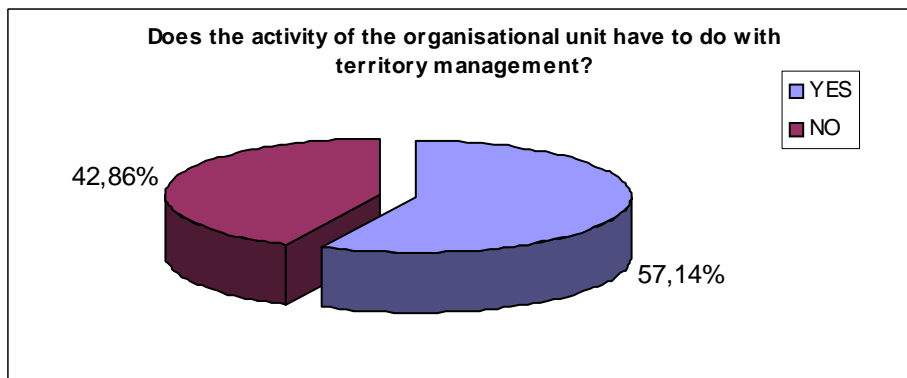


Figure 14: Management of Territory

4.2.5 ICT investment considerations

The work executed also comprises other aspects such as responsibility and the role of

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investment options when it comes to ICT. Almost all of the interviewed declared that they delegate the investment strategies of ICT investments to the Directorate of Information Systems in the City of Turin. In this kind of situations/environment, the results reflect substantially the organisational structure of the City, where there exist an entity that provide the actual decisions regarding the diffusion of ICT, making the interventions lead out to all the other organisational units, based on their individual needs and strategic orientation. In this way, the central unit make evaluations of the main investment choices and budget initiatives, with the always present “do-more-with-less” restrictions.

Out of the 14 organisational units examined in this survey, only four stated that they operated with intent of ICT investments in autonomy, independently of the high level directives that derive from the information systems department, as a fact remain that having a choice is however an exception. The rule remains for all the groups the adherence to the plans and the choices of cross-sectional nature. In fact, all the interviewed have declared that the main part of the cases, the priority of the investment choices derives from the IT department. There are few exceptions. Otherwise the rare autonomy of the organisational entities could be interpreted as a misalignment between the functional requirements of the single compartments and the choices of acquisition/development of new cross-referenced information solutions.

Another issue relates to the decisional power of the interviewed entities regards the same theme of investments in ICT and concern the level of involvement. In order to operate such choices the Direction of Information Systems involve the single organizational units through a survey of their specific needs. Only very rarely the single organizations influence in a direct way the choices of the Information Systems Direction, instead very often the level of involvement include only the verification of needs and only rarely the compartments are involved in the selection or construction of the actual IT solutions.

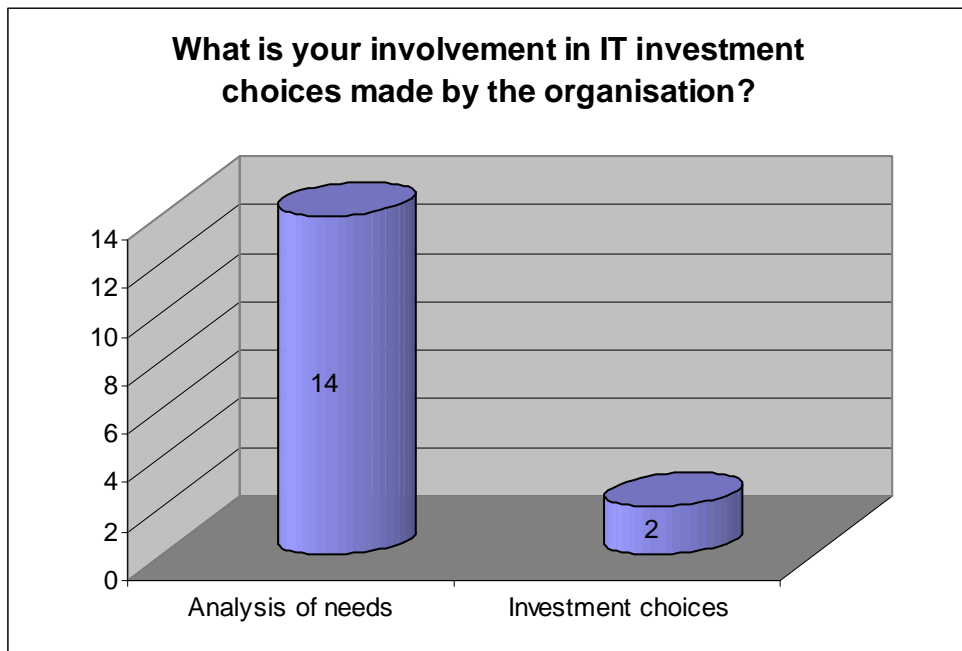


Figure 15: ICT investment decision making

4.2.6 Organisational process logic

The methodology of process organisation is one of the things that the PICTURE project is based upon. As a consequence, the use of the future application solution and the underlying methodology, presuppose a certain level of familiarity or predisposition of the organisational paradigm. Within this perspective the interviews have approached this argument with mainly

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three questions of a very general character to verify the level of familiarity and predisposition of the interested entities within the Public Administration.

The survey has aimed at verifying the existence of documented and formalised processes used within the main operative activities of the involved organisational entities. Formalisation of the internal procedures are not particularly diffused, some entities do not even have defined key responsibility areas or priorities. On the other hand, those that answered affirmative stated that the formalisation does not have an effective impact from a practical view. Using this perspective, the normal habits, and urgent and necessary daily tasks take away the aim for formalised directives.

The above characteristics are in some way striding against the repetitive tasks that define many of the interviewed organisational structures. The logic of processes has in fact posted itself well within the processes characterised by a certain level of repetition of activities. Furthermore the results based on the third question asked on this theme, show that the responsible of the various organisational entities are in any case aware of that the logic of process fits well within the organisational structure of the Public Administration, characterised by frequent human-human relations and to some extension repetitive and standardised activities.

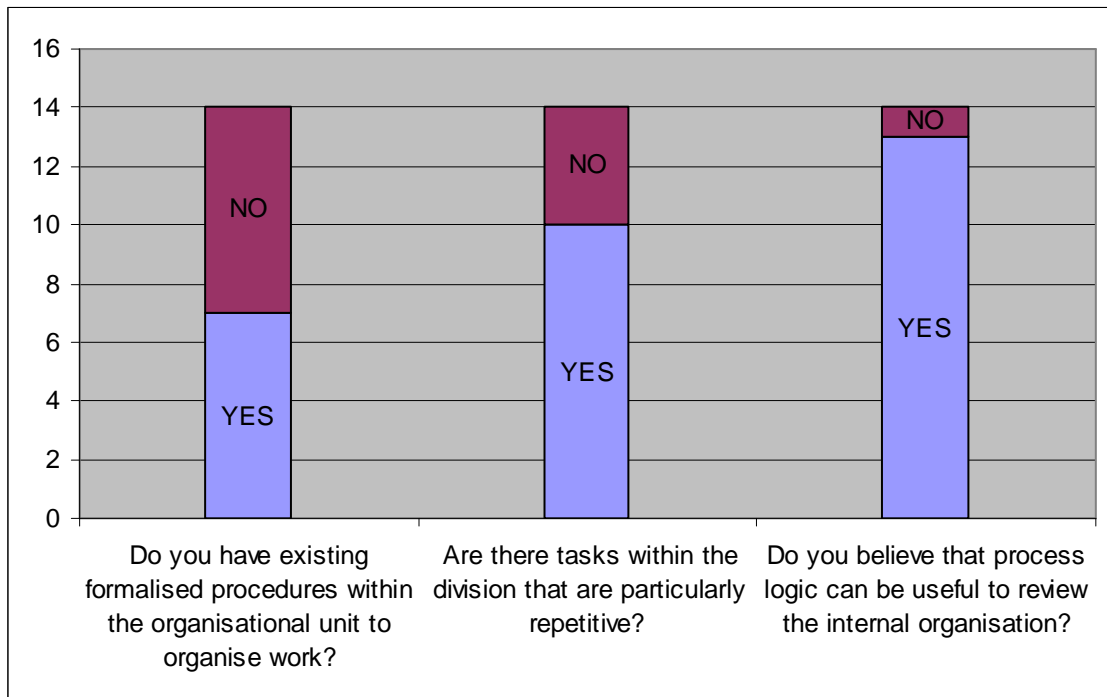


Figure 16: Organisational logic

4.2.7 Organisational logic in reference to client oriented activities

To make a more complete covering survey, the questionnaire also contained a question in relation to customer satisfaction and to client oriented activities. This is a subject matter that seems to be growing also within the Public Administrations. To some extent this specific theme targets some of the objectives of the PICTURE project, in specific in relation to the process of identifying performance indicators used to verify the impact of ICT solutions on the internal organisational processes. A lack of end-user attention was evident when analysing the collected data from the survey on the end-user satisfaction regarding the use of Public Administration services. In most of the cases, no real method seems to be used to measure the citizen satisfaction. In fact most used a reverse way by measuring the complaints that came in. If the complaints were scarce, it pointed to a good result.

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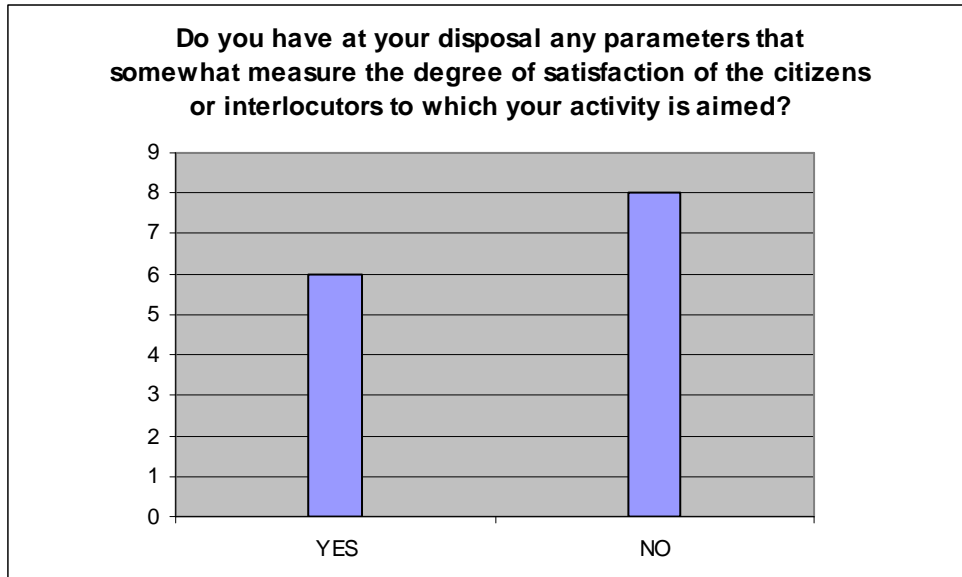


Figure 17: Customer satisfaction

4.2.8 Qualifying factors and the inhibiting factors to the exploitation of ICT solutions

One of the most complex aspects related to the diffusion of IT solutions concern the definition and measurement of perceived benefits, let alone the rate of return in qualitative and quantitative terms, deriving from the adoption of IT solutions. The survey has tried to deepen this aspect by exploring the answers gained during the research, and as a consequence performance indicators could be identified in line with work package 3 indications. The following table shows the ordered indicators.

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| Performance Indicators for Impact Measurement (WP3) | | |
|------------------------------------------------------------|----------------------------------------------------|---------------------------------------------------------------|
| Dimensions | Targeted Impact Area | Performance Indicators |
| TIME | Faster processes | Execution time (minutes) |
| | | Idle time (minutes) |
| | | Delivery time (minutes) |
| RESOURCES | Reduced labour costs | Average employee hour rate (Euro/hour) |
| | Reduced telecom costs | Average cost per month (telephone & internet) |
| | Reduced consumable costs | Average paper handling costs per month |
| | | Average ink + other consumable costs (e.g. folders, pens) |
| Reduced storage space & cost | Physical storage space (in square M) | |
| | Average storage filing costs per month | |
| QUALITY | Easier/ better processes | # steps eliminated/automated |
| | | # of media breaks removed |
| | | PA employee job satisfaction |
| | | End-user service satisfaction |
| | More accurate processes | # of errors reduced |
| | Transparency, accountability and monitoring | Visibility of process steps |
| | | Visibility of process status / audit trail |
| | | End-user service satisfaction |
| | | Availability of statistics for monitoring process performance |
| | Enhanced data protection & privacy | Compliance with data protection regulations |
| End-user service satisfaction | | |

Table 7: Performance Indicators

The gained responses through the survey have been aggregated at different levels as to be able to place them into the structure of the indicators in terms of Time, Resources and Quality, even if also signed as more specific indicators of performance. For those that regard these ultimate answers, they have been organized in the following figure.

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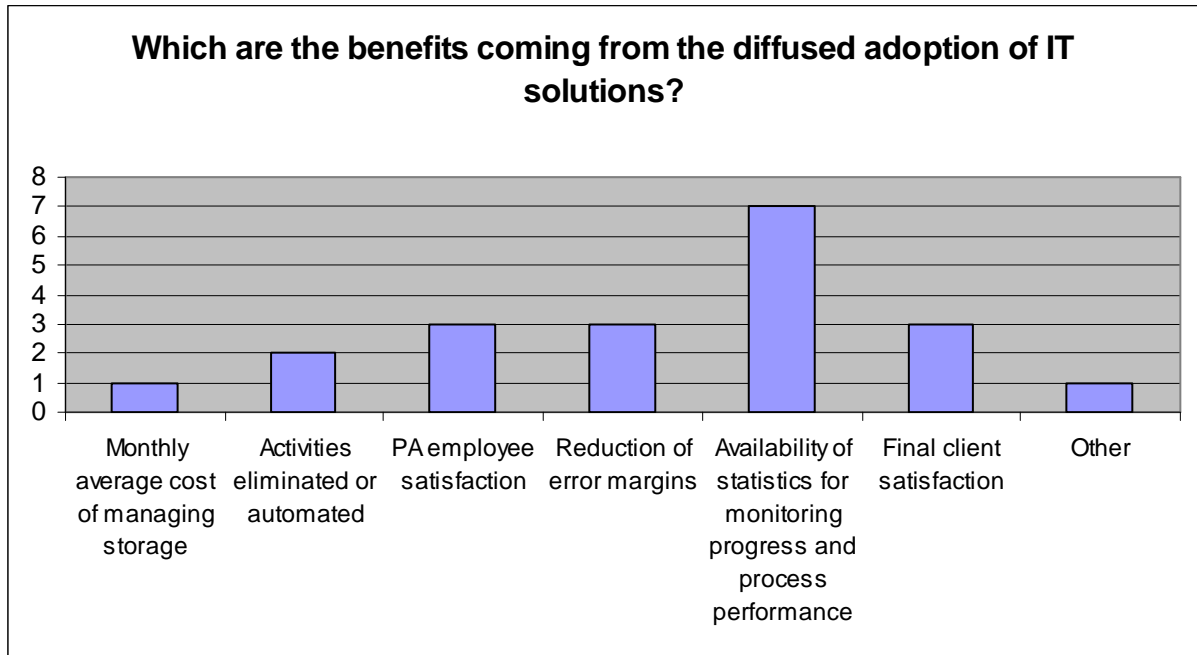


Figure 18: Benefits of IT diffusion

As one can observe, the performance indicator giving the highest response frequency is the “availability of statistics for monitoring progress and process performance”, in our point of view, the answers are interpretable in two ways; one can make conclusions that the indicator effectively has a priority role, where the hypothesis is derived from the consideration that IT systems are useful when exploiting the information relations within an organisation. However, an elaboration of the responses extracted for that indicator suggest, under the condition above mentioned, that it could be possible to add other indicators that refer to the exploitation of the visible information relations but that could specify other aspects such as to collect statistics, or for example to rationalise information, the possibility to organise the information, or to deepen the information in a more homogenous way.

Considering the distribution of the answers, based on the elaborated Performance Indicators used within the PICTURE project, a strong prevalence is noticeable regarding the qualitative aspect where the IT systems make their main contribution. The fact that IT systems reduce cycle time of processes is not deemed as a strong benefit by the interviewed, which gives a certain degree of maturity on the part of the interviewed. In fact that conviction are normally not so obvious, since IT systems often ask for ulterior efforts from the users, or at least different effort, that doesn't always bring time reduction regarding the actual activities.

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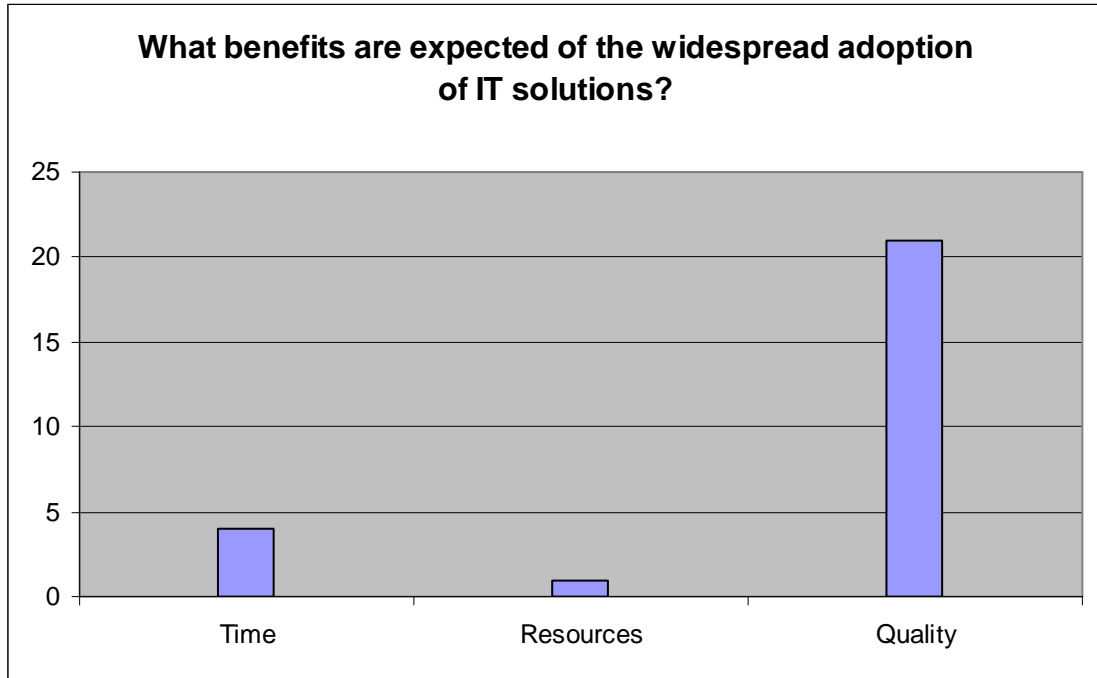


Figure 19: Expected benefits

Before concluding this survey it could also be useful to look at the elements inhibitory in a process of introducing new IT solutions. Strong relevance was placed on aspects relating to discontinuity in the use of distributed information applications, such as their organisational impacts that sometimes risk compromising the effective use of the solutions. Also the discrepancy between the expected functionalities and the offered possibilities seems to play an important role in the unsuccessful cases.

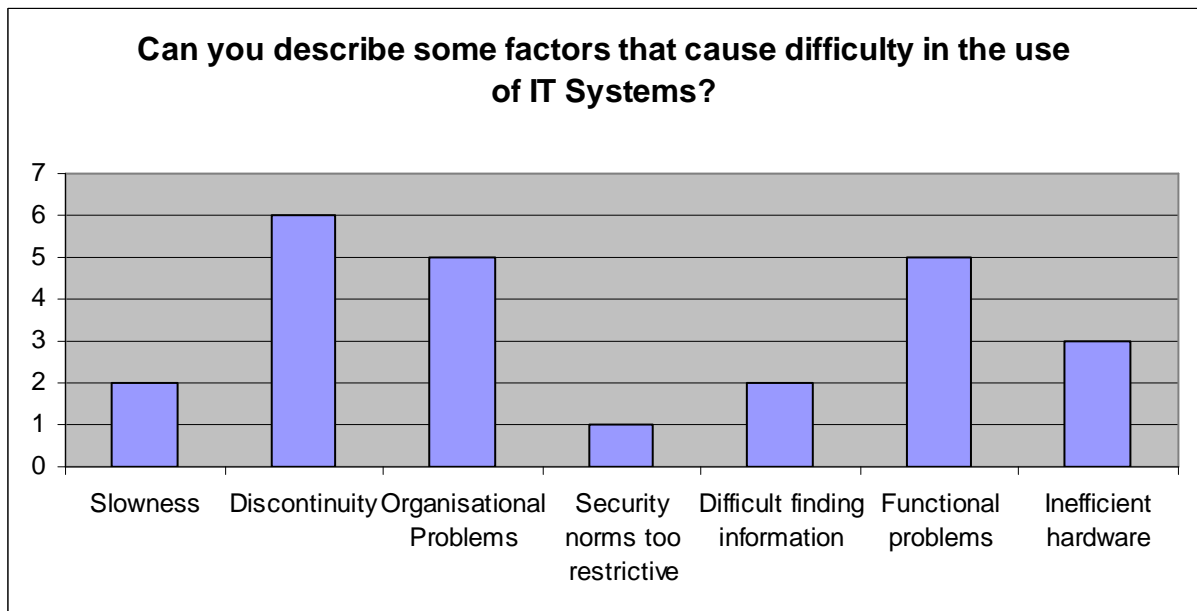


Figure 20: Difficulties in the use of IT solutions

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4.3 Conclusions

Summarizing the results of the expert interviews with managers from the City of Turin municipality a number of findings have to be stated

- 1) Concerning the ICT diffusion the City of Turin, seems to be an example of an Italian public administration at the forefront in adopting and exploiting IT Systems, whereas if the same survey and the same approach were to be conducted in another Italian city, the same level of utilisation, exploitation, knowledge and familiarity with technical solutions would or could not be expected.
- 2) Major inhibitors of the realization of expected benefits are personal resistance to change respectively lack of knowledge / IT education, and the challenges of organizational changes. Thus ICT systems should not require changes for their own sake, but support necessary change processes according to changing environments and duties.
- 3) Users seem to have encountered negative ICT impact. Their biggest fear is work discontinuity through system downtime, followed by organizational and functional problems. In addition they perceived inefficient hardware and feared slowness.

Often such combinations of negative impact occurs, when ICT investment decisions are triggered by immediate niche requirements (departmental solutions and decisions) rather than through an enterprise IT strategy which looks at scalability and reliability by nature. Since at the City of Turin the IT division has a key role in ICT investments it is an open question whether there was negative impact really encountered or whether the perception of potential (negative) impact was reported as a result of personal resistance to change.

- 4) Highest index of need is in the area of ECM and BPM solutions while on the same we encountered obvious difficulties to distinct applications in this field, e.g. workflow and business process management, or document management, "Records Management", "Data storage", and Digital Archive".

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5 Characteristics and Benefits of Typical ICT Applications

When we speak about ICT functionality groups at the current state of the PICTURE project core questions can not be answered yet terminally. Especially, what is the right level of granularity? How to delimit the ICT analysis?

Of course one can distinguish along the layers/level of an IT stack, e.g. top down:

1. Application level:
 - 1.1. Vertical applications: i.e. functions that directly support PA processes,
 - 1.2. Horizontal applications: e.g. workflow, portal, authorization, document management, ...
2. Application integration level:
 - 2.1. Enterprise application integration (including middleware),
 - 2.2. Data warehouse, data marts, analytical applications,
3. Software and data level:
 - 3.1. (Reusable) components and functions,
 - 3.2. Database/data structures,
4. Infrastructure:
 - 4.1. Network
 - 4.2. Operating systems,
 - 4.3. Hardware

But this distinction rather illustrates than answers the above questions. Thus final answers will be generated during the project by an iterative process of preliminary definition, initial evaluation and refined definition (with further evaluations if necessary).

5.1 Focus ICT Components

The focus area can be derived from the initial thoughts on the business of PA.

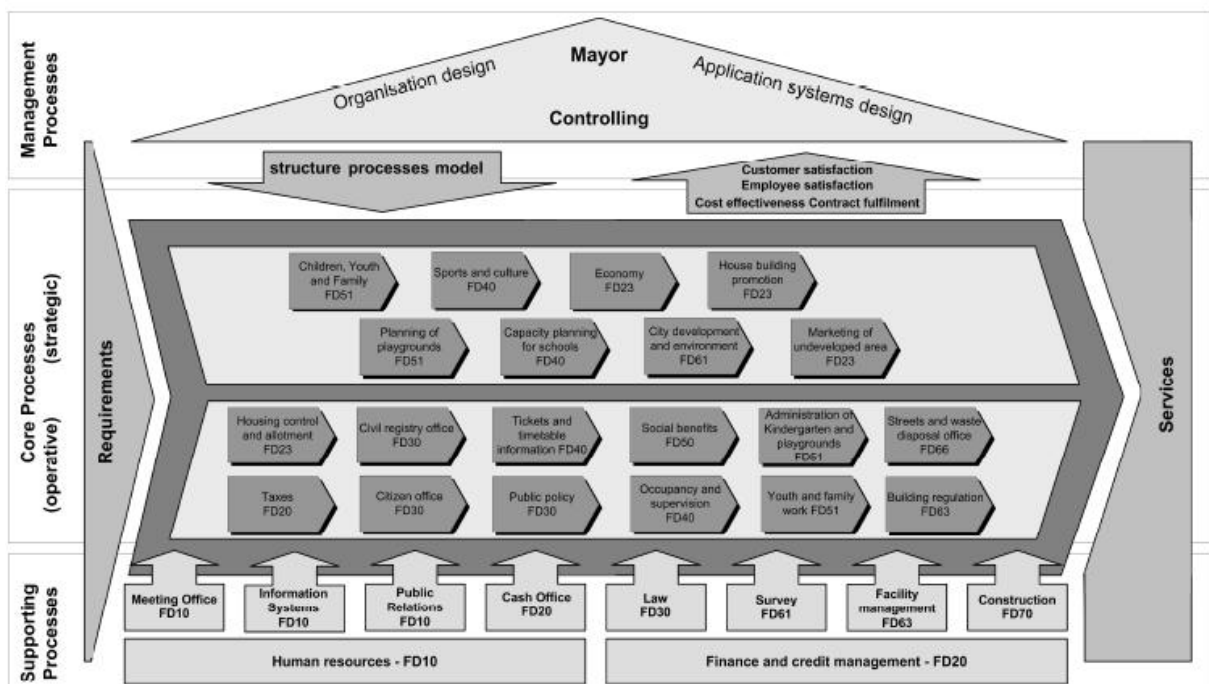


Figure 21: Administrative Process Frameworks

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The general model defines three groups of processes: management processes, core processes and supporting processes. Due to the process characteristics in public administration the core processes are split up in strategic and operational processes. Looking at the sketch one can start with the assumption that all functionalities in the area of Enterprise Content Management (ECM) and Business Process Management (BPM) will be at the core of interest. Closely connected to Business Process Management there is a need for support through so called infrastructure solutions like Workflow Management Systems or Document Management Systems. These Systems are able to support whole acts in public administrations through a process view. Additionally one will have to take into account these functionalities that make up supporting processes that will directly affect the core processes, such as payment or authentication/digital signature.

5.1.1 Workflow Management System (WFMS)

If process oriented organisational structures are to be realised in public administrations within the scope of E-government, an adequate technical support is essential so that the organisational efficiency benefits are not restrained through functionally aligned information systems. The core task of Workflow Management Systems is the support of organisational process flows through the coordination of activities, applications, data and persons involved in the process.

Workflow management can be associated with document management (refer to 5.1.2 for more details). Document management is concerned with the fact that digitised documents take a ready-made way through the company. A typical example is an order or application that comes in. The incoming document will be scanned and thus digitised. Then a workflow management system ensures that the digitised document will be forwarded to all necessary instances in the right order. Therefore, the system has to know the underlying business process and the persons, who are relevant as addressees, in the right order.

With a monitoring component, the way of the document and thus its processing status in the company can be tracked. Inquiries of customers concerning the current state of an order or application can thereby be answered quickly.

The use of WFMS leads to monetary and non-monetary benefit effects. The elimination of transport time and the minimisation of wait time lead to a greater efficiency, which is directly measurable.

The reduction of the lead-time primarily results from the substitution of the manual paper transport between the involved employees through electronic provision of information. Furthermore, workflow management helps to reduce the wait time at the work place, as involved employees are automatically informed, if new tasks are on hand. Via the role resolution the tasks are assigned load-dependently so that even an allocation of work, dependent on the volume of work, can be realised. Important process instances obtain priority through the WFMS so that processes can not be "forgotten" or "misplaced".

Besides the already mentioned monetary benefit effects, the enhanced transparency in the process execution belongs to the most important non-monetary benefit effects. With the help of the workflow monitoring it is possible to get direct information about the state of a process instance at any time. For example, in the case of further inquiries, the current processor of an operation can be detected from the monitoring data, which leads to a lower call back rate. The integrated monitoring and controlling of workflow management systems lead to a greater transparency concerning the workload on the firm level and work group level. Via the role concept of workflow management systems, a substitution during the absence of employees is implicitly realised, as activities are assigned on group level. Thus, in many cases, an explicit substitution rule is no longer necessary. However, manual interventions in the allocation and reallocation of work are still possible.

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Workflow management systems allow the realisation of a modular application landscape. Within the scope of single workflow activities, several applications are integrated, if necessary, so that a substitution or a modification of application functionalities has only local impacts on the workflow. This facilitates the change management because the other sectors of the workflow model are not affected.

Roles are abstractions of an organisational model, which allow the representation of a workflow independent of the current organisation that is how persons are assigned to roles and how roles are grouped organisationally. Through the use of roles and a data base, which shows the organisational structure, a workflow management can automatically assign every activity to the designated employee.

5.1.2 Document Management System (DMS)

The term document management system is often used when the administration and document processing are in the foreground and the complete cycle of documents, which also contains earlier phases of documents, is important. Versioning, differentiated access rights and full text search play an important role. If the document management system is integrated in another system, e.g. insurance applications or ERP systems, this is called an integrated document management system (IDMS).

Since documents are the central objects of a DMS, at first the terms document and file have to be defined. In a DMS environment a file or map designates a container, which contains documents and possibly additional information. The type of the documents can comprise forms as well as image documents and they can derive from different sources. They are related and form the information background which is important for the accomplishment of a processing step. References to documents can be found in a file. Thus it is possible that a document can be assigned to several files. A file often has a temporary status and is closed after the completion of the process. Besides those static files there are also dynamic files. At the time of the opening of those files, the file content is collected via a database query.

The different access frequencies in the life cycle of a document should be considered through the use of an ageing mechanism in the system. This should guarantee that documents, which are only used sometimes or never, are relocated to slower but therefore cheaper media. Thus, no longer required documents can be transferred from magnetic discs to slower WORM discs.

The following advantages can be achieved through document management systems with process control:

- Documents are distributed faster through the workflow
- Time gain, as documents and information are automatically compiled as preparatory work to a work step and prepared for a faster access. The responsible official saves time because he is not interrupted by requests and search.
- Number of work steps is reduced (30-75%), e.g. through automation
- Higher information disposition to clients
- Processing time can be controlled automatically to avoid that processes are left undone (e.g. in the case of illness or holiday of a responsible official).
- Documents can be used simultaneously by different persons
- Reduction or substitution of paper documents contributes to a faster processing.

Document management systems support the indexing, the retrieval as well as the marking or labelling of the saved documents.

Rendition: If a document is to be saved in several formats, e.g. as MS-Word document for further processing or as PDF document as long-term reporting format, these are called renditions

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of a document. At the time of display or processing, the DM system has to decide contextual or via menu query, which rendition has to be taken for the relevant operation.

Versioning: Document management systems support a versioning of documents. Thereby, older versions of a document can be read back. That can be very important e.g. for technical documents and CAD-drawings.

Check-Out and Check-In: These functions guarantee that no inconsistencies emerge if several persons or authors work on the same document. That way it should be avoided that one author accesses a document, works on it and saves it while a second author does the same thing at nearly the same time. The second author would then overwrite the changes of the first author. With the check-out function, the person who accesses the document temporarily blocks the document for further editing. If another person wants to have access to the document, he can only read or copy it. The second person gets informed about the current editing block when accessing the document. With the check-in function the changed document is saved as new version and the editing block is revoked.

5.1.3 Archiving System

In this context an archiving system is a system for long-term archiving. Through the use of archiving systems, the following goals should be attained: Data and documents should be saved audit proof, costs of storage media should be reduced and the performance of the transactional systems should be increased.

The most important parts of archiving systems are scanning, indexing/ key wording, archiving and retrieval.

Scanning a document means in this more close term only the receiving of a paper based document which was added to a scan-device as the other parts of scanning in a more broad meaning are individually performed. So after this act of scanning, the document is objected as an image. Next step in the process of scanning is the indexing and key wording of a document. The Keywords are read out from the document and registered as meta-data. This is carried out automatically, semi-automatically or manually through an administrator. In the next steps it should be able to convert documents which are scanned as non coded information (NCI) into coded information (CI) documents as these are able to process automatically. To do this, archiving systems should be able to execute optical character recognition (OCR).

After convert paper based documents in digital documents in this way, the owner of the archiving system is able to store the information in a recovery way. Considering public administrations a huge crop of documents and papers are received and produced every day. So archiving is a big challenge. On the basis of the generated meta data retrieving processes for documents or more in general for information is much more comfortable. Especially searching for information in documents is easier as the documents are converted in CI.

If a distributed backup-strategy is pursued, with electronic archiving systems loss of information can be avoided. Regarding paper based archives in history; cases like fire or humidity destroyed documents with important information. If digital data is stored on different medium and at different places, this IT-support helps for easy recovering data if necessary.

5.1.4 Web Content Management System (WCMS)

Content management systems are a relatively new technology, which became popular during the year 2000. Reasons for that were on the one hand, that the web presences of companies steadily increased in size and on the other hand, that within the web presence there was an increasing dynamic.

Thus, the amount of work concerning the creation of new websites as well as the maintenance of existing pages rose disproportionately high. Content management systems offer

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solutions for that. E.g. employees, who have no programming knowledge, can also put contents on the web. This can be assured through a strict separation of content and layout and corresponding template. Content management systems are not only applicable for companies that want to offer a complex web presence. Every major internet presence, in which different contents are provided by different persons, demands for a professional content management system. Another advantage of the use of CMS is that there is a version control for the internet presence. The more information offered on the web, the bigger the risk, that the information is out-dated and not taken off the web. This, of course, leaves a bad impression for the visitors of the site. Furthermore, there is the risk that information is taken off the web but not all links, which refer to the content, are changed or deleted as well. By all means, those links can be existent on external web pages, too. With a content management system, an appropriate link control can be conducted.

Through the use of CMS, the costs of the content management can be reduced while simultaneously increasing the quality of the provided contents. The cost reductions can be achieved through an increase of the efficiency and control of the provision processes and a reduction of the lead time. Improvements in quality of form and content can be realised through defined actions, support of the layout process and the maintenance of the provided contents (e.g. version management).

In general the content management lifecycle (or short: content lifecycle) contains the following steps.

- Investigation
- Creation
- Control
- Release
- Publication
- Archiving

These steps should be supported through a CMS.

5.1.5 Portal

In the early phase of the World Wide Web, normally portals were only link collections where one could head off in a favoured direction in the WWW. With the enhancement of the internet, the functionalities of the portals were expanded. The link collections were supplemented with search engines. Thus, there are a couple of well-known portals like e.g. Yahoo, Lycos or Infoseek. Portals also increasingly gain in importance for internal processes in an organisation as employees can use them as central entry area for information recall and use. Through personalisation modules, every user can govern his favoured topics on his individual welcome page.

Portals are web based, personal sable, and integrated access systems to content, applications and services, which serve the support of customer processes.

One can distinguish between portals for employees (Enterprise Information Portals) and portals for external customers (Customer Process Portals).

In reference to the domain of the public administration, portals are abstract places, where the addressees but also the public service, can enter the virtual administration and handle that part of their tasks, which relates to information (inform or get informed about public concerns), communication (e.g. E-Mail, video conference) and transaction (e.g. hand in forms, make applications, notify, pay).

Often the terms CMS and portal software are used synonymously. In this paper the terms are separated. Portals mainly represent the integration idea in the sense of enterprise application

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integration while CMS focuses on the representation of editorial processes.

Portals in the internet increasingly become an integration tool of IT. They permit internal and external employees and costumers the access to information in form of content (documents as unstructured or slightly structured information) and data, which often exist in data bases. Furthermore, they support the increasing access to applications, which can often be found on several, heterogeneous systems. For this reason, portals become the desktop of the user as single-point-of-integrated access.

Portals are characterised by the compilation and summarisation of information, which is important for the user, as well as the integration of different information sources and the simple, consistent, web based access to the underlying applications and systems. Furthermore it can serve as a meeting point of the users as groupware components like e-mail, chat, and newsgroup and, in the advanced, modus also videoconferences and shared application techniques can be embedded in the portal.

As a user it is possible and often meaningful to use several desktops analogue to several portals. Every portal combines the useful components for a special working situation, e.g. a knowledge portal.

The term portal designates an architecturally decorated gate or a lobby. The basic technology portal transmits this function to the digital world. Via a portal, users get access to different applications and information. In order to use the portal a registration is normally necessary. Thus, the portal can identify the user and knows which rights he has and thus which applications he is allowed to use and which data and documents he is allowed to access. Thereby, the following becomes possible:

- The employees can inform themselves and initiate business processes
- Costumers can approach the company interactively via the internet
- Costumers can order products, keep track of the consignment and interfere if applicable
- Partners of the company (e.g. suppliers) can be provided with own areas
- In a certain scope, the user can organise his portal on his own so that e.g. for especially important topics for him, always the latest information is displayed.

Portals increasingly become the central interface to relevant information in the company. The display of processes and information representation are relevant for the internal applications for the intranet as well as interface between companies and in the direct costumer relation via the internet. With the aid of portals, systems are brought together so that users have a quicker and effective access. Furthermore, a portal can realise the access to document management systems. Therefore it is essential to integrate the affected applications like e.g. data bases, ERP systems or content management. Often portals are parts of other systems like e.g. content management or SAP. However, it can as well be purchased as independent special system.

In the sense of further digitalising of organisational workflows and the merging to a virtual work place, productivity, quality and pace should be increased in order to boost the competitive position of the company and the efficiency of the public administration respectively. The further development of the intranet is part of a strategic development of the company and should be realised with the concept "company portal".

Via a portal, an employee has, with only one system registration, direct access from the home page to all information, communication functionalities and applications, which he needs in order to complete his tasks. On the home page, obligatory content and personalised content are displayed. There are three types of personalisation:

- Content, which is connected to the role of the employee and his user identification.

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Roles can be e.g. affiliation to a certain location, a certain department or a certain management.

- Content, which is selected and combined by the employee from a certain home page supply.
- Content, which is chosen from the intranet and placed on his home page by the employee.

Besides the pre-selected content, all content from the intranet is available to the employee, if no restriction is intended for certain user groups. The personalisation gives the employee orientation in the information flood as only the information, which is important for him, is displayed on his home page. The employee can find out about other content via rubrics or a search engine.

5.1.6 Forms Management System

With the help of electronic forms, one can simulate paper forms. This can either be an exact copy without further functions or an interactive form with help function and instructions. There is the possibility to print forms and send them via mail. However, the ideal use of the forms is a direct connection to a database or an application, which transfers the form or the entered form data.

An obstacle for the use of forms is the legal liability. Thus, there are a couple of sectors, which will still need paper in the long run.

The use of an FMS has numerous advantages, which will be briefly introduced in the following.

Freedom from media breaches: transactions, which contain structured data, are possibly subject to written form (inclusive handwritten signature) or contain time limits, are a challenge for a business process free of media breaches. Through a form management system, those demands can be supported and the creation of an electronic file can be facilitated. If e.g. certain forms have to be signed with a handwritten signature the communication participants have to change the transmission medium. Electronic forms are printed and signed and then scanned and registered within the scope of the incoming process in the administration. If an administration aims to handle processes completely online in order to make the course of business more efficient, it is compulsory to ensure a transmission of a necessary data, which is free of media breaks.

Data quality: An important system technical feature of modern process execution systems is the data integration. Ideally, data has to be entered only once; at best, when the data arrives at the administration for the first time. Through this, a high-grade automation concerning the processing of the information can be achieved. In this context, insufficient data quality especially affects the operational level as insufficient data quality leads to discontentment of all involved persons. Relevant data can be wrong, incomplete or not electronically documented, which leads to extensive additional work concerning the data administration.

The great importance of prevention and correction of data errors "at the source", i.e. directly in the data administrative system, is consequently an indispensable prerequisite for a consistent and smooth handling of IT supported processes.

Regarding the integration of an FMS in the IT supported process execution this implicates a better data quality through the complete integration of both systems. Thus, input errors, which arise through the repeated manual acquisition of media break documents, are avoided.

5.1.7 Electronic Signature

Applications at public authorities, contract conclusions and a lot of other procedures demand a checkable declaration of intent from the applicant or contractual partner. Traditionally, this is done with a handwritten signature. However, this leads to the fact that a personal presence of the

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customer is necessary for simple procedures like the conclusion of a savings agreement or the notification of a change of address at the registration office. Furthermore, the contract partner, e.g. a public authority, has to handle the procedure manually. This leads to additional costs on both sides.

The internet as communication medium is composed of a number of physically connected systems and networks, which do not have a hierarchical basic structure and are also not moderated by a superior control entity. This open network structure makes it possible that in principle, every system can exchange data with every other system. However, this openness holds problems with respect to the security of data transmission as neither the sender nor the addressee can detect if the message was intercepted, read or possibly manipulated during the transmission.

These security holes show an obvious risk for the business connections and legal relations in the internet. For the enforceability of emerging demands in business connections, a certain degree of reliability concerning the underlying information is extremely important. Thus, the identity of the business partners and the integrity of the business transaction play an important role. Another consequence of the insecurity of the internet communication is reflected in the existent scepticism or sometimes latent fear of the customer, who is afraid of an economic risk when participating in electronic business connections.

With the help of the electronic signature, those weak points of the internet communication or other nets with problematic data security should be eliminated. Communicating persons shall be enabled to get secure information about the identity of the communication partner and the integrity of the transmitted messages in a legally relevant manner. Furthermore, it should be possible to use the electronically signed documents as reliable evidence and to ensure prescribed legal forms. Thus, digital data can be used the same way as traditional paper documents.

In general, electronic signatures are those procedures, which guarantee the authenticity and integrity of electronically transmitted data.

Authenticity denotes the originality and reliability of the message and can have different meanings in this context:

1. The sender wrote the message. The writing and sending has to be accomplished by the same person without giving hints regarding the identity of that person.
2. The actual identity of the issuer of the message is confirmed by the signature. The issuer of the message can not pretend to be someone else.
3. No third person changed the document. The integrity of the document is assured.

Thus, the securing of authenticity, integrity and identity are the main functions of electronic signatures.

So far, the public key procedure is the only signature procedure conformable to law. The regulations acknowledge the possibility of other signature procedure but merely signatures, which are based on this method, are provided with the security assumption of the German signature law. Different types of signatures are fixed in this signature law. While the old signature law of 1997 assumes two signature types of different quality, this is replaced by a three-step system with "basic", "advanced", and "qualified" electronic signature in the new signature law from 2001. The advanced signature is different from the basic signature because a technique, which is basically the established public key procedure, is compulsory. Concerning the qualified signature, higher quality demands have to be met, e.g. the use of certificates.

Encoding: Procedures concerning the encoding of messages are not part of the signature law. They are neither required nor prohibited. As the electronic signature does not protect the document against access by third persons, it could be desired, to keep the document from third persons through appropriate actions. The mode of operation is in principle the opposite of the signature procedure, where a hash value gets encoded with the private key of the sender and

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decoded with his public key. In the encoding procedure, the document gets encoded with the public key of the addressee and can only be decoded with the private key of the addressee.

Trust Centre: Trust centres are necessary in the context of signature processes. They are also called "Trusted Third Parties". It is a centre, which testifies, that a certain public key belongs to a certain person. Before the signed communication it has to be clear-cut that the signing person as well as the addressee of the signed message trusts in this third party. The trust centre issues a certificate about the relation of a person to a certain key.

The key management is also called Public Key Infrastructure, short PKI. The PKI can be realised through different instances and has the following tasks: user registration, creation of certificates, certificate administration, certificate attribution, certificate attestation, certificate issuing, maintenance of the certificate indexes and determination of the validity of certificates.

Time Stamp: Although every mail program has a function to add the time of sending or the creation time of the document, this information is not reliable. The addressee can manipulate them effortlessly and their creation is untrustworthy, too. The time data in all traditional PC systems conform to a timer that is integrated in a local system circuit board and which can easily be adjusted at the user interface. Thus, if one wants to use the time data or date specification from an e-mail or another file as a legally effective proof of the access time or another relevant date, this manipulability is unsuitable. An additional option, the so called time stamp, which is offered by the trust centres, provides a reliable indication of time and date. It can reliably prove that a (signed) digital document was available to the trust centre with certain content at a certain time. For that purpose, the sender sends his signed data to the time stamp of the trust centre. The time stamp, as part of the system, possesses a calibrated timer, which can not be modified from outside. The current time, which is generated for this timer, is attached to the signed message and the whole document gets signed with the key of the trust centre and sent back to the sender. Therewith, the sender of the signed data can provide the already mentioned evidence (in the context of the authenticity of the digital signature).

However, it will only prove the fact that a certain message existed at a certain time. It will not prove the fact that the addressee actually received the message or received it at a certain time.

Virtual Post office: The virtual post office (VPS) provides security relevant services to transmit encoded or signed ingoing and outgoing data between the public authority and external costumers, if required. If an administration aims to handle those processes completely online in order to make the course of business more efficient, equivalent solutions to the legally binding paper based business process are necessary.

This includes the use of the qualified electronic signature as replacement for the handwritten signature as well as other functions of the ingoing and outgoing mail procedure. Arising media breaches in the interaction between an administration and external partners should be eliminated with the help of VPS. However, the legal liability in the interaction has to be protected. Therefore, a VPS on the part of the administration has to provide security relevant cryptographic services for different communication channels.

5.1.8 E-Payment Systems (EPS)

A big part of the administration services is liable for costs. For this reason it is necessary to arrange for adequate payment procedures for online administrative procedures and to include them in the administrative procedures. Thus, the customer should be able to pay his fees without noteworthy delay after receiving the desired administrative service. The payment procedures, offered in the internet, should be easy to access and easy to use for the customer. Furthermore, the new technical solution for secure shopping may not lead to obvious economical strains for the customer.

A lot of payment procedures have been developed in the scope of E-Commerce in the last

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couple of years. However, none of those new payment procedures could establish itself to a prevalent payment system in the internet. Thus, regarding most electronic shopping, the payment is still carried out traditionally; either through transmission of payment information (e.g. credit card number or account number) or through a later payment. An exception is the payment procedure "paybox", which enables a secure payment via mobile phones and which received the Austrian E-Government quality mark for secure and reliable E-Government. Regarding the choice of payment procedures it is also important in how far data security was considered. An identification of a citizen or company should not be necessary to only handle the payment. There should be payment systems, which enable the user to pay anonymously in the internet or using a pseudonym. Provided that the administrative purpose does not call for identification, e.g. the basic information to the register of residents, the payment can be made anonymously via money card. With reference to a credit card payment, it can be paid using a pseudonym according to the standard "Secure Electronic Transaction" (SET).

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6 Concluding Remarks

In this deliverable we have analysed requirements for deriving the ICT Functionality Groups which will be presented in deliverable D2.6. We have used four types of sources for the requirements:

- Influencing factors from guidelines for IT investments in different European countries. We covered Germany, Italy and Greece.
- ICT guidelines for public administrations in Europe. We covered EU, Germany, Austria, Switzerland, UK, Italy, Netherlands, Norway, and Greece.
- Expert interviews conducted by CSI in the City of Torino (Italy).
- Characteristics and benefits from typical ICT applications for public administrations.

The results can be summarized as follows. Although the influencing factors are derived from country-specific guidelines there are commonalities in the following areas:

- The legal factors in all examined countries cover topics such as federalism, data protection, administrative regulations and legal framework as well as public procurement law.
- The organisational factors cover organisational structure, processes and management factors
- The IT factors in all examined countries cover heterogeneity of IT systems portfolio and IT security.
- The economic factors cover the financial position and investments.
- The personnel factors cover things like inertia and resistance as well as personnel restructuring.

Some of these factors are not directly relevant for deriving the ICT functionality groups, e.g. the personnel factors, but should be considered during the further work in PICTURE.

To identify a common ground for the derivation of the ICT functionality groups we analyzed characteristics and benefits from typical ICT applications for public administrations such as:

- Workflow management systems
- Document management systems
- Archiving systems
- Web content management systems
- Portals
- Forms management systems
- Electronic signatures
- Electronic payment systems

The selection of these types of applications was supported by the analysis of the ICT guidelines in the different European countries as they define which IT systems should be implemented in public administrations. The ones mentioned in the guidelines are also contained in the list above.

This selection was further supported by the expert interviews conducted by CSI in the City of

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Torino (Italy). The interviews revealed the highest index of need in the area of ECM and BPM solutions including workflow management, document management, records management, data storage and digital archive. Therefore we will start the derivation from ICT Functionality Groups from these types of applications.

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8 ANNEX I – Questionnaire for expert interviews

COMUNE DI TORINO PROGETTO PICTURE WP2

INTERVIEW OF THE PA USERS MANAGING STAFF

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A) General

1) In which organisational unit do you work?

2) Can you describe the activities of the organisational unit in which you work?

3) How many people work in your organisational unit?

n. _____

4) How many computers do you have in your organisational unit?

n. _____

5) What is your role in the organisation?

6) What is your involvement in IT investment choices made by the organisation?

7) Who take the decision concerning priorities of the ICT investment choices?

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B) Level of IT knowledge

1) Which of these IT solutions /technologies do you know?

Workflow

I use it I know it I heard about it I don't know it

Business Process Management

I use it I know it I heard about it I don't know it

Business Intelligence

I use it I know it I heard about it I don't know it

Document Management

I use it I know it I heard about it I don't know it

Forms Management (Forms Server)

I use it I know it I heard about it I don't know it

(web) Content Management

I use it I know it I heard about it I don't know it

e-Procurement

I use it I know it I heard about it I don't know it

ERP for Government

I use it I know it I heard about it I don't know it

Customer Relationship Management

I use it I know it I heard about it I don't know it

Knowledge Management

I use it I know it I heard about it I don't know it

Location-aware applications/GIS

I use it I know it I heard about it I don't know it

Virtual post office (Postel)

I use it I know it I heard about it I don't know it

Digital signature

I use it I know it I heard about it I don't know it

Electronic payment procedures

I use it I know it I heard about it I don't know it

Imaging / Scanning

I use it I know it I heard about it I don't know it

Electronic registry (scanning/ recording)

I use it I know it I heard about it I don't know it

Records Management

I use it I know it I heard about it I don't know it

Digital archive

I use it I know it I heard about it I don't know it

HR System (Staff management)

I use it I know it I heard about it I don't know it

Data storage

| | | | |
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- I use it I know it I heard about it I don't know it
 Certified electronic post
 I use it I know it I heard about it I don't know it
 Datawarehouse
 I use it I know it I heard about it I don't know it

2) What is your knowledge level concerning the following Office Automation applications?

| | | | |
|----------------------------------------------|-------------------------------|---------------------------------------|------------------------------------------|
| eMail | | | |
| <input type="checkbox"/> Excellent | <input type="checkbox"/> Good | <input type="checkbox"/> Insufficient | <input type="checkbox"/> I don't know it |
| Word processor (Microsoft Word) | | | |
| <input type="checkbox"/> Excellent | <input type="checkbox"/> Good | <input type="checkbox"/> Insufficient | <input type="checkbox"/> I don't know it |
| Spreadsheet (Microsoft Excel) | | | |
| <input type="checkbox"/> Excellent | <input type="checkbox"/> Good | <input type="checkbox"/> Insufficient | <input type="checkbox"/> I don't know it |
| Presentation builder (Microsoft Power Point) | | | |
| <input type="checkbox"/> Excellent | <input type="checkbox"/> Good | <input type="checkbox"/> Insufficient | <input type="checkbox"/> I don't know it |
| Data Base (Microsoft Access) | | | |
| <input type="checkbox"/> Excellent | <input type="checkbox"/> Good | <input type="checkbox"/> Insufficient | <input type="checkbox"/> I don't know it |
| Image editing (Adobe Photoshop) | | | |
| <input type="checkbox"/> Excellent | <input type="checkbox"/> Good | <input type="checkbox"/> Insufficient | <input type="checkbox"/> I don't know it |
| Publishing (Adobe Illustrator) | | | |
| <input type="checkbox"/> Excellent | <input type="checkbox"/> Good | <input type="checkbox"/> Insufficient | <input type="checkbox"/> I don't know it |
| HTML editor (Microsoft Front Page) | | | |
| <input type="checkbox"/> Excellent | <input type="checkbox"/> Good | <input type="checkbox"/> Insufficient | <input type="checkbox"/> I don't know it |
| Web Browser (Microsoft Internet Explorer) | | | |
| <input type="checkbox"/> Excellent | <input type="checkbox"/> Good | <input type="checkbox"/> Insufficient | <input type="checkbox"/> I don't know it |
| Portals | | | |
| <input type="checkbox"/> Excellent | <input type="checkbox"/> Good | <input type="checkbox"/> Insufficient | <input type="checkbox"/> I don't know it |
| CAD / CAM | | | |
| <input type="checkbox"/> Excellent | <input type="checkbox"/> Good | <input type="checkbox"/> Insufficient | <input type="checkbox"/> I don't know it |
| Electronic Calendar | | | |
| <input type="checkbox"/> Excellent | <input type="checkbox"/> Good | <input type="checkbox"/> Insufficient | <input type="checkbox"/> I don't know it |

3) Do you know your e-mail address and how often do you verify its status?

4) Can you give some examples of situations that cause difficulties in the use of information systems?

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5) What are the benefits expected of the widespread adoption of IT solutions?

6) How much time do you spend on your PC during the working day?

- None
- Less than half an hour
- Less than an hour
- Less than two hours
- Less than four hours
- Less than six hours
- Less than eight hours

7) Do you think that the personnel working in your organisation has an adequate level of IT knowledge?

8) What do you think of the following statement?

"A well designed IT solution effectively adjusts itself to the existing internal organisation".

9) What general impact has the introduction of new IT solutions on the divisions internal organisation?

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C) Adopted IT applications

1) What IT applications do you use on a daily basis?

2) What IT applications have been adopted in your division sector and how many people use them continuously?

3) Does the organisational unit in which you work use the following technologies / components?

Workflow

YES NO

Business Process Management

YES NO

Business Intelligence

YES NO

Document Management

YES NO

Forms Management (Forms Server)

YES NO

(web) Content Management

YES NO

e-Procurement

YES NO

ERP for Government

YES NO

Customer Relationship Management

YES NO

Knowledge Management

YES NO

Location-aware applications/GIS

YES NO

Virtual post office (Postel)

YES NO

Digital signature

YES NO

Electronic payment procedures

| | | | |
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YES NO

Imaging / Scanning

YES NO

Electronic registry (scanning/ recording)

YES NO

Records Management

YES NO

Digital archive

YES NO

HR System (Staff management)

YES NO

Data storage

YES NO

Certified electronic post

YES NO

Datawarehouse

YES NO

4) Do you use systems integrated with other Divisions?

5) Do you use systems integrated with other authorities and /or private structures?

6) Do you have existing procedures for automatic data exchange with other divisions?

7) Do you have existing procedures for automatic data exchange with other authorities and /or private structures?

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D) Survey on the need and intervention areas

1) Estimate the benefits of the following systems for your administration

1 = None 2 = Insufficient 3 = Some 4 = Good 5 = Excellent

Workflow

1 2 3 4 5

Business Process Management

1 2 3 4 5

Business Intelligence

1 2 3 4 5

Document Management

1 2 3 4 5

Forms Management (Forms Server)

1 2 3 4 5

(web) Content Management

1 2 3 4 5

e-Procurement

1 2 3 4 5

ERP for Government

1 2 3 4 5

Customer Relationship Management

1 2 3 4 5

Knowledge Management

1 2 3 4 5

Location-aware applications/GIS

1 2 3 4 5

Virtual post office (Postel)

1 2 3 4 5

Digital signature

1 2 3 4 5

Electronic payment procedures

1 2 3 4 5

Imaging / Scanning

1 2 3 4 5

Electronic registry (scanning/ recording)

1 2 3 4 5

Records Management

1 2 3 4 5

Digital archive

1 2 3 4 5

HR System (Staff management)

1 2 3 4 5

Data storage

| | | | |
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- 1 2 3 4 5
 Certified electronic post
 1 2 3 4 5
 Datawarehouse
 1 2 3 4 5

2) Do you have existing formalised procedures within the organisational unit to organise work?

3) Are there tasks within the division that are particularly repetitive?

4) Do you believe that process logic can be useful to review the internal organisation?

5) Does the activity of the organisational unit have to do with territory management?

6) Does the activity of the organisational unit have to do with the management of editorial or document contents?

7) Are there specific technical knowledge or competences which are determinant for the correct development of the activities for which the organisational unit is competent?

8) What is the percentage of time used in your division to manage accounting/financial/fiscal matters

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in relation to the overall time at disposal?

- 0
- 01% - 10%
- 11% - 20%
- 21% - 40%
- 41% - 60%
- 61% - 80%
- 81% - 100%

9) What is the percentage of time used in your division to manage the Document storage in relation to the overall time at disposal?

- 0
- 01% - 10%
- 11% - 20%
- 21% - 40%
- 41% - 60%
- 61% - 80%
- 81% - 100%

10) What is the percentage of time used in your division to manage Administration activities in relation to the overall time at disposal?

- 0
- 01% - 10%
- 11% - 20%
- 21% - 40%
- 41% - 60%
- 61% - 80%
- 81% - 100%

11) What is the percentage of time Determined in relation to the overall time at disposal?

- 0
- 01% - 10%
- 11% - 20%
- 21% - 40%
- 41% - 60%
- 61% - 80%

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81% - 100%

12) What is the percentage of time used in your division to manage the workloads in relation to the overall time at disposal?

- 0
- 01% - 10%
- 11% - 20%
- 21% - 40%
- 41% - 60%
- 61% - 80%
- 81% - 100%

13) What is the percentage of time used for managing the protocol and storage activities?

- 0
- 01% - 10%
- 11% - 20%
- 21% - 40%
- 41% - 60%
- 61% - 80%
- 81% - 100%

14) Do you have at your disposal information to monitor the activity carried out within the organisation unit?

15) Do you have at your disposal any parameters that somewhat measure the degree of satisfaction of citizens or interlocutors to which your activity is aimed?

16) Which are the most burdensome items of expenditure in your division?
