

Comparative Study of Government Administrative Information Systems: Federal Republic of Germany

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1. Introduction

One important feature of public administration is that it may be characterized as "rule-regulated information processing and communication within and between agencies as well as the clients of administration". From this standpoint, a rather strong interaction of administration and information technology (IT) should be expected. And, indeed, IT has become a fact in public administrations of all countries by now. Although a lot has been accomplished since computers were introduced on a wide scale some twenty years ago, it seems, however, that right now we find ourselves in the middle of the transition from a first broad stage of IT-support for public administrations to a second stage. The objective of the first stage was, more or less, computerization of existing administrative processes - difficult enough, because it was necessary to have the former work of intelligent human beings now carried out by machines. The administrations themselves, their mission, work and procedures, however, remained to a large extent unchanged in substance and structure. As we know from other examples of technological progress, things must not rest there at all. The automobile may be a good witness: Apparently, the technical invention of the spark-ignition engine did a lot more than to make the horse-drawn carriage just a little bit faster. This technical invention, in fact, changed the whole traffic system, and more than that, it changed our whole lives by triggering follow-up inventions or social innovations in terms of road construction, traffic law, car insurance and other aspects of a traffic infrastructure. Generally, technical and follow-up innovations complement each other like two sides of a coin.

With respect to information technology as a technical innovation, shouldn't we expect similar consequences? Follow-up innovations within the fields of administrative tasks and processes themselves might well be the predominant feature of the second broad stage of IT-support for public administrations.

2. Modern Information Technology and the Interdependence of Means and Ends

Today's third generation of IT-applications (after centralized mass processing and online dialog now featuring office automation) principally reaches each office desk and penetrates administrative work in a way which no longer allows to leave the rule-regulated procedures of administration out of consideration. In fact, when IT is introduced into an agency it becomes apparent how media-dependent its processes are in terms of their form,

goals and costs. IT removes quite a few barriers and restrictions which were inherent in conventional paper and pencil technology. And, it is just another aspect of the generally known end/means interdependence when we expect that the enormous progress regarding the means for information processing and communication is also going to start new discussions about ends and goals, public administrations should be persuading. This is from where we should look at the role and shape of information systems in government and administration.

Let us have a brief look at just some of the opportunities for follow-up innovations offered by today's IT. Organizational structures, as rules for the division of labour and for co-operation, naturally start from the human capacity for information processing and from the available access to information. Wherever these two pre-conditions as bottlenecks have determined given organizational structures in the past, changes via IT become possible. Among the most interesting effects here is the capacity of IT to reduce the division of labour - unique in the history of technical progress. Instead of transferring a certain case or file from office to office by continuously adding bits and pieces of information, it becomes possible to give one employee electronic access to all important information and thus to integrate, and very likely simplify and speed up the work process. Where the employees' electronic access to files no longer requires a central location, field agencies can be opened up in order to move administration closer to its clients.

Further, the IT-potential to reduce the division of labour allows to diminish Taylorism and alienation of employees, and, thus, to enhance the quality of the working life. Holistic work integration is supported by IT in two dimensions: Horizontally through online access to data scattered over several offices today, and vertically because better performance information and overview gives superiors the opportunity for more delegation of responsibility and for integration of more planning, decision, operation and control competences in the same job description. Combined with a re-investment of working time saved by routine automation, this would give public administrations the chance to put a higher emphasis on client consultation and on self-reflection about one's contribution to the agencies mission.

As a last example of possible consequences which the relaxation of restrictions formerly inherent in conventional media could have, let us look at the IT-potential for the improvement of citizen/administration relations. Two categories can be distinguished here, the first concerning the citizen as client, the second as voter. Firstly: Information systems have become possible - and are in existence - which aim at overcoming the complexity of administration and its dense network of norms by providing easy to retrieve information. Theoretically, the state even could grant services without application as soon as the data in the computers of the respective agencies indicate that the requirements are met. As far as the citizen as voter is concerned, a responsible participation in political decision-making presupposes that one knows enough about the political-administrative system, its functioning and the proposed issues, in order to be able to judge them. Here, the IT-potential could be used for a new quality of public relations and citizens' participation. Public administration could be given the role of a mediator of political, scientific and administrative information and, thus, reduce the distance between citizens and government/administration.

Obviously, then, applying the means/end interrelation paradigm to IT and public administration does indeed lead to quite interesting considerations about technical and follow-up innovations. However, a word of caution may

be appropriate at this point: IT is one means among others to support the permanent struggle to improve public administrations. Among the problems facing the modern public sector are: Controverse interests in a pluralistic society, complex interactions between spheres of life which used to be independent, internationalization and globalization, or changing value systems. None of these problems, of course, is going to disappear because of new technology alone. Many remedies are required to equip public administration with a "bureaucracy model" adequate for today. Nevertheless, modern IT does have a role to play in such a model although it can be not more - but not less either - than a catalyst.

3. The Need to Build Information Systems

The presupposition for understanding modern information technology in the ways sketched before, namely, as a means to re-evaluate functions and structures of governments and administrations and as a means for administrative reforms, is to understand, describe and design government and administration as information and communication systems. It is quite obvious that from today's view, more systematization has to be brought into administrative data keeping. Knowledge concerning existing data files including their syntactic, semantic and pragmatic cataloguing has to be improved, data deficiencies have to be removed. Thinking in data base terms needs to be extended. Data must be understood as genuine organizational elements instead of program-ingredients or -derivates only. Indeed, one of the most striking innovations by computers might be the fact that "data processing", traditionally more or less an unrecognized part of the regular administrative functions only, has been uncovered as a genuine design object. Data need no longer to be considered more or less as property of certain authorities, agencies or programs. As far as authorization for access is desirable (which is in itself a very important ethical and legal question that needs resolution), we should consider, to the contrary, where we would like to see the concept of common data property applied. For, the orientation of IT toward communication can be utilized to systematically exchange data between the entitled agencies, in order to reduce double work, but above all, to reduce the fact of not being informed and to enlarge the base for decision-making. In addition, the communication orientation of IT could be utilized to share the data banks of government and administration with the public (citizenry, business companies, and organizations).

Of course, a word of caution needs to be said here, too: Doesn't have an unsystematic public administration a lot of appeal because it reduces the governments' power? Considering the many popular complaints about unresolved problems, narrow-mindedness, uncoordinated action, red tape, double work, mistakes, or long processing times, I think that a systematic administration with "zones of calculated ignorance" is welcome, however.

To discuss this set of problems, an arena as it is provided by the comparative study on government administrative information systems by the Research Institute of Social Sciences, Tokai University, is very welcome, indeed. It will enable the actors to become aware of national and cultural idiosyncracies and provide them with insight into the options considered by other countries. The following parts of this paper will concentrate on the four focusing points upon which the preparatory part of this comparative study is based.

4. Limits to Data Collection by Governments

Besides legal limitations which will be addressed in section No. 5, both cost-benefit arguments and opposition by the people restrict data collection by public administrations to some extent.

Quite a few public administrators question the benefits of data collection and data exchange. In some cases they even stop further technical investments because they are not convinced of the benefits. At first glance, their view seems to be supported by the fact that introducing IT has rarely reduced the personnel or budget of any agency. On the other hand: A thorough analysis of the costs and benefits of data collection has to go deeper. Firstly, when computers were introduced into public administration some twenty years ago, their potential to raise productivity was highly welcome, because it allowed the agencies to cope with growing tasks without having to enlarge their payroles. Thus, there were only indirect cost reductions sometimes difficult to notice. Secondly, however, when computers are only used to freeze the status quo or the given functions and structures of public administrations, benefits tend to be lower than expected. IT-applications, designed to produce given results just a bit faster hardly can lead to better cost-benefit relations. This requires IT-supported innovations as they were mentioned in section No. 2 above. Only parallel improvements in organizational structures, personnel relations and tasks/missions of administration will lead to higher productivity and to those higher benefit-cost relations public managers are waiting for. Thirdly, stand-alone IT-applications account for relatively high costs and relatively low benefits. Quite often, investments into data collection and processing of one agency could be utilized by others as well and with low additional costs, if only the data were easily available to them via networking. An example would be the measurement and storage of environmental data which are probably also useful for health administration, economic planning and others. Just as the economic principle of falling variable costs with growing fixed costs teaches us, overlapping effects of cost and benefit sharing can be expected from information systems linked via networks. Of course, and this is the fourth argument against the sceptics regarding productivity gains by IT, it takes time for all of this to happen. Imagine the construction of a subway system in a city. Quite obviously, to measure its economy after the first few kilometres were opened, would be wrong. Naturally, internal and external costs still must be relatively high because both subway staff and citizens are at the foothills of their learning curves only. Benefits, on the other hand, still would have to be relatively low because advantages of the traffic network planned or side-effects on city development could not possibly have been realized. Comparably, the network of information systems needs time to grow (it needs construction plans as well, of course); models for cost benefit sharing need to be developed; and the understanding, e.g. by auditor generals, of terms like economy or cost justification needs to be adapted so that it includes the qualitative aspects which characterize much of the benefit of data collection (e.g. better client consultation, fewer mistakes or law violations, and improved bases for decision-making). In the Federal Republic of Germany, in spite of significant efforts to install data bases, many of the limits mentioned above still have to be overcome.

However, it is probably fair to say that higher barriers against data collecting by government and administration in our country are built up by concerns and opposition at least within parts of the citizenry. Predominant here is the privacy issue the discussion of which gets a remarkable share of public attention. It is probably more than speculation to argue that this feature of IT-introduction into German public administrations might be caused, at least partly, by the experience in our recent history that an evil government

can abuse the administrative apparatus for rejectable aims, and that the state, therefore, should not be allowed to collect more personal data about its citizens than are absolutely necessary for the due conduct of public tasks.

The best way to describe the feelings expressed about data processing by government and administration in this country, might be to refer to the last census which was recommended by the United Nations to be held in 1980 all over the world. Here, the census was used to make an example of public data collecting, however. Although most people felt that the questionnaire was not very detailed and asked for general personal data only (as to education, occupation, housing and the like), the law on which the census was meant to be based was taken to the Constitutional Court - and rejected in 1983 with a decision which since then has risen to fame. The Federal Government had to come up with a new census law to be brought in accordance with the constitution, and finally the census was held with seven years delay in 1987. (Although the opposing groups still called for a boycott, more than 99 percent of the population complied.)

Basically, the Constitutional Court decided that, on the one hand, each citizen has the basic or human right, on principle, to determine herself/himself the disclosure and use of her/his personal data, that on the other hand, however, there exists a public interest in the citizens' data as well, and that these two points of view have to be weighed out. Because the right of privacy was given the nature of a basic or human right in this census court decision, according to our constitution now each data collecting and processing must be allowed by a formal law which, in addition, determines adequately the purposes the respective data can be used for. In spite of the core of this court decision which is that individual privacy rights and public interests have to be weighed out when it comes to data collecting by government and administration, so far the arguments collected to support the privacy position outweigh those gathered in favour of the public interest by far, however. From that also it might be concluded that, in the years to come, a higher emphasis on the utilization of data and IT for administrative innovations (as sketched in section No. 2) to the benefit of the public is to be expected.

5. Coordination and Integration of Administrative Information Systems

An analysis of the situation in the Federal Republic of Germany, in this respect, probably leads to a quite positive general impression. More or less all data which are important for a modern public administration are available on a broad scale and for the whole area of the state, e.g. all citizens are registered as to name, address, family status etc.; all real estate parcels are registered as to location, size, land-use or ownership; all motor vehicles are registered as to type, make, licence, owner, or insurance; in the financial world one would find computerized accounts for all tax and fee payers (and for budgeting and accounting of all federal, state, and local administrations as well); or, in order to restrict ourselves here to only one more example, the various agencies in the social security administration since long use computer-stored individual social insurance accounts for the current and future beneficiaries. Usually, most of those data are accessible online, too. However, the general impression is also that coordination and integration is better within the various branches of government and administration than between them.

Historically, shortly after the computer had been introduced into public administration, the aim was to establish "Integrative Administrative

Information Systems" or "Universal Data Bank Systems" right away and quite in accordance with the general MIS-movement at that time. Two examples of this idea may suffice here: The plan for a horizontal and vertical data communication network between data banks relevant to planning (a so called general information bank system for the Federal Republic of Germany), and, secondly, the so called "Information and Documentation Program", finally enacted in 1974 which aimed at the construction of sixteen information retrieval systems in fields such as medicine, law and administration, engineering, chemistry, or other sectors of knowledge. As we know today, many of these expectations reached too high and faded.

On the other hand, quite a few efforts towards integration and coordination of administrative information systems proved to be successful. One aspect, typical for the German approach, is the establishment in the late 60's and early 70's of what could be called a "DP-Infrastructure". Public management had got interested in EDP on a wide scale. Even top decision makers at federal, state, and local government levels, then, became involved in how to manage the new computer technology. This led to concepts of EDP-organization which were backed up by respective laws or administrative regulations and often by federal or state subsidies. In line with the state of technology and the state of training of administrative personnel at the time, capacity, data and process linkage were the organizational criteria in the center of the debate. It was essential to secure the joint use of assets such as EDP-installations, data files or software. The data processing function was removed from the administrative departments and transferred to the "Data Processing Centers" which often were established as cooperatives. Newly created or already existing bodies and authorities were charged with the planning and coordinating of the EDP-activities of the various ministries, administrative branches and local authorities. As is shown by the level of application of EDP, remarkable success has been achieved with this organizational concept of a "DP-Infrastructure", although there have been some draw-backs, too (like uniform processes reducing the chance of agencies to design their information systems by individual criteria). But, the general advantages of this typical approach to integrating administrative information systems were solidarity of the various administrations, early utilization of computer technology on a broad scale even by small and remote agencies, and joint use of information systems.

Other proofs of successful coordination of information systems can be found in several administrative branches, only a few of which can be mentioned here. One of them is the Federal Reserve Bank with its monthly statistics of the aggregated balances of all 4.400 banking establishments in the country. Based on a federal law and a respective ordinance, they have to report through the Federal Banks network every four weeks several hundred items of data, each of which is analysed for purposes of monetary policy and of bank security and is, in aggregated form, open for access by ministries, researchers, banking institutions, and the public at large via data banks. Another example is the logical Real Estate Data Bank consisting of two classical columns of land registration in Germany: The Legal Parcel Cadastres and the Real Estate Registers. The first are land-oriented and contain the real facts of each single parcel (geodetic-numerical definition of the parcel corners, cadastral map, cadastral inventory, meaning description of location, size, soil quality, nature of land use or location in nature preserve areas etc.), the latter are person-oriented and contain the legal facts of each real estate (ownership, easements, and encumbrances). Although real and legal facts about land are stored in different data bases, they have, by law, to be kept in accordance with each other and up to date. A third example is the juridical data base JURIS which comprises laws and ordinances, court decisions and juridical as well as administrative literature

for easy online retrieval. And, finally, I would like to mention information systems on the basis of statistical data and on the basis of town, regional and state development planning which have come into existence in administration at the federal, state and large-town level. They have been extended into "Planning and Structure Data Banks", "State Data Banks", "State Information Systems" etc. Typical components are population projections and migration trends, investment files, local authority files, or infrastructure data files.

In spite of these achievements, some deficiencies in terms of coordination and integration of administrative information systems have become apparent in recent years. As we have mentioned already, the idea of "Universal Data Bank Systems" had to be given up in practice. Instead, information systems had been developed which were restricted to branches of administration or to certain agencies only. Today, however, the gaps between such "islands" are more and more considered unsatisfactory, for several reasons: (1) First, new political problems have developed which cut across traditional demarcation lines of hierarchies in government and administration, as in the case of environment protection. However, with information systems concentrating one-dimensionally on administrative branches, it is difficult to integrate necessary data in problem-oriented ways (take the construction of a new highway as an example for the need to integrate traffic data, ecologic data, water resource data and others). (2) A second reason for today's efforts to integrate information systems in problem-oriented ways is technical progress itself: Automation of data processing by computers as the first step has been followed by automation of communication via local and wide area networks as the second; and, in addition to that, we have new means for data integration at our disposal for a few years, namely geographical information systems which allow to overlay and analyse all data with spatial reference (e.g. via geometric coordinates). (3) On the other hand, recent technical progress, as a third reason, demands for explicit holistic approaches because the quality jump in capacity and power of workstations and end-user computing otherwise could easily lead to disintegration of public administrations.

For these reasons, more and more public managers and IT-experts realize that now we need even better coordination and integration of administrative information systems without walking into the traps of too euphoric MIS-expectations, however. Efforts to establish information plans are needed which aim at "unearthing the treasure of data" existing in the diverse sections of public administration, at providing for better transparency and documentation of such data, at improving the appropriateness of data for exchange (by keeping them as disaggregated as possible, by storing linkage elements like spatial reference attributes, by caring for data quality in terms of completeness, integrity and actuality), at raising the motivation to offer data to others and to utilize data of other institutions (by advancing the knowledge of the "data market", by economic incentives, by legal regulations of data exchange obligations, copyrights, or privacy), at tackling the technical issues of hardware, software, and data compatibility, and at finding the proper institutional solutions (who is going to promote these new efforts to integrate government administrative information systems? Are "new brooms" needed? Will the "old carriers" do? Would a mixture of both be adequate?). In this respect, e.g. the German "DP-Infrastructure" finds itself in a phase of re-orientation from the early emphasis on data processing and the running of computers to consulting public agencies to enhance their knowledge of IT and available information, or to coordinate by setting standards.

Since 1985, this re-orientation, this shift of public managers' interest in integrated administrative information systems, in fact has become apparent.

At federal, state, and local government level new concepts for the integration of IT into public administration are under consideration. One example is the so called "State System Concept" of the state Baden-Württemberg. A promotion group for this concept was originally established within the Prime Minister's Office in order to underline the political importance of this approach. Meanwhile the group has been transferred to the Minister of the Interior (by tradition in charge of inter-agency coordination); and it is interesting to note that, since then, the group's mission has been extended to administrative reform - a concept in line with what has been said in section No. 2 above.

6. Protection of Privacy and from Abuse of Administrative Data

Concerns about facilitated intrusion into the citizen's privacy accompanied the introduction of computers into public administration right from the start, and privacy protection has assumed a special position in the discussion of IT ever since in the Federal Republic of Germany. It was in 1970 already that the state of Hesse enacted its Privacy Protection Law - the first one in the world. The state of Rhineland-Palatinate followed in 1974; the Federal Privacy Protection Act came into force in 1978; similar acts in all other German states followed.

But it was even before EDP that the constitutional court developed a so called "Theory of Privacy Spheres". In lawsuits about the state's right to demand information about citizens' vacation habits in a microcensus or about the employer's right to inspect divorce files of his civil servants, the court distinguished between three spheres in particular: An "intimate sphere" into which the state is not supposed to look at all; a "private sphere" which the citizen must disclose but only if important public interests demand so; and a "social sphere" which is, by its nature, protected in no way. This concept was based on the first two articles of the German constitution (Basic Law) which refer to human dignity and to a free development of the personality as human rights and which rule out that human beings are registered in a way which transforms them to mere objects replaceable by their data sets. The concept was further developed by the constitutional court's census decision in 1983. Before EDP there were also laws in existence already which dealt with defamation and with the observance of secrecy (official secrets, medical secrets, social welfare secrets and the like), e.g. in the penal code and in the social welfare act.

Privacy problems caused by the computer's capacity to support large bases of personal data and to facilitate the construction of personality profiles, are addressed by two groups of laws which are: sector-specific privacy protection regulations, and genuine privacy protection acts. The former are part of more than 100 other laws and are tailored for their particular problems; examples are the citizen registration act, or tax, social welfare, statistics, and police laws. The latter are of a subsidiary character which means: their prescriptions count as long as they are not substituted by sector-specific norms. Among the features of the privacy protection acts are: (1) Citizens' rights regarding the transparency of personal data storage (by a register of data files kept by ombudsmen for privacy protection (see below), by public notices of the installation of files with personal data, and by individual inquiry), the claim for correction of wrong data or deletion of unnecessary data, and the claim for damages caused by errors of public employees or machine failure; (2) a special "data secret" which forbids the public servants to utilize personal data for other purposes than authorized by law; (3) commissioners for privacy protection, one for the federal administration and one for each state administration, who examine whether the public administrations adhere to the privacy protection regulations, who

recommend improvements in case of complaints, and who are the citizens' ombudsmen in privacy matters; (4) each agency which processes personal data must guarantee data security by applying adequate technical and organizational provisions. In general, privacy protection regulations, more and more, include all kinds of data processing beyond computerization.

As was mentioned in section No. 4 already, today's situation regarding privacy protection is characterized by the census decision of 1983, leading to amendments of the privacy protection acts (already carried out in the states of Hesse, Northrhine-Westfalia and Bremen; the Federal Government has presented a draft) and to amendments of sector-specific laws. Hereby, and in the light of the constitutional court decision, the goal conflicts inherent in the "private sphere" notion, mentioned above, must be resolved, e.g. (1) privacy/legality (public administration must have the right to check the data in applications with respect to their truth); (2) privacy/client-orientation (e.g., should agencies have the right to check ex officio, without application that is, which citizens meet the requirements entitling them to certain public services?); (3) privacy/welfare state (the more public goods and services are provided by the state, the more personal data are needed as well); (4) privacy/economy (under what circumstances should it be allowed that data stored already by agency 1 for purpose A, are also utilized by agency 2 for purpose B)?

In total, it is probably fair to say that the intensive privacy discussions in this country by no means have made the life of public agencies easier but, on the other hand, are asking a lot of meaningful questions, the answers to which will contribute to preserving the trust of the citizens in the IT-supported public administrations of today and the future.

7. Procedures for Citizens to Access Administrative Data

Six years before the census decision the Constitutional Court, in a different case, had come to a conclusion which was also related to government administrative information systems and IT but for some reason never caught on in the public debates on automation and administration. The subject: The public relation efforts by federal government, and the Constitutional Court, in its decision of 1977, underlined the importance of informing the public, for two reasons: (1) The citizens need proper and understandable information in order to know enough about their rights and duties and to be able to make use of the opportunities offered by the state; (2) responsible participation of the citizens in the democratic processes presupposes that they have enough information about the political issues up for decision to be able to judge, to support or to reject them. As in the 1983 decision, constitutional principles anchored in the Basic Law support this position, here e.g. the principles of the democratic state, the social state and the constitutional state.

If such propositions of informing the citizens, in their two roles as clients of public administration and as voters, are compared with reality, however, we find quite a few habits based on restrictions inherent in the conventional "paper and pencil technologies". Some important procedures for citizens to access administrative data in the Federal Republic of Germany are: (1) Publicity of parliament and court sessions (however: The main purpose here is public control and to avoid secrecy or mysteriousness about public decision-making by admitting the press, associations, and interested citizens whereas distance, sacrifice of time and efforts to search documents of former sessions hinder the access to information relevant for a certain problem). (2) All laws and ordinances have to be laid open to the public by official announcements in law gazettes or other public bulletins in order to

become legally binding (see e.g. article 82 Basic Law; however, those journals are usually not at hand when needed; access to specific topics is complicated; and the juridical language used, often hinders understanding by the ordinary citizen). (3) Other public announcements of statutes (e.g. of city councils and their committees), plans (as budgets or zoning plans), registers (like voting lists) or deadlines, in official gazettes, newspapers, citizen assemblies or by laying them open. (4) Petitions, committees of inquiry, parliamentary question-times, citizen consultation-hours, interventions by ombudsmen also are ways to access administrative information. (5) Mainly in local codes the councils' obligation to inform the citizenry of important plans and projects, e.g. in the states of Baden-Württemberg and Northrhine-Westfalia. (6) Development plans for states, regions, or municipalities as well as zoning and land-use plans have to be or are laid open. (7) Budgets, annual statements of accounts, and reports by the auditor generals, by law, also have to be laid open. (8) There is a huge body of reports of all kinds, published periodically or occasionally by diverse ministries, agencies, and authorities (e.g. reports on the situation of the youth, of agriculture, of criminality, of health, or reports by the ombudsmen for soldiers, for privacy protection and so on) which normally give a good overview of statistical data or kinds and effects of policies in the respective fields. (9) Data banks open to public access, offer data from fields such as statistics, research, science, engineering, law, economics, or medicine. (10) There is a right to inspect public files although quite restricted, however. There is no "freedom of information act" as in some other countries. § 29 of the Administrative Procedure Act and § 100 Administrative Court Order give the right to examine the relevant files only to people concerned in a certain administrative procedure and only if this is necessary to safeguard their interests, if it does not hinder the agency's orderly task fulfilment and if the data must not remain secret in the interest of the general public or of a third party. (11) Public administrations release information for general orientation in order to enlighten the citizens on their rights and duties via brochures etc. (e.g. guides for home-owners, for consumers and so on) but, again, there exists no general legal obligation for public administration to do so. An example: According to an act, the victims of crimes are entitled to financial compensation by the state but the state, e.g. the police agency in charge, is not obliged to refer the victim to this right. There are exceptions, however, so in some social welfare laws. (12) Certain laws concerning highway, airport, or waterway construction or the building of waste disposal plans, call for a formal administrative procedure in which the plans have to be laid open to the public (§§ 72-78 Administrative Procedure Act) in order to enable citizens concerned to raise objections. (13) There is no general legal obligation for public administrations to give information on citizens' inquiries. Again, there are exceptions in certain fields such as social welfare administration. Of course, an agency might answer a citizen's inquiry of its own accord if this does not interfere with other norms like privacy protection laws. (14) In certain cases public agencies are obliged to advise the citizens of their legal position or state of affairs concerning them. An example is the advice of the proper legal remedy procedures. But there is no general legal obligation of public administration to advise the citizens. Rather, the citizens are expected to collect relevant information and file the respective applications on their own. Only then, in principle, it is the turn of the agency in charge to become active. (15) In general, there is no legal obligation for public administration to counsel the citizens either. E.g. internal revenue offices are not obliged to counsel the tax payer on how to save taxes. But here, too, one could find exceptions to the rule in special laws like in social welfare or labour administration.

The list above illustrates some ways for citizens to access administrative data. The amount of information available, in principle, is quite impressive.

It would be a little miracle, however, if these means of citizen information were not subject to restrictions of the conventional media and were not tailored to the traditional scope and concept of public administration. Given today's welfare state with its complicated structure of administrative levels, branches, and agencies and with its thicket of norms, one might well ask the question, however, whether "citizen information systems" have been upgraded accordingly in the past already. A negative answer could draw support from studies indicating that quite a few citizens do not assert claims as they would be entitled to do or that people feel uneasy facing an ubiquitous but intransparent state. A negative answer could also draw support from a comparison of the means for citizen information in use on the one hand, and the potential of modern IT on the other. Regarding data base software to support specific and fast data bank queries, regarding telecommunication technology, expert systems, graphical systems to visualize data, regarding simulation techniques to demonstrate the consequences of different problem solutions, or regarding local broadcasting technology and other features of IT, more and more people think that we could do better. Environmental data banks open to public access via interactive videotext, dedicated computer-supported citizen information offices in some local governments, or data bank-supported ex officio-information of citizens entitled to subsidies for parents in the state of Rhineland-Palatinate are indications that we are heading in the right direction and will probably overcome an attitude towards citizen information which some characterize by the so called "concealment attitude". We dispose of a fairly good network of "pipelines" in the form of administrative computer systems already. Now an equal emphasis on the "oil" in the form of information flowing from the citizens to public administration, between agencies and back to the citizens, seems to be necessary. Just as public administration, e.g. with respect to environment protection, demands from business companies to apply the "state of engineering", public administration itself should not remain behind the state of the art concerning citizen information systems. The fate of two bills introduced lately (one by the state of Hamburg into the Federal Council as the chamber of the states in 1987, and one by the "Green Party" into Federal Diet in 1986) have proposed the general right to inquire or to inspect, respectively, the files of environmental administration. The outcome will throw some light on the elbow-room our political-legal-administrative system is going to allow for innovations in the field of citizen information. Further progress, here, seems to be welcome from the standpoint of legitimation of public acting, transparency of rights and duties, and citizen engagement in public affairs. After all, more transparency of administrative data for citizens means more transparency of matters on which the citizens have decided as voters and which the citizens have to finance as tax payers.

8. Concluding Remarks

Hopefully, the reader might agree that in their present state, administration and automation have produced relevant evidence of the fact that technological innovation can be realized and anchored within the user's sphere by follow-up innovation only. But technological innovation, in our case microelectronics, seems to be much more fascinating: it has the privilege to bask in the glamour of a wide public interest. Follow-up innovation, on the other hand, understood as the many complementary measures of paving the way for an effective use of technology remains disregarded and apparently is thought to require "nothing else" but plain daily routine work. At present, information management - as a way of thinking, as a way of analysis and design of public administrations from the perspective of modern IT's potential for change - is one of the most essential

preconditions for realizing information-technological progress in a useful way by follow-up innovation.